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April 8, 2021

Advice 6154-E
(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: **Modification to Pacific Gas and Electric Company's Electric Rule 21 Pursuant to E-5035 Related to AL 5553-E and R.17-07-007 Working Group 1 Decision 19-03-013**

Purpose

The purpose of this advice letter is to make changes to Pacific Gas and Electric Company's (PG&E's) Rule 21 in accordance with E-5035[1] Ordering Paragraphs (OP) 1, 2, 3, 6 and 8 as related to Advice Letter (AL) 5553-E and California Public Utilities Commission (CPUC, Commission) Rulemaking (R.)17-07-007 Working Group 1 Decision (D.) 19-03-013.

Background

Order Instituting Rulemaking (R.) 17-07-007 was adopted July 13, 2017. It deals with refinements to Electric Rule 21 governing the interconnection of distributed energy resources for the three Investor Owned Utilities (IOUs).[2]

On October 2, 2017 the Scoping Memo of Assigned Commissioner and Administrative Law Judge (Scoping Memo) was issued. It set forth (i) the scope, (ii) the schedule and (iii) established a working group process for the proceeding.

In the scoping memo, Working Group One was defined and identified with seven Issues.[3]

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1 Resolution E-5035 - *Adopts modifications to Electric Rule 21, Generating Facility Interconnections, Pursuant to Decision 19-03-013*. - Date of Issuance: March 9th, 2021

2 The IOUs, or independently owned utilities are Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (SCE) (jointly, the Utilities)

3 In response to a January 25, 2018 motion filed by the California Solar Energy Industries Association, the Administrative Law Judge issued a ruling on February 14, 2018 that reassigned Issue 6 from the Smart Inverter Working Group to Working Group Two because

1) Screen Q modifications
2) Complex Metering clarification
3) Material modifications
4) Telemetry modifications
5) Retroactive Smart Meter Activations
6) Smart Inverter Aggregator Forms and Agreements (moved to Working Group 2)
7) ITCC treatment.

The IOUs and stakeholders presented each issue, debated proposed solutions, in a staggered schedule. Finally, on March 15, 2018, a Final Report for Working Group One was filed[4] that documented each issue and laid out various proposals from parties to each issued.

On June 19, 2018, the Administrative Law Judge facilitated a workshop at which time representatives of Working Group One presented the proposals and recommendations from the March Report. The purpose of the workshop was to provide additional clarity to enable the Commission to determine whether to approve the proposals recommended in the March Report.

On August 15, 2018, the Administrative Law Judge issued a ruling directing parties to respond to questions about the March Working Group One Report in order to complete the record. Various parties filed responses on September 5, 2018.

On April 5, 2019, Decision 19-03-013[5], "Decision Adopting Proposals From March 15, 2018 Working Group One Report" was issued.

D.19-03-013 OP 14 requires PG&E and the other IOUs each submit a Tier 2 Advice Letter by June 4, 2019 modifying Rule 21 to be consistent with the decision's requirements. This Advice Letter is submitted to comply with OP 14. The other ordering paragraphs are grouped as they relate to the issues identified in D.19-03-013. Those ordering paragraphs that have issues requiring updates to Rule 21 are addressed in this advice letter, when no other due date is provided.

Pursuant to D.19-03-013 OP 14, PG&E submitted AL 5553-E[6] on June 4, 2019.

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the development of forms and agreements necessary for Issue 6 are better suited to be addressed by legal and regulatory representatives instead of engineers.

4 Working Group One Final Report March 15, 2018 http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M215/K187/215187299.PDF

5 D. 19-03-013 - Decision Adopting Proposals From March 15, 2018 Working Group One Report – issued April 5, 2019. 2 The IOUs are Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (SCE) (jointly, the Utilities)

6 AL 5553-E - *Modification to Electric Rule 21 Pursuant to the Working Group 1 Decision 19-03-013 in Rulemaking 17-07-007*

A summary of the material covered in AL 5553-E is included in the following table:

Issue	Description	OP[6]	Implementation Method	In this AL?	Where in Rule 21
1	Reducing Transmission Cluster Studies (Screen Q)	1	Update exemption language	Yes	§G.3.a
		2	Add CAISO softlinks	Yes	§G.3.a
		3	ID engineering guidelines	No	
2	Clarifying Complex Metering Solutions	4	i. Develop configurations and ii. Clarify Requirements on web. iii. Support DC standards	No	
3	Defining Material Modifications and Establishing Procedures	5	Allow Type 1 FT modifications	Yes	§C §F.2
		6	Allow Type 2 modifications (w/ use case 3 & 4 guidance)	Yes	New §Ee
		7	Develop process option 2 & setup balancing acct	No	
		8	Interim template AL due 7/5	No	
4	Modifying Telemetry Requirements to Ensure Adequate Visibility While Minimizing Costs	9	Prep for June 26th workshop; 30days later submit T3 AL	No	
		10	Update to allow customer owned telemetry	Yes	§J.5
5	The Replacement of Existing Inverters with Smart Inverters	11	No change to existing language for PH1 inverters	No	
		12	Update language on changing inverters	Yes	§H.3.d.ii
7	Income Tax Component of Contribution	13	No action required	No	
	Submit T2 AL by 60 days from decision	14	Orders this Tier 2 Advice letter by June 4		

Also, pursuant to D.19-03-013 OP 8, PG&E jointly submitted AL 5583-E[7], SCE AL 4033-E, and SDG&E AL 3401-E on July 5, 2019 for a standard form template by which utilities may be notified of material modifications that qualify for a notification-only process.

On June 24, 2019, PG&E's AL 5553-E was protested by the California Solar & Storage Association (CALSSA), The utilities submitted responses.

On March 9, 2021, Resolution E-5035 was issued addressing AL 5553-E. its protests, and replies. This Tier 1 advice letter addresses the follow-up ordered in E-5035 to Rule

[7] AL 5583-E - *Joint IOU Submittal -Proposed Template for Process Option 2 Modifications Pursuant to Decision 19-03-013*

21. AL 6155-E will be submitted simultaneously with this one and will address the template changes discussed in PG&E AL 5583-E.

Tariff Revisions

A. OP 1 – Standardize Fast Track Material Modifications Definitions

OP 1 states:

> *Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) shall* ***standardize the Electric Rule 21 Tariff (Rule 21) language describing the allowed types of modifications to interconnection applications under Fast Track.***
>
> *Specifically, all three Utilities should* ***explicitly define "like-for-like" in accordance with definition provided by D.19-03-013 footnote 42.***
>
> *All three Utilities should* ***state explicitly that additional material modifications outside of the identified types will not be accepted within Fast Track****.*
>
> *In addition, SCE should align its Section F.2 structure with that proposed by PG&E and SDG&E.*
>
> [formatting added for clarity]

D.19-03-013 footnote 42 on page 22 states:

> *42 Definition of "like for like" for the purposes of this decision: For inverters, like for like means certified, same nameplate or smaller, same fault current or smaller. For solar panels, like for like means certified, same CEC-AC rating of the system or smaller. For batteries, like for like means same or less kWh & kW rating (****see the following footnote****), and same operating profile. For transformers, like for like means same connection type, same or smaller impedance and capacity. (March Report at 46.)* [emphasis added]

The following footnote (43) is incorporated in footnote 42:

> *43 Definition of "size" for the purposes of this decision: System size is defined as the limiting factor that determines the maximum generating facility capacity. For solar systems, the limiting factor is the lesser of inverter nameplate capacity (kW) or maximum solar output (CEC-AC rating) for PG&E and SDG&E or inverter nameplate capacity (kW) for SCE. For energy storage systems, both the inverter nameplate capacity*

(kW) and the capacity of the storage device (kWh) are considered in the definition of size. For all other generation types, the limiting factor is the gross nameplate rating of the generator. (March Report at 46.)

Table F.1 (Sheet 80) addresses the allowed types of modifications to interconnection applications under Fast Track by reference to the two definitions above. PG&E adds the definition of "Like-for-Like" to Rule 21 Section C – Definitions –

Like-for-like: For inverters, like-for-like means certified, same nameplate or smaller, same fault current or smaller. For solar panels, like-for-like means certified, same CEC-AC rating of the system or smaller. For batteries, like-for-like means same or less kWh & kW rating and same operating profile. For transformers, like-for-like means same connection type, same or smaller impedance and capacity.

And PG&E modifies the Table F.1 language to make it consistent as follows:

Like-for-Like is defined ~~as~~in Section C

~~Generally:~~	~~For PV:~~	~~For batteries:~~	~~For transformers:~~
~~certified, same nameplate or smaller, same fault current or smaller~~	~~same CEC AC rating of the system or smaller~~	~~same or less kWh & kW rating and same operating profile~~	~~same connection type, same or smaller impedance and capacity.~~

[2] System size pursuant to D.19-03-013, footnote 43 on p.22 is defined as the follows:

For solar systems	For energy storage systems	For all other generation types
the lesser of inverter nameplate capacity (kW) or maximum solar output (CEC-AC rating)	both the inverter nameplate capacity (kW) and the capacity of the storage device (kWh) are considered in the definition of size.	the gross nameplate rating of the generator

[3] Pursuant to D.19-03-013, p.23

B. OP 2 – Modifications to Rule 21 Tables F.1 and E.e.3

OP 2 states:

PG&E shall ***amend Rule 21 Tables F.1 and Ee.3 as proposed in its Response to the California Solar & Storage Association's (CALSSA's) protest of*** *AL 5553-E.*

[formatting added for clarity]

E-5035 notes:

> *Protests and Utility Responses to Protests*
>
> *CALSSA argues that PG&E AL 5553-E is inconsistent with D.19-03-013's determination that* ***the utilities have the discretion to allow more than one material modification to a Fast Track interconnection application****. CALSSA also notes that* ***the footnotes in PG&E's Rule 21 Table Ee.3*** *are reversed.*
>
> *In response to CALSSA's protest of AL 5553-E, PG&E indicates willingness to modify its tariff language to 1) clarify that, consistent with the language of D.19-03-013, utilities have the discretion to allow more than one material modification to a Fast Track interconnection application, even when utility action has not necessitated the modification and 2) correct the error in the footnotes in Table Ee.3.*
>
> *(p12)*

Page 25-26 of D. 19-03-013 allows that:

> *…We clarify that each interconnection application will allow one modification request, which can contain multiple modifications.[45] We also give the Utilities discretion to allow modification requests. The utilities are encouraged to exercise this discretion in instances when the utility has caused the need for an additional modification request.*
>
> ———
>
> *[45] March Report at 43-48.*
>
> *[45] Id. at 47. See also SCE Response to August 15, 2018 Ruling at 6 and PG&E/SDG&E Response to August 15, 2018 Ruling at 5-6.*

In Table F.1 PG&E clarifies that PG&E has the discretion to allow more than one material modification to a Fast Track interconnection application, even when utility action has not necessitated the modification. PG&E also clarifies section based on discussions with the other IOUs.

Table F.1 – MODIFICATION TO PENDING APPLICATIONS (D. 19-03-013 Type I Changes)

Modifications to Interconnection Applications Under the Fast Track

Modifications to Interconnection Applications Under the Fast Track

1. The number of ~~Modifications~~ modifications per Interconnection Request ~~are~~ is limited to one request ~~per Interconnection Request~~.

~~1.~~2. Distribution Provider has discretion to allow additional modification requests when the Distribution Provider has caused the need for an additional modification request...

~~2.~~3. From the date of the proposed modification request is received, the Distribution Provider shall process the request within:

(i) ten (10) Business Days if no re-study is required

(ii) twenty (20) Business Days if a re-study is required.

~~3.~~4. Except as allowed in Section E.4 for NEM customers, i~~I~~f a project downsizes, ~~and~~ the revised shall not affect the ~~size belongs to a different~~ cost responsibility or timing of interconnection of other projects~~regime than the original request, the cost responsibility regime should remain that of the original request~~.

~~4.~~5. Additional changes outside of the modification types identified herein will not be accepted within Fast Track.

~~5. The number of modification requests per interconnection request is limited to one. Distribution Providers have discretion to allow additional modification requests when the Distribution Provider has caused the need for an additional modification request.~~

Conditions	Application Modifications Allowed?	Fee
"Like-for-like"[1] equipment replacements meeting the following criteria: 1. Does not increase facility size[2] 2. No size decrease exceeding 20%; and 3. No identified upgrades or mitigations.	Yes	n/a
Size reductions meeting the following criteria: 1. No size reduction exceeding 20%; and 2. Identified upgrades or mitigations are paid for by the customer	Yes	n/a
Size reductions to avoid upgrades meeting the following criteria: 1. The re-study determines that no the modification affects no other distributed energy resource	Yes	$300[3]
Other types of modifications outside of those listed in this table will not be accepted without a new application.	No	

In Table Ee.3, the footnotes are corrected.

Table Ee.3 -- Adding Storage or Capacity

Conditions:		Notification Required?	Inter-connection Request Required?	Proceed without PG&E approval?	Fee (See table E.1)
Adding storage capacity t(kwh) to an existing storage facility without changing inverter	Generator's maximum output based on its rated capacity[1]	Yes	No	Yes	~~Modificat-~~ ion Fees in E.1
	Operational profiles of systems used to determine system impacts[2]	Yes	~~Yes~~No	~~No~~Yes	Modificat-ion Fees in E.1~~E.1~~
Adding storage to an existing generating facility that does not have storage.		~~Yes~~No	Yes	No	E.1
Adding such that system capacity increases and no inverter power controls are employed to limit the real power output to the inverter listed size in the original agreement.		~~Yes~~No	Yes	No	E.1
All Other Scenarios		~~Yes~~No	Yes	No	E.1

[1] If the Commission determines that a generator's maximum output should be based on its rated capacity (per D. 19-03-013, OP6)
~~If the Commission determines that operational profiles of systems should be used to determine system impacts D. 19-03-013, (per OP6)~~

[2] If the Commission determines that operational profiles of systems should be used to determine system impacts D. 19-03-013, (per OP6)
~~If the Commission determines that a generator's maximum output should be based on its rated capacity (per D. 19-03-013, OP6)~~

Note minor corrections were included for clarity. If an interconnection request is required, there is no need to notify PG&E.

C. OP 3 - Table 1 Use Case 3 Material Modifications for Existing Systems

OP 3 states:

> PG&E, SCE, and SDG&E shall update Rule 21 to reflect the appropriate process options for Use Case 3 material modifications, consistent with the designations in Table 1 of this Resolution.
>
> [formatting added for clarity]

Table 1 from E-5035 requires:

Table 1: Process Option Designations for Use Case 3 Material Modifications

Modified Generating Facility Capacity	Process Option
≤ 100 kW and ≤ 110% of original capacity	2
≤ 100 kW and > 110% of original capacity	2
> 100 kW and ≤ 110% of original capacity	2
> 100 kW and > 110% of original capacity	4

The first two cases result in the same process option for all modified generating Facility Capacities ≤ 100 kW, irrespective of whether they are over or under 110%, so they can be combined for simplicity.

Table Ee.1 (sheet 71) is then modified as follows:

Table Ee.1 – Replacing existing equipment

~~Description of Modification~~Conditions		Notification Required?	Inter-connection request is required?	Proceed without PG&E approval?	Fee (See table E.1)
Replace equipment with exact same equipment type		No	No	Yes	n/a
Replace with "like-for-like,"~~[24], [25]~~ where: 1. system output does not exceed what is listed in the original interconnection agreement and 2. operating mode is not adjusted.		Yes	No	Yes	Modificat-ion Fee in E.1 [1]
Replacement increases nameplate capacity of the system, but which employ certified inverter power controls that limit the real power output to the inverter listed size in the original agreement.	Increases nameplate to ≤100kw [2]	Yes	No	Yes	Modificat-ion Fee in E.1 [1]
	Increases nameplate to >100kw and < 110% of original capacity [3]	~~Yes~~	~~Yes~~No	~~No~~Yes	Modificat-ion Fee in E.1~~[1]~~
	Increases nameplate to >100kw and > 110% of original capacity ~~increase capacity to <110% of original capacity~~[5]	~~Yes~~No	~~No~~Yes	~~Yes~~No	~~Modificat-ion Fee in~~ E.1 [3]
Replacing equipment such that the system capacity increases and no inverter power controls are employed to limit the real power output to the inverter listed size in the original agreement		~~Yes~~No	Yes	No	E.1~~[3]~~
All other ~~Scenarios~~scenarios		~~Yes~~No	Yes	No	E.1

[1] See Modification Fees in Table E.1.
[2] For projects increasing capacity to less than or equal to 100 kilowatt (kW), pending the creation of certification schemes for inverter power controls (software/firmware) to limit export (per D. 19-03-013, OP6)
~~[3] For projects increasing capacity to at or greater than 100 kW (per D. 19-03-013, OP6)~~
[43] "E.1" refers to applicable charges/fees in Rule 21 Table E.1 for a new application.
~~[5] For projects of any size that are requesting an increase in capacity within 110 percent of their original generating capacity~~
[64] Like-for-Like is defined in Section C ~~footnote 1 in Table F.1~~
~~[7] System Size is defined in footnote 2 in Table. F.1~~

Note minor corrections were included for clarity. If an interconnection request is required, there is no need to notify PG&E.

D. OP 6 - Screen Q

E-5035 notes:

> *This Resolution finds that the Screen Q exemption language proposed in SDG&E AL 3381-E-A provides the clearest implementation of the Screen Q exemption expansion ordered by D.19-03-013. This Resolution orders PG&E and SCE to modify their Rule 21 language expanding the Screen Q exemption with that proposed by SDG&E AL 3381-E-A.*

OP 6 states:

> *PG&E and SCE shall modify their Rule 21 Section G.3.a language expanding the Screen Q exemption with the language proposed by SDG&E AL 3381-E-A.*

AL 3381-E-A[8] states:

> **Revised Section G.3.a. (Sheet 106): (At the request of the Energy Division this section is revised for clarity)**
>
> ~~Note 1: NEM~~ Exemptions: All NEM Generating Facilities and all inverter-based Generating Facilities with ~~net export~~ a nameplate capacity less than or equal to ~~500 kW~~ 1 MVA ~~that may flow across the Point of Common Coupling~~ will not be studied in the Transmission Cluster Study Process, but may be studied under the Independent Study Process. For an Applicant that agrees to the installation, at Applicant's cost, of Distribution Provider-approved software/firmware-controlled devices or equipment Nationally Recognized Testing Laboratory certified to limit the Generating Facility's net export so that it will never exceed the 1 MVA exemption limit, the Generating Facility's net export will be considered exempt from the Transmission Cluster Study Process for purposes of this section.

[8] AL 3381-E-A – SDG&E Advice Letter - *PARTIAL SUPPLEMENTAL – PROPOSED MODIFICATIONS TO ELECTRIC TARIFF RULE 21 TO INCORPORATE REQUIREMENTS FROM DECISION 1903-013 ADOPTING PROPOSALS FROM THE WORKING GROUP ONE REPORT*

In G.3.a.(sheet 165) PG&E makes the following addition to align with SDG&E's AL 3381-E-A[9]:

> Exemptions: All NEM Generating Facilities and all ~~All~~ inverter-based Generating Facilities ~~including those for NEM systems~~ with a nameplate capacity less than or equal to 1 MVA will not be studied in the WDT Transmission Cluster Study Process, but may be studied under the Independent Study Process. For an Applicant that agrees to the installation, at Applicant's cost, of Distribution Provider-approved software/firmware controlled devices or equipment Nationally Recognized Testing Laboratory certified to limit the Generating Facility's net export so that it will never exceed the 1 MVA exemption limit, the Generating Facility's net export will be considered exempt from the WDT Transmission Cluster Study Process for purposes of this section.

E. OP 8 Updating Rule 21

OP 8 requires:

> *PG&E, SCE, and SDG&E shall update their respective Rule 21 Tariffs in compliance with the above Ordering Paragraphs by submitting* ***Tier 1*** *advice letters* ***within 30 days of the issuance of this Resolution****.*

Date of Issuance: March 9th, 2021

AL 6155-E is submitted concurrently to address the form template changes discussed in PG&E AL 5583-E.

The affected tariff sheets are listed on the enclosed Attachment 1. In accordance to CPUC General Order 96-B, Section 9.5.3, PG&E has implemented the use of the "(P)" symbol for Electric Rule 21 to signify material subject to change under a pending advice letter. Therefore, Attachment 1 includes all the sheets of Electric Rule 21 and language that has been approved by Resolution E-5035 as submitted in AL 5553-E. This submittal includes language from this advice letter (AL 6154-E) and language from other previously submitted advice letters (AL 5915-E, 5988-E, 6014-E, and 6093-E). Language in Electric Rule 21 with the "(P)" designation was submitted to the CPUC, but at the time of thid submittal, has not been approved.

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[9] Note that PG&E consistently changed its references to the "WDT Transmissions Cluster Study Process" throughout its Rule 21, whereas SDG&E uses "Transmission Cluster Study Process." This change was included in AL 5553-E on Page 24 addressing a point of confusion for applicants and was not contested or protested.

For convenience of the reader, PG&E has included “track-change” or “redline” revisions of Rule 21 in Attachment 2. As mentioned in the above paragraph, PG&E implemented the use of the “(P)” symbol for Electric Rule 21 to signify material subject to change under a pending advice letter. The redlines in Attachment 2 are color coded to the specific advice letter. See Attachment 2 cover sheet for more details.

Protests

*****Due to the COVID-19 pandemic and the shelter at home orders, PG&E is currently unable to receive protests or comments to this advice letter via U.S. mail or fax. Please submit protests or comments to this advice letter to EDTariffUnit@cpuc.ca.gov and PGETariffs@pge.com*****

Anyone wishing to protest this submittal may do so by letter sent via U.S. mail, facsimile or E-mail, no later than April 28, 2021, which is 20 days after the date of this submittal. Protests must be submitted to:

CPUC Energy Division
ED Tariff Unit
505 Van Ness Avenue, 4th Floor
San Francisco, California 94102

Facsimile: (415) 703-2200
E-mail: EDTariffUnit@cpuc.ca.gov

Copies of protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest shall also be sent to PG&E either via E-mail or U.S. mail (and by facsimile, if possible) at the address shown below on the same date it is mailed or delivered to the Commission:

Erik Jacobson
Director, Regulatory Relations
c/o Megan Lawson
Pacific Gas and Electric Company
77 Beale Street, Mail Code B13U
P.O. Box 770000
San Francisco, California 94177

Facsimile: (415) 973-3582
E-mail: PGETariffs@pge.com

Any person (including individuals, groups, or organizations) may protest or respond to an advice letter (General Order 96-B, Section 7.4). The protest shall contain the

following information: specification of the advice letter protested; grounds for the protest; supporting factual information or legal argument; name, telephone number, postal address, and (where appropriate) e-mail address of the protestant; and statement that the protest was sent to the utility no later than the day on which the protest was submitted to the reviewing Industry Division (General Order 96-B, Section 3.11).

Effective Date

Pursuant to General Order (GO) 96-B, Rule 5.1, and OP 8 of E-5035, this advice letter is submitted with a Tier 1 designation. PG&E requests that this Tier 1 advice submittal become effective upon date of submittal, which is April 8, 2021.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service lists for R.11-09-011, R.14-07-002 and R.17-07-007. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter submittals can also be accessed electronically at: http://www.pge.com/tariffs/.

/S/
Erik Jacobson
Director, Regulatory Relations

Attachments

cc: Service Lists R.11-09-011, R.14-07-002 and R.17-07-007

California Public Utilities Commission

ADVICE LETTER SUMMARY

ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.: Pacific Gas and Electric Company (ID U39E)

Utility type:
☑ ELC ☐ GAS ☐ WATER
☐ PLC ☐ HEAT

Contact Person: Kimberly Loo
Phone #: (415)973-4587
E-mail: PGETariffs@pge.com
E-mail Disposition Notice to: KELM@pge.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 6154-E

Tier Designation: 1

Subject of AL: Modification to Pacific Gas and Electric Company's Electric Rule 21 Pursuant to E-5035 Related to AL 5553-E and R.17-07-007 Working Group 1 Decision 19-03-013

Keywords (choose from CPUC listing): Compliance, Rule 21

AL Type: ☐ Monthly ☐ Quarterly ☐ Annual ☑ One-Time ☐ Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #:
Res. E-5035, D.19-03-013

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL:

Confidential treatment requested? ☐ Yes ☑ No

If yes, specification of confidential information:
Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information:

Resolution required? ☐ Yes ☑ No

Requested effective date: 4/8/21

No. of tariff sheets: 283

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: See Attachment 1

Service affected and changes proposed[1]: N/A

Pending advice letters that revise the same tariff sheets: N/A

[1]Discuss in AL if more space is needed.

Clear Form

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102
Email: EDTariffUnit@cpuc.ca.gov

Name: Erik Jacobson, c/o Megan Lawson
Title: Director, Regulatory Relations
Utility Name: Pacific Gas and Electric Company
Address: 77 Beale Street, Mail Code B13U
City: San Francisco, CA 94177
State: California Zip: 94177
Telephone (xxx) xxx-xxxx: (415)973-2093
Facsimile (xxx) xxx-xxxx: (415)973-3582
Email: PGETariffs@pge.com

Name:
Title:
Utility Name:
Address:
City:
State: District of Columbia Zip:
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email:

Clear Form

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
49337-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 1	42298-E
49338-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 2	42299-E
49339-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 3	42300-E
49340-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 4	42301-E
49341-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 5	42302-E
49342-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 6	42303-E
49343-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 7	42304-E
49344-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 8	42305-E
49345-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 9	42306-E
49346-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 10	42307-E
49347-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 11	
49348-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 12	42308-E
49349-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 13	42309-E
49350-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 14	42310-E

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49351-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 15	42311-E
49352-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 16	42312-E
49353-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 17	42313-E
49354-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 18	
49355-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 19	42314-E
49356-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 20	42315-E
49357-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 21	42316-E
49358-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 22	42317-E
49359-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 23	42318-E
49360-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 24	42319-E
49361-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 25	42320-E
49362-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 26	42321-E
49363-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 27	42322-E
49364-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 28	42323-E

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49365-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 29	
49366-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 30	42324-E
49367-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 31	42325-E
49368-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 32	42326-E
49369-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 33	42327-E
49370-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 34	42328-E
49371-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 35	42329-E
49372-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 36	42330-E
49373-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 37	42331-E
49374-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 38	42332-E
49375-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 39	42333-E
49376-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 40	42334-E
49377-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 41	42335-E
49378-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 42	42336-E

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49379-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 43	42337-E
49380-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 44	42338-E
49381-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 45	42339-E
49382-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 46	42340-E
49383-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 47	46374-E
49384-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 48	42342-E
49385-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 49	42343-E
49386-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 50	42344-E
49387-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 51	42345-E
49388-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 52	42346-E
49389-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 53	42347-E
49390-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 54	42348-E
49391-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 55	42349-E
49392-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 56	42350-E

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49393-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 57	42351-E
49394-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 58	42352-E
49395-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 59	42353-E
49396-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 60	
49397-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 61	42354-E
49398-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 62	42355-E
49399-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 63	42356-E
49400-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 64	42357-E
49401-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 65	42358-E
49402-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 66	42359-E
49403-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 67	42360-E
49404-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 68	42361-E
49405-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 69	42362-E
49406-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 70	42363-E

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49407-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 71	42364-E
49408-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 72	46398-E
49409-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 73	42366-E
49410-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 74	42367-E
49411-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 75	
49412-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 76	
49413-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 77	
49414-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 78	42368-E
49415-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 79	42369-E
49416-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 80	42370-E
49417-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 81	42371-E
49418-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 82	42372-E
49419-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 83	
49420-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 84	

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49421-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 85	42373-E
49422-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 86	42374-E
49423-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 87	42375-E
49424-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 88	42376-E
49425-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 89	42377-E
49426-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 90	42378-E
49427-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 91	42379-E
49428-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 92	42380-E
49429-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 93	42381-E
49430-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 94	42382-E
49431-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 95	42383-E
49432-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 96	42384-E
49433-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 97	42385-E
49434-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 98	42386-E

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49435-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 99	42387-E
49436-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 100	42388-E
49437-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 101	42389-E
49438-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 102	42390-E
49439-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 103	42391-E
49440-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 104	42392-E
49441-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 105	42393-E
49442-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 106	42394-E
49443-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 107	42395-E
49444-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 108	42396-E
49445-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 109	42397-E
49446-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 110	42398-E
49447-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 111	42399-E
49448-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 112	42400-E

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49449-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 113	42401-E
49450-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 114	42402-E
49451-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 115	42403-E
49452-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 116	42404-E
49453-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 117	42405-E
49454-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 118	42406-E
49455-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 119	42407-E
49456-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 120	42408-E
49457-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 121	42409-E
49458-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 122	42410-E
49459-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 123	42411-E
49460-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 124	42412-E
49461-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 125	42413-E
49462-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 126	42414-E

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49463-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 127	42415-E
49464-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 128	42416-E
49465-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 129	42417-E
49466-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 130	42418-E
49467-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 131	42419-E
49468-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 132	42420-E
49469-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 133	42421-E
49470-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 134	42422-E
49471-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 135	42423-E
49472-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 136	42424-E
49473-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 137	42425-E
49474-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 138	42426-E
49475-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 139	42427-E
49476-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 140	42428-E

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49477-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 141	42429-E
49478-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 142	42430-E
49479-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 143	42431-E
49480-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 144	42432-E
49481-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 145	42433-E
49482-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 146	42434-E
49483-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 147	42435-E
49484-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 148	42436-E
49485-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 149	42437-E
49486-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 150	42438-E
49487-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 151	42439-E
49488-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 152	42440-E
49489-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 153	42441-E
49490-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 154	42442-E

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49491-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 155	42443-E
49492-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 156	42444-E
49493-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 157	42445-E
49494-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 158	42446-E
49495-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 159	42447-E
49496-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 160	42448-E
49497-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 161	42449-E
49498-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 162	42450-E
49499-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 163	
49500-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 164	42451-E
49501-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 165	42452-E
49502-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 166	
49503-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 167	42453-E
49504-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 168	42454-E

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49505-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 169	42455-E
49506-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 170	42456-E
49507-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 171	42457-E
49508-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 172	42458-E
49509-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 173	42459-E
49510-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 174	42460-E
49511-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 175	42461-E
49512-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 176	42462-E
49513-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 177	42463-E
49514-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 178	42464-E
49515-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 179	42465-E
49516-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 180	42466-E
49517-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 181	42467-E
49518-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 182	42468-E

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49519-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 183	42469-E
49520-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 184	42470-E
49521-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 185	42471-E
49522-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 186	42472-E
49523-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 187	42473-E
49524-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 188	42474-E
49525-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 189	42475-E
49526-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 190	42476-E
49527-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 191	42477-E
49528-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 192	42478-E
49529-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 193	42479-E
49530-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 194	
49531-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 195	42480-E
49532-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 196	42481-E

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49533-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 197	42482-E
49534-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 198	42483-E
49535-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 199	42484-E
49536-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 200	42485-E
49537-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 201	42486-E
49538-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 202	42487-E
49539-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 203	42488-E
49540-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 204	42489-E
49541-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 205	42490-E
49542-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 206	42491-E
49543-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 207	42492-E
49544-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 208	43700-E
49545-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 209	43701-E
49546-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 210	43703-E

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49547-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 211	43704-E
49548-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 212	43706-E
49549-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 213	
49550-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 214	
49551-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 215	42500-E
49552-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 216	46382-E
49553-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 217	42502-E
49554-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 218	42503-E
49555-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 219	46383-E
49556-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 220	43709-E
49557-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 221	46384-E
49558-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 222	43711-E*
49559-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 223	43712-E
49560-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 224	43713-E

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49561-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 225	
49562-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 226	42510-E
49563-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 227	42511-E
49564-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 228	42512-E
49565-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 229	42513-E
49566-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 230	42514-E
49567-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 231	42515-E
49568-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 232	42516-E
49569-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 233	42517-E
49570-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 234	42518-E
49571-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 235	42519-E
49572-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 236	42520-E
49573-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 237	42521-E
49574-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 238	42522-E

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49575-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 239	42523-E
49576-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 240	
49577-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 241	
49578-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 242	42524-E
49579-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 243	42525-E
49580-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 244	42526-E
49581-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 245	42527-E
49582-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 246	42528-E
49583-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 247	42529-E
49584-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 248	42530-E
49585-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 249	42531-E
49586-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 250	42532-E
49587-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 251	42533-E
49588-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 252	42534-E

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49589-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 253	42535-E
49590-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 254	42536-E
49591-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 255	42537-E
49592-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 256	42538-E
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GENERATING FACILITY INTERCONNECTIONS

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B. APPLICABILITY (L)

1. APPLICABILITY

This Rule describes the Interconnection, operating and Metering requirements for those Generating Facilities to be connected to Distribution Provider's Distribution System and Transmission System over which the California Public Utilities Commission (Commission) has jurisdiction. All Generating Facilities seeking Interconnection with Distribution Provider's Transmission System shall apply to the California Independent System Operator (CAISO) for Interconnection and be subject to CAISO Tariff except for 1) Net Energy Metering Generating Facilities and 2) Generating Facilities that do not export to the grid or sell any exports sent to the grid (Non-Export Generating Facilities). NEM Generating Facilities and Non-Export Generating Facilities subject to Commission jurisdiction shall interconnect under this Rule regardless of whether they interconnect to Distribution Provider's Distribution or Transmission System. Subject to the requirements of this Rule, Distribution Provider will allow the Interconnection of Generating Facilities with its Distribution or Transmission System.

Generating Facility interconnections to Distribution Provider's Distribution System that are subject to Federal Energy Regulatory Commission (FERC) jurisdiction shall apply under Distribution Provider's Wholesale Distribution Tariff (WDT) whether they interconnect to Distribution Provider's Distribution or Transmission System.

2. DEFINITIONS

Capitalized terms used in this Rule, and not defined in Distribution Provider's other tariffs shall have the meaning ascribed to such terms in Section C of this Rule. The definitions set forth in Section C of this Rule shall only apply to this Rule, the Interconnection Request, study agreements and Generator Interconnection Agreements, and may not apply to Distribution Provider's other tariffs. (L)

(Continued)

B. APPLICABILITY (Cont'd.) (L)

3. APPLICABLE CODES AND STANDARDS (L)

This Rule has been harmonized with the requirements of Institute of Electrical and Electronic Engineers (IEEE) 1547-2018. In some sections, IEEE 1547 language has been adopted directly or by reference, in others, IEEE 1547 requirements were interpreted and this Rule's language was changed to maintain the spirit of both documents. (P) (P) (L) (L)

The language from IEEE 1547-2018 that has been adopted directly (as opposed to paraphrased language or previous language that was determined to be consistent with IEEE 1547-2018) is followed by a citation that lists the clause from which the language derived. For example, IEEE 1547-2018-4.1.1 is a reference to Clause 4.1.1. (P) (L) (P) (L) (P)

In the event of any conflict between this Rule, any of the standards listed herein, or any other applicable standards or codes, the requirements of this Rule shall take precedence. (L) (L)

(Continued)

4. RETAIL CUSTOMER ENERGY STORAGE DEVICES

For retail customers interconnecting stationary or mobile energy storage devices pursuant to this Rule, the load aspects of the storage devices will be treated pursuant to Rules 2, 3, 15, and 16 just like other load, using the incremental net load for non-residential customers, if any, of the storage devices. (P)/(L) (L) (L)

5. Applicability of IEEE 1547-2018 requirements (P)

The systems voltage at Point of Interconnection (POI) will determine the required generating facility operating requirements. Where voltage at the POI is less then 50kV, for applicable Generating Facility technology, IEEE1547-2018 and related certification requirement are required. Where POI voltage is greater than or equal to 50kV, the IOU Interconnection Handbook will outline operating and performance requirements consistent with NERC and CAISO operating requirements. (P)

C. DEFINITIONS (L)

The definitions in this Section C are applicable only to this Rule, the Interconnection Request, Study Agreements and Generator Interconnection Agreements.

Added Facilities: See Special Facilities.

Affected System: An electric system other than Distribution Provider's Distribution or Transmission System that may be affected by the proposed Interconnection. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Affected System Operator: The entity that operates an Affected System.

Affiliate: With respect to a corporation, partnership or other entity, each such other corporation, partnership or other entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such corporation, partnership or other entity.

Allocated Capacity: Existing aggregate generation capacity in megawatts (MW) interconnected to a substation/area bus, bank or circuit (i.e., amount of generation online).

Anti-Islanding: A control scheme installed as part of the Generating or Interconnection Facility that senses and prevents the formation of an Unintended Island.

Applicant: The entity submitting an Interconnection Request pursuant to this Rule.

Application: See Interconnection Request.

Available Capacity: Total Capacity less the sum of Allocated Capacity and Queued Capacity.

Base Case: Data including, but not limited to, base power flow, short circuit and dynamic/stability data bases, underlying load, generation, and transmission facility assumptions, contingency lists, including relevant special protection systems, and transmission diagrams used to perform the Interconnection Studies. The Base Case may include Critical Energy Infrastructure Information (as that term is defined by FERC). The Base Case shall include (a) transmission facilities as approved by Distribution Provider or CAISO, as applicable, (b) planned Distribution Upgrades that may have an impact on the Interconnection Request, (c) Distribution Upgrades and Network Upgrades associated with generating facilities in (iv) below, and (d) generating facilities that (i) are directly interconnected to the Distribution System or CAISO Controlled Grid; (ii) are interconnected to Affected Systems and may have an impact on the Interconnection Request; (iii) have a pending request to interconnect to the Distribution System or an Affected System; or (iv) are not interconnected to the Distribution System or CAISO Controlled Grid, but are subject to a fully executed Generator Interconnection Agreement (or its equivalent predecessor agreement) or for which an unexecuted Generator Interconnection Agreement (or its equivalent predecessor agreement) has been requested to be filed with FERC. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Business Day: Monday through Friday, excluding Federal and State Holidays.

CAISO Controlled Grid: The system of transmission lines and associated facilities that have been placed under the CAISO's Operational Control.

CAISO Tariff: The California Independent System Operator FERC Electric Tariff.

Calendar Day: Any day, including Saturday, Sunday or a Federal and State Holiday.

Certification Test: A test pursuant to this Rule that verifies conformance of certain equipment with Commission-approved performance standards in order to be classified as Certified Equipment. Certification Tests are performed by Nationally Recognized Test Laboratories (NRTLs).

Certification; Certified; Certificate: The documented results of a successful Certification Testing.

Certified Equipment: Equipment that has passed all required Certification Tests.

Commercial Operation: The status of a Generating Facility that has commenced generating electricity, excluding electricity generated during the period which Producer is engaged in on-site test operations and commissioning of the Generating Facility prior to Commercial Operation.

Commercial Operation Date: The date on which a Generator at a Generating Facility commences Commercial Operation, as agreed to by the Parties.

Commission: The Public Utilities Commission of the State of California. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Commissioning Test: A test performed during the commissioning of all or part of a Generating Facility to achieve one or more of the following:

Verify specific aspects of its performance;

Calibrate its instrumentation;

Establish instrument or Protective Function set-points.

Confidential Information: See Section D.7.

Conservation Voltage Regulation (CVR): The CVR program that the Commission directed Distribution Provider to implement as applicable to the operation and design of distribution circuits and related service voltages.

Construction Activities: Actions by Distribution Provider that result in irrevocable financial commitments for the purchase of major electrical equipment or land for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades assigned to the Interconnection Customer that occur after receipt of all appropriate governmental approvals needed for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades.

Continuous Operation: The Smart Inverter operates indefinitely without tripping. Any functions that protect the Smart Inverter from damage may operate as needed.

Control Area: As defined in the CAISO Tariff.

Cost Envelope: A cost-certainty framework defined as plus or minus twenty-five (25) percent of the estimated cost of certain Interconnection Facilities and/or Distribution Upgrades identified in the Cost Envelope Estimate that is offered to an Applicant based on actual costs within such twenty-five (25) percent envelope. Applicant's cost responsibility for Interconnection Facilities and/or Distribution Upgrades subject to the Cost Envelope is set forth in Section F.7.b. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Cost Envelope Option: A five-year pilot option described in Section F.7 applicable to Interconnection Requests for Generating Facilities that are processed under the Fast Track Process or Independent Study Process.

Cost Envelope Estimate: An estimate prepared by the Distribution Provider and delivered to Applicant pursuant to the Cost Envelope Option that contains (i) the estimated cost of Distribution Provider's required Interconnection Facilities and/or Distribution Upgrades that are offered to Applicant that are subject to the Cost Envelope, and (ii) the estimated costs of related activities and facilities that are excluded from the Cost Envelope and offered on an actual cost basis, both pursuant to Section F.7.

Customer: The entity that receives or is entitled to receive Distribution Service through Distribution Provider's Distribution System or is a retail Customer of Distribution Provider connected to the Transmission System. (L)

db_{OF} - A single-sided deadband value for high-frequency in Hz used in Section Hh.L. (P)

db_{UF} - A single-sided deadband value for low-frequency in Hz used in Section Hh.L. (P)

Dedicated Transformer; Dedicated Distribution Transformer: A transformer that provides electricity service to a single Customer. The Customer may or may not have a Generating Facility. (L)

Delivery Network Upgrades: The transmission facilities at or beyond the point where Distribution Provider's Distribution System interconnects to the CAISO Controlled Grid, other than Reliability Network Upgrades, as defined in the CAISO Tariff. (L)

Detailed Study: An Independent Study, a Distribution Group Study or a WDT Transmission Cluster Study. (T) (L)

Detailed Study Agreement: The agreement entered into by the Interconnection Customer and Distribution Provider which sets forth the Parties' agreement to perform Interconnection Studies under the Independent Study Process or the Distribution Group Study Process. (L)

Device: A mechanism or piece of equipment designed to serve a purpose or perform a function. The term may be used interchangeably with the terms "equipment" and function without intentional difference in meaning. See also Function and Protective Function. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

DGS Phase I Interconnection Study: Distribution Group Study (DGS) Phase I Interconnection Study performed by the Distribution Provider under the Distribution Group Study Process per Section G.3.c.i.

DGS Phase II Interconnection Study: Distribution Group Study (DGS) Phase II Interconnection Study performed by the Distribution provider under the Distribution Group Study Process per Section G.3.c.ii.

Dispute Resolution: See Section K.

Distribution Group Study: An interconnection engineering study of a group comprised of Interconnection Requests that pass Screen Q as a group and fail Screen R demonstrating they are electrically interdependent in accordance with Section F.3.c.

Distribution Group Study Process: The interconnection study process set forth in Section F.3.c.

Distribution Provider: Pacific Gas and Electric Company

Distribution Service: The service of delivering energy over the Distribution System pursuant to the approved tariffs of Distribution Provider other than services directly related to the Interconnection of a Generating Facility under this Rule.

Distribution Study Group: A group comprised of Interconnection Requests that fail Screen R that will be studied pursuant to Section F.3.c because the Screen R results demonstrate they are electrically interdependent.

Distribution System: All electrical wires, equipment, and other facilities owned or provided by Distribution Provider, other than Interconnection Facilities or the Transmission System, by which Distribution Provider provides Distribution Service to its Customers.

Distribution Upgrades: The additions, modifications, and upgrades to Distribution Provider's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the Distribution Service. Distribution Upgrades do not include Interconnection Facilities. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Electrical Independence Test: The tests set forth in Section G.3 used to determine eligibility for the Independent Study Process.

Emergency: Whenever in Distribution Provider's discretion an Unsafe Operating Condition or other hazardous condition exists or whenever access is necessary for emergency service restoration, and such immediate action is necessary to protect persons, Distribution Provider's facilities or property of others from damage or interference caused by Interconnection Customer's Generating Facility, or the failure of protective device to operate properly, or a malfunction of any electrical system equipment or a component part thereof.

Energy-Only Deliverability Status: A condition elected by an Interconnection Customer for a Generating Facility interconnected to Distribution System, the result of which is that the Interconnection Customer is responsible only for the costs of Reliability Network Upgrades and is not responsible for the costs of Delivery Network Upgrades, but the Generating Facility will be deemed to have a Net Qualifying Capacity as defined in the CAISO Tariff of zero.

Engineering and Procurement Agreement: An agreement that authorizes Distribution Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the Interconnection in order to advance the implementation of the Interconnection Request.

Exporting Generating Facility: Any Generating Facility other than a Non-Export Generating Facility, NEM Generating Facility, or uncompensated Generating Facility.

Fast Track Process: The interconnection study process set forth in Section F.2.

Federal Energy Regulatory Commission: Referred to herein as FERC. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Field Testing: Testing performed in the field to determine whether equipment meets Distribution Provider's requirements for safe and reliable Interconnection.

Function: Some combination of hardware and software designed to provide specific features or capabilities. Its use, as in Protective Function, is intended to encompass a range of implementations from a single-purpose device to a section of software and specific pieces of hardware within a larger piece of equipment to a collection of devices and software.

Generating Facility: All Generators, electrical wires, equipment, and other facilities, excluding Interconnection Facilities, owned or provided by Producer for the purpose of producing electric power, including storage.

Generating Facility Capacity: The net capacity of the Generating Facility and the aggregate net capacity of the Generating Facility where it includes multiple Generators.

Generator: A device converting mechanical, chemical, or solar energy into electrical energy, including all of its protective and control functions and structural appurtenances. One or more Generators comprise a Generating Facility.

Generator Interconnection Agreement: An agreement between Distribution Provider and Producer providing for the Interconnection of a Generating Facility that gives certain rights and obligations to effect or end Interconnection. For the purpose of this Rule, Net Energy Metering or power purchase agreements authorized by the Commission are also defined as Generator Interconnection Agreements. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Good Utility Practice: Any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority: Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include Interconnection Customer, Distribution Provider, or any Affiliate thereof.

Gross Rating; Gross Nameplate Rating; Gross Capacity or Gross Nameplate Capacity: The total gross generating capacity of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

Host Load: The electrical power, less the Generator auxiliary load, consumed by the Customer, to which the Generating Facility is connected.

Inadvertent Export: The unscheduled and uncompensated export of real power from a Generating Facility (GF) for a limited duration as specified in Sections M and Mm.

Independent Study Process: The interconnection study process set forth in Section F.3.d.

Initial Review: See Section F.2.a. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

In-rush Current: The current determined by the In-rush Current Test.

In-Service Date: The estimated date upon which Applicant reasonably expects it will be ready to begin use of Distribution Provider's Interconnection Facilities.

Interconnection; Interconnected: The physical connection of a Generating Facility in accordance with the requirements of this Rule so that Parallel Operation with Distribution Provider's Distribution or Transmission System can occur (has occurred).

Interconnection Agreement: See Generator Interconnection Agreement.

Interconnection Customer: See Applicant.

Interconnection Facilities: The electrical wires, switches and related equipment that are required in addition to the facilities required to provide electric Distribution Service to a Customer to allow Interconnection. Interconnection Facilities may be located on either side of the Point of Common Coupling as appropriate to their purpose and design. Interconnection Facilities may be integral to a Generating Facility or provided separately. Interconnection Facilities may be owned by either Producer or Distribution Provider.

Interconnection Facilities Study: A study conducted by Distribution Provider for an Interconnection Customer under the Independent Study Process to determine a list of facilities (including Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Network Upgrades as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with Distribution Provider's Distribution or Transmission System. The scope of the study is defined in Section G.3.c.

Interconnection Financial Security: Any of the financial instruments listed in Section F.4.a. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Interconnection Request: An Applicant's request to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with Distribution Provider's Distribution or Transmission System.

Interconnection Study: A study to establish the requirements for Interconnection of a Generating Facility with Distribution Provider's Distribution System or Transmission System, pursuant to this Rule.

Interconnection System Impact Study: An engineering study conducted by Distribution Provider for an Interconnection Customer under the Independent Study Process that evaluates the impact of the proposed interconnection on the safety and reliability of Distribution Provider's Distribution and/or Transmission System and, if applicable, an Affected System. The scope of the study is defined in Section G.3.c.i. (L)

The Integration Capacity Analysis Static Grid (SG) 576 profile: At a given Point of Interconnection, the minimum Integration Capacity Analysis values at each of the 576 hours for the most limiting of these categories: thermal, voltage, power quality, and protection. (P)

Integration Capacity Analysis Static Grid (ICA-SG) Value: The minimum ICA value in a given Point of Interconnection's ICA-SG 576 Profile.

Integration Capacity Analysis (ICA) Values: Values which represent the maximum capacity that can be interconnected at a given Point of Interconnection without exceeding Distribution Provider equipment thermal limits or any of the Distribution System voltage, power quality, protection, and safety (operational flexibility) limits each which is independently calculated**.**

k_{OF}: The per-unit frequency change corresponding to 1 per-unit power output change (frequency droop) for high frequency conditions, unitless used in Section Hh.2.l.

k_{UF}: The per-unit frequency change corresponding to 1 per-unit power output change (frequency droop) for low frequency divisions, unitless used in Section Hh.2.l. (P)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Island; Islanding: A condition on Distribution Provider's Distribution System in which one or more Generating Facilities deliver power to Customers using a portion of Distribution Provider's Distribution System that is electrically isolated from the remainder of Distribution Provider's Distribution System.

Large Generating Facility: A Generating Facility having a Generating Facility Capacity of more than 20 MW. (L)

Like-for-like: For inverters, like-for-like means certified, same nameplate or smaller, same fault current or smaller. For solar panels, like-for-like means certified, same CEC-AC rating of the system or smaller. For batteries, like-for-like means same or less kWh & kW rating and same operating profile. For transformers, like-for-like means same connection type, same or smaller impedance and capacity. (N)

Line Section: That portion of Distribution Provider's Distribution or Transmission System connected to a Customer bounded by automatic sectionalizing devices or the end of the distribution line. (L)

Local Furnishing Bond: Tax-exempt bonds utilized to finance facilities for the local furnishing of electric energy, as described in Internal Revenue Code, 26 U.S.C. § 142(f).

Local Furnishing Distribution Provider: Any Distribution Provider that owns facilities financed by Local Furnishing Bonds. (L)

Local Generating Facility Communication Interface: Interface at the Generating Facility capable of communicating to support the information exchange requirements specified in this rule and as required in IEEE 1547-2018 for all applicable functions that are in Section Hh. (P)

Mandatory Operation: The Smart Inverter operates at maximum available current without tripping during Distribution Provider's Transmission or Distribution System excursions outside the region of continuous operation. Any functions that protect the Smart Inverter from damage may operate as needed. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Material Modification: Those modifications that have a material impact on cost or timing of any Interconnection Request with a later queue priority date or a change in Point of Interconnection. A Material Modification does not include (i) a change in ownership of a Generating Facility, (ii) a modification described in Table F.1, nor (iii) a modification described in Tables Ee.1, 2 or 3 that does not require a new interconnection request. (L) (L)/(T) (T) (T)

Metering: The measurement of electrical power in kilowatts (kW) and/or energy in kilowatt-hours (kWh), and if necessary, reactive power in kVAR at a point, and its display to Distribution Provider, as required by this Rule. (L)

Metering Equipment: All equipment, hardware, software including meter cabinets, conduit, etc., that are necessary for Metering.

Momentary Cessation: The Smart Inverter momentarily reduces current output to the Distribution Provider's Transmission or Distribution System to below 10% of the maximum continuous output current rating. The Smart Inverter is allowed to increase current output to the Distribution Provider's Transmission or Distribution System without any intentional reconnection delay once voltage exits the Momentary Cessation region and enters a Permissive Operation region or Continuous Operation region.

Momentary Parallel Operation: The Interconnection of a Generating Facility to the Distribution and Transmission System for one second (60 cycles) or less.

Nationally Recognized Testing Laboratory (NRTL): A laboratory accredited to perform the Certification Testing requirements under this Rule.

Net Energy Metering (NEM): Metering for the receipt and delivery of electricity between Producer and Distribution Provider pursuant to California Public Utilities Code (PUC) sections 2827, 2827.1 (as currently implemented by Commission Decision (D.)16-01-044), 2827.8, or 2827.10.

NEM-1: Refers to Interconnection Requests for service pursuant to Schedules NEM, NEMV, and NEMVMASH.

NEM-2: Refers to Interconnection Requests for service pursuant to Schedules NEM2, NEM2V, NEM2VMSH, and NEM2VSOM. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Net Rating or Net Nameplate Rating: The Gross Rating minus the consumption of electrical power of the auxiliary load.

Network Upgrades: Delivery Network Upgrades and Reliability Network Upgrades.

Networked Secondary System: An AC distribution system where the secondaries of the distribution transformers are connected to a common bus for supplying electricity directly to consumers. There are two types of secondary networks: grid networks (also referred to as area networks or street networks) and Spot Networks. Synonyms: Secondary Network. Refer to IEEE 1547.6 for additional detail.

Non-Emergency: Conditions or situations that are not Emergencies, including but not limited to meter reading, inspection, testing, routine repairs, replacement, and maintenance.

Nominal: Standard frequency and voltage.

Non-Export; Non-Exporting: When the Generating Facility is sized and designed such that the Generator output is used for Host Load only and is designed to prevent the transfer of electrical energy from the Generating Facility to Distribution Provider's Distribution or Transmission System. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Non-Export AC/DC Converter: A one-way only device that takes alternating current (AC) power from the Distribution System and converts it into direct current (DC) power for DC loads in the Customer's facility. A Non-Export AC/DC Converter must be certified by a Nationally Recognized Test Lab as non-export, meaning it must be certified to not export power back into the grid (i.e. exports less than 0.5% of its rated current towards the grid under steady–state conditions or after 5 cycles of an induced fault condition) and it must meet IEEE 1547-4.3.3 harmonic requirements. Until a national certification standard is approved and the Non-Export AC/DC Converter can be certified by a NRTL, the requirement can be satisfied through Distribution Provider's interim approval process. An interim approval will apply to devices that complete the Distribution Provider's testing procedure described in Section L.7.a.v. The interim approval will be effective upon the Distribution Provider acknowledging that the test results for a particular model of Non-Export AC/DC Converter confirm satisfactory completion of the testing procedures. Twelve months after the UL 1741 Non-Export Certification Requirement Document (CRD) standard is available, new interconnections requests for non-export using an AC/DC converter must use an NRTL certified non-export converter.

Non-Islanding: Designed to detect and disconnect from a stable Unintended Island with matched load and generation. Reliance solely on under/over voltage and frequency trip is not considered sufficient to qualify as Non-Islanding.

Open Loop Response Time: The duration from a step change in control signal input (reference value) until the output changes to 90 percent of its final change, before any overshoot.

Parallel Operation: The simultaneous operation of a Generator with power delivered or received by Distribution Provider while Interconnected. For the purpose of this Rule, Parallel Operation includes only those Generating Facilities that are Interconnected with Distribution Provider's Distribution or Transmission System for more than 60 cycles (one second).

Paralleling Device: An electrical device, typically a circuit breaker, operating under the control of a synchronization relay or by a qualified operator to connect an energized generator to an energized electric power system or two energized power systems to each other. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Party, Parties: Applicant or Distribution Provider.

Periodic Test: A test performed on part or all of a Generating Facility/Interconnection Facilities at pre-determined time or operational intervals to achieve one or more of the following: 1) verify specific aspects of its performance; 2) calibrate instrumentation; and 3) verify and re-establish instrument or Protective Function set-points.

Permissive Operation: The Smart Inverter is allowed, but not required, to operate at any current level.

Point of Common Coupling (PCC): The transfer point for electricity between the electrical conductors of Distribution Provider and the electrical conductors of Producer. (L)

Point of Distributed Energy Resources Connection (Point of Generating Resource Connection–PoC): The point where a generating resource unit is electrically connected in a generating facility and meets the requirements of this rule. (P) (P)

Point of Interconnection (POI): The point where the Interconnection Facilities connect with Distribution Provider's Distribution or Transmission System. This may or may not be coincident with the Point of Common Coupling. (L)/(P) (L)

Pre-Construction Activities: The actions by Distribution Provider, other than those required by an Engineering and Procurement Agreement under Section F.3.f, undertaken prior to Construction Activities in order to prepare for the construction of Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades assigned to the Interconnection Customer, including, but not limited to, preliminary engineering, permitting activities, environmental analysis, or other activities specifically needed to obtain governmental approvals for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Producer: The entity that executes a Generator Interconnection Agreement with Distribution Provider. Producer may or may not own or operate the Generating Facility, but is responsible for the rights and obligations related to the Generator Interconnection Agreement.

Production Test: A test performed on each device coming off the production line to verify certain aspects of its performance.

Protective Function(s): The equipment, hardware and/or software in a Generating Facility (whether discrete or integrated with other functions) whose purpose is to protect against Unsafe Operating Conditions.

Prudent Electrical Practices: Those practices, methods, and equipment, as changed from time to time, that are commonly used in prudent electrical engineering and operations to design and operate electric equipment lawfully and with safety, dependability, efficiency, and economy.

Queue Position: See Section E.5.C.

Queued Capacity: Aggregate queued generation capacity (in MW) for a substation/area bus, bank or circuit (i.e., amount of generation in the queue). (L)

Reference Point of Applicability (RPA): The location where the Generating Facility interconnection and interoperability performance requirements shall be met. (P) (P)

Reasonable Efforts: With respect to an action required to be attempted or taken by a Party under this Rule, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests. (L)

Reliability Network Upgrades: The transmission facilities at or beyond the point where Distribution Provider's Distribution System interconnects to the CAISO Controlled Grid, necessary to interconnect one or more Generating Facility(ies) safely and reliably to the CAISO Controlled Grid, as defined in the CAISO Tariff.

Section 218 Load: Electrical power that is supplied in compliance with California PUC section 218. PUC section 218 defines an "Electric Corporation" and provides conditions under which a transaction involving a Generating Facility would not classify a Producer as an Electric Corporation. These conditions relate to "over-the-fence" sale of electricity from a Generating Facility without using Distribution Provider's Distribution or Transmission System. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Short Circuit Contribution Ratio (SCCR): The ratio of the Generating Facility's short circuit contribution to the short circuit contribution provided through Distribution Provider's Distribution System for a three-phase fault at the high voltage side of the distribution transformer connecting the Generating Facility to Distribution Provider's Distribution System.

Single Line Diagram; Single Line Drawing: A schematic drawing, showing the major electric switchgear, Protective Function devices (including relays, current transformer and potential transformer configurations/wiring in addition to circuit breakers/fuses), wires, Generators, transformers, meters and other devices, providing relevant details to communicate to a qualified engineer the essential design and safety of the system being considered.

Site Exclusivity: Documentation reasonably demonstrating: (1) For private land: (a) Ownership of, a leasehold interest in, or a right to develop property upon which the Generating Facility will be located consisting of a minimum of 50% of the acreage reasonably necessary to accommodate the Generating Facility; or (b) an option to purchase or acquire a leasehold interest in property upon which the Generating Facility will be located consisting of a minimum of 50% of the acreage reasonably necessary to accommodate the Generating Facility. (2) For public land, including that controlled or managed by any federal, state or local agency, a final, non-appealable permit, license, or other right to use the property for the purpose of generating electric power and in acreage reasonably necessary to accommodate the Generating Facility, which exclusive right to use public land under the management of the federal Bureau of Land Management shall be in a form specified by the Bureau of Land Management. The demonstration of Site Exclusivity, at a minimum, must be through the Commercial Operation Date of the new Generating Facility or increase in capacity of the existing Generating Facility.

Small Generating Facility: A Generating Facility that has a Generating Facility Capacity of no more than 20 MW.

Smart Inverter: A Generating Facility's inverter that performs functions that, when activated, can autonomously contribute to grid support during excursions from normal operating voltage and frequency system conditions by providing: dynamic reactive/real power support, voltage and frequency ride-through, ramp rate controls, communication systems with ability to accept external commands and other functions.

Special Facilities: As defined in Distribution Provider's Rule 2. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Spot Network: For purposes of this Rule, a Spot Network is a type of distribution system found within modern commercial buildings to provide high reliability of service to a single customer.

Starting Voltage Drop: The percentage voltage drop at a specified point resulting from In-rush Current. The Starting Voltage Drop can also be expressed in volts on a particular base voltage, (e.g. 6 volts on a 120-volt base, yielding a 5% drop).

Supplemental Review: See Section F.2.c.

System Integrity: The condition under which Distribution Provider's Distribution and Transmission System is deemed safe and can reliably perform its intended functions in accordance with the safety and reliability rules of Distribution Provider.

Telemetering: The electrical or electronic transmittal of Metering data on a real-time basis to Distribution Provider.

Total Capacity: Capacity (in MW) of substation/area bus, bank or circuit based on normal or operating ratings.

Transfer Trip: A Protective Function that trips a Generating Facility remotely by means of an automated communications link controlled by Distribution Provider.

Transient/Dynamic Stability: The ability of an electrical system to withstand disturbances. Transient/Dynamic Stability studies are performed to ensure power system stability and are time-based simulations that assess the performance of the power system during and shortly following system disturbances.

Transmission Cluster Study Process: The cluster study process as defined in Distribution Provider's Wholesale Distribution Tariff.

Transmission System: Transmission facilities owned by Distribution Provider that have been placed under the CAISO's operational control and are part of the CAISO Controlled Grid, as defined in the CAISO Tariff. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Trip: The act of a Generating Facility to cease to energize or disconnect from the Distribution Provider's Transmission or Distribution System automatically due to a Distribution Provider's Transmission or Distribution System disturbance. Following a trip, the Smart Inverter must delay re-energization or reconnection for a preset period of time once the voltage and frequency of the Distribution Provider's Transmission or Distribution System are within normal ranges.

Type Test: A test performed on a sample of a particular model of a device to verify specific aspects of its design, construction and performance.

Unintended Island: The creation of an Island, usually following a loss of a portion of Distribution Provider's Distribution System, without the approval of Distribution Provider.

Unit Cost Guide: A published guide that is not binding for actual facility costs and is provided only for additional cost transparency, developer reference, and Distribution Provider's reference when preparing the study estimate.

Unsafe Operating Conditions: Conditions that, if left uncorrected, could result in harm to personnel, damage to equipment, loss of System Integrity or operation outside pre-established parameters required by the Generator Interconnection Agreement.

Voltage Excursion: Beginning when Distribution Provider's Transmission or Distribution System voltage at the PCC exits the near Nominal magnitude range and ending when voltage re-enters the near Nominal magnitude range.

VRef: The reference voltage or nominal voltage.

VRefOfs: The offset from the reference voltage due to the location of the Smart Inverter system on a distribution feeder. This may be a setting or may be calculated dynamically from local voltage measurements.

Wholesale Distribution Tariff: PG&E's Wholesale Distribution Tariff (WDT) (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 38
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

1. AUTHORIZATION REQUIRED TO OPERATE (Cont'd.)

A Producer must comply with this Rule, execute a Generator Interconnection Agreement with Distribution Provider, and receive Distribution Provider's express written permission before Parallel Operation of its Generating Facility with Distribution Provider's Distribution or Transmission System. Distribution Provider shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission for Parallel Operation of Producer's Generating Facility with Distribution Provider's Distribution or Transmission System.

2. SEPARATE AGREEMENTS REQUIRED FOR OTHER SERVICES

A Producer requiring other electric services from Distribution Provider including, but not limited to, Distribution Service during periods of curtailment or interruption of Producer's Generating Facility, must enter into agreements with Distribution Provider for such services in accordance with Distribution Provider's Commission-approved tariffs.

3. SERVICES UNDER THIS TARIFF LIMITED TO INTERCONNECTION

Interconnection with Distribution Provider's Distribution or Transmission System under this Rule does not provide a Producer any rights to utilize Distribution Provider's Distribution or Transmission System for the transmission, distribution, or wheeling of electric power, nor does it limit those rights.

4. COMPLIANCE WITH LAWS, RULES, AND TARIFFS

A Producer shall ascertain and comply with applicable Commission-approved tariffs of Distribution Provider; applicable FERC-approved rules, tariffs, and regulations; and any local, state or federal law, statute or regulation which applies to the design, siting, construction, installation, operation, or any other aspect of Producer's Generating Facility and Interconnection Facilities. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

5. DESIGN REVIEWS AND INSPECTIONS

Distribution Provider shall have the right to review the design of a Producer's Generating and Interconnection Facilities and to inspect a Producer's Generating and/or Interconnection Facilities prior to the commencement of Parallel Operation with Distribution Provider's Distribution or Transmission System. Distribution Provider may require a Producer to make modifications as necessary to comply with the requirements of this Rule. Distribution Provider's review and authorization for Parallel Operation shall not be construed as confirming or endorsing Producer's design or as warranting the Generating Facilities' and/or Interconnection Facilities' safety, durability or reliability. Distribution Provider shall not, by reason of such review or lack of review, be responsible for the strength, adequacy, or capacity of such equipment.

6. RIGHT TO ACCESS

A Producer's Generating Facility and/or Interconnection Facilities shall be reasonably accessible to Distribution Provider personnel as necessary for Distribution Provider to perform its duties and exercise its rights under its tariffs approved by the Commission, and under any Generator Interconnection Agreement between Distribution Provider and Producer.

7. CONFIDENTIALITY

a. Scope

Confidential Information shall include, without limitation, confidential, proprietary or trade secret information relating to the present or planned business of Applicant, Customer, Producer, or Distribution Provider (individually referred to in Section D.7 as Party or collectively as Parties), including all information relating to a Party's technology, research and development, business affairs, and pricing. Distribution Provider shall not use the information contained in the Interconnection Request to propose discounted tariffs to the Customer unless authorized to do so by the Customer or the information is provided to Distribution Provider by the Customer through other means. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

7. CONFIDENTIALITY (Cont'd)

a. Scope (Cont'd)

Information is Confidential Information only if it is clearly designated or marked in writing as confidential on the face of the document (including electronic materials), or, if the information is conveyed orally or by inspection, if the Party providing the information orally informs the Party receiving the information that the information is confidential. For purposes of this Rule all design, operating specifications, and metering data provided by Applicant shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such, except as provided in section D.7.b. below.

If requested by either Party, the other Party shall provide in writing, the basis for asserting that the information referred to in this Article warrants confidential treatment, and the requesting Party may disclose such writing to the appropriate Governmental Authority. Each Party shall be responsible for the costs associated with affording confidential treatment to its information.

b. Limitations on Scope

Confidential Information shall not include information pertaining to each Interconnection Request that may be provided in a publicly-posted queue pursuant to Section E.5.d of this Rule.

Confidential Information shall not include information that: (1) is generally available to the public other than as a result of a disclosure by the receiving Party; (2) was in the lawful possession of the receiving Party on a non-confidential basis before receiving it from the disclosing Party; (3) was supplied to the receiving Party without restriction by a third party, who, to the knowledge of the receiving Party after due inquiry, was under no obligation to the disclosing Party to keep such information confidential; (4) was independently developed by the (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

7. CONFIDENTIALITY (Cont'd.)

b. Limitations on Scope (Cont'd.)

receiving Party without reference to Confidential Information of the disclosing Party; (5) is, or becomes, publicly known, through no wrongful act or omission of the receiving Party; or (6) is required, in accordance with Section D.7.d, Required Disclosure, to be disclosed by any Governmental Authority or is otherwise required to be disclosed by law or subpoena.

Information designated as Confidential Information will no longer be deemed confidential if the Party that designated the information as confidential notifies the other Party that it no longer is confidential.

c. Disclosure to Commission, FERC, or their respective Staff

Notwithstanding anything in this Section D.7 to the contrary, and pursuant to 18 CFR section 1b.20 in the case of disclosure to FERC, if the Commission, FERC, or their respective staff, during the course of an investigation or otherwise, requests information from one of the Parties that is otherwise required to be maintained in confidence pursuant to this Rule, the Party shall provide the requested information to the Commission, FERC, or their respective staff, within the time provided for in the request for information. In providing the information to the Commission, FERC, or their respective staff, the (L)
Party shall, pursuant to PUC section 583 and General Order 66-D in (L)/(T)
the case of disclosure to the Commission, and consistent with 18 CFR (L)
section 388.112 in the case of disclosure to FERC, request that the information be treated as confidential and non-public by the Commission, FERC, and their respective staff and that the information be withheld from public disclosure. Requests from another state regulatory body with jurisdiction conducting a confidential investigation shall be treated in a similar manner, consistent with applicable state rules and regulations. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

7. CONFIDENTIALITY (Cont'd.)

d. Required Disclosure

Subject to the exception in Section D.7.c, any information that a Party claims is Confidential Information shall not be disclosed by the other Party to any person not employed or retained by the other Party, except to the extent disclosure is (i) required by law or pursuant to an order of the Commission or FERC; (ii) reasonably deemed by the disclosing Party to be required to be disclosed in connection with a dispute between or among the Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the other Party, such consent not to be unreasonably withheld; (iv) necessary to fulfill its obligations under this Rule; or (v) as a transmission or distribution service provider or a Control Area operator, including disclosing the Confidential Information to a Regional Transmission Organization or CAISO, or to a sub-regional, regional or national reliability organization or planning group under the applicable confidentiality provisions in the relevant tariffs. Prior to any disclosures of the other Party's Confidential Information under this subparagraph, or if any third party or Governmental Authority makes any request or demand for any of the information described in this subparagraph, the disclosing Party agrees to assert confidentiality and cooperate with the other Party in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

8. PRUDENT OPERATION AND MAINTENANCE REQUIRED

A Producer shall operate and maintain its Generating Facility and Interconnection Facilities in accordance with Prudent Electrical Practices and shall maintain compliance with this Rule. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

9. CURTAILMENT AND DISCONNECTION

Distribution Provider may limit the operation or disconnect or require the disconnection of a Producer's Generating Facility from Distribution Provider's Distribution or Transmission System at any time, with or without notice, in the event of an Emergency, or to correct Unsafe Operating Conditions. Distribution Provider may also limit the operation or disconnect or require the disconnection of a Producer's Generating Facility from Distribution Provider's Distribution or Transmission System upon the provision of reasonable written notice: 1) to allow for routine maintenance, repairs or modifications to Distribution Provider's Distribution or Transmission System; 2) upon Distribution Provider's determination that a Producer's Generating Facility is not in compliance with this Rule; or 3) upon termination of the Generator Interconnection Agreement. Upon Producer's written request, Distribution Provider shall provide a written explanation of the reason for such curtailment or disconnection.

10. LOCAL FURNISHING BONDS

If a proposed Interconnection of a Generating Facility would impair the tax-exempt status of interest on the Local Furnishing Bonds or the deductibility of interest expense on the Local Furnishing Bonds to the Local Furnishing Distribution Provider under the Internal Revenue Code, Treasury Regulations and/or applicable IRS rulings, the Interconnection Customer will be required to pay the costs properly attributable to the proposed Interconnection of such Generating Facility. The Interconnection Study shall specify and estimate the cost of all remedial measures that address the financial impacts, if any, on Local Furnishing Bonds that would result from an Interconnection. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

11. COORDINATION WITH AFFECTED SYSTEMS

Distribution Provider will notify the Affected System Operators that are potentially affected by an Applicant's Interconnection Request or group of Interconnection Requests. Distribution Provider will coordinate the conduct of any studies required to determine the impact of the Interconnection Request on Affected Systems with Affected System Operators and, if possible, include those results (if available) in its applicable Interconnection Study within the time frame specified in this Rule. Distribution Provider will include such Affected System Operators in all meetings held with Applicant as required by this Rule. Applicant will cooperate with Distribution Provider in all matters related to the conduct of studies and the determination of modifications to Affected Systems. A transmission provider which may be an Affected System shall cooperate with Distribution Provider with whom interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to Affected Systems. Applicant shall enter into an agreement with the owner of the Affected System, as applicable. The agreement shall specify the terms governing payments to be made by Applicant to the owner of the Affected System as well as the repayment, if applicable, by the owner of the Affected System.

12. TRANSFERABILITY OF INTERCONNECTION REQUEST

An Applicant may transfer its Interconnection Request to another entity only if such entity acquires the proposed Generating Facility identified in the Interconnection Request and the Point of Interconnection does not change.

13. SPECIAL PROVISIONS APPLICABLE TO CERTAIN NET ENERGY METERED APPLICANTS

Notwithstanding any other provision in this Rule:

a. For NEM Generating Facilities with a capacity of 1 MW or smaller Distribution Provider may proceed from Initial to Supplemental Review to Independent Study Process to further study without waiting for Applicant concurrence, since Applicant is not responsible for payment of study costs. Except as provided in Section D.13.e below, for NEM-2 Generating Facilities with a capacity greater than 1 MW, the special provisions contained within Section D.13 and other exemptions (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

a. applicable to NEM Applicants contained within this Rule do not apply. Instead, all provisions applicable to non-NEM Interconnection Requests shall apply, including but not limited to the requirement to pay all Interconnection Request fees, study costs and upgrade costs, and the adherence to all non-NEM timeline and interconnection provisions contained within Rule 21.

b. For NEM-1 and NEM-2 Generating Facilities with a capacity of 1 MW or smaller, Distribution Provider approval for Interconnection (i.e., Permission to Operate) shall normally be processed not later than thirty (30) Business Days following Distribution Provider's receipt of 1) a completed Net Energy Metering Interconnection Request including all supporting documents and required payments; 2) a completed signed Net Energy Metering Generator Interconnection Agreement; and 3) evidence of Applicant's final electric inspection clearance from the Governmental Authority having jurisdiction over the Generating Facility. If the 30-day period cannot be met, Distribution Provider shall notify Applicant and the Commission of the reason for the inability to process the Interconnection Request and the expected completion date. However, Applicants that include non-inverter based Generators and/or Generators with non-Certified Equipment and/or Interconnection Requests that are anticipated to require new services (i.e., NEM load aggregation) and/or the design and construction of Interconnection Facilities or Distribution Upgrades should plan to submit a completed Net Energy Metering Interconnection Request including all supporting documents sufficient for Distribution Provider to start the review process in Section F.2.a without waiting for the final inspection clearance. Applicants with such Generating Facilities are advised to submit their Interconnection Request at least six (6) months in advance of their planned Commercial Operation Date. Depending on the size and location of these Generating Facilities, additional time for review may be required and could include Supplemental Review an Interconnection System Impact Study, and an Interconnection Facilities Study as set out in Section F. The advance submission of the Interconnection Request will better accommodate Distribution Provider's review and studies in a manner consistent with the timelines established in this Rule that may be required to complete the processing for these types of Interconnection Requests. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

c. Unless Net Generator Output Metering is required, Metering Equipment necessary to obtain service under NEM-1 or NEM-2 shall be installed and operational within the timeframe required to complete Interconnection.

d. An Applicant with a Fast Track Interconnection Request for a NEM-1 or NEM-2 Generating Facility with a capacity of 1 MW or smaller that 1) goes for more than one year from the date of Distribution Provider's written notification that the Interconnection Request is valid without a signed Generator Interconnection Agreement, or 2) has a Generating Facility that has not been approved for Parallel Operation within one year of completion of all applicable review and/or studies, is subject to withdrawal by Distribution Provider; however, Distribution Provider may not deem the Interconnection Request to be withdrawn if i) Applicant provides reasonable evidence that the Interconnection Request is still active or ii) the delay is at no fault of Applicant. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

e. For the purposes of establishing the interconnection requirements for Net Energy Metering Generating Facilities with a capacity greater than one megawatt (1MW) qualifying for service under PUC Section 2827(b)(4)(B) (i.e., the California Department of Corrections and Rehabilitation), Distribution Provider shall be afforded a prudent but necessary time, as determined by the executive director of the Commission, to study the impacts of the Interconnection Request. If the study reveals the need for upgrades to the Transmission and/or Distribution System arising solely from the Interconnection Request, Distribution Provider shall be afforded the time necessary to complete those upgrades before the Generating Facility is interconnected. The costs of the Network and/or Distribution Upgrades shall be borne by the Applicant, but the exemption from application fees and study costs applicable to Generating Facilities eligible for Net Energy Metering under PUC Section 2827 shall apply. Distribution Provider shall consider the receipt date of the completed Interconnection Request when completing the study allowed for herein and for purposes of determining the appropriate cost responsibility for the necessary Network and/or Distribution Upgrades triggered solely by the Interconnection Request. All Generating Facilities interconnected pursuant to this section shall comply with applicable state and federal requirements, including requirements of the FERC.

For Rate Schedule NEM interconnections, the United States Armed Forces shall comply with all FERC interconnection procedures and requirements for any Generating Facility that interconnects directly to the Transmission System or that requires upgrades to the Transmission System. These same provisions also apply to the Interconnection Requests of the CDCR and United States Armed Forces for NEM-2 Generating Facilities with a capacity greater than 1 MW, except that the CDCR and the United States Armed Forces shall be additionally responsible for any application fees and study costs triggered by the NEM-2 Interconnection Request. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

    f. Applicants with an Interconnection Request for a Net Energy Metering Generating Facility, or a Non-Export Generating Facility, shall have the opportunity to select the Cost Envelope Option in accordance with Section F.7. Applicants who are determined to not have responsibility for any applicable upgrade costs will be automatically withdrawn from the Cost Envelope Option.

14. SPECIAL PROVISIONS APPLICABLE TO NON-EXPORT ENERGY STORAGE GENERATING FACILITIES

    Applicants with Non-Export Energy Storage Generating Facilities that meet the criteria listed in Section N shall be eligible to select expedited processing in their Interconnection Request and to utilize the corresponding form of Interconnection Agreement, subject to the terms and conditions of Section N.

15. COMPLIANCE WITH ESTABLISHED TIMELINES

    Distribution Provider shall use Reasonable Efforts in meeting all the timelines provided for under this Rule. In the event Distribution Provider is not able to meet a particular timeline set forth in this Rule, Distribution Provider shall notify Applicant as soon as practicable and provide an estimated completion date with an explanation of the reasons why additional time is needed. Any Applicant dissatisfied with the Reasonable Efforts of Distribution Provider may use the informal procedures set out in Section F.1.d and/or the Dispute Resolution process in Section K.

16. MODIFICATION OF TIMELINES

    Distribution Provider and Applicant, for good cause, may agree to modify any of the timelines in this Rule. The modified timeline shall be mutually agreed upon, in writing, between Distribution Provider and Applicant. (L)

17. CONVERSION TO FERC WHOLESALE DISTRIBUTION TARIFF PROCESS (P)

    Applicant may submit a request to convert their Interconnection Request to the Federal Energy Regulatory Commission (FERC) jurisdiction Wholesale Distribution Tariff (WDT) process subject to WDT Section 6.8.1.1 requirements. Additional information is available at: https://www.pge.com/egi. (P)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (L)

1. OPTIONAL PRE-APPLICATION REPORT

a. Standard Pre-Application Report

Upon receipt of a completed Pre-Application Report Request and a non-refundable processing fee of $300, Distribution Provider shall provide pre-application data described in this section within ten (10) Business Days of receipt. The Pre-Application Report Request shall include a proposed Point of Interconnection, generation technology and fuel source. The proposed Point of Interconnection shall be defined by latitude and longitude, site map, street address, utility equipment number (e.g. pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the Point of Interconnection.

The Pre-Application Report will include the following information if available:

1. Total Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.
2. Allocated Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.
3. Queued Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.
4. Available Capacity (MW) of substation/area bus or bank and circuit most likely to serve proposed site.
5. Substation nominal distribution voltage or transmission nominal voltage if applicable.
6. Nominal distribution circuit voltage at the proposed site.
7. Approximate circuit distance between the proposed site and the substation.
8. Relevant Line Section(s) peak load estimate, and minimum load data, when available. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

9. Number of protective devices and number of voltage regulating devices between the proposed site and the substation/area.

10. Whether or not three-phase power is available at the site.

11. Limiting conductor rating from proposed Point of Interconnection to distribution substation.

12. Based on proposed Point of Interconnection, existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.

13. Nominal distribution circuit voltage and wiring configuration.

b. Enhanced Pre-Application Report

The Enhanced Pre-Application Report Request shall be submitted in parallel with the Standard Pre-Application Report. Requests that exclude the Standard Pre-Application Report and select only one or both of the Enhanced Pre-Application Report packages shall be assessed an additional non-refundable fee of $100.

The Enhanced Pre-Application Report Request shall include a proposed Point of Interconnection, generation technology and fuel source. The proposed Point of Interconnection shall be defined by latitude and longitude, site map, street address, utility equipment number (e.g. pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the Point of Interconnection.

The information included in the Enhanced Pre-Application Report is dependent upon the data package selected by Applicant. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

i. Primary Service Package

Upon receipt of a completed Enhanced Pre-Application Report Request for Primary Service Package and a non-refundable fee of $225, and additional $100 fee if applicable, Distribution Provider shall provide the enhanced pre-application data described in this section within ten (10) Business Days of receipt.

The Primary Service Package will include the following information if available:

1. Relevant line section(s) absolute minimum load and minimum load during the 10 AM – 4 PM period (provided when SCADA data is available).

2. Existing upstream protection including:

   (a) Device type (Fuse Breaker, Recloser)

   (b) Device controller (device make/model ex: 50E/50T)

   (c) Phase settings [IEEE Curve, Lever, Min Trip (A), Inst Trip(A)]

   (d) Ground settings [IEEE Curve, Lever, Min Trip (A), Inst Trip(A)]

   (e) Rated continuous current

   (f) Short Circuit interrupting capability

   (g) Confirm if the device is capable of bi-directional operation

3. Provide the Available Fault Current at the proposed Point of Interconnection including existing distributed generation fault contribution. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

ii. Behind the Meter Interconnection Package

Upon receipt of a completed Enhanced Pre-Application Report Request for Behind the Meter Interconnection Package and a non-refundable fee of $800, and additional $100 fee if applicable, Distribution Provider shall provide the enhanced pre-application data described in this section within thirty (30) Business Days of receipt. Distribution Provider shall conduct a physical verification based on field confirmation.

If a third party is submitting an Enhanced Pre-Application Report Request for Behind the Meter Interconnection Package on behalf of the Applicant, an Authorization to Receive Customer Information or Act on a Customer's Behalf [PG&E Form 79-1095, SCE Form 14-796, SDG&E Form 185-1000] shall be required to be submitted as part of the Pre-Application Report Request. Distribution Provider shall notify the Applicant if additional processing time will be required.

The Behind the Meter Interconnection Package will include the following information if available:

1. Relevant line section(s) absolute minimum load, and minimum load during the 10 AM – 4 PM period (provided when SCADA data is available)

2. Transformer Data

   (a) Existing service transformer kVA rating

   (b) Primary Voltage and secondary Voltage rating

   (c) Configuration on both Primary and Secondary Side (i.e., Delta, Wye, Grounded Wye, etc.)

   (d) Characteristic impedance (%Z)

   (e) Confirm if the transformer is serving only one customer or multiple customers

   (f) Provide the Available Fault Current on both the Primary and Secondary Side (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

3. Secondary Service Characteristics

(a) Conductor type (AL or CU) and size (AWG)

(b) Conductor insulation type

(c) Number of parallel runs

(d) Confirm if the existing secondary service is 3-wire or 4-wire

4. Primary Service Characteristics

(a) Conductor type (AL or CU) and size (AWG)

(b) Conductor insulation type

(c) Number of parallel runs

(d) Confirm if the existing primary service is 3-wire or 4-wire

iii. Combined Primary Service and Behind the Meter Interconnection Packages

Applicant may choose to request a combination of the Combined Primary Service Package and Behind the Meter Interconnection Package. Upon receipt of the applicable non-refundable fee of $1,025, and additional $100 fee if applicable, Distribution Provider shall provide the enhanced pre-application data described in this section within thirty (30) Business Days of receipt.

If a third party is submitting an Enhanced Pre-Application Report Request for Behind the Meter Interconnection Package on behalf of the Applicant, an Authorization to Receive Customer Information or Act on a Customer's Behalf [PG&E Form 79-1095] shall be processed in accordance with the instructions therein, and shall be required to be submitted at the same time as part of the Pre-Application Report Request. Distribution Provider shall notify the Applicant if additional processing time will be required. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

Except as provided specifically in this Section E.1, the Optional Standard and Enhanced Pre-Application Reports (Pre-Application Report(s)) need only include pre-existing data and does not obligate Distribution Provider to conduct a study or other analysis of the proposed project in the event that data is not available. For all Pre-Application Reports, if Distribution Provider cannot complete all or some of a Pre-Application Report due to lack of available data, Distribution Provider will provide Applicant with a Pre-Application Report that includes the information that is available.

In requesting a Pre-Application Report, Applicant understands that 1) the existence of "Available Capacity" in no way implies that an interconnection up to this level may be completed without impacts since there are many variables studied as part of the interconnection review process, 2) the distribution system is dynamic and subject to change and 3) data provided in the Pre-Application Report may become outdated and not useful at the time of submission of the complete Interconnection Request. Notwithstanding any of the provisions of this Section, Distribution Provider shall, in good faith, provide Pre- Application Report data that represents the best available information at the time of reporting.

2. INTERCONNECTION REQUEST PROCESS

a. Applicant Initiates Contact with Distribution Provider

Upon request, Distribution Provider will provide information and documents (such as sample agreements, Interconnection Request, technical information, listing of Certified Equipment, Initial and Supplemental Review fee information, applicable tariff schedules and Metering requirements) to a potential Applicant. Unless otherwise agreed upon, all such information shall normally be sent to an Applicant within three (3) Business Days following the initial request from Applicant. Distribution Provider will establish an individual representative as the single point of contact for Applicant, but may allocate responsibilities among its staff to best coordinate the Interconnection of an Applicant's Generating Facility. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

b. Applicant Selects a Study Process

An Applicant may select one of two interconnection evaluation processes in accordance with the following eligibility requirements:

i) Fast Track Eligibility

Non-Exporting Generating Facilities and NEM-1 Generating Facilities shall be evaluated under the Fast Track Review Process as described under Section F.2. below. (L) (L)/(P) (L)/(P)

NEM-2 Generating Facilities and Exporting Generating Facilities of any size are eligible for and may elect the Fast Track evaluation if the Applicant believes its Interconnection Request may pass the Fast Track Process as described under Section F.2. below. (L) (P) (P)

ii) Detailed Study Eligibility (L)

Interconnection Requests that are not eligible for Fast Track evaluation must apply for Detailed Study. An Applicant may also choose to apply directly for Detailed Studies. Detailed Study shall require (i) an Independent Study Process, (ii) a Distribution Group Study Process, or (iii) a WDT Transmission Cluster Study Process. The specific study process used will depend on the results of the Electrical Independence Tests for the Transmission and Distribution Systems. (L) (L)/(T) (L) (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 56
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

b. Applicant Selects a Study Process (Cont'd.)

iii) Request for Deliverability Assessment

Unless specified otherwise in the Interconnection Request, Generating Facilities eligible to be studied under the Fast Track Process, Independent Study Process or Distribution Group Study Process will be assumed to have selected Energy-Only Deliverability Status. Nothing herein will prohibit an Applicant from seeking a deliverability assessment in accordance with the (L)
WDT. Applicants studied under the WDT Transmission Cluster (L)/(T)
Study Process may seek a deliverability assessment in (L)
accordance with the applicable provisions of the WDT.

c. Applicant Completes an Interconnection Request

All Applicants shall submit a complete and valid Interconnection Request. When applicable per Table E.1, a nonrefundable $800 Interconnection Request fee, and for Applicants that elect Detailed Study in the Interconnection Request, a study deposit shall be required per instructions in the Interconnection Request. Applicants who proceed to Detailed Study after Fast Track will provide a Detailed Study deposit as specified in Section E.3.a.

Applicant shall submit a separate Interconnection Request for each Point of Interconnection. An Interconnection Request for the expansion of capacity of an existing operating Generating Facility shall be treated the same as an Interconnection Request for a new Generating Facility pursuant to this Rule.

i) Interconnection Requests for the Independent Study Process will be accepted throughout the year, except during the Distribution Group Study windows. All Detailed Study Interconnection (L)
Requests (except those applying directly to the WDT (L)/(T)
Transmission Cluster Study Process) submitted during the (L)
Distribution Group Study Windows will be processed as
Distribution Group Study Process Applicants. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

c. Applicant Completes an Interconnection Request (Cont'd.)

ii) Interconnection Requests to be studied under the Distribution Group Study Process shall either be (a) an Independent Study Process Interconnection Request that passed screen Q and failed Screen R for which the Applicant elects to continue to the next available Distribution Group Study, or (b) an Interconnection Request submitted during a Distribution Group Study Application window that passes Screen Q.

There will normally be two (2) Distribution Group Study Application windows annually. The first Distribution Group Study Application window will usually open on March 1 and close on March 31. The second Distribution Group Study Application window will usually open on September 1 and close on September 30. In the event that any date set in this Section is not a Business Day, then the applicable date shall be the next Business Day thereafter.

The Distribution Provider may change the Distribution Group Study Application window interval and opening or closing dates. Any changes will be posted on the Distribution Provider's website. If there is a conflict between the Distribution Group Study Application window interval and opening or closing dates posted on the Distribution Provider's website and the dates identified in the paragraph above, the dates posted on the Distribution Provider's website shall apply. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

c. Applicant Completes an Interconnection Request (Cont'd.)

TABLE E.1

Summary of Interconnection Request Fees, Deposits and Exemptions (L)

Generating Facility Type	Interconnection Request Fee	Supplemental Review Fee	Detailed Study Deposit	Additional Commissioning Test Verification	Cost Envelope Option Deposit****	Modifications Fee per Ee *****
Non-Net Energy Metering and > 1 MW NEM-2	$800	$2,500*	For a Generating Facility with a Gross Nameplate Rating of 5 MW or less and applying to the Independent Study Process, $10,000 for a System Impact Study or the DGS Phase I Interconnection Study in the case of the Distribution Group Study Process; and $15,000 for an Interconnection Facilities Study or DGS Phase II Interconnection Study in the case of the Distribution Group Study Process. For a Generating Facility with a Gross Nameplate Rating above 5 MW, $50,000 plus $1,000 per MW of electrical output of the Generating Facility, or the increase in electrical output of the existing Generation Facility, as applicable, rounded up to the nearest whole MW, up to a maximum of $250,000.	$150/Person Hour**	$2,500	$0
≤ 1 MW NEM-2***	$145	$0	$0	N/A	$2,500	$0
NEM-1	$0	$0	$0	N/A	$2,500	n/a
Non-NEM Solar ≤ 1MW	First $5,000 of study fees waived			$150/Person Hour**	$2,500	$0

(L)/(N) (L)/(N) (L) (L) (L)/(N) (L)/(N)

* Optional $1,000 additional fault current study fee pursuant to Section F.2.c.ii. The Supplemental Review fee can be pre-paid at the time of application submission as allowed by D.20-09-035 OP 14. This fee is non-refundable. (L)

** Plus additional costs for travel, lodging and meals.

*** Applicants that participate in the Single-Family Affordable Solar Homes (SASH) program are exempt from the Interconnection Request fee.

**** Interconnection Requests that have selected the Cost Envelope Option and that subsequently qualify for and pass the Fast Track Process evaluation, as well as NEM Generating Facilities and Solar ≤ 1 MW Generating Facilities evaluated under the Independent Study Process, must provide the Cost Envelope Option deposit in accordance with Section F.7 to remain eligible for the Cost Envelope Option. (L)

***** The fee will be set to $0 for now, until PG&E submits a new Advice Letter to increase it. Note: the fee does not apply to NEM-1 nor NEMFC by statute. SASH is also exempt from this fee per D. 16-01-044. (N)

****** Solar ≤ 1MW that does not sell power to Distribution Provider (per D.01-07-027) nor participate in NEM-1 or NEM-2 (N)

(Continued)

ELECTRIC RULE NO. 21 Sheet 59
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

d. Site Exclusivity

Documentation of Site Exclusivity must be submitted with the Interconnection Request. This requirement does not apply to Applicants with NEM-1 Generating Facilities, NEM-2 ≤ 1 MW Generating Facilities, or Non-Export Generating Facilities.

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT

The Interconnection Request fee shall be waived for NEM-1 Interconnection Requests and for non-NEM solar-powered Generating Facilities that do not sell power per Commission Decision 01-07-027. NEM-1 Generating Facilities are also exempt from any costs associated with Interconnection Studies.

NEM-2 Applicants are required to pay any applicable Interconnection Request fees and costs associated with Interconnection Studies pursuant to Table E.1. As noted in the table, SASH participants are exempt from the NEM-2 Interconnection Request Fee and NEM-2 ≤1 MW Applicants are exempt from costs associated with Interconnection Studies.

Interconnection Study fees for non-NEM solar ≤1 MW Generating Facilities interconnecting to the Distribution System that do not sell power will be waived up to the amount of $5,000. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.) (L)/(P)

The Interconnection Customer must pay the Interconnection Request Fee as outlined in Table E.1 with the Application. The Interconnection Customer may pay the Supplemental Review Fee outlined in Table E.1 concurrently with the Interconnection Request Fee, or separately upon completion of the Initial Review. (P)

For Interconnection Customers that pay the Supplemental Review Fee concurrently with the Interconnection Request Fee, the Supplemental Review, if required, will be performed following the Initial Review. The Optional Initial Review Results Meeting will not be held, but the Optional Supplemental Review Results Meeting may be held following completion of the Supplemental Review. Only one study report will be provided. (P)

a. Detailed Study Deposit (L)

i) Detailed Study Deposit

To proceed with Detailed Study, Applicant must submit a Detailed Study deposit.

For a Generating Facility with a Gross Nameplate Rating of 5 MW or less, Applicant must submit a Detailed Study deposit of $10,000 for the Interconnection System Impact Study or the DGS Phase I Interconnection Study, and where an Interconnection Facilities Study or DGS Phase II Interconnection Study in the case of the Distribution Group Study Process is required, an additional $15,000 deposit must be submitted as required in Section F.3.b.vi or F.3.c.viii. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

For a Generating Facility with a Gross Nameplate Rating above 5 MW, Applicant must submit a Detailed Study deposit equal to $50,000 plus $1,000 per MW of electrical output of the Generating Facility, or the increase in electrical output of the existing Generating Facility, as applicable, rounded up to the nearest whole MW, up to a maximum of $250,000.

ii) Use of Detailed Study Deposit

The Detailed Study deposit shall be applied to pay for prudent costs incurred by Distribution Provider, the CAISO, or third parties at the direction of Distribution Provider or CAISO, as applicable, to perform and administer the Interconnection Studies. Deposit amounts that exceed the prudent costs incurred by Distribution Provider shall be refunded to Applicant within sixty (60) Calendar Days following either the execution of the Generator Interconnection Agreement or project withdrawal as described in more detail below.

The interconnection study costs for a Distribution Study Group shall be allocated equally among the Interconnection Requests within the Distribution Study Group, except as provided in (3) below.

The Detailed Study deposits shall be refundable as follows:

(1) Should an Interconnection Request be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 on or before thirty (30) Calendar Days following the scoping meeting, Distribution Provider shall refund to Applicant any portion of Applicant's Detailed Study deposit that exceeds the costs Distribution Provider, CAISO, and third parties have incurred on Applicant's behalf, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate). (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

ii) Use of Detailed Study Deposit (Cont'd.)

(2) Should an Interconnection Request that has been moved into the Detailed Study Process be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 more than thirty (30) Calendar Days after the scoping meeting, but on or before thirty (30) Calendar

Days following the results meeting for the Interconnection System Impact Study, or DGS Phase I Interconnection Study, Distribution Provider shall refund to Applicant the difference between (i) Applicant's Detailed Study deposit and (ii) the greater of (a) the costs Distribution Provider, CAISO, and third parties have incurred on Applicant's behalf or (b) one-half of the original Detailed Study deposit up to a maximum of $100,000, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate).

(3) Should an Interconnection Request be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 at any time more than thirty (30) Calendar Days after the results meeting for the Interconnection System Impact Study, or DGS Phase I Interconnection Study, or thirty (30) Calendar Days after issuance of the final Interconnection System Impact Study report or DGS Phase I Interconnection Study report if a results meeting is not held, the Detailed Study deposit shall be non-refundable.

(4) Upon execution of a Generator Interconnection Agreement by an Applicant and Distribution Provider, Distribution Provider shall refund to Applicant any portion of Applicant's detailed study deposit that exceeds the costs Distribution (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

ii) Use of Detailed Study Deposit (Cont'd.)

(4) Provider, CAISO, and third parties have incurred on Applicant's behalf, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate).

iii) Impact of Withdrawal

(1) Notwithstanding the foregoing, an Applicant that withdraws or is deemed to have withdrawn its Interconnection Request shall be obligated to pay to Distribution Provider all costs in excess of the Detailed Study deposit that have been prudently incurred or irrevocably have been committed to be incurred with respect to that Interconnection Request prior to withdrawal. Distribution Provider will reimburse the CAISO or third parties, as applicable, for all work performed on behalf of the withdrawn Interconnection Request at Distribution Provider's direction. Applicant must pay all monies due before it is allowed to obtain any Interconnection Study data or results. Any proceeds of the Detailed Study deposit not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed to be incurred for the interconnection studies shall be applied as directed by the Commission. Where an Applicant with remaining proceeds from a Detailed Study deposit cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

iii) Impact of Withdrawal (Cont'd.)

(2) Forfeited Study Deposit for Distribution Group Study Process

Non-refundable Detailed Study deposits, as pursuant to Section E.3.a.ii, for a Distribution Group Study Process Interconnection Request, shall be applied to the costs associated with any following Interconnection Study or restudy work performed by Distribution Provider, CAISO, or third party for the withdrawn Interconnection Request's

Distribution Study Group. Any remaining proceeds of the Detailed Study deposit, after the withdrawn Interconnection Request's Distribution Study Group has completed all relevant Interconnection Studies or restudies, or all Interconnection Requests associated with the specific Distribution Study Group have withdrawn, not otherwise applied to costs incurred, or irrevocably committed to be incurred for the Interconnection Studies or restudies, shall be allocated to individual Applicants on a kVA basis who have remained in the Distribution Study Group by executing a Generator Interconnection Agreement.

Such funds shall be allocated to Applicants sixty (60) Calendar Days following the conclusion of the Generator Interconnection Agreement negotiation pursuant to Section F.3.e.ii. If no Applicants remain in the Distribution Study Group, such funds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500.

iv) Special Circumstances

Applicant may propose, and Distribution Provider may agree to reduced costs for reviewing atypical Interconnection Requests, such as Interconnection Requests submitted for multiple Generating Facilities, multiple sites, or otherwise as conditions warrant. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY

An Applicant, or a Producer where those are different entities, is responsible for all fees and/or costs, including Commissioning Testing, required to complete the interconnection process. A Producer that interconnects to Distribution Provider's Distribution or Transmission System is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System. NEM-1 Generating Facilities and NEM-2 ≤1 MW Generating Facilities are exempt from any costs associated with Distribution or Network Upgrades.

a. Costs of Interconnection and Parallel Operation

The Interconnection and Parallel Operation of a Producer may trigger the need for Interconnection Facilities, Special Facilities or Added Facilities, Upgrades, Delivery Network Upgrades, and/or Reliability Network Upgrades. Interconnection Facilities installed on Producer's side of the PCC may be owned, operated and maintained by Producer or Distribution Provider. Interconnection Facilities installed on Distribution Provider's side of the PCC and Distribution System modifications shall be owned, operated, and maintained only by Distribution Provider.

b. Methodology and Timing of Cost Identification

Any costs triggered by a Producer are based on Producer's unique Interconnection requirements, Producer's impact on the Distribution System and/or Transmission System following allocation of capacity to earlier-queued interconnection requests, and Producer's electrical interdependence with any earlier-queued interconnection requests. Earlier-queued interconnection requests include interconnection requests under any applicable tariff. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

c. Timing of Cost Identification

For Applicants to Fast Track, Independent Study Process, or Distribution Group Study Process, costs may be identified during the study process, or after the study process is complete and a Generator Interconnection Agreement is executed. The purpose of later identification of costs is to facilitate Applicant's Interconnection while accommodating incomplete interconnection studies for earlier-queued interconnection requests to the same Line Section, distribution circuit, and/or substation, incomplete interconnection studies for earlier-queued interconnection requests with which Applicant is electrically interdependent with respect to short circuit duty, withdrawal of earlier-queued interconnection requests for Interconnection to the Distribution or Transmission System, and delay or cancellation of planned Distribution System Upgrades.

d. Producer Costs During Parallel Operation

All Producers are required to provide and maintain Interconnection Facilities, for the duration of the Generator Interconnection Agreement, that meet Distribution Provider's technical design and operating standards for Parallel Operation as set out in Section H or Hh, including any updates to those standards. This includes Producer responsibility for costs associated with changes to the operating characteristics at the Point of Interconnection necessitated by Distribution Provider's upgrades to the Transmission or Distribution System from time to time.

e. Cost Allocation

For cost allocation under the Fast Track Process or the Independent Study Process: Except where exempt by law or Commission decision, costs triggered by an Interconnection Request are the responsibility of the triggering Interconnection Request. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

e. Cost Allocation (Cont'd.)

For cost allocation under the Distribution Group Study Process: The costs of Interconnection Facilities will be assigned to the triggering Interconnection Request. The costs of Distribution Upgrades or Network Upgrades identified through a Distribution Group Study shall be allocated among the Interconnection Requests in a Distribution Study Group based on nameplate kilovolt amperes (kVA) and, in some instances, as determined by Distribution Provider, also based on an Applicant's specific contributions to the upgrade costs. Costs for upgrades will be allocated based upon an Applicant's specific contributions to a particular upgrade only if the Distribution Provider determines that; based on overall fairness to the Distribution Study Group, the individual applicant, rather than the Distribution Study Group, should be responsible for the costs. Cost allocation within the Distribution Study Group will not always align with cost contribution under a per kVA plus specific contribution allocation method. The DGS Phase I and Phase II study reports will indicate how cost allocation is determined. Examples of the possible types of shared costs include but may not be limited to: upgraded transformers, reconductoring, circuit switchers, and breakers.

Costs triggered by an Interconnection Request under this Rule that transitions to the WDT Transmission Cluster Study Process are allocated pursuant to the terms of Distribution Provider's WDT or other applicable tariff. (L) (L)/(T) (L) (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

f. Summary Tables

Table E.2 summarizes cost responsibility for costs and fees that may arise in the course of the interconnection process for NEM and non-NEM Applicants. Table E.3 summarizes cost responsibility for costs and fees that may arise in the course of the interconnection process for NEM Applicants under various sequences of interconnecting NEM and non-NEM Generators on the same PCC interconnecting to the Distribution or Transmission System.

Table E.2 Summary of Producer Cost Responsibility

Generating Facility Type	Interconnection Request Fee		Supplemental Review Fee		Detailed Study Cost (ISP, DGSP, or TCSP)		Interconnection Facilities Cost		Distribution Upgrades Cost		Transmission Network Upgrade Cost (per Applicable CAISO Tariff at signing of IA)	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Non-NEM and NEM-2 (>1MW)	X		X		X		X		X		X	
NEM-1		X		X		X	X			X[a]		X[a]
NEM-2 (≤1MW)*	X			X		X**	X			X		X**

* Applicants participating in the Single-Family Affordable Solar Homes program are exempt from the Interconnection Request Fee.

** Except as provided in Section F.3.d.

(L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

f. Summary Tables (Cont'd.)

Table E.3 Summary of Producer Cost Responsibility for Multiple Tariff Interconnections

Existing Generating Facility	New Generating Facility	Interconnection Request Fee		Supplemental Review Fee		Detailed Study Cost		Interconnection Facilities Cost		Distribution Upgrades Cost	
		YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
NEM	Non-NEM, NEM-2 (>1 MW)	X		X		X		X		X[b]	
NEM-1	NEM-1		X		X		X	X			X
NEM-1	NEM-2 (≤1MW)*	X			X		X	X			X
Non-NEM	NEM-1		X[c]		X[c]		X[c]	X			X[b,c]
Non-NEM	NEM-2 (>1 MW)	X		X		X		X		X	
Non-NEM	NEM-2 (≤1MW)*	X			X[c]		X[c]	X			X[b,c]
Simultaneous NEM and Non-NEM		X		X		X		X		X[b]	

a) Except as provided in Section D.13.e

b) Proration will be based upon the annual expected energy output (kWh) derived from the nameplate of the Generator(s) modified by technology-specific capacity/availability factors of all NEM and non-NEM Generators for the costs that cannot be clearly assigned to each type of tariff.

c) Change of operation of a non-NEM eligible Generator at any time to export is treated as a simultaneous NEM and non-NEM Interconnection Request, resulting in associated costs being allocated to Producer.

(L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION

Any Applicant for Interconnection to Distribution Provider's Distribution or Transmission System must submit a complete and valid Interconnection Request. An Interconnection Request will be considered complete and valid when all items required for an Interconnection Request have been received by Distribution Provider and deemed valid by Distribution Provider.

a. Acknowledgement of Interconnection Request

For Interconnection Requests that have not elected the Cost Envelope Option, Distribution Provider shall provide a first written notification to the Interconnection Customer within ten (10) Business Days of receipt of the Interconnection Request, which notice shall state whether the Interconnection Request is deemed complete and valid.

For Interconnection Requests that have elected the Cost Envelope Option, Distribution Provider shall provide a first written notification to the Interconnection Customer within twenty (20) Business Days of receipt of the Interconnection Request, which notice shall state whether the Interconnection Request is deemed complete and valid.

b. Deficiencies in Interconnection Request

i) First Notification of Deficiency

If an Interconnection Request fails to meet the requirements, Distribution Provider shall state in its first written notification the reasons for such failure and that the Interconnection Request does not constitute a valid request.

Applicant shall provide Distribution Provider the additional requested information needed to constitute a complete and valid request within ten (10) Business Days from the date of the first written notification that the Interconnection Request is invalid. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

b. Deficiencies in Interconnection Request (Cont'd.)

ii) Second Notification of Deficiency

Distribution Provider shall provide a second written notification to Applicant within ten (10) Business Days of receipt of the additional requested information, stating whether the Interconnection Request is valid or the reasons for any failure.

Applicant shall provide Distribution Provider the additional requested information needed to constitute a complete and valid request within five (5) Business Days from the date of the second written notification that the Interconnection Request is invalid.

iii) Extension Request

Upon request, Applicant can receive one extension of up to twenty (20) Business Days to resolve deficiencies in the Interconnection Request.

iv) Failure to Resolve Deficiencies

If Applicant does not resolve deficiencies in the Interconnection Request within the time frames set out above, Distribution Provider will deem the Interconnection Request withdrawn. Applicant may submit a new Interconnection Request.

Applicants with invalid Interconnection Requests under this Section may seek relief under the dispute resolution provisions in Section K by so notifying Distribution Provider within two (2) Business Days of receipt of the first or second written notification that the Interconnection Request is incomplete and/or invalid. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

c. Assignment of Queue Position

Distribution Provider shall assign a queue position to all NEM-2 Applicants with Generating Facilities sized above 1 MW (except as provided in Section D.13.e) and all non-Net Energy Metering Applicants. Applicants applying for Momentary Parallel Operation of any size, or Non-Export Applicants with Gross Nameplate Capacity of 30 kW or less, will not be assigned a queue position by the Distribution Provider. If there were no deficiencies in the Interconnection Request, the queue position will be based on the date Distribution Provider received the Interconnection Request. If there were deficiencies in the Interconnection Request, the queue position will be based on the date Distribution Provider determines an Interconnection Request to be complete and valid. Should Distribution Provider not meet any deadline for providing the first (Section E.5.b.i) or second written notification (Section E.5.b.ii) to Applicant regarding the Interconnection Request, Applicant's queue position shall be set on the final day of the period in which Distribution Provider was obligated to provide such written notification, provided, however, that Applicant meets deadlines as set out above to submit any additional information required for a valid Interconnection Request following such written notification under Section E.5.b.i or E.5.b.ii, and that Distribution Provider determines that the Interconnection Request is valid.

Distribution Provider shall maintain a single queue for all Interconnection Requests requiring a Queue Position and governed by this Rule with a Point of Interconnection on Distribution Provider's Distribution System. For Interconnection Requests that are studied under the Distribution Group Study Process, the effective queue position for all Interconnection Requests in a Distribution Study Group will be derived on the last day of the Distribution Group Study window for that WDT Distribution Study Group. For Interconnection Requests that are studied under the Transmission Cluster Study Process, the queue position will be the applicable cluster's queue position. (L) (L)/(T) (L) (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

d. Publication of the Interconnection Queue

Distribution Provider shall publish and update monthly on its website the interconnection queue for all Interconnection Requests governed by this Rule with a Point of Interconnection on Distribution Provider's Distribution System that have been assigned a queue position. Nothing here prohibits Distribution Provider from publishing this queue combined with other interconnection requests to Distribution Provider's Distribution System. The published interconnection queue may include the following information for each Interconnection Request governed by this Rule, subject to Energy Division approval:

i) Interconnection Request and Queue Position Data

(1) The assigned number, if any;

(2) the queue position;

(3) the date the Interconnection Request was received by Distribution Provider;

(4) the date the Interconnection Request was determined to be complete and valid;

(5) the review process to which Applicant originally applied and is currently assigned;

(6) the original requested In-Service Date;

(7) the currently requested In-Service Date;

(8) the agreed-upon Commercial Operation Date or actual Commercial Operation Date. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

d. Publication of the Interconnection Queue (Cont'd.)

ii) Applicant Generating Facility/Storage System and Point of Interconnection Data

(1) the maximum summer and winter MW electrical output;

(2) the type of generating or storage facility to be constructed;

(3) the fuel source;

(4) the proposed Point of Interconnection location by county;

(5) the proposed Point of Interconnection location by substation/area and, if applicable, circuit. (L)

(Continued)

Ee. MODIFICATION TO INTERCONNECTED GENERATING FACILITIES (N)

1. MODIFICATIONS TO EXISTING EQUIPMENT (D. 19-03-013 - TYPE II)

Certain non-material modifications to existing facilities are permitted as described below in Tables Ee.1, 2 and 3. Modification requests shall incur any incremental fees as noted below. From the date of the proposed modification request is received, the Distribution Provider shall process the request within:

(a) ten (10) Business Days if no re-study is required
(b) twenty (20) Business Days if a re-study is required

Table Ee.1 – Replacing existing equipment

Description of Modification		Notification Required?	Interconnection request is required?	Proceed without PG&E approval?	Fee (See table E.1)
Replace equipment with exact same equipment type		No	No	Yes	n/a
Replace with "like-for-like,"[4,5] where: 1. system output does not exceed what is listed in the original interconnection agreement and 2. operating mode is not adjusted.		Yes	No	Yes	Modification Fee in E.1[1]
Replacement increases nameplate capacity of the system, but which employ certified inverter power controls that limit the real power output to the inverter listed size in the original agreement.	Increases nameplate to ≤100kw [2]	Yes	No	Yes	Modification Fee in E.1[1]
	Increases nameplate to >100kw and ≤ 110% of original capacity	Yes	No	Yes	Modification Fee in E.1[1]
	Increases nameplate to > 100kw and > 110% of original capacity	No	Yes	No	E.1[3]
Replacing equipment such that the system capacity increases and no inverter power controls are employed to limit the real power output to the inverter listed size in the original agreement		No	Yes	No	E.1[3]
All other scenarios		No	Yes	No	E.1

[1] See Modification Fees in Table E.1.
[2] For projects increasing capacity to less than or equal to 100 kilowatt (kW), pending the creation of certification schemes for inverter power controls (software/firmware) to limit export (per D. 19-03-013, OP6)
[3] "E.1" refers to applicable charges/fees in Rule 21 Table E.1 for a new application.
[4] Like-for-Like is defined in Section C.

(N)

(Continued)

Ee. MODIFICATION TO INTERCONNECTED GENERATING FACILITIES (CONT'D.) (N)

1. MODIFICATIONS TO EXISTING EQUIPMENT (D. 19-03-013 - TYPE II) (CONT'D.)

Table Ee.2 – Upgrading Inverter Firmware /Changing Inverter Characteristics

Conditions:	Notification Required?	Interconnection Request Required	Proceed without PG&E approval?	Fee (See table E.1)
Only performing upgrades to inverter firmware that do not affect grid interactions	No	No	Yes	n/a
Changing inverter operating characteristics.	No	Yes	No	E.1
All Other Scenarios	No	Yes	No	E.1

Table Ee.3 -- Adding Storage or Capacity

Conditions:		Notification Required?	Interconnection Request Required?	Proceed without PG&E approval?	Fee (See table E.1)
Adding storage capacity t(kwh) to an existing storage facility without changing inverter	Generator's maximum output based on its rated capacity[1]	Yes	No	Yes	$0
	Operational profiles of systems used to determine system impacts[2]	Yes	No	Yes	Modification Fees in E.1
Adding storage to an existing generating facility that does not have storage.		No	Yes	No	E.1
Adding such that system capacity increases and no inverter power controls are employed to limit the real power output to the inverter listed size in the original agreement.		No	Yes	No	E.1
All Other Scenarios		No	Yes	No	E.1

[1] If the Commission determines that a generator's maximum output should be based on its rated capacity (per D. 19-03-013, OP6).

[2] If the Commission determines that operational profiles of systems should be used to determine system impacts D. 19-03-013, (per OP6). (N)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS

a. Valid Interconnection Request

After an Interconnection Request is deemed complete and valid, Distribution Provider will perform Fast Track evaluation unless an Applicant applies for Detailed Study or is not eligible for Fast Track evaluation. The eligibility requirements for Fast Track evaluation are set forth in Section E.2.b. See Section D.13 for special provisions related to the timeframe and costs applicable to certain NEM Applicants as provided therein. See Section D.14 and Section N for special provisions applicable to Non-Export Energy Storage Generating Facilities, as provided therein. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Fast Track Review

Fast Track evaluation allows for rapid review of the Interconnection of those Generating Facilities that do not require Detailed Study. Regardless of study process, all Generating Facilities shall be (L)
designed to meet the applicable requirements of Section H or Hh (L)/(P)
which identifies Generating Facility Design and Operation (L)
Requirements.

Fast Track review consists of an Initial Review and, if required, a Supplemental Review. The need for Supplemental Review will be determined based on the results of Initial Review Screens A through M in Section G.1. Applicants that successfully pass Initial Review Screens A through M will be allowed to interconnect without Supplemental Review.

Non-Export AC/DC Converter installations that have a complete and valid Interconnection Request will be eligible to bypass screens B through D and F through M. (L)

If Supplemental Review is required, unless the Applicant has pre-paid (L)/(P)
the Supplemental Review fee, Distribution Provider will notify (L)/(P)
Applicant and Applicant must pay a nonrefundable Supplemental (L)
Review fee, per Table E-1 or withdraw its Interconnection Request. Supplemental Review shall consist of the application of Screens N through P in Section G.2. Applicants that pass Screens N through P will be allowed to interconnect without additional review.

If Supplemental Review reveals that a proposed Generating Facility cannot be interconnected to Distribution Provider's Distribution System by means of Fast Track evaluation, Distribution Provider will notify Applicant that Detailed Study will be required.

Failure to pass Fast Track evaluation means only that further review and/or study are required before the Generating Facility can be interconnected with Distribution Provider's Distribution System. It does not mean that the Generating Facility cannot be interconnected. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Detailed Studies

Detailed Study will be required for Interconnection Requests that apply directly for Detailed Study, are not eligible for Fast Track evaluation, or do not pass Fast Track evaluation. Detailed Study shall consist of one of three study processes: (i) Independent Study Process; (ii) (L)
Distribution Group Study Process; or (iii) WDT Transmission Cluster (L)/(T)
Study Process. The specific study process that is applied will depend (L)
on the results of Screens Q and R in Section G.3. Interconnection Requests that are found to be electrically interdependent with earlier-queued interconnection requests with impacts on the Transmission (L)
System, and thereby fail screen Q, will proceed to the WDT (L)/(T)
Transmission Cluster Study Process. Interconnection Requests that (L)
are not electrically interdependent with earlier-queued interconnection requests with impacts on the Transmission System, and thereby pass Screen Q, will be studied under either the Independent Study Process or the Distribution Group Study Process, depending on the results of Screen R.

d. Compliance with Timelines

Distribution Provider shall use Reasonable Efforts in meeting all the timelines set out in this Rule, or mutually modified by Distribution Provider and Applicant pursuant to Section D.16. Each Distribution Provider shall designate an ombudsman with authority to resolve disputes over missed timelines. The identity, role, and contact information of the ombudsman shall be available on Distribution Provider's website.

If at any time an Applicant is dissatisfied with the Reasonable Efforts of Distribution Provider to meet the timelines in this Section, Applicant may use the following procedures: (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Compliance with Timelines (Cont'd.)

(i) Contact the ombudsman designated by Distribution Provider;

(ii) If the Distribution Provider ombudsman is unable to resolve the dispute within ten (10) Business Days, Applicant may either:

a) Contact the Consumer Affairs Branch (CAB) at the Commission.

b) Upon mutual agreement with Distribution Provider, make a written request for mediation to the Alternative Dispute Resolution (ADR) Coordinator in the Commission's Administrative Law Judge (ALJ) Division. The request may be made by electronic mail to adr_program@cpuc.ca.gov, and shall state "Rule 21" in the subject line. The request shall contain the relevant facts of the timeline dispute. A copy of the request shall be sent to the Distribution Provider ombudsman. Provided that resources are available, the mediator assigned shall schedule a mediation with Applicant and Distribution Provider within ten (10) Business Days of receiving the request.

At any time, Applicant may file a formal complaint before the Commission pursuant to California PUC Section 1702 and Article 4 of the Commission's Rules of Practice and Procedure. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review

Upon receipt of a complete and valid Interconnection Request, Distribution Provider shall perform Initial Review using the process in Section G.1. The Initial Review determines if (i) the Generating Facility qualifies for Fast Track Interconnection through Initial Review, or (ii) the Generating Facility requires a Supplemental Review. Absent extraordinary circumstances, Distribution Provider shall notify Applicant in writing of the results of Initial Review within fifteen (15) Business Days following validation of an Interconnection Request.

For all Interconnection Requests that pass Initial Review and do not require Interconnection Facilities or Distribution Upgrades, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of providing notice of Initial Review results. For Interconnection Requests that pass Initial Review but do require Interconnection Facilities or Distribution Upgrades, within fifteen (15) Business Days of providing notice of Initial Review results, Distribution Provider shall provide Applicant with a non-binding cost estimate of the Interconnection Facilities or Distribution Upgrades. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3. If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option.

For all Interconnection Requests that pass Initial Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 82
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review (Cont'd.)

For Interconnection Requests that fail Initial Review, Distribution Provider shall provide the technical reason, data and analysis supporting the Initial Review results in writing and provide Applicant (L)
the option to either attend an Initial Review, unless the Applicant has (L)/(P)
pre-paid the Supplemental. NEM-1 and ≤1 MW NEM-2 Applicants covered under Section D.13.a, and Applicants that have pre-paid the Supplemental Review fee, shall proceed directly to Supplemental (L)/(P)
Review without an Initial Review results meeting. Applicant shall (L)
notify Distribution Provider within ten (10) Business Days following such notification whether to (i) proceed to an Initial Review results meeting, (ii) proceed to Supplemental Review, or (iii) withdraw the Interconnection Request. Applicant may request one extension of no more than ten (10) Business Days to respond. If Applicant fails to notify Distribution Provider within ten (10) Business Days of such notification, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

No changes may be made to the planned Point of Interconnection or Generating Facility size included in the Interconnection Request (L)
during the Fast Track Process, except as provided in Table F.1 below, (L)/(T)
or unless such changes are agreed to by Distribution Provider. Where (L)/(T)
agreement has not been reached, Applicants choosing to change the (L)
Point of Interconnection or Generating Facility size, except as (L)/(T)
provided for in Table F.1, must reapply and submit a new (L)/(T)
Interconnection Request. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review (Cont'd.) (L)

As part of the evaluation of Screen M, when Integration Capacity Analysis values are available at the requested Point of Interconnection, Distribution Provider will determine if Integration Capacity Analysis values at the proposed Point of Interconnection need to be updated. If Distribution Provider determines that the Integration Capacity Analysis values at the proposed Point Interconnection need to be updated, the Distribution Provider will update the values for the proposed Point Of Interconnection using the Integration Capacity Analysis tool on the specific electrical node or by running the Integration Capacity Analysis on all the electrical nodes in the circuit. Distribution Provider shall not perform additional Integration Capacity Analysis as part of the interconnection process of projects with less than 30 kilovolt amperes nameplate capacity. Distribution Provider shall share the results of any Integration Capacity Analysis updates with the Applicant and provide an explanation of changes to grid conditions or the interconnection queue which led to the need to obtain updated Integration Capacity Analysis values. Distribution Provider shall comply with confidentiality provisions and data redaction policies. (P)

Applicants that elect to proceed to Supplemental Review, unless the Applicant has pre-paid the Supplemental Review fee, shall provide a nonrefundable Supplemental Review fee set forth in Section E.2.c with their response. The Supplemental Review fee shall be waived for Interconnection Requests requesting Interconnection of NEM-1 or ≤1 MW NEM-2 Generating Facilities and for solar-powered non-NEM ≤1 MW Generating Facilities that do not sell power to Distribution Provider, per Commission D.01-07-027. (L)/(P) (L)/(P) (L) (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 84
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review (Cont'd.)

TABLE F.1 – MODIFICATION TO PENDING APPLICATIONS (D. 19-03-013 Type I Changes)

Modifications to Interconnection Applications Under the Fast Track Modifications to Interconnection Applications Under the Fast Track

1. The number of modifications per Interconnection Request is limited to one request.
2. Distribution Provider has discretion to allow additional modification requests when the Distribution Provider has caused the need for an additional modification request.
3. From the date of the proposed modification request is received, the Distribution Provider shall process the request within:
   (i) ten (10) Business Days if no re-study is required
   (ii)twenty (20) Business Days if a re-study is required
4. Except as allowed in Section E.4 for NEM customers, if a project downsizes, the revised shall not affect the cost responsibility or timing of interconnection of other projects.
5. Additional changes outside of the modification types identified herein will not be accepted within Fast Track.

Conditions	Application Modifications Allowed?	Fee
1. "Like-for-like"[1] equipment replacements meeting the following criteria: 2. Does not increase facility size[2]; 3. No size decrease exceeding 20%; and 4. No identified upgrades or mitigations.	Yes	n/a
Size reductions meeting the following criteria: 1. No size reduction exceeding 20%; and 2. Identified upgrades or mitigations are paid for by the customer	Yes	n/a
Size reductions to avoid upgrades meeting the following criteria: 1. The re-study determines that no the modification affects no other distributed energy resource	Yes	$300[3]
Other types of modifications outside of those listed in this table will not be accepted without a new application.	No	

[1] Like-for-Like is defined in Section C.

[2] System size pursuant to D.19-03-013, footnote 43 on p.22 is defined as the follows:

For solar systems	For energy storage systems	For all other generation types
the lesser of inverter nameplate capacity (kW) or maximum solar output (CEC-AC rating)	both the inverter nameplate capacity (kW) and the capacity of the storage device (kWh) are considered in the definition of size.	the gross nameplate rating of the generator

[3] Pursuant to D.19-03-013, p.22. (N)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Optional Initial Review Results Meeting

Within five (5) Business Days of Applicant's request for an Initial Review results meeting, Distribution Provider shall contact Applicant and offer to convene a meeting at a mutually acceptable time to review the Initial Review screen analysis and related results to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably without Supplemental Review. (L)

In the event the Applicant has pre-paid the Supplemental Review fee, the Distribution Provider will proceed, if necessary, with Supplemental Review upon completion of Initial Review and shall not be required to offer an Initial Review results meeting. (P) (P)

If modifications that obviate the need for Supplemental Review are identified, and Applicant and Distribution Provider agree to such modifications, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of the Initial Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Initial Review results meeting. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3. If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option. (L)

For all Interconnection Requests that pass Initial Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Optional Initial Review Results Meeting (Cont'd.)

If Applicant and Distribution Provider are unable to identify or agree to modifications that enable Applicant to pass Initial Review, Applicant shall notify Distribution Provider within ten (10) Business Days of the Initial Review results meeting whether it would like to proceed with Supplemental Review or withdraw its Interconnection Request. Applicant may request one extension of no more than ten (10) Business Days to respond. If Applicant fails to notify Distribution Provider within ten (10) Business Days of the Initial Review results meeting, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

c. Supplemental Review

i) If Applicant requests Supplemental Review and submits a nonrefundable Supplemental Review fee, if required, Distribution Provider shall complete Supplemental Review within twenty (20) Business Days, absent extraordinary circumstances, following authorization and receipt of the fee. Supplemental Review determines if (i) the Generating Facility qualifies for Fast Track Interconnection, or (ii) the Generating Facility requires Detailed Study. If the Applicant paid the Supplemental Review fee concurrently with the Initial Review Fee, Distribution Provider will complete the Supplemental Review, if required, within twenty (20) Business Days from the completion of the Initial Review. (L) (L)/(P) (P) (P)

ii) If the Applicant chooses to move to Supplemental Review, or has pre-paid the non-refundable Supplemental Review fee they have the option to elect that the Distribution Provider provide a fault current study as part of the Supplemental Review. This fault current study would extend the Supplemental Review time by up to ten (10) Business Days, and would require an additional nonrefundable fee of $1,000. (L)/(P) (L)/(P) (L)

This fault current study will determine if the Generating Facility can detect phase and ground faults on the Distribution Provider's Distribution System or the distribution feeder breaker where the Applicant proposes to connect the Generating Facility. The result of the fault current study will determine if direct transfer trip (DTT) will be required from the Distribution System to the Generating Facility site. Note that for Applicants proposing to interconnect to the Distribution System where there is expected to be power backfeed to the Transmission System, DTT from the transmission may still be required and a Detailed Interconnection Study will be required to make this determination. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review (Cont'd.)

ii) Should the Applicant request a Supplemental Review results meeting, as described in Section F.2d, the optional fault current study analysis and related results shall, at the Applicant's request, be reviewed to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably. (L)

If the Applicant chooses to move to Supplemental Review or has pre-paid the non-refundable Supplemental Review fee, they have the option to elect that the Distribution Provider provide a fault current study as part of the Supplemental Review. This fault current study would extend the Supplemental Review time by up to ten (10) Business Days, and would require an additional nonrefundable fee of $1,000. (L)/(P) (L)/(P) (L) (L) (L)/(P)

The Applicant must provide the following data to Distribution Provider when requesting Supplemental Review in order to select this option: (L)

Generator:
- MVA Rating
- kV Rating
- Base MVA
- Base kV
- Xd" (direct axis subtransient reactance)
- Xd' (direct axis transient reactance)
- Xd (Synchronous reactance)
- X2 (Negative Sequence reactance)
- X0 (Zero Sequence reactance)

XFMR Data:
- Winding configuration (delta-Wye grd or Wye grd-Delta)
- MVA Rating
- KV Rating
- Base MVA
- Base KV
- Z1 HV-LV
- Z0 HV-LV (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review (Cont'd.)

ii) If the Applicant chooses to move to Supplemental Review, they have the option to elect that the Distribution Provider provide a fault current study as part of the Supplemental Review. This fault current study would extend the Supplemental Review time by up to ten (10) Business Days, and would require an additional nonrefundable fee of $1,000. (Cont'd.)

Line Data:
Impedance data for line from XFMR to POI (if applicable)
Z1
Z0

POI Location:

iii) For Interconnection Requests that pass Supplemental Review and do not require Interconnection Facilities or Distribution Upgrades, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of providing notice of Supplemental Review results. For Interconnection Requests that pass Supplemental Review and do require Interconnection Facilities or Distribution Upgrades, within fifteen (15) Business Days of providing notice of Supplemental Review results, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3 If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option.

For all Interconnection Requests that pass Supplemental Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review (Cont'd.)

iv) For Interconnection Requests that fail Supplemental Review, Distribution Provider shall provide the technical reason, data and analysis supporting the Supplemental Review results in writing, including, if Distribution Provider can make the determination, which Detailed Study track Applicant qualifies for, and provide Applicant the option to attend a Supplemental Review results meeting or proceed directly to Detailed Study. Applicant shall notify Distribution Provider within fifteen (15) Business Days following such notification whether to (i) proceed to a Supplemental Review results meeting, (ii) proceed to Detailed Study, or (iii) withdraw the Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days of such notification, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

Applicants that elect to proceed to Detailed Study shall provide the applicable study deposit set forth in Section E.3.a with their response. Detailed Study fees for solar Generating Facilities up to 1 MW interconnecting to the Distribution System that do not sell power to Distribution Provider will be waived up to the amount of $5,000. Except as provided for in Section F.3.d, NEM-1 and ≤1 MW NEM-2 Generating Facilities are exempt from any costs associated with Detailed Studies. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 90
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Optional Supplemental Review Results Meeting

Within five (5) Business Days of Applicant's request for a Supplemental Review results meeting, Distribution Provider shall contact Applicant and offer to convene a meeting at a mutually acceptable time to review the Supplemental Review screen analysis and related results to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably without Detailed Study.

If modifications that obviate the need for Detailed Study are identified and Applicant and Distribution Provider agree to such modifications, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of the Supplemental Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Supplemental Review results meeting. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3. If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option.

For all Interconnection Requests that pass Supplemental Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Optional Supplemental Review Results Meeting (Cont'd.)

If Applicant and Distribution Provider are unable to identify or agree to modifications, Applicant shall notify Distribution Provider within twenty (20) Business Days of the Supplemental Review Results Meeting whether it would like to proceed with Detailed Study or withdraw its Interconnection Request. Applicant may request one extension of no more than twenty (20) Business Days to respond. If Applicant fails to notify Distribution Provider within twenty (20) Business Days of the Supplemental Review results meeting, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. Applicants that elect to proceed to Detailed Study shall provide the applicable study deposit set forth in Section E.3.a.

e. Execution of the Generator Interconnection Agreement

For Interconnection Requests where Applicant has not selected the Cost Envelope Option, Following the receipt of a cost estimate for any Distribution Upgrades and/or Interconnection Facilities that have been identified, Applicant shall notify Distribution Provider within fifteen (15) Business Days whether Applicant: (i) requests a Generator Interconnection Agreement, or (ii) withdraws its Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. If Applicant elects to proceed to a Generator Interconnection Agreement, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement for Applicant's signature within fifteen (15) Business Days of Applicant's request. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 92
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Execution of the Generator Interconnection Agreement (Cont'd.)

For those Interconnection Requests where Applicant has selected the Cost Envelope Option and has provided the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Distribution Provider shall complete and issue to Applicant the Cost Envelope Estimate within twenty (20) Business Days following Distribution Provider's receipt of the Cost Envelope Option deposit in accordance with F.7.d. Once the Cost Envelope Estimate is issued, Applicant shall notify Distribution Provider within fifteen (15) Business Days of notification whether Applicant: (i) requests a Generator Interconnection Agreement, or (ii) withdraws its Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. If Applicant elects to proceed to a Generator Interconnection Agreement, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement for Applicant's signature within fifteen (15) Business Days of Applicant's request.

Upon receipt of a draft Generator Interconnection Agreement, Applicant has ninety (90) Calendar Days to sign and return the Generator Interconnection Agreement. Applicant shall provide written comments, or notification of no comments, to the draft Generator Interconnection Agreement and appendices within thirty (30) Calendar Days. At the request of Applicant, Distribution Provider shall begin negotiations with Applicant at any time after Distribution Provider provides Applicant with the draft Generator Interconnection Agreement, which contains in its appendices the cost estimate for any Distribution Upgrades and/or Interconnection Facilities that have been identified by Distribution Provider. Distribution Provider and Applicant (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 93
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Execution of the Generator Interconnection Agreement (Cont'd.)

shall negotiate concerning the cost estimate, or any disputed provisions of the appendices to a draft Generator Interconnection Agreement, for not more than ninety (90) Calendar Days after Distribution Provider provides Applicant with the Generator Interconnection Agreement. If Applicant determines that negotiations are at an impasse, it may request termination of the negotiations and initiate Dispute Resolution procedures pursuant to Section K. If Applicant fails to sign the Generator Interconnection Agreement or initiate Dispute Resolution within ninety (90) Calendar Days, the Interconnection Request shall be deemed withdrawn.

After Applicant, or a Producer where those are different entities, has executed the Generator Interconnection Agreement, Distribution Provider will commence design, procurement, construction and installation of Distribution Provider's Distribution Upgrades and/or Interconnection Facilities that have been identified in the Generator Interconnection Agreement. Distribution Provider and Producer will use good faith efforts to meet schedules in accordance with the requirements of the Generator Interconnection Agreement and estimated costs as appropriate. Producer is responsible for all applicable costs associated with Parallel Operation to support the safe and reliable operation of the Distribution System and Transmission System as set forth in Section E.4.

Distribution Provider and Producer shall negotiate in good faith concerning a schedule for the construction of Distribution Provider's Interconnection Facilities and Distribution Upgrades. (L)

Distribution Provider shall provide quarterly updates on substation upgrades to Producers whose projects are dependent on a substation upgrade. (P) (P)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS

a. Detailed Study Track Selection Process

For all Detailed Study Applicants, as well as Applicants that have failed Fast Track initial review and/or supplemental review, the specific Detailed Study track for which Applicant is eligible will be determined by the application of Screens Q and R. For Applicants that require application of Screens Q and R, absent extraordinary circumstances, within twenty (20) Business Days following validation of an Interconnection Request and receipt of the appropriate study deposit set forth in Section E.3.a, Distribution Provider will apply Screen Q, and if applicable, Screen R and provide Applicant with the screen results as set forth below.

If Applicant fails Screen Q, Distribution Provider shall provide the data and analysis supporting Screen Q results in writing. The Interconnection Request will be processed in accordance with Section F.3.d below. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

a. Detailed Study Track Selection Process (Cont'd.)

If Applicant passes Screen Q, but fails Screen R, Distribution Provider shall provide data and analysis supporting the Screen R results in writing. Applicant shall notify Distribution Provider within twenty (20) Business Days following such notification whether it would like to (i) proceed to the Distribution Group Study Process or (ii) withdraw the Interconnection Request. Applicant may request one extension of no more than twenty (20) Business Days to respond. However, Applicant's decision must be received prior to the close of a given Distribution Group Study window, to participate in that Distribution Study Group. If the decision is received after the close of a particular Distribution Group Study window, then Applicant's Interconnection Request will be included in the next available Distribution Group Study window.

If Applicant fails to notify Distribution Provider within twenty (20) Business Days of receiving Screen R results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

If Applicant elects to proceed to the Distribution Group Study Process, the Interconnection Request will be processed in accordance with Section F.3.c below.

A Distribution Study Group will be comprised of all Interconnection Requests that are determined to be electrically interdependent based on results of Screen R. A Distribution Study Group may contain only one Interconnection Request.

Applicant(s) that opt to proceed to the Distribution Group Study Process will be re-evaluated under Screen Q. If the Distribution Study Group fails Screen Q, the Applicants will be required to withdraw and move to the WDT Transmission Cluster Process. (L)/(T)

If Applicant passes Screens Q and R, the Interconnection Request will be processed in accordance with Section F.3.b below. (L)

If Applicant elects to proceed to the WDT Transmission Cluster Study Process, Interconnection Request will be processed in accordance with Section F.3.d. (L)/(T)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process

i) Scoping Meeting

Within five (5) Business Days after Distribution Provider notifies Applicant that the Interconnection Request has passed Screens Q and R and is thus eligible for the Independent Study Process, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant and Distribution Provider for a scoping meeting.

The purpose of the scoping meeting shall be: (i) to discuss reasonable Commercial Operation Dates and alternative interconnection options; (ii) to exchange information, including any transmission data that would reasonably be expected to impact Applicant's interconnection options; (iii) to analyze such information; and (iv) to determine feasible Points of Interconnection and eliminate alternatives given resources and available information.

Distribution Provider will bring to the scoping meeting, as reasonably necessary to accomplish its purpose, such already available technical data, including, but not limited to; (i) general facility loadings, (ii) general instability issues, (iii) general short circuit issues, (iv) general voltage issues, and (v) general reliability issues.

Applicant will bring to the scoping meeting, in addition to the technical data in Attachment A of the Rule 21 Exporting Generating Facility Interconnection Request form, any system studies previously performed. Distribution Provider, the CAISO, if applicable, and Applicant will also bring to the meeting personnel and other resources as may be reasonably required to accomplish the purpose of the meeting in the time allocated for the meeting. On the basis of the meeting, Applicant shall designate its Point of Interconnection. The duration of the meeting shall be only what is sufficient to accomplish its purpose. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

i) Scoping Meeting (Cont'd.)

Within fifteen (15) Business Days after the scoping meeting, Distribution Provider shall provide Applicant with a Detailed Study Agreement, which shall contain an outline of the scope of the Interconnection System Impact Study and Interconnection Facilities Study, contain a non-binding good faith estimate of the cost to perform such studies, and shall specify that Applicant is responsible for the actual cost of the Interconnection Studies, including reasonable administrative costs. Applicant shall execute and deliver to Distribution Provider the Detailed Study Agreement no later than thirty (30) Business Days after the scoping meeting, or the Interconnection Request shall be deemed withdrawn.

ii) Timing of the Interconnection System Impact Study Results

Absent extraordinary circumstances, Distribution Provider shall complete and issue a final Interconnection System Impact Study report within sixty (60) Business Days after the execution of a Detailed Study Agreement. If the System Impact Study indicates (L)
a need for Network Upgrades on the Transmission System, (L)/(T)
Distribution Provider will share applicable study results with the (L)
CAISO for review and comment and will incorporate comments into the final Interconnection System Impact Study report.

At any time Distribution Provider determines that it will not meet the required time frame for completing the Interconnection System Impact Study, Distribution Provider shall notify Applicant in writing as to the status of the Interconnection System Impact Study and provide an estimated completion date with an explanation of the reasons why additional time is required. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 98
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

ii) Timing of the Interconnection System Impact Study Results (Cont'd.)

Upon request, Distribution Provider shall provide Applicant all relevant supporting documentation, workpapers and pre-Interconnection Request and post-Interconnection Request power flow, short circuit and stability databases, and currently planned Distribution Upgrades relevant to the Interconnection Request for the Interconnection System Impact Study. Applicant may be required to sign a non-disclosure agreement with terms consistent with Section D.7 regarding Confidentiality.

iii) Interconnection System Impact Study Results Meeting

Applicant shall request a results meeting within ten (10) Business Days of the issuance of the final Interconnection System Impact Study report. This results meeting, if requested, shall be held among Distribution Provider, the CAISO, if applicable, and Applicant to discuss the results of the Interconnection System Impact Study, including assigned cost responsibility. Within five (5) Business Days of the request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting.

If Applicant does not request a results meeting within the specified time above, the results meeting will be deemed waived. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

iv) Initial Posting of Interconnection Financial Security

Applicant shall make its initial posting of Interconnection Financial Security in accordance with the requirements of Section F.4.b, within sixty (60) Calendar Days after issuance of the final Interconnection System Impact Study report, or its Interconnection Request shall be deemed withdrawn. The initial posting of Interconnection Financial Security will be based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final Interconnection System Impact Study report.

v) Modifications

At any time during the course of the Interconnection Studies, Applicant, Distribution Provider, or the CAISO, as applicable, may identify changes to the planned Interconnection that may improve the costs and benefits (including reliability) of the Interconnection, and the ability of the proposed change to accommodate the Interconnection Request. To the extent the identified changes are acceptable to Distribution Provider, the CAISO, as applicable, and Applicant, such acceptance not to be unreasonably withheld, Distribution Provider shall modify the Point of Interconnection and/or configuration in accordance with such changes without altering the Interconnection Request's eligibility for participating in Interconnection Studies. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 100
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

v) Modifications (Cont'd.)

At the Interconnection System Impact Study results meeting, Applicant should be prepared to discuss any desired modifications to the Interconnection Request. After the issuance of the final Interconnection System Impact Study report, but no later than five (5) Business Days following the Interconnection System Impact Study results meeting, Applicant shall submit to Distribution Provider, in writing, (i) modifications to any information provided in the Interconnection Request, including that information required for the Cost Envelope Option, if applicable, or (ii) confirmations of no modifications. Distribution Provider will forward Applicant's request for modification to the CAISO, if applicable, within two (2) Business Days of receipt. If no Interconnection System Impact Study results meeting is held, Applicant shall submit to Distribution Provider any requested modifications within twenty-five (25) Business Days of the receipt of the final Interconnection System Impact Study report.

Modifications permitted under this Section F.3.b.v shall include specifically: (a) a decrease in the electrical output (MW) of the proposed Generating Facility; (b) modifying the technical parameters associated with the Generating Facility technology or the Generating Facility step-up transformer impedance characteristics; and (c) modifying the interconnection configuration. For any modifications other than those permitted above, Distribution Provider, in coordination with CAISO, if applicable, will evaluate whether the proposed modification to the Interconnection Request constitutes a Material Modification. Distribution Provider will inform Applicant in writing whether the modifications would constitute a Material Modification (i) for Interconnection Requests that have not elected the Cost Envelope Option, within ten (10) Business Days of receipt of the proposed request for modification, and (ii) for Interconnection Requests that have elected the Cost Envelope Option, within twenty (20) Business Days of receipt of the proposed request of modification. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 101
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

v) Modifications (Cont'd.)

Any change to the Point of Interconnection, except for that specified by Distribution Provider in an Interconnection Study or otherwise allowed under this Section F.3.d.v, shall constitute a Material Modification.

If the proposed modification is determined to be a Material Modification, Applicant may either withdraw the proposed modification or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification determination results.

Proposed modifications determined not to be Material Modifications may still necessitate the need to re-evaluate the System Impact Study to determine modifications to the Interconnection Facilities and Distribution Upgrades, or to update the Cost Envelope Estimate, if applicable, in accordance with Section F.7. Distribution Provider will provide Applicant an estimate of time to complete the re-evaluation and the associated incremental cost required to complete the re-evaluation. Applicant may either accept the additional time and cost to complete the reevaluation, withdraw the proposed modification request, or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification results. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

vi) Scope and Purpose of the Interconnection Facilities Study and Study Deposit

Within ten (10) Business Days of Applicant's confirmation of no modifications or Distribution Provider's determination that the Interconnection System Impact Study does not require reevaluation, Applicant shall submit to Distribution Provider the data required by Distribution Provider, including the completed form of Attachment B to the Detailed Study Agreement, if applicable. For Generating Facilities 5 MW or less, Applicant shall also submit the Interconnection Facilities Study deposit, as set out in Section E.3.a, unless the Interconnection Facilities Study will be waived in accordance with Section F.3.b.vii.

For NEM Generating Facilities and Solar ≤1 MW Generating Facilities that have elected the Cost Envelope Option, Applicant must (i) submit to Distribution Provider the Cost Envelope Option deposit within ten (10) Business Days of Applicant's confirmation of no modifications or Distribution Provider's determination that the Interconnection System Impact Study does not require reevaluation, or (ii) provide Distribution Provider written notice that it elects to withdraw its request for the Cost Envelope Option, in accordance with Section F.7. Should Applicant fail to provide the required Cost Envelope Option deposit or provide written notice within such timeframe, Applicant's request for the Cost Envelope Option shall be deemed withdrawn, and the Interconnection Request shall continue to be processed in accordance with the Independent Study Process. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

vii) Waiver of the Interconnection Facilities Study

The Interconnection Facilities Study may be waived if Distribution Provider and Applicant mutually agree to such waiver within either (i) five (5) Business Days following the Interconnection System Impact Study results meeting, or (ii) within twenty-five (25) Business Days of the issuance of the final Interconnection System Impact Study report if no Interconnection System Impact Study results meeting is held. If Distribution Provider and Applicant agree to waive the Interconnection Facilities Study for an Interconnection Request where Applicant has selected the Cost Envelope Option, the Interconnection Request shall not be eligible for the Cost Envelope Option and Applicant's request for the Cost Envelope Option shall be deemed withdrawn. The Interconnection Facilities Study may not be waived for Interconnection Requests that have selected the Cost Envelope Option and for which the Applicant elects to proceed with Distribution Provider's preparation of the Cost Envelope Estimate.

Within thirty (30) Calendar Days after Distribution Provider and Applicant mutually agree to waive the Interconnection Facilities Study, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, to Applicant. If Applicant chooses to forgo the Interconnection Facilities Study and move directly to a Generator Interconnection Agreement, Applicant must agree in writing to be responsible for all actual costs of all required facilities deemed necessary by Distribution Provider. Applicant is responsible for all applicable costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System as set forth in Section E.4. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

viii) Timing of the Interconnection Facilities Study

The Interconnection Facilities Study shall be completed and provided to Applicant within sixty (60) Business Days after Applicant posts the initial Interconnection Financial Security in accordance with Section F.4.b where Distribution Upgrades or Network Upgrades are identified and, for Generating Facilities with a Gross Nameplate Rating of 5 MW or less, Applicant submits the Interconnection Facilities Study deposit in accordance with Section E.3.a and F.3.b.vi. In cases where no Distribution Upgrades and/or Network Upgrades are identified and the required facilities are limited to Distribution Provider's Interconnection Facilities only, the Interconnection Facilities Study shall be completed within forty-five (45) Business Days after Applicant posts the initial Interconnection Financial Security and, for Generating Facilities with a Gross Nameplate Rating of 5 MW or less, Applicant submits the Interconnection Facilities Study deposit.

If applicable, Distribution Provider will share the study results with the CAISO for review and comment, and will incorporate CAISO comments, if any, into the study report prior to issuing a final Interconnection Facilities Study report to Applicant.

Within thirty (30) Calendar Days after Distribution Provider issues the final Interconnection Facilities Study report to Applicant, or within thirty (30) Calendar Days of an Interconnection Facilities Study results meeting, if requested, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

At any time Distribution Provider determines that it will not meet the required time frame for completing the Interconnection Facilities Study, Distribution Provider shall notify Applicant in writing as to the status of the Interconnection Facilities Study and provide an estimated completion date with an explanation of the reasons why additional time is required. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

ix) Interconnection Facilities Study Results Meeting

If requested by Applicant, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and Applicant to discuss the results of the Interconnection Facilities Study, including assigned cost responsibility. Within five (5) Business Days of the request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting.

Within thirty (30) Calendar Days after the Interconnection Facilities Study results meeting, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, to Applicant.

x) Second and Third Postings of Interconnection Financial Security

Applicant will post its second and third postings of Interconnection Financial Security as set forth in Sections F.4.c and F.4.d based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived in accordance with Section F.3.b.vii.

c. Distribution Group Study Process

i) Initiation of Distribution Study Process

Applicants that apply for the Independent Study Process that pass Screen Q but fail Screen R will be eligible for inclusion in a Distribution Study Group. Applicant must submit all materials required to complete their Interconnection Request no later than ten (10) Business Days after the close of the relevant Distribution Group Study window. This includes notification from Applicant that they want to proceed with the Distribution Group Study Process, if applicable, in accordance with Section F.3.a. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

i) Initiation of Distribution Study Process (Cont'd.)

Distribution Provider shall perform a Screen Q analysis for the Distribution Study Group within thirty (30) Business Days of the close of the window, using best available information about projects that have entered the Distribution Group Study Process under Rule 21 and the WDT.

If the Distribution Study Group fails Screen Q, the Distribution Provider will deem the projects withdrawn from Rule 21 and notify Applicants. Applicants may elect to proceed with the WDT Transmission Cluster Study Process pursuant to Section F.3.d. (L) (L)/(T) (L)

In order to be eligible to participate in the DGS Phase I Interconnection Study, the scoping meeting must be complete and the Applicant must execute the Detailed Study Agreement prior to the start date of the DGS Phase I Interconnection Study.

ii) Scoping Meeting

Within five (5) Business Days after Distribution Provider performs the Electrical Independence Test, it will contact the Applicant(s) to notify them that the Interconnection Request has passed Screen Q and failed Screen R and is thus eligible for the Distribution Group Study Process, and establish a date agreeable to Applicant and Distribution Provider for a scoping meeting.

The Distribution Provider, in coordination with the CAISO, if applicable, shall determine whether the Interconnection Request is at or near the boundary of an Affected System(s) so as to potentially impact such Affected System(s). If a determination of potential impact is made, the Distribution Provider shall invite the Affected System Operator(s) to the scoping meeting by informing them of the time and place of the scheduled scoping meeting as soon as practicable. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 107
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

ii) Scoping Meeting (Cont'd.)

The purpose of the scoping meeting shall be: (i) to discuss reasonable Commercial Operation Dates and alternative interconnection options; (ii) to exchange information, including any transmission data that would reasonably be expected to impact Applicant's interconnection options; (iii) to analyze such information; (iv) to determine feasible Points of Interconnection and eliminate alternatives given resources and available information; and (v) to advise Applicant of the expected start date of the DGS Phase I Interconnection Study.

Distribution Provider will bring to the scoping meeting, as reasonably necessary to accomplish its purpose, such already available technical data, including, but not limited to: (i) general facility loadings, (ii) general instability issues, (iii) general short circuit issues, (iv) general voltage issues, and (v) general reliability issues.

Applicant will bring to the scoping meeting, in addition to the technical data in Attachment A of the Rule 21 Exporting Generating Facility Interconnection Request form, any system studies previously performed. Distribution Provider, the CAISO, if applicable, and Applicant will also bring to the meeting personnel and other resources as may be reasonably required to accomplish the purpose of the meeting in the time allocated for the meeting.

During the meeting, Applicant shall confirm its Point of Interconnection. The duration of the meeting shall be only what is sufficient to accomplish its purpose. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 108
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

ii) Scoping Meeting (Cont'd.)

Within fifteen (15) Business Days after the scoping meeting, Distribution Provider shall provide Applicant with a Detailed Study Agreement, which shall contain an outline of the scope of the DGS Phase I Interconnection Study and DGS Phase II Interconnection Study, contain a non-binding good faith estimate of the cost to perform such studies, and shall specify that Applicant is responsible for the actual cost of the Interconnection Studies, including reasonable administrative costs. Applicant shall execute and deliver to Distribution Provider the Detailed Study Agreement no later than thirty (30) Business Days after the scoping meeting or the start date of the DGS Phase I Interconnection Study, whichever is earlier, or the Interconnection Request shall be deemed withdrawn.

iii) Grouping of Interconnection Requests for a Distribution Group Study

The results of Screen R will determine the Interconnection Requests to be grouped together for each Distribution Group Study. An Interconnection Request that failed Screen R will be grouped with other projects that are determined to be electrically interdependent through the application of Screen R. No later than the date a DGS Phase I Interconnection Study begins, Distribution Provider may send to each Applicant in a Distribution Study Group a list of the Interconnection Requests in its Distribution Study Group.

At the Distribution Provider's option, an Interconnection Request received during a particular Distribution Group Study Application window may be studied individually (Independent Study Process) or in a Distribution Group Study for the purpose of conducting one or more of the analyses forming the Interconnection Studies. For each Interconnection Study received within the same Distribution Group Study Application window, the Distribution Provider may develop one or more Distribution Study Groups. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

iv) Timing of the DGS Phase I Interconnection Study

Absent extraordinary circumstances, Distribution Provider shall complete and issue a final DGS Phase I Interconnection Study report within sixty (60) Business Days from the start of the study. If the DGS Phase I Interconnection Study indicates a need for Network Upgrades, Distribution Provider will share applicable study results with the CAISO for review and comment and will incorporate comments into the final DGS Phase I Interconnection Study report.

At any time Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase I Interconnection Study, Distribution Provider shall notify all Applicants in the Distribution Study Group as to the status of the DGS Phase I Interconnection Study and provide an estimated completion date with an explanation of the reasons why additional time is required.

Upon request, Distribution Provider shall provide any Applicant in the Distribution Study Group all relevant supporting documentation, workpapers and pre-Interconnection Request and post-Interconnection Request power flow, short circuit and dynamic/stability databases, and currently planned Distribution Upgrades relevant to the Interconnection Request for the DGS Phase I Interconnection Study. Applicant may be required to sign a non-disclosure agreement with terms consistent with Section D.7 regarding Confidentiality.

If applicable, Distribution Provider will share the applicable study results with the CAISO for review and comment, and will incorporate CAISO comments, if any, into the study report prior to issuing a final DGS Phase I Interconnection Study report to Applicants in the Distribution Study Group. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 110
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

v) DGS Phase I Interconnection Study Results Meeting

If requested by an Applicant in a Distribution Study Group or Distribution Provider, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and the Applicant to discuss the results of the DGS Phase I Interconnection Study, including assigned cost responsibility. Within five (5) Business Days of such request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting. If the Applicant or Distribution Provider has requested a results meeting, it must be completed within thirty (30) Calendar Days after issuance of the final DGS Phase I Interconnection Study report, unless otherwise agreed upon by the Distribution Provider and Applicant.

At the Phase I Interconnection Study results meeting, the Applicant shall provide a schedule outlining key milestones including environmental survey start date, expected environmental permitting submittal date, expected procurement date of project equipment, back-feed date for project construction, and expected project construction date. This will assist the parties in determining if proposed Commercial Operation Dates are reasonable. If large-scale Distribution Provider's Interconnection Facilities or Distribution Upgrades for the Generating Facility have been identified in the DGS Phase I Interconnection Study, such as telecommunications equipment, distribution feeders to support back feed, a new substation, and/or expanded substation work, permitting and material procurement lead times may result in the need to alter the proposed Commercial Operation Date, the Applicant and Distribution Provider may agree to a new Commercial Operation Date. In addition, where an Applicant intends to establish Commercial Operation separately for different Electric Generating Units or project phases at its Generating Facility, it may only do so in accordance with an implementation plan agreed to in advance by the Distribution Provider and the CAISO, if applicable, which agreement shall not be unreasonably withheld. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

v) DGS Phase I Interconnection Study Results Meeting (Cont'd.)

Where the parties cannot agree to a revised Commercial Operation Date, the Commercial Operation Date determined reasonable by the Distribution Provider will be used for the DGS Phase II Interconnection Study, or the Generator Interconnection Agreement (in accordance with Section F.3.e.iii) if the DGS Phase II Interconnection Study is waived in accordance with Section F.3.c.ix, where the revised Commercial Operation Date is needed to accommodate the anticipated completion, assuming Reasonable Efforts by the Distribution Provider of necessary Distribution Upgrades and/or Distribution Provider's Interconnection Facilities, pending the outcome of any relief sought by the Applicant under Sections F.1.d or K. The Applicant must notify the Distribution Provider within five (5) Business Days following the Results Meeting if it is initiating dispute procedures under Sections F.1.d or K.

Within five (5) Business Days following the DGS Phase I Interconnection Study results meeting, the Applicant shall submit to the Distribution Provider all requested information. If no DGS Phase I Interconnection Study results meeting is held, Applicant shall submit to Distribution Provider any requested information within thirty (30) Calendar Days of the receipt of the final DGS Phase I Interconnection Study report.

vi) Initial Posting of Interconnection Financial Security

Each Applicant in a Distribution Study Group shall make its initial posting of Interconnection Financial Security in accordance with the requirements of Section F.4.b, within sixty (60) Calendar Days after being provided with the final DGS Phase I Interconnection Study report, or its Interconnection Request shall be deemed withdrawn. The initial posting of Interconnection Financial Security will be based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final DGS Phase I Interconnection Study report. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

vii) Modifications

At any time during the course of the Interconnection Studies, Applicant, Distribution Provider, or the CAISO, as applicable, may identify changes to the planned Interconnection that may improve the costs and benefits (including reliability) of the Interconnection, and the ability of the proposed change to accommodate the Interconnection Request. To the extent the identified changes are acceptable to Distribution Provider, the CAISO, as applicable, and Applicant, such acceptance not to be unreasonably withheld, Distribution Provider shall modify the Point of Interconnection and/or configuration in accordance with such changes without altering the Interconnection Request's eligibility for participating in Interconnection Studies.

At the DGS Phase I Interconnection Study results meeting, if elected by Applicant or Distribution Provider, Applicant should be prepared to discuss any desired modifications to the Interconnection Request. After the publication of the final DGS Phase I Interconnection Study report, but no later than five (5) Business Days following the DGS Phase I Interconnection Study results meeting, Applicant shall submit to Distribution Provider, in writing, modifications to any information provided in the Interconnection Request. Distribution Provider will forward Applicant's request for modification to the CAISO, if applicable, within two (2) Business Days of receipt.

If no DGS Phase I Interconnection Study results meeting is held, Applicant shall submit to Distribution Provider any requested modifications within thirty (30) Calendar Days of the receipt of the final Phase I Interconnection Study report. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

vii) Modifications (Cont'd.)

Modifications permitted under this Section F.3.c.vii shall include specifically: (a) a decrease in the electrical output (MW) of the proposed Generating Facility; (b) modifying the technical parameters associated with the Generating Facility technology or the Generating Facility step-up transformer impedance characteristics; and (c) modifying the interconnection configuration. For any modifications other than those permitted above, Distribution Provider, in coordination with CAISO, if applicable, will evaluate whether the proposed modification to the Interconnection Request constitutes a Material Modification. Distribution Provider will inform Applicant in writing whether the modifications would constitute a Material Modification within ten (10) Business Days of receipt of the proposed request for modification. Any change to the Point of Interconnection, except for that specified by Distribution Provider in an Interconnection Study or otherwise allowed under this Section F.3.c.vii, shall constitute a Material Modification.

If the proposed modification is determined to be a Material Modification, Applicant may either withdraw the proposed modification or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification determination results.

Proposed modifications determined not to be Material Modifications may still necessitate the need to re-evaluate the DGS Phase I Interconnection Study to determine modifications to the Interconnection Facilities and Distribution Upgrades. Such re-evaluation will occur during the DGS Phase II Interconnection Study. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

viii) Scope and Purpose of the DGS Phase II Interconnection Study and Study Deposit

Within either (i) five (5) Business Days following the DGS Phase I Interconnection Study results meeting, or (ii) within thirty (30) Calendar Days of the receipt of the final DGS Phase I Interconnection Study report if no DGS Phase I Interconnection Study results meeting is held, Applicant shall submit to Distribution Provider the data required by Distribution Provider. Within thirty (30) Business Days of the issuance of the final DGS Phase I Interconnection Study report, for Generating Facilities 5 MW or less, Applicant shall submit the DGS Phase II Interconnection Study deposit, as set out in Section E.3.a, unless the DGS Phase II Interconnection Study is waived in accordance with Section F.3.

ix) Waiver of the DGS Phase II Interconnection Study

The DGS Phase II Interconnection Study may be waived if Distribution Provider and all Applicants included in the DGS Phase I Interconnection Study mutually agree to such waiver within thirty (30) Calendar Days of the issuance of the DGS Phase I Interconnection Study report. Within thirty (30) Calendar Days after Distribution Provider and Applicants agree to waive the DGS Phase II Interconnection Study, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, to Applicant. Applicant is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System as set forth in Section E.4. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

x) DGS Phase II Interconnection Study Procedures

Distribution Provider shall utilize existing studies to the extent practicable in conducting the DGS Phase II Interconnection Study. The Distribution Provider shall commence the DGS Phase II Interconnection Study within sixty (60) Calendar Days of the issuance of the final DGS Phase I Interconnection Study report.

Distribution Provider shall complete and distribute to Applicants the DGS Phase II Interconnection Study reports within sixty (60) Business Days after the commencement of each DGS Phase II Interconnection Study. The Distribution Provider will issue a final DGS Phase II Interconnection Study report to Applicant.

At the request of Applicant or at any time Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase II Interconnection Study, Distribution Provider shall notify Applicant as to the schedule status of the DGS Phase II Interconnection Study and provide an estimated completion date. If the Distribution Provider is unable to complete the DGS Phase II Interconnection Study in the time specified, such notice shall provide an explanation of the reasons why additional time is required.

Upon request of the Applicant, Distribution Provider shall provide Applicant all supporting documentation, work papers, and relevant pre-Interconnection Request and post-Interconnection Request power, short circuit and stability databases for the DGS Phase II Interconnection Study, subject to confidentiality arrangements consistent with Section D.7. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

x) DGS Phase II Interconnection Study Procedures (Cont'd.)

The Distribution Provider will conduct a DGS Phase II Interconnection Study that will incorporate eligible Interconnection Requests from the previous DGS Phase I Interconnection Study. The DGS Phase II Interconnection Study shall (i) update, as necessary, analyses performed in the DGS Phase I Interconnection Study to account for the withdrawal of Interconnection Requests or other projects in the Interconnection Study Process, (ii) identify Distribution Upgrades needed to physically interconnect the Generating Facility, (iii) assign cost responsibility for the Distribution Upgrades, (iv) identify for each Interconnection Request a final Point of Interconnection and Distribution Provider's Interconnection Facilities, (v) provide an estimate for each Interconnection Request of the Distribution Provider's Interconnection Facilities, and (vi) optimize in-service timing requirements based on operational studies in order to maximize achievement of the Commercial Operation Dates of the Generating Facilities, as applicable.

xi) DGS Phase II Interconnection Study Results Meeting

If requested by an Applicant in a Distribution Study Group, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and the Applicant to discuss the results of the DGS Phase II Interconnection Study, including selection of the final Commercial Operation Date and assigned cost responsibility. Within five (5) Business Days of such request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting. If Applicant wants to have a meeting, it must be completed within thirty (30) Calendar Days after issuance of the final DGS Phase II Interconnection Study report, unless mutually agreed upon by the Distribution Provider and Applicant. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

xi) DGS Phase II Interconnection Study Results Meeting (Cont'd.)

Distribution Provider shall tender a draft Generator Interconnection Agreement pursuant to F.3.e.i. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

xii) Timing of the DGS Phase II Interconnection Study

At any time Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase II Interconnection Study, Distribution Provider shall notify each Applicant in the Distribution Study Group in writing as to the status of the DGS Phase II Interconnection Study and provide an estimated completion date with an explanation of the reasons why additional time is required.

xiii) Second and Third Postings of Interconnection Financial Security

Each Applicant in a Distribution Study Group will post its second and third posting of Interconnection Financial Security as set forth in Sections F.4.c and F.4.d based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final DGS Phase II Interconnection Study, or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived in accordance with Section F.3.c.ix. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

xiv) Withdrawal and Reallocation of Cost to Interconnection Requests in a Distribution Study Group

If at any time, an Interconnection Request is withdrawn or a Generator Interconnection Agreement is terminated, the upgrades identified in the Interconnection Studies will be revaluated to determine if they are still needed. If the Distribution Provider determines that a restudy is needed, it will be conducted pursuant to Section F.3.c.xv. Any costs, identified in the Distribution Group Study not already funded by Interconnection Financial Security that has been posted by the withdrawing Applicant, will be the responsibility of remaining Applicants in the Distribution Group and will be reallocated in accordance with E.4.e.

xv) Restudy

If a restudy is required following the issuance of the final DGS Phase II Interconnection Study, or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived, due to a project withdrawal, Distribution Provider shall notify the remaining Applicant(s) in writing.

The restudy report shall be completed and provided to each Applicant remaining in the Distribution Group within sixty (60) Business Days of the withdrawal of the Interconnection Request that caused the restudy. The Applicants remaining in the Distribution Group will be responsible for the cost of the restudy. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

xvi) Automatic Timing Extension

If during any six month period, the number of Interconnection Requests exceeds by fifty (50) percent the number of active Interconnection Request in the preceding six month period, the study timelines for Distribution Group Studies begun during the next twelve (12) months will automatically increase as follows. The time to complete the DGS Phase I Interconnection Study pursuant to Section F.3.c.iv will increase from sixty (60) Business Days to one hundred twenty (120) Business Days. The time to complete the DGS Phase II Interconnection Study pursuant to Section F.3.c.x will increase from sixty (60) Business Days to one hundred twenty (120) Business Days. The time to tender a draft Generator Interconnection Agreement pursuant to F.3.e.i will increase from thirty (30) Calendar Days to forty-five (45) Calendar Days. Distribution Provider will notify Applicants in the Distribution Study Group in writing after commencement of DGS Phase I Interconnection Study of the extension. (L)

d. WDT Transmission Cluster Study Process (L)/(T)

If Applicant's Interconnection Request fails Screen Q or elects to be (L)
studied under the WDT Transmission Cluster Study Process, (L)/(T)
Applicant shall have the option of applying for Interconnection under (L)
the WDT Transmission Cluster Study Process of the Wholesale (L)/(T)
Distribution Tariff in accordance with its provisions. If Applicant fails (L)
Screen Q, Applicant's Interconnection Request shall be deemed
withdrawn under this Rule regardless of whether Applicant applies for
Interconnection under the WDT. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 120
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.) (L)

d. WDT Transmission Cluster Study Process (Cont'd.) (L)/(T)

An Applicant that chooses to apply under the WDT Transmission Cluster Study Process must file a valid Interconnection Request and post the applicable study deposit as set out in Distribution Provider's WDT. If Applicant chooses to apply under the WDT, then Applicant's Interconnection Request will be subject to the terms of Distribution Provider's WDT applicable to the WDT Transmission Cluster Study Process, including those provisions establishing cost responsibility. Upon completion of the WDT Transmission Cluster Study Process under the WDT, Applicants that are eligible for a State-jurisdictional Interconnection can, in accordance with the WDT, either execute the applicable Commission-approved Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities or the WDT Generator Interconnection Agreement. Such Commission-approved Generator Interconnection Agreement for Exporting Generating Facilities will include the cost responsibility established in the WDT Transmission Cluster Study. (L)/(T)

If and when an Applicant submits a new interconnection request under the WDT, Applicant is under the jurisdiction of FERC. On the date the applicable Commission-approved Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities is executed by Applicant, or Producer where those are different entities, and Distribution Provider, jurisdiction over the Interconnection reverts back to the Commission. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement

i) Tender

The Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, within thirty (30) Calendar Days of the following:

1) Agreement by the Distribution Provider and Applicant to waive the Interconnection Facilities Study in accordance with Section F.3.b.vii,

2) Issuance of the final Interconnection Facilities Study report (or results meeting, if held) to Applicant,

3) Agreement by the Distribution Provider and all Applicants included in a DGS Phase I Interconnection Study to waive the DGS Phase II Interconnection Study in accordance with Section F.3.c.ix,

4) Issuance of the final DGS Phase II Interconnection Study report to each Applicant in the Distribution Study Group (or results meeting, if held).

Applicant(s) shall provide written comments, or notification of no comments, to the draft appendices within thirty (30) Calendar Days.

ii) Negotiation

Notwithstanding Section F.3.e.i, at the request of Applicant, Distribution Provider shall begin negotiations with Applicant concerning the appendices to the Generator Interconnection Agreement at any time after Distribution Provider provides Applicant with the final Interconnection Facilities Study report (or (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement (Cont'd.)

ii) Negotiation (Cont'd.)

final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) or final DGS Phase II Interconnection Study report (or the final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process. Distribution Provider and Applicant shall negotiate concerning any disputed provisions of the appendices to the draft Generator Interconnection Agreement for not more than ninety (90) Calendar Days after Distribution Provider provides Applicant with the final DGS Phase II Interconnection Study report (or the final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) in the case of the Independent Study Process. Producers whose Interconnection Requests were studied in a Distribution Group Study Process will be required to fund upgrades triggered by more than one Interconnection Request in accordance with a payment schedule that allows such upgrades to be completed in time for the earliest Commercial Operation Date of such Interconnection requests. Producer is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution System and Transmission System as set forth in Section E.4.

If Applicant determines that negotiations are at an impasse, it may request termination of the negotiations at any time after tender of the draft Generator Interconnection Agreement pursuant to Section F.3.e.i and initiate Dispute Resolution procedures pursuant to Section K. Unless otherwise agreed by the Parties, if Applicant or Producer, where those are different entities, has not executed the Generator Interconnection Agreement, or initiated Dispute Resolution procedures pursuant to Section K, within ninety (90) Calendar Days after issuance of the final (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement (Cont'd.)

ii) Negotiation (Cont'd.)

DGS Phase II Interconnection Facilities Study report (or the final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) in the case of the Independent Study Process, it shall be deemed to have withdrawn its Interconnection Request.

iii) Extensions of Commercial Operation Date

Extensions of the Commercial Operation Date will be agreed upon in the executed Generator Interconnection Agreement. Reasonable Commercial Operation Dates will be discussed at the DGS Phase II Interconnection Study results meeting, or the DGS Phase I Interconnection Study results meeting if the DGS Phase II Interconnection Study results meeting is waived, in the case of the Distribution Group Study Process, the Interconnection Facilities Study results meeting, or the Interconnection System Impact Study results meeting if the Interconnection Facilities Study is waived in the case of the Independent Study Process. A request for an extension of the Commercial Operation Date after the Generator Interconnection Agreement is executed will be agreed to provided that, the Producer is still responsible for funding any Distribution Upgrades and Network Upgrades as specified in the Generator Interconnection Agreement and under the same payment schedule agreed upon in the Generator Interconnection Agreement. This provision has no impact on any power purchase agreement terms. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

f. Engineering & Procurement (E&P) Agreement

Prior to executing a Generator Interconnection Agreement, in order to advance the implementation of its interconnection, an Applicant may request, and Distribution Provider shall offer, an E&P Agreement that authorizes Distribution Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the interconnection. However, Distribution Provider shall not be obligated to offer an E&P Agreement if Applicant is in Dispute Resolution as a result of an allegation that Applicant has failed to meet any milestones or comply with any prerequisites specified in other parts of this Rule. The E&P Agreement is an optional procedure. The E&P Agreement shall provide for Applicant to pay the cost of all activities authorized by Applicant and to make advance payments or provide other satisfactory security for such costs.

Applicant shall pay the cost of such authorized activities and any cancellation costs for equipment that is already ordered for its interconnection, which cannot be mitigated as hereafter described, whether or not such items or equipment later become unnecessary. If Applicant withdraws its Interconnection Request, or either Applicant or Distribution Provider terminates the E&P Agreement, to the extent the equipment ordered can be canceled under reasonable terms, Applicant shall be obligated to pay the associated cancellation costs. To the extent that the equipment cannot be reasonably canceled, Distribution Provider may elect: (i) to take title to the equipment, in which event Distribution Provider shall refund Applicant any amounts paid by Applicant for such equipment and shall pay the cost of delivery of such equipment, or (ii) to transfer title to and deliver such equipment to Applicant, in which event Applicant shall pay any unpaid balance and cost of delivery of such equipment.

4. INTERCONNECTION FINANCIAL SECURITY

a. Types of Interconnection Financial Security

The Interconnection Financial Security posted by an Applicant may be any combination of the following types of Interconnection Financial Security provided in favor of Distribution Provider: (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

a. Types of Interconnection Financial Security (Cont'd.)

i) an irrevocable and unconditional letter of credit issued by a bank or financial institution that has a credit rating of A or better by Standard and Poor's or A2 or better by Moody's;

ii) an unconditional and irrevocable guaranty issued by a company has a credit rating of A or better by Standard and Poor's or A2 or better by Moody's;

iii) a cash deposit standing to the credit of Distribution Provider and in an interest-bearing escrow account maintained at a bank or financial institution that is reasonably acceptable to Distribution Provider;

Interconnection Financial Security instruments as listed above shall be in such form as Distribution Provider may reasonably require from time to time by notice to Applicants, or in such other form as has been evaluated and approved as reasonably acceptable by Distribution Provider.

Distribution Provider shall require the use of standardized forms of Interconnection Financial Security to the greatest extent possible. If at any time the guarantor of the Interconnection Financial Security fails to maintain the credit rating required by this Section F.4.a, Applicant shall provide to Distribution Provider replacement Interconnection Financial Security meeting the requirements of this Section F.4.a within five (5) Business Days of the change in credit rating.

Interest on a cash deposit standing to the credit of Distribution Provider in an interest-bearing escrow account under subpart (iii) of this Section F.4.a will accrue to Applicant's benefit.

b. Initial Posting of Interconnection Financial Security

On or before sixty (60) Calendar Days after publication of either the final Interconnection System Impact Study report, or the final DGS Phase I Interconnection Study report, Applicant must post, with notice to Distribution Provider, two separate Interconnection Financial Security instruments. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

b. Initial Posting of Interconnection Financial Security (Cont'd.)

First, Applicant proposing to interconnect a Large Generating Facility shall post an Interconnection Financial Security instrument in an amount equal to the lesser of (i) fifteen percent (15%) of the total cost responsibility assigned to Applicant in the final Interconnection System Impact Study or final DGS Phase I Interconnection Study in the case of the Distribution Group Study Process for Network Upgrades, (ii) $20,000 per MW of electrical output of the Large Generating Facility or the amount of megawatt increase in the generating capacity of each existing Generating Facility as listed by Applicant in its Interconnection Request, including any requested modifications thereto, or (iii) $7,500,000.

Applicant proposing to interconnect a Small Generating Facility shall post an Interconnection Financial Security instrument in an amount equal to the lesser of (i) fifteen percent (15%) of the total cost responsibility assigned to Applicant in the final Interconnection System Impact Study or final DGS Phase I Interconnection Study in the case of the Distribution Group Study Process for Network Upgrades, or (ii) $20,000 per MW of electrical output of the Small Generating Facility or the amount of megawatt increase in the generating capacity of each existing Generating Facility as listed by Applicant in its Interconnection Request.

Second, Applicant shall also post an Interconnection Financial Security instrument in the amount of twenty percent (20%) of the total estimated cost responsibility assigned to Applicant in the final Interconnection System Impact Study or final DGS Phase I Interconnection Study in the case of the Distribution Group Study Process for Distribution Provider's Interconnection Facilities and Distribution Upgrades.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.b shall result in the Interconnection Request being deemed withdrawn subject to Section F.6.

If required by Distribution Provider, Applicant shall provide Distribution Provider with written notice that it has posted the required Interconnection Financial Security no later than the applicable final day for posting. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

c. Second Posting of Interconnection Financial Security

On or before one hundred twenty (120) Calendar Days after issuance of the final DGS Phase II Interconnection Study report (or final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) or final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived in the case of the Independent Study Process), Applicant shall post two separate Interconnection Financial Security instruments.

First, Applicant proposing to interconnect a Large Generating Facility shall post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Network Upgrades equals the lesser of (i) $15 million, or (ii) thirty percent (30%) of the total cost responsibility assigned to Applicant for Network Upgrades in either the final Interconnection System Impact Study (final DGS Phase I Interconnection Study in the case on the Distribution Group Study Process) or final Interconnection Facilities Study (final DGS Phase II Interconnection Study in the case of the Distribution Group Study Process), whichever is lower.

Applicant proposing to interconnect a Small Generating Facility shall post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Network Upgrades equals the lesser of (i) $1 million, or (ii) thirty percent (30%) of the total cost responsibility assigned to Applicant for Network Upgrades in either the final Interconnection System Impact Study or final Interconnection Facilities Study (final DGS Phase I or final DGS Phase II Interconnection Studies, respectively, for the Distribution Group Study Process), whichever is lower.

Second, Applicant shall also post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades equals thirty percent (30%) of the total cost responsibility assigned to Applicant in the final DGS Phase II Interconnection Facilities Study (or final DGS Phase I Interconnection Study if the DGS Phase II Interconnection study is waived) in the case (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

c. Second Posting of Interconnection Financial Security (Cont'd.)

of the Distribution Group Study Process, or final Interconnection Facilities Study (or final Interconnection System Impact Study if the Interconnection Facilities Study is waived) in the case of the Independent Study Process, for Distribution Provider's Interconnection Facilities and Distribution Upgrades.

If the start date for Construction Activities of Network Upgrades, Distribution Provider's Interconnection Facilities and Distribution Upgrades on behalf of Applicant is prior to one hundred twenty (120) Calendar Days after issuance of the final DGS Phase II Interconnection Facilities Study report (or final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived), in the case of the Distribution Group Study Process or final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) in the case of the Independent Study Process, that start date must be set forth in Applicant's Generator Interconnection Agreement and Applicant shall make its second posting of Interconnection Financial Security pursuant to Section F.4.d rather than Section F.4.c.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.c shall result in the Interconnection Request being deemed withdrawn and subject to Section F.6 or, if applicable, shall constitute grounds for termination of the Generator Interconnection Agreement.

d. Third Posting of Interconnection Financial Security.

On or before the start of Construction Activities for Network Upgrades or Distribution Provider's Interconnection Facilities or Distribution Upgrades on behalf of Applicant, whichever is earlier, Applicant shall modify the two separate Interconnection Financial Security instruments posted as follows.

With respect to the Interconnection Financial Security instrument for Network Upgrades, Applicant shall modify this instrument so that it equals one hundred percent (100%) of the total cost responsibility (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

d. Third Posting of Interconnection Financial Security. (Cont'd.)

assigned to Applicant for Network Upgrades in the final DGS Phase II Interconnection Study (or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or final Interconnection Facilities Study (or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived) in the case of the Independent Study Process.

With respect to the Interconnection Financial Security instrument for Distribution Provider's Interconnection Facilities or Distribution Upgrades, Applicant shall modify this instrument so that it equals one hundred percent (100%) of the total cost responsibility assigned to Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades in the final DGS Phase II Interconnection Study (or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or final Interconnection Facilities Study (or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived) in the case of the Independent Study Process.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.d shall constitute grounds for termination of the Generator Interconnection Agreement.

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process.

Except as set forth in Section F.4.e.i, withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall allow Distribution Provider to liquidate the Interconnection Financial Security, or balance thereof, posted by Applicant for Network Upgrades at the time of withdrawal. To the extent the amount of the liquidated Interconnection Financial Security plus capital, if any, separately provided by Applicant to satisfy its obligation to finance Network Upgrades in accordance with Section E.4 exceeds the total (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

cost responsibility for Network Upgrades assigned to Applicant by the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived, Distribution Provider shall remit to Applicant the excess amount.

Withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall result in the release to Applicant of any Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades, except with respect to any amounts necessary to pay for costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades and for which Distribution Provider has not been reimbursed.

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement.

A portion of the Interconnection Financial Security shall be released to Applicant, consistent with Section F.4.e.ii, if the withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement occurs for any of the following reasons:

(1) Failure to Secure a Power Purchase Agreement.

At the time of withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement, Applicant demonstrates to Distribution Provider that it has failed to secure an acceptable power purchase agreement for the energy or capacity of the Generating Facility after a good faith effort to do so. A good faith effort can be established by demonstrating participation in a competitive solicitation (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement. (Cont'd.)

(1) Failure to Secure a Power Purchase Agreement. (Cont'd.)

process or bilateral negotiations with an entity other than an Affiliate that progressed, at minimum, to the mutual exchange by all counter-parties of proposed term sheets.

(2) Failure to Secure a Necessary Permit.

At the time of withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement, Applicant demonstrates to Distribution Provider that it has received a final denial from the primary issuing Governmental Authority of any permit or other authorization necessary for the construction or operation of the Generating Facility.

(3) Increase in the Cost of Distribution Provider's Interconnection Facilities or Distribution Upgrades.

Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement based on an increase of: (i) more than 30% or $300,000, whichever is greater, in the estimated cost of Distribution Provider's Interconnection Facilities; or (ii) more than 30% or $300,000, whichever is greater, in the estimated cost of Distribution Upgrades allocated to Applicant from the Interconnection System Impact Study to the Interconnection Facilities Study. This Section F.4.e.i.(3) shall not apply if the cause of the cost increase under (i) or (ii) above is the result of a change requested by Applicant pursuant to Section F.3.b.v. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement. (Cont'd.)

(4) Material Change in Applicant's Interconnection Facilities Created by Distribution Provider's Change in the Point of Interconnection.

Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement based on a material change from the Interconnection System Impact Study in the Point of Interconnection for the Generating Facility mandated by Distribution Provider and included in the final Interconnection Facilities Study. A material change in the Point of Interconnection shall be where the Point of Interconnection has moved to (i) a different substation, (ii) a different line on a different right of way, or (iii) a materially different location than previously identified on the same line.

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades.

(1) Up to One Hundred Twenty (120) Calendar Days After the Final Interconnection Facilities Study Report (or Final Interconnection System Impact Study Report if the Interconnection Facilities Study is Waived).

If, at any time after the initial posting of the Interconnection Financial Security for Network Upgrades under Section F.4.b and on or before one hundred twenty (120) Calendar Days (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades (Cont'd.)

(1) Up to One Hundred Twenty (120) Calendar Days After the Final Interconnection Facilities Study Report (or Final Interconnection System Impact Study Report if the Interconnection Facilities Study is Waived). (Cont'd.)

after the date of issuance of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement, as applicable, in accordance with Section F.4.e.i, Distribution Provider shall liquidate the Interconnection Financial Security for Network Upgrades under Section F.4.b and reimburse Applicant in an amount of (i) any posted amount less fifty percent (50%) of the value of the posted Interconnection Financial Security for Network Upgrades (with a maximum of $10,000 per requested and approved MW value of the Generating Facility Capacity at the time of withdrawal being retained by Distribution Provider), or (ii) if the Interconnection Financial Security has been drawn down to finance Pre-Construction Activities for Network Upgrades on behalf of Applicant, the lesser of the remaining balance of the Interconnection Financial Security or the amount calculated under (i) above. If Applicant has separately provided capital apart from the Interconnection Financial Security to finance Pre-Construction Activities for Network Upgrades, Distribution Provider will credit the capital provided as if drawn from the Interconnection Financial Security and apply (ii) above. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades. (Cont'd.)

(2) Between One Hundred Twenty-One (121) Calendar Days and After Final Interconnection Facilities Study Report and the Commencement of Construction Activities.

If, at any time between one hundred twenty-one (121) Calendar Days and after the date of issuance of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), and the commencement of Construction Activities for either Network Upgrades or Distribution Provider's Interconnection Facilities or Distribution Upgrades, Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement, as applicable, in accordance with Section F.4.e.i, Distribution Provider shall liquidate the Interconnection Financial Security for Network Upgrades under Section F.4.c and reimburse Applicant in an amount of (i) any posted amounts less fifty percent (50%) of the value of the posted Interconnection Financial Security for Network Upgrades (with a maximum of $20,000 per requested and approved MW value of the Generating Facility Capacity at the time of withdrawal being retained by Distribution Provider), or, (ii) if the Interconnection Financial Security has been drawn down to finance Pre-Construction Activities for Network Upgrades on behalf of Applicant, the lesser of the remaining balance of the Interconnection Financial Security or the amount calculated under (i) above. If Applicant has separately provided capital apart from the Interconnection Financial Security to finance Pre-Construction Activities for Network Upgrades, Distribution Provider will credit the capital provided as if drawn from the Interconnection Financial Security and apply (ii) above. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades. (Cont'd.)

(3) After Commencement of Construction Activities.

Once Construction Activities on Network Upgrades on behalf of Applicant commence, any withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement by Applicant will be treated in accordance with this Section F.4.e.

(4) Notification and Accounting by Distribution Provider.

Distribution Provider will notify Applicant within three (3) Business Days of liquidating any Interconnection Financial Security. Within seventy-five (75) Calendar Days of any liquidating event, Distribution Provider will provide Applicant with an accounting of the disposition of the proceeds of the liquidated Interconnection Financial Security and all proceeds not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant in accordance with this Section F.4.e shall be applied as directed by the Commission. Where an Applicant with remaining proceeds from Interconnection Financial Security cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

f. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Distribution Group Study Process.

Withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall allow Distribution Provider to liquidate the Interconnection Financial Security, or balance thereof, posted by Applicant for Network Upgrades or Distribution Upgrades at the time of withdrawal. To the extent the amount of the liquidated Interconnection Financial Security plus capital, if any, separately provided by Applicant to satisfy its obligation to finance Network Upgrades or Distribution Upgrades in accordance with Section E.4 exceeds the total cost responsibility for Network Upgrades or Distribution Upgrades assigned to Applicant by the final DGS Phase II Interconnection study (or final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived), Distribution Provider shall remit to Applicant the excess amount.

Withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall result in the release to Applicant of any Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities, except with respect to any amounts necessary to pay for costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant for Distribution Provider's Interconnection Facilities and for which Distribution Provider has not been reimbursed.

i) Notification and Accounting by Distribution Provider.

Distribution Provider will notify Applicant within three (3) Business Days of liquidating any Interconnection Financial Security. Within seventy-five (75) Calendar Days of any liquidating event, Distribution Provider will provide Applicant with an accounting of the disposition of the proceeds of the liquidated Interconnection Financial Security and all proceeds not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant in accordance with this Section F.4.f. Where an Applicant with remaining proceeds from Interconnection Financial Security cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

5. COMMISSIONING TESTING AND PARALLEL OPERATION

a. Commissioning Testing

Producer Arranges for and Completes Commissioning Testing of Generating Facility and Producer's Interconnection Facilities: Producer is responsible for testing new Generating Facilities and associated Interconnection Facilities according to Section L.5 to ensure compliance with the safety and reliability provisions of this Rule prior to being operated in parallel with Distribution Provider's Distribution or Transmission System. For non-Certified Equipment, Producer shall develop a written testing plan to be submitted to Distribution Provider for its review and acceptance. Alternatively, Producer and Distribution Provider may agree to have Distribution Provider conduct the required testing at Producer's expense. Where applicable, the test plan shall include the installation test procedures published by the manufacturer of the Generating Facility or Interconnection Facilities. Facility testing shall be conducted at a mutually agreeable time, and depending on who conducts the test, Distribution Provider or Producer shall be given the opportunity to witness the tests.

b. Parallel Operation or Momentary Parallel Operation

Producer shall not commence Parallel Operation of its Generating Facility with Distribution Provider's system unless it has received Distribution Provider's express written permission to do so. Distribution Provider shall authorize Producer's Generating Facility for Parallel Operation or Momentary Parallel Operation with Distribution Provider's Distribution or Transmission System, in writing, within five (5) Business Days of satisfactory compliance with the terms of all applicable agreements. Compliance may include, but not be limited to, provision of any required documentation and satisfactorily completing any required inspections or tests as described herein or in the agreements formed between Producer and Distribution Provider. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

6. WITHDRAWAL

Applicant may withdraw its Interconnection Request at any time by written notice of such withdrawal to Distribution Provider. In addition, after receipt of the Interconnection Request, if Applicant fails to adhere to the requirements and timelines of this tariff, except as provided in Section K (Disputes), Distribution Provider shall deem the Interconnection Request to be withdrawn and shall provide written notice to Applicant of the deemed withdrawal within five (5) Business Days and an explanation of the reasons for such deemed withdrawal. Upon receipt of such written notice, Applicant shall have five (5) Business Days in which to either respond with information or action that either cures the deficiency or supports its position that the deemed withdrawal was erroneous and notifies Distribution Provider of its intent to pursue Dispute Resolution. If Applicant cures the deficiency or supports its position that the deemed withdrawal was erroneous, Applicant shall not lose its Queue Position established pursuant to Section E.5.

Withdrawal shall result in the removal of the Interconnection Request from the Interconnection Study process. If Applicant disputes the withdrawal and removal from the Interconnection Study process and has elected to pursue Dispute Resolution as set forth in Section K, Applicant's Interconnection Request is not required to be considered in any ongoing Interconnection Study during the Dispute Resolution process.

In the event of such withdrawal, Distribution Provider, subject to the provisions in Section D.7 and Sections E.3.a, as applicable, shall provide, at Applicant's request, all information that Distribution Provider developed for any completed study conducted up to the date of withdrawal of the Interconnection Request. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION

Interconnection Requests for Generating Facilities evaluated under the Fast Track Process or Independent Study Process may qualify for the Cost Envelope Option described in this Section F.7 provided the requirements set forth in subsection (a) below are met. As further described below, under the Cost Envelope Option, Distribution Provider will prepare a Cost Envelope Estimate. The Cost Envelope Estimate will be based on the Applicant's estimated costs to interconnect a Generating Faciliy and will identify which elements of the estimated costs are subject to the Cost Envelope, and which are excluded from the Cost Envelope. Should an Applicant decide to proceed to a Generator Interconnection Agreement following receipt of the Cost Envelope Estimate in accordance with Section F.2.e for the Fast Track Process, or Section F.3.e.i for the Independent Study Process, the Generator Interconnection Agreement shall include cost responsibility for required upgrades based upon the Cost Envelope Estimate.

a. Eligibility for Cost Envelope Option

i) Eligibility of Interconnection Requests Under the Fast Track Process

Interconnection Requests processed under the Fast Track Process are eligible for the Cost Envelope Option if all of the following criteria are met:

(1) Applicant selects the Cost Envelope Option in its Interconnection Request, or during any applicable results meeting if mutually agreed upon by Distribution Provider and Applicant, and provides the additional required information specified therein for the Cost Envelope Option; and,

(2) The Interconnection Request passes the Fast Track Process evaluation pursuant to Section F.2.; and, (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

a. Eligibility for Cost Envelope Option (Cont'd.)

i) Eligibility of Interconnection Requests Under the Fast Track Process (Cont'd.)

(3) Applicant provides Distribution Provider the Cost Envelope Option deposit of $2,500 within ten (10) Business Days following receipt of the Distribution Provider's non-binding cost estimate provided in accordance with Sections F.2.a, F.2.b, F.2.c.iii, or F.2.d, as applicable. The Cost Envelope Option deposit of $2,500 is subject to adjustment upon mutual agreement of the Distribution Provider and Applicant.

In the event it is determined under the Initial Review or Supplemental Review that i) there are no Distribution Provider Interconnection Facilities and/or Distribution Upgrades required for interconnection of the Generating Facility, or ii) there are no Distribution Provider's Interconnection Facilities and/or Distribution Upgrades required for interconnection of the Generating Facility for which Applicant bears cost responsibility, Applicant's election of the Cost Envelope Option shall be considered not applicable and shall be deemed withdrawn. In such event, the Interconnection Request shall continue to be processed in accordance with the Fast Track Process.

ii) Eligibility of Interconnection Requests Under The Independent Study Process

(1) Applicant selects the Cost Envelope Option in its Interconnection Request and provides the additional required information specified therein for the Cost Envelope Option; and,

(2) The Interconnection Request qualifies for evaluation under the Independent Study Process pursuant to Section F.3.a; and, (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

a. Eligibility for Cost Envelope Option (Cont'd.)

ii) Eligibility of Interconnection Requests Under The Independent Study Process (Cont'd.)

(3) An Interconnection System Impact Study and Interconnection Facilities Study are completed for the Interconnection Request pursuant to Sections F.3.b.ii and F.3.b.viii, respectively; and,

(4) In the case of a NEM Generating Facility or Solar ≤1 MW Generating Facility, Applicant provides Distribution Provider the Cost Envelope Option deposit of $2,500 within the timeframe set forth in Section F.3.b.vi. The Cost Envelope Option deposit of $2,500 is subject to adjustment upon mutual agreement of the Distribution Provider and Applicant.

b. Cost Responsibility under the Cost Envelope Option

i) Cost Responsibility for Facilities Subject to Cost Envelope

Applicant shall be responsible for the actual cost of the portion of interconnection facilities and/or distribution upgrades subject to the cost envelope within the range of plus or minus twenty-five (25) percent of the estimated cost of such facilities identified in the cost envelope estimate. Applicant's cost responsibility for that portion of the interconnection facilities and/or distribution upgrades subject to the cost envelope shall be capped at twentyfive (25) percent above the estimated cost, and applicant shall not be responsible for the portion of the actual cost of such interconnection facilities and/or distribution upgrades that exceeds twenty-five (25) percent of the estimate. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

b. Cost Responsibility under the Cost Envelope Option (Cont'd.)

i) Cost Responsibility for Facilities Subject to Cost Envelope (Cont'd.)

Correspondingly, applicant's cost responsibility for the portion of the interconnection facilities and/or distribution upgrades subject to the cost envelope shall not be less than the amount determined as twenty-five (25) percent below the estimated cost, and any portion of the actual cost of such interconnection facilities and/or distribution upgrades that is below twenty-five (25) percent of the estimate shall not be refundable to applicant.

ii) Cost Responsibility for Facilities Not Subject to Cost Envelope

Applicant shall be responsible for the actual cost of the portion of Interconnection Facilities and/or Distribution Upgrades that are not subject to the Cost Envelope and the actual cost of Network Upgrades in accordance with Section F.7.e.

c. Timing of Applicant's Selection of Cost Envelope Option and Payment of Deposit

i) For Interconnection Requests under the Fast Track Process, Applicant must select the Cost Envelope Option in its Interconnection Request to be eligible for the Cost Envelope Option, in accordance with Section F.7.a.i. In addition, for Interconnection Requests that pass the Fast Track Process, Applicant must provide the Distribution Provider a $2,500 Cost Envelope Option deposit within ten (10) Business Days of receipt of the Distribution Provider's non-binding cost estimate for the (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

c. Timing of Applicant's Selection of Cost Envelope Option and Payment of Deposit (Cont'd.)

i) Interconnection Facilities and/or Distribution Upgrades required for interconnection. If Applicant fails to provide the Cost Envelope Option deposit within ten (10) Business Days of receipt of the Distribution Provider's non-binding cost estimate for the Interconnection Facilities and/or Distribution Upgrades required for interconnection, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option. However, if the Applicant fails to provide the Cost Envelope Option deposit within the required timeframe, a Generator Interconnection Agreement may be requested by Applicant in accordance with Section F.2.e, and such Generator Interconnection Agreement will reflect the non-binding cost estimate for the Distribution Provider's required Interconnection Facilities and/or Distribution Upgrades provided during the Initial or Supplemental Review, and Applicant shall be responsible for the actual cost of such upgrades.

ii) For Interconnection Requests under the Independent Study Process, Applicant must select the Cost Envelope Option in its Interconnection Request to be eligible for the Cost Envelope Option, in accordance with Section F.7.a.ii. In the case of a NEM Generating Facility or Solar ≤1 MW Generating Facility, Applicant must also provide Distribution Provider the Cost Envelope Option deposit of $2,500 following completion of the Interconnection System Impact Study within the timeframe set forth in Section F.3.b.vi. The Cost Envelope Option deposit of $2,500 is subject to adjustment upon mutual agreement of the Distribution Provider and Applicant. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

c. Timing of Applicant's Selection of Cost Envelope Option and Payment of Deposit (Cont'd.)

ii) An Applicant must withdraw its request for the Cost Envelope Option following the Distribution Provider's completion of the Interconnection System Impact Study in the event the Distribution Provider and Applicant agree to waive the Interconnection Facilities Study in accordance with Section F.3.b.vii, by so indicating on Attachment B of the Detailed Study Agreement, or for NEM Generating Facilities by providing Distribution Provider written notice of such withdrawal prior to commencement of the Interconnection Facilities Study in accordance with Section F.3.b.vi.

d. Distribution Provider's Preparation of the Cost Envelope Estimate

For Interconnection Requests evaluated under the Fast Track Process, Distribution Provider shall complete and issue to Applicant the Cost Envelope Estimate within twenty (20) Business Days following Distribution Provider's receipt of the Cost Envelope Option deposit required pursuant to Section F.7.a.i.3. For Interconnection Requests evaluated under the Independent Study Process, the Cost Envelope Estimate will be developed as part of the Interconnection Facilities Study and will be included in the Interconnection Facilities Study report in accordance with Section F.3.b.viii.

Applicant shall be responsible for the actual cost of development of the Cost Envelope Estimate. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 145
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

d. Distribution Provider's Preparation of the Cost Envelope Estimate (Cont'd.)

If full payment for the required Interconnection Facilities and/or Distribution Upgrades identified in the Cost Envelope Estimate has not been paid by Applicant to the Distribution Provider within two hundred ten (210) Calendar Days from the date Distribution Provider provides the Cost Envelope Estimate to Applicant, the Cost Envelope Estimate shall be subject to re-evaluation and adjustment by the Distribution Provider at Applicant's expense.

e. Cost Elements Not Subject to Cost Envelope

Any and all costs of required environmental studies, environmental mitigation, permits, and/or easements related to the construction and installation of Distribution Provider's Interconnection Facilities and/or Distribution Upgrades shall not be subject to the Cost Envelope. Such costs shall be the responsibility of Applicant based on the actual cost incurred by the Distribution Provider.

Any and all costs of required Network Upgrades shall not be subject to the Cost Envelope. Such costs shall be the responsibility of Applicant based on the actual cost incurred by the Distribution Provider. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

e. Cost Elements Not Subject to Cost Envelope (Cont'd.)

The cost of any Distribution Provider's Interconnection Facilities and/or Distribution Upgrades triggered by one or more earlier queued Interconnection Requests that are also required for interconnection of a later-queued Generating Facility under the Cost Envelope Option shall not be subject to the Cost Envelope. In the event one or more of the earlier-queued projects withdraws (or is delayed to the extent the upgrade will not be completed in time to meet the later-queued Generating Facility's requested In-Service Date), all, or a portion, of Distribution Provider's Interconnection Facilities and/or Distribution Upgrades may become the responsibility of the later-queued Generating Facility. Upon such an occurrence, the Generator Interconnection Agreement shall be amended to reflect the Applicant's responsibility for such Distribution Provider's Interconnection Facilities and/or Distribution Upgrades based on actual costs unless Applicant requests in writing, within ten (10) Business Days of Applicant's receipt of Distribution Provider's nonbinding estimated cost of such required facilities, that it elects to include such facilities in the Cost Envelope. Within ten (10) Business Days of Applicant's request, Distribution Provider shall provide to Applicant an estimate of the cost required to update the Cost Envelope Estimate. Applicant shall notify Distribution Provider in writing within ten (10) Business Days of Applicant's receipt of Distribution Provider's estimate whether (i) Applicant elects to proceed with the update to the Cost Envelope Estimate at Applicant's expense, or (ii) that Applicant withdraws its request to include the additional facilities in the Cost Envelope. If Applicant elects to proceed with the update to the Cost Envelope Estimate, Distribution Provider shall complete the update within the sum of the time allowed for each step utilized by the Distribution Provider in preparation of the initial Cost Envelope Estimate pursuant to Section F.2 for Interconnection Requests evaluated under the Fast Track Process, or Section F.3.b for Interconnection Requests evaluated under the Independent Study Process, from receipt of payment of the estimated cost of the update. Should Applicant fail to so notify Distribution Provider within the ten (10) Business Day period, Applicant's request to include such additional facilities in the Cost Envelope shall be deemed withdrawn and such additional facilities shall be the responsibility of Applicant based on actual cost. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

f. Modifications

Under the Fast Track Process, modifications are not permitted to the Generating Facility, related equipment, Point of Interconnection or other interconnection parameters that would require a re-evaluation of the Initial Review or Supplemental Review. However, notwithstanding these restrictions, an Applicant may identify and suggest minor changes to the Interconnection Facilities (e.g., minor adjustments to physical location of switchgear or other equipment, adjustments to routing of conductor from the Point of Common Coupling to the Point of Interconnection, etc.) upon or near completion of Applicant's final design of its Interconnection Facilities. If an Applicant identifies such changes, Applicant shall notify Distribution Provider of the requested changes and if, in the reasonable judgement of Distribution Provider, a re-evaluation of the costs under the Cost Envelope Option is required, Distribution Provider will provide Applicant within ten (10) Business Days of receipt of Applicant's notice an estimate of the time required to re-evaluate the costs under the Cost Envelope Option and the estimated cost of such re-evaluation. Applicant may either (i) accept the additional time and cost to complete the re-evaluation, (ii) withdraw the proposed changes, or (iii) proceed with a new Interconnection Request for such changes. Applicant shall provide Distribution Provider written notice of its election within ten (10) Business Days following Applicant's receipt of Distribution Provider's estimated additional time and cost required for the re-evaluation. If Applicant elects to proceed with the re-evaluation of the costs under the Cost Envelope Option, Distribution Provider shall complete the reevaluation within twenty (20) Business Days from receipt of all required technical data related to the proposed changes and payment of the estimated cost of the reevaluation. Should Applicant fail to so notify Distribution Provider within such ten (10) Business Day period, Applicant's request to make the proposed changes shall be deemed withdrawn. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

f. Modifications

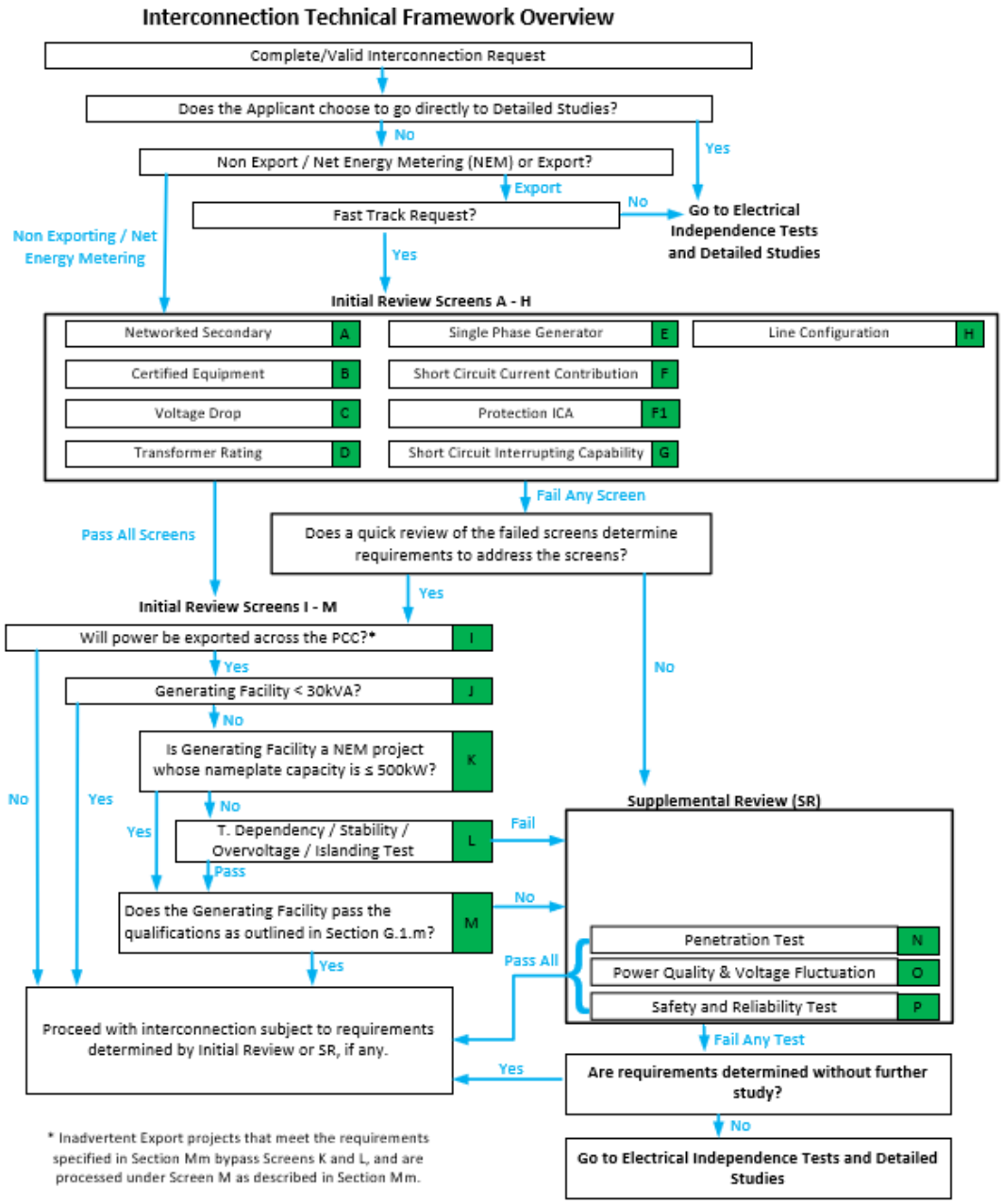
Under the Independent Study Process, any requested modifications, including required updates to costs under the Cost Envelope Option, shall be made in accordance with Section F.3.b.v. If Applicant elects to proceed with re-evaluation of the costs under the Cost Envelope Option pursuant to Section F.3.b.v, Distribution Provider shall complete the re-evaluation within the sum of the time allowed for each step utilized by the Distribution Provider for preparation of the initial Cost Envelope Estimate pursuant Section F.3.b from receipt of all required technical data related to the proposed changes and payment of the estimated cost of the re-evaluation.

g. Tender of the Generator Interconnection Agreement Under the Cost Envelope Option

Negotiation and execution of the Generator Interconnection Agreement shall be in accordance with Section F.2.e for Interconnection Requests evaluated under the Fast Track Process, and in accordance with Section F.3.e.ii for Interconnection Requests evaluated under the Independent Study Process. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (L)



(P)

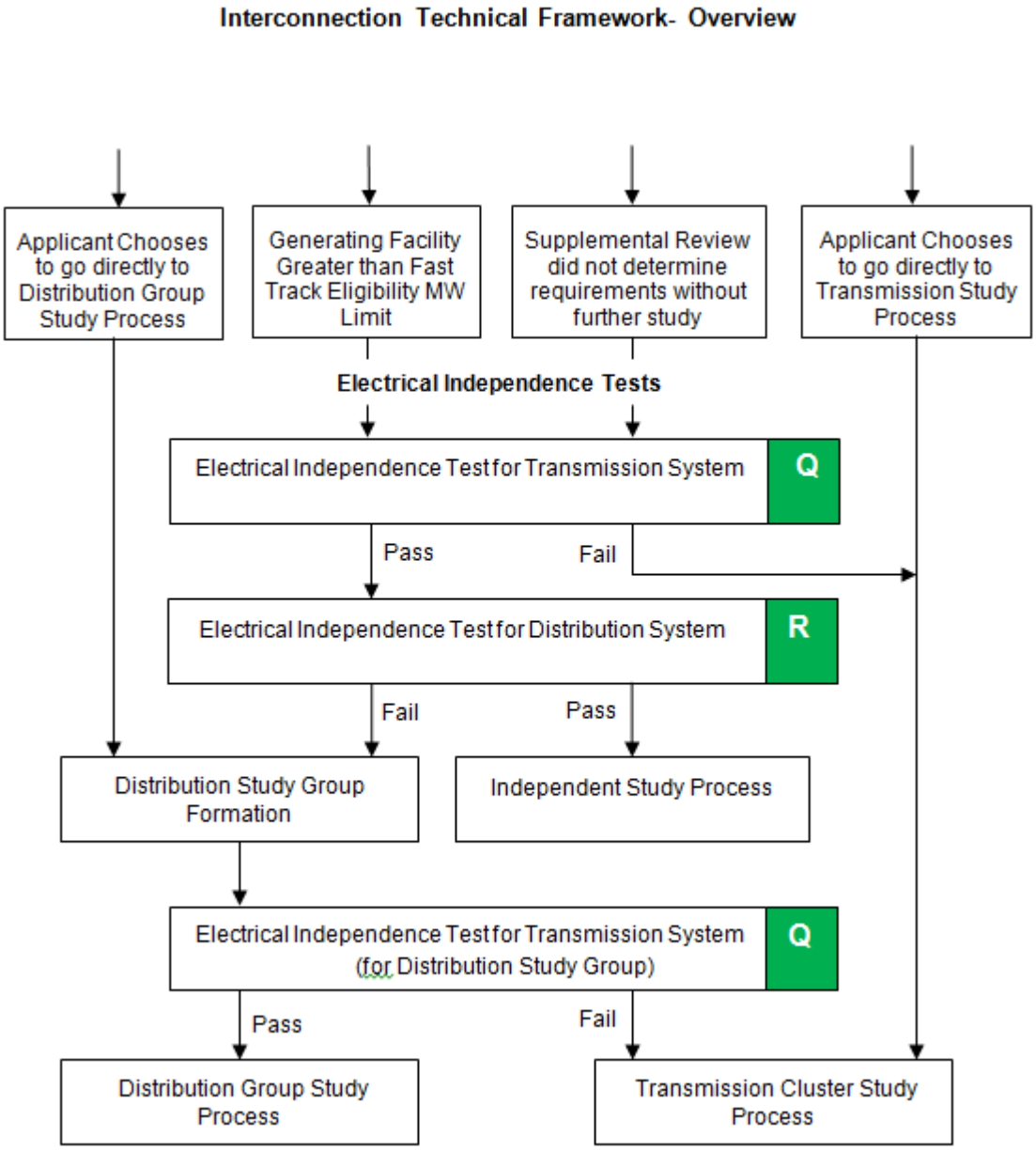
(P)
(L)

* Non-Export AC/DC Converter installations that have a complete and valid Interconnection Request will be eligible to bypass screens B through D and F through M. If Generating Facility meets the conditions in Screen I below (Section G.1.i), skip Screens K, L and M. (L)/(P)

(P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.)



(L)

(L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS

The Initial Review consists of Screens A through M. If any of the Screens A through H are not passed, a quick review of the failed Screen(s) may determine the requirements to address the failure(s). Otherwise, Supplemental Review is required.

Some examples of solutions that may be available to mitigate the impact of a failed Screen A through H are:

1. Replace an overloaded distribution transformer with a larger transformer.

2. Replace overloaded secondary conductors with larger conductor.

3. Determine if phase balancing on the transformer is possible with minimal review.

4. If possible without further study check if the Generating Facility will actually overstress equipment.

a. Screen A: Is the PCC on a Networked Secondary System?

- If Yes (fail), must go to Supplemental Review except if the Generating Facility is on a Spot Network and meets the following criteria. If the Generating Facility meets the following criteria, continue to Screen B pursuant to Section G.1.

  The proposed Generating Facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of 5 % of a Spot Network's maximum load or 50 kW. Under no condition shall the interconnection of a Generating Facility result in a backfeed of a Spot Network or cause unnecessary operation of any Spot Network protectors. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

a. Screen A: Is the PCC on a Networked Secondary System? (Cont'd.)

- If No (pass), continue to Screen B.

Significance: Special considerations must be given to Generating Facilities proposed to be installed on Networked Secondary Systems because of the design and operational aspects of network protectors. There are no such considerations for radial distribution systems.

b. Screen B: Is Certified Equipment used?

Does the Interconnection Request propose to use Certified Equipment as set out in Section L or does the equipment have interim Distribution Provider approval?

- If Yes (pass), continue to Screen C.
- If No (fail) continue to Screen C pursuant to Section G.1.

Interim approval allows Distribution Provider to treat equipment that has not completed this Rule's Certification requirements as having met the intent of this screen. Interim approval is granted at Distribution Provider's discretion on case by case bases, and approval for one Generating Facility does not guarantee approval for any other Generating Facility.

Significance: If the Generating and/or Interconnection Facility has been Certified or previously approved by Distribution Provider, Distribution Provider does not need to repeat its full review and/or test of the Generating and/or Interconnection Facility's Protective Functions. Site Commissioning Testing may still be required to ensure that the Protective Functions are working properly.

Certification indicates that the criteria in Section L, as appropriate, have been tested and verified. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

c. Screen C: Is the Starting Voltage Drop within acceptable limits?

- If Yes (pass), continue to Screen D.
- If No (fail), continue to Screen D pursuant to Section G.1.

Note: This Screen only applies to Generating Facilities that start by motoring the Generator(s).

Distribution Provider has two options in determining whether Starting Voltage Drop is acceptable. The option to be used is at Distribution Provider's discretion.

Option 1: Distribution Provider may determine that the Generating Facility's starting In-rush Current is equal to or less than the continuous ampere rating of the Customer's service equipment.

Option 2: Distribution Provider may determine the impedances of the service distribution transformer (if present) and the secondary conductors to Customer's service equipment and perform a voltage drop calculation. Alternatively, Distribution Provider may use tables or nomographs to determine the voltage drop. Voltage drops caused by starting a Generator must be less than 2.5% for primary Interconnections and 5% for secondary Interconnections.

Significance:

1. This Screen addresses potential voltage fluctuation problems that may be caused by Generators that start by motoring.

2. When starting, Generating Facilities should have minimal impact on the service voltage to other Distribution Provider Customers.

3. Passing this Screen does not relieve Producer from ensuring that its Generating Facility complies with the flicker requirements of this Rule, Section H.2.d. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

d. Screen D: Is the transformer or secondary conductor rating exceeded?

Do the maximum aggregated Gross Ratings for all the Generating Facilities connected to a secondary distribution transformer exceed the transformer or secondary conductor rating, modified per established Distribution Provider practice, absent any Generating Facilities?

- If Yes (fail), continue to Screen E pursuant to Section G.1.
- If No (pass), continue to screen E.

Significance: This screen addresses potential secondary transformer or secondary conductor overloads. When Distribution Provider's analysis determines a transformer or conductor change is required, Distribution Provider will furnish Applicant with an explanation of why the change is needed.

e. Screen E: Does the Single-Phase Generator cause unacceptable imbalance?

If the proposed Generating Facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, does it cause unacceptable imbalance between the two phases of the 240 volt service?

- If Yes (fail), continue to Screen F pursuant to Section G.1.
- If No (pass), continue to screen F. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

e. Screen E: Does the Single-Phase Generator cause unacceptable imbalance? (Cont'd.)

Significance: Generating Facilities connected to a single-phase transformer with 120/240 V secondary voltage must be installed such that the aggregated gross output is as balanced as practicable between the two phases of the 240 volt service. When Distribution Provider's analysis determines a transformer change is required. Distribution Provider will furnish the customer with an explanation of why the change is needed.

f. Screen F: Is the Short Circuit Current Contribution Ratio within acceptable limits? (L)

- If Yes (pass), continue to Screen F1. (L)/(P)
- If No (fail), continue to Screen F1 pursuant to Section G.1. (L)/(P)

Note: This Screen does not apply to Generating Facilities with a Gross Rating of less than 30 kVA. (L)
(L)/(P)

When measured at primary side (high side) of the Dedicated Distribution Transformer serving a Generating Facility, the sum of the Short Circuit Contribution Ratios of all Generating Facilities connected to Distribution Provider's Distribution System circuit that serves the Generating Facility must be less than or equal to 0.1. (L)

Significance: If the Generating Facility passes this Screen, it can be expected that it will have no significant impact on Distribution Provider's Distribution System's short circuit duty, fault detection sensitivity, relay coordination or fuse-saving schemes. (L)

Screen F1: Is the Short Circuit Current Contribution less than or equal to 1.2 per unit or is the generation project gross nameplate rating multiplied by its per unit contribution less than the ICA-SG value multiplied by 1.2 per unit? (P)

- If Yes (Pass), continue to Screen G
- If No (Fail), continue to Screen G pursuant to Section G.1. (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.) (L)

f. Screen F1 (Cont'd.) (P)

Generating systems with less than or equal to 1.2 per unit short circuit contribution can reference the Integration Capacity Analysis value for meeting the reduction of reach Integration Capacity Analysis Protection Screen. For generating facilities exceeding the less than or equal to 1.2 per unit short circuit contribution, a utility would use the protection Integration Capacity Analysis value at the point of interconnection and the project specific per unit short circuit contribution to determine whether the facility passes Screen F1.

Significance: If the Generating Facility passes this Screen, it can be expected that it will have no significant impact on Protection Reduction of Reach. The Generating Facility will have no significant impact on Distribution Provider's Distribution System's short circuit duty, fault detection sensitivity, relay coordination or fuse-saving schemes. (P)

g. Screen G: Is the Short Circuit Interrupting Capability Exceeded? (L)

Does the proposed Generating Facility, in aggregate with other Generating Facilities on the distribution circuit, cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Request equipment on the system to exceed 87.5 % of the short circuit interrupting capability; or is the Interconnection proposed for a circuit that already exceeds 87.5 % of the short circuit interrupting capability?

- If Yes (fail) continue to Screen H pursuant to Section G.1.
- If No (pass), continue to Screen H

Note: This Screen does not apply to Generating Facilities with a Gross Rating of less than 30 kVA. (L)/(P)

Significance: If the Generating Facility passes this screen, it can be expected that it will not cause any of Distribution Provider's equipment to be overstressed. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

h. Screen H: Is the line configuration compatible with the Interconnection type?

- If Yes (pass), continue to Screen I.
- If No (fail), continue to Screen I pursuant to Section G.1.

Note: This Screen does not apply to Generating Facilities with a Gross Rating of less than 30 kVA. (L)
(L)/(P)

Line Configuration Screen: Identify primary distribution line configuration that will serve the Generating Facility. Based on the type of Interconnection to be used for the Generating Facility, determine from Table G.1 if the proposed Generating Facility passes the Screen. (L)

Table G-1
Type of Interconnection

Primary Distribution Line Type Configuration	Type of Interconnection to be made to Primary Distribution Line	Result/Criteria
Three-phase, three-wire	Any type	Pass Screen
Three-phase, four-wire	Single-phase, line-to-neutral	Pass Screen
Three-phase, four-wire (For any line that has such a section OR mixed three-wire & four-wire)	All others	To pass, aggregate Generating Facility nameplate rating must be less than or equal to 10% of Line Section peak load

(L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

h. Screen H: Is the line configuration compatible with the Interconnection type? (Cont'd.)

Significance: If the primary distribution line serving the Generating Facility is of a "three-wire" configuration, or if the Generating Facility's distribution transformer is single-phase and connected in a line-to-neutral configuration, then there is no concern about overvoltages to Distribution Provider's, or other Customer's equipment caused by loss of system neutral grounding during the operating time of the Non-Islanding Protective Function.

i. Screen I: Will power be exported across the PCC? (L)

- If Yes, Continue to Screen J. This includes Options 5, 6 and 8 below. (P)
- If No, skip screens K, L, and M To ensure that the Generating Facility does not export across the PCC, the Generating Facility must incorporate one of the Options 1, 2, 3, 4 or 7 shown below. Following that selection, Initial Review is complete. (P)

Option 1 ("Reverse Power Protection"): To ensure power is never exported across the PCC, a reverse power Protective Function may be provided. The default setting for this Protective Function shall be 0.1% (export) of the service transformer's rating, with a maximum 2.0 second time delay. For multiple tariff interconnections refer to Section J.8. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

i. Screen I: Will power be exported across the PCC? (Cont'd.)

Option 2 ("Minimum Power Protection"): To ensure at least a minimum amount of power is imported across the PCC at all times (and, therefore, that power is not exported), an under-power Protective Function may be provided. The default setting for this Protective Function shall be 5% (import) of Generating Facility's total Gross Rating, with a maximum 2.0 second time delay.

Option 3 (Certified Non-Islanding Protection): To ensure the incidental export of power is limited to acceptable levels, this option requires that all of the following conditions be met: a) the total Gross Capacity of the Generating Facility must be no more than 25% of the nominal ampere rating of Producer's service equipment; b) the total Gross Capacity of the Generating Facility must be no more than 50% of Producer's service transformer capacity rating (this capacity requirement does not apply to Customers taking primary service without an intervening transformer); and c) the Generating Facility must be Certified as Non-Islanding.

The ampere rating of the Customer's service equipment to be used in this evaluation will be that rating for which the customer's utility service was originally sized or for which an upgrade has been approved. It is not the intent of this provision to allow increased export simply by increasing the size of the customer's service panel, without separate approval for the resize. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

i. Screen I: Will power be exported across the PCC? (Cont'd.)

Option 4 (Relative Generating Facility Rating): This option, when used, requires the Net Rating of the Generating Facility to be so small in comparison to its host facility's minimum load, that the use of additional Protective Functions is not required to ensure that power will not be exported to Distribution Provider's Distribution or Transmission System. This option requires the Generating Facility capacity to be no greater than 50% of Producer's verifiable minimum Host Load over the past 12 months.

Option 5: Inadvertent Export as described in Section M. (L)

Option 6: Inadvertent Export utilizing UL-1741 or UL-1741 SA/SB listed grid support (Non-Islanding) inverters as described in Section Mm. (L)/(P) (L)

Significance:

1. If it can be assured that the Generating Facility will not export power, Distribution Provider's Distribution or Transmission System does not need to be studied for load-carrying capability or Generating Facility power flow effects on Distribution Provider voltage regulators.

2. This Screen permits the use of reverse-power or minimum-power relaying as a Non-Islanding Protective Function (Option 1, 2, and 3).

3. This Screen allows, under certain defined conditions, for Generating Facilities that incorporate Certified Non-Islanding protection to qualify for interconnection through the Fast Track process without implementing reverse power or minimum power Protective Functions (Option 3). (L)

Option 7: Non-Export utilizing Certified Power Control Systems as described in Section Mm1. (P)

Option 8: Inadvertent Export utilizing Certified Power Control Systems as described in Section Mm2. (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.) (L)

j. Screen J: Is the Gross Rating of the Generating Facility less than 30 kVA? (L)/(P)

- If Yes (pass), skip Screens K, L and M; Initial Review is complete. (L)
- If No (fail), continue to Screen K.[i]

Significance: The Generating Facility will have a minimal impact on fault current levels and any potential line overvoltages from loss of Distribution Provider's Distribution System neutral grounding.

k. Screen K: Is the Generating Facility a Net Energy Metering (NEM) Generating Facility with nameplate capacity less than or equal to 500 kW?

- If Yes (pass), skip screen L and continue to screen M.
- If No (fail), continue to screen L.

Significance: The purpose of this Screen is solely to facilitate interconnection of NEM facilities below this size threshold by allowing such facilities to bypass Screen M. The use of nameplate capacity expedites the Initial Review analysis. In Supplemental Review, the net export will be analyzed.

[i] Inadvertent Export systems that meet the requirements specified in Section Mm bypass Screens K and L, and are processed under Screen M as described in Section Mm. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.) (L)

l. Screen L: Transmission Dependency, Stability, Overvoltage and Islanding Test (L)/(P) (L)/(P)

Is the Interconnection Request for an area where: (L)

(i) there are known, or posted, transient stability limitations, or

(ii) the proposed Generating Facility has interdependencies, known to Distribution Provider, with earlier-queued Transmission System interconnection requests, or (L) (L)/(P)

(iii) there is potential for transmission islanding, or (P)

(iv) there is potential for transmission Ground Fault Overvoltage (GFOV) due to lack of effective grounding. (P)

Where (i) or (ii) or (iii) or (iv) above are met, the impacts of this Interconnection Request to the Transmission System may require Detailed Study. (L)/(P) (L)

- If Yes (fail), Supplemental Review is required.
- If No (pass), continue to Screen M.

Significance: Special consideration must be given to those areas identified as having current or future (due to currently-queued interconnection requests) grid stability concerns. (L)

PG&E will temporarily apply anti-islanding tests until the resolution of Issue 18* R. 17.-07-007 Working Group Four in made effective in PG&E's tariffs. (P) (P)

m. Screen M: (L)

When ICA information is available at the requested point of interconnection, Screen M should be evaluated in accordance with nameplate or typical PV output profile. (P) (P)

* Issue 18 is "*Should the Commission adopt changes to anti-islanding screen parameters to reflect research on islanding risks when using UL 1741-certified inverters in order to avoid unnecessary mitigations? If yes, what should those changes entail?*" (P) (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (P)

1. INITIAL REVIEW SCREENS (Cont'd.)

m. Screen M (Cont'd.):

For Interconnection requests based on nameplate capacity:

a) Is the Interconnection request aggregate nameplate capacity greater than 90% of the lower value in the ICA-SG 576 profile?

or

b) Is the Interconnection request aggregate nameplate capacity greater than 90% of the lower value in the ICA-OF 576 profile?

If the response is "yes" to either a) or b), screen M fails, and the project must be evaluated under the Supplemental Review or Detailed Study to determine mitigation requirements

For Interconnection requests based on typical PV output profile

a) Is the Interconnection request real power production based on PV Watts or equivalent greater than 90% of the ICA-SG 576 value in any hour?

or

b) Is the Interconnection request real power production based on PV Watts or equivalent greater than 90% of the ICA-OF 576 value in any hour?

If the response is "yes" to either a) or b), screen M fails, and the project must be evaluated under the Supplemental Review or Detailed Study to determine mitigation requirements

When ICA information is not available at the requested point of interconnection, Screen M should be evaluated as follows: (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

m. Screen M (Cont'd): (L)/(P)

Is the aggregate Generating Facility capacity on the Line Section less than 15% of Line Section peak load for all line sections bounded by automatic sectionalizing devices?[ii]

- If Yes (pass), Initial Review is complete.
- If No (fail), Supplemental Review is required.

Significance:

1. Low penetration of Generating Facility capacity will have a minimal impact on the operation and load restoration efforts of Distribution Provider's Distribution System.

2. The operating requirements for a high penetration of Generating Facility capacity may be different since the impact on Distribution Provider's Distribution System will no longer be minimal, therefore requiring additional study or controls.

The purpose of this Screen is solely to identify if the Generating Facility needs additional study and is not intended as justification for limiting the penetration of generation on a line section.

2. SUPPLEMENTAL REVIEW SCREENS

The Supplemental Review consists of Screens N through P. If any of the Screens are not passed, a quick review of the failed Screen(s) will determine the requirements to address the failure(s) or that Detailed Studies are required. In certain instances, Distribution Provider may be able to identify the necessary solution and determine that Detailed Studies are unnecessary. Some examples of solutions that may be available to mitigate the impact of a failed Screen are:

1. Replacing a fixed capacitor bank with a switched capacitor bank.
2. Adjustment of line regulation settings.
3. Simple reconfiguration of the distribution circuit. (L)

(P)

[ii] Inadvertent Export systems that meet the requirements specified in Section Mm are processed under Screen M as described in Section Mm. (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (L)

Is Integration Capacity Analysis Values available at the requested Point of Interconnection? (P)

If Yes, evaluate Screen N as follows:

Is the Interconnection Request Gross Nameplate Rating below 90% of the ICA-SG Value (i.e. the minimum value) in the ICA-SG 576 Profile?

Did the Interconnection Request pass Screen F1?

- If the evaluation of the two Screen N questions above are both "yes" (pass), continue to Screen O.
- If no to either or both of the above (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen O. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens if Applicant elects to proceed.)

If No, evaluate Screen N as follows: (P)

Where 12 months of line section minimum load data is available, can be calculated, can be estimated from existing data, or determined from a power flow model, is the aggregate Generating Facility capacity on the Line Section less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the Generating Facility? (L) (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (Cont'd.) (L)/(P)

If No, evaluate Screen N as follows (Cont'd.): (L)/(P)

- If yes (pass), continue to Screen O. (L)
- If no (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen O. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens, if Applicant elects to proceed.)

Note 1: If none of the above options are available, this screen defaults to Screen M.

Note 2: The type of Generating Facility technology will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. For solar Generating Facilities with no battery storage, daytime minimum load will be used (i.e., 10 am to 4 pm for fixed panel solar Generating Facilities and 8 am to 6 pm for solar Generating Facilities utilizing tracking systems), while absolute minimum load will be used for all other Generating Facility technologies.

Note 3: When this screen is being applied to a NEM Generating Facility, the net export in kW, if known, that may flow across the Point of Common Coupling into Distribution Provider's Distribution System will be considered as part of the aggregate generation. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (Cont'd.)

Note 4: Distribution Provider will not consider as part of the aggregate Generating Facility capacity for purposes of this screen Generating Facility capacity known to be already reflected in the minimum load data.

Note 5: NEM Generating Facilities with net export less than or equal to 500 kW that may flow across the Point of Common Coupling into Distribution Provider's Distribution or Transmission System will not be (L)
studied in the WDT Transmission Cluster Study Process, but may be (L)/(T)
studied under the Independent Study Process. (L)

Significance: Penetration of Generating Facility capacity that does not result in power flow from the circuit back toward the substation will have a minimal impact on equipment loading, operation, and protection of the Distribution System.

b. Screen O: Power Quality and Voltage Tests

In aggregate with existing Generating Facility capacity on the Line Section, distribution circuit, and/or substation.

i) Can it be determined within the Supplemental Review that the voltage regulation on the line section can be maintained in compliance with Commission Rule 2 and/or Conservation Voltage Regulation voltage requirements under all system conditions?

ii) Can it be determined within the Supplemental Review that the voltage fluctuation is within acceptable limits as defined by IEEE (L)
1547-2018 7.2 or utility practice similar to IEEE1547-2018 7.2? (L)/(P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

b. Screen O: Power Quality and Voltage Tests (Cont'd.)

In aggregate with existing Generating Facility capacity on the Line Section, distribution circuit, and/or substation. (Cont'd.)

iii) Can it be determined within the Supplemental Review that the harmonic levels meet IEEE 1547-2018 7.3 limits at the Point of Common Coupling (PCC)? (L) (L)/(P) (L)

iv) Are any voltage impacts created by the project mitigated considering the settings of the Volt-Var function and the characteristics of the circuit segment? (P) (P)

- If yes to all of the above (pass), continue to Screen P. (L)
- If no to any of the above (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen P. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens.)

Significance: Adverse voltages and undesirable interference may be experienced by other Customers on Distribution Provider's Distribution System caused by operation of the Generating Facility(ies).

c. Screen P: Safety and Reliability Tests

Does the location of the proposed Generating Facility or the aggregate generation capacity on the Line Section create impacts to safety or reliability that cannot be adequately addressed without Detailed Study?

- If yes (fail), review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Section G.3.
- If no (pass), Supplemental Review is complete. (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

c. Screen P: Safety and Reliability Tests (Cont'd.)

Significance: In the safety and reliability test, there are several factors that may affect the nature and performance of an Interconnection. These include, but are not limited to:

1. Generating Facility energy source
2. Modes of synchronization
3. Unique system topology
4. Possible impacts to critical load customers
5. Possible safety impacts

The specific combination of these factors will determine if any system study requirements are needed. The following are some examples of the items that may be considered under this screen:

1. Does the Line Section have significant minimum loading levels dominated by a small number of customers (i.e. several large commercial customers)?
2. Is there an even or uneven distribution of loading along the feeder?
3. Is the proposed Generating Facility located in close proximity to the substation (i.e. <2.5 electrical line miles), and is the distribution line from the substation to the customer composed of large conductor/cable (i.e. 600A class cable)? (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

c. Screen P: Safety and Reliability Tests (Cont'd.)

4. Does the Generating Facility incorporate a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time?

5. Is operational flexibility reduced by the proposed Generating Facility, such that transfer of the line section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues?

6. Does the Generating Facility utilize Certified anti-islanding functions and equipment?

3. DETAILED STUDY SCREENS

a. Screen Q: Is the Interconnection Request electrically Independent of the Transmission System?

Distribution Provider, in consultation with the CAISO, will determine, based on knowledge of the interdependencies with earlier-queued interconnection requests under any tariff, whether the Interconnection Request to the Distribution System is of sufficient MW size and located at a point of interconnection such that it is reasonably anticipated to require or contribute to the need for Reliability Network Upgrades. In making this determination, the Distribution Provider will make a Determination of Electrical Independence for the CAISO Controlled Grid as set forth in the applicable CAISO Tariff in effect at the time the Electrical Independence Test begins. (L) (L)/(T)

If Distribution Provider determines that no interdependencies, or that interdependencies do exist but the proposed Generating Facility is not reasonably anticipated to require or contribute to the need for Reliability Network Upgrades, then the Interconnection Request will be deemed to have passed Distribution Provider's Determination of Electrical Independence for the CAISO Controlled Grid.

If Distribution Provider determines that interdependencies exist and that they are reasonably anticipated to require or contribute to the need for Reliability Network Upgrades, then Applicant may be studied under the WDT Transmission Cluster Study Process as set forth in Section F.3.d. (L)/(T)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

a. Screen Q: Is the Interconnection Request electrically Independent of the Transmission System? (Cont'd.)

Distribution Provider will coordinate with the CAISO if necessary to conduct the Determination of Electrical Independence for the CAISO Controlled Grid as set forth in the applicable CAISO Tariff** in effect at the time the Electrical Independence Test (EIT) begins. The results of the incremental power flow, aggregate power flow, and short-circuit current contribution tests set out in the applicable CAISO Tariff in effect at the time the EIT begins will determine whether the Interconnection Request is electrically independent from the CAISO Controlled Grid.

- If Yes (pass), continue to Screen R.
- If No (fail), proceed to Section F.3.d. (L)

Exemptions: All NEM Generating Facilities and all inverter-based Generating Facilities, with a nameplate capacity less than or equal to 1 MVA will not be studied in the WDT Transmission Cluster Study Process, but may be studied under the Independent Study Process. For an Applicant that agrees to the installation, at Applicant's cost, of Distribution Provider-approved software/firmware controlled devices or equipment Nationally Recognized Testing Laboratory certified to limit the Generating Facility's net export so that it will never exceed the 1 MVA exemption limit, the Generating Facility's net export will be considered exempt from the WDT Transmission Cluster Study Process for purposes of this section. (L)/(T)

Significance: Generating Facilities that are electrically interdependent with the Transmission System must be studied with other interconnection requests that have Transmission System interdependencies. It is possible to pass this Screen Q (i.e., be found to have no electrical interdependencies with earlier-queued Distribution System and/or Transmission System interconnection requests as set out above), be studied under the Independent Study Process, and still trigger a Reliability Network Upgrade. (L)

(L)/(T)

** The currently effective CAISO Tariff can be accessed at the following CAISO website http://www.caiso.com/rules/Pages/Regulatory/Default.aspx (N)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

b. Screen R: Is the Interconnection Request independent of other earlier-queued and yet to be studied interconnection requests interconnecting to the Distribution System?

For Interconnection Requests that are electrically independent from the CAISO Controlled Grid, Distribution Provider will evaluate each Interconnection Request for known or reasonably anticipated relationships between the Interconnection Request and any earlier-queued interconnection requests in the Distribution Group Study Process, the Independent Study Process, or interconnection requests studied under predecessor interconnection procedures that have yet to complete their respective interconnection studies. Distribution Provider may conduct incremental power flow, aggregate power flow, and/or short-circuit duty tests using existing interconnection studies, Base Case data, overall system knowledge, and engineering judgment to determine whether an Interconnection Request can be studied independently of earlier-queued interconnection requests. If the Interconnection Request being evaluated for electrical independence on the Distribution System may be electrically related to earlier-queued interconnection requests that have yet to complete interconnection studies, then it fails the evaluation of electrical independence for the Distribution System.

- If Yes (pass), continue to Independent Study Process
- If No (fail), continue to the Distribution Group Study Process

Significance: Interconnection Requests that are electrically related to earlier-queued interconnection requests that have not yet been studied do not qualify for independent study. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies

The Interconnection Studies shall consist of an Interconnection System Impact Study and an Interconnection Facilities Study for the Independent Study Process or the DGS Phase I Interconnection Study and the DGS Phase II Interconnection Study for the Distribution Group Study Process. The Interconnection Studies will identify Interconnection Facilities, Distribution Upgrades and Reliability Network Upgrades necessary to mitigate thermal overloads and voltage violations, and address short circuit, dynamic/stability, and reliability issues associated with the requested Interconnection Service. If Distribution Provider anticipates that Reliability Network Upgrades will be required, or the Interconnection Studies identify the need for Reliability Network Upgrades, then Distribution Provider will coordinate with the CAISO during the study process as set forth in Sections F.3.b or F.3.c above.

The estimated costs of short circuit related upgrades and shared interconnection facilities, if any, identified through a Distribution Group Study shall be assigned as provided in E.4.e.

i) Interconnection System Impact and DGS Phase I Interconnection Study.

(1) Scope of the Interconnection System Impact and DGS Phase I Interconnection Study.

The Interconnection System Impact or DGS Phase I Interconnection Study in the case of the Distribution Group Study Process may consist of a localized short circuit analysis, a stability/dynamic analysis, a power flow analysis, and any other studies that are deemed necessary. The localized short circuit analysis will evaluate impacts to the Distribution and Transmission System only with any local short circuit-duty related Reliability Network Upgrades allocated to the Generating Facility or Generating Facilities that require(s) the upgrades. Short circuit duty impacts to the (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies (Cont'd.)

i) Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

(1) Scope of the Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

CAISO Controlled Grid are appropriately evaluated only in the (L)
WDT Transmission Cluster Study Process as set forth in (L)/(T)
Section F.3.d. The short circuit duty contribution of any (L)
Interconnection Requests studied in the Independent Study Process or Distribution Group Study Process that are subsequently identified in the Cluster Study Process will be allocated its pro rata share of the short circuit duty-related Reliability Network Upgrades on the basis of the short circuit duty contribution of each Generating Facility.

The Interconnection System Impact Study or DGS Phase I Interconnection Study in the case of the Distribution Group Study Process, shall state the assumptions upon which it is based, state the results of the analyses, and provide the requirement or potential impediments to providing the requested Interconnection Service, including a preliminary indication of the cost and length of time that would be necessary to correct any problems identified in those analyses and implement the Interconnection.

The Interconnection System Impact or DGS Phase I Interconnection Study shall provide a list of Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Reliability Network Upgrades that are required as a result of the Interconnection Request along with a non-binding good faith estimate of cost responsibility and the amount of construction time required.

If at any time the Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase I Interconnection Study due to the large number of (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies (Cont'd.)

i) Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

(1) Scope of the Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

Interconnection Requests in the Distribution Group Study Application window, study complexity, or unavailability of resources on a reasonable basis to perform the study in the required time frame, the Distribution Provider shall notify the Interconnection Customer(s) within the Distribution Group Study as to the schedule status of the DGS Phase I Interconnection Study and provide an estimated completion date with an explanation of the reasons why additional time is required.

Upon request, the Distribution Provider shall provide the Applicant(s) all supporting documentation, work papers and relevant pre-Interconnection Request and post-Interconnection Request power flow, short circuit and stability databases for the DGS Phase I Interconnection Study, subject to confidentiality arrangements as outlined in Section D.7.

ii) Interconnection Facilities Study and DGS Phase II Interconnection Study.

(1) Scope and Purpose of the Interconnection Facilities and DGS Phase II Interconnection Study.

The Interconnection Facilities Study or DGS Phase II Interconnection Study in the case of the Distribution Group Study Process shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the Interconnection System Impact Study or DGS Phase I Interconnection Study technical analyses in accordance with (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies (Cont'd.)

ii) Interconnection Facilities Study and DGS Phase II Interconnection Study. (Cont'd.)

(1) Scope and Purpose of the Interconnection Facilities and DGS Phase II Interconnection Study. (Cont'd.)

Good Utility Practice to physically and electrically connect the Generating Facility to the Distribution or Transmission System. The Interconnection Facilities Study or DGS Phase II Interconnection Study shall also identify (i) the electrical switching configuration of the connection equipment, including, without limitation: the transformer, switchgear, meters, and other station equipment; the nature and estimated cost of any Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Network Upgrades necessary to accomplish the interconnection; and an estimate of the time required to complete the construction and installation of such facilities. The analyses in the Interconnection System Impact Study (or DGS Phase I Interconnection Study in the case of the Distribution Group Study Process) will be updated as necessary in the Interconnection Facilities Study (or DGS Phase II Interconnection Study), to account for withdrawal of interconnection requests in the interconnection queue.

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS

Section H shall be used for interconnection of non-inverter based technologies. (L)

(P)

(P)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (L)

This section is consistent with the requirements of IEEE 1547-2018. In the event of conflict, this Rule shall take precedent. (P) (P)

The Protective Functions and requirements of this Rule are designed to protect Distribution Provider's Distribution and Transmission System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. Producer's Protective Functions shall not impact the operation of other Protective Functions on Distribution Provider's Distribution and Transmission System in a manner that would affect Distribution Provider's capability of providing reliable service to its customers. (L)

a. Protective Functions Required

Generating Facilities operating in parallel with Distribution Provider's Distribution or Transmission System shall be equipped with the following Protective Functions to sense abnormal conditions on Distribution Provider's Distribution or Transmission System and cause the Generating Facility to be automatically disconnected from Distribution Provider's Distribution or Transmission System or to prevent the Generating Facility from being connected to Distribution Provider's Distribution or Transmission System inappropriately:

i) Over and under voltage trip functions and over and under frequency trip functions;

ii) A voltage and frequency sensing and time-delay function to prevent the Generating Facility from energizing a de-energized Distribution or Transmission System circuit and to prevent the Generating Facility from reconnecting with Distribution Provider's

Distribution or Transmission System unless Distribution Provider's Distribution System service voltage and frequency is within the ANSI C84.1-1995 Table 1 Range B voltage Range of 106 volts to 127 volts (on a 120 volt basis), inclusive, and a frequency range of 59.3 Hz to 60.5 Hz, inclusive, and are stable for at least 60 seconds; (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

a. Protective Functions Required (Cont'd.)

iii) A function to prevent the Generating Facility from contributing to the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution System within two seconds of the formation of an Unintended Island; and (L) (L)/(P)

(iv) Open Phase Condition: Generating Facility shall detect and cease to energize and trip all phases within 2 seconds of any open phase condition in accordance with IEEE 1547-2018 6.2.2. (P) (P)

The Generating Facility shall cease to energize Distribution Provider's Distribution System for faults on Distribution Provider's Distribution System circuit to which it is connected (IEEE 1547-2018 6.2.1). The Generating Facility shall cease to energize Distribution Provider's Distribution circuit prior to re-closure by Distribution Provider's Distribution System equipment (IEEE 1547-2018 6.3). (L) (L) (L)/(P) (L) (L) (L)/(P)

b. Momentary Paralleling Generating Facilities (L)

With Distribution Provider's approval, the transfer switch or scheme used to transfer Producer's loads from Distribution Provider's Distribution or Transmission System to Producer's Generating Facility may be used in lieu of the Protective Functions required for Parallel Operation. (L)

Generating facilities which operate using a momentary parallel scheme are not required to comply with the functional requirements as required in the IEEE 1547-2018 standard. (P) (P)

c. Suitable Equipment Required (L)

Circuit breakers or other interrupting equipment located at the Point of Common Coupling (PCC) must be Certified or "Listed" (as defined in Article 100, the Definitions Section of the National Electrical Code) as suitable for their intended application. This includes being capable of (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

c. Suitable Equipment Required (Cont'd.)

interrupting the maximum available fault current expected at their location. Producer's Generating Facility and Interconnection Facilities shall be designed so that the failure of any single device or component shall not potentially compromise the safety and reliability of Distribution Provider's Distribution and Transmission System. The Generating Facility paralleling-device shall be capable of withstanding (L)
220% of the Interconnection Facility rated voltage (IEEE 1547-2018 (L)/(P)
4.11). The Interconnection Facility shall have the capability to (L)/(P)
withstand voltage and current surges in accordance with the (L)
environments defined in IEEE Std C62.41.2-2002 or IEEE Std C37.90.1-2002 as applicable and as described in L.3.e (IEEE 1547- (L)
2018 4.11). (L)/(P)

d. Visible Disconnect Required (L)

When required by Distribution Provider's operating practices, Producer shall furnish and install a ganged, manually-operated isolating switch (or a comparable device mutually agreed upon by Distribution Provider and Producer) near the Point of Interconnection to isolate the Generating Facility from Distribution Provider's Distribution or Transmission System. The device does not have to be rated for load break nor provide over-current protection.

The device must:

i) allow visible verification that separation has been accomplished. (This requirement may be met by opening the enclosure to observe contact separation.)

ii) include markings or signage that clearly indicates open and closed positions.

iii) be capable of being reached:

a) for Emergency purposes quickly and conveniently 24 hours a day by Distribution Provider personnel for construction, (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

d. Visible Disconnect Required (Cont'd.)

iii) be capable of being reached: (Cont'd.)

a) operation, maintenance, inspection, testing or to isolate the Generating Facility from Distribution Provider's Distribution or Transmission System without obstacles or requiring those seeking access to obtain keys, special permission, or security clearances.

b) for Non-Emergency purposes during normal business hours. Distribution Provider, where possible, will provide notice to Customer for gaining access to Customer's premises.

iv) be capable of being locked in the open position,

v) be clearly marked on the submitted single line diagram and its type and location approved by Distribution Provider prior to installation. If the device is not adjacent to the PCC, permanent signage must be installed at a Distribution Provider approved location providing a clear description of the location of the device. If the switch is not accessible outside the locked premises, signage with contact information and a Distribution Provider approved locking device for the premises shall be installed.

Generating Facilities with Non-Islanding inverters totaling one (1) kilovolt-ampere (kVA) or less are exempt from this requirement.

e. Drawings Required

Prior to Parallel Operation or Momentary Parallel Operation of the Generating Facility, Distribution Provider shall approve Producer's Protective Function and control diagrams. Generating Facilities equipped with Protective Functions and a control scheme previously approved by Distribution Provider for system-wide application or only Certified Equipment may satisfy this requirement by reference to previously approved drawings and diagrams. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

f. Generating Facility Conditions Not Identified

In the event this Rule does not address the Interconnection conditions for a particular Generating Facility, Distribution Provider and Producer may agree upon other arrangements

2. PREVENTION OF INTERFERENCE

Producer shall not operate Generating or Interconnection Facilities that superimpose a voltage or current upon Distribution Provider's Distribution or Transmission System that interferes with Distribution Provider operations, service to Distribution Provider Customers, or communication facilities. If such interference occurs, Producer must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by Distribution Provider. If Producer does not take corrective action in a timely manner, or continues to operate the facilities causing interference without restriction or limit, Distribution Provider may, without liability, disconnect Producer's facilities from Distribution Provider's Distribution or Transmission System, in accordance with Section D.9 of this Rule. To eliminate undesirable interference caused by its operation, each Generating Facility shall meet the following criteria: (L)

Note: Except as otherwise stated, the RPA for all performance requirements shall be met at the PCC. (P)

When Generating facility is less than 500KVA or when generating facility operates under one of the non-exporting options or inadvertent export of no longer than 30 seconds, the RPA may be the Generating Facility Connection Point (PoC). (P)

a. Voltage Regulation

(L)

The Generating Facility shall not actively regulate the voltage at the PCC while in parallel with Distribution Provider's Distribution System. The Generating Facility shall not cause the service voltage at other customers to go outside the requirements of ANSI C84.1-1995, Range A. (L)/(P)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting

The voltage ranges in Table H.1 define protective trip limits for the Protective Function and are not intended to define or imply a voltage regulation Function. Generating Facilities shall cease to energize Distribution Provider's Distribution System within the prescribed trip time whenever the voltage at the PCC deviates from the allowable voltage operating range. The Protection Function shall detect and respond to voltage on all phases to which the Generating Facility is connected.

i) Generating Facilities (30 kVA or less)

Generating Facilities with a Gross Rating of 30 kVA or less shall be capable of operating within the voltage range normally experienced on Distribution Provider's Distribution System from plus to minus 5% of the nominal voltage (e.g. 114 volts to 126 volts, on a 120 volt base), at the service panel or PCC. The trip settings at the generator terminals may be selected in a manner that minimizes nuisance tripping between 106 volts and 132 volts on a 120-volt base (88%-110% of nominal voltage) to compensate for voltage drop between the generator terminals and the PCC. Voltage may be detected at either the PCC or the Point of Interconnection. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal. (L)

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting (Cont'd.)

ii) Generating Facilities (greater than 30 kVA)

Distribution Provider may have specific operating voltage ranges for Generating Facilities with Gross Ratings greater than 30 kVA, and may require adjustable operating voltage settings. In the absence of such requirements, the Generating Facility shall be capable of operating at a range between 88% and 110% of the applicable interconnection voltage. Voltage shall be detected at either the PCC or the Point of Interconnection, with settings compensated to account for the voltage at the PCC. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal.

iii) Voltage Disturbances

Whenever Distribution Provider's Distribution System voltage at the PCC varies from and remains outside normal (Nominally 120 volts) for the predetermined parameters set forth in Table H-1, the Generating Facility's Protective Functions shall cause the Generator(s) to become isolated from Distribution Provider's Distribution System: (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting (Cont'd.)

iii) Voltage Disturbances (Cont'd.)

Table H.1: Voltage Trip Settings for Generating Facilities*

Voltage at Point of Common Coupling (the ranges below are used to trip the generator during abnormal distribution system conditions)		Maximum Trip Time**	
Assuming 120 Volt Base	% of Nominal Voltage	# of Cycles (Assuming 60 Hz Nominal)	Seconds
Less than 60 volts	Less than 50%	10 Cycles	0.16 Seconds
Greater than or equal to 60 volts but less than 106 volts	Greater than or equal to 50% but less than 88%	120 Cycles	2 Seconds
Greater than 132 volts but less than or equal to 144 volts	Greater than 110% but less than or equal to 120%	60 Cycles	1 Second
Greater than 144 volts	Greater than 120%	10 Cycles	0.16 Seconds

**For Generating Facilities with a Rating greater than 30 kVA, set points shall be field adjustable and different voltage set points and trip times from those in Table H.1 may be negotiated with Distribution Provider*

*** "Maximum Trip Time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize Distribution Provider's Distribution System. Protective Function equipment and circuits may remain connected to Distribution Provider's Distribution System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to allow for a Generating Facility to minimize tripping during short term system disturbances. Set points shall not be user adjustable for generating facilities less than 30 kW.*

(L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

c. Paralleling

The Generating Facility shall parallel with Distribution Provider's Distribution or Transmission System without causing a voltage fluctuation at the PCC greater than plus/minus 5% of the prevailing voltage level of Distribution Provider's Distribution or Transmission System at the PCC, and meet the flicker requirements of Section H.2.d. Section L, Certification and Testing Criteria, provides technology-specific tests for evaluating the paralleling Function. (IEEE 1547-2018 4.10) (L)/(P)

d. Flicker (L)

The Generating Facility shall not create objectionable flicker for other customers on Distribution Provider's Distribution or Transmission System. To minimize the adverse voltage effects experienced by other customers, flicker at the PCC caused by the Generating Facility should not exceed the limits of IEEE 1547-2018 7.2.3. This requirement is necessary to minimize the adverse voltage affects experienced by other Customers on Distribution Provider's Distribution or Transmission System. Generators may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded. (L)/(P) (L) (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

e. Integration with Distribution Provider's Distribution System Grounding

The grounding scheme of the Generating Facility shall not cause over-voltages that exceed the rating of the equipment connected to Distribution Provider's Distribution System and shall not disrupt the coordination of the ground fault protection on Distribution Provider's Distribution System (IEEE 1547-2018 4.10) (See Section G.1.i, line configuration). (L)/(P)

f. Frequency

Distribution Provider controls system frequency, and the Generating Facility shall operate in synchronism with Distribution Provider's Distribution or Transmission System. Whenever Distribution Provider's Distribution or Transmission System frequency at the PCC varies from and remains outside normal (nominally 60 Hz) by the predetermined amounts set forth in Table H.2, the Generating Facility's Protective Functions shall cease to energize Distribution Provider's Distribution or Transmission System within the stated maximum trip time. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency (Cont'd.)

Table H.2
Frequency Trip Settings

Generating Facility Rating	Frequency Range (Assuming 60Hz Nominal)	Maximum Trip Time *[1]* (Assuming 60 Cycles per Second)
Less or equal to 30kW	Less than 59.3 Hz	10 Cycles
	Greater than 60.5 Hz	10 Cycles
Greater than 30 kW	Less than 57.0 Hz	10 Cycles
	Less than an adjustable value between 59.8 Hz and 57 Hz but greater than 57 Hz. *[2]*	Adjustable between 10 and 18,000 Cycles. *[2, 3]*
	Greater than 60.5 Hz.	10 Cycles

[1] – "Maximum Trip time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize Distribution Provider's Distribution or Transmission System. Protective Function sensing equipment and circuits may remain connected to Distribution Provider's Distribution or Transmission System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to allow a Generating Facility to "ride through" short-term disturbances to avoid nuisance tripping. Set points shall not be user adjustable (though they may be field adjustable by qualified personnel). For Generating Facilities with a Gross Rating greater than 30 kVA, set points shall be field adjustable and different voltage set points and trip times from those in Table H.2 may be negotiated with Distribution Provider.

[2] – Unless otherwise required by Distribution Provider, a trip frequency of 59.3 Hz and a maximum trip time of 10 cycles shall be used.

[3] – When a 10 cycle Maximum trip time is used, a second under frequency trip setting is not required. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

g. Harmonics

When the Generating Facility is serving balanced linear loads, harmonic current injection into Distribution Provider's Distribution or Transmission System at the PCC shall not exceed the limits stated in IEEE 1547-2018 7.3. The harmonic current injections shall be exclusive of any harmonic currents due to harmonic voltage distortion present in Distribution Provider's Distribution or Transmission System without the Generating Facility connected. The harmonic distortion of a Generating Facility shall be evaluated using the same criteria as for the Host Loads. (L) (L)/(P) (L) (L) (L)/(P) (L) (L) (P) (P)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

h. Direct Current Injection

Generating Facilities should not inject direct current greater than 0.5% of rated output current into Distribution Provider's Distribution or Transmission System.

i. Power Factor

Producer shall provide adequate reactive power compensation on site to maintain the Generating Facility power factor near unity at rated output or a Distribution Provider specified power factor within a power factor range from 0.9 leading to 0.9 lagging, based on local system conditions. While not required, for generators that do not have inherent reactive power control capability Distribution Provider at its option may offer reactive power support in the form of power factor correction capacitors on its Distribution or Transmission System, under a Generator Interconnection Agreement or an Added Facilities or Special Facilities agreement, as described in Rule 2.H, as applicable. (L)

j. Generating Facility Rapid Voltage Changes (RVC) (P)

Generating step or ramp changes shall meet the requirements as specified in IEEE 1547-2018 7.2.2.

k. Limitations of overvoltage over one fundamental frequency period

Generating Facility shall not contribute to instantaneous or fundamental frequency overvoltage conditions per IEEE 1547-2018 7.4.1.

l. Limitation of cumulative instantaneous overvoltage

Generating Facility shall not cause the instantaneous voltage on any portion of the Distribution or Transmission system to exceed the magnitudes per IEEE 1547-2018 7.4.2. (P)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

3. TECHNOLOGY SPECIFIC REQUIREMENTS

a. Technology Specific Requirements

Three-Phase Synchronous Generators: For three phase Generators, the Generating Facility circuit breakers shall be three-phase devices with electronic or electromechanical control. Producer shall be responsible for properly synchronizing its Generating Facility with Distribution Provider's Distribution or Transmission System by means of either manual or automatic synchronous equipment. Automatic synchronizing is required for all synchronous Generators that have a Short Circuit Contribution Ratio (SCCR) exceeding 0.05. Loss of synchronism protection is not required except as may be necessary to (L)
meet Section H.2.d (Flicker) (IEEE1547-2018 7.3). Unless otherwise (L)/(P)
agreed upon by Producer and Distribution Provider, synchronous (L)
Generators shall automatically regulate power factor, not voltage, while operating in parallel with Distribution Provider's Distribution System. A power system stabilization Function is specifically not required for Generating Facilities under 10 MW Net Rating.

b. Induction Generators

Induction Generators (except self-excited Induction Generators) do not require a synchronizing Function. Starting or rapid load fluctuations on induction Generators can adversely impact Distribution Provider's Distribution or Transmission System voltage. Corrective step-switched capacitors or other techniques may be necessary and may cause undesirable ferro-resonance. When these counter measures (e.g. additional capacitors) are installed on Producer's side of the PCC, Distribution Provider must review these measures. Additional equipment may be required as determined in a Supplemental Review or an Interconnection Study. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

3. TECHNOLOGY SPECIFIC REQUIREMENTS (Cont'd.)

c. Inverters

Grid-interactive inverters do not require separate synchronizing equipment. Non-grid-interactive or "stand-alone" inverters shall not be used for Parallel Operation with Distribution Provider's Distribution or Transmission System.

d. Limitations on Inverters Not Classified as Smart Inverters

i) Inverter based systems may continue to be installed per Section H until September 8, 2017. Section Hh may be used in all or in part, for inverter based technologies by mutual agreement of the Distribution Provider and the Applicant. If a developer replaces an existing inverter with an inverter of greater ability, the replacement inverter shall have all the required functionalities and be set according to current Commission practices as of the date the new smart inverter is installed, unless the interconnection applicant can demonstrate that safety or operational needs necessitate otherwise, per D.19-03-013 op 12. (L) (L)/(T) (T) (T)

ii) The replacement of an existing inverter to an inverter that is of equal or greater ability than the original is allowed per Section H. Section Hh may be used in all or in part, for replacement inverter-based technologies by mutual agreement of the Distribution Provider and the Applicant. (L)

e. Non-Export AC/DC Converters

A Non-Export AC/DC Converter must satisfy the definition in Section C.

4. SUPPLEMENTAL GENERATING FACILITY REQUIREMENTS

a. Fault Detection

A Generating Facility with an SCCR exceeding 0.1 or one that does not cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the formation of an Unintended Island shall be equipped with Protective Functions designed to detect Distribution or Transmission System faults, both line-to-line and line-to-ground, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the initiation of a fault. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

4. SUPPLEMENTAL GENERATING FACILITY REQUIREMENTS (Cont'd.)

b. Transfer Trip

For a Generating Facility that cannot detect Distribution or Transmission System faults (both line-to-line and line-to-ground) or the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds, Distribution Provider may require a Transfer Trip system or an equivalent Protective Function.

c. Reclose Blocking

Where the aggregate Generating Facility capacity exceeds 15% of the peak load on any automatic reclosing device, Distribution Provider may require additional Protective Functions, including, but not limited to reclose-blocking on some of the automatic reclosing devices. (L)

(P)

(P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

(L)

The inverter requirements are intended to be consistent with UL 1741 and IEEE 1547-2018. In the event of conflict this Rule shall take precedence. (P)

(P)

The Smart Inverter default settings and default activation states may be modified upon mutual agreement between Applicant and Distribution Provider (P)

Process for changing default settings for new Interconnection Requests:

Distribution Provider, in the study process for new Generating Facilities, may determine and provide the optimum Smart Inverter Settings for the reactive power settings, including changes to the reactive power default settings (Example: Deactivate Volt/Var and activate Fixed Power Factor at given power factor).

Distribution Provider, in the study process for new Generating Facilities, may determine and provide the optimum Smart Inverter Settings for the Ramp Rate settings depending on the Generating Facility technology (such as solar, storage).

Distribution Provider, in the study process for new Generating Facilities, may determine the optimum Smart Inverter Settings for the volt//watt settings including changes to the default settings (Example: Change the volt/watt set points). The Applicant may select to agree on the new settings or select to perform upgrades to operate using the existing default volt/watt settings.

Default settings for voltage ride-through, frequency ride-through requirements, and Frequency/Watt should not be modified on an individual project basis unless the Interconnection Studies have determined that the default settings may not meet grid reliability requirements. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L) (L)

Process for changing default settings for existing, operating Generating Facilities authorized to operate per Section D.1: (P)

When grid changes or Generating Facility changes require that the Smart Inverter operating settings be reevaluated, the Distribution Provider or Producer may request changes to the Generating Facility Smart Inverter operating parameters. The request must include the reason for and timing of the proposed changes. The requested changes must be within the Smart Inverter function adjustability limits, must be within the limits specified in this tariff, and must be mutually agreed on. This may be considered a material modification. (P)

The Smart Inverter default settings and default activation states may be modified upon mutual agreement between Applicant and Distribution Provider. (P) (P)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (L)

The Protective Functions and requirements of this Rule are designed to protect Distribution Provider's Distribution and Transmission System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. Producer's Protective Functions shall not impact the operation of other Protective Functions on Distribution Provider's Distribution and Transmission System in a manner that would affect Distribution Provider's capability of providing reliable service to its customers.

a. Protective Functions Required

Smart Inverters operating in parallel with Distribution Provider's Distribution or Transmission System shall be equipped with the following Protective Functions to sense abnormal conditions on Distribution Provider's Distribution or Transmission System and cause the Smart Inverter to be automatically disconnected from Distribution Provider's Distribution or Transmission System or to prevent the Smart Inverter from being connected to Distribution Provider's Distribution or Transmission System inappropriately:

(i) Over and under voltage trip functions and over and under frequency trip functions; (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

a. Protective Functions Required (Cont'd.)

(ii) A voltage and frequency sensing and time-delay function to prevent the Smart Inverter from energizing a de-energized Distribution or Transmission System circuit and to prevent the Smart Inverter from reconnecting with Distribution Provider's Distribution or Transmission System unless Distribution Provider's Distribution System service voltage and frequency is within the ANSI C84.1-1995 Table 1 Range B voltage Range of 106 volts to 127 volts (on a 120 volt basis), inclusive, and a frequency range of 59.0 Hz to 60.5 Hz, inclusive, and are stable for at least 15 seconds; and (L) (L)/(P) (L)

(iii) A function to prevent the Smart Inverter from contributing to the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution System within two seconds of the formation of an Unintended Island. (L)

The Smart Inverter shall cease to energize Distribution Provider's Distribution System for faults on Distribution Provider's Distribution System circuit to which it is connected (IEEE 1547-2018 6.2.1). The Smart Inverter shall cease to energize Distribution Provider's Distribution circuit prior to re-closure by Distribution Provider's Distribution System equipment (IEEE 1547-2018 6.3). (P)

(iv) Open Phase Condition: Generating Facility shall detect and cease to energize and trip all phases within 2 seconds of any open phase condition in accordance with IEEE 1547-2018 6.2.2. (P)

b. Momentary Paralleling Generating Facilities (L)

With Distribution Provider's approval, the transfer switch or scheme used to transfer Producer's loads from Distribution Provider's Distribution or Transmission System to Producer's Generating Facility may be used in lieu of the Protective Functions required for Parallel Operation. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

c. Suitable Equipment Required

Circuit breakers or other interrupting equipment located at the Point of Common Coupling (PCC) must be Certified or "Listed" (as defined in Article 100, the Definitions Section of the National Electrical Code) as suitable for their intended application. This includes being capable of interrupting the maximum available fault current expected at their location. Producer's Smart Inverter and Interconnection Facilities shall be designed so that the failure of any single device or component shall not potentially compromise the safety and reliability of Distribution Provider's Distribution and Transmission System. The Smart Inverter paralleling-device shall be capable of withstanding 220% of the (L)
Interconnection Facility rated voltage (IEEE 1547-2018 4.11.3). The (L)/(P)
Interconnection Facility shall have the capability to withstand voltage (L)
and current surges in accordance with the environments defined in
IEEE Std C62.41.2-2002 or IEEE Std C37.90.1-2002 as applicable (L)
and as described in L.3.e (IEEE 1547-2018 4.11.2). (L)/(P)

d. Visible Disconnect Required (L)

When required by Distribution Provider's operating practices, Producer shall furnish and install a ganged, manually-operated isolating switch (or a comparable device mutually agreed upon by Distribution Provider and Producer) near the Point of Interconnection to isolate the Smart Inverter from Distribution Provider's Distribution or Transmission System. The device does not have to be rated for load break nor provide over-current protection.

The device must:

(i) allow visible verification that separation has been accomplished. (This requirement may be met by opening the enclosure to observe contact separation.) (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

   d. Visible Disconnect Required (Cont'd.)

      (ii) include markings or signage that clearly indicates open and closed positions.

      (iii) be capable of being reached:

         a) for Emergency purposes quickly and conveniently 24 hours a day by Distribution Provider personnel for construction, operation, maintenance, inspection, testing or to isolate the Smart Inverter from Distribution Provider's Distribution or Transmission System without obstacles or requiring those seeking access to obtain keys, special permission, or security clearances.

         b) for Non-Emergency purposes during normal business hours. Distribution Provider, where possible, will provide notice to Customer for gaining access to Customer's premises.

      (iv) be capable of being locked in the open position.

      (v) be clearly marked on the submitted single line diagram and its type and location approved by Distribution Provider prior to installation. If the device is not adjacent to the PCC, permanent signage must be installed at a Distribution Provider approved location providing a clear description of the location of the device. If the switch is not accessible outside the locked premises, signage with contact information and a Distribution Provider approved locking device for the premises shall be installed.

      Generating Facilities with Non-Islanding inverters totaling one (1) kilovolt-ampere (kVA) or less are exempt from this requirement. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

   e. Drawings Required

      Prior to Parallel Operation or Momentary Parallel Operation of the Smart Inverter, Distribution Provider shall approve Producer's Protective Function and control diagrams. Generating Facilities equipped with Protective Functions and a control scheme previously approved by Distribution Provider for system-wide application or only Certified Equipment may satisfy this requirement by reference to previously approved drawings and diagrams.

   f. Generating Facility Conditions Not Identified

      In the event this Rule does not address the Interconnection conditions for a particular Smart Inverter, Distribution Provider and Producer may agree upon other arrangements.

2. PREVENTION OF INTERFERENCE

   Producer shall not operate Smart Inverters that superimpose a voltage or current upon Distribution Provider's Distribution or Transmission System that interferes with Distribution Provider operations, service to Distribution Provider Customers, or communication facilities. If such interference occurs, Producer must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by Distribution Provider. If Producer does not take corrective action in a timely manner, or continues to operate the facilities causing interference without restriction or limit, Distribution Provider may, without liability, disconnect Producer's facilities from Distribution Provider's Distribution or Transmission System, in accordance with Section D.9 of this Rule. To eliminate undesirable interference caused by its operation, each Smart Inverter shall meet the following criteria: (L)

   Note: Except as otherwise stated, the RPA for all performance requirements shall be met at the PCC. (P)

   When Generating facility is less than 500KVA or when generating facility operates under one of the non-exporting options or inadvertent export of no longer than 30 seconds, the RPA may be the Generating Facility Connection Point (PoC). (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

a. Voltage Regulation

If approved by the Distribution Provider, the Smart Inverter may actively regulate the voltage at the PCC while in parallel with Distribution Provider's Distribution System. The Smart Inverter shall not cause the service voltage at other customers to go outside the requirements of ANSI C84.1-1995, Range A. (L)/(P)

b. Voltage Trip and Ride-Through Settings (L)

The voltage ranges in Table Hh-.1a define protective trip limits for the Protective Function and are not intended to define or imply a voltage regulation Function. Generating Facilities shall cease to energize Distribution Provider's Distribution System within the prescribed trip time whenever the voltage at the PCC deviates from the allowable voltage operating range. The Protection Function shall detect and respond to voltage on all phases to which the Generating Facility is connected. (L)/(P) (L)

(i) Smart Inverters

Smart Inverters shall be capable of operating within the voltage range normally experienced on Distribution Provider's Distribution System from plus to minus 5% of the nominal voltage (e.g. 114 volts to 126 volts, on a 120 volt base), at the service panel or PCC. The trip settings at the generator terminals may be selected in a manner that minimizes nuisance tripping in accordance with Table Hh-.1 to compensate for voltage drop between the generator terminals and the PCC. Voltage may be detected at either the PCC or the Point of Interconnection. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip and Ride-Through Settings (Cont'd.)

(ii) Voltage Disturbances

Whenever Distribution Provider's Distribution System voltage at the RPA varies from and remains the continuous operating region for the predetermined parameters set forth in Table Hh-.1b, the Smart Inverter's Protective Functions shall cause the Smart Inverter(s) to trip and become isolated from Distribution Provider's Distribution System as required in Table Hh-1a: (L) (P) (P)

1. The Smart Inverter shall stay connected to the Distribution Provider's Transmission or Distribution System while the grid remains within the "Voltage Range (p.u)" and must stay connected in the corresponding "Operating Mode. (L) (L) (L)/(P) (L)

2. If the distribution system voltage does not exit the ride-through region and recovers to normal system voltage, the Smart Inverter shall restore continuous operation within 2 seconds. (L)

3. If the Distribution Provider's Transmission or Distribution System voltage does not exit the ride-through region and returns from the V<0.5 pu region to the 0.5≤V< 0.7 or 0.7≤V< 0.88 pu region, the Smart Inverter shall restore available current within 2 seconds. (P) (P)

4. Different voltage-time settings could be permitted by the Distribution Provider. (L) (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip and Ride-Through Settings (Cont'd.)

(ii) Voltage Disturbances (Cont'd.) (L)

Table Hh.1a: Trip Table (P)

Shall Trip Function	Voltage Trip Default Settings (p.u. of nomnial voltage)	Voltage Rage of Shall Trip Function (p.u. of nomnial voltage)	Default Clearing Time (s)
OV1	1.20	V≥1.20	0.16
OV2	1.10	1.10 ≤ V < 1.20	13.0
Continuous Operation	NA	0.88 < V < 1.10	NA
UV1	0.88	0.50 < V ≤ 0.88	21.0
UV2	0.50	V ≤ 0.50	2.0

Table Hh-1b – Smart Inverter Voltage ride-through settings

Voltage Range (p.u.)	Operating Mode/Response	Minimum Ride-Through Time (s)	Maximum Response Time (s)
V > 1.20	Cease to Energise	NA	0.16
1.10 ≤ V < 1.20	Momentary Cessation	12	0.083
0.88 < V < 1.10	Continuous Operation	Infinite	NA
0.70 < V ≤ 0.88	Mandatory Operation	20	NA
0.50 < V ≤ 0.70	Mandatory Operation	10	NA
V < 0.50	Momentary Cessation	1	0.083

(P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

c. Paralleling

The Generating Facility shall parallel with Distribution Provider's Distribution or Transmission System without causing a voltage fluctuation at the PCC greater than plus/minus 5% of the prevailing voltage level of Distribution Provider's Distribution or Transmission System at the PCC, and meet the flicker requirements of Section H.2.d. Section L, Certification and Testing Criteria, provides technology-specific tests for evaluating the paralleling Function. (L)
(IEEE 1547-2018 4.10) (L)/(P)

d. Flicker (L)

The Generating Facility shall not create objectionable flicker for other customers on Distribution Provider's Distribution or Transmission System. To minimize the adverse voltage effects experienced by other (L)
customers, flicker at the PCC caused by the Generating Facility (L)/(P)
should not exceed the limits of IEEE 1547-2018 7.2.3. This (L)/(P)
requirement is necessary to minimize the adverse voltage affects (L)
experienced by other Customers on Distribution Provider's Distribution or Transmission System. Generators may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded.

e. Integration with Distribution Provider's Distribution System Grounding

The grounding scheme of the Generating Facility shall not cause over-voltages that exceed the rating of the equipment connected to Distribution Provider's Distribution System and shall not disrupt the coordination of the ground fault protection on Distribution Provider's Distribution System (IEEE 1547-2018 4.12) (See Section G.1.i, line configuration). (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency

Distribution Provider controls system frequency, and the Generating Facility shall operate in synchronism with Distribution Provider's Distribution or Transmission System. Whenever Distribution Provider's Distribution or Transmission System frequency at the PCC varies from and remains outside normal (nominally 60 Hz) by the predetermined amounts set forth in Table H.2a, the Generating Facility's Protective Functions shall cease to energize Distribution Provider's Distribution or Transmission System within the stated maximum trip time. (L)/(P) (L)

(i) Frequency Ride-Through Requirements

Smart Inverter based systems shall remain connected to the Distribution Provider's Distribution or Transmission System while the grid is within the frequency-time range indicated in Table Hh-.2, and shall disconnect from the electric grid during a high or low frequency event that is outside that frequency-time range. (L)

The frequency values are shown in Table Hh.2b. These values provide default interconnection system response to abnormal frequencies. The inverter shall disconnect by the default clearing times. In the high frequency range between 60.2 Hz and 61.5 Hz, or some other mutually agreed range, the Smart Inverter is permitted to reduce real power output until it ceases to export power by 61.5 Hz, or other frequency value mutually agreed between the generating facility operator and the Distribution Provider. Islands and microgrids may need different default frequency settings. (L)/(P) (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency (Cont'd.)

(i) Frequency Ride-Through Requirements(Cont'd.)

Table Hh.2a: Frequency Trip Settings Table (L)/(P)

Shall Trip Function	Frequency Trip Default Setting (Hz)	Resulting Range of Shall Trip Function (Hz)	Default Clearing Time (s)
OF1	62.0	f≥62.0	0.16
OF2	61.2	61.2≤f<62	300
Continuous Operation	NA	58.5<f<61.2	NA
UF1	58.5	56.5<f≤58.5	300
UF2	56.5	f≤56.5	0.16

(P)

Table Hh.2b: Frequency Ride-Through Settings Table

Frequency (Hz)	Operating Mode	Default Clearing Time
f>62.0	No Ride-Through requirements apply to this range	NA
61.2<f≤61.8	Mandatory Operation	299
58.8≤f≤61.2	Continuous Operation	Infinite
57.0≤f<58.8	Mandatory Operation	299
F<57.0	No Ride-Through requirements apply to this range	NA

(P)

ii) Rate of change of frequency (ROCOF) ride-through

Smart Inverter shall not trip for frequency excursion have a rate of change of frequency (ROCOF) magnitude that is less than or equal to 3.0Hz per second as specified in IEEE 1547-2018 6.5.2.5 category III. For ROCOF greater than 3Hz per second, it is preferred for Smart Inverter to ride-through as long as frequency remains in the continuous operating region, low frequency ride-though region (and corresponding duration times), or high frequency region (and corresponding duration times).

iii) Voltage phase angle change ride-through

Voltage phase angle change ride-through as specified in IEEE 1547-2018 6.5.2.6. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

g. Harmonics

When the Smart Inverter is serving balanced linear loads, harmonic current injection into Distribution Provider's Distribution or Transmission System at the PCC shall not exceed the limits stated in (L)
IEEE 1547-2018 7.3. The harmonic current injections shall be (L)/(P)
exclusive of any harmonic currents due to harmonic voltage distortion (L)
present in Distribution Provider's Distribution or Transmission System (L)
without the Smart Inverter connected. The harmonic distortion of a (L)/(P)
Smart Inverter shall be evaluated using the same criteria as for the (L)
Host Loads.

h. Direct Current Injection

Smart Inverter should not inject direct current greater than 0.5% of rated output current into Distribution Provider's Distribution or Transmission System. (L)

i. Smart Inverter Reactive Power Requirements (P)

Smart Inverter Reactive Power capabilities shall comply with IEEE 1547-2018 5.2 Category B requirement. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

(P)

(P)

j. Dynamic Volt/VAR Operations (L)

(P)

(P)

The Distribution Provider may permit or require the Smart Inverter systems to operate in larger power factor ranges, including in 4-quadrant operations for storage systems with the implementation of additional anti-islanding protection as determined by the Distribution Provider. (L)

(L)

The Smart Inverter shall be capable of supporting dynamic reactive power compensation (dynamic Volt/VAR operation) within the following constraints: (L)/(P)
(L)

- The Smart Inverter shall be able to consume reactive power in response to an increase in line voltage, and produce reactive power in response to a decrease in line voltage as indicated in table Hh-4. (L)/(P)
(P)

(P)

(P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

j. Dynamic Volt/VAR Operations (Cont'd.)

Dynamic Volt/Var Operations Default Settings

Table Hh-4 and Figure Hh-1 depict the default settings, which should be applied for all inverter sizes. Specific volt/var settings may be required for larger Generating Facilities (such as 100 kw or greater), or for specific areas with the Distribution Systems as determined by the Distribution Provider.

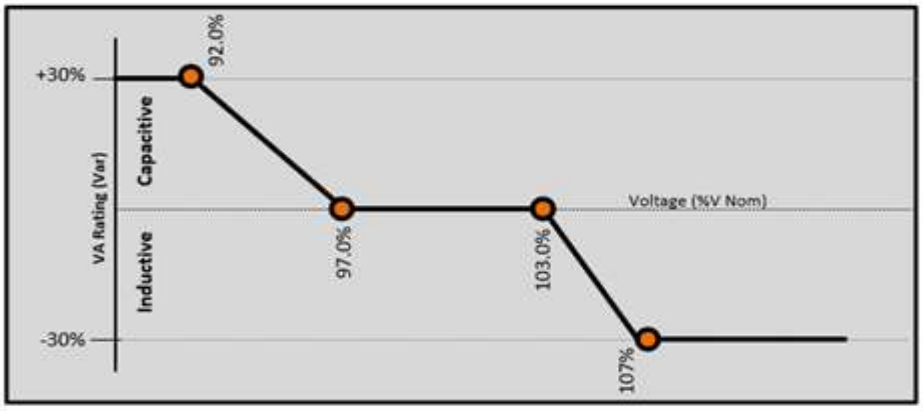
Default Open Loop Response Time for volt/var operation should be five (5) seconds.

Table Hh-4: Voltage and Reactive Default Settings (L)

(P)

Voltage Setpoint	Voltage Value	Reactive Setpoint	Reactive Value	Operation
V1	92.0%	Q1	30%	Reactive Power injection
V2	97.0%	Q2	0	Unity Power Factor
V3	103.0%	Q3	0	Unity Power Factor
V4	107.0%	Q4	30%	Reactive Power Absorption

Figure Hh-1: Voltage and Reactive Default Settings



(P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

k. Enter Service Ramp Rate Requirements (P)

The Smart Inverter is required to have the following ramp controls

- Enter Service requirements as outlined in IEEE 1547-2018 section 4.10.3 with following default settings

  1. Delay Enter Service per Hh.1.a.ii (15 seconds)

  2. Default Enter Service Duration of 300 seconds

l. Frequency Droop (Frequency – Power, Frequency—Watt) Requirements

Smart Inverters shall change their real power production as a function of system frequency, in accordance with IEEE 1547-2018 6.5.2.7 with the following defaults, Deadband 36 mHz kOF and kUF 3.33%.: (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

(P)

(P)

m. Voltage-Watt Default Settings Requirements (L)

(P)

(P)

Smart Inverters shall reduce their real power production as a function of measured voltage at the inverter terminals or at the Generating Facility Point of Common Coupling (PCC) in accordance with the following: (L)

- When the measured voltage is greater than 106% of nominal voltage (for example: 127.2 volts on a 120 volts nominal), the export of active power at the PCC or the production of active power by the Smart Inverter shall be reduced at a rate of 25% of active power nameplate rating per one percent of nominal voltage. Figure Hh-3 – Volt-Watt Requirements – illustrates the required rate of reduction. When export of active power is controlled, a certified inverter and control system shall be used. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

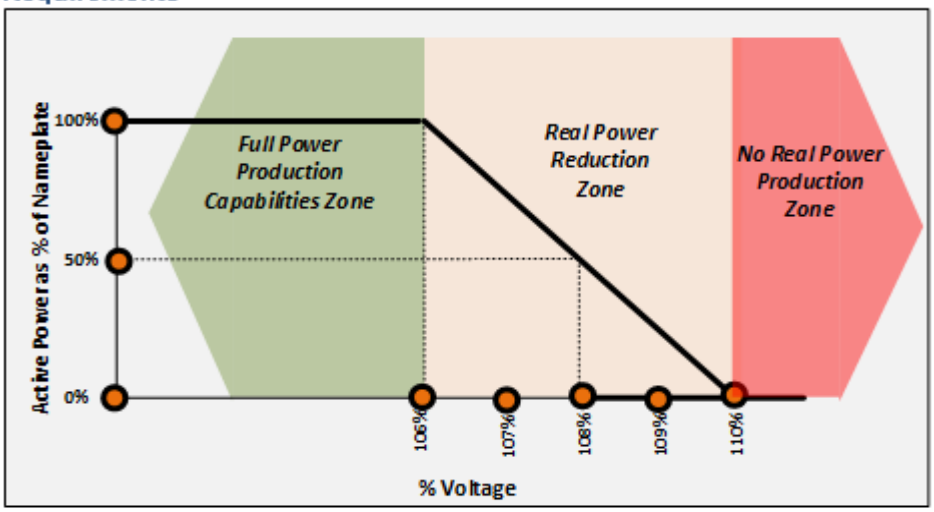
m. (Cont'd.)

- When the measured voltage is greater than 110% of nominal voltage (Example: 132 volts on a 120 volts nominal), the export of active power output to the grid at the PCC or the production of active power by the Smart Inverter shall be reduced to 0 watts (L)

- Open Loop response time shall be 5 seconds, (P)

(L)

Figure HH-3 – Volt-Watt Requirements



(L)

Percent (%) of nominal voltage

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

n. Dynamic Reactive Power Support Function

The capability for this requirement will become mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted twelve (12) months after approval of a nationally recognized standard that includes the function.

The utilization of this function is allowed and optional upon the mutual agreement of the Distribution Provider and the Applicant, before the effective date.

o. Default Activation States

Unless otherwise provided by Distribution Provider, pursuant to Distribution Provider's Distribution Generation Interconnection Handbook, the default settings will be as follows: (L)

	Function	State	(P)
1	Anti-islanding	activated	
2	Low/High Voltage Ride-Through	activated	
3	Low/High Frequency Ride-Through	activated	
4	Dynamic Volt/VAR operations	activated	
5	Enter Service Ram Control	activate	
6	Storage Inverter Normal Operation Ramp Control	activate	
7	Fixed power factor	deactivated	
8	Reconnect by "soft-start" methods	activated	
9	Frequency-Watt*	activated	
10	Volt/Watt*	activated	
11	Constant Reactive Power Mode	deactivated	
12	Set Active Power Function Mode (Optional)	activated under mutual agreement	
13	Dynamic Reactive Power Support Mode (Optional)	activated under mutual agreement	

These default activation states may be modified by mutual agreement between Distribution Provider and Producer. (P)

* These functions must be activated for Interconnection Requests submitted on or after February 22, 2019. (P) (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

p. Load Shedding or Transfer (L)/(P)

The voltage and frequency ride-through requirements of Hh.2.b.(ii) and Hh.2.f.(i) shall not apply if either: a) The real power across the Point of Common Coupling is continuously maintained at a value less than 10% of the aggregate rating of the Smart Inverters connected to the Generation Facility prior to any voltage disturbance, and the Generation Facility disconnects from the Distribution Provider's T&D system, along with Generation Facility load, such that the net change in real power flow from or to the Distribution Provider is less than 10% of the aggregate Smart Inverter capacity; or b) Generation Facility load real power demand equal to 90% to 120% of the pre-disturbance aggregate Smart Inverter real power output is shed within 0.1 seconds of Smart Inverter disconnection. (L)

q. Measurement and Calculation Accuracy (P)

Smart Inverter shall meet minimum steady-state and transient measurement and calculation accuracy as required in IEEE1547-2018 4.4.

r. Prioritization of Smart Inverter Responses

1. The response to disable permit to service as specified in section Hh.8.a shall take precedence over any other tripping requirements

2. Prioritization of tripping requirements not related to disabling permit to service shall meet IEEE 1547-2018 4.7.

s. Storage Inverter Normal Operation Ramp Control Requirements

Smart Inverters used for energy storage applications shall include ramp-up rate control. The default value shall be 100% of maximum current output per second or slower if required by applicant. Other ramp-up control settings can be used, when required, as mutually agreed by the Distribution Provider and the Producer. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

2. PREVENTION OF INTERFERENCE (Cont'd.)

t. Ride-through of consecutive voltage disturbances

Ride through of Consecutive Voltage Disturbances shall be in accordance with IEEE 1547-2018 6.4.2.5.

u. Restore output without dynamic voltage support

Restore output without dynamic voltage shall be accordance with IEEE 1547-2018 6.4.2.7.1.

v. Transition between performance operating region

Transition between performance operating regions should be in accordance with IEEE 1547-2018 6.4.2.7.3.

w. Constant Reactive Power Mode

When in this mode, the Smart Inverter shall maintain a constant reactive power. The target reactive power level and mode (injection or absorption) shall be specified by the Distribution Provider and shall be within the same range specified in IEEE 1547-2018 5.2. The reactive power settings are allowed to be adjusted locally and/or remotely as specified by the Distribution Provider. The maximum Smart Inverter response time to maintain constant reactive power shall be 10 seconds or less.

x. Generating Facility Rapid Voltage Changes (RVC)

Generating step or ramp changes shall meet the requirements as specified in IEEE 1547-2018 7.2.2.

y. Limitations of overvoltage over one fundamental frequency period

Generating Facility shall not contribute to instantaneous or fundamental frequency overvoltage conditions per IEEE 1547-2018 7.4.1. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

2. PREVENTION OF INTERFERENCE (Cont'd.)

z. Limitation of cumulative instantaneous overvoltage

Generating Facility shall not cause the instantaneous voltage on any portion of the Distribution or Transmission system to exceed the magnitudes per IEEE 1547-2018 7.4.2

zz. Phase 3 Functions

Table of Phase 3 Effective Dates Pursuant to Resolution E-4898 and Resolution E-5000 and CPUC Letter of March 20, 2020 responding to a request to extend the date for Functions 1, 2, 3 and 8:

Phase 3 Function #		
	Description	**Effective Date (note)**
1	Monitor Key Smart Inverter Data	**June 22, 2020**
2	Smart Inverter Disconnect and Reconnect Command (Cease to Energize and Return to Service)	**June 22, 2020**
3	Limit Maximum Active Power Mode	**June 22, 2020**
4	Set Active Power Mode	12 months after approval of a nationally recognized standard that includes the function.
5	Frequency Watt Mode	**February 22, 2019**, which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.
6	Volt Watt Mode	**February 22, 2019**, which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.
7	Dynamic Reactive Support	12 months after approval of a nationally recognized standard that includes the function.
8	Scheduling Power Values and Modes	**June 22, 2020**

Note: The utilization of any of these functions is permissible under mutual agreement between the utility and the generating facility before the effective date. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

3. TECHNOLOGY SPECIFIC REQUIREMENTS

Grid-interactive inverters do not require separate synchronizing equipment. Non grid-interactive or "stand-alone" inverters shall not be used for Parallel Operation with Distribution Provider's Distribution or Transmission System.

4. SUPPLEMENTAL SMART INVERTER REQUIREMENTS

a. Fault Detection

A Smart Inverter with an SCCR exceeding 0.1 or one that does not cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the formation of an Unintended Island shall be equipped with Protective Functions designed to detect Distribution or Transmission System faults, both line-to-line and line-to-ground, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the initiation of a fault.

b. Transfer Trip

For a Generating Facility that cannot detect Distribution or Transmission System faults (both line-to-line and line-to-ground) or the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds, Distribution Provider may require a Transfer Trip system or an equivalent Protective Function.

c. Reclose Blocking

Where the aggregate Generating Facility capacity exceeds 15% of the peak load on any automatic reclosing device, Distribution Provider may require additional Protective Functions, including, but not limited to reclose-blocking on some of the automatic reclosing devices. (L)

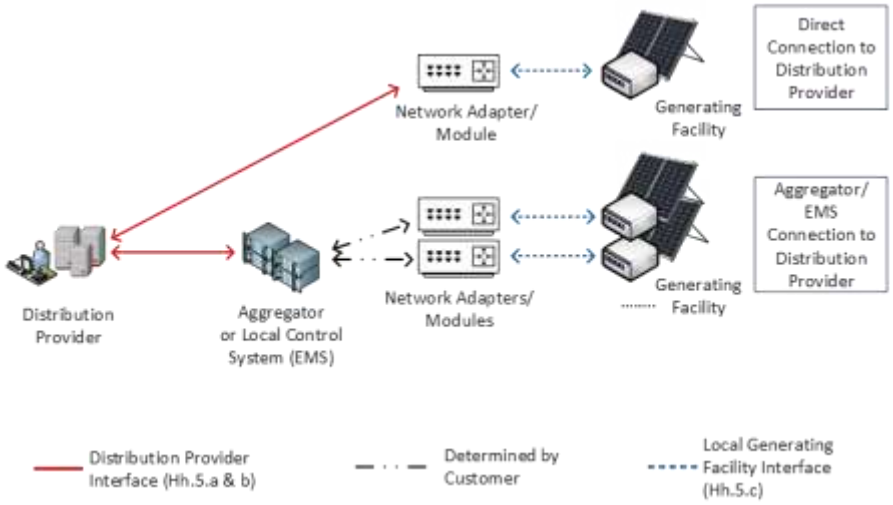
(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

(L)

5. COMMUNICATION REQUIREMENTS (P)

Generating Facilities utilizing inverter-based technologies must adhere to the following communication protocol requirements for communications between Distribution Provider and the Generating Facility. The diagram below shows the interface requirements as applicable for section Hh.5. The Distribution Provider Interface (solid red line) is described in Sections Hh.5.a and Hh.5.b. The Local Generating Facility Interface (dotted blue line) is described in Section Hh.5.c. The top row shows a direct connection between the Distribution Provider and the Generating Facility network adapter which may be separated from or integrated into the Smart Inverter. The lower row shows a connection between the Distribution Provider and an aggregator or local control system.



The network adapter depicted in the diagram is a device that connects the Smart Inverter to the local area network (LAN) or the wide area network (WAN). If no upstream control system is managing the Generating Facility (e.g., an aggregator or energy management system) and the Generating

Facility is being managed directly by the Distribution Provider, the network adapter is required to be an IEEE 2030.5-2018 DER client as defined by CSIP, unless another protocol is agreed to be used with the Distribution Provider. The network adapter may also support other functions such as protocol translation or Generating Facility management. The network adapter may be integrated into the Smart Inverter or be a separate device. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

5. COMMUNICATION REQUIREMENTS (Cont'd.)

a. The communications requirements in this section pertain to (i) the Distribution Provider and the individual Generating Facility's inverter control or energy management system; (ii) the Distribution Provider and communication to the Generating Facility through an aggregator not co-located or part of the Generating Facility; or (iii) the Distribution Provider and the Smart Inverter:

(i) Software shall be updateable via communications remotely;

(ii) The transport level protocol shall be TCP/IP;

(iii) The default application-level protocol shall be IEEE 2030.5 (i.e., Smart Energy Profile 2.0) as defined in the latest final version of the Common Smart Inverter Profile (CSIP), the Interconnection Handbook, Cybersecurity Requirements or Programs and Contracts. Other application-level protocols may be used by mutual agreement of the parties including IEEE 1815/DNP3 for SCADA real-time monitoring and control and IEC 61850.

b. Additional communication protocol requirements shall also apply to Generating Facilities utilizing inverter-based technologies as provided in the following documents:

(i) Distribution Provider Generation Interconnection Handbook, which shall include:

(a) Details and guidelines for the implementation of communications with Generating Facilities utilizing inverter-based technologies;

(b) Requirements for which application-level protocols are supported and references to an application-level protocol implementation guide;

(c) Cybersecurity and privacy requirements (these may additionally or alternatively be included in the application-level protocol implementation guide); (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

5. COMMUNICATION REQUIREMENTS (Cont'd.)

b. (Cont'd.)

(i) (Cont'd.)

(d) Generic device communications registration management requirements, including how to register individual Generating Facilities, Generating Facilities with energy management systems, and Aggregators (these additionally or alternatively may be included in the application-level protocol implementation guide); and,

(e) Conditions under which communication functions are mandatory.

(ii) Application-Level Protocol Implementation Guide, which shall provide:

(a) Detailed communication requirements and implementation guidelines to ensure consistent interoperability of the Generating Facilities with all California investor-owned utilities under the Commission's jurisdiction.

c. Communication and protocol performance requirements

i) Communication performance requirements

Communication performance requirements for the interface to the Generating facility shall comply with IEEE 1547-2018 10.8.

ii) Communication Protocol Requirements

The protocol requirements at the Generating Facility shall be per IEEE 1547-2018 10.7. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

6. SCHEDULING CAPABILITY REQUIREMENTS

a. Generating Facilities which incorporate Smart Inverters shall incorporate scheduling capabilities with a minimum scheduling memory capability of at least 24 events. (L)/(P)

The utilization of this function is permissible under mutual agreement between the utility and the generating facility before the effective date. (L)

Each event is composed of modifications to each, selected group of, or all of the following Smart Inverter function.

(i) Modifications to the voltage and reactive set-points of the Dynamic volt/var function.

(ii) Modifications to the reactive power set-points for the fixed power factor function.

(iii) Modifications to the voltage and watt-reduction level set-points for the volt/watt function. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

6. SCHEDULING CAPABILITY REQUIREMENTS (Cont'd.)

b. The Generating Facility's scheduling capability requirement herein shall be met by one or more of the following options.

(i) Scheduling capability requirements may be stored at the Generating Facility Energy Management System (GFEMS). The GFEMS shall communicate the necessary commands to the Smart Inverters within 10 minutes from when GFEMS received the scheduling information:

(ii) Scheduling capability requirements may be stored at the Smart Inverter Control Unit (SMCU) within the Generating Facility. The SMCU shall communicate necessary commands to the Smart Inverters within 10 minutes from when SCMU received the scheduling information.

(iii) Scheduling capability requirements may be stored at an aggregator not co-located within the Generating Facility. The aggregator shall communicate the necessary commands to the Smart Inverters within 15 minutes of the aggregator receiving the scheduling information.

(iv) Other options may be utilized by mutual agreement between the Applicant and Distribution Provider.

c. The selected scheduling control system shall store the schedules and shall send operational commands to the Smart Inverters as required by the schedule received from the Distribution Provider. The Smart Inverter shall respond by changing its mode of operation as commanded at the schedule start time with no unreasonable delay.

Each scheduled mode of operation shall include and start-time and duration. The Smart Inverter should return to its default settings at the end of the duration time or shall enter a new operational mode as directed by the scheduling control system. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

7. MONITORING AND TELEMETRY REQUIREMENTS (L)

(P)

(P)

a. Smart Inverter shall have the capability to communicate its performance information per IEEE 1547-2018 10.5 Table 29: (L) (L)/(P)

(i) Smart Inverter production or consumption of active power (Watts). (L)

(ii) Smart Inverter consumption or production of reactive power (VARs)

(iii) Phase measured at the AC terminals of the Smart Inverter (Volts)

(iv) Frequency measured at the AC terminals of the Smart Inverter (Hz) (L)

(v) Connection Status (P)

(vi) Alarm Status (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

7. MONITORING AND TELEMETRY REQUIREMENTS (Cont'd.)

b. When the Generating Facility includes energy-storage with Smart Inverters, the following monitoring and telemetry capability are required:

(i) The Smart Inverter shall be capable of communicating the operational state of charge as a percentage of energy storage capacity.

c. Operational State as In-Service or not In-service communication capability requirements. The Smart Inverter shall be capable of communicating when the Smart Inverter is capable of providing electric services as follows:

(i) In-Service state: An operational state which indicates that the Smart Inverter is connected to the electric system and operating as determined locally by the Generating Facility operator or by a scheduling control system as outlined in section Hh.6

(ii) Not In-Service state: An operating state which indicates that the Smart Inverter is not capable of connecting to the electric system and not capable of providing any type of electrical support as required locally or as commanded by a scheduling control system as outlined in section Hh. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

7. MONITORING AND TELEMETRY REQUIREMENTS (Cont'd.)

d. Monitoring and performance information should be communicated in aggregate at the Generating Facility as follows:

(i) When the Generating Facility includes only Smart Inverters: The production or consumption of active and reactive power shall be communicated as an aggregate of all Smart Inverters within the Generating Facility.

(ii) When a Generating Facility includes Smart Inverters and other technologies such as synchronous or induction generation systems, the Generating Facility should communicate the following:

a) The production or consumption of active and reactive power shall be communicated in aggregate of all Smart Inverters within the Generating Facility

b) The production or consumption of active and reactive power shall be communicated in aggregate of all the other technologies within the Generating Facility

(iii) When the Generating Facility with Smart Inverters includes one or multiple energy storage systems: The available operational energy should be communicated as an aggregate of all the energy storage systems. (L)

(iv) Nameplate information shall be available through a local Generating Facility Interface as required in IEEE 1547-2018 10.3 and must include the information as required in IEEE 1547-2018 Table 28. (P)

(v) Configuration information shall be available through a Local Generating Facility Interface as required in IEEE 1547-2018 10.4. This information represents the present capacity and ability of the Generating Facility. When a configuration update changes the Generating Facility nameplate information, it may require a study depending on the change. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

8. CONTROL THROUGH COMMUNICATION CAPABILITIES

a. The capability for these requirements will be mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted on or after the earlier of the dates shown in the "Table of Phase 3 Effective Dates Pursuant to Resolution E-4898" in Section Hh.2.zz. (L) (L)/(P)

The utilization of these functions is permissible under mutual agreement between the utility and the generating facility before the effective date. (L)

Smart Inverters shall have the capabilities of accepting an operational controls through communications in accordance to the following: (L)

(i) Disable permit to service control command. When the Smart Inverter receives a disable permit service command through communication, the Smart Inverter must cease-to energize and trip within 2 seconds or initiate the opening of the switch referenced in the inverter terminal in order to galvanically isolate the Smart Inverter from the Distribution System. (P) (P)

(ii) Return to service control command. When the Smart Inverter receives a return-to-service control command, the Smart Inverter may return to service operation as required by Generating Facility operator or as required by the scheduling control system as required by section H.6. This shall be accomplished by enabling permit service as required in IEEE 1547-2018 4.10.3. (L) (P) (P)

(iii) Limit Active Power command. When the Smart Inverter receives a command to limit its production of real power, the Smart Inverter shall reduce its real power production to the specified percent of real power capacity of the Smart Inverter or to a specified real power value. In no more than 30 s or in the time it takes for the primary energy source to reduce its active power output to achieve the requirements of the active power limit set point, whichever is greater. (L) (L) (P) (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)
(L)

8. CONTROL THROUGH COMMUNICATION CAPABILITIES (Cont'd.) (L)/(P)

a. (Cont'd.)

(iii) Limit Active Power command (Cont'd.). (L)/(P)

Where the Smart Inverter operates under a non-export provision, the active power limit set point may be implemented as a maximum active power to serve the host customer load. (P)

Under mutual agreement, Smart Inverter may be required to reduce active power below the level needed to support host customer load. (P)

(iv) Set Active Power Level Mode Function. The capability for this requirement will become mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted twelve (12) months after approval of a nationally recognized standard that includes the function. (L)

(v) Suspension of Active Power restriction. When the Smart Inverter receives a command to suspend the command for active power reduction, the Smart Inverter may return to normal operation as required by Generating Facility operator or as required by the scheduling control system as required by section H.6. (L)

(vi) Transition between operating modes. Transition between modes shall commence in no more than 30 s after the mode setting change is received at the local Generating Facility communication interface. Changes of control functional modes shall be executed such that the Smart Inverter output is transitioned smoothly over a time period between 5 s and 300 s. (P)

Ramping of the Smart Inverter output is not required for control parameter setting changes.

For all control and protective function parameter settings, the time following the input to the local Generating Facility communication interface and preceding the point in time when the invoked action begins shall be no greater than 30 s. (P)

(Continued)

ELECTRIC RULE NO. 21 Sheet 226
GENERATING FACILITY INTERCONNECTIONS

I. THIRD-PARTY INSTALLATIONS, RESERVATION OF UNUSED FACILITIES, AND REFUND OF SALVAGE VALUE (L)

1. INTERCONNECTION FACILITIES AND DISTRIBUTION UPGRADES

Except as provided for in the Generator Interconnection Agreement of this Rule, Interconnection Facilities connected to Distribution Provider's side of the PCC and Distribution Upgrades shall be provided, installed, owned, and maintained by Distribution Provider at Producer's expense.

2. THIRD-PARTY INSTALLATIONS (L)

Producer may, at its option, employ a qualified contractor that meets the Contractor Qualifications set forth under Electric Rule 15, Section G., to provide and install Interconnection Facilities or Distribution Upgrades, to be owned and operated by Distribution Provider, on Distribution Provider's side of the PCC. Such Interconnection Facilities and Distribution Upgrades shall be installed in accordance with Distribution Provider's design and specifications. Upon final inspection and acceptance by Distribution Provider, Producer shall transfer ownership of such Producer installed Interconnection Facilities or Distribution Upgrades to Distribution Provider and such facilities shall thereafter be owned and maintained by Distribution Provider at Producer's expense. Producer shall pay Distribution Provider's reasonable cost of design, administration, and monitoring of the installation for such facilities to ensure compliance with Distribution Provider's requirements. Producer shall also be responsible for all costs, including any income tax liability, associated with the transfer of Producer installed Interconnection Facilities and Distribution Upgrades to Distribution Provider. (L)/(P) (L)/(P) (L)

* Only duly authorized employees of utility are allowed to connect to, disconnect from, or perform any work upon Utility's facilities. (P) (P)

(Continued)

ELECTRIC RULE NO. 21 Sheet 227
GENERATING FACILITY INTERCONNECTIONS

I. THIRD-PARTY INSTALLATIONS, RESERVATION OF UNUSED FACILITIES, AND REFUND OF SALVAGE VALUE (Cont'd.) (L)

3. RESERVATION OF UNUSED FACILITIES

When a Producer wishes to reserve Distribution Provider-owned Interconnection Facilities or Distribution Upgrades installed and operated as Added Facilities for Producer at Producer's expense, but idled by a change in the operation of Producer's Generating Facility or otherwise, Producer may elect to abandon or reserve such facilities consistent with the terms of its agreement with Distribution Provider. If Producer elects to reserve idle Interconnection Facilities or Distribution Upgrades, Distribution Provider shall be entitled to continue to charge Producer for the costs related to the ongoing operation and maintenance of the Added Facilities.

4. REFUND OF SALVAGE VALUE

When a Producer elects to abandon the Special Facilities or Added Facilities for which it has either advanced the installed costs or constructed and transferred to Distribution Provider, Producer shall, at a minimum, receive from Distribution Provider a credit for the net salvage value of the Added Facilities.

J. METERING, MONITORING AND TELEMETERING

1. GENERAL REQUIREMENTS

All Generating Facilities shall be metered in accordance with this Section J and shall meet all applicable standards of Distribution Provider contained in Distribution Provider's applicable tariffs and published Distribution Provider manuals dealing with Metering specifications.

2. METERING BY NON-DISTRIBUTION PROVIDER PARTIES

The ownership, installation, operation, reading, and testing of revenue Metering Equipment for Generating Facilities shall be by Distribution Provider except to the extent that the Commission authorizes any or all these services be performed by others. (L)

(Continued)

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

3. NET GENERATION OUTPUT METERING

Generating Facility customers may be required to install Net Generation Output Metering for evaluation, monitoring, and verification purposes and to determine applicable standby and non-bypassable charges as defined in Distribution Provider's tariffs, to satisfy applicable California Independent System Operator (CAISO) reliability requirements, and for Distribution System planning and operations.

However, Generating Facility customers do not need to install Net Generation Output Metering where less intrusive and/or more cost effective options, for Producer/Customer, are available for providing generator data to Distribution Provider. These Generating Facilities may opt to have Distribution Provider estimate load data in accordance with Distribution Provider's applicable tariffs to determine or meet applicable standby and non-bypassable and other applicable charges and tariff requirements. However, if a Generating Facility customer objects to Distribution Provider's estimate of the Generator(s) output, the customer may elect to install the Net Generation Output Metering, or have Distribution Provider install Net Generation Output Metering at the customer's expense.

(a) All metering options available to the customer must conform to the requirements set forth in Distribution Provider's Rule 22. If Distribution Provider does not receive meter data in accordance with Rule 22, Distribution Provider shall have the right to install Distribution Provider-owned Net Generation Output Metering at the customer's expense. The relevant factors in determining the need for Net Generation Output Metering are as listed below:

i) Data requirements in proportion to need for information;

ii) Producer's election to install equipment that adequately addresses Distribution Provider's operational requirements; (L)

(Continued)

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

3. NET GENERATION OUTPUT METERING (Cont'd.)

iii) Accuracy and type of required Metering consistent with purposes of collecting data;

iv) Cost of Metering relative to the need for and accuracy of the data;

v) The Generating Facility's size relative to the cost of the Metering/monitoring;

vi) Other means of obtaining the data (e.g. Generating Facility logs, proxy data, etc.);

vii) Requirements under any Generator Interconnection Agreement with Producer.

The requirements in this Section may not apply to Metering of Generating Facilities operating under Distribution Provider's Net Energy Metering tariffs. Nothing in this Section J.3 supersedes Section D.4, Compliance with Laws, Rules and Tariff Schedules.

Distribution Provider will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring Net Generation Output Metering equipment in each instance along with the size and location of the facility.

4. POINT OF COMMON COUPLING (PCC) METERING

For purposes of assessing Distribution Provider's charges for retail service, Producer's PCC Metering shall be reviewed by Distribution Provider, and if required, replaced to ensure that it will appropriately measure electric power according to the provisions of the Customer's electric service Tariff. Where required, the Customer's existing meter may be replaced with a bi-directional meter so that power deliveries to and from Producer's site can be separately recorded. Alternately, Producer may, at its sole option and cost, require Distribution Provider to install multi-metering equipment to separately record power deliveries to Distribution Provider's Distribution System and retail purchases from Distribution Provider. Where necessary, such PCC Metering shall be designed to prevent reverse registration.

Generating Facilities participating in Net Energy Metering shall have metering provided pursuant to the terms of the applicable Net Energy Metering tariff schedule. (L)

(Continued)

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

5. TELEMETERING

If the nameplate rating of the Generating Facility is 1 MW or greater, Telemetering equipment at the Net Generation Output Metering location may be required at Producer's expense. If the Generating Facility is Interconnected to a portion of Distribution Provider's Distribution System operating at a voltage below 10 kV, then Telemetering equipment may be required on Generating Facilities 250 kW or greater. Distribution Provider shall only require Telemetering to the extent that less intrusive and/or more cost effective options for providing the necessary data in real time are not available. Distribution Provider will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring Telemetering equipment in each instance along with the size and location of the facility. (L)

Customer-owned, behind-the-meter, telemetry equipment is allowed where practicable to mitigate the costs associated with Distribution Provider's ownership of the equipment (i.e., the Income Tax Component of Contribution and Cost of Ownership charges), per D.19-03-013 Ordering Paragraph 5. Distribution Provider will allow for a cap of thirty calendar days to repair or replace malfunctioning equipment as notified by the Distribution Provider and if the malfunctioning equipment is not repaired by the thirtieth day, the Distribution Provider can make the necessary repairs and charge the customer for related costs or can disconnect the distributed energy resource. (N)

6. LOCATION (L)

Where Distribution Provider-owned Metering is located on Producer's premises, Producer shall provide, at no expense to Distribution Provider, a suitable location for all such Metering Equipment. (L)

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

7. COSTS OF METERING

Producer will bear all costs of the Metering required by this Rule, including the incremental costs of operating and maintaining the Metering Equipment.

8. MULTIPLE TARIFF METERING

The requirements of Section J.3 may not apply where a Generating Facility includes multiple generators eligible for service under more than one Net Energy Metering (NEM) tariff schedule (e.g. NEM-1, NEM-2, NEMBIO, NEMFC), or where a Generating Facility consists of one or more NEM-eligible generators in combination with one or more non-NEM eligible generators without Non-Export relays ("Reverse Power Protection"). To ensure proper tariff administration, metering will be required at the PCC and at each of the NEM eligible generator groups eligible for service under the same NEM tariff schedule. For combinations of multiple NEM eligible generators under different tariffs, billing administration and metering requirements will be as specified in the appropriate NEM tariff schedule.

Where a Generating Facility consists of one or more NEM eligible generator groups in combination with one or more non-NEM generators, metering of the non-NEM generators is not required, except as specified in Section J.3. (L)

(Continued)

K. DISPUTE RESOLUTION PROCESS (L)

In addition to the informal procedures for timeline-related disputes set out in Section F.1.d, the following procedures will apply for disputes arising from this Rule:

1. SCOPE

The Commission shall have initial jurisdiction to interpret, add, delete or modify any provision of this Rule or of any agreements entered into between Distribution Provider and Applicant or Producer to implement this tariff ("Implementing Agreements") and to resolve disputes regarding Distribution Provider's performance of its obligations under Commission-jurisdictional tariffs, the applicable agreements, and requirements related to the interconnection of Applicant's or Producer's Generating Facility or Interconnection Facilities pursuant to this Rule.

2. PROCEDURES

Any dispute arising between Distribution Provider and Producer (individually referred to in Section K as "Party" and collectively "the Parties") regarding Distribution Provider's or Producer's performance of its obligations under its tariffs, the Implementing Agreements, and requirements related to the interconnection of Producer's Facilities pursuant to this Rule shall be resolved according to the following procedures:

a. The dispute shall be documented in a written notice ("notice") by the aggrieved Party to the other Party containing the relevant known facts pertaining to the dispute, the specific dispute and the relief sought, and express notice by the aggrieved Party that it is invoking the procedures under this Section. The notice shall be sent to the Party's email address and physical address set forth in the Generator Interconnection Agreement or Interconnection Request, if there is no Generator Interconnection Agreement. A copy of the notice shall also be sent to the Energy Division, Office of the Director, at the Commission. The receiving Party shall acknowledge the notice within five (5) Calendar Days of its receipt. (L)

(Continued)

K. DISPUTE RESOLUTION PROCESS (Cont'd.) (L)

2. PROCEDURES (Cont'd.)

a Upon the aggrieved Party notifying the other Party of the dispute, each Party must designate a representative with the authority to make decisions for its respective Party to review the dispute within seven (7) Calendar Days. In addition, upon receipt of the notice, Distribution Provider shall provide the aggrieved Party with all relevant regulatory and/or technical details and analysis regarding any Distribution Provider interconnection requirements under dispute within twenty-one (21) Calendar Days.

Within forty-five (45) Calendar Days of the date of the notice, the Parties' authorized representatives will be required to meet and confer to try to resolve the dispute. Parties are expected to operate in good faith and use best efforts to resolve the dispute.

b. If a resolution is not reached in forty-five (45) Calendar Days from the date of the notice, either 1) a Party may request to continue negotiations for an additional forty-five (45) Calendar Days or 2) the Parties may by mutual agreement make a written request for mediation to the ADR Coordinator in the Commission's ALJ Division. The request may be submitted by electronic mail to adr_program@cpuc.ca.gov. Alternatively, both Parties by mutual agreement may request mediation from an outside third-party mediator with costs to be shared equally between the Parties.

c. At any time, either Party may file a formal complaint before the Commission pursuant to California PUC section 1702 and Article 4 of the Commission's Rules of Practice and Procedure.

Nothing in this section shall be construed to limit the rights of any Party to exercise rights and remedies under Commission law. (L)

(Continued)

K. DISPUTE RESOLUTION PROCESS (Cont'd.) (L)

3. PERFORMANCE DURING DISPUTE

Pending resolution of any dispute under this Section, the Parties shall proceed diligently with the performance of their respective obligations under this Rule and the Implementing Agreements, unless the Implementing Agreements have been terminated. Disputes as to the Interconnection Request and implementation of this Section shall be subject to resolution pursuant to the procedures set forth in this Section.

L. CERTIFICATION AND TESTING CRITERIA

1. INTRODUCTION

This Section describes the test procedures and requirements for equipment used for the Interconnection of Generating Facilities to Distribution Provider's Distribution or Transmission System. Included are Type Testing, Production Testing, Commissioning Testing, and Periodic Testing. The procedures listed rely heavily on those described in appropriate Underwriters Laboratory (UL), Institute of Electrical and Electronic Engineers (IEEE), and International Electrotechnical (L)
Commission (IEC) documents—most notably UL 1741 including UL-1741 (L)/(P)
Supplement A or B as appropriate. (P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

1. INTRODUCTION (Cont'd.)

The tests described here, together with the technical requirements in Section H of this Rule, are intended to provide assurance that the Generating Facility's equipment will not adversely affect Distribution Provider's Distribution or Transmission System and that a Generating Facility will cease providing power to Distribution Provider's Distribution or Transmission System under abnormal conditions. The tests were developed assuming a low level of Generating Facility penetration or number of connections to Distribution Provider's Distribution or Transmission System. At high levels of Generating Facility penetration, additional requirements and corresponding test procedures may need to be defined.

Section L also provides criteria for "Certifying" Generators, inverters or converters. Once a Generator, inverter or converter has been Certified per this Rule, it may be considered suitable for Interconnection with Distribution Provider's Distribution or Transmission System. Subject to the exceptions described in Section L, Distribution Provider will not repeat the design review or require retesting of such Certified Equipment. It should be noted that the Certification process is intended to facilitate Generating Facilities Interconnections. Certification is not a prerequisite to interconnect a Generating Facility for Section H, except for Non-Export AC/DC Converters seeking an expedited process, but it is a prerequisite for inverters installed under Section Hh. (L)/(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

2. CERTIFIED AND NON-CERTIFIED INTERCONNECTION EQUIPMENT

a. Certified Equipment

Equipment tested and approved (i.e. "Listed") by an accredited NRTL as having met both the Type Testing and Production Testing requirements described in this document is considered to be Certified Equipment for purposes of Interconnection with Distribution Provider's Distribution or Transmission System. Certification may apply to either a pre-packaged system or an assembly of components that address the necessary functions. Type Testing may be done in the manufacturer's factory or test laboratory, or in the field. At the discretion of the testing laboratory, field-certification may apply only to the particular installation tested. In such cases, some or all of the tests may need to be repeated at other installations.

When equipment is Certified by a NRTL, the NRTL shall provide to the manufacturer, at a minimum, a Certificate with the following information for each device:

Administrative:

(1) The effective date of Certification or applicable serial number (range or first in series), and/or other proof that certification is current;

(2) Equipment model number(s) of the Certified equipment;

(3) The software version utilized in the equipment, if applicable;

(4) Test procedures specified (including date or revision number); and

(5) Laboratory accreditation (by whom and to what standard). (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

2. CERTIFIED AND NON-CERTIFIED INTERCONNECTION EQUIPMENT (Cont'd.)

a. Certified Equipment (Cont'd.)

Technical (as appropriate):

(1) Device ratings (kW, kV, Volts, amps, etc.);

(2) Maximum available fault current in amps, per IEEE 1547-2018 11.4; (L)/(P)

(3) In-rush Current in amps; (L)

(4) Trip points, if factory set (trip value and timing);

(5) Trip point and timing ranges for adjustable settings;

(6) Nominal power factor or range if adjustable;

(7) If the equipment is Certified as Non-Exporting and the method used (reverse power or underpower);

(8) If the equipment is Certified as Non-Islanding; and

(9) If the equipment is Certified as a Non-Export AC/DC Converter.

It is the responsibility of the equipment manufacturer to ensure that Certification information is made publicly available by the manufacturer, the testing laboratory, or by a third party.

b. Non-Certified Equipment

For non-Certified equipment, some or all of the tests described in this Rule may be required by Distribution Provider for each Generating and/or Interconnection Facility. The manufacturer or a laboratory acceptable to Distribution Provider may perform these tests. Test results for non-Certified equipment must be submitted to Distribution Provider for the Supplemental Review. Approval by Distribution Provider for equipment used in a particular Generating and/or Interconnection Facility does not guarantee Distribution Provider's approval for use in other Generating and/or Interconnection Facilities. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING

a. Type Tests and Criteria for Interconnection Equipment Certification

Type testing provides a basis for determining that equipment meets the specifications for being designated as Certified equipment under this Rule. The requirements described in this Section cover only issues related to Interconnection and are not intended to address device safety or other issues.

Table L.1 defines the test criteria by Generator or inverter technology. (L)
While UL 1741(1) and UL 1741 – Supplement SA/SB were written (L)/(P)
specifically for inverters, the requirements are readily adaptable to (L)
synchronous Generators, induction Generators, as well as
single/multi-function controllers and protection relays. Until a universal
test standard is developed, Distribution Provider or NRTL shall adopt
the procedures referenced in Table L.1 as appropriate and necessary
for a Generating Facility and/or Interconnection Facilities or
associated equipment performance and its control and Protection
Functions. These tests shall be performed in the sequence shown in
Table L.2.

Non-Export AC/DC Converters must satisfy the requirements in its
definition in Section C. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.1, Type Test and Requirements for Interconnection Equipment Certification (L)

(P)

Type Test	Reference (1)	Inverter (6)	Smart Inverter (7)	Smart Inverter 2022 (Note 9,10)	Synchronous Generators	Induction Generators
Utility Interaction	UL 1741 - 39, 40	X	X	X	X	X
Utility Compatibility (Required testing to 1547 and 1547.1)	UL 1741 - 46	X	X	X	X	X
DC Isolation	IEEE 1547.1(8) -5.6	X	X	-	-	-
Dielectric Voltage Withstand	IEEE1547.1(8) -5.5.3	X	X	-	X	X
Dielectric Voltage Withstand	IEEE1547.1 2020, 5.8.2	-	-	X	-	-
Harmonic Distortion	IEEE-1547.1(8) -5.11	X	X	-	X	X
Harmonic Distortion	IEEE1547.1 2020, 5.12	-	-	X	-	-
DC Injection	IEEE1547.1(8) -5.6	X	X	-	-	-
DC Injection	1547.1 2020, 5.9	-	-	X	-	-
Distribution Provider Voltage Variations	IEEE1547.1 - 5.2	X	-	-	X	X
Distribution Provider Frequency Variations	IEEE1547.1 - 5.3	X	-	-	X	X
Abnormal Tests	UL 1741 - 47	X	X	X	-	-
Loss of Control Circuit	UL 1741 - 47.8	X	X	X	X	X
Short Circuit	UL 1741 - 47.3	X	X	X	X	X
Load Transfer	UL 1741 - 47.7	X	X	X	X	X
Surge Withstand Capability	L.3.e	X	X	X	X	X
Anti-Islanding (Traditional)	L.3.b	(2)	-	-	(2)	(2)
Non-Export	L.3.c	(3)	(3)	(3)	(3)	(3)
In-rush Current	L.3.d	-	-	-	-	(4)
Synchronization	L.3.f	(5)	(5)	(5)	X	(5)

(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (P)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.1, Type Test and Requirements for Interconnection Equipment Certification (Cont'd.)

Type Test	Reference (1)	Inverter (6)	Smart Inverter (7)	Smart Inverter 2022 (Note 9,10)	Synchronous Generators	Induction Generators
Anti-islanding (Smart Inverters)	UL 1741 SA - SA8	-	X	-	-	-
Low and High Voltage Ride-through	UL 1741 SA - SA9	-	X	-	-	-
Low and High Frequency Ride-through	UL 1741 SA - SA10	-	X	-	-	-
Normal and Soft-Start Ramp Rate	UL 1741 SA - SA11	-	X	-	-	-
Specified Power Factor	UL 1741 SA - SA12	-	X	-	-	-
Volt/Var Mode (Q(V))	UL 1741 SA - SA13	-	X	-	-	-
Frequency-Watt (optional)	UL 1741 SA - SA14	-	X	-	-	-
Volt-Watt (optional)	UL 1741 SA - SA15	-	X	-	-	-
Markings and Instructions	UL 1741 SA - SA6 , SA16	-	X	-	-	-
Disable Permit Service	UL1741 SA - SA17	-	X	-	-	-
Limit Active Power	UL1741 SA - SA18	-	X	-	-	-
DC Injection (2022)	IEEE1547.1-2020	-	-	X	-	-
Anti-islanding (Smart Inverters) (2022)	UL1741SB-SB3	-	-	X	-	-
Low and High Voltage Ride-through (2022)	UL1741SB-SB3	-	-	X	-	-
Low and High Frequency Ride-through (2022)	UL1741SB-SB3	-	-	X	-	-
Normal and Soft-Start Ramp Rate (2022)	UL1741SB-SB3	-	-	X	-	-
Specified Power Factor (2022)	UL1741SB-SB3	-	-	X	-	-
Volt/Var Mode (Q(V)) (2022)	UL1741SB-SB3	-	-	X	-	-

(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (P)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.1, Type Test and Requirements for Interconnection Equipment Certification (Cont'd.)

Type Test	Reference (1)	Inverter (6)	Smart Inverter (7)	Smart Inverter 2022 (Note 9,10)	Synchronous Generators	Induction Generators
Frequency-Watt (2022)	UL1741SB-SB3	-	-	X	-	-
Volt-Watt (2022)	UL1741SB-SB3	-	-	X	-	-
Constant Reactive Power(2022)	UL1741SB-SB3	-	-	X	-	-
Disable Permit Service(2022)	UL1741SB-SB3	-	-	X	-	-
Limit Active Power(2022)	UL1741SB-SB3	-	-	X	-	-
Markings and Instructions(2022)	UL1741SB-SB5	-	-	X	-	-

(1) References are to section numbers in either UL 1741 and/or UL 1741-Supplement SA (Inverters, Converters and Charge Controllers for Use in Independent Power Systems) or this Rule. References in UL 1741 to "photovoltaics" or "inverter" may have to be adapted to the other technologies by the testing laboratory to appropriately apply in the tests to other technologies.
(2) Required only if Non-Islanding designation.
(3) Required only if Non-Export designation is desired.
(4) Required for Generators that use Distribution Provider power to motor to speed.
(5) Required for all self-excited induction Generators as well as Inverters that operate as voltage sources when connected to Distribution Provider's Distribution or Transmission System.
(6) Inverters compliant with Section H.
(7) Inverters compliant with Section Hh.
(8) IEEE 1547.1 refers to 2005 revision (P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.2 Type Tests Sequence for Interconnection Equipment Certification

Test No.	Type Test
1	Distribution Provider Voltage and Frequency Variation
2	Synchronization
3	Surge Withstand Capability
4	Distribution Provider Voltage and Frequency Variation, including ride through
5	Synchronization
6	Other Required and Optional Tests

Tests 1, 2, and 3 must be done first and in the order shown. Tests 4 and on follow in order convenient to the test agency.

b. Anti-Islanding Test

Devices that pass the Anti-Islanding test procedure described in UL 1741 Supplement SB will be considered Non-Islanding for the purposes of these Interconnection requirements. The test is required only for devices for which a Certified Non-Islanding designation is desired. (L) (L)/(P) (L)

c. Non-Export Test

Equipment that passes the Non-Export test procedure described in Section L.7.a will be considered Non-Exporting for the purposes of these Interconnection requirements. This test is required only for devices for which a Certified Non-Export designation is desired. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

d. In-rush Current Test

Generation equipment that utilizes Distribution Provider power to motor up to speed will be tested using the procedure defined in Section L.7.b to determine the maximum current drawn during this startup process. The resulting In-rush Current is used to estimate the Starting Voltage Drop.

e. Surge Withstand Capability Test

The interconnection equipment shall be tested for the surge withstand requirement in Section H.1.c in all normal operating modes in accordance with IEEE Std C62.45-2002 for equipment rates less than 1000 V to confirm that the surge withstand capability is met by using the selected test level(s) from IEEE Std C62.41.2-2002. Interconnection equipment rated greater than 1000 V shall be tested in accordance with manufacturer or system integrator designated applicable standards. For interconnection equipment signal and control circuits, use IEEE Std C37.90.1-2002. These tests shall confirm the equipment did not fail, did not misoperate, and did not provide misinformation (IEEE 1547-2018 4.11.2). (L)/(P)

The location/exposure category for which the equipment has been tested shall be clearly marked on the equipment label or in the equipment documentation. External surge protection may be used to protect the equipment in harsher location/exposure categories. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

f. Synchronization Test

This test is applied to synchronous Generators, self-excited induction generators, and inverters capable of operating as voltage-source while connected to Distribution Provider's Distribution or Transmission System. The test is also applied to the resynchronization Function (transition from stand-alone to parallel operation) on equipment that provides such functionality. This test may not need to be performed on both the synchronization and re-synchronization functions if the manufacturers can verify to the satisfaction of the testing organization that monitoring and controls hardware and software are common to both functions. This test is not necessary for induction generators or current-source inverters. Instead, the ln-rush Current test Section L.3.d shall be applied to those generators.

This test shall demonstrate that at the moment of the paralleling-device closure, all three synchronization parameters in Table L.3 are within the stated limits. This test shall also demonstrate that if any of the parameters are outside of the limits stated in the table, the (L)
paralleling-device shall not close (IEEE 1547-2018 4.10). The test will (L)/(P)
start with only one of the three parameters: (1) voltage difference (L)
between Generating Facility and Distribution Provider's Distribution or Transmission System; (2) frequency difference; or (3) phase angle outside of the synchronization specification. Verify that the Generating Facility is brought within specification prior to synchronization. Repeat the test five times for each of the three parameters. For manual synchronization with synch check or manual control with auto synchronization, the test must verify that paralleling does not occur until the parameters are brought within specifications. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

f. Synchronization Test (Cont'd.)

Table L.3
***Synchronization Parameter Limits* [1]**

Aggregate Rating of Generator Units (kVA)	Frequency Difference (Δf, Hz)	Voltage Difference (ΔV, %)	Phase Angle Difference (ΔΦ,°)
0-500	0.3	10	20
> 500-1,500	0.2	5	15
> 1,500-10,000	0.1	3	10

(L)

[1] – IEEE 1547-2018, 4.10.4 (L)/(P)

(L)

g. Paralleling Device Withstand Test

The di-electric voltage withstand test specified in Section L.1 shall be performed on the paralleling device to ensure compliance with those requirements specified in Section H.1.c (IEEE 1547-2018 4.11.3). (L)/(P)

(L)

h. Backfeed Test

Non-Export AC/DC Converters must satisfy the requirements in its definition in Section C.

4. PRODUCTION TESTING

At a minimum, each interconnection system shall be subjected to Distribution Provider Voltage and Frequency Variation Test procedure described in UL1741 under Manufacturing and Production Tests, Section 68 and the Synchronization test specified in Section L.3.f. Interconnection systems with adjustable set points shall be tested at a single set of set points as specified by the manufacturer. This test may be performed in the factory or as part of a Commissioning Test (Section L.5). (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING

a. Commissioning Testing

Commissioning Testing, where required, will be performed on-site to verify protective settings and functionality. Upon initial Parallel Operation of a Generating Facility, or any time interface hardware or software is changed that may affect the functions listed below, a Commissioning Test must be performed. An individual qualified in testing protective equipment (professional engineer, factory–certified technician, or licensed electrician with experience in testing protective equipment) must perform Commissioning Testing in accordance with the manufacturer's recommended test procedure to verify the settings and requirements per this Rule.

Distribution Provider may require written Commissioning test procedure be submitted to Distribution Provider at least 10 working days prior to the performance of the Commissioning Test. Distribution Provider has the right to witness Commissioning Test. Distribution Provider may also require written certification by the installer describing which tests were performed and their results. Protective Functions to be tested during commissioning, particularly with respect to non-Certified equipment, may consist of the following:

(1) Over and under voltage

(2) Over and under frequency

(3) Anti-Islanding function (if applicable)

(4) Non-Exporting function (if applicable)

(5) Inability to energize dead line (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

a. Commissioning Testing (Cont'd.)

(6) Time delay on restart after Distribution Provider source is stable

(7) Distribution Provider system fault detection (if used)

(8) Synchronizing controls (if applicable)

(9) Other Interconnection Protective Functions that may be required as part of the Generator Interconnection Agreement

Commissioning Test shall include visual inspections of the interconnection equipment and protective settings to confirm compliance with the interconnection requirements.

b. Review, Study, and Additional Commissioning Test Verification Costs

A Producer shall be responsible for the reasonably incurred costs of the reviews, studies and additional Commissioning Test verifications conducted pursuant to Section E of this Rule. If the initial Commissioning Test verification is not successful through no fault of Distribution Provider, Distribution Provider may impose upon Producer a cost based charge for subsequent Commissioning Test verifications. All Costs for additional Commissioning Test verifications shall be paid by Producer within thirty days of receipt of Distribution Provider's invoice. The invoice provided by Distribution Provider shall consist of the hourly rate multiplied by the hours incurred by Distribution Provider and will separately specify the amount of time spent on-site from that spent in roundtrip travel to the Commissioning Test site. Additional cost, if any, will be specified on the invoice. If the initial Commissioning Test verification is not successful through the fault of Distribution Provider, that visit will not be considered the initial Commissioning Test verification. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

c. Other Checks and Tests

Other checks and tests that may need to be performed include:

(1) Verifying final Protective Function settings

(2) Trip test (L.5.g)

(3) In-service tests (L.5.h)

d. Certified Equipment

Generating Facilities qualifying for interconnection through the Fast Track process incorporate Certified Equipment that have, at a minimum, passed the Type Tests and Production Tests described in this Rule and are judged to have little or no potential impact on Distribution Provider's Distribution or Transmission System. For such Generating Facilities, it is necessary to perform only the following tests:

(1) Protective Function settings that have been changed after Production Testing will require field verification. Tests shall be performed using injected secondary frequencies, voltages and currents, applied waveforms, at a test connection using a Generator to simulate abnormal Distribution Provider voltage or frequency, or varying the set points to show that the device trips at the measured (actual) Distribution Provider voltage or frequency.

(2) The Non-Islanding function shall be checked by operating a load break disconnect switch to verify the Interconnection equipment ceases to energize Distribution Provider's Distribution or Transmission System and does not re-energize it for the required time delay after the switch is closed. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

d. Certified Equipment (Cont'd.)

(3) The Non-Exporting function shall be checked using secondary injection techniques. This function may also be tested by adjusting the Generating Facility output and local loads to verify that the applicable Non-Exporting criteria (i.e., reverse power or underpower) are met.

The Supplemental Review or an Interconnection Study may impose additional components or additional testing.

e. Non-Certified Equipment

Non-certified Equipment shall be subjected to the appropriate tests described in Type Testing (Section L.3) as well as those described in Certified Equipment Commissioning Tests (Section L.5.d). With Distribution Provider's approval, these tests may be performed in the factory, in the field as part of commissioning, or a combination of both. Distribution Provider, at its discretion, may also approve a reduced set of tests for a particular Generating Facility or, for example, if it determines it has sufficient experience with the equipment.

f. Verification of Settings

At the completion of Commission testing, Producer shall confirm all devices are set to Distribution Provider-approved settings. Verification shall be documented in the Commissioning Test Certification. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

g. Trip Tests

Interconnection Protective Functions and devices (e.g. reverse power relays) that have not previously been tested as part of the Interconnection Facilities with their associated interrupting devices (e.g. contactor or circuit breaker) shall be trip tested during commissioning. The trip test shall be adequate to prove that the associated interrupting devices open when the protective devices operate. Interlocking circuits between Protective Function devices or between interrupting devices shall be similarly tested unless they are part of a system that has been tested and approved during manufacturing.

h. In-service Tests

Interconnection Protective Functions and devices that have not previously been tested as part of the Interconnection Facilities with their associated instrument transformers or that are wired in the field shall be given an in-service test during commissioning. This test will verify proper wiring, polarity, CT/PT ratios, and proper operation of the measuring circuits. The in-service test shall be made with the power system energized and carrying a known level of current. A measurement shall be made of the magnitude and phase angle of each Alternating Current (AC) voltage and current connected to the protective device and the results compared to expected values. For protective devices with built-in Metering Functions that report current and voltage magnitudes and phase angles, or magnitudes of current, voltage, and real and reactive power, the metered values may be used for in-service testing. Otherwise, portable ammeters, voltmeters, and phase-angle meters shall be used. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

6. PERIODIC TESTING

Periodic Testing of Interconnection-related Protective Functions shall be performed as specified by the manufacturer, or at least every four years. All Periodic Tests prescribed by the manufacturer shall be performed. Producer shall maintain Periodic Test reports or a log for inspection by Distribution Provider. Periodic Testing conforming to Distribution Provider test intervals for the particular Line Section may be specified by Distribution Provider under special circumstances, such as high fire hazard areas. Batteries used to activate any Protective Function shall be checked and logged once per month for proper voltage. Once every four years, the battery must be either replaced or a discharge test performed.

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS

This Section describes the additional Type Tests necessary to qualify a device as Certified under this Rule. These Type Tests are not contained in Underwriters Laboratories UL 1741 Standard *Inverters, Converters and Controllers for Use in Independent Power Systems,* or other referenced standards.

a. Non-Exporting Test Procedures

The Non-Exporting test is intended to verify the operation of relays, controllers and inverters designed to limit the export of power and certify the equipment as meeting the requirements of Screen I, Options 1 and 2, of the review process. Tests are provided for discrete relay packages and for controllers and inverters with the intended Functions integrated. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test

This version of the Non-Exporting test procedure is intended for discrete reverse power and underpower relay packages provided to meet the requirements of Options 1 and 2 of Screen I. It should be understood that in the reverse power application, the relay will provide a trip output with power flowing in the export (toward Distribution Provider's Distribution or Transmission System) direction.

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired export power flow of 0.5 secondary watts (the minimum pickup setting, assumes 5 amp and 120V CT/PT secondary). Apply nominal voltage with minimum current setting at zero (0) degrees phase angle in the trip direction. Increase the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2% of the expected power. For relays with adjustable settings, repeat this test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay does not operate (measured watts will be zero or negative). (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 2: Leading Power Factor Test

Apply rated voltage with a minimum pickup current setting (calculated value for system application) and apply a leading power factor load current in the non-trip direction (current lagging voltage by 135 degrees). Increase the current to relay rated current and verify that the relay does not operate. For relays with adjustable settings, this test should be repeated at the minimum, midpoint, and maximum settings.

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Increase the current level to pickup (about 10 times higher than at 0 degrees) and verify that the relay operates. Repeat for phase angles of 90, 180 and 270 degrees and verify that the relay does not operate.

Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and current at 180 degrees from tripping direction, to simulate normal load conditions (for three-phase relays, use Ia at 180, Ib at 60 and Ic at 300 degrees). Remove phase-1 voltage and observe that the relay does not operate. Repeat for phases-2 and 3. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 5: Load Current Test

Using the pickup settings determined in Step 1, apply rated voltage and current at 180 degrees from the tripping direction, to simulate normal load conditions (use Ia at 180, Ib at 300 and Ic at 60 degrees). Observe that the relay does not operate.

Step 6: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and 2 times rated current, to simulate an unbalanced fault in the non-trip direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 180 degrees, Ib at 0 degrees, and Ic at 180 degrees). Observe that the relay, especially single phase, does operate properly.

Step 7: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 8: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 9: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand capability test described in L.3.e.

ii) Discrete Underpower Relay Test

This version of the Non-Exporting test procedure is intended for discrete underpower relay packages and meets the requirements of Option 2 of Screen I. A trip output will be provided when import power (toward Producer's load) drops below the specified level.

Note: For an underpower relay, pickup is defined as the highest power level at which the relay indicates that the power is less than the set level. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired power flow pickup level of 5% of peak load minimum pickup setting. Apply rated voltage and current at 0 (zero) degrees phase angle in the direction of normal load current.

Decrease the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2% of the expected power. For relays with adjustable settings, repeat the test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay operates (measured watts will be zero or negative).

Step 2: Leading Power Factor Test

Using the pickup current setting determined in Step 1, apply rated voltage and rated leading power factor load current in the normal load direction (current leading voltage by 45 degrees). Decrease the current to 145% of the pickup level determined in Step 1 and verify that the relay does not operate. For relays with adjustable settings, repeat the test at the minimum, midpoint, and maximum settings. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Decrease the current level to pickup (about 10% of the value at 0 degrees) and verify that the relay operates. Repeat for phase angles 90, 180 and 270 degrees and verify that the relay operates for any current less than rated current.

Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and 25% of rated current in the normal load direction, to simulate light load conditions. Remove phase 1 voltage and observe that the relay does not operate. Repeat for Phases-2 and 3.

Step 5: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and two times rated current, to simulate an unbalanced fault in the normal load direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 0 degrees, Ib at 180 degrees, and Ic at 0 degrees). Observe that the relay (especially single-phase types) operates properly. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 6: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings.

Step 7: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 8: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand test described in Section L.3.e. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

iii) Tests for Inverters and Controllers with Integrated Functions

Inverters and controllers designed to provide reverse or underpower functions shall be tested to certify the intended operation of this function. Two methods are acceptable:

Method 1: If the inverter or controller utilizes external current/voltage measurement to determine the reverse or underpower condition, then the inverter or controller shall be functionally tested by application of appropriate secondary currents and potentials as described in the Discrete Reverse Power Relay Test, Section L.7.a.i of this Rule.

Method 2: If external secondary current or voltage signals are not used, then unit-specific tests must be conducted to verify that power cannot be exported across the PCC for a period exceeding two seconds. These may be factory tests, if the measurement and control points are integral to the unit, or they may be performed in the field.

iv) Tests for Inadvertent Export Inverters

Test requirements for certified inverters with integrated functions for Inadvertent Export shall verify the performance requirements specified in Section Mm of this Rule. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

v) Interim Tests for Non-Export AC/DC Converters ("Converter")

Step 1: Limitation of Back-feed Under Steady State Conditions

Apply the nominal DC operating voltage of the Converter across its DC terminals with a battery source or simulated equivalent of a battery source. Vary the battery source by 100%, 75%, 50%, 25%, and 10% of Converter rated output power. The measured steady-state DC current component at each of the AC terminals of the Converter is required to be less than 0.5% of the Converter's rated RMS AC current. This test is to be repeated for 80% nominal DC operating voltage and for 125% nominal DC operating voltage. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant.

Step 2: Back-feed Under Fault Conditions – DC Output Shorted

With a battery source or simulated equivalent of a battery source connected to the DC terminals, apply rated conditions of the Converter then short its DC terminals for 200 milliseconds. After 5 cycles of inducing the short circuit, record the measured peak current at each of the AC terminals of the Converter. These peak currents within this time interval are each required to be less than 0.5% of the Converter's rated RMS AC current. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

v) Interim Tests for Non-Export AC/DC Converters ("Converter") (Cont'd.)

Step 3: Back-feed Under Fault Conditions – AC Input Shorted: Phase-Ground, Phase-Phase, and 3-Phase

With a battery source or simulated equivalent of a battery source connected to the DC terminals, apply rated conditions of the Converter, then apply a short between any two phases on the grid side of the Converter for 200 milliseconds. After 5 cycles of inducing the short circuit, record the measured peak current at each of the AC terminals of the Converter. These peak currents within this time interval are each required to be less than 0.5% of the Converter's rated RMS AC current. This test is to be repeated for phase-ground and 3-phase shorts. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant.

Step 4: Back-feed Under Fault Conditions – Component Faults

Distribution Provider can elect to test for back-feed under the condition of a short circuit across certain components which are internal to the Converter. Potential tests can include inducing a short circuit across different terminals for electronic switches and/or across different terminals for internal transformers. Ultimately, the components used for testing will be chosen on a case-by-case basis and will depend on the Converter's circuit topology. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant.

Step 5: Harmonics Testing

Under normal loading conditions at 10%, 25%, 50%, 75%, and 100% of the Converter's rated power output, conduct harmonic current distortion measurements on each of the AC terminals. Measurements should be below the maximum harmonic current distortion requirements given in IEEE 1547- 2018 7.3. (L)/(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

b. In-rush Current Test Procedures

This test will determine the maximum In-rush Current drawn by the Generator.

i) Locked-Rotor Method

Use the test procedure defined in NEMA MG-1 (manufacturer's data is acceptable if available).

ii) Start-up Method

Install and setup the Generating Facility equipment as specified by the manufacturer. Using a calibrated oscilloscope or data acquisition equipment with appropriate speed and accuracy, measure the current draw at the Point of Interconnection as the Generating Facility starts up and parallels with Distribution Provider's Distribution or Transmission System. Startup shall follow the normal, manufacturer-specified procedure. Sufficient time and current resolution and accuracy shall be used to capture the maximum current draw within 5%. In-rush Current is defined as the maximum current draw from Distribution Provider during the startup process, using a 10-cycle moving average. During the test, Distribution Provider source, real or simulated, must be capable of maintaining voltage within +/- 5% of rated at the connection to the unit under test. Repeat this test five times. Report the highest 10-cycle current as the In-rush Current. A graphical representation of the time-current characteristic along with the certified In-rush Current must be included in the test report and made available to Distribution Provider. (L)

(Continued)

M. INADVERTENT EXPORT (L)

Under certain operating conditions, an Applicant may choose to completely offset their facility load by installing generation systems which are optimally sized to meet their peak demand with load following functionality on the Generator controls to ensure conditional export of electrical power from the Generating Facility to Distribution Provider's Distribution or Transmission System. In situations where the loading changes rapidly and/or the Generator cannot ramp down quickly enough, the Generating Facility may need to export small amounts of power for limited duration. The event of exporting uncompensated power for a short time is referred to as Inadvertent Export.

The following are the minimum requirements for Inadvertent Export systems. Other factors relevant to the interconnection study process (e.g. 15% screen results, short circuit current ratio, etc.) may necessitate additional technical requirements (e.g. reclose block, transfer trip, ground bank, etc.) that are not explicitly noted here. Inadvertent Export may not be available for interconnections to Networked Secondary Systems.

1. For Inadvertent Export interconnection requests, additional Protective Functions and equipment to detect Distribution or Transmission System faults (per Distribution Provider's standard practices) may be required over and above the basic Protective Functions and equipment associated with the four options in the Export Screen. Protective Functions may include, but are not limited to, directional overcurrent/voltage-restraint overcurrent Protective Functions for line-to-line fault detection and overcurrent/overvoltage Protective Functions for line-to-ground detection. The addition of a ground bank or ground detector may also be necessary. (L)

(Continued)

M. INADVERTENT EXPORT (Cont'd.) (L)

2. The effect on equipment ratings can be mitigated by limiting the amount of inadvertent export allowed. To a large degree, Voltage Regulation may be similarly handled. The amount of Inadvertent Export is dependent on specific Distribution Provider requirements and should be limited to the lesser of the following values:

   a. 50% of the Generating Facility Capacity, or

   b. 10% of the continuous conductor rating in watts at 0.9 power factor for the lowest rated feeder conductor upstream of the GF (i.e. 200kW @ 12kV), or

   c. 110% of the largest load block in the facility, or

   d. 500kW or some other maximum level indicated by Distribution Provider

3. In addition to the limits above, the following are required:

   a. A reverse power Protective Function will be provided to trip the connected Generator(s) within two seconds if the proposed amount of Inadvertent Export is exceeded.

   b. The frequency of Inadvertent Export occurrences should be less than two occurrences per 24-hour period.

   c. A separate reverse power or underpower Protective Function will be required (in addition to the reverse power Protective Function described in 3a. above) to trip the connected Generator(s) if the duration of reverse power or underpower (i.e. ANY export) exceeds 60 seconds. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (L)

The following are the minimum requirements for Inadvertent Export systems that meet the criteria specified below. Other factors relevant to the interconnection study process (e.g., 15% screen results, short circuit current ratio, etc.) may necessitate additional technical requirements (e.g., reclose block, transfer trip, ground bank, etc.) that are not explicitly noted here. Inadvertent Export may not be available for interconnections to Networked Secondary Systems.

The certified control functions internal to the inverter control or external control system may be used to replace the discrete reverse/under power relay functions described in Section M provided the requirements outlined below are met.

1) All of the following requirements must be met by the Generating Facility to qualify for Inadvertent Export under this Section.

   a. The Generating Facility must utilize only UL-1741 certified or UL-1741 SA listed grid support non-islanding inverters; and,

   b. The Generating Facility must have an aggregate maximum nameplate capacity of 500 kVA or less; and,

   c. The Generating Facility's total energy export must not exceed its nameplate rating (kVA-gross) multiplied by 0.1 hours per day over a rolling 30-day period (e.g., for a 100 kVA-gross nameplate Generating Facility, the maximum energy allowed to be exported for a 30-day period is 300 kWh) ; and,

   d. Export from the Generating Facility across the PCC to the Distribution System is less than 100 kVA. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (Cont'd.) (L)

2) To govern the level of Inadvertent Export allowable under this Section, the Generating Facility must utilize a NRTL-certified control system or NRTL-certified inverter system that meets all of the following requirements.

a. Must result in the Generating Facility disconnecting from the Distribution System, ceasing to energize the Distribution System or halting energy production within two (2) seconds after either:

i. The period of continuous export exceeds 30 seconds;

or,

ii. The level of export exceeds 100 kVA.

b. Must monitor that the total energy export is maintained within the allowable energy export outlined above 1.c and provide an indication or notification (e.g., electronic, alarm) if that energy export limit is exceeded.

c. Failure of the of the control or inverter system for more than thirty (30) seconds, resulting from loss of control signal, loss of control power or a single component failure or related control sensing of the control circuitry, must result in the Generating Facility entering Non-Export operation where no energy is exported across to the PCC to the Distribution System.

Interim approval of the control or inverter system may be permitted upon mutual agreement of PG&E and the Producer. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (Cont'd.) (L)

3) Applicability of Engineering Review Screens.

Inadvertent Export systems that meet the requirements described herein are processed under Initial Review Screens A through J as described in Section H. If these systems fail Screen J, they then bypass Screens K and L and are processed under Screens M and M1 as described below.

Screen M: Is the aggregate Generating Facility capacity on the Line Section less than 15% of Line Section peak load for all line sections bound by automatic sectionalizing devices?

- If Yes (pass), Initial Review is complete.
- If No (fail), continue to Screen M1.

Screen M1: Is the aggregate of all distributed energy resources (DER) causing reverse power flow (1) at a line section with a voltage regulator device(s) or (2) at a protection device, including the circuit breaker / field recloser?*,**

- If No (pass), existing DER does not cause reverse power flow at (1) or (2) and Initial Review is complete.
- If Yes (fail), existing DER causes reverse power flow at (1) or (2); fail Initial Review and Supplemental Review is required.

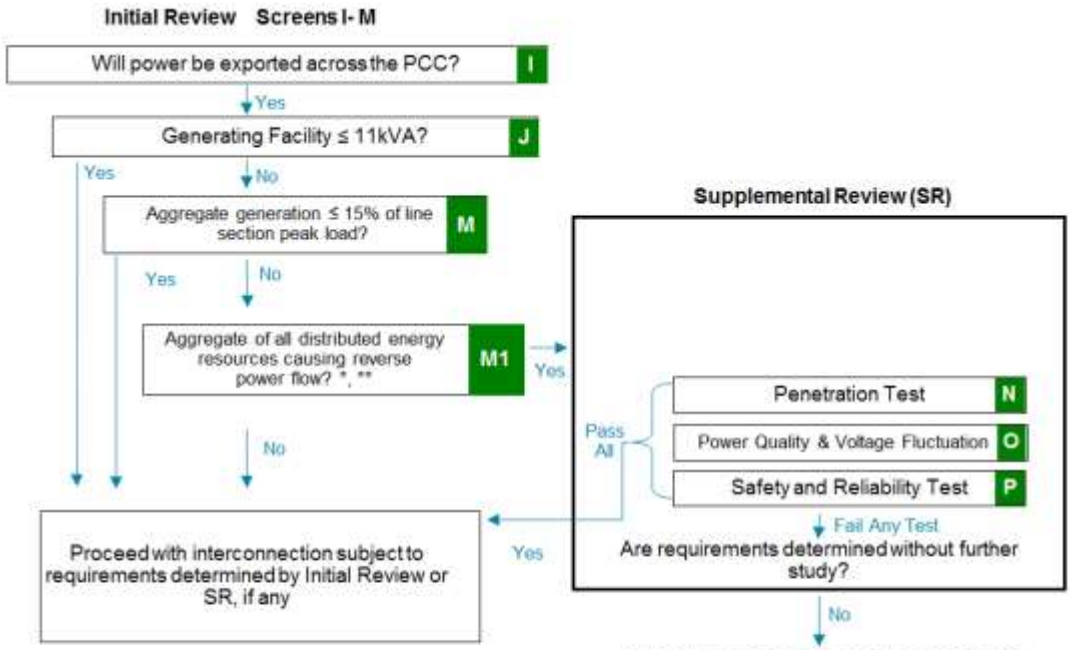
* For the purposes of applying Screen M1 herein, Distribution Provider shall utilize a zero coincidence factor when considering the impact of other Inadvertent Export systems that meet the requirements of Section Mm (i.e., projects that qualify for Option 6 under Section G.1.i) such that those Inadvertent Export systems do not impact Screen M1's aggregate analysis determination for the individual Inadvertent Export project being evaluated.

** The presence of existing non-certified DER on the line section may require additional review to ensure safe and reliable grid operation. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (Cont'd.) (L)

3) Applicability of Engineering Review Screens. (Cont'd.)



* For the purposes of applying Screen M1 herein, Distribution Provider shall utilize a zero coincidence factor when considering the impact of other Inadvertent Export systems that meet with the requirements of Section Mm (i.e., projects that qualify for Option 6 under Section G.1.i) such that those Inadvertent Export systems do not impact Screen M1's aggregate analysis determination for the individual analysis determination for the individual Inadvertent Export project being evaluated.

** The presence of existing non-certified DER on the line section may require additional review to ensure safe and reliable grid operation. (L)

(Continued)

Mm1. NON-EXPORT UTILIZING CERTIFIED POWER CONTROL SYSTEMS (P)

Generating Facilities that use certified power control systems to meet the **non-export** requirements shall meet the following six specifications.

i. Uses a power control system that has passed the requirements of the most recent UL Power Control Systems CRD test protocol;

ii. The power control system has an open-loop response time of no more than 2(two) seconds as provided in the power control system specification and certification data sheets;

iii. The Generating Facility uses only UL 1741 certified and/or UL 1741 SA listed grid-support non-islanding inverters;

iv. The power control system is set to zero-export;

v. The power control system must reduce export to below zero export in two seconds or less;

vi. The operation of the Generating Facility power control system shall maintain voltage fluctuations limits specified in Electric Rule 2.

Once satisfying the first six specifications above, the evaluation of **a non-export** Generating Facility requesting interconnection under this section shall also:

i. Omit evaluation for Screen D.

ii. Utilize the Generating Facility's gross nameplate rating for Screens F and G

Once satisfying the first six specifications above, the evaluation of a **limited export** Generating Facility requesting interconnection under this section shall also utilize the:

i. Approved limited export value to determine the impacts to the grid and in Screens D, I, J, K, M, N, O, and P;

ii. Generating Facility's gross nameplate rating for Screens F and G. (P)

(Continued)

ELECTRIC RULE NO. 21 Sheet 270
GENERATING FACILITY INTERCONNECTIONS

Mm2. INADVERTENT EXPORT UTILIZING CERTIFIED POWER CONTROL SYSTEMS (P)

Generating Facilities that use certified power control systems to meet the inadvertent export requirements shall meet the following seven specifications:

i. The Generating Facility aggregate maximum gross nameplate capacity shall not exceed 1000KVA;

ii. Use power control systems that have passed the requirements of the most recent UL Power Control Systems CRD test protocol;

iii. The power control system has an open-loop response time of no more than 10(ten) seconds as provided in the control system specification and certification data sheets;

iv. The Generating Facility uses only UL 1741 certified and/or UL 1741 SA listed grid-support non-islanding inverters;

v. The power control system is set to zero-export;

vi. The power control system must reduce export to below zero export in 10(ten) seconds or less;

vii. The operation of the Generating Facility power control system shall maintain voltage fluctuations limits specified in Electric Rule 2.

The Distribution Provider evaluating Generating Facilities requesting interconnection under this section shall:

i. Apply Screens A through M using the aggregate inverter nameplate rating;

ii. If Supplemental Review is required, within 15 BD days of being notified by the Distribution Provider, the applicant shall identify and provide to the Distribution Provider the frequency of inadvertent export, the real power level in watts of inadvertent export and the time duration of inadvertent export; (P)

(Continued)

Mm2. INADVERTENT EXPORT UTILIZING CERTIFIED POWER CONTROL SYSTEMS (CONT'D.) (P)

iii. If distribution upgrades are identified, Screen P shall recognize power control parameters taking into account local feeder conditions, customer's operating profile and the magnitude, duration, and frequency of anticipated export during the review of Screen P;

iv. Complete Supplemental Review within 15 days of receiving the required information specified under ii. above in this section;

v. If the Interconnection Customer does not provide the operating profile information within the specified 15 Business Days, Distribution Provider will perform Supplemental Review based on information included in the Interconnection Request within 30 Business Days of the request for customer operating profile information;

vi. Only the largest facility operating under this Rule 21 section in the line section shall be used for aggregate evaluation for subsequent interconnection requests. (P)

(Continued)

N. EXPEDITED INTERCONNECTION PROCESS FOR NON-EXPORT ENERGY STORAGE GENERATING FACILITIES (L)

Applicants with Interconnection Requests for Non-Export Energy Storage Generating Facilities who meet the requirements outlined below are eligible for expedited interconnection in accordance with the Fast Track Process technical review requirements of Section F.2. Applicants with Non-Export AC/DC Converters that meet the requirements outlined in O. below are also eligible. (L)/(P) (L)

1. ELIGIBILITY REQUIREMENTS

Applicants seeking to interconnect a Generating Facility under the provisions of this Section N must meet the following eligibility requirements.

a. Applicant must electronically submit a completed Interconnection Request, including completing all application fields and submitting all supporting documentation necessary to facilitate the expedited review as required by Distribution Provider. Such documentation may include, but is not limited to, single line diagrams with specific details, manufacturer data sheets for proposed equipment, description of control systems, validation of the right to do business in the state, etc. Distribution Provider shall clearly communicate these requirements as part of the application process. Applicant shall select this process option in the Interconnection Request.

b. Applicant's Generating Facility must meet the requirements outlined in Section N.2 below.

c. Applicant's Interconnection Request must be eligible for and select the Fast Track Process.

d. Applicant's Interconnection Request must pass Fast Track Initial Review and not require any Interconnection Facilities, Distribution Upgrades or Network Upgrades to remain eligible under this Section. As such, Interconnection Requests that select the Cost Envelope Option are not eligible.

e. Applicants selecting this section shall use the corresponding interconnection agreement type provided for eligible Generating Facilities. (L)

(P)

(P)

(Continued)

N. EXPEDITED INTERCONNECTION PROCESS FOR NON-EXPORT ENERGY STORAGE GENERATING FACILITIES (Cont'd.) (L)

2. GENERATING FACILITY ELIGIBILITY CRITERIA

An Applicant's Generating Facility must meet and adhere to the following criteria.

a. The Generating Facility must be comprised solely of the following specific categories of generation technology: Non-Exporting battery storage.

b. The Generating Facility must have an aggregate maximum inverter nameplate rating of no greater than 500 kW. There is no limitation on an energy storage device's kWh capacity rating.

c. The Generating Facility must be located behind an existing single retail meter and Point of Common Coupling with a single, clearly marked and accessible disconnect. No other Generators, other than isolated back-up Generators, may be at the same Point of Interconnection or Point of Common Coupling.

d. The Generating Facility must utilize Option 3 or Option 4 to meet the non-export protection requirements of Screen I in Section G.1.i.

e. The Generating Facility must have a single or coordinated control system for all charging functions if utilizing multiple inverters. The control system must also ensure that there is no increase in the Interconnection Customer's existing peak load demand.

f. The Generating Facility must utilize only inverter-based, UL 1741 and UL 1741 SA-listed equipment. Additionally, all installed equipment must meet Distribution Provider's current electric service requirements with no violations or variances. (L)

(Continued)

O. Non-Export AC/DC CONVERTER ELIGIBILITY CRITERIA (L)

Applicants with Non-Export AC/DC Converters who meet the eligibility criteria below qualify for the expedited interconnection process outlined in Section N of this Rule.

1. The Non-Export AC/DC Converter must have an aggregate maximum inverter nameplate rating of no greater than 500 kW. There is no limitation on an energy storage device's kWh capacity rating.

2. Applicant's Interconnection Request must be eligible for and select the Fast Track Process.

3. Applicant's Interconnection Request must pass Fast Track Initial Review and not require any Interconnection Facilities, Distribution Upgrades or Network Upgrades to remain eligible under this Section.

4. Applicants selecting this section shall use the corresponding interconnection agreement type provided for Non-Export AC/DC Converters eligible under this Section. As such, Interconnection Requests that select the Cost Envelope Option are not eligible.

5. Applicant's Non-Export AC/DC converter must meet the Certification requirements in the Section C Definition of "Non-Export AC/DC Converters". (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 275
GENERATING FACILITY INTERCONNECTIONS

(L)

Appendix A Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	**Title**	**Associated Tariffs**	**Use Guidance**
Pre-Application Request			
79-1181	Rule 21 Pre-Application Report Request	Rule 21	For Generator Developer to request basic info about local distribution circuit
Study Agreement			
79-1162	Rule 21 Detailed Study Agreement	Rule 21	Independent Study and Distribution Group Study Process Study Agreement
NEM and Non-Export Interconnection Forms			
79-973	Generating Facility Interconnection Agreement For Non-Export Generating Facilities (Rule 21 Interconnection Agreement)	Rule 21	Interconnection Agreement used for RESBCT and non-NEM generation with Application 79-974 and 79-1112
79-978	Interconnection Agreement for Net Energy Metering of Solar or Wind Electric Generating Facilities of 1,000 kW or Less, Other Than Facilities of 30 kW or Less	NEM, Rule 21	Solar and/or Wind > 30 kW and ≤ 1 MW expanded NEM used with Form 79-1174-02
79-978-02	Interconnection Agreement for Net Energy Metering (NEM2) of Solar or Wind Electric Generating Facilities of 1,000 Kilowatts or Less, Other than Facilities of 30 Kilowatts or Less	NEM2, Rule 21	Solar and/or Wind > 30 kW and ≤ 1 MW expanded NEM2 used with Form 79-1174-02
79-992	Customer Generation Agreement (Third party Generator on Premises, Non-Exporting)	Rule 21	Used with Forms 79-1174
79-997	Interconnection Agreement for Net Energy Metering of Biogas Digester Generating Facilities	NEM, Rule 21	NEMBIO (Closed to new applicants), NEMBIOA Interconnection Agreement used with Form 79-1174
79-1010	Interconnection Agreement for Net Energy Metering of Fuel Cell Generating Facilities	NEM, Rule 21	NEMFC Interconnection Agreement used with Form 79-1174
79-1069	Generating facility Interconnection Agreement (Multiple Tariff)	NEM, Rule 21	NEMMT Interconnection Agreement used with Form 79-1174
79-1069-02	Generating Facility Interconnection Agreement (Multiple Tariff NEM2MT)	NEM2, Rule 21	NEM2MT Interconnection Agreement used with Form 79-1174-02

(L)

(Continued)

Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	**Title**	**Associated Tariffs**	**Use Guidance**
NEM and Non-Export Interconnection Forms (Cont'd.)			
79-1070	Export Addendum to Generating Facility Interconnection Agreement for Non-Export Generating Facilities (Form 79-973) Sized 2 Megawatts or Less	Rule 21	Export addendum used with Form 79-973
79-1109 ***	Virtual Net Energy Metering Application and Interconnection Agreement For The Building Owner of Multifamily Affordable Housing With A Solar Generating Facility of 1 Megawatt or Less	NEM, Rule 21	NEMV Interconnection Agreement used with Form 79-974
79-1109-02***	NEM2VMSH Virtual Net Energy Metering Application and Interconnection Agreement for the Building Owner of Multifamily Affordable Housing with a Solar Generating Facility of 1 Megawatt or Less	NEM2VMSH, Rule 21	NEM2VMSH Interconnection Agreement used with Form 79-1174-02
79-1124 ***	Eligible Low Income Development Virtual Net Energy Metering Application and Interconnection Agreement for Multifamily Affordable Housing with Solar Generation Totaling 1 Megawatt or Less	NEMVMASH, Rule 21	NEMVMASH Interconnection Agreement
79-1124-02***	Eligible Low Income Development Virtual Net Energy Metering (NEM2VMSH) Application and Interconnection Agreement for Multifamily Affordable Housing with Solar Generation Totaling 1 Megawatt or Less	NEM2VMSH, Rule 21	NEM2VMSH Interconnection Agreement
79-1130	Request to Opt-out of / Opt-in to Compensation for Surplus Electricity	NEM	AB 920- Opt not to receive compensation for net annual excess energy
79-1131 ***	NEMV Application and Interconnection Agreement for a Solar (PV) or Wind Generating Facility of 1 MW or Less Serving Multiple Tenants Served at a Single Property Delivery Point	NEM, Rule 21	NEMV Interconnection Agreement
79-1131-02***	NEM2V Application and Interconnection Agreement for a Solar (PV) or Wind Generating Facility of 1 MW or Less Serving Multiple Tenants Served at a Single Property Delivery Point	NEM2V, Rule 21	NEM2V Interconnection Agreement
79-1136	PG&E Interconnection Agreement For an Existing Small Generating Facility Interconnecting to the Distribution System under Rule 21	Rule 21	Used for existing QFs with Form 79-974 (L)

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(Continued)

Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	Title	Associated Tariffs	Use Guidance
NEM and Non-Export Interconnection Forms (Cont'd.)			
79-1137	Interconnection Agreement for Net Energy Metering for a Renewable Electrical Generation Facility of 1,000 kW or Less, Except Solar or Wind (SB 489)	NEM, Rule 21	NEMV, NEMEXP, NEMEXPM Interconnection Agreement typically used with Forms 79-974 and 79-1142 Applications
79-1137-02	Interconnection Agreement for Net Energy Metering (NEM2/NEM2V) for a Renewable Electricity Generation Facility of 1,000 Kilowatts or Less, Except Solar or Wind	NEM2, NEM2V, Rule 21	NEM2V, NEM2EXP, NEM2EXPM Interconnection Agreement typically used with Forms 79-1174-02
79-1142 ***	NEMV Interconnection Application for a Renewable Electrical Generation Facility of 1 Megawatt or Less	NEM, Rule 21	Used with Form 79-1137 (L)
79-1151A	Net Energy Metering Interconnection for Solar And/or Wind Electric Generating Facilities Of 30 Kilowatts Or Less Agreement and Customer Authorization	NEM, Rule 21	NEMS Interconnection Agreement be used with 79-1151B Application
79-1151A-02	Agreement And Customer Authorization - Net Energy Metering (NEM2) Internconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less	NEM2, Rule 21	NEM2S Application to be used with 79-1151A Interconnection Agreement
79-1151B	Net Energy Metering Interconnection For Solar And/or Wind Electric Generating Facilities Of 30 Kilowatts Or Less Application	NEM, Rule 21	NEMS Application to be used with 79-1151A Interconnection Agreement
79-1151B-02	Application - Net Energy Metering (NEM2) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less	NEM2, Rule 21	NEM2S Application to be used with 79-1151A-02 Interconnection Agreement
79-1155	Schedules NEM, NEMV, NEMVMASH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation	NEM, Rule 21	
79-1155-02	Schedules NEM2, NEM2V, NEM2VMSH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation	NEM2 NEM2V NEM2VMSH, Rule 21	

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(Continued)

Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	**Title**	**Associated Tariffs**	**Use Guidance**
Other NEM and Non-Export Forms (Cont'd.)			
79-1174 (Attach-ments A through N)	Rule 21 Generator Interconnection Application	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Rule 21 customer interconnection application form for expanded net-energy metered (all NEM > 30 kw and all non-Solar/Wind NEM), NEMFC, NEMV, NEMVMASH, RES-BCT, and non-export and limited export Rule 21 generation. (Standard NEM for solar and/or wind ≤ 30 kw will continue to use the 79-1151B application.)
79-1174-02 (Attach-ments A through N)	Rule 21 Generator Interconnection Application	NEM2 (NEM2EXP, NEM2MT and NEM2A), NEMFC, NEM2V, NEM2VMSH, RES-BCT, Rule 21	Rule 21 customer interconnection application form for expanded net-energy metered (all NEM2 > 30 kw and all non-Solar/Wind NEM), NEMFC, NEM2V, NEM2VMSH, RES-BCT, and non-export and limited export Rule 21 generation. (Standard NEM for solar and/or wind ≤ 30 kw will continue to use the 79-1151B application.)
79-1192	Interconnection Agreement for Non-Export Storage Generating Facilities 500KW or Less	Rule 21	Used for expedited interconnection of non-export energy storage, pursuant to Rule 21 Section N, PG&E AL 4941-E & E-A and D.16-06-052, & Attachment C, Section II.1

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(Continued)

Appendix A (Cont'd.)
Forms Associated with Rule 21
Generating Facility Interconnections

Form Number	Title	Associated Tariffs	Use Guidance
Other NEM and Non-Export Forms (Cont'd.)			
79-1193	AGREEMENT AND CUSTOMER AUTHORIZATION Net Energy Metering (NEM) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less with Energy Storage of 10 Kilowatts Or Less or Energy Storage with Power Control System Certification	NEM	For NEM pair storage scenarios using Power Control Systems to ensure NEM integrity
79-1193-02	AGREEMENT AND CUSTOMER AUTHORIZATION Net Energy Metering (NEM2) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less with Energy Storage of 10 Kilowatts Or Less or Energy Storage with Power Control System Certification	NEM2	For NEM2 pair storage scenarios using Power Control Systems to ensure NEM integrity
79-1199	Agreement And Customer Authorization Non-Export Stand-Alone Energy Storage Of 30 Kilowatts Or Less	Rule 21	Interconnection Agreement For non-export storage ≤ 30 kW
79-1202 ****	Load Aggregation Appendix	NEM, NEM2, Rule 21	Use as an Appendix with Form 79-1151A, 79-1151A-02, 79-978, 79-978-02,79-1137, 79-1137-02, 79-1069 or 79-1069-02
79-1206-02	Eligible Low-Income Development Virtual Net Energy Metering (NEM2VSOM) Interconnection Agreement For The Solar On Multifamily Affordable Housing (SOMAH) Program With Solar Generation Totaling 1 Mw Or Less	NEM2VSOM	NEM2VSOM Interconnection agreement for solar 1 MW or less.

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GENERATING FACILITY INTERCONNECTIONS

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Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	Title	Associated Tariffs	Use Guidance
Export for Sale Interconnection Forms			
79-1145	Rule 21 Exporting Generator Interconnection Request	Rule 21	Preferred online application: https://www.pge.com/en_US/large-business/services/alternatives-to-pge/electric-generation-interconnection.page
79-1197	Local Government Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) Re-Allocation Request	RES-BCT	Use to establish RES-BCT benefiting account re-allocations
79-1198-02	Interconnection Agreement For Net Energy Metering (NEM2) And Renewable Electrical Generating Facility Sized Greater Than 1,000 Kw	NEM2	FT and Detailed Study Interconnection Agreement for >1MW NEM2 Generating Facilities
79-1200	Rule 21 Generator Interconnection Agreement For Exporting Generating Facilities	Rule 21	FT and Detailed Study Interconnection Agreement for Exporting Generating Facilities
Other Agreements			
79-280	Agreement for Installation of Allocation of Special Facilities for Parallel Operation of Non-Utility-Owned Generation and/or Electrical Standby Service (Electric Rules 2 and 21)	Rule 21	Special Facilities Agreement to be used with Form 79-702

*** The application section of these forms is replaced by 79-1174.
**** For NEMA expanded customers, use the online 79-1174 form.

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(Continued)

APPENDIX B (L)

Unit Cost Guide

Distribution Provider shall publish a Unit Cost Guide for facilities generally required to interconnect generation in Distribution Provider's Distribution System. The Unit Cost Guide shall not be binding for actual facility costs and is provided only for additional cost transparency, developer reference, and Distribution Provider's reference when preparing the cost estimate provided in any applicable studies. The Unit Cost Guide shall not replace the estimated cost provided by Distribution Provider in an Interconnection Study or an initial or supplemental review under the Fast Track Process.

The Unit Cost Guide shall include the anticipated cost of procuring and installing Interconnection Facilities and Distribution Upgrades generally utilized by the Applicant. An annual adjustment shall be performed within the Unit Cost Guide for five (5) years to account for the anticipated timing of procurement to accommodate a potential range of Commercial Operation Dates.

The Unit Cost Guide shall be updated annually in accordance with the process set forth in D.16-06-052. (L)

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Advice 6154-E
April 8, 2021

Attachment 2

Redline Tariff Revisions

For convenience of the reader, PG&E has included redline revisions of Rule 21 in Attachment 2.

In this advice letter and accordance to CPUC General Order 96B, Section 9.5.3, PG&E has implemented the use of the "(P)" symbol to signify material subject to change under a pending advice letter. The redlines in Attachment 2 are color coded to the specific advice letter. The color coding is as follows:

Redline Text Color	Advice Letter	Subject	Comments
	5553-E	Modification to Electric Rule 21 Pursuant to the Working Group 1 Decision 19-03-013 in Rulemaking 17-07-007	Approved by Resolution E-5035 and being finalized in this advice letter
	5915-E	Advice Letter Modifying Electric Rule 21 Pursuant to Decision 20-09-035 for Working Group 2 and 3 (due 120 Days from Issuance) for Ordering Paragraphs 5, 6, 8 and 11.	Pending Approval
	5988-E	Advice Letter Modifying Electric Rule 21 Pursuant to Decision 20-09-035 for Working Group 2 and 3	Pending Approval
	6014-E	Advice Letter Modifying Electric Rule 21 Pursuant to Decision 20-09-035 for Working Group 2 and 3 (due 60 Days from Issuance)	Pending Approval
	6093-E	Modifications to Electric Rule 21 Pursuant to Resolution E-5000 Ordering Paragraphs 6, 7, and 8 for IEEE 1547.1 Standards	Pending Approval
	6154-E	Modification to Pacific Gas and Electric Company's Electric Rule 21 Pursuant to E-5035 Related to AL 5553-E and R.17-07-007 Working Group 1 Decision 19-03-013	In this advice letter most changes signify material relocated to another part of tariff schedules with no change in text, or sheet renumbering.

ELECTRIC RULE NO. 21 Sheet 1
GENERATING FACILITY INTERCONNECTIONS

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GENERATING FACILITY INTERCONNECTIONS

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B. APPLICABILITY (L)

1. APPLICABILITY

This Rule describes the Interconnection, operating and Metering requirements for those Generating Facilities to be connected to Distribution Provider's Distribution System and Transmission System over which the California Public Utilities Commission (Commission) has jurisdiction. All Generating Facilities seeking Interconnection with Distribution Provider's Transmission System shall apply to the California Independent System Operator (CAISO) for Interconnection and be subject to CAISO Tariff except for 1) Net Energy Metering Generating Facilities and 2) Generating Facilities that do not export to the grid or sell any exports sent to the grid (Non-Export Generating Facilities). NEM Generating Facilities and Non-Export Generating Facilities subject to Commission jurisdiction shall interconnect under this Rule regardless of whether they interconnect to Distribution Provider's Distribution or Transmission System. Subject to the requirements of this Rule, Distribution Provider will allow the Interconnection of Generating Facilities with its Distribution or Transmission System.

Generating Facility interconnections to Distribution Provider's Distribution System that are subject to Federal Energy Regulatory Commission (FERC) jurisdiction shall apply under Distribution Provider's Wholesale Distribution Tariff (WDT) whether they interconnect to Distribution Provider's Distribution or Transmission System.

2. DEFINITIONS

Capitalized terms used in this Rule, and not defined in Distribution Provider's other tariffs shall have the meaning ascribed to such terms in Section C of this Rule. The definitions set forth in Section C of this Rule shall only apply to this Rule, the Interconnection Request, study agreements and Generator Interconnection Agreements, and may not apply to Distribution Provider's other tariffs. (L)

(Continued)

B. APPLICABILITY (Cont'd.) (L)

3. APPLICABLE CODES AND STANDARDS (L)

This Rule has been harmonized with the requirements of ~~American National Standards Institute/~~Institute of Electrical and Electronic Engineers (~~ANSI/~~IEEE) 1547-~~2003~~ 2018.~~Standards for Interconnecting Distributed Resources with Electric Power Systems.~~ In some sections, IEEE 1547 language has been adopted directly or by reference, in others, IEEE 1547 requirements were interpreted and this Rule's language was changed to maintain the spirit of both documents. (P)

~~UL1741- Supplement SA has been utilized for certification of phase I Smart Inverters (Phase 1 Smart Inverter Functions) as outlined in section Hh.~~ (P)

The language from IEEE 1547-2018 that has been adopted directly (as opposed to paraphrased language or previous language that was determined to be consistent with IEEE 1547-2018) is followed by a citation that lists the clause from which the language derived. For example, IEEE 1547-2018-4.1.1 is a reference to Clause 4.1.1. (L)/(P)

In the event of any conflict between this Rule, any of the standards listed herein, or any other applicable standards or codes, the requirements of this Rule shall take precedence. (L)

(Continued)

B. APPLICABILITY (Cont'd.) (L)

4. RETAIL CUSTOMER ENERGY STORAGE DEVICES (L)

For retail customers interconnecting stationary or mobile energy storage devices pursuant to this Rule, the load aspects of the storage devices will be treated pursuant to Rules 2, 3, 15, and 16 just like other load, using the incremental net load for non-residential customers, if any, of the storage devices. (L)/(P) (L) (L)

5. Applicability of IEEE 1547-2018 requirements (P)

The systems voltage at Point of Interconnection (POI) will determine the required generating facility operating requirements. Where voltage at the POI is less then 50kV, for applicable Generating Facility technology, IEEE 1547-2018 and related certification requirement are required. Where POI voltage is greater than or equal to 50kV, the IOU Interconnection Handbook will outline operating and performance requirements consistent with NERC and CAISO operating requirements. (P)

C. DEFINITIONS (L)

The definitions in this Section C are applicable only to this Rule, the Interconnection Request, Study Agreements and Generator Interconnection Agreements.

Added Facilities: See Special Facilities.

Affected System: An electric system other than Distribution Provider's Distribution or Transmission System that may be affected by the proposed Interconnection. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Affected System Operator: The entity that operates an Affected System.

Affiliate: With respect to a corporation, partnership or other entity, each such other corporation, partnership or other entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such corporation, partnership or other entity.

Allocated Capacity: Existing aggregate generation capacity in megawatts (MW) interconnected to a substation/area bus, bank or circuit (i.e., amount of generation online).

Anti-Islanding: A control scheme installed as part of the Generating or Interconnection Facility that senses and prevents the formation of an Unintended Island.

Applicant: The entity submitting an Interconnection Request pursuant to this Rule.

Application: See Interconnection Request.

Available Capacity: Total Capacity less the sum of Allocated Capacity and Queued Capacity.

Base Case: Data including, but not limited to, base power flow, short circuit and dynamic/stability data bases, underlying load, generation, and transmission facility assumptions, contingency lists, including relevant special protection systems, and transmission diagrams used to perform the Interconnection Studies. The Base Case may include Critical Energy Infrastructure Information (as that term is defined by FERC). The Base Case shall include (a) transmission facilities as approved by Distribution Provider or CAISO, as applicable, (b) planned Distribution Upgrades that may have an impact on the Interconnection Request, (c) Distribution Upgrades and Network Upgrades associated with generating facilities in (iv) below, and (d) generating facilities that (i) are directly interconnected to the Distribution System or CAISO Controlled Grid; (ii) are interconnected to Affected Systems and may have an impact on the Interconnection Request; (iii) have a pending request to interconnect to the Distribution System or an Affected System; or (iv) are not interconnected to the Distribution System or CAISO Controlled Grid, but are subject to a fully executed Generator Interconnection Agreement (or its equivalent predecessor agreement) or for which an unexecuted Generator Interconnection Agreement (or its equivalent predecessor agreement) has been requested to be filed with FERC. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Business Day: Monday through Friday, excluding Federal and State Holidays.

CAISO Controlled Grid: The system of transmission lines and associated facilities that have been placed under the CAISO's Operational Control.

CAISO Tariff: The California Independent System Operator FERC Electric Tariff.

Calendar Day: Any day, including Saturday, Sunday or a Federal and State Holiday.

Certification Test: A test pursuant to this Rule that verifies conformance of certain equipment with Commission-approved performance standards in order to be classified as Certified Equipment. Certification Tests are performed by Nationally Recognized Test Laboratories (NRTLs).

Certification; Certified; Certificate: The documented results of a successful Certification Testing.

Certified Equipment: Equipment that has passed all required Certification Tests.

Commercial Operation: The status of a Generating Facility that has commenced generating electricity, excluding electricity generated during the period which Producer is engaged in on-site test operations and commissioning of the Generating Facility prior to Commercial Operation.

Commercial Operation Date: The date on which a Generator at a Generating Facility commences Commercial Operation, as agreed to by the Parties.

Commission: The Public Utilities Commission of the State of California. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Commissioning Test: A test performed during the commissioning of all or part of a Generating Facility to achieve one or more of the following:

Verify specific aspects of its performance;

Calibrate its instrumentation;

Establish instrument or Protective Function set-points.

Confidential Information: See Section D.7.

Conservation Voltage Regulation (CVR): The CVR program that the Commission directed Distribution Provider to implement as applicable to the operation and design of distribution circuits and related service voltages.

Construction Activities: Actions by Distribution Provider that result in irrevocable financial commitments for the purchase of major electrical equipment or land for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades assigned to the Interconnection Customer that occur after receipt of all appropriate governmental approvals needed for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades.

Continuous Operation: The Smart Inverter operates indefinitely without tripping. Any functions that protect the Smart Inverter from damage may operate as needed.

Control Area: As defined in the CAISO Tariff.

Cost Envelope: A cost-certainty framework defined as plus or minus twenty-five (25) percent of the estimated cost of certain Interconnection Facilities and/or Distribution Upgrades identified in the Cost Envelope Estimate that is offered to an Applicant based on actual costs within such twenty-five (25) percent envelope. Applicant's cost responsibility for Interconnection Facilities and/or Distribution Upgrades subject to the Cost Envelope is set forth in Section F.7.b. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Cost Envelope Option: A five-year pilot option described in Section F.7 applicable to Interconnection Requests for Generating Facilities that are processed under the Fast Track Process or Independent Study Process.

Cost Envelope Estimate: An estimate prepared by the Distribution Provider and delivered to Applicant pursuant to the Cost Envelope Option that contains (i) the estimated cost of Distribution Provider's required Interconnection Facilities and/or Distribution Upgrades that are offered to Applicant that are subject to the Cost Envelope, and (ii) the estimated costs of related activities and facilities that are excluded from the Cost Envelope and offered on an actual cost basis, both pursuant to Section F.7.

Customer: The entity that receives or is entitled to receive Distribution Service through Distribution Provider's Distribution System or is a retail Customer of Distribution Provider connected to the Transmission System. (L)

db$_{OF}$ - A single-sided deadband value for high-frequency in Hz used in Section Hh.L. (P)

db$_{UF}$ - A single-sided deadband value for low-frequency in Hz used in Section Hh.L. (P)

Dedicated Transformer; Dedicated Distribution Transformer: A transformer that provides electricity service to a single Customer. The Customer may or may not have a Generating Facility. (L)

Delivery Network Upgrades: The transmission facilities at or beyond the point where Distribution Provider's Distribution System interconnects to the CAISO Controlled Grid, other than Reliability Network Upgrades, as defined in the CAISO Tariff. (L)~~(~~

Detailed Study: An Independent Study, a Distribution Group Study or a WDT Transmission Cluster Study. (L)/(P)

Detailed Study Agreement: The agreement entered into by the Interconnection Customer and Distribution Provider which sets forth the Parties' agreement to perform Interconnection Studies under the Independent Study Process or the Distribution Group Study Process. (L)

Device: A mechanism or piece of equipment designed to serve a purpose or perform a function. The term may be used interchangeably with the terms "equipment" and function without intentional difference in meaning. See also Function and Protective Function. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

DGS Phase I Interconnection Study: Distribution Group Study (DGS) Phase I Interconnection Study performed by the Distribution Provider under the Distribution Group Study Process per Section G.3.c.i.

DGS Phase II Interconnection Study: Distribution Group Study (DGS) Phase II Interconnection Study performed by the Distribution provider under the Distribution Group Study Process per Section G.3.c.ii.

Dispute Resolution: See Section K.

Distribution Group Study: An interconnection engineering study of a group comprised of Interconnection Requests that pass Screen Q as a group and fail Screen R demonstrating they are electrically interdependent in accordance with Section F.3.c.

Distribution Group Study Process: The interconnection study process set forth in Section F.3.c.

Distribution Provider: Pacific Gas and Electric Company

Distribution Service: The service of delivering energy over the Distribution System pursuant to the approved tariffs of Distribution Provider other than services directly related to the Interconnection of a Generating Facility under this Rule.

Distribution Study Group: A group comprised of Interconnection Requests that fail Screen R that will be studied pursuant to Section F.3.c because the Screen R results demonstrate they are electrically interdependent.

Distribution System: All electrical wires, equipment, and other facilities owned or provided by Distribution Provider, other than Interconnection Facilities or the Transmission System, by which Distribution Provider provides Distribution Service to its Customers.

Distribution Upgrades: The additions, modifications, and upgrades to Distribution Provider's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the Distribution Service. Distribution Upgrades do not include Interconnection Facilities. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Electrical Independence Test: The tests set forth in Section G.3 used to determine eligibility for the Independent Study Process.

Emergency: Whenever in Distribution Provider's discretion an Unsafe Operating Condition or other hazardous condition exists or whenever access is necessary for emergency service restoration, and such immediate action is necessary to protect persons, Distribution Provider's facilities or property of others from damage or interference caused by Interconnection Customer's Generating Facility, or the failure of protective device to operate properly, or a malfunction of any electrical system equipment or a component part thereof.

Energy-Only Deliverability Status: A condition elected by an Interconnection Customer for a Generating Facility interconnected to Distribution System, the result of which is that the Interconnection Customer is responsible only for the costs of Reliability Network Upgrades and is not responsible for the costs of Delivery Network Upgrades, but the Generating Facility will be deemed to have a Net Qualifying Capacity as defined in the CAISO Tariff of zero.

Engineering and Procurement Agreement: An agreement that authorizes Distribution Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the Interconnection in order to advance the implementation of the Interconnection Request.

Exporting Generating Facility: Any Generating Facility other than a Non-Export Generating Facility, NEM Generating Facility, or uncompensated Generating Facility.

Fast Track Process: The interconnection study process set forth in Section F.2.

Federal Energy Regulatory Commission: Referred to herein as FERC. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Field Testing: Testing performed in the field to determine whether equipment meets Distribution Provider's requirements for safe and reliable Interconnection.

Function: Some combination of hardware and software designed to provide specific features or capabilities. Its use, as in Protective Function, is intended to encompass a range of implementations from a single-purpose device to a section of software and specific pieces of hardware within a larger piece of equipment to a collection of devices and software.

Generating Facility: All Generators, electrical wires, equipment, and other facilities, excluding Interconnection Facilities, owned or provided by Producer for the purpose of producing electric power, including storage.

Generating Facility Capacity: The net capacity of the Generating Facility and the aggregate net capacity of the Generating Facility where it includes multiple Generators.

Generator: A device converting mechanical, chemical, or solar energy into electrical energy, including all of its protective and control functions and structural appurtenances. One or more Generators comprise a Generating Facility.

Generator Interconnection Agreement: An agreement between Distribution Provider and Producer providing for the Interconnection of a Generating Facility that gives certain rights and obligations to effect or end Interconnection. For the purpose of this Rule, Net Energy Metering or power purchase agreements authorized by the Commission are also defined as Generator Interconnection Agreements. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Good Utility Practice: Any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority: Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include Interconnection Customer, Distribution Provider, or any Affiliate thereof.

Gross Rating; Gross Nameplate Rating; Gross Capacity or Gross Nameplate Capacity: The total gross generating capacity of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

Host Load: The electrical power, less the Generator auxiliary load, consumed by the Customer, to which the Generating Facility is connected.

Inadvertent Export: The unscheduled and uncompensated export of real power from a Generating Facility (GF) for a limited duration as specified in Sections M and Mm.

Independent Study Process: The interconnection study process set forth in Section F.3.d.

Initial Review: See Section F.2.a. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

In-rush Current: The current determined by the In-rush Current Test.

In-Service Date: The estimated date upon which Applicant reasonably expects it will be ready to begin use of Distribution Provider's Interconnection Facilities.

Interconnection; Interconnected: The physical connection of a Generating Facility in accordance with the requirements of this Rule so that Parallel Operation with Distribution Provider's Distribution or Transmission System can occur (has occurred).

Interconnection Agreement: See Generator Interconnection Agreement.

Interconnection Customer: See Applicant.

Interconnection Facilities: The electrical wires, switches and related equipment that are required in addition to the facilities required to provide electric Distribution Service to a Customer to allow Interconnection. Interconnection Facilities may be located on either side of the Point of Common Coupling as appropriate to their purpose and design. Interconnection Facilities may be integral to a Generating Facility or provided separately. Interconnection Facilities may be owned by either Producer or Distribution Provider.

Interconnection Facilities Study: A study conducted by Distribution Provider for an Interconnection Customer under the Independent Study Process to determine a list of facilities (including Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Network Upgrades as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with Distribution Provider's Distribution or Transmission System. The scope of the study is defined in Section G.3.c.

Interconnection Financial Security: Any of the financial instruments listed in Section F.4.a. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Interconnection Request: An Applicant's request to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with Distribution Provider's Distribution or Transmission System.

Interconnection Study: A study to establish the requirements for Interconnection of a Generating Facility with Distribution Provider's Distribution System or Transmission System, pursuant to this Rule.

Interconnection System Impact Study: An engineering study conducted by Distribution Provider for an Interconnection Customer under the Independent Study Process that evaluates the impact of the proposed interconnection on the safety and reliability of Distribution Provider's Distribution and/or Transmission System and, if applicable, an Affected System. The scope of the study is defined in Section G.3.c.i. (L)

The Integration Capacity Analysis Static Grid (SG) 576 profile: At a given Point of Interconnection, the minimum Integration Capacity Analysis values at each of the 576 hours for the most limiting of these categories: thermal, voltage, power quality, and protection. (P)

Integration Capacity Analysis Static Grid (ICA-SG) Value: The minimum ICA value in a given Point of Interconnection's ICA-SG 576 Profile.

Integration Capacity Analysis (ICA) Values: Values which represent the maximum capacity that can be interconnected at a given Point of Interconnection without exceeding Distribution Provider equipment thermal limits or any of the Distribution System voltage, power quality, protection, and safety (operational flexibility) limits each which is independently calculated. (P)

k_{OF}: The per-unit frequency change corresponding to 1 per-unit power output change (frequency droop) for high frequency conditions, unitless used in Section Hh.2.I. (P)

k_{UF}: The per-unit frequency change corresponding to 1 per-unit power output change (frequency droop) for low frequency divisions, unitless used in Section Hh.2.I. (P)

(Continued)

C. DEFINITIONS (Cont'd.)

Island; Islanding: A condition on Distribution Provider's Distribution System in which one or more Generating Facilities deliver power to Customers using a portion of Distribution Provider's Distribution System that is electrically isolated from the remainder of Distribution Provider's Distribution System.

Large Generating Facility: A Generating Facility having a Generating Facility Capacity of more than 20 MW.

Like-for-like: For inverters, like-for-like means certified, same nameplate or smaller, same fault current or smaller. For solar panels, like-for-like means certified, same CEC-AC rating of the system or smaller. For batteries, like-for-like means same or less kWh & kW rating and same operating profile. For transformers, like-for-like means same connection type, same or smaller impedance and capacity.

Line Section: That portion of Distribution Provider's Distribution or Transmission System connected to a Customer bounded by automatic sectionalizing devices or the end of the distribution line.

Local Furnishing Bond: Tax-exempt bonds utilized to finance facilities for the local furnishing of electric energy, as described in Internal Revenue Code, 26 U.S.C. § 142(f).

Local Furnishing Distribution Provider: Any Distribution Provider that owns facilities financed by Local Furnishing Bonds.

Local Generating Facility Communication Interface: Interface at the Generating Facility capable of communicating to support the information exchange requirements specified in this rule and as required in IEEE 1547-2018 for all applicable functions that are in Section Hh.

Mandatory Operation: The Smart Inverter operates at maximum available current without tripping during Distribution Provider's Transmission or Distribution System excursions outside the region of continuous operation. Any functions that protect the Smart Inverter from damage may operate as needed.

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Material Modification: Those modifications that have a material impact on cost or timing of any Interconnection Request with a later queue priority date or a change in Point of Interconnection. A Material Modification does not include (i) a change in ownership of a Generating Facility, (ii) a modification described in Table F.1, nor (iii) a modification described in Tables Ee.1, 2 or 3 that does not require a new interconnection request.. (L) (L)/(T) (T) (T)

Metering: The measurement of electrical power in kilowatts (kW) and/or energy in kilowatt-hours (kWh), and if necessary, reactive power in kVAR at a point, and its display to Distribution Provider, as required by this Rule. (L)

Metering Equipment: All equipment, hardware, software including meter cabinets, conduit, etc., that are necessary for Metering.

Momentary Cessation: The Smart Inverter momentarily reduces current output to the Distribution Provider's Transmission or Distribution System to below 10% of the maximum continuous output current rating. The Smart Inverter is allowed to increase current output to the Distribution Provider's Transmission or Distribution System without any intentional reconnection delay once voltage exits the Momentary Cessation region and enters a Permissive Operation region or Continuous Operation region.

Momentary Parallel Operation: The Interconnection of a Generating Facility to the Distribution and Transmission System for one second (60 cycles) or less.

Nationally Recognized Testing Laboratory (NRTL): A laboratory accredited to perform the Certification Testing requirements under this Rule.

Net Energy Metering (NEM): Metering for the receipt and delivery of electricity between Producer and Distribution Provider pursuant to California Public Utilities Code (PUC) sections 2827, 2827.1 (as currently implemented by Commission Decision (D.)16-01-044), 2827.8, or 2827.10.

NEM-1: Refers to Interconnection Requests for service pursuant to Schedules NEM, NEMV, and NEMVMASH.

NEM-2: Refers to Interconnection Requests for service pursuant to Schedules NEM2, NEM2V, NEM2VMSH, and NEM2VSOM. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Net Rating or Net Nameplate Rating: The Gross Rating minus the consumption of electrical power of the auxiliary load.

Network Upgrades: Delivery Network Upgrades and Reliability Network Upgrades.

Networked Secondary System: An AC distribution system where the secondaries of the distribution transformers are connected to a common bus for supplying electricity directly to consumers. There are two types of secondary networks: grid networks (also referred to as area networks or street networks) and Spot Networks. Synonyms: Secondary Network. Refer to IEEE 1547.6 for additional detail.

Non-Emergency: Conditions or situations that are not Emergencies, including but not limited to meter reading, inspection, testing, routine repairs, replacement, and maintenance.

Nominal: Standard frequency and voltage.

Non-Export; Non-Exporting: When the Generating Facility is sized and designed such that the Generator output is used for Host Load only and is designed to prevent the transfer of electrical energy from the Generating Facility to Distribution Provider's Distribution or Transmission System. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Non-Export AC/DC Converter: A one-way only device that takes alternating current (AC) power from the Distribution System and converts it into direct current (DC) power for DC loads in the Customer's facility. A Non-Export AC/DC Converter must be certified by a Nationally Recognized Test Lab as non-export, meaning it must be certified to not export power back into the grid (i.e. exports less than 0.5% of its rated current towards the grid under steady–state conditions or after 5 cycles of an induced fault condition) and it must meet IEEE 1547-4.3.3 harmonic requirements. Until a national certification standard is approved and the Non-Export AC/DC Converter can be certified by a NRTL, the requirement can be satisfied through Distribution Provider's interim approval process. An interim approval will apply to devices that complete the Distribution Provider's testing procedure described in Section L.7.a.v. The interim approval will be effective upon the Distribution Provider acknowledging that the test results for a particular model of Non-Export AC/DC Converter confirm satisfactory completion of the testing procedures. Twelve months after the UL 1741 Non-Export Certification Requirement Document (CRD) standard is available, new interconnections requests for non-export using an AC/DC converter must use an NRTL certified non-export converter.

Non-Islanding: Designed to detect and disconnect from a stable Unintended Island with matched load and generation. Reliance solely on under/over voltage and frequency trip is not considered sufficient to qualify as Non-Islanding.

Open Loop Response Time: The duration from a step change in control signal input (reference value) until the output changes to 90 percent of its final change, before any overshoot.

Parallel Operation: The simultaneous operation of a Generator with power delivered or received by Distribution Provider while Interconnected. For the purpose of this Rule, Parallel Operation includes only those Generating Facilities that are Interconnected with Distribution Provider's Distribution or Transmission System for more than 60 cycles (one second).

Paralleling Device: An electrical device, typically a circuit breaker, operating under the control of a synchronization relay or by a qualified operator to connect an energized generator to an energized electric power system or two energized power systems to each other. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Party, Parties: Applicant or Distribution Provider.

Periodic Test: A test performed on part or all of a Generating Facility/Interconnection Facilities at pre-determined time or operational intervals to achieve one or more of the following: 1) verify specific aspects of its performance; 2) calibrate instrumentation; and 3) verify and re-establish instrument or Protective Function set-points.

Permissive Operation: The Smart Inverter is allowed, but not required, to operate at any current level.

Point of Common Coupling (PCC): The transfer point for electricity between the electrical conductors of Distribution Provider and the electrical conductors of Producer. (L)

Point of Distributed Energy Resources Connection (Point of Generating Resource Connection–PoC): The point where a generating resource unit is electrically connected in a generating facility and meets the requirements of this rule. (P) (P)

Point of Interconnection (POI): The point where the Interconnection Facilities connect with Distribution Provider's Distribution or Transmission System. This may or may not be coincident with the Point of Common Coupling. (L)/(P) (L)

Pre-Construction Activities: The actions by Distribution Provider, other than those required by an Engineering and Procurement Agreement under Section F.3.f, undertaken prior to Construction Activities in order to prepare for the construction of Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades assigned to the Interconnection Customer, including, but not limited to, preliminary engineering, permitting activities, environmental analysis, or other activities specifically needed to obtain governmental approvals for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Producer: The entity that executes a Generator Interconnection Agreement with Distribution Provider. Producer may or may not own or operate the Generating Facility, but is responsible for the rights and obligations related to the Generator Interconnection Agreement.

Production Test: A test performed on each device coming off the production line to verify certain aspects of its performance.

Protective Function(s): The equipment, hardware and/or software in a Generating Facility (whether discrete or integrated with other functions) whose purpose is to protect against Unsafe Operating Conditions.

Prudent Electrical Practices: Those practices, methods, and equipment, as changed from time to time, that are commonly used in prudent electrical engineering and operations to design and operate electric equipment lawfully and with safety, dependability, efficiency, and economy.

Queue Position: See Section E.5.C.

Queued Capacity: Aggregate queued generation capacity (in MW) for a substation/area bus, bank or circuit (i.e., amount of generation in the queue). (L)

Reference Point of Applicability (RPA): The location where the Generating Facility interconnection and interoperability performance requirements shall be met. (P) (P)

Reasonable Efforts: With respect to an action required to be attempted or taken by a Party under this Rule, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests. (L)

Reliability Network Upgrades: The transmission facilities at or beyond the point where Distribution Provider's Distribution System interconnects to the CAISO Controlled Grid, necessary to interconnect one or more Generating Facility(ies) safely and reliably to the CAISO Controlled Grid, as defined in the CAISO Tariff.

Section 218 Load: Electrical power that is supplied in compliance with California PUC section 218. PUC section 218 defines an "Electric Corporation" and provides conditions under which a transaction involving a Generating Facility would not classify a Producer as an Electric Corporation. These conditions relate to "over-the-fence" sale of electricity from a Generating Facility without using Distribution Provider's Distribution or Transmission System. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Short Circuit Contribution Ratio (SCCR): The ratio of the Generating Facility's short circuit contribution to the short circuit contribution provided through Distribution Provider's Distribution System for a three-phase fault at the high voltage side of the distribution transformer connecting the Generating Facility to Distribution Provider's Distribution System.

Single Line Diagram; Single Line Drawing: A schematic drawing, showing the major electric switchgear, Protective Function devices (including relays, current transformer and potential transformer configurations/wiring in addition to circuit breakers/fuses), wires, Generators, transformers, meters and other devices, providing relevant details to communicate to a qualified engineer the essential design and safety of the system being considered.

Site Exclusivity: Documentation reasonably demonstrating: (1) For private land: (a) Ownership of, a leasehold interest in, or a right to develop property upon which the Generating Facility will be located consisting of a minimum of 50% of the acreage reasonably necessary to accommodate the Generating Facility; or (b) an option to purchase or acquire a leasehold interest in property upon which the Generating Facility will be located consisting of a minimum of 50% of the acreage reasonably necessary to accommodate the Generating Facility. (2) For public land, including that controlled or managed by any federal, state or local agency, a final, non-appealable permit, license, or other right to use the property for the purpose of generating electric power and in acreage reasonably necessary to accommodate the Generating Facility, which exclusive right to use public land under the management of the federal Bureau of Land Management shall be in a form specified by the Bureau of Land Management. The demonstration of Site Exclusivity, at a minimum, must be through the Commercial Operation Date of the new Generating Facility or increase in capacity of the existing Generating Facility.

Small Generating Facility: A Generating Facility that has a Generating Facility Capacity of no more than 20 MW.

Smart Inverter: A Generating Facility's inverter that performs functions that, when activated, can autonomously contribute to grid support during excursions from normal operating voltage and frequency system conditions by providing: dynamic reactive/real power support, voltage and frequency ride-through, ramp rate controls, communication systems with ability to accept external commands and other functions.

Special Facilities: As defined in Distribution Provider's Rule 2. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Spot Network: For purposes of this Rule, a Spot Network is a type of distribution system found within modern commercial buildings to provide high reliability of service to a single customer.

Starting Voltage Drop: The percentage voltage drop at a specified point resulting from In-rush Current. The Starting Voltage Drop can also be expressed in volts on a particular base voltage, (e.g. 6 volts on a 120-volt base, yielding a 5% drop).

Supplemental Review: See Section F.2.c.

System Integrity: The condition under which Distribution Provider's Distribution and Transmission System is deemed safe and can reliably perform its intended functions in accordance with the safety and reliability rules of Distribution Provider.

Telemetering: The electrical or electronic transmittal of Metering data on a real-time basis to Distribution Provider.

Total Capacity: Capacity (in MW) of substation/area bus, bank or circuit based on normal or operating ratings.

Transfer Trip: A Protective Function that trips a Generating Facility remotely by means of an automated communications link controlled by Distribution Provider.

Transient/Dynamic Stability: The ability of an electrical system to withstand disturbances. Transient/Dynamic Stability studies are performed to ensure power system stability and are time-based simulations that assess the performance of the power system during and shortly following system disturbances.

Transmission Cluster Study Process: The cluster study process as defined in Distribution Provider's Wholesale Distribution Tariff.

Transmission System: Transmission facilities owned by Distribution Provider that have been placed under the CAISO's operational control and are part of the CAISO Controlled Grid, as defined in the CAISO Tariff. (L)

(Continued)

C. DEFINITIONS (Cont'd.) (L)

Trip: The act of a Generating Facility to cease to energize or disconnect from the Distribution Provider's Transmission or Distribution System automatically due to a Distribution Provider's Transmission or Distribution System disturbance. Following a trip, the Smart Inverter must delay re-energization or reconnection for a preset period of time once the voltage and frequency of the Distribution Provider's Transmission or Distribution System are within normal ranges.

Type Test: A test performed on a sample of a particular model of a device to verify specific aspects of its design, construction and performance.

Unintended Island: The creation of an Island, usually following a loss of a portion of Distribution Provider's Distribution System, without the approval of Distribution Provider.

Unit Cost Guide: A published guide that is not binding for actual facility costs and is provided only for additional cost transparency, developer reference, and Distribution Provider's reference when preparing the study estimate.

Unsafe Operating Conditions: Conditions that, if left uncorrected, could result in harm to personnel, damage to equipment, loss of System Integrity or operation outside pre-established parameters required by the Generator Interconnection Agreement.

Voltage Excursion: Beginning when Distribution Provider's Transmission or Distribution System voltage at the PCC exits the near Nominal magnitude range and ending when voltage re-enters the near Nominal magnitude range.

VRef: The reference voltage or nominal voltage.

VRefOfs: The offset from the reference voltage due to the location of the Smart Inverter system on a distribution feeder. This may be a setting or may be calculated dynamically from local voltage measurements.

Wholesale Distribution Tariff: PG&E's Wholesale Distribution Tariff (WDT) (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

1. AUTHORIZATION REQUIRED TO OPERATE (Cont'd.)

A Producer must comply with this Rule, execute a Generator Interconnection Agreement with Distribution Provider, and receive Distribution Provider's express written permission before Parallel Operation of its Generating Facility with Distribution Provider's Distribution or Transmission System. Distribution Provider shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission for Parallel Operation of Producer's Generating Facility with Distribution Provider's Distribution or Transmission System.

2. SEPARATE AGREEMENTS REQUIRED FOR OTHER SERVICES

A Producer requiring other electric services from Distribution Provider including, but not limited to, Distribution Service during periods of curtailment or interruption of Producer's Generating Facility, must enter into agreements with Distribution Provider for such services in accordance with Distribution Provider's Commission-approved tariffs.

3. SERVICES UNDER THIS TARIFF LIMITED TO INTERCONNECTION

Interconnection with Distribution Provider's Distribution or Transmission System under this Rule does not provide a Producer any rights to utilize Distribution Provider's Distribution or Transmission System for the transmission, distribution, or wheeling of electric power, nor does it limit those rights.

4. COMPLIANCE WITH LAWS, RULES, AND TARIFFS

A Producer shall ascertain and comply with applicable Commission-approved tariffs of Distribution Provider; applicable FERC-approved rules, tariffs, and regulations; and any local, state or federal law, statute or regulation which applies to the design, siting, construction, installation, operation, or any other aspect of Producer's Generating Facility and Interconnection Facilities. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

5. DESIGN REVIEWS AND INSPECTIONS

Distribution Provider shall have the right to review the design of a Producer's Generating and Interconnection Facilities and to inspect a Producer's Generating and/or Interconnection Facilities prior to the commencement of Parallel Operation with Distribution Provider's Distribution or Transmission System. Distribution Provider may require a Producer to make modifications as necessary to comply with the requirements of this Rule. Distribution Provider's review and authorization for Parallel Operation shall not be construed as confirming or endorsing Producer's design or as warranting the Generating Facilities' and/or Interconnection Facilities' safety, durability or reliability. Distribution Provider shall not, by reason of such review or lack of review, be responsible for the strength, adequacy, or capacity of such equipment.

6. RIGHT TO ACCESS

A Producer's Generating Facility and/or Interconnection Facilities shall be reasonably accessible to Distribution Provider personnel as necessary for Distribution Provider to perform its duties and exercise its rights under its tariffs approved by the Commission, and under any Generator Interconnection Agreement between Distribution Provider and Producer.

7. CONFIDENTIALITY

a. Scope

Confidential Information shall include, without limitation, confidential, proprietary or trade secret information relating to the present or planned business of Applicant, Customer, Producer, or Distribution Provider (individually referred to in Section D.7 as Party or collectively as Parties), including all information relating to a Party's technology, research and development, business affairs, and pricing. Distribution Provider shall not use the information contained in the Interconnection Request to propose discounted tariffs to the Customer unless authorized to do so by the Customer or the information is provided to Distribution Provider by the Customer through other means. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

7. CONFIDENTIALITY (Cont'd)

a. Scope (Cont'd)

Information is Confidential Information only if it is clearly designated or marked in writing as confidential on the face of the document (including electronic materials), or, if the information is conveyed orally or by inspection, if the Party providing the information orally informs the Party receiving the information that the information is confidential. For purposes of this Rule all design, operating specifications, and metering data provided by Applicant shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such, except as provided in section D.7.b. below.

If requested by either Party, the other Party shall provide in writing, the basis for asserting that the information referred to in this Article warrants confidential treatment, and the requesting Party may disclose such writing to the appropriate Governmental Authority. Each Party shall be responsible for the costs associated with affording confidential treatment to its information.

b. Limitations on Scope

Confidential Information shall not include information pertaining to each Interconnection Request that may be provided in a publicly-posted queue pursuant to Section E.5.d of this Rule.

Confidential Information shall not include information that: (1) is generally available to the public other than as a result of a disclosure by the receiving Party; (2) was in the lawful possession of the receiving Party on a non-confidential basis before receiving it from the disclosing Party; (3) was supplied to the receiving Party without restriction by a third party, who, to the knowledge of the receiving Party after due inquiry, was under no obligation to the disclosing Party to keep such information confidential; (4) was independently developed by the (L)

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D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

7. CONFIDENTIALITY (Cont'd.)

b. Limitations on Scope (Cont'd.)

receiving Party without reference to Confidential Information of the disclosing Party; (5) is, or becomes, publicly known, through no wrongful act or omission of the receiving Party; or (6) is required, in accordance with Section D.7.d, Required Disclosure, to be disclosed by any Governmental Authority or is otherwise required to be disclosed by law or subpoena.

Information designated as Confidential Information will no longer be deemed confidential if the Party that designated the information as confidential notifies the other Party that it no longer is confidential.

c. Disclosure to Commission, FERC, or their respective Staff

Notwithstanding anything in this Section D.7 to the contrary, and pursuant to 18 CFR section 1b.20 in the case of disclosure to FERC, if the Commission, FERC, or their respective staff, during the course of an investigation or otherwise, requests information from one of the Parties that is otherwise required to be maintained in confidence pursuant to this Rule, the Party shall provide the requested information to the Commission, FERC, or their respective staff, within the time provided for in the request for information. In providing the information to the Commission, FERC, or their respective staff, the Party shall, pursuant to PUC section 583 and General Order 66-~~C~~ D in the case of disclosure to the Commission, and consistent with 18 CFR section 388.112 in the case of disclosure to FERC, request that the information be treated as confidential and non-public by the Commission, FERC, and their respective staff and that the information be withheld from public disclosure. Requests from another state regulatory body with jurisdiction conducting a confidential investigation shall be treated in a similar manner, consistent with applicable state rules and regulations. (L) (L)/(T) (L) (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

7. CONFIDENTIALITY (Cont'd.)

d. Required Disclosure

Subject to the exception in Section D.7.c, any information that a Party claims is Confidential Information shall not be disclosed by the other Party to any person not employed or retained by the other Party, except to the extent disclosure is (i) required by law or pursuant to an order of the Commission or FERC; (ii) reasonably deemed by the disclosing Party to be required to be disclosed in connection with a dispute between or among the Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the other Party, such consent not to be unreasonably withheld; (iv) necessary to fulfill its obligations under this Rule; or (v) as a transmission or distribution service provider or a Control Area operator, including disclosing the Confidential Information to a Regional Transmission Organization or CAISO, or to a sub-regional, regional or national reliability organization or planning group under the applicable confidentiality provisions in the relevant tariffs. Prior to any disclosures of the other Party's Confidential Information under this subparagraph, or if any third party or Governmental Authority makes any request or demand for any of the information described in this subparagraph, the disclosing Party agrees to assert confidentiality and cooperate with the other Party in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

8. PRUDENT OPERATION AND MAINTENANCE REQUIRED

A Producer shall operate and maintain its Generating Facility and Interconnection Facilities in accordance with Prudent Electrical Practices and shall maintain compliance with this Rule. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

9. CURTAILMENT AND DISCONNECTION

Distribution Provider may limit the operation or disconnect or require the disconnection of a Producer's Generating Facility from Distribution Provider's Distribution or Transmission System at any time, with or without notice, in the event of an Emergency, or to correct Unsafe Operating Conditions. Distribution Provider may also limit the operation or disconnect or require the disconnection of a Producer's Generating Facility from Distribution Provider's Distribution or Transmission System upon the provision of reasonable written notice: 1) to allow for routine maintenance, repairs or modifications to Distribution Provider's Distribution or Transmission System; 2) upon Distribution Provider's determination that a Producer's Generating Facility is not in compliance with this Rule; or 3) upon termination of the Generator Interconnection Agreement. Upon Producer's written request, Distribution Provider shall provide a written explanation of the reason for such curtailment or disconnection.

10. LOCAL FURNISHING BONDS

If a proposed Interconnection of a Generating Facility would impair the tax-exempt status of interest on the Local Furnishing Bonds or the deductibility of interest expense on the Local Furnishing Bonds to the Local Furnishing Distribution Provider under the Internal Revenue Code, Treasury Regulations and/or applicable IRS rulings, the Interconnection Customer will be required to pay the costs properly attributable to the proposed Interconnection of such Generating Facility. The Interconnection Study shall specify and estimate the cost of all remedial measures that address the financial impacts, if any, on Local Furnishing Bonds that would result from an Interconnection. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

11. COORDINATION WITH AFFECTED SYSTEMS

Distribution Provider will notify the Affected System Operators that are potentially affected by an Applicant's Interconnection Request or group of Interconnection Requests. Distribution Provider will coordinate the conduct of any studies required to determine the impact of the Interconnection Request on Affected Systems with Affected System Operators and, if possible, include those results (if available) in its applicable Interconnection Study within the time frame specified in this Rule. Distribution Provider will include such Affected System Operators in all meetings held with Applicant as required by this Rule. Applicant will cooperate with Distribution Provider in all matters related to the conduct of studies and the determination of modifications to Affected Systems. A transmission provider which may be an Affected System shall cooperate with Distribution Provider with whom interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to Affected Systems. Applicant shall enter into an agreement with the owner of the Affected System, as applicable. The agreement shall specify the terms governing payments to be made by Applicant to the owner of the Affected System as well as the repayment, if applicable, by the owner of the Affected System.

12. TRANSFERABILITY OF INTERCONNECTION REQUEST

An Applicant may transfer its Interconnection Request to another entity only if such entity acquires the proposed Generating Facility identified in the Interconnection Request and the Point of Interconnection does not change.

13. SPECIAL PROVISIONS APPLICABLE TO CERTAIN NET ENERGY METERED APPLICANTS

Notwithstanding any other provision in this Rule:

a. For NEM Generating Facilities with a capacity of 1 MW or smaller Distribution Provider may proceed from Initial to Supplemental Review to Independent Study Process to further study without waiting for Applicant concurrence, since Applicant is not responsible for payment of study costs. Except as provided in Section D.13.e below, for NEM-2 Generating Facilities with a capacity greater than 1 MW, the special provisions contained within Section D.13 and other exemptions (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

a. applicable to NEM Applicants contained within this Rule do not apply. Instead, all provisions applicable to non-NEM Interconnection Requests shall apply, including but not limited to the requirement to pay all Interconnection Request fees, study costs and upgrade costs, and the adherence to all non-NEM timeline and interconnection provisions contained within Rule 21.

b. For NEM-1 and NEM-2 Generating Facilities with a capacity of 1 MW or smaller, Distribution Provider approval for Interconnection (i.e., Permission to Operate) shall normally be processed not later than thirty (30) Business Days following Distribution Provider's receipt of 1) a completed Net Energy Metering Interconnection Request including all supporting documents and required payments; 2) a completed signed Net Energy Metering Generator Interconnection Agreement; and 3) evidence of Applicant's final electric inspection clearance from the Governmental Authority having jurisdiction over the Generating Facility. If the 30-day period cannot be met, Distribution Provider shall notify Applicant and the Commission of the reason for the inability to process the Interconnection Request and the expected completion date. However, Applicants that include non-inverter based Generators and/or Generators with non-Certified Equipment and/or Interconnection Requests that are anticipated to require new services (i.e., NEM load aggregation) and/or the design and construction of Interconnection Facilities or Distribution Upgrades should plan to submit a completed Net Energy Metering Interconnection Request including all supporting documents sufficient for Distribution Provider to start the review process in Section F.2.a without waiting for the final inspection clearance. Applicants with such Generating Facilities are advised to submit their Interconnection Request at least six (6) months in advance of their planned Commercial Operation Date. Depending on the size and location of these Generating Facilities, additional time for review may be required and could include Supplemental Review an Interconnection System Impact Study, and an Interconnection Facilities Study as set out in Section F. The advance submission of the Interconnection Request will better accommodate Distribution Provider's review and studies in a manner consistent with the timelines established in this Rule that may be required to complete the processing for these types of Interconnection Requests. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

c. Unless Net Generator Output Metering is required, Metering Equipment necessary to obtain service under NEM-1 or NEM-2 shall be installed and operational within the timeframe required to complete Interconnection.

d. An Applicant with a Fast Track Interconnection Request for a NEM-1 or NEM-2 Generating Facility with a capacity of 1 MW or smaller that 1) goes for more than one year from the date of Distribution Provider's written notification that the Interconnection Request is valid without a signed Generator Interconnection Agreement, or 2) has a Generating Facility that has not been approved for Parallel Operation within one year of completion of all applicable review and/or studies, is subject to withdrawal by Distribution Provider; however, Distribution Provider may not deem the Interconnection Request to be withdrawn if i) Applicant provides reasonable evidence that the Interconnection Request is still active or ii) the delay is at no fault of Applicant. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

e. For the purposes of establishing the interconnection requirements for Net Energy Metering Generating Facilities with a capacity greater than one megawatt (1MW) qualifying for service under PUC Section 2827(b)(4)(B) (i.e., the California Department of Corrections and Rehabilitation), Distribution Provider shall be afforded a prudent but necessary time, as determined by the executive director of the Commission, to study the impacts of the Interconnection Request. If the study reveals the need for upgrades to the Transmission and/or Distribution System arising solely from the Interconnection Request, Distribution Provider shall be afforded the time necessary to complete those upgrades before the Generating Facility is interconnected. The costs of the Network and/or Distribution Upgrades shall be borne by the Applicant, but the exemption from application fees and study costs applicable to Generating Facilities eligible for Net Energy Metering under PUC Section 2827 shall apply. Distribution Provider shall consider the receipt date of the completed Interconnection Request when completing the study allowed for herein and for purposes of determining the appropriate cost responsibility for the necessary Network and/or Distribution Upgrades triggered solely by the Interconnection Request. All Generating Facilities interconnected pursuant to this section shall comply with applicable state and federal requirements, including requirements of the FERC.

For Rate Schedule NEM interconnections, the United States Armed Forces shall comply with all FERC interconnection procedures and requirements for any Generating Facility that interconnects directly to the Transmission System or that requires upgrades to the Transmission System. These same provisions also apply to the Interconnection Requests of the CDCR and United States Armed Forces for NEM-2 Generating Facilities with a capacity greater than 1 MW, except that the CDCR and the United States Armed Forces shall be additionally responsible for any application fees and study costs triggered by the NEM-2 Interconnection Request. (L)

(Continued)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (L)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

    f. Applicants with an Interconnection Request for a Net Energy Metering Generating Facility, or a Non-Export Generating Facility, shall have the opportunity to select the Cost Envelope Option in accordance with Section F.7. Applicants who are determined to not have responsibility for any applicable upgrade costs will be automatically withdrawn from the Cost Envelope Option.

14. SPECIAL PROVISIONS APPLICABLE TO NON-EXPORT ENERGY STORAGE GENERATING FACILITIES

    Applicants with Non-Export Energy Storage Generating Facilities that meet the criteria listed in Section N shall be eligible to select expedited processing in their Interconnection Request and to utilize the corresponding form of Interconnection Agreement, subject to the terms and conditions of Section N.

15. COMPLIANCE WITH ESTABLISHED TIMELINES

    Distribution Provider shall use Reasonable Efforts in meeting all the timelines provided for under this Rule. In the event Distribution Provider is not able to meet a particular timeline set forth in this Rule, Distribution Provider shall notify Applicant as soon as practicable and provide an estimated completion date with an explanation of the reasons why additional time is needed. Any Applicant dissatisfied with the Reasonable Efforts of Distribution Provider may use the informal procedures set out in Section F.1.d and/or the Dispute Resolution process in Section K.

16. MODIFICATION OF TIMELINES

    Distribution Provider and Applicant, for good cause, may agree to modify any of the timelines in this Rule. The modified timeline shall be mutually agreed upon, in writing, between Distribution Provider and Applicant. (L)

17. CONVERSION TO FERC WHOLESALE DISTRIBUTION TARIFF PROCESS (P)

    Applicant may submit a request to convert their Interconnection Request to the Federal Energy Regulatory Commission (FERC) jurisdiction Wholesale Distribution Tariff (WDT) process subject to WDT Section 6.8.1.1 requirements. Additional information is available at: https://www.pge.com/egi. (P)

(Continued)

ELECTRIC RULE NO. 21 Sheet 4~~96~~
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (L)

1. OPTIONAL PRE-APPLICATION REPORT

a. Standard Pre-Application Report

Upon receipt of a completed Pre-Application Report Request and a non-refundable processing fee of $300, Distribution Provider shall provide pre-application data described in this section within ten (10) Business Days of receipt. The Pre-Application Report Request shall include a proposed Point of Interconnection, generation technology and fuel source. The proposed Point of Interconnection shall be defined by latitude and longitude, site map, street address, utility equipment number (e.g. pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the Point of Interconnection.

The Pre-Application Report will include the following information if available:

1. Total Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.

2. Allocated Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.

3. Queued Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.

4. Available Capacity (MW) of substation/area bus or bank and circuit most likely to serve proposed site.

5. Substation nominal distribution voltage or transmission nominal voltage if applicable.

6. Nominal distribution circuit voltage at the proposed site.

7. Approximate circuit distance between the proposed site and the substation.

8. Relevant Line Section(s) peak load estimate, and minimum load data, when available. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

9. Number of protective devices and number of voltage regulating devices between the proposed site and the substation/area.

10. Whether or not three-phase power is available at the site.

11. Limiting conductor rating from proposed Point of Interconnection to distribution substation.

12. Based on proposed Point of Interconnection, existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.

13. Nominal distribution circuit voltage and wiring configuration.

b. Enhanced Pre-Application Report

The Enhanced Pre-Application Report Request shall be submitted in parallel with the Standard Pre-Application Report. Requests that exclude the Standard Pre-Application Report and select only one or both of the Enhanced Pre-Application Report packages shall be assessed an additional non-refundable fee of $100.

The Enhanced Pre-Application Report Request shall include a proposed Point of Interconnection, generation technology and fuel source. The proposed Point of Interconnection shall be defined by latitude and longitude, site map, street address, utility equipment number (e.g. pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the Point of Interconnection.

The information included in the Enhanced Pre-Application Report is dependent upon the data package selected by Applicant. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

i. Primary Service Package

Upon receipt of a completed Enhanced Pre-Application Report Request for Primary Service Package and a non-refundable fee of $225, and additional $100 fee if applicable, Distribution Provider shall provide the enhanced pre-application data described in this section within ten (10) Business Days of receipt.

The Primary Service Package will include the following information if available:

1. Relevant line section(s) absolute minimum load and minimum load during the 10 AM – 4 PM period (provided when SCADA data is available).

2. Existing upstream protection including:

   (a) Device type (Fuse Breaker, Recloser)

   (b) Device controller (device make/model ex: 50E/50T)

   (c) Phase settings [IEEE Curve, Lever, Min Trip (A), Inst Trip(A)]

   (d) Ground settings [IEEE Curve, Lever, Min Trip (A), Inst Trip(A)]

   (e) Rated continuous current

   (f) Short Circuit interrupting capability

   (g) Confirm if the device is capable of bi-directional operation

3. Provide the Available Fault Current at the proposed Point of Interconnection including existing distributed generation fault contribution. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

ii. Behind the Meter Interconnection Package

Upon receipt of a completed Enhanced Pre-Application Report Request for Behind the Meter Interconnection Package and a non-refundable fee of $800, and additional $100 fee if applicable, Distribution Provider shall provide the enhanced pre-application data described in this section within thirty (30) Business Days of receipt. Distribution Provider shall conduct a physical verification based on field confirmation.

If a third party is submitting an Enhanced Pre-Application Report Request for Behind the Meter Interconnection Package on behalf of the Applicant, an Authorization to Receive Customer Information or Act on a Customer's Behalf [PG&E Form 79-1095, SCE Form 14-796, SDG&E Form 185-1000] shall be required to be submitted as part of the Pre-Application Report Request. Distribution Provider shall notify the Applicant if additional processing time will be required.

The Behind the Meter Interconnection Package will include the following information if available:

1. Relevant line section(s) absolute minimum load, and minimum load during the 10 AM – 4 PM period (provided when SCADA data is available)

2. Transformer Data

   (a) Existing service transformer kVA rating

   (b) Primary Voltage and secondary Voltage rating

   (c) Configuration on both Primary and Secondary Side (i.e., Delta, Wye, Grounded Wye, etc.)

   (d) Characteristic impedance (%Z)

   (e) Confirm if the transformer is serving only one customer or multiple customers

   (f) Provide the Available Fault Current on both the Primary and Secondary Side (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

3. Secondary Service Characteristics

(a) Conductor type (AL or CU) and size (AWG)

(b) Conductor insulation type

(c) Number of parallel runs

(d) Confirm if the existing secondary service is 3-wire or 4-wire

4. Primary Service Characteristics

(a) Conductor type (AL or CU) and size (AWG)

(b) Conductor insulation type

(c) Number of parallel runs

(d) Confirm if the existing primary service is 3-wire or 4-wire

iii. Combined Primary Service and Behind the Meter Interconnection Packages

Applicant may choose to request a combination of the Combined Primary Service Package and Behind the Meter Interconnection Package. Upon receipt of the applicable non-refundable fee of $1,025, and additional $100 fee if applicable, Distribution Provider shall provide the enhanced pre-application data described in this section within thirty (30) Business Days of receipt.

If a third party is submitting an Enhanced Pre-Application Report Request for Behind the Meter Interconnection Package on behalf of the Applicant, an Authorization to Receive Customer Information or Act on a Customer's Behalf [PG&E Form 79-1095] shall be processed in accordance with the instructions therein, and shall be required to be submitted at the same time as part of the Pre-Application Report Request. Distribution Provider shall notify the Applicant if additional processing time will be required. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

1. OPTIONAL PRE-APPLICATION REPORT (Cont'd.)

Except as provided specifically in this Section E.1, the Optional Standard and Enhanced Pre-Application Reports (Pre-Application Report(s)) need only include pre-existing data and does not obligate Distribution Provider to conduct a study or other analysis of the proposed project in the event that data is not available. For all Pre-Application Reports, if Distribution Provider cannot complete all or some of a Pre-Application Report due to lack of available data, Distribution Provider will provide Applicant with a Pre-Application Report that includes the information that is available.

In requesting a Pre-Application Report, Applicant understands that 1) the existence of "Available Capacity" in no way implies that an interconnection up to this level may be completed without impacts since there are many variables studied as part of the interconnection review process, 2) the distribution system is dynamic and subject to change and 3) data provided in the Pre-Application Report may become outdated and not useful at the time of submission of the complete Interconnection Request. Notwithstanding any of the provisions of this Section, Distribution Provider shall, in good faith, provide Pre- Application Report data that represents the best available information at the time of reporting.

2. INTERCONNECTION REQUEST PROCESS

a. Applicant Initiates Contact with Distribution Provider

Upon request, Distribution Provider will provide information and documents (such as sample agreements, Interconnection Request, technical information, listing of Certified Equipment, Initial and Supplemental Review fee information, applicable tariff schedules and Metering requirements) to a potential Applicant. Unless otherwise agreed upon, all such information shall normally be sent to an Applicant within three (3) Business Days following the initial request from Applicant. Distribution Provider will establish an individual representative as the single point of contact for Applicant, but may allocate responsibilities among its staff to best coordinate the Interconnection of an Applicant's Generating Facility. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

b. Applicant Selects a Study Process

An Applicant may select one of two interconnection evaluation processes in accordance with the following eligibility requirements:

i) Fast Track Eligibility

Non-Exporting Generating Facilities and NEM-1 Generating Facilities shall be evaluated under the~~are eligible for~~ Fast Track Review Process as described under Section F.2. below~~evaluation regardless of the Gross Nameplate Rating of the proposed Generating Facility~~. (L) (L)/(P) (L)/(P)

NEM-2 Generating Facilities and Exporting Generating Facilities of any size are eligible for and may elect the Fast Track evaluation if the Applicant believes its Interconnection Request may pass the Fast Track Process as described under Section F.2. below~~with a Gross Nameplate Rating no larger than 3.0 MW on a 12 kV or higher voltage interconnection point for PG&E are also eligible for Fast Track evaluation~~. (L) (P)

~~For an Exporting Generating Facility that agrees to the installation of Distribution Provider-approved protective devices at Applicant's cost such that the Exporting Generating Facility's net export will never exceed the Fast Track eligibility limits, the Generating Facility's net export will be considered for purposes of Fast Track eligibility. However, these Interconnection Requests will be required to complete Supplemental Review and Applicants should pre-pay for Supplemental Review at the time the Interconnection Request is submitted.~~ (P)

ii) Detailed Study Eligibility (L)

Interconnection Requests that are not eligible for Fast Track evaluation must apply for Detailed Study. An Applicant may also choose to apply directly for Detailed Studies. Detailed Study shall require (i) an Independent Study Process, (ii) a Distribution Group Study Process, or (iii) a WDT Transmission Cluster Study Process. The specific study process used will depend on the results of the Electrical Independence Tests for the Transmission and Distribution Systems. (L) (L)/(T) (L) (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

b. Applicant Selects a Study Process (Cont'd.)

iii) Request for Deliverability Assessment

Unless specified otherwise in the Interconnection Request, Generating Facilities eligible to be studied under the Fast Track Process, Independent Study Process or Distribution Group Study Process will be assumed to have selected Energy-Only Deliverability Status. Nothing herein will prohibit an Applicant from seeking a deliverability assessment in accordance with the WDT. Applicants studied under the WDT Transmission Cluster Study Process may seek a deliverability assessment in accordance with the applicable provisions of the WDT. (L) (L)/(T) (L)

c. Applicant Completes an Interconnection Request

All Applicants shall submit a complete and valid Interconnection Request. When applicable per Table E.1, a nonrefundable $800 Interconnection Request fee, and for Applicants that elect Detailed Study in the Interconnection Request, a study deposit shall be required per instructions in the Interconnection Request. Applicants who proceed to Detailed Study after Fast Track will provide a Detailed Study deposit as specified in Section E.3.a.

Applicant shall submit a separate Interconnection Request for each Point of Interconnection. An Interconnection Request for the expansion of capacity of an existing operating Generating Facility shall be treated the same as an Interconnection Request for a new Generating Facility pursuant to this Rule.

i) Interconnection Requests for the Independent Study Process will be accepted throughout the year, except during the Distribution Group Study windows. All Detailed Study Interconnection Requests (except those applying directly to the WDT Transmission Cluster Study Process) submitted during the Distribution Group Study Windows will be processed as Distribution Group Study Process Applicants. (L) (L)/(T) (L) (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

c. Applicant Completes an Interconnection Request (Cont'd.)

ii) Interconnection Requests to be studied under the Distribution Group Study Process shall either be (a) an Independent Study Process Interconnection Request that passed screen Q and failed Screen R for which the Applicant elects to continue to the next available Distribution Group Study, or (b) an Interconnection Request submitted during a Distribution Group Study Application window that passes Screen Q.

There will normally be two (2) Distribution Group Study Application windows annually. The first Distribution Group Study Application window will usually open on March 1 and close on March 31. The second Distribution Group Study Application window will usually open on September 1 and close on September 30. In the event that any date set in this Section is not a Business Day, then the applicable date shall be the next Business Day thereafter.

The Distribution Provider may change the Distribution Group Study Application window interval and opening or closing dates. Any changes will be posted on the Distribution Provider's website. If there is a conflict between the Distribution Group Study Application window interval and opening or closing dates posted on the Distribution Provider's website and the dates identified in the paragraph above, the dates posted on the Distribution Provider's website shall apply. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 585
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

c. Applicant Completes an Interconnection Request (Cont'd.)

TABLE E.1

Summary of Interconnection Request Fees, Deposits and Exemptions

Generating Facility Type	Interconnection Request Fee	Supplemental Review Fee	Detailed Study Deposit	Additional Commissioning Test Verification	Cost Envelope Option Deposit****	Modifications Fee per Ee ***** (L)/(N)
Non-Net Energy Metering and > 1 MW NEM-2	$800	$2,500*	For a Generating Facility with a Gross Nameplate Rating of 5 MW or less and applying to the Independent Study Process, $10,000 for a System Impact Study or the DGS Phase I Interconnection Study in the case of the Distribution Group Study Process; and $15,000 for an Interconnection Facilities Study or DGS Phase II Interconnection Study in the case of the Distribution Group Study Process. For a Generating Facility with a Gross Nameplate Rating above 5 MW, $50,000 plus $1,000 per MW of electrical output of the Generating Facility, or the increase in electrical output of the existing Generation Facility, as applicable, rounded up to the nearest whole MW, up to a maximum of $250,000.	$150/Person Hour**	$2,500	$0 (L)/(N) (L)
≤ 1 MW NEM-2***	$145	$0	$0	N/A	$2,500	$0 (L)/(N)
NEM-1	$0	$0	$0	N/A	$2,500	n/a
Non-NEM Solar ≤ 1MW ~~or less that does not sell power to Distribution Provider (per D.01-07-027) nor participate in NEM-1 or NEM-2~~	First $5,000 of study fees waived			$150/Person Hour**	$2,500	$0 (L)/(N)

* Optional $1,000 additional fault current study fee pursuant to Section F.2.c.ii. The Supplemental Review fee can be pre-paid at the time of application submission as allowed by D.20-09-035 OP 14. This fee is non-refundable. (L)/(P)

** Plus additional costs for travel, lodging and meals. (P)

*** Applicants that participate in the Single-Family Affordable Solar Homes (SASH) program are exempt from the Interconnection Request fee. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 585
GENERATING FACILITY INTERCONNECTIONS

**** Interconnection Requests that have selected the Cost Envelope Option and that subsequently qualify for and pass the Fast Track Process evaluation, as well as NEM Generating Facilities and Solar ≤ 1 MW Generating Facilities evaluated under the Independent Study Process, must provide the Cost Envelope Option deposit in accordance with Section F.7 to remain eligible for the Cost Envelope Option.

***** The fee will be set to $0 for now, until PG&E submits a new Advice Letter to increase it. Note: the fee does not apply to NEM-1 nor NEMFC by statute. SASH is also exempt from this fee per D. 16-01-044. (L) (N)

****** Solar ≤ 1MW that does not sell power to Distribution Provider (per D.01-07-027) nor participate in NEM-1 or NEM-2 (N)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

d. Site Exclusivity

Documentation of Site Exclusivity must be submitted with the Interconnection Request. This requirement does not apply to Applicants with NEM-1 Generating Facilities, NEM-2 ≤ 1 MW Generating Facilities, or Non-Export Generating Facilities.

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT

The Interconnection Request fee shall be waived for NEM-1 Interconnection Requests and for non-NEM solar-powered Generating Facilities that do not sell power per Commission Decision 01-07-027. NEM-1 Generating Facilities are also exempt from any costs associated with Interconnection Studies.

NEM-2 Applicants are required to pay any applicable Interconnection Request fees and costs associated with Interconnection Studies pursuant to Table E.1. As noted in the table, SASH participants are exempt from the NEM-2 Interconnection Request Fee and NEM-2 ≤1 MW Applicants are exempt from costs associated with Interconnection Studies.

Interconnection Study fees for non-NEM solar ≤1 MW Generating Facilities interconnecting to the Distribution System that do not sell power will be waived up to the amount of $5,000. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (CONT'D.) (L)

The Interconnection Customer must pay the Interconnection Request Fee as outlined in Table E.1 with the Application. The Interconnection Customer may pay the Supplemental Review Fee outlined in Table E.1 concurrently with the Interconnection Request Fee, or separately upon completion of the Initial Review. (P)

For Interconnection Customers that pay the Supplemental Review Fee concurrently with the Interconnection Request Fee, the Supplemental Review, if required, will be performed following the Initial Review. The Optional Initial Review Results Meeting will not be held, but the Optional Supplemental Review Results Meeting may be held following completion of the Supplemental Review. Only one study report will be provided. (P)

a. Detailed Study Deposit (L)

i) Detailed Study Deposit

To proceed with Detailed Study, Applicant must submit a Detailed Study deposit.

For a Generating Facility with a Gross Nameplate Rating of 5 MW or less, Applicant must submit a Detailed Study deposit of $10,000 for the Interconnection System Impact Study or the DGS Phase I Interconnection Study, and where an Interconnection Facilities Study or DGS Phase II Interconnection Study in the case of the Distribution Group Study Process is required, an additional $15,000 deposit must be submitted as required in Section F.3.b.vi or F.3.c.viii. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

For a Generating Facility with a Gross Nameplate Rating above 5 MW, Applicant must submit a Detailed Study deposit equal to $50,000 plus $1,000 per MW of electrical output of the Generating Facility, or the increase in electrical output of the existing Generating Facility, as applicable, rounded up to the nearest whole MW, up to a maximum of $250,000.

ii) Use of Detailed Study Deposit

The Detailed Study deposit shall be applied to pay for prudent costs incurred by Distribution Provider, the CAISO, or third parties at the direction of Distribution Provider or CAISO, as applicable, to perform and administer the Interconnection Studies. Deposit amounts that exceed the prudent costs incurred by Distribution Provider shall be refunded to Applicant within sixty (60) Calendar Days following either the execution of the Generator Interconnection Agreement or project withdrawal as described in more detail below.

The interconnection study costs for a Distribution Study Group shall be allocated equally among the Interconnection Requests within the Distribution Study Group, except as provided in (3) below.

The Detailed Study deposits shall be refundable as follows:

(1) Should an Interconnection Request be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 on or before thirty (30) Calendar Days following the scoping meeting, Distribution Provider shall refund to Applicant any portion of Applicant's Detailed Study deposit that exceeds the costs Distribution Provider, CAISO, and third parties have incurred on Applicant's behalf, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate). (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

ii) Use of Detailed Study Deposit (Cont'd.)

(2) Should an Interconnection Request that has been moved into the Detailed Study Process be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 more than thirty (30) Calendar Days after the scoping meeting, but on or before thirty (30) Calendar

Days following the results meeting for the Interconnection System Impact Study, or DGS Phase I Interconnection Study, Distribution Provider shall refund to Applicant the difference between (i) Applicant's Detailed Study deposit and (ii) the greater of (a) the costs Distribution Provider, CAISO, and third parties have incurred on Applicant's behalf or (b) one-half of the original Detailed Study deposit up to a maximum of $100,000, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate).

(3) Should an Interconnection Request be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 at any time more than thirty (30) Calendar Days after the results meeting for the Interconnection System Impact Study, or DGS Phase I Interconnection Study, or thirty (30) Calendar Days after issuance of the final Interconnection System Impact Study report or DGS Phase I Interconnection Study report if a results meeting is not held, the Detailed Study deposit shall be non-refundable.

(4) Upon execution of a Generator Interconnection Agreement by an Applicant and Distribution Provider, Distribution Provider shall refund to Applicant any portion of Applicant's detailed study deposit that exceeds the costs Distribution (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

ii) Use of Detailed Study Deposit (Cont'd.)

(4) Provider, CAISO, and third parties have incurred on Applicant's behalf, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate).

iii) Impact of Withdrawal

(1) Notwithstanding the foregoing, an Applicant that withdraws or is deemed to have withdrawn its Interconnection Request shall be obligated to pay to Distribution Provider all costs in excess of the Detailed Study deposit that have been prudently incurred or irrevocably have been committed to be incurred with respect to that Interconnection Request prior to withdrawal. Distribution Provider will reimburse the CAISO or third parties, as applicable, for all work performed on behalf of the withdrawn Interconnection Request at Distribution Provider's direction. Applicant must pay all monies due before it is allowed to obtain any Interconnection Study data or results. Any proceeds of the Detailed Study deposit not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed to be incurred for the interconnection studies shall be applied as directed by the Commission. Where an Applicant with remaining proceeds from a Detailed Study deposit cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

iii) Impact of Withdrawal (Cont'd.)

(2) Forfeited Study Deposit for Distribution Group Study Process

Non-refundable Detailed Study deposits, as pursuant to Section E.3.a.ii, for a Distribution Group Study Process Interconnection Request, shall be applied to the costs associated with any following Interconnection Study or restudy work performed by Distribution Provider, CAISO, or third party for the withdrawn Interconnection Request's

Distribution Study Group. Any remaining proceeds of the Detailed Study deposit, after the withdrawn Interconnection Request's Distribution Study Group has completed all relevant Interconnection Studies or restudies, or all Interconnection Requests associated with the specific Distribution Study Group have withdrawn, not otherwise applied to costs incurred, or irrevocably committed to be incurred for the Interconnection Studies or restudies, shall be allocated to individual Applicants on a kVA basis who have remained in the Distribution Study Group by executing a Generator Interconnection Agreement.

Such funds shall be allocated to Applicants sixty (60) Calendar Days following the conclusion of the Generator Interconnection Agreement negotiation pursuant to Section F.3.e.ii. If no Applicants remain in the Distribution Study Group, such funds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500.

iv) Special Circumstances

Applicant may propose, and Distribution Provider may agree to reduced costs for reviewing atypical Interconnection Requests, such as Interconnection Requests submitted for multiple Generating Facilities, multiple sites, or otherwise as conditions warrant. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY

An Applicant, or a Producer where those are different entities, is responsible for all fees and/or costs, including Commissioning Testing, required to complete the interconnection process. A Producer that interconnects to Distribution Provider's Distribution or Transmission System is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System. NEM-1 Generating Facilities and NEM-2 ≤1 MW Generating Facilities are exempt from any costs associated with Distribution or Network Upgrades.

a. Costs of Interconnection and Parallel Operation

The Interconnection and Parallel Operation of a Producer may trigger the need for Interconnection Facilities, Special Facilities or Added Facilities, Upgrades, Delivery Network Upgrades, and/or Reliability Network Upgrades. Interconnection Facilities installed on Producer's side of the PCC may be owned, operated and maintained by Producer or Distribution Provider. Interconnection Facilities installed on Distribution Provider's side of the PCC and Distribution System modifications shall be owned, operated, and maintained only by Distribution Provider.

b. Methodology and Timing of Cost Identification

Any costs triggered by a Producer are based on Producer's unique Interconnection requirements, Producer's impact on the Distribution System and/or Transmission System following allocation of capacity to earlier-queued interconnection requests, and Producer's electrical interdependence with any earlier-queued interconnection requests. Earlier-queued interconnection requests include interconnection requests under any applicable tariff. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

c. Timing of Cost Identification

For Applicants to Fast Track, Independent Study Process, or Distribution Group Study Process, costs may be identified during the study process, or after the study process is complete and a Generator Interconnection Agreement is executed. The purpose of later identification of costs is to facilitate Applicant's Interconnection while accommodating incomplete interconnection studies for earlier-queued interconnection requests to the same Line Section, distribution circuit, and/or substation, incomplete interconnection studies for earlier-queued interconnection requests with which Applicant is electrically interdependent with respect to short circuit duty, withdrawal of earlier-queued interconnection requests for Interconnection to the Distribution or Transmission System, and delay or cancellation of planned Distribution System Upgrades.

d. Producer Costs During Parallel Operation

All Producers are required to provide and maintain Interconnection Facilities, for the duration of the Generator Interconnection Agreement, that meet Distribution Provider's technical design and operating standards for Parallel Operation as set out in Section H or Hh, including any updates to those standards. This includes Producer responsibility for costs associated with changes to the operating characteristics at the Point of Interconnection necessitated by Distribution Provider's upgrades to the Transmission or Distribution System from time to time.

e. Cost Allocation

For cost allocation under the Fast Track Process or the Independent Study Process: Except where exempt by law or Commission decision, costs triggered by an Interconnection Request are the responsibility of the triggering Interconnection Request. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

e. Cost Allocation (Cont'd.)

For cost allocation under the Distribution Group Study Process: The costs of Interconnection Facilities will be assigned to the triggering Interconnection Request. The costs of Distribution Upgrades or Network Upgrades identified through a Distribution Group Study shall be allocated among the Interconnection Requests in a Distribution Study Group based on nameplate kilovolt amperes (kVA) and, in some instances, as determined by Distribution Provider, also based on an Applicant's specific contributions to the upgrade costs. Costs for upgrades will be allocated based upon an Applicant's specific contributions to a particular upgrade only if the Distribution Provider determines that; based on overall fairness to the Distribution Study Group, the individual applicant, rather than the Distribution Study Group, should be responsible for the costs. Cost allocation within the Distribution Study Group will not always align with cost contribution under a per kVA plus specific contribution allocation method. The DGS Phase I and Phase II study reports will indicate how cost allocation is determined. Examples of the possible types of shared costs include but may not be limited to: upgraded transformers, reconductoring, circuit switchers, and breakers. (L)

Costs triggered by an Interconnection Request under this Rule that transitions to the WDT Transmission Cluster Study Process are allocated pursuant to the terms of Distribution Provider's WDT or other applicable tariff. (L)/(T) (L) (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

f. Summary Tables

Table E.2 summarizes cost responsibility for costs and fees that may arise in the course of the interconnection process for NEM and non-NEM Applicants. Table E.3 summarizes cost responsibility for costs and fees that may arise in the course of the interconnection process for NEM Applicants under various sequences of interconnecting NEM and non-NEM Generators on the same PCC interconnecting to the Distribution or Transmission System.

Table E.2 Summary of Producer Cost Responsibility

Generating Facility Type	Interconnection Request Fee		Supplemental Review Fee		Detailed Study Cost (ISP, DGSP, or TCSP)		Interconnection Facilities Cost		Distribution Upgrades Cost		Transmission Network Upgrade Cost (per Applicable CAISO Tariff at signing of IA)	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Non-NEM and NEM-2 (>1MW)	X		X		X		X		X		X	
NEM-1		X		X		X	X			X[a]		X[a]
NEM-2 (≤1MW)*	X			X		X**	X			X		X**

* Applicants participating in the Single-Family Affordable Solar Homes program are exempt from the Interconnection Request Fee.

** Except as provided in Section F.3.d.

(L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

f. Summary Tables (Cont'd.)

Table E.3 Summary of Producer Cost Responsibility for Multiple Tariff Interconnections

Existing Generating Facility	New Generating Facility	Interconnection Request Fee		Supplemental Review Fee		Detailed Study Cost		Interconnection Facilities Cost		Distribution Upgrades Cost	
		YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
NEM	Non-NEM, NEM-2 (>1 MW)	X		X		X		X		X[b]	
NEM-1	NEM-1		X		X		X	X			X
NEM-1	NEM-2 (≤1MW)*	X			X		X	X			X
Non-NEM	NEM-1		X[c]		X[c]		X[c]	X			X[b,c]
Non-NEM	NEM-2 (>1 MW)	X		X		X		X		X	
Non-NEM	NEM-2 (≤1MW)*	X			X[c]		X[c]	X			X[b,c]
Simultaneous NEM and Non-NEM		X		X		X		X		X[b]	

a) Except as provided in Section D.13.e

b) Proration will be based upon the annual expected energy output (kWh) derived from the nameplate of the Generator(s) modified by technology-specific capacity/availability factors of all NEM and non-NEM Generators for the costs that cannot be clearly assigned to each type of tariff.

c) Change of operation of a non-NEM eligible Generator at any time to export is treated as a simultaneous NEM and non-NEM Interconnection Request, resulting in associated costs being allocated to Producer. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION

Any Applicant for Interconnection to Distribution Provider's Distribution or Transmission System must submit a complete and valid Interconnection Request. An Interconnection Request will be considered complete and valid when all items required for an Interconnection Request have been received by Distribution Provider and deemed valid by Distribution Provider.

a. Acknowledgement of Interconnection Request

For Interconnection Requests that have not elected the Cost Envelope Option, Distribution Provider shall provide a first written notification to the Interconnection Customer within ten (10) Business Days of receipt of the Interconnection Request, which notice shall state whether the Interconnection Request is deemed complete and valid.

For Interconnection Requests that have elected the Cost Envelope Option, Distribution Provider shall provide a first written notification to the Interconnection Customer within twenty (20) Business Days of receipt of the Interconnection Request, which notice shall state whether the Interconnection Request is deemed complete and valid.

b. Deficiencies in Interconnection Request

i) First Notification of Deficiency

If an Interconnection Request fails to meet the requirements, Distribution Provider shall state in its first written notification the reasons for such failure and that the Interconnection Request does not constitute a valid request.

Applicant shall provide Distribution Provider the additional requested information needed to constitute a complete and valid request within ten (10) Business Days from the date of the first written notification that the Interconnection Request is invalid. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

b. Deficiencies in Interconnection Request (Cont'd.)

ii) Second Notification of Deficiency

Distribution Provider shall provide a second written notification to Applicant within ten (10) Business Days of receipt of the additional requested information, stating whether the Interconnection Request is valid or the reasons for any failure.

Applicant shall provide Distribution Provider the additional requested information needed to constitute a complete and valid request within five (5) Business Days from the date of the second written notification that the Interconnection Request is invalid.

iii) Extension Request

Upon request, Applicant can receive one extension of up to twenty (20) Business Days to resolve deficiencies in the Interconnection Request.

iv) Failure to Resolve Deficiencies

If Applicant does not resolve deficiencies in the Interconnection Request within the time frames set out above, Distribution Provider will deem the Interconnection Request withdrawn. Applicant may submit a new Interconnection Request.

Applicants with invalid Interconnection Requests under this Section may seek relief under the dispute resolution provisions in Section K by so notifying Distribution Provider within two (2) Business Days of receipt of the first or second written notification that the Interconnection Request is incomplete and/or invalid. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

c. Assignment of Queue Position

Distribution Provider shall assign a queue position to all NEM-2 Applicants with Generating Facilities sized above 1 MW (except as provided in Section D.13.e) and all non-Net Energy Metering Applicants. Applicants applying for Momentary Parallel Operation of any size, or Non-Export Applicants with Gross Nameplate Capacity of 30 kW or less, will not be assigned a queue position by the Distribution Provider. If there were no deficiencies in the Interconnection Request, the queue position will be based on the date Distribution Provider received the Interconnection Request. If there were deficiencies in the Interconnection Request, the queue position will be based on the date Distribution Provider determines an Interconnection Request to be complete and valid. Should Distribution Provider not meet any deadline for providing the first (Section E.5.b.i) or second written notification (Section E.5.b.ii) to Applicant regarding the Interconnection Request, Applicant's queue position shall be set on the final day of the period in which Distribution Provider was obligated to provide such written notification, provided, however, that Applicant meets deadlines as set out above to submit any additional information required for a valid Interconnection Request following such written notification under Section E.5.b.i or E.5.b.ii, and that Distribution Provider determines that the Interconnection Request is valid.

Distribution Provider shall maintain a single queue for all Interconnection Requests requiring a Queue Position and governed by this Rule with a Point of Interconnection on Distribution Provider's Distribution System. For Interconnection Requests that are studied under the Distribution Group Study Process, the effective queue position for all Interconnection Requests in a Distribution Study Group will be derived on the last day of the Distribution Group Study window for that WDT Distribution Study Group. For Interconnection Requests that are studied under the Transmission Cluster Study Process, the queue position will be the applicable cluster's queue position. (L) (L)/(T) (L) (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

d. Publication of the Interconnection Queue

Distribution Provider shall publish and update monthly on its website the interconnection queue for all Interconnection Requests governed by this Rule with a Point of Interconnection on Distribution Provider's Distribution System that have been assigned a queue position. Nothing here prohibits Distribution Provider from publishing this queue combined with other interconnection requests to Distribution Provider's Distribution System. The published interconnection queue may include the following information for each Interconnection Request governed by this Rule, subject to Energy Division approval:

i) Interconnection Request and Queue Position Data

(1) The assigned number, if any;

(2) the queue position;

(3) the date the Interconnection Request was received by Distribution Provider;

(4) the date the Interconnection Request was determined to be complete and valid;

(5) the review process to which Applicant originally applied and is currently assigned;

(6) the original requested In-Service Date;

(7) the currently requested In-Service Date;

(8) the agreed-upon Commercial Operation Date or actual Commercial Operation Date. (L)

(Continued)

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (L)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

d. Publication of the Interconnection Queue (Cont'd.)

ii) Applicant Generating Facility/Storage System and Point of Interconnection Data

(1) the maximum summer and winter MW electrical output;

(2) the type of generating or storage facility to be constructed;

(3) the fuel source;

(4) the proposed Point of Interconnection location by county;

(5) the proposed Point of Interconnection location by substation/area and, if applicable, circuit. (L)

~~F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS~~

~~1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS~~

~~a. Valid Interconnection Request~~

~~After an Interconnection Request is deemed complete and valid, Distribution Provider will perform Fast Track evaluation unless an Applicant applies for Detailed Study or is not eligible for Fast Track evaluation. The eligibility requirements for Fast Track evaluation are set forth in Section E.2.b. See Section D.13 for special provisions related to the timeframe and costs applicable to certain NEM Applicants as provided therein. See Section D.14 and Section N for special provisions applicable to Non-Export Energy Storage Generating Facilities, as provided therein.~~

(Continued)

ELECTRIC RULE NO. 21 Sheet ~~71~~75
GENERATING FACILITY INTERCONNECTIONS

Ee. MODIFICATION TO INTERCONNECTED GENERATING FACILITIES (N)

1. MODIFICATIONS TO EXISTING EQUIPMENT (D. 19-03-013 - Type II)
Certain non-material modifications to existing facilities are permitted as described below in Tables Ee.1, 2 and 3. Modification requests shall incur any incremental fees as noted below. From the date of the proposed modification request is received, the Distribution Provider shall process the request within:

(a) ten (10) Business Days if no re-study is required

(b) twenty (20) Business Days if a re-study is required

Table Ee.1 – Replacing existing equipment

~~Conditions~~Description of Modification		Notification Required?	Interconnection request is required?	Proceed without PG&E approval?	Fee (See table E.1)
Replace equipment with exact same equipment type		No	No	Yes	n/a
Replace with "like-for-like,"~~64,75~~ where: 1. system output does not exceed what is listed in the original interconnection agreement and ~~1.~~2. operating mode is not adjusted.		Yes	No	Yes	Modification Fee in E.1[1]
Replacement increases nameplate capacity of the system, but which employ certified inverter power controls that limit the real power output to the inverter listed size in the original agreement.	Increases nameplate to <100kw [2]	Yes	No	Yes	Modification Fee in E.1[1]
	Increases nameplate to >100kw and < 110% of original capacity -[3]	Yes	~~Yes~~No	~~No~~Yes	Modification Fee in E.1[41]
	Increase nameplate to >100kw and ~~>capacity to <~~110% of original capacity[5]	~~Yes~~No	~~No~~Yes	~~Yes~~No	~~Modification Fee in~~ E.1[43]
Replacing equipment such that the system capacity increases and no inverter power controls are employed to limit the real power output to the inverter listed size in the original agreement		~~Yes~~No	Yes	No	E.1[43]
All other s~~S~~cenarios		~~Yes~~No	Yes	No	E.1

[1] See Modification Fees in Table E.1.
[2] For projects increasing capacity to less than or equal to 100 kilowatt (kW), pending the creation of certification schemes for inverter power controls (software/firmware) to limit export (per D. 19-03-013, OP6)
~~[3] For projects increasing capacity to at or greater than 100 kW (per D. 19-03-013, OP6)~~
[43] "E.1" refers to applicable charges/fees in Rule 21 Table E.1 for a new application.
~~[5] For projects of any size that are requesting an increase in capacity within 110 percent of their original generating capacity~~
[64] Like-for-Like is defined in ~~footnote 1 of Table F.1~~Section C.

(Continued)

ELECTRIC RULE NO. 21 Sheet ~~7~~175
GENERATING FACILITY INTERCONNECTIONS

~~7~~ ~~System Size is defined in footnote 2 of Table F.1~~

(N)

(Continued)

Ee. Modification to Interconnected Generating Facilities (CONT'D.) (N)

1. MODIFICATIONS TO EXISTING EQUIPMENT (D. 19-03-013 - Type II) (CONT'D.)

Table Ee.2 – Upgrading Inverter Firmware /Changing Inverter Characteristics (N)

Conditions:	Notification Required?	Interconnection Request Required	Proceed without PG&E approval?	Fee (See table E.1)
Only performing upgrades to inverter firmware that do not affect grid interactions	No	No	Yes	n/a
Changing inverter operating characteristics.	~~Yes~~No	Yes	No	E.1
All Other Scenarios	~~Yes~~No	Yes	No	E.1

Table Ee.3 -- Adding Storage or Capacity

Conditions:		Notification Required?	Interconnection Request Required?	Proceed without PG&E approval?	Fee (See table E.1)
Adding storage capacity t(kwh) to an existing storage facility without changing inverter	generator's maximum output based on its rated capacity[1]	Yes	No	Yes	$0
	operational profiles of systems used to determine system impacts[2]	Yes	~~Yes~~No	~~No~~Yes	Modification Fees in E.1
Adding storage to an existing generating facility that does not have storage.		~~Yes~~No	Yes	No	E.1
Adding such that system capacity increases and no inverter power controls are employed to limit the real power output to the inverter listed size in the original agreement.		~~Yes~~No	Yes	No	E.1
All Other Scenarios		~~Yes~~No	Yes	No	E.1

[1] If the Commission determines that a generator's maximum output should be based on its rated capacity (per D. 19-03-013, OP6)~~If the Commission determines that operational profiles of systems should be used to determine system impacts D. 19-03-013, (per OP6)~~

[2] ~~I~~ If the Commission determines that operational profiles of systems should be used to determine system impacts D. 19-03-013, (per OP6)~~f the Commission determines that a generator's maximum output should be based on its rated capacity (per D. 19-03-013, OP6)~~ (N)

(Continued)

ELECTRIC RULE NO. 21 Sheet 7~~7~~1
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (CONT'D.) (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (CONT'D.)

a. Valid Interconnection Request

After an Interconnection Request is deemed complete and valid, Distribution Provider will perform Fast Track evaluation unless an Applicant applies for Detailed Study or is not eligible for Fast Track evaluation. The eligibility requirements for Fast Track evaluation are set forth in Section E.2.b. See Section D.13 for special provisions related to the timeframe and costs applicable to certain NEM Applicants as provided therein. See Section D.14 and Section N for special provisions applicable to Non-Export Energy Storage Generating Facilities, as provided therein. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Fast Track Review

Fast Track evaluation allows for rapid review of the Interconnection of those Generating Facilities that do not require Detailed Study. Regardless of study process, all Generating Facilities shall be designed to meet the applicable requirements of Section H or Hh which identifies Generating Facility Design and Operation Requirements. (L) (L)/(P) (L)

Fast Track review consists of an Initial Review and, if required, a Supplemental Review. The need for Supplemental Review will be determined based on the results of Initial Review Screens A through M in Section G.1. Applicants that successfully pass Initial Review Screens A through M will be allowed to interconnect without Supplemental Review.

Non-Export AC/DC Converter installations that have a complete and valid Interconnection Request will be eligible to bypass screens B through D and F through M. (L)

If Supplemental Review is required, unless the Applicant has pre-paid the Supplemental Review fee, Distribution Provider will notify Applicant and Applicant must pay a nonrefundable Supplemental Review fee, per Table E-1 or withdraw its Interconnection Request. Supplemental Review shall consist of the application of Screens N through P in Section G.2. Applicants that pass Screens N through P will be allowed to interconnect without additional review. (L)/(P) (L)/(P) (L)

If Supplemental Review reveals that a proposed Generating Facility cannot be interconnected to Distribution Provider's Distribution System by means of Fast Track evaluation, Distribution Provider will notify Applicant that Detailed Study will be required.

Failure to pass Fast Track evaluation means only that further review and/or study are required before the Generating Facility can be interconnected with Distribution Provider's Distribution System. It does not mean that the Generating Facility cannot be interconnected. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Detailed Studies

Detailed Study will be required for Interconnection Requests that apply directly for Detailed Study, are not eligible for Fast Track evaluation, or do not pass Fast Track evaluation. Detailed Study shall consist of one of three study processes: (i) Independent Study Process; (ii) Distribution Group Study Process; or (iii) WDT Transmission Cluster Study Process. The specific study process that is applied will depend on the results of Screens Q and R in Section G.3. Interconnection Requests that are found to be electrically interdependent with earlier-queued interconnection requests with impacts on the Transmission System, and thereby fail screen Q, will proceed to the WDT Transmission Cluster Study Process. Interconnection Requests that are not electrically interdependent with earlier-queued interconnection requests with impacts on the Transmission System, and thereby pass Screen Q, will be studied under either the Independent Study Process or the Distribution Group Study Process, depending on the results of Screen R. (L) (L)/(T) (L) (L) (L)/(T) (L)

d. Compliance with Timelines

Distribution Provider shall use Reasonable Efforts in meeting all the timelines set out in this Rule, or mutually modified by Distribution Provider and Applicant pursuant to Section D.16. Each Distribution Provider shall designate an ombudsman with authority to resolve disputes over missed timelines. The identity, role, and contact information of the ombudsman shall be available on Distribution Provider's website.

If at any time an Applicant is dissatisfied with the Reasonable Efforts of Distribution Provider to meet the timelines in this Section, Applicant may use the following procedures: (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Compliance with Timelines (Cont'd.)

(i) Contact the ombudsman designated by Distribution Provider;

(ii) If the Distribution Provider ombudsman is unable to resolve the dispute within ten (10) Business Days, Applicant may either:

a) Contact the Consumer Affairs Branch (CAB) at the Commission.

b) Upon mutual agreement with Distribution Provider, make a written request for mediation to the Alternative Dispute Resolution (ADR) Coordinator in the Commission's Administrative Law Judge (ALJ) Division. The request may be made by electronic mail to adr_program@cpuc.ca.gov, and shall state "Rule 21" in the subject line. The request shall contain the relevant facts of the timeline dispute. A copy of the request shall be sent to the Distribution Provider ombudsman. Provided that resources are available, the mediator assigned shall schedule a mediation with Applicant and Distribution Provider within ten (10) Business Days of receiving the request.

At any time, Applicant may file a formal complaint before the Commission pursuant to California PUC Section 1702 and Article 4 of the Commission's Rules of Practice and Procedure. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review

Upon receipt of a complete and valid Interconnection Request, Distribution Provider shall perform Initial Review using the process in Section G.1. The Initial Review determines if (i) the Generating Facility qualifies for Fast Track Interconnection through Initial Review, or (ii) the Generating Facility requires a Supplemental Review. Absent extraordinary circumstances, Distribution Provider shall notify Applicant in writing of the results of Initial Review within fifteen (15) Business Days following validation of an Interconnection Request.

For all Interconnection Requests that pass Initial Review and do not require Interconnection Facilities or Distribution Upgrades, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of providing notice of Initial Review results. For Interconnection Requests that pass Initial Review but do require Interconnection Facilities or Distribution Upgrades, within fifteen (15) Business Days of providing notice of Initial Review results, Distribution Provider shall provide Applicant with a non-binding cost estimate of the Interconnection Facilities or Distribution Upgrades. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3. If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option.

For all Interconnection Requests that pass Initial Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review (Cont'd.)

For Interconnection Requests that fail Initial Review, Distribution Provider shall provide the technical reason, data and analysis supporting the Initial Review results in writing and provide Applicant the option to either attend an Initial Review results meeting or proceed directly to Supplemental Review, unless the Applicant has pre-paid the Supplemental Review fee. NEM-1 and ≤1 MW NEM-2 Applicants covered under Section D.13.a, and Applicants that have pre-paid the Supplemental Review fee, shall proceed directly to Supplemental Review without an Initial Review results meeting. Applicant shall notify Distribution Provider within ten (10) Business Days following such notification whether to (i) proceed to an Initial Review results meeting, (ii) proceed to Supplemental Review, or (iii) withdraw the Interconnection Request. Applicant may request one extension of no more than ten (10) Business Days to respond. If Applicant fails to notify Distribution Provider within ten (10) Business Days of such notification, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. (L) (L)/ (P) (L)/(P) (L)

No changes may be made to the planned Point of Interconnection or Generating Facility size included in the Interconnection Request during the Fast Track Process, except as provided in Table F.1 below, or unless such changes are agreed to by Distribution Provider. Where agreement has not been reached, Applicants choosing to change the Point of Interconnection or Generating Facility size , except as provided for in Table F.1, must reapply and submit a new Interconnection Request. (L) (L)/(T) (L)/(T) (L) (L)/(T) (L)/(T) (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review (Cont'd.) (L)

As part of the evaluation of Screen M, when Integration Capacity Analysis values are available at the requested Point of Interconnection, Distribution Provider will determine if Integration Capacity Analysis values at the proposed Point of Interconnection need to be updated. If Distribution Provider determines that the Integration Capacity Analysis values at the proposed Point Interconnection need to be updated, the Distribution Provider will update the values for the proposed Point Of Interconnection using the Integration Capacity Analysis tool on the specific electrical node or by running the Integration Capacity Analysis on all the electrical nodes in the circuit. Distribution Provider shall not perform additional Integration Capacity Analysis as part of the interconnection process of projects with less than 30 kilovolt amperes nameplate capacity. Distribution Provider shall share the results of any Integration Capacity Analysis updates with the Applicant and provide an explanation of changes to grid conditions or the interconnection queue which led to the need to obtain updated Integration Capacity Analysis values. Distribution Provider shall comply with confidentiality provisions and data redaction policies. (P)

Applicants that elect to proceed to Supplemental Review, unless the Applicant has pre-paid the Supplemental Review fee, shall provide a nonrefundable Supplemental Review fee set forth in Section E.2.c with their response. The Supplemental Review fee shall be waived for Interconnection Requests requesting Interconnection of NEM-1 or ≤1 MW NEM-2 Generating Facilities and for solar-powered non-NEM ≤1 MW Generating Facilities that do not sell power to Distribution Provider, per Commission D.01-07-027. (L)/(P) (L)/(P) (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet ~~76~~84
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review (Cont'd.)

TABLE F.1 – MODIFICATION TO PENDING APPLICATIONS (D. 19-03-013 Type I Changes)

Modifications to Interconnection Applications Under the Fast Track Modifications to Interconnection Applications Under the Fast Track

1. The number of m~~M~~odifications per Interconnection Request is ~~are~~ limited to one request. ~~per Interconnection Request.~~
2. Distribution Provider has discretion to allow additional modification requests when the Distribution Provider has caused the need for an additional modification request.
3. From the date of the proposed modification request is received, the Distribution Provider shall process the request within:
   (i) ten (10) Business Days if no re-study is required
   (ii) twenty (20) Business Days if a re-study is required
4. Except as allowed in Section E.4 for NEM customers, i~~f~~ a project downsizes, ~~and~~ the revised shall not affect the ~~size belongs to a different~~ cost responsibility or timing of interconnection of other projects. ~~regime than the original request, the cost responsibility regime should remain that of the original request.~~
5. Additional changes outside of the modification types identified herein will not be accepted within Fast Track.

~~5. The number of modification requests per interconnection request is limited to one. Distribution Providers have discretion to allow additional modification requests when the Distribution Provider has caused the need for an additional modification request.~~

Conditions	Application Modifications Allowed?	Fee
1. "Like-for-like"[1] equipment replacements meeting the following criteria: 2. Does not increase facility size[2]; 3. No size decrease exceeding 20%; and 4. No identified upgrades or mitigations.	Yes	n/a
Size reductions meeting the following criteria: 1. No size reduction exceeding 20%; and 2. Identified upgrades or mitigations are paid for by the customer	Yes	n/a
Size reductions to avoid upgrades meeting the following criteria: 1. The re-study determines that no the modification affects no other distributed energy resource	Yes	$300[3]
Other types of modifications outside of those listed in this table will not be accepted without a new application.	No	

[1] Like-for-Like is defined ~~as~~in Section C

~~Generally:~~	~~For PV:~~	~~For batteries:~~	~~For transformers:~~
~~certified, same nameplate or smaller, same fault current or smaller~~	~~same CEC-AC rating of the system or smaller~~	~~same or less kWh & kW rating and same operating profile~~	~~same connection type, same or smaller impedance and capacity.~~

[2] System size pursuant to D.19-03-013, footnote 43 on p.22 is defined as the follows:

For solar systems	For energy storage systems	For all other generation types

(N)

(Continued)

the lesser of inverter nameplate capacity (kW) or maximum solar output (CEC-AC rating)	both the inverter nameplate capacity (kW) and the capacity of the storage device (kWh) are considered in the definition of size.	the gross nameplate rating of the generator

[3] Pursuant to D.19-03-013, p.23

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Optional Initial Review Results Meeting

Within five (5) Business Days of Applicant's request for an Initial Review results meeting, Distribution Provider shall contact Applicant and offer to convene a meeting at a mutually acceptable time to review the Initial Review screen analysis and related results to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably without Supplemental Review. (L)

In the event the Applicant has pre-paid the Supplemental Review fee, the Distribution Provider will proceed, if necessary, with Supplemental Review upon completion of Initial Review and shall not be required to offer an Initial Review results meeting. (P)

If modifications that obviate the need for Supplemental Review are identified, and Applicant and Distribution Provider agree to such modifications, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of the Initial Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Initial Review results meeting. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3. If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option. (L)

For all Interconnection Requests that pass Initial Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Optional Initial Review Results Meeting (Cont'd.)

If Applicant and Distribution Provider are unable to identify or agree to modifications that enable Applicant to pass Initial Review, Applicant shall notify Distribution Provider within ten (10) Business Days of the Initial Review results meeting whether it would like to proceed with Supplemental Review or withdraw its Interconnection Request. Applicant may request one extension of no more than ten (10) Business Days to respond. If Applicant fails to notify Distribution Provider within ten (10) Business Days of the Initial Review results meeting, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

c. Supplemental Review

i) If Applicant requests Supplemental Review and submits a nonrefundable Supplemental Review fee, if required, Distribution Provider shall complete Supplemental Review within twenty (20) Business Days, absent extraordinary circumstances, following authorization and receipt of the fee. Supplemental Review determines if (i) the Generating Facility qualifies for Fast Track Interconnection, or (ii) the Generating Facility requires Detailed Study. If the Applicant paid the Supplemental Review fee concurrently with the Initial Review Fee, Distribution Provider will complete the Supplemental Review, if required, within twenty (20) Business Days from the completion of the Initial Review. (L) (L)/ (P) (P) (P)

ii) If the Applicant chooses to move to Supplemental Review or has pre-paid the non-refundable Supplemental Review fee, they have the option to elect that the Distribution Provider provide a fault current study as part of the Supplemental Review. This fault current study would extend the Supplemental Review time by up to ten (10) Business Days, and would require an additional nonrefundable fee of $1,000. (L)/(P) (L)/(P)

This fault current study will determine if the Generating Facility can detect phase and ground faults on the Distribution Provider's Distribution System or the distribution feeder breaker where the Applicant proposes to connect the Generating Facility. The result of the fault current study will determine if direct transfer trip (DTT) will be required from the Distribution System to the Generating Facility site. Note that for Applicants proposing to interconnect to the Distribution System where there is expected to be power backfeed to the Transmission System, DTT from the transmission may still be required and a Detailed Interconnection Study will be required to make this determination. (L)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review (Cont'd.)

ii) Should the Applicant request a Supplemental Review results meeting, as described in Section F.2d, the optional fault current study analysis and related results shall, at the Applicant's request, be reviewed to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably. (L)

If the Applicant chooses to move to Supplemental Review or has pre-paid the non-refundable Supplemental Review fee, they have the option to elect that the Distribution Provider provide a fault current study as part of the Supplemental Review. This fault current study would extend the Supplemental Review time by up to ten (10) Business Days, and would require an additional nonrefundable fee of $1,000. ~~(Cont'd.)~~ (L)/(P) (L)/(P) (L) (L) (L)/(P)

The Applicant must provide the following data to Distribution Provider when requesting Supplemental Review in order to select this option: (L)

Generator:
- MVA Rating
- kV Rating
- Base MVA
- Base kV
- Xd" (direct axis subtransient reactance)
- Xd' (direct axis transient reactance)
- Xd (Synchronous reactance)
- X2 (Negative Sequence reactance)
- X0 (Zero Sequence reactance)

XFMR Data:
- Winding configuration (delta-Wye grd or Wye grd-Delta)
- MVA Rating
- KV Rating
- Base MVA
- Base KV
- Z1 HV-LV
- Z0 HV-LV (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review (Cont'd.)

ii) If the Applicant chooses to move to Supplemental Review, they have the option to elect that the Distribution Provider provide a fault current study as part of the Supplemental Review. This fault current study would extend the Supplemental Review time by up to ten (10) Business Days, and would require an additional nonrefundable fee of $1,000. (Cont'd.)

Line Data:
Impedance data for line from XFMR to POI (if applicable)
Z1
Z0

POI Location:

iii) For Interconnection Requests that pass Supplemental Review and do not require Interconnection Facilities or Distribution Upgrades, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of providing notice of Supplemental Review results. For Interconnection Requests that pass Supplemental Review and do require Interconnection Facilities or Distribution Upgrades, within fifteen (15) Business Days of providing notice of Supplemental Review results, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3 If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option.

For all Interconnection Requests that pass Supplemental Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review (Cont'd.)

iv) For Interconnection Requests that fail Supplemental Review, Distribution Provider shall provide the technical reason, data and analysis supporting the Supplemental Review results in writing, including, if Distribution Provider can make the determination, which Detailed Study track Applicant qualifies for, and provide Applicant the option to attend a Supplemental Review results meeting or proceed directly to Detailed Study. Applicant shall notify Distribution Provider within fifteen (15) Business Days following such notification whether to (i) proceed to a Supplemental Review results meeting, (ii) proceed to Detailed Study, or (iii) withdraw the Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days of such notification, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

Applicants that elect to proceed to Detailed Study shall provide the applicable study deposit set forth in Section E.3.a with their response. Detailed Study fees for solar Generating Facilities up to 1 MW interconnecting to the Distribution System that do not sell power to Distribution Provider will be waived up to the amount of $5,000. Except as provided for in Section F.3.d, NEM-1 and ≤1 MW NEM-2 Generating Facilities are exempt from any costs associated with Detailed Studies. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Optional Supplemental Review Results Meeting

Within five (5) Business Days of Applicant's request for a Supplemental Review results meeting, Distribution Provider shall contact Applicant and offer to convene a meeting at a mutually acceptable time to review the Supplemental Review screen analysis and related results to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably without Detailed Study.

If modifications that obviate the need for Detailed Study are identified and Applicant and Distribution Provider agree to such modifications, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of the Supplemental Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Supplemental Review results meeting. For those Interconnection Requests where Applicant has selected the Cost Envelope Option, within ten (10) Business Days of providing Applicant the non-binding cost estimate for the required Interconnection Facilities and/or Distribution Upgrades, Applicant shall provide the Distribution Provider the Cost Envelope Option deposit, in accordance with Section F.7.a.i.3. If Applicant fails to provide the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option.

For all Interconnection Requests that pass Supplemental Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Optional Supplemental Review Results Meeting (Cont'd.)

If Applicant and Distribution Provider are unable to identify or agree to modifications, Applicant shall notify Distribution Provider within twenty (20) Business Days of the Supplemental Review Results Meeting whether it would like to proceed with Detailed Study or withdraw its Interconnection Request. Applicant may request one extension of no more than twenty (20) Business Days to respond. If Applicant fails to notify Distribution Provider within twenty (20) Business Days of the Supplemental Review results meeting, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. Applicants that elect to proceed to Detailed Study shall provide the applicable study deposit set forth in Section E.3.a.

e. Execution of the Generator Interconnection Agreement

For Interconnection Requests where Applicant has not selected the Cost Envelope Option, Following the receipt of a cost estimate for any Distribution Upgrades and/or Interconnection Facilities that have been identified, Applicant shall notify Distribution Provider within fifteen (15) Business Days whether Applicant: (i) requests a Generator Interconnection Agreement, or (ii) withdraws its Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. If Applicant elects to proceed to a Generator Interconnection Agreement, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement for Applicant's signature within fifteen (15) Business Days of Applicant's request. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Execution of the Generator Interconnection Agreement (Cont'd.)

For those Interconnection Requests where Applicant has selected the Cost Envelope Option and has provided the Cost Envelope Option deposit in accordance with Section F.7.a.i.3, Distribution Provider shall complete and issue to Applicant the Cost Envelope Estimate within twenty (20) Business Days following Distribution Provider's receipt of the Cost Envelope Option deposit in accordance with F.7.d. Once the Cost Envelope Estimate is issued, Applicant shall notify Distribution Provider within fifteen (15) Business Days of notification whether Applicant: (i) requests a Generator Interconnection Agreement, or (ii) withdraws its Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. If Applicant elects to proceed to a Generator Interconnection Agreement, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement for Applicant's signature within fifteen (15) Business Days of Applicant's request.

Upon receipt of a draft Generator Interconnection Agreement, Applicant has ninety (90) Calendar Days to sign and return the Generator Interconnection Agreement. Applicant shall provide written comments, or notification of no comments, to the draft Generator Interconnection Agreement and appendices within thirty (30) Calendar Days. At the request of Applicant, Distribution Provider shall begin negotiations with Applicant at any time after Distribution Provider provides Applicant with the draft Generator Interconnection Agreement, which contains in its appendices the cost estimate for any Distribution Upgrades and/or Interconnection Facilities that have been identified by Distribution Provider. Distribution Provider and Applicant (L)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Execution of the Generator Interconnection Agreement (Cont'd.)

shall negotiate concerning the cost estimate, or any disputed provisions of the appendices to a draft Generator Interconnection Agreement, for not more than ninety (90) Calendar Days after Distribution Provider provides Applicant with the Generator Interconnection Agreement. If Applicant determines that negotiations are at an impasse, it may request termination of the negotiations and initiate Dispute Resolution procedures pursuant to Section K. If Applicant fails to sign the Generator Interconnection Agreement or initiate Dispute Resolution within ninety (90) Calendar Days, the Interconnection Request shall be deemed withdrawn.

After Applicant, or a Producer where those are different entities, has executed the Generator Interconnection Agreement, Distribution Provider will commence design, procurement, construction and installation of Distribution Provider's Distribution Upgrades and/or Interconnection Facilities that have been identified in the Generator Interconnection Agreement. Distribution Provider and Producer will use good faith efforts to meet schedules in accordance with the requirements of the Generator Interconnection Agreement and estimated costs as appropriate. Producer is responsible for all applicable costs associated with Parallel Operation to support the safe and reliable operation of the Distribution System and Transmission System as set forth in Section E.4.

Distribution Provider and Producer shall negotiate in good faith concerning a schedule for the construction of Distribution Provider's Interconnection Facilities and Distribution Upgrades. (L)

Distribution Provider shall provide quarterly updates on substation upgrades to Producers whose projects are dependent on a substation upgrade. (P) (P)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS

a. Detailed Study Track Selection Process

For all Detailed Study Applicants, as well as Applicants that have failed Fast Track initial review and/or supplemental review, the specific Detailed Study track for which Applicant is eligible will be determined by the application of Screens Q and R. For Applicants that require application of Screens Q and R, absent extraordinary circumstances, within twenty (20) Business Days following validation of an Interconnection Request and receipt of the appropriate study deposit set forth in Section E.3.a, Distribution Provider will apply Screen Q, and if applicable, Screen R and provide Applicant with the screen results as set forth below.

If Applicant fails Screen Q, Distribution Provider shall provide the data and analysis supporting Screen Q results in writing. The Interconnection Request will be processed in accordance with Section F.3.d below. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

a. Detailed Study Track Selection Process (Cont'd.)

If Applicant passes Screen Q, but fails Screen R, Distribution Provider shall provide data and analysis supporting the Screen R results in writing. Applicant shall notify Distribution Provider within twenty (20) Business Days following such notification whether it would like to (i) proceed to the Distribution Group Study Process or (ii) withdraw the Interconnection Request. Applicant may request one extension of no more than twenty (20) Business Days to respond. However, Applicant's decision must be received prior to the close of a given Distribution Group Study window, to participate in that Distribution Study Group. If the decision is received after the close of a particular Distribution Group Study window, then Applicant's Interconnection Request will be included in the next available Distribution Group Study window.

If Applicant fails to notify Distribution Provider within twenty (20) Business Days of receiving Screen R results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

If Applicant elects to proceed to the Distribution Group Study Process, the Interconnection Request will be processed in accordance with Section F.3.c below.

A Distribution Study Group will be comprised of all Interconnection Requests that are determined to be electrically interdependent based on results of Screen R. A Distribution Study Group may contain only one Interconnection Request.

Applicant(s) that opt to proceed to the Distribution Group Study Process will be re-evaluated under Screen Q. If the Distribution Study Group fails Screen Q, the Applicants will be required to withdraw and move to the WDT Transmission Cluster Process. (L) (L)/(T)

If Applicant passes Screens Q and R, the Interconnection Request will be processed in accordance with Section F.3.b below. (L) (L)

If Applicant elects to proceed to the WDT Transmission Cluster Study Process, Interconnection Request will be processed in accordance with Section F.3.d. (L)/(T) (L) (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process

i) Scoping Meeting

Within five (5) Business Days after Distribution Provider notifies Applicant that the Interconnection Request has passed Screens Q and R and is thus eligible for the Independent Study Process, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant and Distribution Provider for a scoping meeting.

The purpose of the scoping meeting shall be: (i) to discuss reasonable Commercial Operation Dates and alternative interconnection options; (ii) to exchange information, including any transmission data that would reasonably be expected to impact Applicant's interconnection options; (iii) to analyze such information; and (iv) to determine feasible Points of Interconnection and eliminate alternatives given resources and available information.

Distribution Provider will bring to the scoping meeting, as reasonably necessary to accomplish its purpose, such already available technical data, including, but not limited to; (i) general facility loadings, (ii) general instability issues, (iii) general short circuit issues, (iv) general voltage issues, and (v) general reliability issues.

Applicant will bring to the scoping meeting, in addition to the technical data in Attachment A of the Rule 21 Exporting Generating Facility Interconnection Request form, any system studies previously performed. Distribution Provider, the CAISO, if applicable, and Applicant will also bring to the meeting personnel and other resources as may be reasonably required to accomplish the purpose of the meeting in the time allocated for the meeting. On the basis of the meeting, Applicant shall designate its Point of Interconnection. The duration of the meeting shall be only what is sufficient to accomplish its purpose. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

i) Scoping Meeting (Cont'd.)

Within fifteen (15) Business Days after the scoping meeting, Distribution Provider shall provide Applicant with a Detailed Study Agreement, which shall contain an outline of the scope of the Interconnection System Impact Study and Interconnection Facilities Study, contain a non-binding good faith estimate of the cost to perform such studies, and shall specify that Applicant is responsible for the actual cost of the Interconnection Studies, including reasonable administrative costs. Applicant shall execute and deliver to Distribution Provider the Detailed Study Agreement no later than thirty (30) Business Days after the scoping meeting, or the Interconnection Request shall be deemed withdrawn.

ii) Timing of the Interconnection System Impact Study Results

Absent extraordinary circumstances, Distribution Provider shall complete and issue a final Interconnection System Impact Study report within sixty (60) Business Days after the execution of a Detailed Study Agreement. If the System Impact Study indicates a need for Network Upgrades on the Transmission System, (L) (L)/(T) (L) Distribution Provider will share applicable study results with the CAISO for review and comment and will incorporate comments into the final Interconnection System Impact Study report.

At any time Distribution Provider determines that it will not meet the required time frame for completing the Interconnection System Impact Study, Distribution Provider shall notify Applicant in writing as to the status of the Interconnection System Impact Study and provide an estimated completion date with an explanation of the reasons why additional time is required. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

ii) Timing of the Interconnection System Impact Study Results (Cont'd.)

Upon request, Distribution Provider shall provide Applicant all relevant supporting documentation, workpapers and pre-Interconnection Request and post-Interconnection Request power flow, short circuit and stability databases, and currently planned Distribution Upgrades relevant to the Interconnection Request for the Interconnection System Impact Study. Applicant may be required to sign a non-disclosure agreement with terms consistent with Section D.7 regarding Confidentiality.

iii) Interconnection System Impact Study Results Meeting

Applicant shall request a results meeting within ten (10) Business Days of the issuance of the final Interconnection System Impact Study report. This results meeting, if requested, shall be held among Distribution Provider, the CAISO, if applicable, and Applicant to discuss the results of the Interconnection System Impact Study, including assigned cost responsibility. Within five (5) Business Days of the request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting.

If Applicant does not request a results meeting within the specified time above, the results meeting will be deemed waived. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

iv) Initial Posting of Interconnection Financial Security

Applicant shall make its initial posting of Interconnection Financial Security in accordance with the requirements of Section F.4.b, within sixty (60) Calendar Days after issuance of the final Interconnection System Impact Study report, or its Interconnection Request shall be deemed withdrawn. The initial posting of Interconnection Financial Security will be based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final Interconnection System Impact Study report.

v) Modifications

At any time during the course of the Interconnection Studies, Applicant, Distribution Provider, or the CAISO, as applicable, may identify changes to the planned Interconnection that may improve the costs and benefits (including reliability) of the Interconnection, and the ability of the proposed change to accommodate the Interconnection Request. To the extent the identified changes are acceptable to Distribution Provider, the CAISO, as applicable, and Applicant, such acceptance not to be unreasonably withheld, Distribution Provider shall modify the Point of Interconnection and/or configuration in accordance with such changes without altering the Interconnection Request's eligibility for participating in Interconnection Studies. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

v) Modifications (Cont'd.)

At the Interconnection System Impact Study results meeting, Applicant should be prepared to discuss any desired modifications to the Interconnection Request. After the issuance of the final Interconnection System Impact Study report, but no later than five (5) Business Days following the Interconnection System Impact Study results meeting, Applicant shall submit to Distribution Provider, in writing, (i) modifications to any information provided in the Interconnection Request, including that information required for the Cost Envelope Option, if applicable, or (ii) confirmations of no modifications. Distribution Provider will forward Applicant's request for modification to the CAISO, if applicable, within two (2) Business Days of receipt. If no Interconnection System Impact Study results meeting is held, Applicant shall submit to Distribution Provider any requested modifications within twenty-five (25) Business Days of the receipt of the final Interconnection System Impact Study report.

Modifications permitted under this Section F.3.b.v shall include specifically: (a) a decrease in the electrical output (MW) of the proposed Generating Facility; (b) modifying the technical parameters associated with the Generating Facility technology or the Generating Facility step-up transformer impedance characteristics; and (c) modifying the interconnection configuration. For any modifications other than those permitted above, Distribution Provider, in coordination with CAISO, if applicable, will evaluate whether the proposed modification to the Interconnection Request constitutes a Material Modification. Distribution Provider will inform Applicant in writing whether the modifications would constitute a Material Modification (i) for Interconnection Requests that have not elected the Cost Envelope Option, within ten (10) Business Days of receipt of the proposed request for modification, and (ii) for Interconnection Requests that have elected the Cost Envelope Option, within twenty (20) Business Days of receipt of the proposed request of modification. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

v) Modifications (Cont'd.)

Any change to the Point of Interconnection, except for that specified by Distribution Provider in an Interconnection Study or otherwise allowed under this Section F.3.d.v, shall constitute a Material Modification.

If the proposed modification is determined to be a Material Modification, Applicant may either withdraw the proposed modification or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification determination results.

Proposed modifications determined not to be Material Modifications may still necessitate the need to re-evaluate the System Impact Study to determine modifications to the Interconnection Facilities and Distribution Upgrades, or to update the Cost Envelope Estimate, if applicable, in accordance with Section F.7. Distribution Provider will provide Applicant an estimate of time to complete the re-evaluation and the associated incremental cost required to complete the re-evaluation. Applicant may either accept the additional time and cost to complete the reevaluation, withdraw the proposed modification request, or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification results. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

vi) Scope and Purpose of the Interconnection Facilities Study and Study Deposit

Within ten (10) Business Days of Applicant's confirmation of no modifications or Distribution Provider's determination that the Interconnection System Impact Study does not require reevaluation, Applicant shall submit to Distribution Provider the data required by Distribution Provider, including the completed form of Attachment B to the Detailed Study Agreement, if applicable. For Generating Facilities 5 MW or less, Applicant shall also submit the Interconnection Facilities Study deposit, as set out in Section E.3.a, unless the Interconnection Facilities Study will be waived in accordance with Section F.3.b.vii.

For NEM Generating Facilities and Solar ≤1 MW Generating Facilities that have elected the Cost Envelope Option, Applicant must (i) submit to Distribution Provider the Cost Envelope Option deposit within ten (10) Business Days of Applicant's confirmation of no modifications or Distribution Provider's determination that the Interconnection System Impact Study does not require reevaluation, or (ii) provide Distribution Provider written notice that it elects to withdraw its request for the Cost Envelope Option, in accordance with Section F.7. Should Applicant fail to provide the required Cost Envelope Option deposit or provide written notice within such timeframe, Applicant's request for the Cost Envelope Option shall be deemed withdrawn, and the Interconnection Request shall continue to be processed in accordance with the Independent Study Process. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

vii) Waiver of the Interconnection Facilities Study

The Interconnection Facilities Study may be waived if Distribution Provider and Applicant mutually agree to such waiver within either (i) five (5) Business Days following the Interconnection System Impact Study results meeting, or (ii) within twenty-five (25) Business Days of the issuance of the final Interconnection System Impact Study report if no Interconnection System Impact Study results meeting is held. If Distribution Provider and Applicant agree to waive the Interconnection Facilities Study for an Interconnection Request where Applicant has selected the Cost Envelope Option, the Interconnection Request shall not be eligible for the Cost Envelope Option and Applicant's request for the Cost Envelope Option shall be deemed withdrawn. The Interconnection Facilities Study may not be waived for Interconnection Requests that have selected the Cost Envelope Option and for which the Applicant elects to proceed with Distribution Provider's preparation of the Cost Envelope Estimate.

Within thirty (30) Calendar Days after Distribution Provider and Applicant mutually agree to waive the Interconnection Facilities Study, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, to Applicant. If Applicant chooses to forgo the Interconnection Facilities Study and move directly to a Generator Interconnection Agreement, Applicant must agree in writing to be responsible for all actual costs of all required facilities deemed necessary by Distribution Provider. Applicant is responsible for all applicable costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System as set forth in Section E.4. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

viii) Timing of the Interconnection Facilities Study

The Interconnection Facilities Study shall be completed and provided to Applicant within sixty (60) Business Days after Applicant posts the initial Interconnection Financial Security in accordance with Section F.4.b where Distribution Upgrades or Network Upgrades are identified and, for Generating Facilities with a Gross Nameplate Rating of 5 MW or less, Applicant submits the Interconnection Facilities Study deposit in accordance with Section E.3.a and F.3.b.vi. In cases where no Distribution Upgrades and/or Network Upgrades are identified and the required facilities are limited to Distribution Provider's Interconnection Facilities only, the Interconnection Facilities Study shall be completed within forty-five (45) Business Days after Applicant posts the initial Interconnection Financial Security and, for Generating Facilities with a Gross Nameplate Rating of 5 MW or less, Applicant submits the Interconnection Facilities Study deposit.

If applicable, Distribution Provider will share the study results with the CAISO for review and comment, and will incorporate CAISO comments, if any, into the study report prior to issuing a final Interconnection Facilities Study report to Applicant.

Within thirty (30) Calendar Days after Distribution Provider issues the final Interconnection Facilities Study report to Applicant, or within thirty (30) Calendar Days of an Interconnection Facilities Study results meeting, if requested, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

At any time Distribution Provider determines that it will not meet the required time frame for completing the Interconnection Facilities Study, Distribution Provider shall notify Applicant in writing as to the status of the Interconnection Facilities Study and provide an estimated completion date with an explanation of the reasons why additional time is required. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Independent Study Process (Cont'd.)

ix) Interconnection Facilities Study Results Meeting

If requested by Applicant, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and Applicant to discuss the results of the Interconnection Facilities Study, including assigned cost responsibility. Within five (5) Business Days of the request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting.

Within thirty (30) Calendar Days after the Interconnection Facilities Study results meeting, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, to Applicant.

x) Second and Third Postings of Interconnection Financial Security

Applicant will post its second and third postings of Interconnection Financial Security as set forth in Sections F.4.c and F.4.d based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived in accordance with Section F.3.b.vii.

c. Distribution Group Study Process

i) Initiation of Distribution Study Process

Applicants that apply for the Independent Study Process that pass Screen Q but fail Screen R will be eligible for inclusion in a Distribution Study Group. Applicant must submit all materials required to complete their Interconnection Request no later than ten (10) Business Days after the close of the relevant Distribution Group Study window. This includes notification from Applicant that they want to proceed with the Distribution Group Study Process, if applicable, in accordance with Section F.3.a. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

i) Initiation of Distribution Study Process (Cont'd.)

Distribution Provider shall perform a Screen Q analysis for the Distribution Study Group within thirty (30) Business Days of the close of the window, using best available information about projects that have entered the Distribution Group Study Process under Rule 21 and the WDT.

If the Distribution Study Group fails Screen Q, the Distribution Provider will deem the projects withdrawn from Rule 21 and notify Applicants. Applicants may elect to proceed with the WDT Transmission Cluster Study Process pursuant to Section F.3.d. (L) (L)/(T) (L)

In order to be eligible to participate in the DGS Phase I Interconnection Study, the scoping meeting must be complete and the Applicant must execute the Detailed Study Agreement prior to the start date of the DGS Phase I Interconnection Study.

ii) Scoping Meeting

Within five (5) Business Days after Distribution Provider performs the Electrical Independence Test, it will contact the Applicant(s) to notify them that the Interconnection Request has passed Screen Q and failed Screen R and is thus eligible for the Distribution Group Study Process, and establish a date agreeable to Applicant and Distribution Provider for a scoping meeting.

The Distribution Provider, in coordination with the CAISO, if applicable, shall determine whether the Interconnection Request is at or near the boundary of an Affected System(s) so as to potentially impact such Affected System(s). If a determination of potential impact is made, the Distribution Provider shall invite the Affected System Operator(s) to the scoping meeting by informing them of the time and place of the scheduled scoping meeting as soon as practicable. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

ii) Scoping Meeting (Cont'd.)

The purpose of the scoping meeting shall be: (i) to discuss reasonable Commercial Operation Dates and alternative interconnection options; (ii) to exchange information, including any transmission data that would reasonably be expected to impact Applicant's interconnection options; (iii) to analyze such information; (iv) to determine feasible Points of Interconnection and eliminate alternatives given resources and available information; and (v) to advise Applicant of the expected start date of the DGS Phase I Interconnection Study.

Distribution Provider will bring to the scoping meeting, as reasonably necessary to accomplish its purpose, such already available technical data, including, but not limited to: (i) general facility loadings, (ii) general instability issues, (iii) general short circuit issues, (iv) general voltage issues, and (v) general reliability issues.

Applicant will bring to the scoping meeting, in addition to the technical data in Attachment A of the Rule 21 Exporting Generating Facility Interconnection Request form, any system studies previously performed. Distribution Provider, the CAISO, if applicable, and Applicant will also bring to the meeting personnel and other resources as may be reasonably required to accomplish the purpose of the meeting in the time allocated for the meeting.

During the meeting, Applicant shall confirm its Point of Interconnection. The duration of the meeting shall be only what is sufficient to accomplish its purpose. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

ii) Scoping Meeting (Cont'd.)

Within fifteen (15) Business Days after the scoping meeting, Distribution Provider shall provide Applicant with a Detailed Study Agreement, which shall contain an outline of the scope of the DGS Phase I Interconnection Study and DGS Phase II Interconnection Study, contain a non-binding good faith estimate of the cost to perform such studies, and shall specify that Applicant is responsible for the actual cost of the Interconnection Studies, including reasonable administrative costs. Applicant shall execute and deliver to Distribution Provider the Detailed Study Agreement no later than thirty (30) Business Days after the scoping meeting or the start date of the DGS Phase I Interconnection Study, whichever is earlier, or the Interconnection Request shall be deemed withdrawn.

iii) Grouping of Interconnection Requests for a Distribution Group Study

The results of Screen R will determine the Interconnection Requests to be grouped together for each Distribution Group Study. An Interconnection Request that failed Screen R will be grouped with other projects that are determined to be electrically interdependent through the application of Screen R. No later than the date a DGS Phase I Interconnection Study begins, Distribution Provider may send to each Applicant in a Distribution Study Group a list of the Interconnection Requests in its Distribution Study Group.

At the Distribution Provider's option, an Interconnection Request received during a particular Distribution Group Study Application window may be studied individually (Independent Study Process) or in a Distribution Group Study for the purpose of conducting one or more of the analyses forming the Interconnection Studies. For each Interconnection Study received within the same Distribution Group Study Application window, the Distribution Provider may develop one or more Distribution Study Groups. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

iv) Timing of the DGS Phase I Interconnection Study

Absent extraordinary circumstances, Distribution Provider shall complete and issue a final DGS Phase I Interconnection Study report within sixty (60) Business Days from the start of the study. If the DGS Phase I Interconnection Study indicates a need for Network Upgrades, Distribution Provider will share applicable study results with the CAISO for review and comment and will incorporate comments into the final DGS Phase I Interconnection Study report.

At any time Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase I Interconnection Study, Distribution Provider shall notify all Applicants in the Distribution Study Group as to the status of the DGS Phase I Interconnection Study and provide an estimated completion date with an explanation of the reasons why additional time is required.

Upon request, Distribution Provider shall provide any Applicant in the Distribution Study Group all relevant supporting documentation, workpapers and pre-Interconnection Request and post-Interconnection Request power flow, short circuit and dynamic/stability databases, and currently planned Distribution Upgrades relevant to the Interconnection Request for the DGS Phase I Interconnection Study. Applicant may be required to sign a non-disclosure agreement with terms consistent with Section D.7 regarding Confidentiality.

If applicable, Distribution Provider will share the applicable study results with the CAISO for review and comment, and will incorporate CAISO comments, if any, into the study report prior to issuing a final DGS Phase I Interconnection Study report to Applicants in the Distribution Study Group. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

v) DGS Phase I Interconnection Study Results Meeting

If requested by an Applicant in a Distribution Study Group or Distribution Provider, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and the Applicant to discuss the results of the DGS Phase I Interconnection Study, including assigned cost responsibility. Within five (5) Business Days of such request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting. If the Applicant or Distribution Provider has requested a results meeting, it must be completed within thirty (30) Calendar Days after issuance of the final DGS Phase I Interconnection Study report, unless otherwise agreed upon by the Distribution Provider and Applicant.

At the Phase I Interconnection Study results meeting, the Applicant shall provide a schedule outlining key milestones including environmental survey start date, expected environmental permitting submittal date, expected procurement date of project equipment, back-feed date for project construction, and expected project construction date. This will assist the parties in determining if proposed Commercial Operation Dates are reasonable. If large-scale Distribution Provider's Interconnection Facilities or Distribution Upgrades for the Generating Facility have been identified in the DGS Phase I Interconnection Study, such as telecommunications equipment, distribution feeders to support back feed, a new substation, and/or expanded substation work, permitting and material procurement lead times may result in the need to alter the proposed Commercial Operation Date, the Applicant and Distribution Provider may agree to a new Commercial Operation Date. In addition, where an Applicant intends to establish Commercial Operation separately for different Electric Generating Units or project phases at its Generating Facility, it may only do so in accordance with an implementation plan agreed to in advance by the Distribution Provider and the CAISO, if applicable, which agreement shall not be unreasonably withheld. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

v) DGS Phase I Interconnection Study Results Meeting (Cont'd.)

Where the parties cannot agree to a revised Commercial Operation Date, the Commercial Operation Date determined reasonable by the Distribution Provider will be used for the DGS Phase II Interconnection Study, or the Generator Interconnection Agreement (in accordance with Section F.3.e.iii) if the DGS Phase II Interconnection Study is waived in accordance with Section F.3.c.ix, where the revised Commercial Operation Date is needed to accommodate the anticipated completion, assuming Reasonable Efforts by the Distribution Provider of necessary Distribution Upgrades and/or Distribution Provider's Interconnection Facilities, pending the outcome of any relief sought by the Applicant under Sections F.1.d or K. The Applicant must notify the Distribution Provider within five (5) Business Days following the Results Meeting if it is initiating dispute procedures under Sections F.1.d or K.

Within five (5) Business Days following the DGS Phase I Interconnection Study results meeting, the Applicant shall submit to the Distribution Provider all requested information. If no DGS Phase I Interconnection Study results meeting is held, Applicant shall submit to Distribution Provider any requested information within thirty (30) Calendar Days of the receipt of the final DGS Phase I Interconnection Study report.

vi) Initial Posting of Interconnection Financial Security

Each Applicant in a Distribution Study Group shall make its initial posting of Interconnection Financial Security in accordance with the requirements of Section F.4.b, within sixty (60) Calendar Days after being provided with the final DGS Phase I Interconnection Study report, or its Interconnection Request shall be deemed withdrawn. The initial posting of Interconnection Financial Security will be based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final DGS Phase I Interconnection Study report. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

vii) Modifications

At any time during the course of the Interconnection Studies, Applicant, Distribution Provider, or the CAISO, as applicable, may identify changes to the planned Interconnection that may improve the costs and benefits (including reliability) of the Interconnection, and the ability of the proposed change to accommodate the Interconnection Request. To the extent the identified changes are acceptable to Distribution Provider, the CAISO, as applicable, and Applicant, such acceptance not to be unreasonably withheld, Distribution Provider shall modify the Point of Interconnection and/or configuration in accordance with such changes without altering the Interconnection Request's eligibility for participating in Interconnection Studies.

At the DGS Phase I Interconnection Study results meeting, if elected by Applicant or Distribution Provider, Applicant should be prepared to discuss any desired modifications to the Interconnection Request. After the publication of the final DGS Phase I Interconnection Study report, but no later than five (5) Business Days following the DGS Phase I Interconnection Study results meeting, Applicant shall submit to Distribution Provider, in writing, modifications to any information provided in the Interconnection Request. Distribution Provider will forward Applicant's request for modification to the CAISO, if applicable, within two (2) Business Days of receipt.

If no DGS Phase I Interconnection Study results meeting is held, Applicant shall submit to Distribution Provider any requested modifications within thirty (30) Calendar Days of the receipt of the final Phase I Interconnection Study report. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

vii) Modifications (Cont'd.)

Modifications permitted under this Section F.3.c.vii shall include specifically: (a) a decrease in the electrical output (MW) of the proposed Generating Facility; (b) modifying the technical parameters associated with the Generating Facility technology or the Generating Facility step-up transformer impedance characteristics; and (c) modifying the interconnection configuration. For any modifications other than those permitted above, Distribution Provider, in coordination with CAISO, if applicable, will evaluate whether the proposed modification to the Interconnection Request constitutes a Material Modification. Distribution Provider will inform Applicant in writing whether the modifications would constitute a Material Modification within ten (10) Business Days of receipt of the proposed request for modification. Any change to the Point of Interconnection, except for that specified by Distribution Provider in an Interconnection Study or otherwise allowed under this Section F.3.c.vii, shall constitute a Material Modification.

If the proposed modification is determined to be a Material Modification, Applicant may either withdraw the proposed modification or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification determination results.

Proposed modifications determined not to be Material Modifications may still necessitate the need to re-evaluate the DGS Phase I Interconnection Study to determine modifications to the Interconnection Facilities and Distribution Upgrades. Such re-evaluation will occur during the DGS Phase II Interconnection Study. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

viii) Scope and Purpose of the DGS Phase II Interconnection Study and Study Deposit

Within either (i) five (5) Business Days following the DGS Phase I Interconnection Study results meeting, or (ii) within thirty (30) Calendar Days of the receipt of the final DGS Phase I Interconnection Study report if no DGS Phase I Interconnection Study results meeting is held, Applicant shall submit to Distribution Provider the data required by Distribution Provider. Within thirty (30) Business Days of the issuance of the final DGS Phase I Interconnection Study report, for Generating Facilities 5 MW or less, Applicant shall submit the DGS Phase II Interconnection Study deposit, as set out in Section E.3.a, unless the DGS Phase II Interconnection Study is waived in accordance with Section F.3.

ix) Waiver of the DGS Phase II Interconnection Study

The DGS Phase II Interconnection Study may be waived if Distribution Provider and all Applicants included in the DGS Phase I Interconnection Study mutually agree to such waiver within thirty (30) Calendar Days of the issuance of the DGS Phase I Interconnection Study report. Within thirty (30) Calendar Days after Distribution Provider and Applicants agree to waive the DGS Phase II Interconnection Study, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, to Applicant. Applicant is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System as set forth in Section E.4. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

x) DGS Phase II Interconnection Study Procedures

Distribution Provider shall utilize existing studies to the extent practicable in conducting the DGS Phase II Interconnection Study. The Distribution Provider shall commence the DGS Phase II Interconnection Study within sixty (60) Calendar Days of the issuance of the final DGS Phase I Interconnection Study report.

Distribution Provider shall complete and distribute to Applicants the DGS Phase II Interconnection Study reports within sixty (60) Business Days after the commencement of each DGS Phase II Interconnection Study. The Distribution Provider will issue a final DGS Phase II Interconnection Study report to Applicant.

At the request of Applicant or at any time Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase II Interconnection Study, Distribution Provider shall notify Applicant as to the schedule status of the DGS Phase II Interconnection Study and provide an estimated completion date. If the Distribution Provider is unable to complete the DGS Phase II Interconnection Study in the time specified, such notice shall provide an explanation of the reasons why additional time is required.

Upon request of the Applicant, Distribution Provider shall provide Applicant all supporting documentation, work papers, and relevant pre-Interconnection Request and post-Interconnection Request power, short circuit and stability databases for the DGS Phase II Interconnection Study, subject to confidentiality arrangements consistent with Section D.7. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

x) DGS Phase II Interconnection Study Procedures (Cont'd.)

The Distribution Provider will conduct a DGS Phase II Interconnection Study that will incorporate eligible Interconnection Requests from the previous DGS Phase I Interconnection Study. The DGS Phase II Interconnection Study shall (i) update, as necessary, analyses performed in the DGS Phase I Interconnection Study to account for the withdrawal of Interconnection Requests or other projects in the Interconnection Study Process, (ii) identify Distribution Upgrades needed to physically interconnect the Generating Facility, (iii) assign cost responsibility for the Distribution Upgrades, (iv) identify for each Interconnection Request a final Point of Interconnection and Distribution Provider's Interconnection Facilities, (v) provide an estimate for each Interconnection Request of the Distribution Provider's Interconnection Facilities, and (vi) optimize in-service timing requirements based on operational studies in order to maximize achievement of the Commercial Operation Dates of the Generating Facilities, as applicable.

xi) DGS Phase II Interconnection Study Results Meeting

If requested by an Applicant in a Distribution Study Group, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and the Applicant to discuss the results of the DGS Phase II Interconnection Study, including selection of the final Commercial Operation Date and assigned cost responsibility. Within five (5) Business Days of such request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting. If Applicant wants to have a meeting, it must be completed within thirty (30) Calendar Days after issuance of the final DGS Phase II Interconnection Study report, unless mutually agreed upon by the Distribution Provider and Applicant. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

xi) DGS Phase II Interconnection Study Results Meeting (Cont'd.)

Distribution Provider shall tender a draft Generator Interconnection Agreement pursuant to F.3.e.i. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

xii) Timing of the DGS Phase II Interconnection Study

At any time Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase II Interconnection Study, Distribution Provider shall notify each Applicant in the Distribution Study Group in writing as to the status of the DGS Phase II Interconnection Study and provide an estimated completion date with an explanation of the reasons why additional time is required.

xiii) Second and Third Postings of Interconnection Financial Security

Each Applicant in a Distribution Study Group will post its second and third posting of Interconnection Financial Security as set forth in Sections F.4.c and F.4.d based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final DGS Phase II Interconnection Study, or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived in accordance with Section F.3.c.ix. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 1~~0~~9~~18~~
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

xiv) Withdrawal and Reallocation of Cost to Interconnection Requests in a Distribution Study Group

If at any time, an Interconnection Request is withdrawn or a Generator Interconnection Agreement is terminated, the upgrades identified in the Interconnection Studies will be revaluated to determine if they are still needed. If the Distribution Provider determines that a restudy is needed, it will be conducted pursuant to Section F.3.c.xv. Any costs, identified in the Distribution Group Study not already funded by Interconnection Financial Security that has been posted by the withdrawing Applicant, will be the responsibility of remaining Applicants in the Distribution Group and will be reallocated in accordance with E.4.e.

xv) Restudy

If a restudy is required following the issuance of the final DGS Phase II Interconnection Study, or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived, due to a project withdrawal, Distribution Provider shall notify the remaining Applicant(s) in writing.

The restudy report shall be completed and provided to each Applicant remaining in the Distribution Group within sixty (60) Business Days of the withdrawal of the Interconnection Request that caused the restudy. The Applicants remaining in the Distribution Group will be responsible for the cost of the restudy. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Distribution Group Study Process (Cont'd.)

xvi) Automatic Timing Extension

If during any six month period, the number of Interconnection Requests exceeds by fifty (50) percent the number of active Interconnection Request in the preceding six month period, the study timelines for Distribution Group Studies begun during the next twelve (12) months will automatically increase as follows. The time to complete the DGS Phase I Interconnection Study pursuant to Section F.3.c.iv will increase from sixty (60) Business Days to one hundred twenty (120) Business Days. The time to complete the DGS Phase II Interconnection Study pursuant to Section F.3.c.x will increase from sixty (60) Business Days to one hundred twenty (120) Business Days. The time to tender a draft Generator Interconnection Agreement pursuant to F.3.e.i will increase from thirty (30) Calendar Days to forty-five (45) Calendar Days. Distribution Provider will notify Applicants in the Distribution Study Group in writing after commencement of DGS Phase I Interconnection Study of the extension. (L)

d. WDT Transmission Cluster Study Process (L)/(T)

If Applicant's Interconnection Request fails Screen Q or elects to be studied under the WDT Transmission Cluster Study Process, Applicant shall have the option of applying for Interconnection under the WDT Transmission Cluster Study Process of the Wholesale Distribution Tariff in accordance with its provisions. If Applicant fails Screen Q, Applicant's Interconnection Request shall be deemed withdrawn under this Rule regardless of whether Applicant applies for Interconnection under the WDT. (L) (L)/(T) (L) (L)/(T) (L)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.) (L)

d. WDT Transmission Cluster Study Process (Cont'd.) (L)/(T)

An Applicant that chooses to apply under the WDT Transmission Cluster Study Process ~~of the WDT~~ must file a valid Interconnection Request and post the applicable study deposit as set out in Distribution Provider's WDT. If Applicant chooses to apply under the WDT, then Applicant's Interconnection Request will be subject to the terms of Distribution Provider's WDT applicable to the WDT Transmission Cluster Study Process, including those provisions establishing cost responsibility. Upon completion of the WDT Transmission Cluster Study Process under the WDT, Applicants that are eligible for a State-jurisdictional Interconnection can, in accordance with the WDT, either execute the applicable Commission-approved Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities or the WDT Generator Interconnection Agreement. Such Commission-approved Generator Interconnection Agreement for Exporting Generating Facilities will include the cost responsibility established in the WDT Transmission Cluster Study. (L)/(T) (L) (L) (L)/(T) (L) (L)/(T) (L) (L)

If and when an Applicant submits a new interconnection request under the WDT, Applicant is under the jurisdiction of FERC. On the date the applicable Commission-approved Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities is executed by Applicant, or Producer where those are different entities, and Distribution Provider, jurisdiction over the Interconnection reverts back to the Commission. (L) (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement

i) Tender

The Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, within thirty (30) Calendar Days of the following:

1) Agreement by the Distribution Provider and Applicant to waive the Interconnection Facilities Study in accordance with Section F.3.b.vii,

2) Issuance of the final Interconnection Facilities Study report (or results meeting, if held) to Applicant,

3) Agreement by the Distribution Provider and all Applicants included in a DGS Phase I Interconnection Study to waive the DGS Phase II Interconnection Study in accordance with Section F.3.c.ix,

4) Issuance of the final DGS Phase II Interconnection Study report to each Applicant in the Distribution Study Group (or results meeting, if held).

Applicant(s) shall provide written comments, or notification of no comments, to the draft appendices within thirty (30) Calendar Days.

ii) Negotiation

Notwithstanding Section F.3.e.i, at the request of Applicant, Distribution Provider shall begin negotiations with Applicant concerning the appendices to the Generator Interconnection Agreement at any time after Distribution Provider provides Applicant with the final Interconnection Facilities Study report (or (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement (Cont'd.)

ii) Negotiation (Cont'd.)

final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) or final DGS Phase II Interconnection Study report (or the final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process. Distribution Provider and Applicant shall negotiate concerning any disputed provisions of the appendices to the draft Generator Interconnection Agreement for not more than ninety (90) Calendar Days after Distribution Provider provides Applicant with the final DGS Phase II Interconnection Study report (or the final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) in the case of the Independent Study Process. Producers whose Interconnection Requests were studied in a Distribution Group Study Process will be required to fund upgrades triggered by more than one Interconnection Request in accordance with a payment schedule that allows such upgrades to be completed in time for the earliest Commercial Operation Date of such Interconnection requests. Producer is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution System and Transmission System as set forth in Section E.4.

If Applicant determines that negotiations are at an impasse, it may request termination of the negotiations at any time after tender of the draft Generator Interconnection Agreement pursuant to Section F.3.e.i and initiate Dispute Resolution procedures pursuant to Section K. Unless otherwise agreed by the Parties, if Applicant or Producer, where those are different entities, has not executed the Generator Interconnection Agreement, or initiated Dispute Resolution procedures pursuant to Section K, within ninety (90) Calendar Days after issuance of the final (L)

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement (Cont'd.)

ii) Negotiation (Cont'd.)

DGS Phase II Interconnection Facilities Study report (or the final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) in the case of the Independent Study Process, it shall be deemed to have withdrawn its Interconnection Request.

iii) Extensions of Commercial Operation Date

Extensions of the Commercial Operation Date will be agreed upon in the executed Generator Interconnection Agreement. Reasonable Commercial Operation Dates will be discussed at the DGS Phase II Interconnection Study results meeting, or the DGS Phase I Interconnection Study results meeting if the DGS Phase II Interconnection Study results meeting is waived, in the case of the Distribution Group Study Process, the Interconnection Facilities Study results meeting, or the Interconnection System Impact Study results meeting if the Interconnection Facilities Study is waived in the case of the Independent Study Process. A request for an extension of the Commercial Operation Date after the Generator Interconnection Agreement is executed will be agreed to provided that, the Producer is still responsible for funding any Distribution Upgrades and Network Upgrades as specified in the Generator Interconnection Agreement and under the same payment schedule agreed upon in the Generator Interconnection Agreement. This provision has no impact on any power purchase agreement terms. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

f. Engineering & Procurement (E&P) Agreement

Prior to executing a Generator Interconnection Agreement, in order to advance the implementation of its interconnection, an Applicant may request, and Distribution Provider shall offer, an E&P Agreement that authorizes Distribution Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the interconnection. However, Distribution Provider shall not be obligated to offer an E&P Agreement if Applicant is in Dispute Resolution as a result of an allegation that Applicant has failed to meet any milestones or comply with any prerequisites specified in other parts of this Rule. The E&P Agreement is an optional procedure. The E&P Agreement shall provide for Applicant to pay the cost of all activities authorized by Applicant and to make advance payments or provide other satisfactory security for such costs.

Applicant shall pay the cost of such authorized activities and any cancellation costs for equipment that is already ordered for its interconnection, which cannot be mitigated as hereafter described, whether or not such items or equipment later become unnecessary. If Applicant withdraws its Interconnection Request, or either Applicant or Distribution Provider terminates the E&P Agreement, to the extent the equipment ordered can be canceled under reasonable terms, Applicant shall be obligated to pay the associated cancellation costs. To the extent that the equipment cannot be reasonably canceled, Distribution Provider may elect: (i) to take title to the equipment, in which event Distribution Provider shall refund Applicant any amounts paid by Applicant for such equipment and shall pay the cost of delivery of such equipment, or (ii) to transfer title to and deliver such equipment to Applicant, in which event Applicant shall pay any unpaid balance and cost of delivery of such equipment.

4. INTERCONNECTION FINANCIAL SECURITY

a. Types of Interconnection Financial Security

The Interconnection Financial Security posted by an Applicant may be any combination of the following types of Interconnection Financial Security provided in favor of Distribution Provider: (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

a. Types of Interconnection Financial Security (Cont'd.)

i) an irrevocable and unconditional letter of credit issued by a bank or financial institution that has a credit rating of A or better by Standard and Poor's or A2 or better by Moody's;

ii) an unconditional and irrevocable guaranty issued by a company has a credit rating of A or better by Standard and Poor's or A2 or better by Moody's;

iii) a cash deposit standing to the credit of Distribution Provider and in an interest-bearing escrow account maintained at a bank or financial institution that is reasonably acceptable to Distribution Provider;

Interconnection Financial Security instruments as listed above shall be in such form as Distribution Provider may reasonably require from time to time by notice to Applicants, or in such other form as has been evaluated and approved as reasonably acceptable by Distribution Provider.

Distribution Provider shall require the use of standardized forms of Interconnection Financial Security to the greatest extent possible. If at any time the guarantor of the Interconnection Financial Security fails to maintain the credit rating required by this Section F.4.a, Applicant shall provide to Distribution Provider replacement Interconnection Financial Security meeting the requirements of this Section F.4.a within five (5) Business Days of the change in credit rating.

Interest on a cash deposit standing to the credit of Distribution Provider in an interest-bearing escrow account under subpart (iii) of this Section F.4.a will accrue to Applicant's benefit.

b. Initial Posting of Interconnection Financial Security

On or before sixty (60) Calendar Days after publication of either the final Interconnection System Impact Study report, or the final DGS Phase I Interconnection Study report, Applicant must post, with notice to Distribution Provider, two separate Interconnection Financial Security instruments. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

b. Initial Posting of Interconnection Financial Security (Cont'd.)

First, Applicant proposing to interconnect a Large Generating Facility shall post an Interconnection Financial Security instrument in an amount equal to the lesser of (i) fifteen percent (15%) of the total cost responsibility assigned to Applicant in the final Interconnection System Impact Study or final DGS Phase I Interconnection Study in the case of the Distribution Group Study Process for Network Upgrades, (ii) $20,000 per MW of electrical output of the Large Generating Facility or the amount of megawatt increase in the generating capacity of each existing Generating Facility as listed by Applicant in its Interconnection Request, including any requested modifications thereto, or (iii) $7,500,000.

Applicant proposing to interconnect a Small Generating Facility shall post an Interconnection Financial Security instrument in an amount equal to the lesser of (i) fifteen percent (15%) of the total cost responsibility assigned to Applicant in the final Interconnection System Impact Study or final DGS Phase I Interconnection Study in the case of the Distribution Group Study Process for Network Upgrades, or (ii) $20,000 per MW of electrical output of the Small Generating Facility or the amount of megawatt increase in the generating capacity of each existing Generating Facility as listed by Applicant in its Interconnection Request.

Second, Applicant shall also post an Interconnection Financial Security instrument in the amount of twenty percent (20%) of the total estimated cost responsibility assigned to Applicant in the final Interconnection System Impact Study or final DGS Phase I Interconnection Study in the case of the Distribution Group Study Process for Distribution Provider's Interconnection Facilities and Distribution Upgrades.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.b shall result in the Interconnection Request being deemed withdrawn subject to Section F.6.

If required by Distribution Provider, Applicant shall provide Distribution Provider with written notice that it has posted the required Interconnection Financial Security no later than the applicable final day for posting. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

c. Second Posting of Interconnection Financial Security

On or before one hundred twenty (120) Calendar Days after issuance of the final DGS Phase II Interconnection Study report (or final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived) or final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived in the case of the Independent Study Process), Applicant shall post two separate Interconnection Financial Security instruments.

First, Applicant proposing to interconnect a Large Generating Facility shall post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Network Upgrades equals the lesser of (i) $15 million, or (ii) thirty percent (30%) of the total cost responsibility assigned to Applicant for Network Upgrades in either the final Interconnection System Impact Study (final DGS Phase I Interconnection Study in the case on the Distribution Group Study Process) or final Interconnection Facilities Study (final DGS Phase II Interconnection Study in the case of the Distribution Group Study Process), whichever is lower.

Applicant proposing to interconnect a Small Generating Facility shall post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Network Upgrades equals the lesser of (i) $1 million, or (ii) thirty percent (30%) of the total cost responsibility assigned to Applicant for Network Upgrades in either the final Interconnection System Impact Study or final Interconnection Facilities Study (final DGS Phase I or final DGS Phase II Interconnection Studies, respectively, for the Distribution Group Study Process), whichever is lower.

Second, Applicant shall also post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades equals thirty percent (30%) of the total cost responsibility assigned to Applicant in the final DGS Phase II Interconnection Facilities Study (or final DGS Phase I Interconnection Study if the DGS Phase II Interconnection study is waived) in the case (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

c. Second Posting of Interconnection Financial Security (Cont'd.)

of the Distribution Group Study Process, or final Interconnection Facilities Study (or final Interconnection System Impact Study if the Interconnection Facilities Study is waived) in the case of the Independent Study Process, for Distribution Provider's Interconnection Facilities and Distribution Upgrades.

If the start date for Construction Activities of Network Upgrades, Distribution Provider's Interconnection Facilities and Distribution Upgrades on behalf of Applicant is prior to one hundred twenty (120) Calendar Days after issuance of the final DGS Phase II Interconnection Facilities Study report (or final DGS Phase I Interconnection Study report if the DGS Phase II Interconnection Study is waived), in the case of the Distribution Group Study Process or final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) in the case of the Independent Study Process, that start date must be set forth in Applicant's Generator Interconnection Agreement and Applicant shall make its second posting of Interconnection Financial Security pursuant to Section F.4.d rather than Section F.4.c.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.c shall result in the Interconnection Request being deemed withdrawn and subject to Section F.6 or, if applicable, shall constitute grounds for termination of the Generator Interconnection Agreement.

d. Third Posting of Interconnection Financial Security.

On or before the start of Construction Activities for Network Upgrades or Distribution Provider's Interconnection Facilities or Distribution Upgrades on behalf of Applicant, whichever is earlier, Applicant shall modify the two separate Interconnection Financial Security instruments posted as follows.

With respect to the Interconnection Financial Security instrument for Network Upgrades, Applicant shall modify this instrument so that it equals one hundred percent (100%) of the total cost responsibility (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

d. Third Posting of Interconnection Financial Security. (Cont'd.)

assigned to Applicant for Network Upgrades in the final DGS Phase II Interconnection Study (or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or final Interconnection Facilities Study (or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived) in the case of the Independent Study Process.

With respect to the Interconnection Financial Security instrument for Distribution Provider's Interconnection Facilities or Distribution Upgrades, Applicant shall modify this instrument so that it equals one hundred percent (100%) of the total cost responsibility assigned to Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades in the final DGS Phase II Interconnection Study (or the final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived) in the case of the Distribution Group Study Process or final Interconnection Facilities Study (or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived) in the case of the Independent Study Process.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.d shall constitute grounds for termination of the Generator Interconnection Agreement.

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process.

Except as set forth in Section F.4.e.i, withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall allow Distribution Provider to liquidate the Interconnection Financial Security, or balance thereof, posted by Applicant for Network Upgrades at the time of withdrawal. To the extent the amount of the liquidated Interconnection Financial Security plus capital, if any, separately provided by Applicant to satisfy its obligation to finance Network Upgrades in accordance with Section E.4 exceeds the total (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

cost responsibility for Network Upgrades assigned to Applicant by the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived, Distribution Provider shall remit to Applicant the excess amount. Withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall result in the release to Applicant of any Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades, except with respect to any amounts necessary to pay for costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades and for which Distribution Provider has not been reimbursed.

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement.

A portion of the Interconnection Financial Security shall be released to Applicant, consistent with Section F.4.e.ii, if the withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement occurs for any of the following reasons:

(1) Failure to Secure a Power Purchase Agreement.
At the time of withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement, Applicant demonstrates to Distribution Provider that it has failed to secure an acceptable power purchase agreement for the energy or capacity of the Generating Facility after a good faith effort to do so. A good faith effort can be established by demonstrating participation in a competitive solicitation (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement. (Cont'd.)

(1) Failure to Secure a Power Purchase Agreement. (Cont'd.) process or bilateral negotiations with an entity other than an Affiliate that progressed, at minimum, to the mutual exchange by all counter-parties of proposed term sheets.

(2) Failure to Secure a Necessary Permit.
At the time of withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement, Applicant demonstrates to Distribution Provider that it has received a final denial from the primary issuing Governmental Authority of any permit or other authorization necessary for the construction or operation of the Generating Facility.

(3) Increase in the Cost of Distribution Provider's Interconnection Facilities or Distribution Upgrades.

Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement based on an increase of: (i) more than 30% or $300,000, whichever is greater, in the estimated cost of Distribution Provider's Interconnection Facilities; or (ii) more than 30% or $300,000, whichever is greater, in the estimated cost of Distribution Upgrades allocated to Applicant from the Interconnection System Impact Study to the Interconnection Facilities Study. This Section F.4.e.i.(3) shall not apply if the cause of the cost increase under (i) or (ii) above is the result of a change requested by Applicant pursuant to Section F.3.b.v. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement. (Cont'd.)

(4) Material Change in Applicant's Interconnection Facilities Created by Distribution Provider's Change in the Point of Interconnection.

Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement based on a material change from the Interconnection System Impact Study in the Point of Interconnection for the Generating Facility mandated by Distribution Provider and included in the final Interconnection Facilities Study. A material change in the Point of Interconnection shall be where the Point of Interconnection has moved to (i) a different substation, (ii) a different line on a different right of way, or (iii) a materially different location than previously identified on the same line.

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades.

(1) Up to One Hundred Twenty (120) Calendar Days After the Final Interconnection Facilities Study Report (or Final Interconnection System Impact Study Report if the Interconnection Facilities Study is Waived).
If, at any time after the initial posting of the Interconnection Financial Security for Network Upgrades under Section F.4.b and on or before one hundred twenty (120) Calendar Days (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades (Cont'd.)

(1) Up to One Hundred Twenty (120) Calendar Days After the Final Interconnection Facilities Study Report (or Final Interconnection System Impact Study Report if the Interconnection Facilities Study is Waived). (Cont'd.) after the date of issuance of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement, as applicable, in accordance with Section F.4.e.i, Distribution Provider shall liquidate the Interconnection Financial Security for Network Upgrades under Section F.4.b and reimburse Applicant in an amount of (i) any posted amount less fifty percent (50%) of the value of the posted Interconnection Financial Security for Network Upgrades (with a maximum of $10,000 per requested and approved MW value of the Generating Facility Capacity at the time of withdrawal being retained by Distribution Provider), or (ii) if the Interconnection Financial Security has been drawn down to finance Pre-Construction Activities for Network Upgrades on behalf of Applicant, the lesser of the remaining balance of the Interconnection Financial Security or the amount calculated under (i) above. If Applicant has separately provided capital apart from the Interconnection Financial Security to finance Pre-Construction Activities for Network Upgrades, Distribution Provider will credit the capital provided as if drawn from the Interconnection Financial Security and apply (ii) above. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades. (Cont'd.)

(2) Between One Hundred Twenty-One (121) Calendar Days and After Final Interconnection Facilities Study Report and the Commencement of Construction Activities.
If, at any time between one hundred twenty-one (121) Calendar Days and after the date of issuance of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), and the commencement of Construction Activities for either Network Upgrades or Distribution Provider's Interconnection Facilities or Distribution Upgrades, Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement, as applicable, in accordance with Section F.4.e.i, Distribution Provider shall liquidate the Interconnection Financial Security for Network Upgrades under Section F.4.c and reimburse Applicant in an amount of (i) any posted amounts less fifty percent (50%) of the value of the posted Interconnection Financial Security for Network Upgrades (with a maximum of $20,000 per requested and approved MW value of the Generating Facility Capacity at the time of withdrawal being retained by Distribution Provider), or, (ii) if the Interconnection Financial Security has been drawn down to finance Pre-Construction Activities for Network Upgrades on behalf of Applicant, the lesser of the remaining balance of the Interconnection Financial Security or the amount calculated under (i) above. If Applicant has separately provided capital apart from the Interconnection Financial Security to finance Pre-Construction Activities for Network Upgrades, Distribution Provider will credit the capital provided as if drawn from the Interconnection Financial Security and apply (ii) above. (L)

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Independent Study Process. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades. (Cont'd.)

(3) After Commencement of Construction Activities. Once Construction Activities on Network Upgrades on behalf of Applicant commence, any withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement by Applicant will be treated in accordance with this Section F.4.e.

(4) Notification and Accounting by Distribution Provider. Distribution Provider will notify Applicant within three (3) Business Days of liquidating any Interconnection Financial Security. Within seventy-five (75) Calendar Days of any liquidating event, Distribution Provider will provide Applicant with an accounting of the disposition of the proceeds of the liquidated Interconnection Financial Security and all proceeds not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant in accordance with this Section F.4.e shall be applied as directed by the Commission. Where an Applicant with remaining proceeds from Interconnection Financial Security cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

f. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security for Interconnection Requests Studied Under the Distribution Group Study Process.

Withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall allow Distribution Provider to liquidate the Interconnection Financial Security, or balance thereof, posted by Applicant for Network Upgrades or Distribution Upgrades at the time of withdrawal. To the extent the amount of the liquidated Interconnection Financial Security plus capital, if any, separately provided by Applicant to satisfy its obligation to finance Network Upgrades or Distribution Upgrades in accordance with Section E.4 exceeds the total cost responsibility for Network Upgrades or Distribution Upgrades assigned to Applicant by the final DGS Phase II Interconnection study (or final DGS Phase I Interconnection Study if the DGS Phase II Interconnection Study is waived), Distribution Provider shall remit to Applicant the excess amount.

Withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall result in the release to Applicant of any Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities, except with respect to any amounts necessary to pay for costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant for Distribution Provider's Interconnection Facilities and for which Distribution Provider has not been reimbursed.

i) Notification and Accounting by Distribution Provider.

Distribution Provider will notify Applicant within three (3) Business Days of liquidating any Interconnection Financial Security. Within seventy-five (75) Calendar Days of any liquidating event, Distribution Provider will provide Applicant with an accounting of the disposition of the proceeds of the liquidated Interconnection Financial Security and all proceeds not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant in accordance with this Section F.4.f. Where an Applicant with remaining proceeds from Interconnection Financial Security cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

5. COMMISSIONING TESTING AND PARALLEL OPERATION

a. Commissioning Testing

Producer Arranges for and Completes Commissioning Testing of Generating Facility and Producer's Interconnection Facilities: Producer is responsible for testing new Generating Facilities and associated Interconnection Facilities according to Section L.5 to ensure compliance with the safety and reliability provisions of this Rule prior to being operated in parallel with Distribution Provider's Distribution or Transmission System. For non-Certified Equipment, Producer shall develop a written testing plan to be submitted to Distribution Provider for its review and acceptance. Alternatively, Producer and Distribution Provider may agree to have Distribution Provider conduct the required testing at Producer's expense. Where applicable, the test plan shall include the installation test procedures published by the manufacturer of the Generating Facility or Interconnection Facilities. Facility testing shall be conducted at a mutually agreeable time, and depending on who conducts the test, Distribution Provider or Producer shall be given the opportunity to witness the tests.

b. Parallel Operation or Momentary Parallel Operation

Producer shall not commence Parallel Operation of its Generating Facility with Distribution Provider's system unless it has received Distribution Provider's express written permission to do so. Distribution Provider shall authorize Producer's Generating Facility for Parallel Operation or Momentary Parallel Operation with Distribution Provider's Distribution or Transmission System, in writing, within five (5) Business Days of satisfactory compliance with the terms of all applicable agreements. Compliance may include, but not be limited to, provision of any required documentation and satisfactorily completing any required inspections or tests as described herein or in the agreements formed between Producer and Distribution Provider. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

6. WITHDRAWAL

Applicant may withdraw its Interconnection Request at any time by written notice of such withdrawal to Distribution Provider. In addition, after receipt of the Interconnection Request, if Applicant fails to adhere to the requirements and timelines of this tariff, except as provided in Section K (Disputes), Distribution Provider shall deem the Interconnection Request to be withdrawn and shall provide written notice to Applicant of the deemed withdrawal within five (5) Business Days and an explanation of the reasons for such deemed withdrawal. Upon receipt of such written notice, Applicant shall have five (5) Business Days in which to either respond with information or action that either cures the deficiency or supports its position that the deemed withdrawal was erroneous and notifies Distribution Provider of its intent to pursue Dispute Resolution. If Applicant cures the deficiency or supports its position that the deemed withdrawal was erroneous, Applicant shall not lose its Queue Position established pursuant to Section E.5.
Withdrawal shall result in the removal of the Interconnection Request from the Interconnection Study process. If Applicant disputes the withdrawal and removal from the Interconnection Study process and has elected to pursue Dispute Resolution as set forth in Section K, Applicant's Interconnection Request is not required to be considered in any ongoing Interconnection Study during the Dispute Resolution process.
In the event of such withdrawal, Distribution Provider, subject to the provisions in Section D.7 and Sections E.3.a, as applicable, shall provide, at Applicant's request, all information that Distribution Provider developed for any completed study conducted up to the date of withdrawal of the Interconnection Request. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION

Interconnection Requests for Generating Facilities evaluated under the Fast Track Process or Independent Study Process may qualify for the Cost Envelope Option described in this Section F.7 provided the requirements set forth in subsection (a) below are met. As further described below, under the Cost Envelope Option, Distribution Provider will prepare a Cost Envelope Estimate. The Cost Envelope Estimate will be based on the Applicant's estimated costs to interconnect a Generating Faciliy and will identify which elements of the estimated costs are subject to the Cost Envelope, and which are excluded from the Cost Envelope. Should an Applicant decide to proceed to a Generator Interconnection Agreement following receipt of the Cost Envelope Estimate in accordance with Section F.2.e for the Fast Track Process, or Section F.3.e.i for the Independent Study Process, the Generator Interconnection Agreement shall include cost responsibility for required upgrades based upon the Cost Envelope Estimate.

a. Eligibility for Cost Envelope Option

i) Eligibility of Interconnection Requests Under the Fast Track Process

Interconnection Requests processed under the Fast Track Process are eligible for the Cost Envelope Option if all of the following criteria are met:

(1) Applicant selects the Cost Envelope Option in its Interconnection Request, or during any applicable results meeting if mutually agreed upon by Distribution Provider and Applicant, and provides the additional required information specified therein for the Cost Envelope Option; and,

(2) The Interconnection Request passes the Fast Track Process evaluation pursuant to Section F.2.; and, (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

a. Eligibility for Cost Envelope Option (Cont'd.)

i) Eligibility of Interconnection Requests Under the Fast Track Process (Cont'd.)

(3) Applicant provides Distribution Provider the Cost Envelope Option deposit of $2,500 within ten (10) Business Days following receipt of the Distribution Provider's non-binding cost estimate provided in accordance with Sections F.2.a, F.2.b, F.2.c.iii, or F.2.d, as applicable. The Cost Envelope Option deposit of $2,500 is subject to adjustment upon mutual agreement of the Distribution Provider and Applicant.

In the event it is determined under the Initial Review or Supplemental Review that i) there are no Distribution Provider Interconnection Facilities and/or Distribution Upgrades required for interconnection of the Generating Facility, or ii) there are no Distribution Provider's Interconnection Facilities and/or Distribution Upgrades required for interconnection of the Generating Facility for which Applicant bears cost responsibility, Applicant's election of the Cost Envelope Option shall be considered not applicable and shall be deemed withdrawn. In such event, the Interconnection Request shall continue to be processed in accordance with the Fast Track Process.

ii) Eligibility of Interconnection Requests Under The Independent Study Process

(1) Applicant selects the Cost Envelope Option in its Interconnection Request and provides the additional required information specified therein for the Cost Envelope Option; and,

(2) The Interconnection Request qualifies for evaluation under the Independent Study Process pursuant to Section F.3.a; and, (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

a. Eligibility for Cost Envelope Option (Cont'd.)

ii) Eligibility of Interconnection Requests Under The Independent Study Process (Cont'd.)

(3) An Interconnection System Impact Study and Interconnection Facilities Study are completed for the Interconnection Request pursuant to Sections F.3.b.ii and F.3.b.viii, respectively; and,

(4) In the case of a NEM Generating Facility or Solar ≤1 MW Generating Facility, Applicant provides Distribution Provider the Cost Envelope Option deposit of $2,500 within the timeframe set forth in Section F.3.b.vi. The Cost Envelope Option deposit of $2,500 is subject to adjustment upon mutual agreement of the Distribution Provider and Applicant.

b. Cost Responsibility under the Cost Envelope Option

i) Cost Responsibility for Facilities Subject to Cost Envelope

Applicant shall be responsible for the actual cost of the portion of interconnection facilities and/or distribution upgrades subject to the cost envelope within the range of plus or minus twenty-five (25) percent of the estimated cost of such facilities identified in the cost envelope estimate. Applicant's cost responsibility for that portion of the interconnection facilities and/or distribution upgrades subject to the cost envelope shall be capped at twentyfive (25) percent above the estimated cost, and applicant shall not be responsible for the portion of the actual cost of such interconnection facilities and/or distribution upgrades that exceeds twenty-five (25) percent of the estimate. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

b. Cost Responsibility under the Cost Envelope Option (Cont'd.)

i) Cost Responsibility for Facilities Subject to Cost Envelope (Cont'd.)

Correspondingly, applicant's cost responsibility for the portion of the interconnection facilities and/or distribution upgrades subject to the cost envelope shall not be less than the amount determined as twenty-five (25) percent below the estimated cost, and any portion of the actual cost of such interconnection facilities and/or distribution upgrades that is below twenty-five (25) percent of the estimate shall not be refundable to applicant.

ii) Cost Responsibility for Facilities Not Subject to Cost Envelope

Applicant shall be responsible for the actual cost of the portion of Interconnection Facilities and/or Distribution Upgrades that are not subject to the Cost Envelope and the actual cost of Network Upgrades in accordance with Section F.7.e.

c. Timing of Applicant's Selection of Cost Envelope Option and Payment of Deposit

i) For Interconnection Requests under the Fast Track Process, Applicant must select the Cost Envelope Option in its Interconnection Request to be eligible for the Cost Envelope Option, in accordance with Section F.7.a.i. In addition, for Interconnection Requests that pass the Fast Track Process, Applicant must provide the Distribution Provider a $2,500 Cost Envelope Option deposit within ten (10) Business Days of receipt of the Distribution Provider's non-binding cost estimate for the (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 13~~43~~
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

c. Timing of Applicant's Selection of Cost Envelope Option and Payment of Deposit (Cont'd.)

i) Interconnection Facilities and/or Distribution Upgrades required for interconnection. If Applicant fails to provide the Cost Envelope Option deposit within ten (10) Business Days of receipt of the Distribution Provider's non-binding cost estimate for the Interconnection Facilities and/or Distribution Upgrades required for interconnection, Applicant's request for the Cost Envelope Option shall be deemed withdrawn and the Interconnection Request shall not be eligible for the Cost Envelope Option. However, if the Applicant fails to provide the Cost Envelope Option deposit within the required timeframe, a Generator Interconnection Agreement may be requested by Applicant in accordance with Section F.2.e, and such Generator Interconnection Agreement will reflect the non-binding cost estimate for the Distribution Provider's required Interconnection Facilities and/or Distribution Upgrades provided during the Initial or Supplemental Review, and Applicant shall be responsible for the actual cost of such upgrades.

ii) For Interconnection Requests under the Independent Study Process, Applicant must select the Cost Envelope Option in its Interconnection Request to be eligible for the Cost Envelope Option, in accordance with Section F.7.a.ii. In the case of a NEM Generating Facility or Solar ≤1 MW Generating Facility, Applicant must also provide Distribution Provider the Cost Envelope Option deposit of $2,500 following completion of the Interconnection System Impact Study within the timeframe set forth in Section F.3.b.vi. The Cost Envelope Option deposit of $2,500 is subject to adjustment upon mutual agreement of the Distribution Provider and Applicant. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

c. Timing of Applicant's Selection of Cost Envelope Option and Payment of Deposit (Cont'd.)

ii) An Applicant must withdraw its request for the Cost Envelope Option following the Distribution Provider's completion of the Interconnection System Impact Study in the event the Distribution Provider and Applicant agree to waive the Interconnection Facilities Study in accordance with Section F.3.b.vii, by so indicating on Attachment B of the Detailed Study Agreement, or for NEM Generating Facilities by providing Distribution Provider written notice of such withdrawal prior to commencement of the Interconnection Facilities Study in accordance with Section F.3.b.vi.

d. Distribution Provider's Preparation of the Cost Envelope Estimate

For Interconnection Requests evaluated under the Fast Track Process, Distribution Provider shall complete and issue to Applicant the Cost Envelope Estimate within twenty (20) Business Days following Distribution Provider's receipt of the Cost Envelope Option deposit required pursuant to Section F.7.a.i.3. For Interconnection Requests evaluated under the Independent Study Process, the Cost Envelope Estimate will be developed as part of the Interconnection Facilities Study and will be included in the Interconnection Facilities Study report in accordance with Section F.3.b.viii.

Applicant shall be responsible for the actual cost of development of the Cost Envelope Estimate. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

d. Distribution Provider's Preparation of the Cost Envelope Estimate (Cont'd.)

If full payment for the required Interconnection Facilities and/or Distribution Upgrades identified in the Cost Envelope Estimate has not been paid by Applicant to the Distribution Provider within two hundred ten (210) Calendar Days from the date Distribution Provider provides the Cost Envelope Estimate to Applicant, the Cost Envelope Estimate shall be subject to re-evaluation and adjustment by the Distribution Provider at Applicant's expense.

e. Cost Elements Not Subject to Cost Envelope

Any and all costs of required environmental studies, environmental mitigation, permits, and/or easements related to the construction and installation of Distribution Provider's Interconnection Facilities and/or Distribution Upgrades shall not be subject to the Cost Envelope. Such costs shall be the responsibility of Applicant based on the actual cost incurred by the Distribution Provider.

Any and all costs of required Network Upgrades shall not be subject to the Cost Envelope. Such costs shall be the responsibility of Applicant based on the actual cost incurred by the Distribution Provider. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

e. Cost Elements Not Subject to Cost Envelope (Cont'd.)

The cost of any Distribution Provider's Interconnection Facilities and/or Distribution Upgrades triggered by one or more earlier queued Interconnection Requests that are also required for interconnection of a later-queued Generating Facility under the Cost Envelope Option shall not be subject to the Cost Envelope. In the event one or more of the earlier-queued projects withdraws (or is delayed to the extent the upgrade will not be completed in time to meet the later-queued Generating Facility's requested In-Service Date), all, or a portion, of Distribution Provider's Interconnection Facilities and/or Distribution Upgrades may become the responsibility of the later-queued Generating Facility. Upon such an occurrence, the Generator Interconnection Agreement shall be amended to reflect the Applicant's responsibility for such Distribution Provider's Interconnection Facilities and/or Distribution Upgrades based on actual costs unless Applicant requests in writing, within ten (10) Business Days of Applicant's receipt of Distribution Provider's nonbinding estimated cost of such required facilities, that it elects to include such facilities in the Cost Envelope. Within ten (10) Business Days of Applicant's request, Distribution Provider shall provide to Applicant an estimate of the cost required to update the Cost Envelope Estimate. Applicant shall notify Distribution Provider in writing within ten (10) Business Days of Applicant's receipt of Distribution Provider's estimate whether (i) Applicant elects to proceed with the update to the Cost Envelope Estimate at Applicant's expense, or (ii) that Applicant withdraws its request to include the additional facilities in the Cost Envelope. If Applicant elects to proceed with the update to the Cost Envelope Estimate, Distribution Provider shall complete the update within the sum of the time allowed for each step utilized by the Distribution Provider in preparation of the initial Cost Envelope Estimate pursuant to Section F.2 for Interconnection Requests evaluated under the Fast Track Process, or Section F.3.b for Interconnection Requests evaluated under the Independent Study Process, from receipt of payment of the estimated cost of the update. Should Applicant fail to so notify Distribution Provider within the ten (10) Business Day period, Applicant's request to include such additional facilities in the Cost Envelope shall be deemed withdrawn and such additional facilities shall be the responsibility of Applicant based on actual cost. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

f. Modifications

Under the Fast Track Process, modifications are not permitted to the Generating Facility, related equipment, Point of Interconnection or other interconnection parameters that would require a re-evaluation of the Initial Review or Supplemental Review. However, notwithstanding these restrictions, an Applicant may identify and suggest minor changes to the Interconnection Facilities (e.g., minor adjustments to physical location of switchgear or other equipment, adjustments to routing of conductor from the Point of Common Coupling to the Point of Interconnection, etc.) upon or near completion of Applicant's final design of its Interconnection Facilities. If an Applicant identifies such changes, Applicant shall notify Distribution Provider of the requested changes and if, in the reasonable judgement of Distribution Provider, a re-evaluation of the costs under the Cost Envelope Option is required, Distribution Provider will provide Applicant within ten (10) Business Days of receipt of Applicant's notice an estimate of the time required to re-evaluate the costs under the Cost Envelope Option and the estimated cost of such re-evaluation. Applicant may either (i) accept the additional time and cost to complete the re-evaluation, (ii) withdraw the proposed changes, or (iii) proceed with a new Interconnection Request for such changes. Applicant shall provide Distribution Provider written notice of its election within ten (10) Business Days following Applicant's receipt of Distribution Provider's estimated additional time and cost required for the re-evaluation. If Applicant elects to proceed with the re-evaluation of the costs under the Cost Envelope Option, Distribution Provider shall complete the reevaluation within twenty (20) Business Days from receipt of all required technical data related to the proposed changes and payment of the estimated cost of the reevaluation. Should Applicant fail to so notify Distribution Provider within such ten (10) Business Day period, Applicant's request to make the proposed changes shall be deemed withdrawn. (L)

(Continued)

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)

7. COST ENVELOPE OPTION (Cont'd.)

f. Modifications

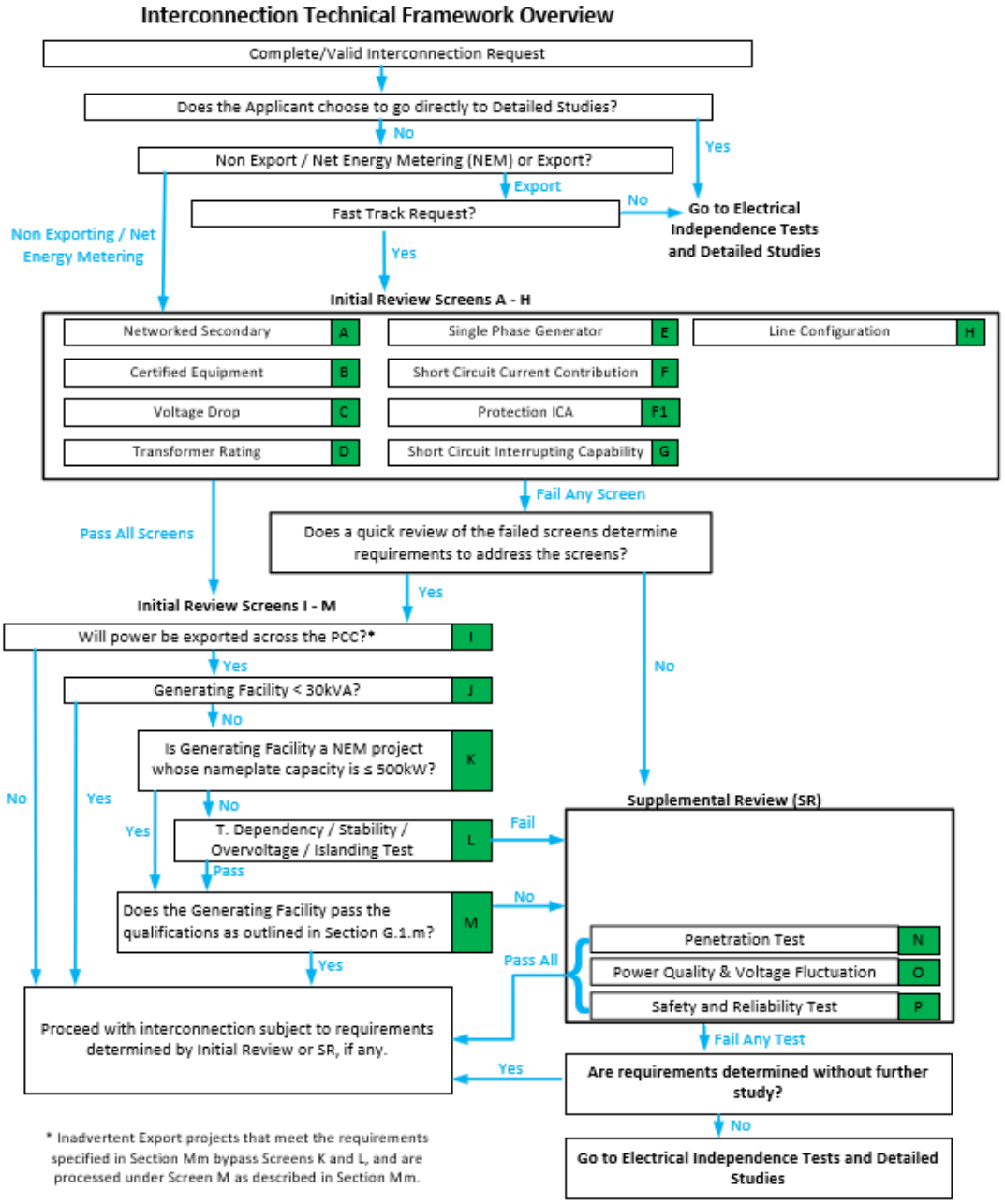
Under the Independent Study Process, any requested modifications, including required updates to costs under the Cost Envelope Option, shall be made in accordance with Section F.3.b.v. If Applicant elects to proceed with re-evaluation of the costs under the Cost Envelope Option pursuant to Section F.3.b.v, Distribution Provider shall complete the re-evaluation within the sum of the time allowed for each step utilized by the Distribution Provider for preparation of the initial Cost Envelope Estimate pursuant Section F.3.b from receipt of all required technical data related to the proposed changes and payment of the estimated cost of the re-evaluation.

g. Tender of the Generator Interconnection Agreement Under the Cost Envelope Option

Negotiation and execution of the Generator Interconnection Agreement shall be in accordance with Section F.2.e for Interconnection Requests evaluated under the Fast Track Process, and in accordance with Section F.3.e.ii for Interconnection Requests evaluated under the Independent Study Process. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS



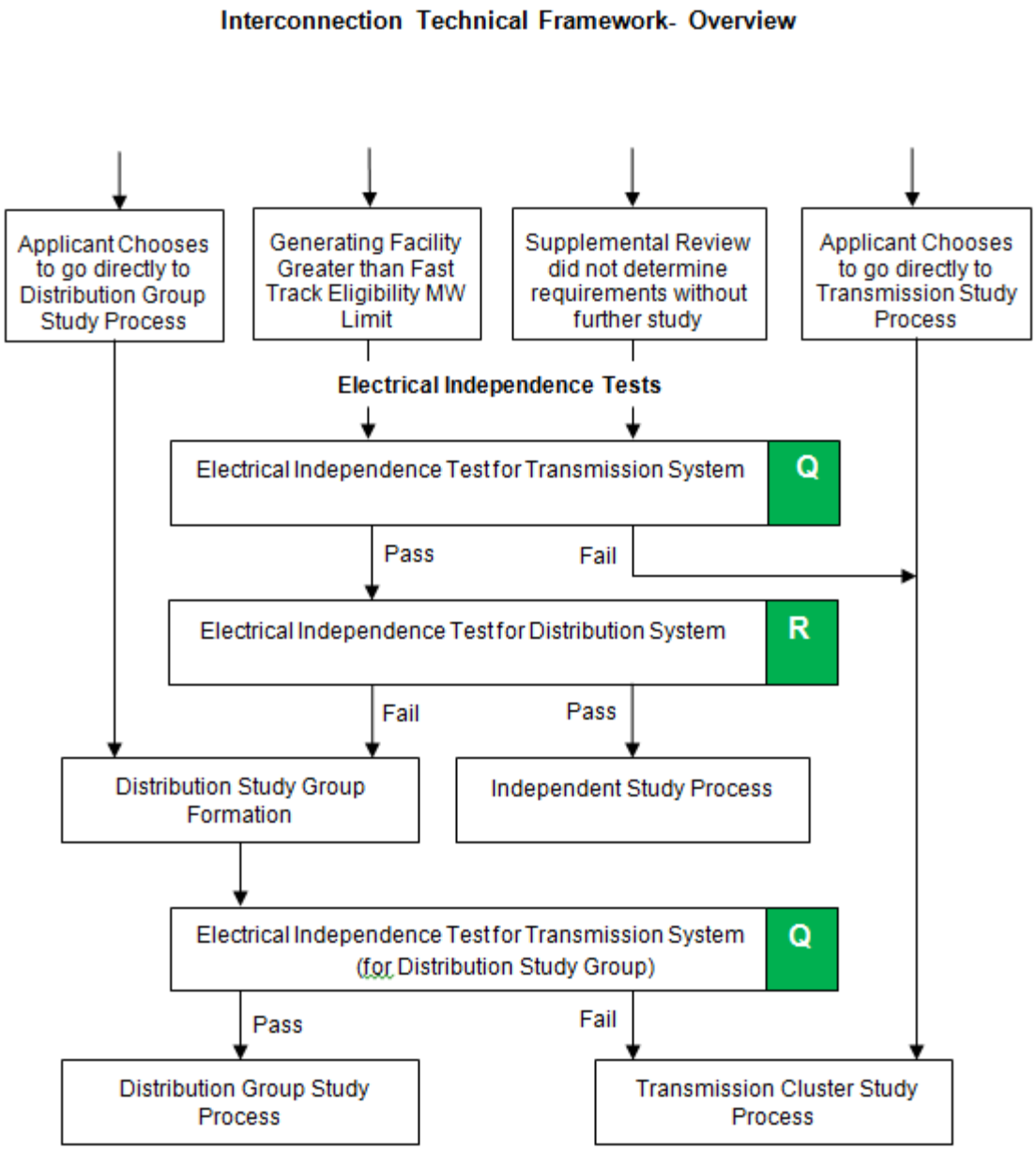
(P)

(P)

* Non-Export AC/DC Converter installations that have a complete and valid Interconnection Request will be eligible to bypass screens B through D and F through M. If Generating Facility meets the conditions in Screen I below (Section G.1.i), skip Screens K, L and M. (P) (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)



(L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS

The Initial Review consists of Screens A through M. If any of the Screens A through H are not passed, a quick review of the failed Screen(s) may determine the requirements to address the failure(s). Otherwise, Supplemental Review is required.
Some examples of solutions that may be available to mitigate the impact of a failed Screen A through H are:

1. Replace an overloaded distribution transformer with a larger transformer.

2. Replace overloaded secondary conductors with larger conductor.

3. Determine if phase balancing on the transformer is possible with minimal review.

4. If possible without further study check if the Generating Facility will actually overstress equipment.

a. Screen A: Is the PCC on a Networked Secondary System?

- If Yes (fail), must go to Supplemental Review except if the Generating Facility is on a Spot Network and meets the following criteria. If the Generating Facility meets the following criteria, continue to Screen B pursuant to Section G.1.

  The proposed Generating Facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of 5 % of a Spot Network's maximum load or 50 kW. Under no condition shall the interconnection of a Generating Facility result in a backfeed of a Spot Network or cause unnecessary operation of any Spot Network protectors. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

a. Screen A: Is the PCC on a Networked Secondary System? (Cont'd.)

- If No (pass), continue to Screen B.

Significance: Special considerations must be given to Generating Facilities proposed to be installed on Networked Secondary Systems because of the design and operational aspects of network protectors. There are no such considerations for radial distribution systems.

b. Screen B: Is Certified Equipment used?

Does the Interconnection Request propose to use Certified Equipment as set out in Section L or does the equipment have interim Distribution Provider approval?

- If Yes (pass), continue to Screen C.
- If No (fail) continue to Screen C pursuant to Section G.1.

Interim approval allows Distribution Provider to treat equipment that has not completed this Rule's Certification requirements as having met the intent of this screen. Interim approval is granted at Distribution Provider's discretion on case by case bases, and approval for one Generating Facility does not guarantee approval for any other Generating Facility.

Significance: If the Generating and/or Interconnection Facility has been Certified or previously approved by Distribution Provider, Distribution Provider does not need to repeat its full review and/or test of the Generating and/or Interconnection Facility's Protective Functions. Site Commissioning Testing may still be required to ensure that the Protective Functions are working properly. Certification indicates that the criteria in Section L, as appropriate, have been tested and verified. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

c. Screen C: Is the Starting Voltage Drop within acceptable limits?

- If Yes (pass), continue to Screen D.
- If No (fail), continue to Screen D pursuant to Section G.1.

Note: This Screen only applies to Generating Facilities that start by motoring the Generator(s).

Distribution Provider has two options in determining whether Starting Voltage Drop is acceptable. The option to be used is at Distribution Provider's discretion.

Option 1: Distribution Provider may determine that the Generating Facility's starting In-rush Current is equal to or less than the continuous ampere rating of the Customer's service equipment.

Option 2: Distribution Provider may determine the impedances of the service distribution transformer (if present) and the secondary conductors to Customer's service equipment and perform a voltage drop calculation. Alternatively, Distribution Provider may use tables or nomographs to determine the voltage drop. Voltage drops caused by starting a Generator must be less than 2.5% for primary Interconnections and 5% for secondary Interconnections.

Significance:

1. This Screen addresses potential voltage fluctuation problems that may be caused by Generators that start by motoring.

2. When starting, Generating Facilities should have minimal impact on the service voltage to other Distribution Provider Customers.

3. Passing this Screen does not relieve Producer from ensuring that its Generating Facility complies with the flicker requirements of this Rule, Section H.2.d. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

d. Screen D: Is the transformer or secondary conductor rating exceeded?

Do the maximum aggregated Gross Ratings for all the Generating Facilities connected to a secondary distribution transformer exceed the transformer or secondary conductor rating, modified per established Distribution Provider practice, absent any Generating Facilities?

- If Yes (fail), continue to Screen E pursuant to Section G.1.
- If No (pass), continue to screen E.

Significance: This screen addresses potential secondary transformer or secondary conductor overloads. When Distribution Provider's analysis determines a transformer or conductor change is required, Distribution Provider will furnish Applicant with an explanation of why the change is needed.

e. Screen E: Does the Single-Phase Generator cause unacceptable imbalance?

If the proposed Generating Facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, does it cause unacceptable imbalance between the two phases of the 240 volt service?

- If Yes (fail), continue to Screen F pursuant to Section G.1.
- If No (pass), continue to screen F. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

e. Screen E: Does the Single-Phase Generator cause unacceptable imbalance? (Cont'd.)

Significance: Generating Facilities connected to a single-phase transformer with 120/240 V secondary voltage must be installed such that the aggregated gross output is as balanced as practicable between the two phases of the 240 volt service. When Distribution Provider's analysis determines a transformer change is required. Distribution Provider will furnish the customer with an explanation of why the change is needed.

f. Screen F: Is the Short Circuit Current Contribution Ratio within acceptable limits? (L)

- If Yes (pass), continue to Screen F1~~G~~. (L)/(P)
- If No (fail), continue to Screen F1~~G~~ pursuant to Section G.1. (L)/(P)

Note: This Screen does not apply to Generating Facilities with a Gross Rating of ~~11~~ less than 30 kVA ~~or less~~. (L) (L)/(P)

When measured at primary side (high side) of the Dedicated Distribution Transformer serving a Generating Facility, the sum of the Short Circuit Contribution Ratios of all Generating Facilities connected to Distribution Provider's Distribution System circuit that serves the Generating Facility must be less than or equal to 0.1.

Significance: If the Generating Facility passes this Screen, it can be expected that it will have no significant impact on Distribution Provider's Distribution System's short circuit duty, fault detection sensitivity, relay coordination or fuse-saving schemes. (L)

Screen F1: Is the Short Circuit Current Contribution less than or equal to 1.2 per unit or is the generation project gross nameplate rating multiplied by its per unit contribution less than the ICA-SG value multiplied by 1.2 per unit? (P)

- If Yes (Pass), continue to Screen G
- If No (Fail), continue to Screen G pursuant to Section G.1. (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.) (L)

f. Screen F1: (Cont'd.) (P)

Generating systems with less than or equal to 1.2 per unit short circuit contribution can reference the Integration Capacity Analysis value for meeting the reduction of reach Integration Capacity Analysis Protection Screen. For generating facilities exceeding the less than or equal to 1.2 per unit short circuit contribution, a utility would use the protection Integration Capacity Analysis value at the point of interconnection and the project specific per unit short circuit contribution to determine whether the facility passes Screen F1.

Significance: If the Generating Facility passes this Screen, it can be expected that it will have no significant impact on Protection Reduction of Reach. The Generating Facility will have no significant impact on Distribution Provider's Distribution System's short circuit duty, fault detection sensitivity, relay coordination or fuse-saving schemes. (P)

g. Screen G: Is the Short Circuit Interrupting Capability Exceeded? (L)

Does the proposed Generating Facility, in aggregate with other Generating Facilities on the distribution circuit, cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Request equipment on the system to exceed 87.5 % of the short circuit interrupting capability; or is the Interconnection proposed for a circuit that already exceeds 87.5 % of the short circuit interrupting capability?

- If Yes (fail) continue to Screen H pursuant to Section G.1.
- If No (pass), continue to Screen H

Note: This Screen does not apply to Generating Facilities with a Gross Rating of less than 3011 kVA ~~or less~~. (L)/(P)

Significance: If the Generating Facility passes this screen, it can be expected that it will not cause any of Distribution Provider's equipment to be overstressed. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

h. Screen H: Is the line configuration compatible with the Interconnection type?

- If Yes (pass), continue to Screen I.
- If No (fail), continue to Screen I pursuant to Section G.1.

Note: This Screen does not apply to Generating Facilities with a Gross Rating of less than 3011 kVA ~~or less~~. (L)/(P)
Line Configuration Screen: Identify primary distribution line configuration that will serve the Generating Facility. Based on the type of Interconnection to be used for the Generating Facility, determine from Table G.1 if the proposed Generating Facility passes the Screen. (L)

Table G-1
Type of Interconnection

Primary Distribution Line Type Configuration	Type of Interconnection to be made to Primary Distribution Line	Result/Criteria
Three-phase, three-wire	Any type	Pass Screen
Three-phase, four-wire	Single-phase, line-to-neutral	Pass Screen
Three-phase, four-wire (For any line that has such a section OR mixed three-wire & four-wire)	All others	To pass, aggregate Generating Facility nameplate rating must be less than or equal to 10% of Line Section peak load

(L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

h. Screen H: Is the line configuration compatible with the Interconnection type? (Cont'd.)

Significance: If the primary distribution line serving the Generating Facility is of a "three-wire" configuration, or if the Generating Facility's distribution transformer is single-phase and connected in a line-to-neutral configuration, then there is no concern about overvoltages to Distribution Provider's, or other Customer's equipment caused by loss of system neutral grounding during the operating time of the Non-Islanding Protective Function.

i. Screen I: Will power be exported across the PCC? (L)

- If Yes, Continue to Screen J. This includes Options 5, ~~and~~ 6 and 8 below. (L)/(P)
- If No, skip screens K, L, and M. ~~then t~~To ensure that the Generating Facility does not export across the PCC, the Generating Facility must incorporate one of the Options 1, 2, 3, 4 or 7 ~~first four options~~ shown below. Following that selection, Initial Review is complete. (L)/(P) (L) (L)/(P) (L)/(P) (L)

Option 1 ("Reverse Power Protection"): To ensure power is never exported across the PCC, a reverse power Protective Function may be provided. The default setting for this Protective Function shall be 0.1% (export) of the service transformer's rating, with a maximum 2.0 second time delay. For multiple tariff interconnections refer to Section J.8. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

i. Screen I: Will power be exported across the PCC? (Cont'd.)

Option 2 ("Minimum Power Protection"): To ensure at least a minimum amount of power is imported across the PCC at all times (and, therefore, that power is not exported), an under-power Protective Function may be provided. The default setting for this Protective Function shall be 5% (import) of Generating Facility's total Gross Rating, with a maximum 2.0 second time delay.

Option 3 (Certified Non-Islanding Protection): To ensure the incidental export of power is limited to acceptable levels, this option requires that all of the following conditions be met: a) the total Gross Capacity of the Generating Facility must be no more than 25% of the nominal ampere rating of Producer's service equipment; b) the total Gross Capacity of the Generating Facility must be no more than 50% of Producer's service transformer capacity rating (this capacity requirement does not apply to Customers taking primary service without an intervening transformer); and c) the Generating Facility must be Certified as Non-Islanding.

The ampere rating of the Customer's service equipment to be used in this evaluation will be that rating for which the customer's utility service was originally sized or for which an upgrade has been approved. It is not the intent of this provision to allow increased export simply by increasing the size of the customer's service panel, without separate approval for the resize. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.)

i. Screen I: Will power be exported across the PCC? (Cont'd.)

Option 4 (Relative Generating Facility Rating): This option, when used, requires the Net Rating of the Generating Facility to be so small in comparison to its host facility's minimum load, that the use of additional Protective Functions is not required to ensure that power will not be exported to Distribution Provider's Distribution or Transmission System. This option requires the Generating Facility capacity to be no greater than 50% of Producer's verifiable minimum Host Load over the past 12 months.

Option 5: Inadvertent Export as described in Section M. (L)

Option 6: Inadvertent Export utilizing UL-1741 or UL-1741 SA/SB listed grid support (Non-Islanding) inverters as described in Section Mm. (L)/(P) (L)

Significance:

1. If it can be assured that the Generating Facility will not export power, Distribution Provider's Distribution or Transmission System does not need to be studied for load-carrying capability or Generating Facility power flow effects on Distribution Provider voltage regulators.

2. This Screen permits the use of reverse-power or minimum-power relaying as a Non-Islanding Protective Function (Option 1, 2, and 3).

3. This Screen allows, under certain defined conditions, for Generating Facilities that incorporate Certified Non-Islanding protection to qualify for interconnection through the Fast Track process without implementing reverse power or minimum power Protective Functions (Option 3). (L)

Option 7: Non-Export utilizing Certified Power Control Systems as described in Section Mm1. (P)

Option 8: Inadvertent Export utilizing Certified Power Control Systems as described in Section Mm2. (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.) (L)

j. Screen J: Is the Gross Rating of the Generating Facility less than ~~11~~ 3011 ~~or less~~ kVA? (L)/(P) (L)/(P)

- If Yes (pass), skip Screens K, L and M; Initial Review is complete. (L)
- If No (fail), continue to Screen K.[i]

Significance: The Generating Facility will have a minimal impact on fault current levels and any potential line overvoltages from loss of Distribution Provider's Distribution System neutral grounding.

k. Screen K: Is the Generating Facility a Net Energy Metering (NEM) Generating Facility with nameplate capacity less than or equal to 500 kW?

- If Yes (pass), skip screen L and continue to screen M.
- If No (fail), continue to screen L.

Significance: The purpose of this Screen is solely to facilitate interconnection of NEM facilities below this size threshold by allowing such facilities to bypass Screen M. The use of nameplate capacity expedites the Initial Review analysis. In Supplemental Review, the net export will be analyzed.

[i] Inadvertent Export systems that meet the requirements specified in Section Mm bypass Screens K and L, and are processed under Screen M as described in Section Mm. (L) (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.) (L)

I. Screen L: Transmission Dependency Stability, Overvoltage and Islanding and Transmission Stability Tests (L)/(P) (L)/(P)

Is the Interconnection Request for an area where: (L)
(i)) there are known, or posted, transient stability limitations, or

(ii))the proposed Generating Facility has interdependencies, known to Distribution Provider, with earlier-queued Transmission System interconnection requests., or (L) (L)/(P)

(iii) there is potential for transmission islanding, or (P)

(iv) there is potential for transmission Ground Fault Overvoltage (GFOV) due to lack of effective grounding. (P)

Where (i) or (ii) or (iii) or (iv) above are met, the impacts of this Interconnection Request to the Transmission System may require Detailed Study. (L)/(P) (L)

- If Yes (fail), Supplemental Review is required.
- If No (pass), continue to Screen M.

Significance: Special consideration must be given to those areas identified as having current or future (due to currently-queued interconnection requests) grid stability concerns. (L)

PG&E will temporarily apply anti-islanding tests until the resolution of Issue 18* R. 17.-07-007 Working Group Four in made effective in PG&E's tariffs. (P) (P)

m. Screen M: (L)

When ICA information is available at the requested point of interconnection, Screen M should be evaluated in accordance with nameplate or typical PV output profile. (P) (P)

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* Issue 18 is "*Should the Commission adopt changes to anti-islanding screen parameters to reflect research on islanding risks when using UL 1741-certified inverters in order to avoid unnecessary mitigations? If yes, what should those changes entail?*" (P) (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (P)

1. INITIAL REVIEW SCREENS (Cont'd.)

m. Screen M (Cont'd.):

For Interconnection requests based on nameplate capacity:

a) Is the Interconnection request aggregate nameplate capacity greater than 90% of the lower value in the ICA-SG 576 profile?

or

b) Is the Interconnection request aggregate nameplate capacity greater than 90% of the lower value in the ICA-OF 576 profile?

If the response is "yes" to either a) or b), screen M fails, and the project must be evaluated under the Supplemental Review or Detailed Study to determine mitigation requirements

For Interconnection requests based on typical PV output profile

a) Is the Interconnection request real power production based on PV Watts or equivalent greater than 90% of the ICA-SG 576 value in any hour?

or

b) Is the Interconnection request real power production based on PV Watts or equivalent greater than 90% of the ICA-OF 576 value in any hour?

If the response is "yes" to either a) or b), screen M fails, and the project must be evaluated under the Supplemental Review or Detailed Study to determine mitigation requirements

When ICA information is not available at the requested point of interconnection, Screen M should be evaluated as follows:. (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

1. INITIAL REVIEW SCREENS (Cont'd.) (L)

m. Screen M (Cont'd.): (L)/(P)

Is the aggregate Generating Facility capacity on the Line Section less than 15% of Line Section peak load for all line sections bounded by automatic sectionalizing devices? [ii] (L)

- If Yes (pass), Initial Review is complete.
- If No (fail), Supplemental Review is required.

Significance:
1. Low penetration of Generating Facility capacity will have a minimal impact on the operation and load restoration efforts of Distribution Provider's Distribution System.

2. The operating requirements for a high penetration of Generating Facility capacity may be different since the impact on Distribution Provider's Distribution System will no longer be minimal, therefore requiring additional study or controls.

The purpose of this Screen is solely to identify if the Generating Facility needs additional study and is not intended as justification for limiting the penetration of generation on a line section.

2. SUPPLEMENTAL REVIEW SCREENS

The Supplemental Review consists of Screens N through P. If any of the Screens are not passed, a quick review of the failed Screen(s) will determine the requirements to address the failure(s) or that Detailed Studies are required. In certain instances, Distribution Provider may be able to identify the necessary solution and determine that Detailed Studies are unnecessary. Some examples of solutions that may be available to mitigate the impact of a failed Screen are:

1. Replacing a fixed capacitor bank with a switched capacitor bank.

2. Adjustment of line regulation settings.

3. Simple reconfiguration of the distribution circuit. (L)

[ii] Inadvertent Export Systems that meet the requirements in Section Mm are processed under Screen M as describer in Section Mm.

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (L)

Is Integration Capacity Analysis Values available at the requested Point of Interconnection? (P)

If Yes, evaluate Screen N as follows:

Is the Interconnection Request Gross Nameplate Rating below 90% of the ICA-SG Value (i.e. the minimum value) in the ICA-SG 576 Profile?

Did the Interconnection Request pass Screen F1?

- If the evaluation of the two Screen N questions above are both "yes" (pass), continue to Screen O.
- If no to either or both of the above (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen O. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens if Applicant elects to proceed.)

If No, evaluate Screen N as follows: (P)

Where 12 months of line section minimum load data is available, can be calculated, can be estimated from existing data, or determined from a power flow model, is the aggregate Generating Facility capacity on the Line Section less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the Generating Facility?. (L) (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.) (L)

a. Screen N: Penetration Test (Cont'd.) (L)/(P)

If No, evaluate Screen N as follows (Cont'd.): (L)/(P)

- If yes (pass), continue to Screen O. (L)
- If no (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen O. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens, if Applicant elects to proceed.)

Note 1: If none of the above options are available, this screen defaults to Screen M.

Note 2: The type of Generating Facility technology will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. For solar Generating Facilities with no battery storage, daytime minimum load will be used (i.e., 10 am to 4 pm for fixed panel solar Generating Facilities and 8 am to 6 pm for solar Generating Facilities utilizing tracking systems), while absolute minimum load will be used for all other Generating Facility technologies.

Note 3: When this screen is being applied to a NEM Generating Facility, the net export in kW, if known, that may flow across the Point of Common Coupling into Distribution Provider's Distribution System will be considered as part of the aggregate generation. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (Cont'd.)

Note 4: Distribution Provider will not consider as part of the aggregate Generating Facility capacity for purposes of this screen Generating Facility capacity known to be already reflected in the minimum load data.

Note 5: NEM Generating Facilities with net export less than or equal to 500 kW that may flow across the Point of Common Coupling into Distribution Provider's Distribution or Transmission System will not be studied in the WDT Transmission Cluster Study Process, but may be studied under the Independent Study Process. (L) (L)/(T) (L)

Significance: Penetration of Generating Facility capacity that does not result in power flow from the circuit back toward the substation will have a minimal impact on equipment loading, operation, and protection of the Distribution System.

b. Screen O: Power Quality and Voltage Tests

In aggregate with existing Generating Facility capacity on the Line Section, distribution circuit, and/or substation.

i) Can it be determined within the Supplemental Review that the voltage regulation on the line section can be maintained in compliance with Commission Rule 2 and/or Conservation Voltage Regulation voltage requirements under all system conditions?

ii) Can it be determined within the Supplemental Review that the voltage fluctuation is within acceptable limits as defined by IEEE ~~1453~~1547-2018 7.2 or utility practice similar to IEEE~~1453~~ 1547-2018 7.2? (L) (L)/(P) (P)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

b. Screen O: Power Quality and Voltage Tests (Cont'd.)

In aggregate with existing Generating Facility capacity on the Line Section, distribution circuit, and/or substation. (Cont'd.)

iii) Can it be determined within the Supplemental Review that the harmonic levels meet IEEE 5191547-2018 7.3 limits at the Point of Common Coupling (PCC)? (L) (L)/(P) (L)

iv) Are any voltage impacts created by the project mitigated considering the settings of the Volt-Var function and the characteristics of the circuit segment? (P) (P)

- If yes to all of the above (pass), continue to Screen P. (L)
- If no to any of the above (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen P. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens.)

Significance: Adverse voltages and undesirable interference may be experienced by other Customers on Distribution Provider's Distribution System caused by operation of the Generating Facility(ies).

c. Screen P: Safety and Reliability Tests

Does the location of the proposed Generating Facility or the aggregate generation capacity on the Line Section create impacts to safety or reliability that cannot be adequately addressed without Detailed Study?

- If yes (fail), review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Section G.3.
- If no (pass), Supplemental Review is complete. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 15869
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

c. Screen P: Safety and Reliability Tests (Cont'd.)

Significance: In the safety and reliability test, there are several factors that may affect the nature and performance of an Interconnection. These include, but are not limited to:

1. Generating Facility energy source
2. Modes of synchronization
3. Unique system topology
4. Possible impacts to critical load customers
5. Possible safety impacts

The specific combination of these factors will determine if any system study requirements are needed. The following are some examples of the items that may be considered under this screen:

1. Does the Line Section have significant minimum loading levels dominated by a small number of customers (i.e. several large commercial customers)?
2. Is there an even or uneven distribution of loading along the feeder?
3. Is the proposed Generating Facility located in close proximity to the substation (i.e. <2.5 electrical line miles), and is the distribution line from the substation to the customer composed of large conductor/cable (i.e. 600A class cable)? (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

c. Screen P: Safety and Reliability Tests (Cont'd.)

4. Does the Generating Facility incorporate a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time?

5. Is operational flexibility reduced by the proposed Generating Facility, such that transfer of the line section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues?

6. Does the Generating Facility utilize Certified anti-islanding functions and equipment?

3. DETAILED STUDY SCREENS

a. Screen Q: Is the Interconnection Request electrically Independent of the Transmission System?

Distribution Provider, in consultation with the CAISO, will determine, based on knowledge of the interdependencies with earlier-queued interconnection requests under any tariff, whether the Interconnection Request to the Distribution System is of sufficient MW size and located at a point of interconnection such that it is reasonably anticipated to require or contribute to the need for Reliability Network Upgrades. In making this determination, the Distribution Provider will make a Determination of Electrical Independence for the CAISO Controlled Grid as set forth in the applicable CAISO Tariff in effect at the time the Electrical Independence Test begins. (L) (L)/(T)

If Distribution Provider determines that no interdependencies ~~exist as described above~~ or that interdependencies do exist but the proposed Generating Facility is not reasonably anticipated to require or contribute to the need for Reliability Network Upgrades, then the Interconnection Request will be deemed to have passed Distribution Provider's Determination of Electrical Independence for the CAISO Controlled Grid.

If Distribution Provider determines that interdependencies exist ~~as described above~~ and that they are reasonably anticipated to require or contribute to the need for Reliability Network Upgrades, then Applicant may be studied under the WDT Transmission Cluster Study Process as set forth in Section F.3.d. (L)/(T)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

a. Screen Q: Is the Interconnection Request electrically Independent of the Transmission System? (Cont'd.)

Distribution Provider will coordinate with the CAISO if necessary to conduct the Determination of Electrical Independence for the CAISO Controlled Grid as set forth in the applicable CAISO Tariff in effect at the time the Electrical Independence Test (EIT) begins. The results of the incremental power flow, aggregate power flow, and short-circuit current contribution tests set out in the applicable CAISO Tariff in effect at the time the EIT begins will determine whether the Interconnection Request is electrically independent from the CAISO Controlled Grid.

- If Yes (pass), continue to Screen R.
- If No (fail), proceed to Section F.3.d. (L)

Exemptions:~~Note 1~~: All NEM Generating Facilities and all inverter-based ~~NEM~~ Generating Facilities~~, including those for NEM systems,~~ with a nameplate capacity ~~net export~~ less than or equal to 1 MVA ~~500 kW that may flow across the Point of Common Coupling~~ will not be studied in the WDT Transmission Cluster Study Process, but may be studied under the Independent Study Process. For an Applicant that agrees to the installation, at Applicant's cost, of Distribution Provider-approved software/firmware controlled devices or equipment Nationally Recognized Testing Laboratory certified to limit the Generating Facility's net export so that it will never exceed the 1 MVA exemption limit, the Generating Facility's net export will be considered exempt from the WDT Transmission Cluster Study Process for purposes of this section. (L)/(L)/(T) (T)

Significance: Generating Facilities that are electrically interdependent with the Transmission System must be studied with other interconnection requests that have Transmission System interdependencies. It is possible to pass this Screen Q (i.e., be found to have no electrical interdependencies with earlier-queued Distribution System and/or Transmission System interconnection requests as set out above), be studied under the Independent Study Process, and still trigger a Reliability Network Upgrade. (L) (L)

** The currently effective CAISO Tariff can be accessed at the following CAISO website http://www.caiso.com/rules/Pages/Regulatory/Default.aspx (T) (T)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

b. Screen R: Is the Interconnection Request independent of other earlier-queued and yet to be studied interconnection requests interconnecting to the Distribution System?

For Interconnection Requests that are electrically independent from the CAISO Controlled Grid, Distribution Provider will evaluate each Interconnection Request for known or reasonably anticipated relationships between the Interconnection Request and any earlier-queued interconnection requests in the Distribution Group Study Process, the Independent Study Process, or interconnection requests studied under predecessor interconnection procedures that have yet to complete their respective interconnection studies. Distribution Provider may conduct incremental power flow, aggregate power flow, and/or short-circuit duty tests using existing interconnection studies, Base Case data, overall system knowledge, and engineering judgment to determine whether an Interconnection Request can be studied independently of earlier-queued interconnection requests. If the Interconnection Request being evaluated for electrical independence on the Distribution System may be electrically related to earlier-queued interconnection requests that have yet to complete interconnection studies, then it fails the evaluation of electrical independence for the Distribution System.

- If Yes (pass), continue to Independent Study Process
- If No (fail), continue to the Distribution Group Study Process

Significance: Interconnection Requests that are electrically related to earlier-queued interconnection requests that have not yet been studied do not qualify for independent study. (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies

The Interconnection Studies shall consist of an Interconnection System Impact Study and an Interconnection Facilities Study for the Independent Study Process or the DGS Phase I Interconnection Study and the DGS Phase II Interconnection Study for the Distribution Group Study Process. The Interconnection Studies will identify Interconnection Facilities, Distribution Upgrades and Reliability Network Upgrades necessary to mitigate thermal overloads and voltage violations, and address short circuit, dynamic/stability, and reliability issues associated with the requested Interconnection Service. If Distribution Provider anticipates that Reliability Network Upgrades will be required, or the Interconnection Studies identify the need for Reliability Network Upgrades, then Distribution Provider will coordinate with the CAISO during the study process as set forth in Sections F.3.b or F.3.c above.

The estimated costs of short circuit related upgrades and shared interconnection facilities, if any, identified through a Distribution Group Study shall be assigned as provided in E.4.e.

i) Interconnection System Impact and DGS Phase I Interconnection Study.

(1) Scope of the Interconnection System Impact and DGS Phase I Interconnection Study.

The Interconnection System Impact or DGS Phase I Interconnection Study in the case of the Distribution Group Study Process may consist of a localized short circuit analysis, a stability/dynamic analysis, a power flow analysis, and any other studies that are deemed necessary. The localized short circuit analysis will evaluate impacts to the Distribution and Transmission System only with any local short circuit-duty related Reliability Network Upgrades allocated to the Generating Facility or Generating Facilities that require(s) the upgrades. Short circuit duty impacts to the (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies (Cont'd.)

i) Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

(1) Scope of the Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

CAISO Controlled Grid are appropriately evaluated only in the WDT Transmission Cluster Study Process as set forth in Section F.3.d. The short circuit duty contribution of any Interconnection Requests studied in the Independent Study Process or Distribution Group Study Process that are subsequently identified in the Cluster Study Process will be allocated its pro rata share of the short circuit duty-related Reliability Network Upgrades on the basis of the short circuit duty contribution of each Generating Facility. (L) (L)/(T) (L)

The Interconnection System Impact Study or DGS Phase I Interconnection Study in the case of the Distribution Group Study Process, shall state the assumptions upon which it is based, state the results of the analyses, and provide the requirement or potential impediments to providing the requested Interconnection Service, including a preliminary indication of the cost and length of time that would be necessary to correct any problems identified in those analyses and implement the Interconnection.

The Interconnection System Impact or DGS Phase I Interconnection Study shall provide a list of Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Reliability Network Upgrades that are required as a result of the Interconnection Request along with a non-binding good faith estimate of cost responsibility and the amount of construction time required.

If at any time the Distribution Provider determines that it will not meet the required time frame for completing the DGS Phase I Interconnection Study due to the large number of (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies (Cont'd.)

i) Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

(1) Scope of the Interconnection System Impact and DGS Phase I Interconnection Study. (Cont'd.)

Interconnection Requests in the Distribution Group Study Application window, study complexity, or unavailability of resources on a reasonable basis to perform the study in the required time frame, the Distribution Provider shall notify the Interconnection Customer(s) within the Distribution Group Study as to the schedule status of the DGS Phase I Interconnection Study and provide an estimated completion date with an explanation of the reasons why additional time is required.

Upon request, the Distribution Provider shall provide the Applicant(s) all supporting documentation, work papers and relevant pre-Interconnection Request and post-Interconnection Request power flow, short circuit and stability databases for the DGS Phase I Interconnection Study, subject to confidentiality arrangements as outlined in Section D.7.

ii) Interconnection Facilities Study and DGS Phase II Interconnection Study.

(1) Scope and Purpose of the Interconnection Facilities and DGS Phase II Interconnection Study.

The Interconnection Facilities Study or DGS Phase II Interconnection Study in the case of the Distribution Group Study Process shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the Interconnection System Impact Study or DGS Phase I Interconnection Study technical analyses in accordance with (L)

(Continued)

G. ENGINEERING REVIEW DETAILS (Cont'd.) (L)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process and Distribution Group Study Process Interconnection Studies (Cont'd.)

ii) Interconnection Facilities Study and DGS Phase II Interconnection Study. (Cont'd.)

(1) Scope and Purpose of the Interconnection Facilities and DGS Phase II Interconnection Study. (Cont'd.)

Good Utility Practice to physically and electrically connect the Generating Facility to the Distribution or Transmission System. The Interconnection Facilities Study or DGS Phase II Interconnection Study shall also identify (i) the electrical switching configuration of the connection equipment, including, without limitation: the transformer, switchgear, meters, and other station equipment; the nature and estimated cost of any Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Network Upgrades necessary to accomplish the interconnection; and an estimate of the time required to complete the construction and installation of such facilities. The analyses in the Interconnection System Impact Study (or DGS Phase I Interconnection Study in the case of the Distribution Group Study Process) will be updated as necessary in the Interconnection Facilities Study (or DGS Phase II Interconnection Study), to account for withdrawal of interconnection requests in the interconnection queue.

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS

Section H shall be used for interconnection of non-inverter based technologies. (L)

~~Section H shall also continue to be used for interconnection of inverter based technologies until September 8, 2017. Following such date, Section Hh shall apply for interconnection of inverter based technologies. Until such date, Section Hh may be used in all or in part, for inverter based technologies by mutual agreement of the Distribution Provider and the Applicant.~~ (P) (P)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (L)

This section is consistent with the requirements of ~~ANSI/~~IEEE 1547-2018.~~2003 Standard for Interconnecting Distributed Resources with Electric Power Systems (IEEE 1547). Exceptions are taken to IEEE 1547 Clauses 4.1.4.2 Distribution Secondary Spot Networks and Clauses 4.1.8.1 or 5.1.3.1, which address Protection from Electromagnetic Interference. These are being studied for inclusion in a subsequent version of this Rule. Also, Rule 21 does not adopt the Generating Facility power limitation of 10 MW incorporated in IEEE 1547.~~ In the event of conflict, this Rule shall take precedent. (P)

The Protective Functions and requirements of this Rule are designed to protect Distribution Provider's Distribution and Transmission System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. Producer's Protective Functions shall not impact the operation of other Protective Functions on Distribution Provider's Distribution and Transmission System in a manner that would affect Distribution Provider's capability of providing reliable service to its customers. (L)

a. Protective Functions Required

Generating Facilities operating in parallel with Distribution Provider's Distribution or Transmission System shall be equipped with the following Protective Functions to sense abnormal conditions on Distribution Provider's Distribution or Transmission System and cause the Generating Facility to be automatically disconnected from Distribution Provider's Distribution or Transmission System or to prevent the Generating Facility from being connected to Distribution Provider's Distribution or Transmission System inappropriately:

i) Over and under voltage trip functions and over and under frequency trip functions;

ii) A voltage and frequency sensing and time-delay function to prevent the Generating Facility from energizing a de-energized Distribution or Transmission System circuit and to prevent the Generating Facility from reconnecting with Distribution Provider's (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

a. Protective Functions Required (Cont'd.)

ii) Distribution or Transmission System unless Distribution Provider's Distribution System service voltage and frequency is within the ANSI C84.1-1995 Table 1 Range B voltage Range of 106 volts to 127 volts (on a 120 volt basis), inclusive, and a frequency range of 59.3 Hz to 60.5 Hz, inclusive, and are stable for at least 60 seconds; ~~and~~ (L) (L)/(P)

iii) A function to prevent the Generating Facility from contributing to the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution System within two seconds of the formation of an Unintended Island~~.~~; and (L) (L) (L)/(P)

(iv) Open Phase Condition: Generating Facility shall detect and cease to energize and trip all phases within 2 seconds of any open phase condition in accordance with IEEE 1547-2018 6.2.2. (P) (P)

The Generating Facility shall cease to energize Distribution Provider's Distribution System for faults on Distribution Provider's Distribution System circuit to which it is connected (IEEE 1547-2018 6.2.14~~.2.1~~). The Generating Facility shall cease to energize Distribution Provider's Distribution circuit prior to re-closure by Distribution Provider's Distribution System equipment (IEEE 1547-2018 6.3~~4.2.2~~). (L) (L) (L)/(P) (L) (L) (L)/(P)

b. Momentary Paralleling Generating Facilities (L)

With Distribution Provider's approval, the transfer switch or scheme used to transfer Producer's loads from Distribution Provider's Distribution or Transmission System to Producer's Generating Facility may be used in lieu of the Protective Functions required for Parallel Operation. (L)

Generating facilities which operate using a momentary parallel scheme are not required to comply with the functional requirements as required in the IEEE 1547-2018 standard. (P) (P)

c. Suitable Equipment Required (L)

Circuit breakers or other interrupting equipment located at the Point of Common Coupling (PCC) must be Certified or "Listed" (as defined in Article 100, the Definitions Section of the National Electrical Code) as suitable for their intended application. This includes being capable of (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

c. Suitable Equipment Required (Cont'd.)

interrupting the maximum available fault current expected at their location. Producer's Generating Facility and Interconnection Facilities shall be designed so that the failure of any single device or component shall not potentially compromise the safety and reliability of Distribution Provider's Distribution and Transmission System. The Generating Facility paralleling-device shall be capable of withstanding 220% of the Interconnection Facility rated voltage (IEEE 1547-2018 4.11~~4.1.8.3~~). The Interconnection Facility shall have the capability to withstand voltage and current surges in accordance with the environments defined in IEEE Std C62.41.2-2002 or IEEE Std C37.90.1-2002 as applicable and as described in L.3.e (IEEE 1547-2018 4.11~~4.1.8.2~~). (L) (L)/(P) (L)/(P) (L) (L) (P)

d. Visible Disconnect Required (L)

When required by Distribution Provider's operating practices, Producer shall furnish and install a ganged, manually-operated isolating switch (or a comparable device mutually agreed upon by Distribution Provider and Producer) near the Point of Interconnection to isolate the Generating Facility from Distribution Provider's Distribution or Transmission System. The device does not have to be rated for load break nor provide over-current protection.

The device must:

i) allow visible verification that separation has been accomplished. (This requirement may be met by opening the enclosure to observe contact separation.)

ii) include markings or signage that clearly indicates open and closed positions.

iii) be capable of being reached:

a) for Emergency purposes quickly and conveniently 24 hours a day by Distribution Provider personnel for construction, (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

d. Visible Disconnect Required (Cont'd.)

iii) be capable of being reached: (Cont'd.)

a) operation, maintenance, inspection, testing or to isolate the Generating Facility from Distribution Provider's Distribution or Transmission System without obstacles or requiring those seeking access to obtain keys, special permission, or security clearances.

b) for Non-Emergency purposes during normal business hours. Distribution Provider, where possible, will provide notice to Customer for gaining access to Customer's premises.

iv) be capable of being locked in the open position,

v) be clearly marked on the submitted single line diagram and its type and location approved by Distribution Provider prior to installation. If the device is not adjacent to the PCC, permanent signage must be installed at a Distribution Provider approved location providing a clear description of the location of the device. If the switch is not accessible outside the locked premises, signage with contact information and a Distribution Provider approved locking device for the premises shall be installed.

Generating Facilities with Non-Islanding inverters totaling one (1) kilovolt-ampere (kVA) or less are exempt from this requirement.

e. Drawings Required

Prior to Parallel Operation or Momentary Parallel Operation of the Generating Facility, Distribution Provider shall approve Producer's Protective Function and control diagrams. Generating Facilities equipped with Protective Functions and a control scheme previously approved by Distribution Provider for system-wide application or only Certified Equipment may satisfy this requirement by reference to previously approved drawings and diagrams. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

f. Generating Facility Conditions Not Identified

In the event this Rule does not address the Interconnection conditions for a particular Generating Facility, Distribution Provider and Producer may agree upon other arrangements

2. PREVENTION OF INTERFERENCE

Producer shall not operate Generating or Interconnection Facilities that superimpose a voltage or current upon Distribution Provider's Distribution or Transmission System that interferes with Distribution Provider operations, service to Distribution Provider Customers, or communication facilities. If such interference occurs, Producer must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by Distribution Provider. If Producer does not take corrective action in a timely manner, or continues to operate the facilities causing interference without restriction or limit, Distribution Provider may, without liability, disconnect Producer's facilities from Distribution Provider's Distribution or Transmission System, in accordance with Section D.9 of this Rule. To eliminate undesirable interference caused by its operation, each Generating Facility shall meet the following criteria: (L)

Note: Except as otherwise stated, the RPA for all performance requirements shall be met at the PCC. (P)

When Generating facility is less than 500KVA or when generating facility operates under one of the non-exporting options or inadvertent export of no longer than 30 seconds, the RPA may be the Generating Facility Connection Point (PoC). (P)

a. Voltage Regulation (L)

The Generating Facility shall not actively regulate the voltage at the PCC while in parallel with Distribution Provider's Distribution System. The Generating Facility shall not cause the service voltage at other customers to go outside the requirements of ANSI C84.1-1995, Range A ~~(IEEE 1547-4.1.1)~~. (L)/(P)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting

The voltage ranges in Table H.1 define protective trip limits for the Protective Function and are not intended to define or imply a voltage regulation Function. Generating Facilities shall cease to energize Distribution Provider's Distribution System within the prescribed trip time whenever the voltage at the PCC deviates from the allowable voltage operating range. The Protection Function shall detect and respond to voltage on all phases to which the Generating Facility is connected.

i) Generating Facilities (30 kVA or less)

Generating Facilities with a Gross Rating of 30 kVA or less shall be capable of operating within the voltage range normally experienced on Distribution Provider's Distribution System from plus to minus 5% of the nominal voltage (e.g. 114 volts to 126 volts, on a 120 volt base), at the service panel or PCC. The trip settings at the generator terminals may be selected in a manner that minimizes nuisance tripping between 106 volts and 132 volts on a 120-volt base (88%-110% of nominal voltage) to compensate for voltage drop between the generator terminals and the PCC. Voltage may be detected at either the PCC or the Point of Interconnection. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal. (L)

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting (Cont'd.)

ii) Generating Facilities (greater than 30 kVA)

Distribution Provider may have specific operating voltage ranges for Generating Facilities with Gross Ratings greater than 30 kVA, and may require adjustable operating voltage settings. In the absence of such requirements, the Generating Facility shall be capable of operating at a range between 88% and 110% of the applicable interconnection voltage. Voltage shall be detected at either the PCC or the Point of Interconnection, with settings compensated to account for the voltage at the PCC. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal.

iii) Voltage Disturbances

Whenever Distribution Provider's Distribution System voltage at the PCC varies from and remains outside normal (Nominally 120 volts) for the predetermined parameters set forth in Table H-1, the Generating Facility's Protective Functions shall cause the Generator(s) to become isolated from Distribution Provider's Distribution System: (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting (Cont'd.)

iii) Voltage Disturbances (Cont'd.)

Table H.1: Voltage Trip Settings for Generating Facilities*			
Voltage at Point of Common Coupling (the ranges below are used to trip the generator during abnormal distribution system conditions)		Maximum Trip Time**	
Assuming 120 Volt Base	% of Nominal Voltage	# of Cycles (Assuming 60 Hz Nominal)	Seconds
Less than 60 volts	Less than 50%	10 Cycles	0.16 Seconds
Greater than or equal to 60 volts but less than 106 volts	Greater than or equal to 50% but less than 88%	120 Cycles	2 Seconds
Greater than 132 volts but less than or equal to 144 volts	Greater than 110% but less than or equal to 120%	60 Cycles	1 Second
Greater than 144 volts	Greater than 120%	10 Cycles	0.16 Seconds
**For Generating Facilities with a Rating greater than 30 kVA, set points shall be field adjustable and different voltage set points and trip times from those in Table H.1 may be negotiated with Distribution Provider*			
*** "Maximum Trip Time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize Distribution Provider's Distribution System. Protective Function equipment and circuits may remain connected to Distribution Provider's Distribution System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to allow for a Generating Facility to minimize tripping during short term system disturbances. Set points shall not be user adjustable for generating facilities less than 30 kW.*			

(L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

c. Paralleling

The Generating Facility shall parallel with Distribution Provider's Distribution or Transmission System without causing a voltage fluctuation at the PCC greater than plus/minus 5% of the prevailing voltage level of Distribution Provider's Distribution or Transmission System at the PCC, and meet the flicker requirements of Section H.2.d. Section L, Certification and Testing Criteria, provides technology-specific tests for evaluating the paralleling Function. (IEEE 1547-2018 4.10~~4.1.3~~) (L) (L)/(P)

d. Flicker (L)

The Generating Facility shall not create objectionable flicker for other customers on Distribution Provider's Distribution or Transmission System. To minimize the adverse voltage effects experienced by other customers ~~(IEEE 1547-4.3.2)~~, flicker at the PCC caused by the Generating Facility should not exceed the limits of IEEE 1547-2018 7.2.3~~defined by the "Maximum Borderline of Irritation Curve" identified in IEEE 519-1992 (IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, IEEE STD 519-1992)~~. This requirement is necessary to minimize the adverse voltage affects experienced by other Customers on Distribution Provider's Distribution or Transmission System. Generators may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded. (L) (L)/(P) (L)/(P) (L) (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

e. Integration with Distribution Provider's Distribution System Grounding

The grounding scheme of the Generating Facility shall not cause over-voltages that exceed the rating of the equipment connected to Distribution Provider's Distribution System and shall not disrupt the coordination of the ground fault protection on Distribution Provider's Distribution System (IEEE 1547-2018 4.10~~4.1.2~~) (See Section G.1.i, line configuration). (L) (L)/(P) (L)

f. Frequency

Distribution Provider controls system frequency, and the Generating Facility shall operate in synchronism with Distribution Provider's Distribution or Transmission System. Whenever Distribution Provider's Distribution or Transmission System frequency at the PCC varies from and remains outside normal (nominally 60 Hz) by the predetermined amounts set forth in Table H.2, the Generating Facility's Protective Functions shall cease to energize Distribution Provider's Distribution or Transmission System within the stated maximum trip time. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency (Cont'd.)

Table H.2
Frequency Trip Settings

Generating Facility Rating	Frequency Range (Assuming 60Hz Nominal)	Maximum Trip Time *[1]* (Assuming 60 Cycles per Second)
Less or equal to 30kW	Less than 59.3 Hz	10 Cycles
	Greater than 60.5 Hz	10 Cycles
Greater than 30 kW	Less than 57.0 Hz	10 Cycles
	Less than an adjustable value between 59.8 Hz and 57 Hz but greater than 57 Hz. *[2]*	Adjustable between 10 and 18,000 Cycles. *[2, 3]*
	Greater than 60.5 Hz.	10 Cycles

[1] – "Maximum Trip time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize Distribution Provider's Distribution or Transmission System. Protective Function sensing equipment and circuits may remain connected to Distribution Provider's Distribution or Transmission System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to allow a Generating Facility to "ride through" short-term disturbances to avoid nuisance tripping. Set points shall not be user adjustable (though they may be field adjustable by qualified personnel). For Generating Facilities with a Gross Rating greater than 30 kVA, set points shall be field adjustable and different voltage set points and trip times from those in Table H.2 may be negotiated with Distribution Provider.

[2] – Unless otherwise required by Distribution Provider, a trip frequency of 59.3 Hz and a maximum trip time of 10 cycles shall be used.

[3] – When a 10 cycle Maximum trip time is used, a second under frequency trip setting is not required. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

g. Harmonics

When the Generating Facility is serving balanced linear loads, harmonic current injection into Distribution Provider's Distribution or Transmission System at the PCC shall not exceed the limits stated in IEEE 1547-2018 7.3~~Table H.3~~. The harmonic current injections shall be exclusive of any harmonic currents due to harmonic voltage distortion present in Distribution Provider's Distribution or Transmission System without the Generating Facility connected ~~(IEEE 1547-4.3.3.)~~. The harmonic distortion of a Generating Facility shall be evaluated using the same criteria as for the Host Loads. (L) (L)/(P) (L) (L) (L)/(P) (L)/(P) (L)

(P)

~~***Table H.3***~~

~~***Maximum harmonic current distortion in percent of current (I) [1,2]***~~

~~Individual harmonic order, h~~						~~Total demand distortion~~
~~(odd harmonics) [3]~~	~~h<11~~	~~11≤ h<17~~	~~17≤ h<23~~	~~23≤ h<35~~	~~35≤ h~~	
~~Max Distortion (%)~~	~~4.0~~	~~2.0~~	~~1.5~~	~~0.6~~	~~0.3~~	~~5.0~~

~~[1] – IEEE1547-4.3.3~~
~~[2] – I = the greater of the maximum Host Load current average demand over 15 or 30 minutes without the GF, or the GF rated current capacity (transformed to the PCC when a transformer exists between the GF and the PCC).~~
~~[3] – Even harmonics are limited to 25% of the odd harmonic limits above.~~

(P)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

h. Direct Current Injection

Generating Facilities should not inject direct current greater than 0.5% of rated output current into Distribution Provider's Distribution or Transmission System.

i. Power Factor

Producer shall provide adequate reactive power compensation on site to maintain the Generating Facility power factor near unity at rated output or a Distribution Provider specified power factor within a power factor range from 0.9 leading to 0.9 lagging, based on local system conditions. While not required, for generators that do not have inherent reactive power control capability Distribution Provider at its option may offer reactive power support in the form of power factor correction capacitors on its Distribution or Transmission System, under a Generator Interconnection Agreement or an Added Facilities or Special Facilities agreement, as described in Rule 2.H, as applicable. (L)

j. Generating Facility Rapid Voltage Changes (RVC) (P)

Generating step or ramp changes shall meet the requirements as specified in IEEE 1547-2018 7.2.2.

k. Limitations of overvoltage over one fundamental frequency period

Generating Facility shall not contribute to instantaneous or fundamental frequency overvoltage conditions per IEEE 1547-2018 7.4.1.

l. Limitation of cumulative instantaneous overvoltage

Generating Facility shall not cause the instantaneous voltage on any portion of the Distribution or Transmission system to exceed the magnitudes per IEEE 1547-2018 7.4.2. (P)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

3. TECHNOLOGY SPECIFIC REQUIREMENTS
   a. Technology Specific Requirements

      Three-Phase Synchronous Generators: For three phase Generators, the Generating Facility circuit breakers shall be three-phase devices with electronic or electromechanical control. Producer shall be responsible for properly synchronizing its Generating Facility with Distribution Provider's Distribution or Transmission System by means of either manual or automatic synchronous equipment. Automatic synchronizing is required for all synchronous Generators that have a Short Circuit Contribution Ratio (SCCR) exceeding 0.05. Loss of synchronism protection is not required except as may be necessary to meet Section H.2.d (Flicker) (IEEE1547-2018 7.3~~4.2.5~~). Unless otherwise agreed upon by Producer and Distribution Provider, synchronous Generators shall automatically regulate power factor, not voltage, while operating in parallel with Distribution Provider's Distribution System. A power system stabilization Function is specifically not required for Generating Facilities under 10 MW Net Rating. (L) (L)/(P) (L)

   b. Induction Generators

      Induction Generators (except self-excited Induction Generators) do not require a synchronizing Function. Starting or rapid load fluctuations on induction Generators can adversely impact Distribution Provider's Distribution or Transmission System voltage. Corrective step-switched capacitors or other techniques may be necessary and may cause undesirable ferro-resonance. When these counter measures (e.g. additional capacitors) are installed on Producer's side of the PCC, Distribution Provider must review these measures. Additional equipment may be required as determined in a Supplemental Review or an Interconnection Study. (L)

(Continued)

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

3. TECHNOLOGY SPECIFIC REQUIREMENTS (Cont'd.)

c. Inverters

Grid-interactive inverters do not require separate synchronizing equipment. Non-grid-interactive or "stand-alone" inverters shall not be used for Parallel Operation with Distribution Provider's Distribution or Transmission System.

d. Limitations on Inverters Not Classified as Smart Inverters

i) Inverter based systems may continue to be installed per Section H until September 8, 2017. Section Hh may be used in all or in part, for inverter based technologies by mutual agreement of the Distribution Provider and the Applicant.

ii) The replacement of an existing inverter to an inverter that is of equal or greater ability than the original is allowed per Section H. Section Hh may be used in all or in part, for replacement inverter-based technologies by mutual agreement of the Distribution Provider and the Applicant. (L)
If a developer replaces an existing inverter with an inverter of greater ability, the replacement inverter shall have all the required functionalities and be set according to current Commission practices as of the date the new smart inverter is installed, unless the interconnection applicant can demonstrate that safety or operational needs necessitate otherwise, per D.19-03-013 op 12. (L)/(T) (T) (T)

e. Non-Export AC/DC Converters (L)

A Non-Export AC/DC Converter must satisfy the definition in Section C.

4. SUPPLEMENTAL GENERATING FACILITY REQUIREMENTS

a. Fault Detection

A Generating Facility with an SCCR exceeding 0.1 or one that does not cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the formation of an Unintended Island shall be equipped with Protective Functions designed to detect Distribution or Transmission System faults, both line-to-line and line-to-ground, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the initiation of a fault. (L)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

4. SUPPLEMENTAL GENERATING FACILITY REQUIREMENTS (Cont'd.)

b. Transfer Trip

For a Generating Facility that cannot detect Distribution or Transmission System faults (both line-to-line and line-to-ground) or the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds, Distribution Provider may require a Transfer Trip system or an equivalent Protective Function.

c. Reclose Blocking

Where the aggregate Generating Facility capacity exceeds 15% of the peak load on any automatic reclosing device, Distribution Provider may require additional Protective Functions, including, but not limited to reclose-blocking on some of the automatic reclosing devices. (L)

~~Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS~~ (P)
~~Section H shall continue to be used for interconnection of inverter based technologies until September 8, 2017. Following such date, Section Hh shall apply for interconnection of inverter based technologies. Until such date, Section Hh may be used in all or in part, for inverter based technologies by mutual agreement of the Distribution Provider and the Applicant.~~

~~1 "The Standard for Inverters, Converters, and Controllers for Use in Independent Power Systems".~~ (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L) (L)

The inverter requirements are intended to be consistent with UL 1741 - and IEEE 1547-2018. ~~Supplement SA using Section Hh of Rule 21 as the source requirement document and ANSI/IEEE 1547-2003 and 1547a Standard for Interconnecting Distributed Resources with Electric Power Systems (IEEE 1547 including amendment 1547a), where possible.~~ In the event of conflict ~~between this Rule, and UL 1741 - Supplement SA, and/or IEEE 1547-2003 or IEEE 1547a,~~ this Rule shall take precedence. ~~Exceptions are taken to IEEE 1547 Clauses 4.1.4.2 Distribution Secondary Spot Networks and Clauses 4.1.8.1 or 5.1.3.1, which address Protection from Electromagnetic Interference. Rule 21 does not adopt the Generating Facility power limitation of 10 MW incorporated in IEEE 1547.~~ (P)

Process for changing default settings for new Interconnection Requests: (P)

Distribution Provider, in the study process for new Generating Facilities, may determine and provide the optimum Smart Inverter Settings for the reactive power settings, including changes to the reactive power default settings (Example: Deactivate Volt/Var and activate Fixed Power Factor at given power factor).

Distribution Provider, in the study process for new Generating Facilities, may determine and provide the optimum Smart Inverter Settings for the Ramp Rate settings depending on the Generating Facility technology (such as solar, storage).

Distribution Provider, in the study process for new Generating Facilities, may determine the optimum Smart Inverter Settings for the volt//watt settings including changes to the default settings (Example: Change the volt/watt set points). The Applicant may select to agree on the new settings or select to perform upgrades to operate using the existing default volt/watt settings.

Default settings for voltage ride-through, frequency ride-through requirements, and Frequency/Watt should not be modified on an individual project basis unless the Interconnection Studies have determined that the default settings may not meet grid reliability requirements. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)
(L)

Process for changing default settings for existing, operating Generating Facilities authorized to operate per Section D.1: (P)

When grid changes or Generating Facility changes require that the Smart Inverter operating settings be reevaluated, the Distribution Provider or Producer may request changes to the Generating Facility Smart Inverter operating parameters. The request must include the reason for and timing of the proposed changes. The requested changes must be within the Smart Inverter function adjustability limits, must be within the limits specified in this tariff, and must be mutually agreed on. This may be considered a material modification. (P)

The Smart Inverter default settings and default activation states may be modified upon mutual agreement between Applicant and Distribution Provider. (P)
(P)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (L)

The Protective Functions and requirements of this Rule are designed to protect Distribution Provider's Distribution and Transmission System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. Producer's Protective Functions shall not impact the operation of other Protective Functions on Distribution Provider's Distribution and Transmission System in a manner that would affect Distribution Provider's capability of providing reliable service to its customers.

a. Protective Functions Required

Smart Inverters operating in parallel with Distribution Provider's Distribution or Transmission System shall be equipped with the following Protective Functions to sense abnormal conditions on Distribution Provider's Distribution or Transmission System and cause the Smart Inverter to be automatically disconnected from Distribution Provider's Distribution or Transmission System or to prevent the Smart Inverter from being connected to Distribution Provider's Distribution or Transmission System inappropriately:

(i) Over and under voltage trip functions and over and under frequency trip functions; (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

a. Protective Functions Required (Cont'd.)

(ii) A voltage and frequency sensing and time-delay function to prevent the Smart Inverter from energizing a de-energized Distribution or Transmission System circuit and to prevent the Smart Inverter from reconnecting with Distribution Provider's Distribution or Transmission System unless Distribution Provider's Distribution System service voltage and frequency is within the ANSI C84.1-1995 Table 1 Range B voltage Range of 106 volts to 127 volts (on a 120 volt basis), inclusive, and a frequency range of 59.0 ~~58.5~~ Hz to 60.5 Hz, inclusive, and are stable for at least 15 seconds; and (L) (L) (P) (L)

(iii) A function to prevent the Smart Inverter from contributing to the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution System within two seconds of the formation of an Unintended Island. (L)

The Smart Inverter shall cease to energize Distribution Provider's Distribution System for faults on Distribution Provider's Distribution System circuit to which it is connected (IEEE 1547-2018 6.2.1). The Smart Inverter shall cease to energize Distribution Provider's Distribution circuit prior to re-closure by Distribution Provider's Distribution System equipment (IEEE 1547-2018 6.3). (P)

(iv) Open Phase Condition: Generating Facility shall detect and cease to energize and trip all phases within 2 seconds of any open phase condition in accordance with IEEE 1547-2018 6.2.2.

~~The Smart Inverter shall cease to energize Distribution Provider's Distribution System for faults on Distribution Provider's Distribution System circuit to which it is connected (IEEE 1547-4.2.1). The Smart Inverter shall cease to energize Distribution Provider's Distribution circuit prior to re-closure by Distribution Provider's Distribution System equipment (IEEE 1547-4.2.2).~~ (P)

b. Momentary Paralleling Generating Facilities (L)

With Distribution Provider's approval, the transfer switch or scheme used to transfer Producer's loads from Distribution Provider's Distribution or Transmission System to Producer's Generating Facility may be used in lieu of the Protective Functions required for Parallel Operation. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

c. Suitable Equipment Required

Circuit breakers or other interrupting equipment located at the Point of Common Coupling (PCC) must be Certified or "Listed" (as defined in Article 100, the Definitions Section of the National Electrical Code) as suitable for their intended application. This includes being capable of interrupting the maximum available fault current expected at their location. Producer's Smart Inverter and Interconnection Facilities shall be designed so that the failure of any single device or component shall not potentially compromise the safety and reliability of Distribution Provider's Distribution and Transmission System. The Smart Inverter paralleling-device shall be capable of withstanding 220% of the Interconnection Facility rated voltage (IEEE 1547-2018 4.11.3~~4.1.8.3~~). (L) (L)/(P) The Interconnection Facility shall have the capability to withstand voltage and current surges in accordance with the environments defined in IEEE Std C62.41.2-2002 or IEEE Std C37.90.1-2002 as applicable and as described in L.3.e (IEEE 1547-2018 4.11.2~~4.1.8.2~~). (P) (L) (L) (L)/(P)

d. Visible Disconnect Required (L)

When required by Distribution Provider's operating practices, Producer shall furnish and install a ganged, manually-operated isolating switch (or a comparable device mutually agreed upon by Distribution Provider and Producer) near the Point of Interconnection to isolate the Smart Inverter from Distribution Provider's Distribution or Transmission System. The device does not have to be rated for load break nor provide over-current protection.

The device must:

(i) allow visible verification that separation has been accomplished. (This requirement may be met by opening the enclosure to observe contact separation.) (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

d. Visible Disconnect Required (Cont'd.)

(ii) include markings or signage that clearly indicates open and closed positions.

(iii) be capable of being reached:

a) for Emergency purposes quickly and conveniently 24 hours a day by Distribution Provider personnel for construction, operation, maintenance, inspection, testing or to isolate the Smart Inverter from Distribution Provider's Distribution or Transmission System without obstacles or requiring those seeking access to obtain keys, special permission, or security clearances.

b) for Non-Emergency purposes during normal business hours. Distribution Provider, where possible, will provide notice to Customer for gaining access to Customer's premises.

(iv) be capable of being locked in the open position.

(v) be clearly marked on the submitted single line diagram and its type and location approved by Distribution Provider prior to installation. If the device is not adjacent to the PCC, permanent signage must be installed at a Distribution Provider approved location providing a clear description of the location of the device. If the switch is not accessible outside the locked premises, signage with contact information and a Distribution Provider approved locking device for the premises shall be installed.

Generating Facilities with Non-Islanding inverters totaling one (1) kilovolt-ampere (kVA) or less are exempt from this requirement. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

   e. Drawings Required

      Prior to Parallel Operation or Momentary Parallel Operation of the Smart Inverter, Distribution Provider shall approve Producer's Protective Function and control diagrams. Generating Facilities equipped with Protective Functions and a control scheme previously approved by Distribution Provider for system-wide application or only Certified Equipment may satisfy this requirement by reference to previously approved drawings and diagrams.

   f. Generating Facility Conditions Not Identified

      In the event this Rule does not address the Interconnection conditions for a particular Smart Inverter, Distribution Provider and Producer may agree upon other arrangements.

2. PREVENTION OF INTERFERENCE

   Producer shall not operate Smart Inverters that superimpose a voltage or current upon Distribution Provider's Distribution or Transmission System that interferes with Distribution Provider operations, service to Distribution Provider Customers, or communication facilities. If such interference occurs, Producer must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by Distribution Provider. If Producer does not take corrective action in a timely manner, or continues to operate the facilities causing interference without restriction or limit, Distribution Provider may, without liability, disconnect Producer's facilities from Distribution Provider's Distribution or Transmission System, in accordance with Section D.9 of this Rule. To eliminate undesirable interference caused by its operation, each Smart Inverter shall meet the following criteria: (L)

   Note: Except as otherwise stated, the RPA for all performance requirements shall be met at the PCC. (P)

   When Generating facility is less than 500KVA or when generating facility operates under one of the non-exporting options or inadvertent export of no longer than 30 seconds, the RPA may be the Generating Facility Connection Point (PoC). (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

a. Voltage Regulation

If approved by the Distribution Provider, the Smart Inverter may actively regulate the voltage at the PCC while in parallel with Distribution Provider's Distribution System. The Smart Inverter shall not cause the service voltage at other customers to go outside the requirements of ANSI C84.1-1995, Range A ~~(IEEE 1547-4.1.1)~~. (L) (L)/(P)

b. Voltage Trip and Ride-Through Settings (L)

The voltage ranges in Table Hh-.1a define protective trip limits for the Protective Function and are not intended to define or imply a voltage regulation Function. Generating Facilities shall cease to energize Distribution Provider's Distribution System within the prescribed trip time whenever the voltage at the PCC deviates from the allowable voltage operating range. The Protection Function shall detect and respond to voltage on all phases to which the Generating Facility is connected. (L)/(P) (L)

(i) Smart Inverters

Smart Inverters shall be capable of operating within the voltage range normally experienced on Distribution Provider's Distribution System from plus to minus 5% of the nominal voltage (e.g. 114 volts to 126 volts, on a 120 volt base), at the service panel or PCC. The trip settings at the generator terminals may be selected in a manner that minimizes nuisance tripping in accordance with Table Hh-.1 to compensate for voltage drop between the generator terminals and the PCC. Voltage may be detected at either the PCC or the Point of Interconnection. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip and Ride-Through Settings (Cont'd.)

(ii) Voltage Disturbances

Whenever Distribution Provider's Distribution System voltage at the RPA~~PCC~~ varies from and remains the continuous operating region~~outside near Nominal voltage~~ for the predetermined parameters set forth in Table Hh-.1b, the Smart Inverter's Protective Functions shall cause the Smart Inverter(s) to trip and become isolated from Distribution Provider's Distribution System as required in Table Hh-1a: (L) (P) (P)

1. The Smart Inverter shall stay connected to the Distribution Provider's Transmission or Distribution System while the grid remains within the "Voltage Range (p.u)" ~~Ride-Through Until" voltage-time range~~ and must stay connected in the corresponding "Operating Mode. (L) (L) (L)/(P) (L)/(P) (L)

~~2. For voltage excursions beyond the near Nominal (NN) magnitude range and within the range of the HV1 or LV3 regions, the Smart Inverter shall momentarily cease to energize within 0.16 seconds.~~ (P)

~~3. In the HV1 region, the Smart Inverter is permitted to reduce power output as a function of voltage under mutual agreement between the Producer and the Distribution Provider.~~ (P)

4~~2~~. If the distribution system voltage does not exit the ride-through region and recovers to normal system voltage, the Smart Inverter shall restore continuous operation within 2 seconds. (L) (L)

~~5. If the Distribution Provider's Transmission or Distribution System voltage does not exit the ride-through region and returns from the LV3 region to the LV2 or LV1 region, the Smart Inverter shall restore available current within 2 seconds.~~ (P)

3. If the Distribution Provider's Transmission or Distribution System voltage does not exit the ride-through region and returns from the V<0.5 pu region to the 0.5≤V< 0.7 or 0.7≤V<

(Continued)

0.88 pu region, the Smart Inverter shall restore available current within 2 seconds. I (P)

~~6~~4. Different voltage-time settings could be permitted by the Distribution Provider. (L) (L)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip and Ride-Through Settings (Cont'd.)

(ii) Voltage Disturbances (Cont'd.) (L)

Table Hh.1a: Voltage ~~Ride-Through~~Trip Table (P)

Shall Trip Function	Voltage Trip Default Settings (p.u. of nomnial voltage)	Voltage Rage of Shall Trip Function (p.u. of nomnial voltage)	Default Clearing Time (s)
OV1	1.20	V≥1.20	0.16
OV2	1.10	1.10 ≤ V < 1.20	13.0
Continuous Operation	NA	0.88 < V < 1.10	NA
UV1	0.88	0.50 < V ≤ 0.88	21.0
UV2	0.50	V ≤ 0.50	2.0

Table Hh-1b – Smart Inverter Voltage ride-through settings

Voltage Range (p.u.)	Operating Mode/Response	Minimum Ride-Through Time (s)	Maximum Response Time (s)
V > 1.20	Cease to Energise	NA	0.16
1.10 ≤ V < 1.20	Momentary Cessation	12	0.083
0.88 < V < 1.10	Continuous Operation	Infinite	NA
0.70 < V ≤ 0.88	Mandatory Operation	20	NA
0.50 < V ≤ 0.70	Mandatory Operation	10	NA
V < 0.50	Momentary Cessation	1	0.083

~~Region~~	~~Voltage at Point of Common Coupling (% Nominal Voltage)~~	~~Ride-Through Until~~	~~Operating Mode~~	~~Maximum Trip Time~~
~~High Voltage 2 (HV2)~~	~~V >120~~			~~0.16 seconds~~
~~High Voltage 1 (HV1)~~	~~110 < V < 120~~	~~12 seconds~~	~~Momentary Cessation~~	~~13 seconds~~

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

~~Near Nominal (NN)~~	~~88 ≤ V ≤ 110~~	~~Indefinite~~	~~Continuous Operation~~	~~Not Applicable~~
~~Low Voltage 1 (LV1)~~	~~70 ≤ V < 88~~	~~20 seconds~~	~~Mandatory Operation~~	~~21 seconds~~
~~Low Voltage 2 (LV2)~~	~~50 ≤ V < 70~~	~~10 seconds~~	~~Mandatory Operation~~	~~11 seconds~~
~~Low Voltage 3 (LV3)~~	~~V < 50~~	~~1 seconds~~	~~Momentary Cessation~~	~~1.5 seconds~~

(P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

c. Paralleling

The Generating Facility shall parallel with Distribution Provider's Distribution or Transmission System without causing a voltage fluctuation at the PCC greater than plus/minus 5% of the prevailing voltage level of Distribution Provider's Distribution or Transmission System at the PCC, and meet the flicker requirements of Section H.2.d. Section L, Certification and Testing Criteria, provides technology-specific tests for evaluating the paralleling Function. (IEEE 1547-2018 4.10~~4.1.3~~) (L) (L)/(P)

d. Flicker (L)

The Generating Facility shall not create objectionable flicker for other customers on Distribution Provider's Distribution or Transmission System. To minimize the adverse voltage effects experienced by other customers ~~(IEEE 1547-4.3.2)~~, flicker at the PCC caused by the Generating Facility should not exceed the limits of IEEE 1547-2018 7.2.3.~~defined by the "Maximum Borderline of Irritation Curve" identified in IEEE 519-1992 (IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, IEEE STD 519-1992).~~ This requirement is necessary to minimize the adverse voltage affects experienced by other Customers on Distribution Provider's Distribution or Transmission System. Generators may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded. (L) (L)/(P) (L)/(P) (L)

e. Integration with Distribution Provider's Distribution System Grounding

The grounding scheme of the Generating Facility shall not cause over-voltages that exceed the rating of the equipment connected to Distribution Provider's Distribution System and shall not disrupt the coordination of the ground fault protection on Distribution Provider's Distribution System (IEEE 1547-2018 4.12~~4.1.2~~) (See Section G.1.i, line configuration). (L) (L)/(P) (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency

Distribution Provider controls system frequency, and the Generating Facility shall operate in synchronism with Distribution Provider's Distribution or Transmission System. Whenever Distribution Provider's Distribution or Transmission System frequency at the PCC varies from and remains outside normal (nominally 60 Hz) by the predetermined amounts set forth in Table H.2a, the Generating Facility's Protective Functions shall cease to energize Distribution Provider's Distribution or Transmission System within the stated maximum trip time. (L) (L)/(P) (L)

(i) Frequency Ride-Through Requirements

Smart Inverter based systems shall remain connected to the Distribution Provider's Distribution or Transmission System while the grid is within the frequency-time range indicated in Table Hh-.2, and shall disconnect from the electric grid during a high or low frequency event that is outside that frequency-time range. (L)

The frequency values are shown in Table Hh.2b. These values provide default interconnection system response to abnormal frequencies. The inverter shall disconnect by the default clearing times. In the high frequency range between 60.2 Hz and 61.5 Hz, or some other mutually agreed range, the Smart Inverter is permitted to reduce real power output until it ceases to export power by 61.5 Hz, or other frequency value mutually agreed between the generating facility operator and the Distribution Provider. Islands and microgrids may need different default frequency settings. (L)/(P) (L) (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency (Cont'd.)

(i) Frequency Ride-Through Requirements(Cont'd.) (L)

Table Hh.2a: Frequency ~~Ride-Through and~~ Trip Settings Table (L)/(P)

Shall Trip Function	Frequency Trip Default Setting (Hz)	Resulting Range of Shall Trip Function (Hz)	Default Clearing Time (s)
OF1	62.0	f≥62.0	0.16
OF2	61.2	61.2≤f<62	300
Continuous Operation	NA	58.5<f<61.2	NA
UF1	58.5	56.5<f≤58.5	300
UF2	56.5	f≤56.5	0.16

(P)

Table Hh.2b: Frequency Ride-Through Settings Table

Frequency (Hz)	Operating Mode	Default Clearing Time
f>62.0	No Ride-Through requirements apply to this range	NA
61.2<f≤61.8	Mandatory Operation	299
58.8≤f≤61.2	Continuous Operation	Infinite
57.0≤f<58.8	Mandatory Operation	299
F<57.0	No Ride-Through requirements apply to this range	NA

~~System Frequency Default Settings (Hz)~~	~~Minimum Range of Adjustability (Hz)~~	~~Ride-Through Until~~	~~Ride-Through Operational Mode~~	~~MaximumTrip Time~~
~~f > 62~~	~~62 - 64~~	~~No Ride Through~~	~~Not Applicable~~	~~0.16 seconds~~
~~60.5 < f ≤ 62~~	~~60.1 - 62~~	~~299 seconds~~	~~Mandatory Operation~~	~~300 seconds~~
~~58.5 ≤ f ≤ 60.5~~	~~Not Applicable~~	~~Indefinite~~	~~Continuous Operation~~	~~Not Applicable~~
~~57.0 ≤ f < 58.5~~	~~57 - 59.9~~	~~299 seconds~~	~~Mandatory Operation~~	~~300 seconds~~

(Continued)

~~f < 57.0~~	~~53 - 57~~	~~No Ride Through~~	~~Not Applicable~~	~~0.16 seconds~~

ii) Rate of change of frequency (ROCOF) ride-through

Smart Inverter shall not trip for frequency excursion have a rate of change of frequency (ROCOF) magnitude that is less than or equal to 3.0Hz per second as specified in IEEE 1547-2018 6.5.2.5 category III. For ROCOF greater than 3Hz per second, it is preferred for Smart Inverter to ride-through as long as frequency remains in the continuous operating region, low frequency ride-though region (and corresponding duration times), or high frequency region (and corresponding duration times).

iii) Voltage phase angle change ride-through

Voltage phase angle change ride-through as specified in IEEE 1547-2018 6.5.2.6. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

g. Harmonics

When the Smart Inverter is serving balanced linear loads, harmonic current injection into Distribution Provider's Distribution or Transmission System at the PCC shall not exceed the limits stated in IEEE 1547-2018 7.3~~Table Hh-.43~~. The harmonic current injections shall be exclusive of any harmonic currents due to harmonic voltage distortion present in Distribution Provider's Distribution or Transmission System without the Smart Inverter connected ~~(IEEE 1547-4.3.3.)~~. The harmonic distortion of a Smart Inverter shall be evaluated using the same criteria as for the Host Loads.~~g. Harmonics (Cont'd.)~~ (L) (L)/(P) (L) (L) (L)/(P) (L)/(P)

~~***Table Hh.3***~~

~~***Maximum harmonic current distortion in percent of current (I) [1,2]***~~

~~Individual harmonic order, h (odd harmonics) [3]~~	~~h<11~~	~~11≤ h<17~~	~~17≤ h<23~~	~~23≤ h<35~~	~~35≤ h~~	~~Total demand distortion~~
~~Max Distortion (%)~~	~~4.0~~	~~2.0~~	~~1.5~~	~~0.6~~	~~0.3~~	~~5.0~~

~~[1] – IEEE1547-4.3.3~~
~~[2] – I = the greater of the maximum Host Load current average demand over 15 or 30 minutes without the GF, or the GF rated current capacity (transformed to the PCC when a transformer exists between the GF and the PCC).~~
~~[3] – Even harmonics are limited to 25% of the odd harmonic limits above.~~ (P)

h. Direct Current Injection (L)

Smart Inverter should not inject direct current greater than 0.5% of rated output current into Distribution Provider's Distribution or Transmission System. (L)

i. Smart Inverter Reactive Power Requirements (P)

Smart Inverter Reactive Power capabilities shall comply with IEEE 1547-2018 5.2 Category B requirement.~~i. Fixed Power Factor~~

~~Producer shall provide adequate reactive power compensation on site to maintain the Smart Inverter power factor near unity at rated output or a Distribution Provider specified power factor in accordance with the following requirements:~~

(Continued)

ELECTRIC RULE NO. 21 Sheet ~~193~~205
GENERATING FACILITY INTERCONNECTIONS

~~(i) Default Power Factor setting: Absorbing reactive power at 0.95 lagging power factor.~~ I I I

~~(ii) Aggregate generating facility is greater than 15 kW: 1.0 +/- 0.15 (0.85 Lagging to 0.85 Leading) down to 20% rated power irrespective of Real Power Production.~~ I I (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

~~i. Fixed Power Factor (Cont'd.)~~ (P)

~~(iii) Aggregate generating facility is less than or equal to 15 kW: 1.0 +/- 0.10 (0.90 Lagging to 0.90 Leading) down to 20% rated power irrespective of Real Power Production.~~ (P)

j. Dynamic Volt/VAR Operations (L)

~~The Smart Inverter shall be capable of operating dynamically within a power factor range of +/- 0.85 PF for larger (>15 kW) systems, down to 20% of rated active power, and +/- 0.9 PF for smaller systems (≤15 kW), down to 20% of rated active power, irrespective of Real Power Production. This dynamic Volt/VAR capability shall be able to be activated or deactivated in accordance with Distribution Provider requirements.~~ (P)

The Distribution Provider may permit or require the Smart Inverter systems to operate in larger power factor ranges, including in 4-quadrant operations for storage systems with the implementation of additional anti-islanding protection as determined by the Distribution Provider. (L)

The Smart Inverter shall be capable of supporting ~~providing~~ dynamic reactive power compensation (dynamic Volt/VAR operation) within the following constraints: (L)/(P) (L)

- The Smart Inverter shall be able to consume reactive power in response to an increase in line voltage, and produce reactive power in response to a decrease in line voltage as indicated in table Hh-4. (L) (L)/(P) (P)

- ~~The reactive power provided shall be per the range irrespective of real power production, but the maximum reactive power provided to the system shall be as directed by the Distribution Provide~~ (P)

- ~~Reduction of real power production is allowed to meet the required reactive power ranges.~~ (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

j. Dynamic Volt/VAR Operations (Cont'd.)

Dynamic Volt/Var Operations Default Settings

Table Hh-4 and Figure Hh-1 depict the default settings, which should be applied for all inverter sizes. Specific volt/var settings may be required for larger Generating Facilities (such as 100 kw or greater), or for specific areas with the Distribution Systems as determined by the Distribution Provider.

Default Open Loop Response Time for volt/var operation should be five (5) seconds.

Table Hh-4: Voltage and Reactive Default Settings (L)

(P)

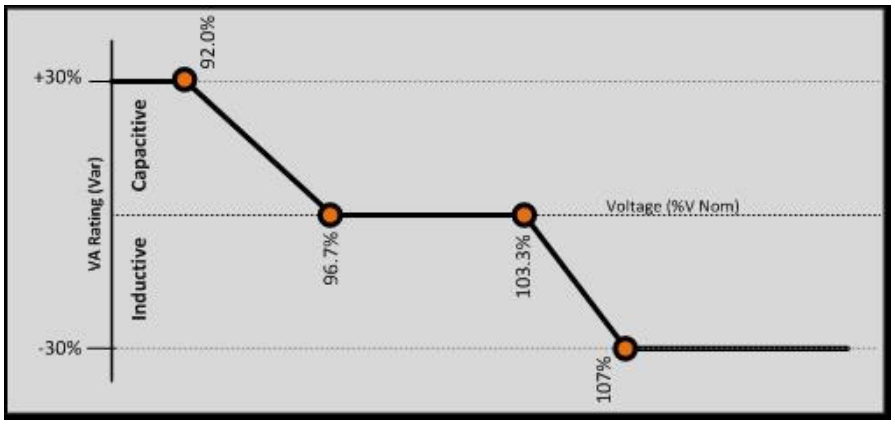
Voltage Setpoint	Voltage Value	Reactive Setpoint	Reactive Value	Operation
V1	92.0%	Q1	30%	Reactive Power injection
V2	97.0%	Q2	0	Unity Power Factor
V3	103.0%	Q3	0	Unity Power Factor
V4	107.0%	Q4	30%	Reactive Power Absorption

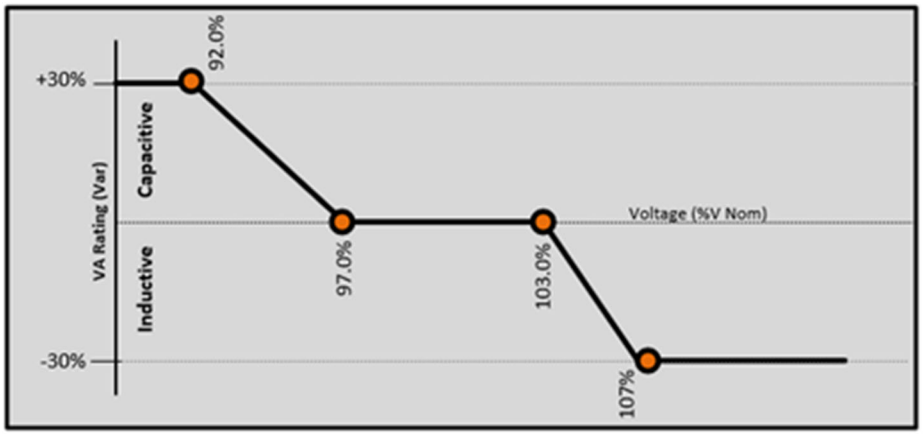
Voltage Setpoint	Voltage Value	Reactive Setpoint	Reactive Value	Operation
V1	92.0%	Q1	30%	Reactive Power Injection
V2	96.7%	Q2	0	Unity Power Factor
V3	103.3%	Q3	0	Unity Power Factor
V4	107.0%	Q4	30%	Reactive Power Absorption

Figure Hh-1: Voltage and Reactive Default Settings

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS





(P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

k. Enter Service Ramp Rate Requirements (P)

The Smart Inverter is required to have the following ramp controls: ~~for at least the following four conditions. These functions can be established by multiple control functions or by one general ramp rate control function. Ramp rates are contingent upon sufficient energy available from the Smart Inverter.~~

- Enter Service requirements as outlined in IEEE 1547-2018 section 4.10.3 with following default settings

  1. Delay Enter Service per Hh.1.a.ii (15 seconds)

  2. Default Enter Service Duration of 300 seconds

- ~~Normal ramp-up rate: For transitions between energy output levels over the normal course of operation. The default value is 100% of maximum current output per second with a range of adjustment between 1% to 100%, with specific settings as mutually agreed by the Distributor Provider and the Producer.~~

- ~~Connect/Reconnect Ramp-up rate: Upon starting to inject power into the grid, following a period of inactivity or a disconnection, the inverter shall be able to control its rate of increase of power from 1 to 100% maximum current per second. The default value is 2% of maximum current output per second, with specific settings as mutually agreed upon by the Distribution Provider and the Producer.~~

l. Frequency Droop (Frequency – Power, Frequency-Watt Requirements

~~This requirement will become mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted on or after February 22, 2019, nine (9) months following the approval of the SunSpec Alliance Communication Protocol Certification Test Standard.~~

~~The utilization of this function is permissible under mutual agreement between the utility and the generating facility before the effective date.~~

Smart Inverters shall change ~~reduce~~ their real power production as a function of system frequency, in accordance with with IEEE 1547-

(Continued)

2018 6.5.2.7 with the following defaults, Deadband 36 mHz kOF and kUF 3.33%.~~the following:~~ (P)

- ~~When system frequency exceeds 60.036 Hz, the active power output produced by the Smart Inverter shall be reduced by 50% of real power nameplate rating per hertz (5% of real power nameplate rating reduction per 0.1 hertz)~~

(Continued)

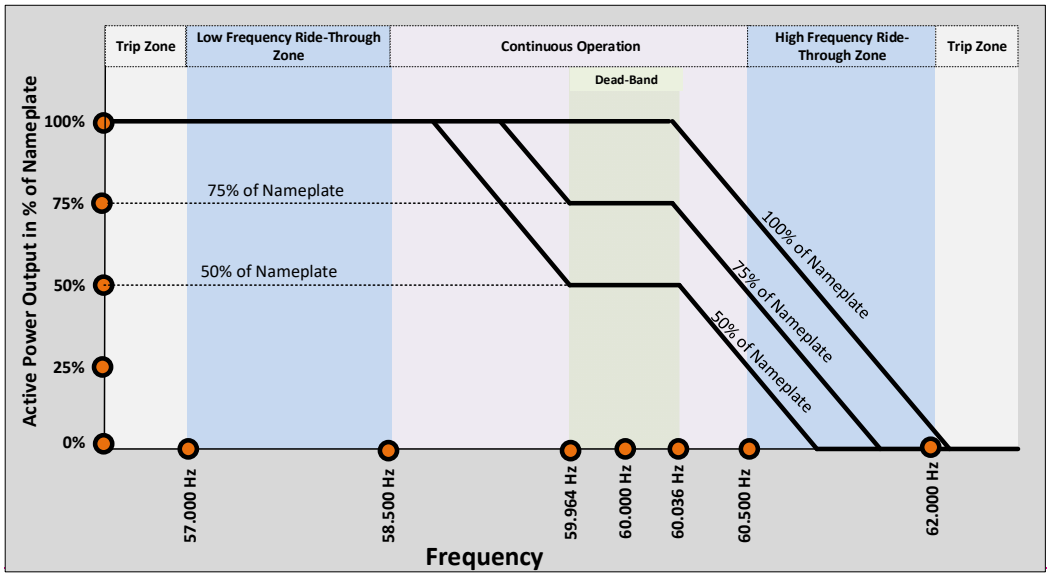
Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

~~I. Frequency-Watt Requirements (Cont'd.)~~ (P)

- ~~When system frequency moves under 59.964 Hz, the active power output produced by the Smart Inverter shall be increased by 50% of real power nameplate rating per hertz (5% of real power nameplate rating increase per 0.1 hertz) when inverter is capable of increasing real power production.~~
- ~~The default dead-band should be +/- 0.036 Hz from 60 Hertz (59.964 Hz to 60.036 Hz). When the system frequency is in range of 59.964 Hz and 60.036 Hz, the Smart Inverter is not required to decrease power as a function of system frequency.~~
- ~~Open loop response time for Frequency – Watt shall be 5 seconds.~~
- ~~Figure Hh-2 illustrated this requirement for three levels of output power. Figure Hh-2 is for illustration purposes only.~~

~~Figure Hh-2: Active Power as a Function of System Frequency~~



~~Note: the frequency markers on the horizontal axis are not drawn to scale~~. (P)

m. Voltage-Watt Default Settings Requirements (L)

(Continued)

~~This requirement will become mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted on or after February 22, 2019, nine (9) months following the approval of the SunSpec Alliance Communication Protocol Certification Test Standard.~~ (P)

~~The utilization of this function is permissible under mutual agreement between the utility and the generating facility before the effective date.~~ (P)

Smart Inverters shall reduce their real power production as a function of measured voltage at the inverter terminals or at the Generating Facility Point of Common Coupling (PCC) in accordance with the following: (L)

- When the measured voltage is greater than 106% of nominal voltage (for example: 127.2 volts on a 120 volts nominal), the export of active power at the PCC or the production of active power by the Smart Inverter shall be reduced at a rate of 25% of active power nameplate rating per one percent of nominal voltage. Figure Hh-3 – Volt-Watt Requirements – illustrates the required rate of reduction. When export of active power is controlled, a certified inverter and control system shall be used. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

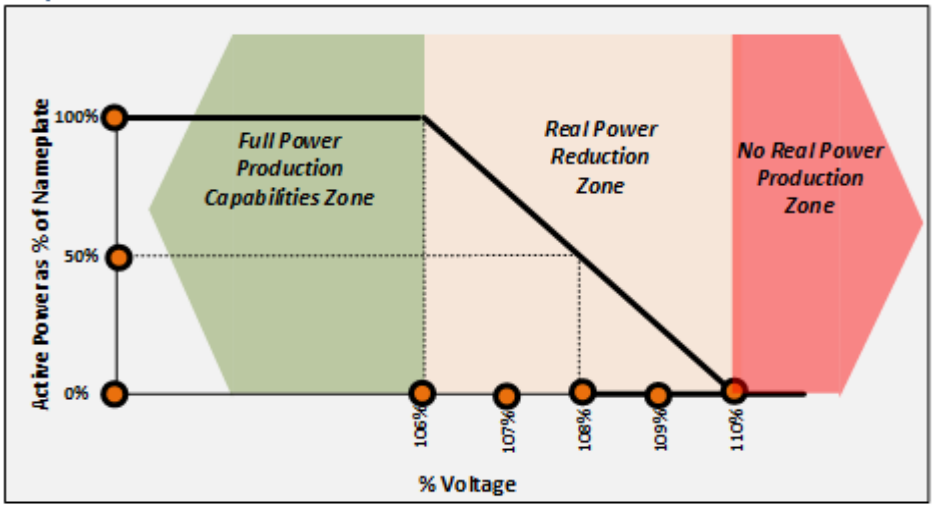
m. (Cont'd.)

- When the measured voltage is greater than 110% of nominal voltage (Example: 132 volts on a 120 volts nominal), the export of active power output to the grid at the PCC or the production of active power by the Smart Inverter shall be reduced to 0 watts (L)

- Open Loop response time shall be 5 seconds, (P)

(L)

Figure HH-3 – Volt-Watt Requirements



Percent (%) of nominal voltage (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

n. Dynamic Reactive Power Support Function

The capability for this requirement will become mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted twelve (12) months after approval of a nationally recognized standard that includes the function.

The utilization of this function is allowed and optional upon the mutual agreement of the Distribution Provider and the Applicant, before the effective date.

o. Default Activation States

Unless otherwise provided by Distribution Provider, pursuant to Distribution Provider's Distribution Generation Interconnection Handbook, the default settings will be as follows: (L)

(P)

	Function	State
1	Anti-islanding	activated
2	Low/High Voltage Ride-Through	activated
3	Low/High Frequency Ride-Through	activated
4	Dynamic Volt/VAR operations	activated
5	Enter Service Ram Control	activate
6	Storage Inverter Normal Operation Ramp Control	activate
7	Fixed power factor	deactivated
8	Reconnect by "soft-start" methods	activated
9	Frequency-Watt*	activated
10	Volt/Watt*	activated
11	Constant Reactive Power Mode	deactivated
12	Set Active Power Function Mode (Optional)	activated under mutual agreement
13	Dynamic Reactive Power Support Mode (Optional)	activated under mutual agreement

	~~Function~~	~~State~~

(Continued)

~~1~~	~~Anti-islanding~~	~~activated~~
~~2~~	~~Low/High Voltage Ride-Through~~	~~activated~~
~~3~~	~~Low/High Frequency Ride-Through~~	~~activated~~
~~4~~	~~Dynamic Volt/VAR operations~~	~~activated~~
~~5~~	~~Ramp rates~~	~~activated~~
~~6~~	~~Fixed power factor~~	~~deactivated~~
~~7~~	~~Reconnect by "soft-start" methods~~	~~activated~~
~~8~~	~~Frequency-Watt*~~	~~activated~~
~~9~~	~~Volt/Watt*~~	~~activated~~
~~10~~	~~Set Active Power Function Mode (Optional)~~	~~activated under mutual agreement~~
~~11~~	~~Dynamic Reactive Power Support Mode (Optional)~~	~~activated under mutual agreement~~

These default activation states may be modified by mutual agreement between Distribution Provider and Producer. (P)

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* These functions must be activated for Interconnection Requests submitted on or after February 22, 2019. (P) (P)

(Continued)

~~Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.)~~ (P)

~~2. PREVENTION OF INTERFERENCE (Cont'd.)~~

~~p. Phase 3 Functions~~

~~Table of Phase 3 Effective Dates Pursuant to Resolution E-4898 and Resolution E-5000 and CPUC Letter of March 20, 2020 responding to a request to extend the date for Functions 1, 2, 3 and 8:~~

~~Phase 3 Function #~~		
	~~Description~~	**~~Effective Date (note)~~**
~~1~~	~~Monitor Key DER Data~~	~~**June 22, 2020**~~
~~2~~	~~DER Disconnect and Reconnect Command (Cease to Energize and Return to Service)~~	~~**June 22, 2020**~~
~~3~~	~~Limit Maximum Active Power Mode~~	~~**June 22, 2020**~~
~~4~~	~~Set Active Power Mode~~	~~12 months after approval of a nationally recognized standard that includes the function.~~
~~5~~	~~Frequency Watt Mode~~	~~**February 22, 2019**, which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.~~
~~6~~	~~Volt Watt Mode~~	~~**February 22, 2019**, which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.~~
~~7~~	~~Dynamic Reactive Support~~	~~12 months after approval of a nationally recognized standard that includes the function.~~
~~8~~	~~Scheduling Power Values and Modes~~	~~**June 22, 2020**~~

~~Note: The utilization of any of these functions is permissible under mutual agreement between the utility and the generating facility before the effective date.~~ (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.) (L)

~~q~~p. Load Shedding or Transfer (L)/(P)

The voltage and frequency ride-through requirements of Hh.2.b.(ii) and Hh.2.f.(i) shall not apply if either: a) The real power across the Point of Common Coupling is continuously maintained at a value less than 10% of the aggregate rating of the Smart Inverters connected to the Generation Facility prior to any voltage disturbance, and the Generation Facility disconnects from the Distribution Provider's T&D system, along with Generation Facility load, such that the net change in real power flow from or to the Distribution Provider is less than 10% of the aggregate Smart Inverter capacity; or b) Generation Facility load real power demand equal to 90% to 120% of the pre-disturbance aggregate Smart Inverter real power output is shed within 0.1 seconds of Smart Inverter disconnection. (L)

q. Measurement and Calculation Accuracy (P)

Smart Inverter shall meet minimum steady-state and transient measurement and calculation accuracy as required in IEEE1547-2018 4.4.

r. Prioritization of Smart Inverter Responses

1. The response to disable permit to service as specified in section Hh.8.a shall take precedence over any other tripping requirements

2. Prioritization of tripping requirements not related to disabling permit to service shall meet IEEE 1547-2018 4.7.

s. Storage Inverter Normal Operation Ramp Control Requirements

Smart Inverters used for energy storage applications shall include ramp-up rate control. The default value shall be 100% of maximum current output per second or slower if required by applicant. Other ramp-up control settings can be used, when required, as mutually agreed by the Distribution Provider and the Producer. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

2. PREVENTION OF INTERFERENCE (Cont'd.)

t. Ride-through of consecutive voltage disturbances

Ride through of Consecutive Voltage Disturbances shall be in accordance with IEEE 1547-2018 6.4.2.5.

u. Restore output without dynamic voltage support

Restore output without dynamic voltage shall be accordance with IEEE 1547-2018 6.4.2.7.1.

v. Transition between performance operating region

Transition between performance operating regions should be in accordance with IEEE 1547-2018 6.4.2.7.3.

w. Constant Reactive Power Mode

When in this mode, the Smart Inverter shall maintain a constant reactive power. The target reactive power level and mode (injection or absorption) shall be specified by the Distribution Provider and shall be within the same range specified in IEEE 1547-2018 5.2. The reactive power settings are allowed to be adjusted locally and/or remotely as specified by the Distribution Provider. The maximum Smart Inverter response time to maintain constant reactive power shall be 10 seconds or less.

x. Generating Facility Rapid Voltage Changes (RVC)

Generating step or ramp changes shall meet the requirements as specified in IEEE 1547-2018 7.2.2.

y. Limitations of overvoltage over one fundamental frequency period

Generating Facility shall not contribute to instantaneous or fundamental frequency overvoltage conditions per IEEE 1547-2018 7.4.1. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

2. PREVENTION OF INTERFERENCE (Cont'd.)

z. Limitation of cumulative instantaneous overvoltage

Generating Facility shall not cause the instantaneous voltage on any portion of the Distribution or Transmission system to exceed the magnitudes per IEEE 1547-2018 7.4.2

zz. Phase 3 Functions

Table of Phase 3 Effective Dates Pursuant to Resolution E-4898 and Resolution E-5000 and CPUC Letter of March 20, 2020 responding to a request to extend the date for Functions 1, 2, 3 and 8:

Phase 3 Function #		
	Description	**Effective Date (note)**
1	Monitor Key Smart Inverter Data	**June 22, 2020**
2	Smart Inverter Disconnect and Reconnect Command (Cease to Energize and Return to Service)	**June 22, 2020**
3	Limit Maximum Active Power Mode	**June 22, 2020**
4	Set Active Power Mode	12 months after approval of a nationally recognized standard that includes the function.
5	Frequency Watt Mode	**February 22, 2019**, which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.
6	Volt Watt Mode	**February 22, 2019**, which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.
7	Dynamic Reactive Support	12 months after approval of a nationally recognized standard that includes the function.
8	Scheduling Power Values and Modes	**June 22, 2020**

Note: The utilization of any of these functions is permissible under mutual agreement between the utility and the generating facility before the effective date. (P)

(Continued)

ELECTRIC RULE NO. 21 Sheet 21503
GENERATING FACILITY INTERCONNECTIONS

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

3. TECHNOLOGY SPECIFIC REQUIREMENTS

Grid-interactive inverters do not require separate synchronizing equipment. Non grid-interactive or "stand-alone" inverters shall not be used for Parallel Operation with Distribution Provider's Distribution or Transmission System.

4. SUPPLEMENTAL SMART INVERTER REQUIREMENTS

a. Fault Detection

A Smart Inverter with an SCCR exceeding 0.1 or one that does not cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the formation of an Unintended Island shall be equipped with Protective Functions designed to detect Distribution or Transmission System faults, both line-to-line and line-to-ground, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the initiation of a fault.

b. Transfer Trip

For a Generating Facility that cannot detect Distribution or Transmission System faults (both line-to-line and line-to-ground) or the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds, Distribution Provider may require a Transfer Trip system or an equivalent Protective Function.

c. Reclose Blocking

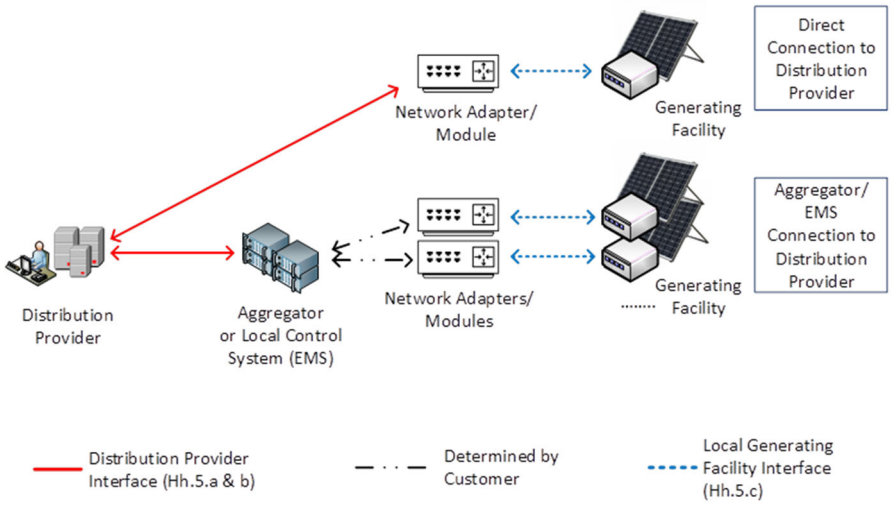
Where the aggregate Generating Facility capacity exceeds 15% of the peak load on any automatic reclosing device, Distribution Provider may require additional Protective Functions, including, but not limited to reclose-blocking on some of the automatic reclosing devices. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

5. COMMUNICATION REQUIREMENTS (L)

Generating Facilities utilizing inverter-based technologies must adhere to the following communication protocol requirements for communications between Distribution Provider and the Generating Facility. The diagram below shows the interface requirements as applicable for section Hh.5. The Distribution Provider Interface (solid red line) is described in Sections Hh.5.a and Hh.5.b. The Local Generating Facility Interface (dotted blue line) is described in Section Hh.5.c. The top row shows a direct connection between the Distribution Provider and the Generating Facility network adapter which may be separated from or integrated into the Smart Inverter. The lower row shows a connection between the Distribution Provider and an aggregator or local control system. (P)



The network adapter depicted in the diagram is a device that connects the Smart Inverter to the local area network (LAN) or the wide area network (WAN). If no upstream control system is managing the Generating Facility (e.g., an aggregator or energy management system) and the Generating

Facility is being managed directly by the Distribution Provider, the network adapter is required to be an IEEE 2030.5-2018 DER client as defined by CSIP, unless another protocol is agreed to be used with the Distribution Provider. The network adapter may also support other functions such as protocol translation or Generating Facility management. The network adapter may be integrated into the Smart Inverter or be a separate device. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

5. COMMUNICATION REQUIREMENTS

a. The communications requirements in this section pertain to (i) the Distribution Provider and the individual Generating Facility's inverter control or energy management system; (ii) the Distribution Provider and communication to the Generating Facility through an aggregator not co-located or part of the Generating Facility; or (iii) the Distribution Provider and the Smart Inverter:

(i) Software shall be updateable via communications remotely;

(ii) The transport level protocol shall be TCP/IP;

(iii) The default application-level protocol shall be IEEE 2030.5 (i.e., Smart Energy Profile 2.0) as defined in the latest final version of the Common Smart Inverter Profile (CSIP), the Interconnection Handbook, Cybersecurity Requirements or Programs and Contracts. Other application-level protocols may be used by mutual agreement of the parties including IEEE 1815/DNP3 for SCADA real-time monitoring and control and IEC 61850.

~~a. The communication protocol requirements included in this section Hh.5 shall become mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted June 22, 2020. Until such date, this subsection may be used in all or in part by inverter-based technologies by mutual agreement of the Distribution Provider and the Applicant. The communications requirements herein shall be between:~~

~~(i) (i) the Distribution Provider and the individual Generating Facility's inverter control or energy management system;~~

~~(ii) (ii) the Distribution Provider and communication to the Generating Facility through an aggregator not co-located or part of the Generating Facility; or~~

~~(iii) other communication options as are mutually agreed to are by Applicant and the Distribution Provider.~~

~~b. Generating Facilities utilizing inverter-based technologies must adhere to all of the following communication protocol requirements for communications between Distribution Provider and communication option selected in section Hh. 5. This Rule does not specify the communication between the selected communication option and~~

(Continued)

~~Smart Inverter but performance will be enforced by in compliance with this Rule:~~

~~(i) Shall be capable of communications;~~

~~(ii) Software shall be updateable via communications remotely;~~

~~(iii) The transport level protocol shall be TCP/IP; and,~~

~~(iv) The default application-level protocol shall be IEEE 2030.5 (i.e., Smart Energy Profile 2.0 (SEP 2)) as defined in the California IEEE 2030.5 Implementation Guide, but other application-level protocols may be used by mutual agreement of the parties including IEEE 1815/DNP3 for SCADA real-time monitoring and control and IEC 61850.~~

b. Additional communication protocol requirements shall also apply to Generating Facilities utilizing inverter-based technologies as provided in the following documents:

(i) Distribution Provider Generation Interconnection Handbook, which shall include:

(a) Details and guidelines for the implementation of communications with Generating Facilities utilizing inverter-based technologies;

(b) Requirements for which application-level protocols are supported and references to an application-level protocol implementation guide;

(c) Cybersecurity and privacy requirements (these may additionally or alternatively be included in the application-level protocol implementation guide); (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (P)

5. COMMUNICATION REQUIREMENTS (Cont'd.)

~~c. Additional communication protocol requirements shall also apply to Generating Facilities utilizing inverter-based technologies as provided in the following documents:~~

~~(i) Distribution Provider Generation Interconnection Handbook, which shall include:~~

~~a) Details and guidelines for the implementation of communications with Generating Facilities utilizing inverter-based technologies;~~

~~b) Cybersecurity and privacy requirements (these may additionally or alternatively be included in the application-level protocol implementation guide); and,~~

~~c) Generic device communications registration management requirements, including how to register individual Generating Facilities, Generating Facilities with energy management systems, and aggregators (these requirements additionally or alternatively may be included in the application-level protocol implementation guide).~~

~~(ii) Application-Level Protocol Implementation Guide, which shall provide:~~

~~a) Communication requirements and implementation guidelines to ensure consistent interoperability of the Generating Facilities with all California investor-owned utilities under the Commission's jurisdiction.~~

b. (Cont'd.)

(i) (Cont'd.)

(d) Generic device communications registration management requirements, including how to register individual Generating Facilities, Generating Facilities with energy management systems, and Aggregators (these additionally or alternatively may be included in the application-level protocol implementation guide); and,

(Continued)

(e) Conditions under which communication functions are mandatory.

(ii) Application-Level Protocol Implementation Guide, which shall provide:

(a) Detailed communication requirements and implementation guidelines to ensure consistent interoperability of the Generating Facilities with all California investor-owned utilities under the Commission's jurisdiction.

c. Communication and protocol performance requirements

i) Communication performance requirements

Communication performance requirements for the interface to the Generating facility shall comply with IEEE 1547-2018 10.8.

ii) Communication Protocol Requirements

The protocol requirements at the Generating Facility shall be per IEEE 1547-2018 10.7. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

6. SCHEDULING CAPABILITY REQUIREMENTS

a. Generating Facilities which incorporate Smart Inverters shall incorporate scheduling capabilities with a minimum scheduling memory capability of at least 24 events. ~~The capability for this requirement will be mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted on or after June 22, 2020.~~ (L) (L)/(P) (P) (P)

The utilization of this function is permissible under mutual agreement between the utility and the generating facility before the effective date. (L)

Each event is composed of modifications to each, selected group of, or all of the following Smart Inverter function.

(i) Modifications to the voltage and reactive set-points of the Dynamic volt/var function.

(ii) Modifications to the reactive power set-points for the fixed power factor function.

(iii) Modifications to the voltage and watt-reduction level set-points for the volt/watt function. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

6. SCHEDULING CAPABILITY REQUIREMENTS (Cont'd.)

b. The Generating Facility's scheduling capability requirement herein shall be met by one or more of the following options.

(i) Scheduling capability requirements may be stored at the Generating Facility Energy Management System (GFEMS). The GFEMS shall communicate the necessary commands to the Smart Inverters within 10 minutes from when GFEMS received the scheduling information:

(ii) Scheduling capability requirements may be stored at the Smart Inverter Control Unit (SMCU) within the Generating Facility. The SMCU shall communicate necessary commands to the Smart Inverters within 10 minutes from when SCMU received the scheduling information.

(iii) Scheduling capability requirements may be stored at an aggregator not co-located within the Generating Facility. The aggregator shall communicate the necessary commands to the Smart Inverters within 15 minutes of the aggregator receiving the scheduling information.

(iv) Other options may be utilized by mutual agreement between the Applicant and Distribution Provider.

c. The selected scheduling control system shall store the schedules and shall send operational commands to the Smart Inverters as required by the schedule received from the Distribution Provider. The Smart Inverter shall respond by changing its mode of operation as commanded at the schedule start time with no unreasonable delay.

Each scheduled mode of operation shall include and start-time and duration. The Smart Inverter should return to its default settings at the end of the duration time or shall enter a new operational mode as directed by the scheduling control system. (L)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

7. MONITORING AND TELEMETRY REQUIREMENTS (L)

a. ~~The capability for this requirement will be mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted on or after June 22, 2020.~~ (P)

~~The utilization of this function is permissible under mutual agreement between the utility and the generating facility before the effective date.~~ (P)

Smart Inverter shall have the capability to communicate its performance information per IEEE 1547-2018 10.5 Table 2~~including~~: (L) (L)/(P)

(i) Smart Inverter production or consumption of active power (Watts). (L)

(ii) Smart Inverter consumption or production of reactive power (VARs)

(iii) Phase measured at the AC terminals of the Smart Inverter (Volts)

(iv) Frequency measured at the AC terminals of the Smart Inverter (Hz) (L)

(v) Connection Status (P)

(vi) Alarm Status (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

7. MONITORING AND TELEMETRY REQUIREMENTS (Cont'd.)

b. When the Generating Facility includes energy-storage with Smart Inverters, the following monitoring and telemetry capability are required:

(i) The Smart Inverter shall be capable of communicating the operational state of charge as a percentage of energy storage capacity.

c. Operational State as In-Service or not In-service communication capability requirements. The Smart Inverter shall be capable of communicating when the Smart Inverter is capable of providing electric services as follows:

(i) In-Service state: An operational state which indicates that the Smart Inverter is connected to the electric system and operating as determined locally by the Generating Facility operator or by a scheduling control system as outlined in section Hh.6

(ii) Not In-Service state: An operating state which indicates that the Smart Inverter is not capable of connecting to the electric system and not capable of providing any type of electrical support as required locally or as commanded by a scheduling control system as outlined in section Hh. (L)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

7. MONITORING AND TELEMETRY REQUIREMENTS (Cont'd.)

d. Monitoring and performance information should be communicated in aggregate at the Generating Facility as follows:

(i) When the Generating Facility includes only Smart Inverters: The production or consumption of active and reactive power shall be communicated as an aggregate of all Smart Inverters within the Generating Facility.

(ii) When a Generating Facility includes Smart Inverters and other technologies such as synchronous or induction generation systems, the Generating Facility should communicate the following:

a) The production or consumption of active and reactive power shall be communicated in aggregate of all Smart Inverters within the Generating Facility

b) The production or consumption of active and reactive power shall be communicated in aggregate of all the other technologies within the Generating Facility

(iii) When the Generating Facility with Smart Inverters includes one or multiple energy storage systems: The available operational energy should be communicated as an aggregate of all the energy storage systems. (L)

(iv) Nameplate information shall be available through a local Generating Facility Interface as required in IEEE 1547-2018 10.3 and must include the information as required in IEEE 1547-2018 Table 28. (P)

(v) Configuration information shall be available through a Local Generating Facility Interface as required in IEEE 1547-2018 10.4. This information represents the present capacity and ability of the Generating Facility. When a configuration update changes the Generating Facility nameplate information, it may require a study depending on the change. (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

8. CONTROL THROUGH COMMUNICATION CAPABILITIES

a. The capability for these requirements will be mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted on or after the earlier of the dates shown in the "Table of Phase 3 Effective Dates Pursuant to Resolution E-4898" in Section Hh.2.~~p~~zz. (L) (L)/(P)

The utilization of these functions is permissible under mutual agreement between the utility and the generating facility before the effective date. (L)

Smart Inverters shall have the capabilities of accepting an operational controls through communications in accordance to the following: (L)

(i) Disable permit to service ~~Cease to energize~~ control command. When the Smart Inverter receives a disable permit service command through communication, the Smart Inverter must cease-to energize and trip within 2 seconds or initiate the opening of the switch referenced in the inverter terminal in order to galvanically isolate the Smart Inverter from the Distribution System. ~~When the Smart Inverter receives a cease-to-energize command through communication it must enter into a cease-to-energize state of operation or shall initiate the opening of the DER switch referenced in the ECP in order to galvanically isolate the DER system from the Distribution System~~ (P) (P)

(ii) Return to service control command. When the Smart Inverter receives a return-to-service control command, the Smart Inverter may return to service operation as required by Generating Facility operator or as required by the scheduling control system as required by section H.6. This shall be accomplished by enabling permit service as required in IEEE 1547-2018 4.10.3. (L) (L) (L)/(P) (P)

(iii) Limit Active Power command. When the Smart Inverter receives a command to limit its production of real power, the Smart Inverter shall reduce its real power production to the specified percent of real power capacity of the Smart Inverter or to a specified real power value. In no more than 30 s or in the time it takes for the primary energy source to reduce its active power output to achieve the requirements of the active power limit set point, whichever is greater. (L) (L) (L)/(P) (P) (P)

(Continued)

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

8. CONTROL THROUGH COMMUNICATION CAPABILITIES (Cont'd.) (L)/(P)

a. (Cont'd.)

(iii) Limit Active Power command (Cont'd.). (L)/(P)

Where the Smart Inverter operates under a non-export provision, the active power limit set point may be implemented as a maximum active power to serve the host customer load. (P)

Under mutual agreement, Smart Inverter may be required to reduce active power below the level needed to support host customer load. (P)

(iv) Set Active Power Level Mode Function. The capability for this requirement will become mandatory for Generating Facilities utilizing inverter-based technologies for which an Interconnection Request is submitted twelve (12) months after approval of a nationally recognized standard that includes the function. (L)

(v) Suspension of Active Power restriction. When the Smart Inverter receives a command to suspend the command for active power reduction, the Smart Inverter may return to normal operation as required by Generating Facility operator or as required by the scheduling control system as required by section H.6. (L)

(vi) Transition between operating modes. Transition between modes shall commence in no more than 30 s after the mode setting change is received at the local Generating Facility communication interface. Changes of control functional modes shall be executed such that the Smart Inverter output is transitioned smoothly over a time period between 5 s and 300 s. (P)

Ramping of the Smart Inverter output is not required for control parameter setting changes.

For all control and protective function parameter settings, the time following the input to the local Generating Facility communication interface and preceding the point in time when the invoked action begins shall be no greater than 30 s. (P)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

I. THIRD-PARTY INSTALLATIONS, RESERVATION OF UNUSED FACILITIES, AND REFUND OF SALVAGE VALUE (L)

1. INTERCONNECTION FACILITIES AND DISTRIBUTION UPGRADES

Except as provided for in the Generator Interconnection Agreement of this Rule, Interconnection Facilities connected to Distribution Provider's side of the PCC and Distribution Upgrades shall be provided, installed, owned, and maintained by Distribution Provider at Producer's expense.

2. THIRD-PARTY INSTALLATIONS (L)

~~Subject to the approval of Distribution Provider, a~~ Producer may, at its option, employ a qualified contractor that meets the Contractor Qualifications set forth under Electric Rule 15, Section G, to provide and install Interconnection Facilities or Distribution Upgrades, to be owned and operated by Distribution Provider, on Distribution Provider's side of the PCC. Such Interconnection Facilities and Distribution Upgrades shall be installed in accordance with Distribution Provider's design and specifications. Upon final inspection and acceptance by Distribution Provider, Producer shall transfer ownership of such Producer installed Interconnection Facilities or Distribution Upgrades to Distribution Provider and such facilities shall thereafter be owned and maintained by Distribution Provider at Producer's expense. Producer shall pay Distribution Provider's reasonable cost of design, administration, and monitoring of the installation for such facilities to ensure compliance with Distribution Provider's requirements. Producer shall also be responsible for all costs, including any income tax liability, associated with the transfer of Producer installed Interconnection Facilities and Distribution Upgrades to Distribution Provider. (L)/ (P) (L)/(P) (L)

* Only duly authorized employees of utility are allowed to connect to, disconnect from, or perform any work upon Utility's facilities. (P)

(P)

(Continued)

ELECTRIC RULE NO. 21 Sheet 22744
GENERATING FACILITY INTERCONNECTIONS

I. THIRD-PARTY INSTALLATIONS, RESERVATION OF UNUSED FACILITIES, AND REFUND OF SALVAGE VALUE (Cont'd.) (L)

3. RESERVATION OF UNUSED FACILITIES

When a Producer wishes to reserve Distribution Provider-owned Interconnection Facilities or Distribution Upgrades installed and operated as Added Facilities for Producer at Producer's expense, but idled by a change in the operation of Producer's Generating Facility or otherwise, Producer may elect to abandon or reserve such facilities consistent with the terms of its agreement with Distribution Provider. If Producer elects to reserve idle Interconnection Facilities or Distribution Upgrades, Distribution Provider shall be entitled to continue to charge Producer for the costs related to the ongoing operation and maintenance of the Added Facilities.

4. REFUND OF SALVAGE VALUE

When a Producer elects to abandon the Special Facilities or Added Facilities for which it has either advanced the installed costs or constructed and transferred to Distribution Provider, Producer shall, at a minimum, receive from Distribution Provider a credit for the net salvage value of the Added Facilities.

J. METERING, MONITORING AND TELEMETERING

1. GENERAL REQUIREMENTS

All Generating Facilities shall be metered in accordance with this Section J and shall meet all applicable standards of Distribution Provider contained in Distribution Provider's applicable tariffs and published Distribution Provider manuals dealing with Metering specifications.

2. METERING BY NON-DISTRIBUTION PROVIDER PARTIES

The ownership, installation, operation, reading, and testing of revenue Metering Equipment for Generating Facilities shall be by Distribution Provider except to the extent that the Commission authorizes any or all these services be performed by others. (L)

(Continued)

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

3. NET GENERATION OUTPUT METERING

Generating Facility customers may be required to install Net Generation Output Metering for evaluation, monitoring, and verification purposes and to determine applicable standby and non-bypassable charges as defined in Distribution Provider's tariffs, to satisfy applicable California Independent System Operator (CAISO) reliability requirements, and for Distribution System planning and operations.

However, Generating Facility customers do not need to install Net Generation Output Metering where less intrusive and/or more cost effective options, for Producer/Customer, are available for providing generator data to Distribution Provider. These Generating Facilities may opt to have Distribution Provider estimate load data in accordance with Distribution Provider's applicable tariffs to determine or meet applicable standby and non-bypassable and other applicable charges and tariff requirements. However, if a Generating Facility customer objects to Distribution Provider's estimate of the Generator(s) output, the customer may elect to install the Net Generation Output Metering, or have Distribution Provider install Net Generation Output Metering at the customer's expense.

(a) All metering options available to the customer must conform to the requirements set forth in Distribution Provider's Rule 22. If Distribution Provider does not receive meter data in accordance with Rule 22, Distribution Provider shall have the right to install Distribution Provider-owned Net Generation Output Metering at the customer's expense. The relevant factors in determining the need for Net Generation Output Metering are as listed below:

i) Data requirements in proportion to need for information;

ii) Producer's election to install equipment that adequately addresses Distribution Provider's operational requirements; (L)

(Continued)

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

3. NET GENERATION OUTPUT METERING (Cont'd.)

iii) Accuracy and type of required Metering consistent with purposes of collecting data;

iv) Cost of Metering relative to the need for and accuracy of the data;

v) The Generating Facility's size relative to the cost of the Metering/monitoring;

vi) Other means of obtaining the data (e.g. Generating Facility logs, proxy data, etc.);

vii) Requirements under any Generator Interconnection Agreement with Producer.

The requirements in this Section may not apply to Metering of Generating Facilities operating under Distribution Provider's Net Energy Metering tariffs. Nothing in this Section J.3 supersedes Section D.4, Compliance with Laws, Rules and Tariff Schedules.

Distribution Provider will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring Net Generation Output Metering equipment in each instance along with the size and location of the facility.

4. POINT OF COMMON COUPLING (PCC) METERING

For purposes of assessing Distribution Provider's charges for retail service, Producer's PCC Metering shall be reviewed by Distribution Provider, and if required, replaced to ensure that it will appropriately measure electric power according to the provisions of the Customer's electric service Tariff. Where required, the Customer's existing meter may be replaced with a bi-directional meter so that power deliveries to and from Producer's site can be separately recorded. Alternately, Producer may, at its sole option and cost, require Distribution Provider to install multi-metering equipment to separately record power deliveries to Distribution Provider's Distribution System and retail purchases from Distribution Provider. Where necessary, such PCC Metering shall be designed to prevent reverse registration.

Generating Facilities participating in Net Energy Metering shall have metering provided pursuant to the terms of the applicable Net Energy Metering tariff schedule. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 23047
GENERATING FACILITY INTERCONNECTIONS

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

5. TELEMETERING

If the nameplate rating of the Generating Facility is 1 MW or greater, Telemetering equipment at the Net Generation Output Metering location may be required at Producer's expense. If the Generating Facility is Interconnected to a portion of Distribution Provider's Distribution System operating at a voltage below 10 kV, then Telemetering equipment may be required on Generating Facilities 250 kW or greater. Distribution Provider shall only require Telemetering to the extent that less intrusive and/or more cost effective options for providing the necessary data in real time are not available. Distribution Provider will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring Telemetering equipment in each instance along with the size and location of the facility. (L)

Customer-owned, behind-the-meter, telemetry equipment is allowed where practicable to mitigate the costs associated with Distribution Provider's ownership of the equipment (i.e., the Income Tax Component of Contribution and Cost of Ownership charges), per D.19-03-013 Ordering Paragraph 5. Distribution Provider will allow for a cap of thirty calendar days to repair or replace malfunctioning equipment as notified by the Distribution Provider and if the malfunctioning equipment is not repaired by the thirtieth day, the Distribution Provider can make the necessary repairs and charge the customer for related costs or can disconnect the distributed energy resource. (N)

6. LOCATION (L)

Where Distribution Provider-owned Metering is located on Producer's premises, Producer shall provide, at no expense to Distribution Provider, a suitable location for all such Metering Equipment. (L)

(Continued)

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)

7. COSTS OF METERING

Producer will bear all costs of the Metering required by this Rule, including the incremental costs of operating and maintaining the Metering Equipment.

8. MULTIPLE TARIFF METERING

The requirements of Section J.3 may not apply where a Generating Facility includes multiple generators eligible for service under more than one Net Energy Metering (NEM) tariff schedule (e.g. NEM-1, NEM-2, NEMBIO, NEMFC), or where a Generating Facility consists of one or more NEM-eligible generators in combination with one or more non-NEM eligible generators without Non-Export relays ("Reverse Power Protection"). To ensure proper tariff administration, metering will be required at the PCC and at each of the NEM eligible generator groups eligible for service under the same NEM tariff schedule. For combinations of multiple NEM eligible generators under different tariffs, billing administration and metering requirements will be as specified in the appropriate NEM tariff schedule.

Where a Generating Facility consists of one or more NEM eligible generator groups in combination with one or more non-NEM generators, metering of the non-NEM generators is not required, except as specified in Section J.3. (L)

(Continued)

K. DISPUTE RESOLUTION PROCESS (L)

In addition to the informal procedures for timeline-related disputes set out in Section F.1.d, the following procedures will apply for disputes arising from this Rule:

1. SCOPE

The Commission shall have initial jurisdiction to interpret, add, delete or modify any provision of this Rule or of any agreements entered into between Distribution Provider and Applicant or Producer to implement this tariff ("Implementing Agreements") and to resolve disputes regarding Distribution Provider's performance of its obligations under Commission-jurisdictional tariffs, the applicable agreements, and requirements related to the interconnection of Applicant's or Producer's Generating Facility or Interconnection Facilities pursuant to this Rule.

2. PROCEDURES

Any dispute arising between Distribution Provider and Producer (individually referred to in Section K as "Party" and collectively "the Parties") regarding Distribution Provider's or Producer's performance of its obligations under its tariffs, the Implementing Agreements, and requirements related to the interconnection of Producer's Facilities pursuant to this Rule shall be resolved according to the following procedures:

a. The dispute shall be documented in a written notice ("notice") by the aggrieved Party to the other Party containing the relevant known facts pertaining to the dispute, the specific dispute and the relief sought, and express notice by the aggrieved Party that it is invoking the procedures under this Section. The notice shall be sent to the Party's email address and physical address set forth in the Generator Interconnection Agreement or Interconnection Request, if there is no Generator Interconnection Agreement. A copy of the notice shall also be sent to the Energy Division, Office of the Director, at the Commission. The receiving Party shall acknowledge the notice within five (5) Calendar Days of its receipt. (L)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

K. DISPUTE RESOLUTION PROCESS (Cont'd.) (L)

2. PROCEDURES (Cont'd.)

a Upon the aggrieved Party notifying the other Party of the dispute, each Party must designate a representative with the authority to make decisions for its respective Party to review the dispute within seven (7) Calendar Days. In addition, upon receipt of the notice, Distribution Provider shall provide the aggrieved Party with all relevant regulatory and/or technical details and analysis regarding any Distribution Provider interconnection requirements under dispute within twenty-one (21) Calendar Days.

Within forty-five (45) Calendar Days of the date of the notice, the Parties' authorized representatives will be required to meet and confer to try to resolve the dispute. Parties are expected to operate in good faith and use best efforts to resolve the dispute.

b. If a resolution is not reached in forty-five (45) Calendar Days from the date of the notice, either 1) a Party may request to continue negotiations for an additional forty-five (45) Calendar Days or 2) the Parties may by mutual agreement make a written request for mediation to the ADR Coordinator in the Commission's ALJ Division. The request may be submitted by electronic mail to adr_program@cpuc.ca.gov. Alternatively, both Parties by mutual agreement may request mediation from an outside third-party mediator with costs to be shared equally between the Parties.

c. At any time, either Party may file a formal complaint before the Commission pursuant to California PUC section 1702 and Article 4 of the Commission's Rules of Practice and Procedure.

Nothing in this section shall be construed to limit the rights of any Party to exercise rights and remedies under Commission law. (L)

(Continued)

K. DISPUTE RESOLUTION PROCESS (Cont'd.) (L)

3. PERFORMANCE DURING DISPUTE

Pending resolution of any dispute under this Section, the Parties shall proceed diligently with the performance of their respective obligations under this Rule and the Implementing Agreements, unless the Implementing Agreements have been terminated. Disputes as to the Interconnection Request and implementation of this Section shall be subject to resolution pursuant to the procedures set forth in this Section.

L. CERTIFICATION AND TESTING CRITERIA

1. INTRODUCTION

This Section describes the test procedures and requirements for equipment used for the Interconnection of Generating Facilities to Distribution Provider's Distribution or Transmission System. Included are Type Testing, Production Testing, Commissioning Testing, and Periodic Testing. The procedures listed rely heavily on those described in appropriate Underwriters Laboratory (UL), Institute of Electrical and Electronic Engineers (IEEE), and International Electrotechnical Commission (IEC) documents—most notably UL 1741 including UL-1741 Supplement A or B as appropriate.~~and IEEE 929 as well as the testing described in *May 1999 New York State Public Service Commission's Interconnection Requirements.* As noted in Section B, this Rule has been revised to be consistent with ANSI/IEEE 1547-2003 Standard for Interconnecting Distribution Resources with Electric Power Systems.~~ (L) (L)/(P) (P) (P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

1. INTRODUCTION (Cont'd.)

The tests described here, together with the technical requirements in Section H of this Rule, are intended to provide assurance that the Generating Facility's equipment will not adversely affect Distribution Provider's Distribution or Transmission System and that a Generating Facility will cease providing power to Distribution Provider's Distribution or Transmission System under abnormal conditions. The tests were developed assuming a low level of Generating Facility penetration or number of connections to Distribution Provider's Distribution or Transmission System. At high levels of Generating Facility penetration, additional requirements and corresponding test procedures may need to be defined.

Section L also provides criteria for "Certifying" Generators, inverters or converters. Once a Generator, inverter or converter has been Certified per this Rule, it may be considered suitable for Interconnection with Distribution Provider's Distribution or Transmission System. Subject to the exceptions described in Section L, Distribution Provider will not repeat the design review or require retesting of such Certified Equipment. It should be noted that the Certification process is intended to facilitate Generating Facilities Interconnections. Certification is not a prerequisite to interconnect a Generating Facility for Section H, except for Non-Export AC/DC Converters seeking an expedited process, but it is a prerequisite for inverters installed under section Hh~~after September 8, 2017, pursuant to Section Hh of this Rule~~. (L)/(P)

(L)

(P)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

2. CERTIFIED AND NON-CERTIFIED INTERCONNECTION EQUIPMENT

a. Certified Equipment

Equipment tested and approved (i.e. "Listed") by an accredited NRTL as having met both the Type Testing and Production Testing requirements described in this document is considered to be Certified Equipment for purposes of Interconnection with Distribution Provider's Distribution or Transmission System. Certification may apply to either a pre-packaged system or an assembly of components that address the necessary functions. Type Testing may be done in the manufacturer's factory or test laboratory, or in the field. At the discretion of the testing laboratory, field-certification may apply only to the particular installation tested. In such cases, some or all of the tests may need to be repeated at other installations.

When equipment is Certified by a NRTL, the NRTL shall provide to the manufacturer, at a minimum, a Certificate with the following information for each device:

Administrative:

(1) The effective date of Certification or applicable serial number (range or first in series), and/or other proof that certification is current;

(2) Equipment model number(s) of the Certified equipment;

(3) The software version utilized in the equipment, if applicable;

(4) Test procedures specified (including date or revision number); and

(5) Laboratory accreditation (by whom and to what standard). (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

2. CERTIFIED AND NON-CERTIFIED INTERCONNECTION EQUIPMENT (Cont'd.)

a. Certified Equipment (Cont'd.)

Technical (as appropriate):

(1) Device ratings (kW, kV, Volts, amps, etc.); (L)

(2) Maximum available fault current in amps, per IEEE 1547-2018 11.4; (L)/(P) (P)

(3) In-rush Current in amps; (L)

(4) Trip points, if factory set (trip value and timing);

(5) Trip point and timing ranges for adjustable settings;

(6) Nominal power factor or range if adjustable;

(7) If the equipment is Certified as Non-Exporting and the method used (reverse power or underpower);

(8) If the equipment is Certified as Non-Islanding; and

(9) If the equipment is Certified as a Non-Export AC/DC Converter.

It is the responsibility of the equipment manufacturer to ensure that Certification information is made publicly available by the manufacturer, the testing laboratory, or by a third party.

b. Non-Certified Equipment

For non-Certified equipment, some or all of the tests described in this Rule may be required by Distribution Provider for each Generating and/or Interconnection Facility. The manufacturer or a laboratory acceptable to Distribution Provider may perform these tests. Test results for non-Certified equipment must be submitted to Distribution Provider for the Supplemental Review. Approval by Distribution Provider for equipment used in a particular Generating and/or Interconnection Facility does not guarantee Distribution Provider's approval for use in other Generating and/or Interconnection Facilities. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING

a. Type Tests and Criteria for Interconnection Equipment Certification

Type testing provides a basis for determining that equipment meets the specifications for being designated as Certified equipment under this Rule. The requirements described in this Section cover only issues related to Interconnection and are not intended to address device safety or other issues.

Table L.1 defines the test criteria by Generator or inverter technology. While UL 1741(1) and UL 1741 – Supplement SA/SB were written specifically for inverters, the requirements are readily adaptable to synchronous Generators, induction Generators, as well as single/multi-function controllers and protection relays. Until a universal test standard is developed, Distribution Provider or NRTL shall adopt the procedures referenced in Table L.1 as appropriate and necessary for a Generating Facility and/or Interconnection Facilities or associated equipment performance and its control and Protection Functions. These tests shall be performed in the sequence shown in Table L.2. (L) (L)/(P) (L)

Non-Export AC/DC Converters must satisfy the requirements in its definition in Section C. (L)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.1, Type Test and Requirements for Interconnection Equipment Certification (L)

(P)

Type Test	Referance (1)	Inverter (6)	Smart Inverter (7)	Smart Inverter 2022 (Note 9,10)	Synchronous Generators	Induction Generators
Utility Interaction	UL 1741 - 39, 40	X	X	X	X	X
Utility Compatibility (Required testing to 1547 and 1547.1)	UL 1741 - 46	X	X	X	X	X
DC Isolation	IEEE 1547.1(8) - 5.6	X	X	-	-	-
Dielectric Voltage Withstand	IEEE1547.1(8) - 5.5.3	X	X	-	X	X
Dielectric Voltage Withstand	IEEE1547.1 2020, 5.8.2	-	-	X	-	-
Harmonic Distortion	IEEE-1547.1(8) - 5.11	X	X	-	X	X
Harmonic Distortion	IEEE1547.1 2020, 5.12	-	-	X	-	-
DC Injection	IEEE1547.1(8) - 5.6	X	X	-	-	-
DC Injection	1547.1 2020, 5.9	-	-	X	-	-
Distribution Provider Voltage Variations	IEEE1547.1 - 5.2	X	-	-	X	X
Distribution Provider Frequency Variations	IEEE1547.1 - 5.3	X	-	-	X	X
Abnormal Tests	UL 1741 - 47	X	X	X	-	-
Loss of Control Circuit	UL 1741 - 47.8	X	X	X	X	X
Short Circuit	UL 1741 - 47.3	X	X	X	X	X
Load Transfer	UL 1741 - 47.7	X	X	X	X	X
Surge Withstand Capability	L.3.e	X	X	X	X	X
Anti-Islanding (Traditional)	L.3.b	(2)	-	-	(2)	(2)
Non-Export	L.3.c	(3)	(3)	(3)	(3)	(3)
In-rush Current	L.3.d	-	-	-	-	(4)
Synchronization	L.3.f	(5)	(5)	(5)	X	(5)

(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (P)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.1, Type Test and Requirements for Interconnection Equipment Certification (Cont'd.)

Type Test	Referance (1)	Inverter (6)	Smart Inverter (7)	Smart Inverter 2022 (Note 9,10)	Synchronous Generators	Induction Generators
Anti-islanding (Smart Inverters)	UL 1741 SA - SA8	-	X	-	-	-
Low and High Voltage Ride-through	UL 1741 SA - SA9	-	X	-	-	-
Low and High Frequency Ride-through	UL 1741 SA - SA10	-	X	-	-	-
Normal and Soft-Start Ramp Rate	UL 1741 SA - SA11	-	X	-	-	-
Specified Power Factor	UL 1741 SA - SA12	-	X	-	-	-
Volt/Var Mode (Q(V))	UL 1741 SA - SA13	-	X	-	-	-
Frequency-Watt (optional)	UL 1741 SA - SA14	-	X	-	-	-
Volt-Watt (optional)	UL 1741 SA - SA15	-	X	-	-	-
Markings and Instructions	UL 1741 SA - SA6 , SA16	-	X	-	-	-
Disable Permit Service	UL1741 SA - SA17	-	X	-	-	-
Limit Active Power	UL1741 SA - SA18	-	X	-	-	-
DC Injection (2022)	IEEE1547.1-2020	-	-	X	-	-
Anti-islanding (Smart Inverters) (2022)	UL1741SB- SB3	-	-	X	-	-
Low and High Voltage Ride-through (2022)	UL1741SB- SB3	-	-	X	-	-
Low and High Frequency Ride-through (2022)	UL1741SB- SB3	-	-	X	-	-
Normal and Soft-Start Ramp Rate (2022)	UL1741SB- SB3	-	-	X	-	-
Specified Power Factor (2022)	UL1741SB- SB3	-	-	X	-	-
Volt/Var Mode (Q(V)) (2022)	UL1741SB- SB3	-	-	X	-	-

(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (P)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.1, Type Test and Requirements for Interconnection Equipment Certification (Cont'd.)

Type Test	Referance (1)	Inverter (6)	Smart Inverter (7)	Smart Inverter 2022 (Note 9,10)	Synchronous Generators	Induction Generators
Frequency-Watt (2022)	UL1741SB- SB3	-	-	X	-	-
Volt-Watt (2022)	UL1741SB- SB3	-	-	X	-	-
Constant Reactive Power(2022)	UL1741SB- SB3	-	-	X	-	-
Disable Permit Service(2022)	UL1741SB- SB3	-	-	X	-	-
Limit Active Power(2022)	UL1741SB- SB3	-	-	X	-	-
Markings and Instructions(2022)	UL1741SB- SB5	-	-	X	-	-

(1) References are to section numbers in either UL 1741 and/or UL 1741-Supplement SA (Inverters, Converters and Charge Controllers for Use in Independent Power Systems) or this Rule. References in UL 1741 to "photovoltaics" or "inverter" may have to be adapted to the other technologies by the testing laboratory to appropriately apply in the tests to other technologies.
(2) Required only if Non-Islanding designation.
(3) Required only if Non-Export designation is desired.
(4) Required for Generators that use Distribution Provider power to motor to speed.
(5) Required for all self-excited induction Generators as well as Inverters that operate as voltage sources when connected to Distribution Provider's Distribution or Transmission System.
(6) Inverters compliant with Section H.
(7) Inverters compliant with Section Hh.
(8) IEEE 1547.1 refers to 2005 revision

~~Type Test~~	~~Reference 1~~	~~Inverter (6)~~	~~Smart Inverter (7)~~	~~Synchronous Generators~~	~~Induction Generators~~
~~Utility Interaction~~	~~UL 1741 – 39, 40~~	~~X~~	~~X~~	~~X~~	~~X~~
~~Utility Compatibility (Required testing to 1547 & 1547.1)~~	~~UL 1741 – 46~~	~~X~~	~~X~~	~~X~~	~~X~~
~~DC Isolation~~	~~IEEE 1547.1(8) -5.6~~	~~X~~	~~X~~	~~-~~	~~-~~
~~Dielectric Voltage Withstand~~	~~IEEE 1547.1(8) -5.5.3~~	~~X~~	~~X~~	~~X~~	~~X~~
~~Harmonic Distortion~~	~~IEEE 1547.1(8) -5.11~~	~~X~~	~~X~~	~~X~~	~~X~~
~~DC Injection~~	~~IEEE 1547.1(8) -5.6~~	~~X~~	~~X~~	~~-~~	~~-~~
~~Distribution Provider Voltage Variation~~	~~IEEE 1547.1(8) -5.2~~	~~X~~	~~-~~	~~X~~	~~X~~
~~Distribution Provider Frequency Variation~~	~~IEEE 1547.1(8) -5.3~~	~~X~~	~~-~~	~~X~~	~~X~~
~~Abnormal Tests~~	~~UL 1741 – 47~~				
~~Loss of Control Circuit~~	~~UL 1741 – 47.8~~	~~X~~	~~X~~	~~X~~	~~X~~
~~Short Circuit~~	~~UL 1741 - 47.3~~	~~X~~	~~X~~	~~X~~	~~X~~
~~Load Transfer~~	~~UL 1741 – 47.7~~	~~X~~	~~X~~	~~X~~	~~X~~
~~Surge Withstand Capability~~	~~L.3.e~~	~~X~~	~~X~~	~~X~~	~~X~~
~~Anti-Islanding (non-Smart Inverters)~~	~~L.3.b~~	~~(2)~~	~~-~~	~~(2)~~	~~(2)~~

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

Non-Export	L.3.c	(3)	(3)	(3)	(3)
In-rush Current	L.3.d	-	-	-	(4)
Synchronization	L.3.f	(5)	(5)	X	(5)
Anti-islanding (Smart Inverters)	UL 1741 SA - SA8	-	X	-	-
Low and High Voltage Ride-through (L/H VRT)	UL 1741 SA – SA9	-	X	-	-
Low and High Frequency Ride-through (L/H FRT)	UL 1741 SA - SA10	-	X	-	-
Normal and Soft-Start Ramp Rate (RR)	UL 1741 SA - SA11	-	X	-	-
Specified Power Factor	UL 1741 SA - SA12	-	X	-	-
Volt/Var Mode (Q(V))	UL 1741 SA - SA13	-	X	-	-
Frequency-Watt(FW) - optional	UL 1741 SA - SA14	-	X	-	-
Volt-Watt (VW) - optional	UL 1741 SA - SA15	-	X	-	-
Markings and Instructions	UL 1741 SA6, SA16	-	X	-	-

Table Notes:

(1) References are to section numbers in either UL 1741 and/or UL 1741 Supplement SA (Inverters, Converters and Charge Controllers for Use in Independent Power Systems) or this Rule. References in UL 1741 to "photovoltaics" or "inverter" may have to be adapted to the other technologies by the testing laboratory to appropriately apply in the tests to other technologies.
(2) Required only if Non-Islanding designation.
(3) Required only if Non-Export designation is desired.
(4) Required for Generators that use Distribution Provider power to motor to speed.
(5) Required for all self-excited induction Generators as well as Inverters that operate as voltage sources when connected to Distribution Provider's Distribution or Transmission System.
(6) Inverters compliant with Section H.
(7) Inverters compliant with Section Hh.
(8) IEEE 1547.1 refers to 2005 revision.

"X" = Required " " = Not Required

(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.2 Type Tests Sequence for Interconnection Equipment Certification

Test No.	Type Test
1	Distribution Provider Voltage and Frequency Variation
2	Synchronization
3	Surge Withstand Capability
4	Distribution Provider Voltage and Frequency Variation, including ride through
5	Synchronization
6	Other Required and Optional Tests

Tests 1, 2, and 3 must be done first and in the order shown. Tests 4 and on follow in order convenient to the test agency.

b. Anti-Islanding Test

Devices that pass the Anti-Islanding test procedure described in UL 1741 Supplement SB ~~Section 46.3~~ will be considered Non-Islanding for the purposes of these Interconnection requirements. The test is required only for devices for which a Certified Non-Islanding designation is desired. (L) (L)/(P) (L)

c. Non-Export Test

Equipment that passes the Non-Export test procedure described in Section L.7.a will be considered Non-Exporting for the purposes of these Interconnection requirements. This test is required only for devices for which a Certified Non-Export designation is desired. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

d. In-rush Current Test

Generation equipment that utilizes Distribution Provider power to motor up to speed will be tested using the procedure defined in Section L.7.b to determine the maximum current drawn during this startup process. The resulting In-rush Current is used to estimate the Starting Voltage Drop.

e. Surge Withstand Capability Test

The interconnection equipment shall be tested for the surge withstand requirement in Section H.1.c in all normal operating modes in accordance with IEEE Std C62.45-2002 for equipment rates less than 1000 V to confirm that the surge withstand capability is met by using the selected test level(s) from IEEE Std C62.41.2-2002. Interconnection equipment rated greater than 1000 V shall be tested in accordance with manufacturer or system integrator designated applicable standards. For interconnection equipment signal and control circuits, use IEEE Std C37.90.1-2002. These tests shall confirm the equipment did not fail, did not misoperate, and did not provide misinformation (IEEE 1547-2018 4.11.2~~5.1.3.2~~). (L)/(P)

The location/exposure category for which the equipment has been tested shall be clearly marked on the equipment label or in the equipment documentation. External surge protection may be used to protect the equipment in harsher location/exposure categories. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

f. Synchronization Test

This test is applied to synchronous Generators, self-excited induction generators, and inverters capable of operating as voltage-source while connected to Distribution Provider's Distribution or Transmission System. The test is also applied to the resynchronization Function (transition from stand-alone to parallel operation) on equipment that provides such functionality. This test may not need to be performed on both the synchronization and re-synchronization functions if the manufacturers can verify to the satisfaction of the testing organization that monitoring and controls hardware and software are common to both functions. This test is not necessary for induction generators or current-source inverters. Instead, the In-rush Current test Section L.3.d shall be applied to those generators.

This test shall demonstrate that at the moment of the paralleling-device closure, all three synchronization parameters in Table L.3 are within the stated limits. This test shall also demonstrate that if any of the parameters are outside of the limits stated in the table, the paralleling-device shall not close (IEEE 1547-2018 4.10~~5.1.2A~~). The test will start with only one of the three parameters: (1) voltage difference between Generating Facility and Distribution Provider's Distribution or Transmission System; (2) frequency difference; or (3) phase angle outside of the synchronization specification. Verify that the Generating Facility is brought within specification prior to synchronization. Repeat the test five times for each of the three parameters. For manual synchronization with synch check or manual control with auto synchronization, the test must verify that paralleling does not occur until the parameters are brought within specifications. (L) (L)/(P) (L) (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

3. TYPE TESTING (Cont'd.)

f. Synchronization Test (Cont'd.)

Table L.3
***Synchronization Parameter Limits* [1]**

Aggregate Rating of Generator Units (kVA)	Frequency Difference (Δf, Hz)	Voltage Difference (ΔV, %)	Phase Angle Difference (ΔΦ,°)
0-500	0.3	10	20
> 500-1,500	0.2	5	15
> 1,500-10,000	0.1	3	10

(L)

[1] – IEEE 1547-2018 4.10~~5.1.1B~~ (L)/(P)

g. Paralleling Device Withstand Test (L)

The di-electric voltage withstand test specified in Section L.1 shall be performed on the paralleling device to ensure compliance with those requirements specified in Section H.1.c (IEEE 1547-2018 4.11.3~~5.1.3.3~~). (L)/(P) (P)

h. Backfeed Test (L)

Non-Export AC/DC Converters must satisfy the requirements in its definition in Section C.

4. PRODUCTION TESTING

At a minimum, each interconnection system shall be subjected to Distribution Provider Voltage and Frequency Variation Test procedure described in UL1741 under Manufacturing and Production Tests, Section 68 and the Synchronization test specified in Section L.3.f. Interconnection systems with adjustable set points shall be tested at a single set of set points as specified by the manufacturer. This test may be performed in the factory or as part of a Commissioning Test (Section L.5). (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING

a. Commissioning Testing

Commissioning Testing, where required, will be performed on-site to verify protective settings and functionality. Upon initial Parallel Operation of a Generating Facility, or any time interface hardware or software is changed that may affect the functions listed below, a Commissioning Test must be performed. An individual qualified in testing protective equipment (professional engineer, factory–certified technician, or licensed electrician with experience in testing protective equipment) must perform Commissioning Testing in accordance with the manufacturer's recommended test procedure to verify the settings and requirements per this Rule.

Distribution Provider may require written Commissioning test procedure be submitted to Distribution Provider at least 10 working days prior to the performance of the Commissioning Test. Distribution Provider has the right to witness Commissioning Test. Distribution Provider may also require written certification by the installer describing which tests were performed and their results. Protective Functions to be tested during commissioning, particularly with respect to non-Certified equipment, may consist of the following:

(1) Over and under voltage

(2) Over and under frequency

(3) Anti-Islanding function (if applicable)

(4) Non-Exporting function (if applicable)

(5) Inability to energize dead line (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

a. Commissioning Testing (Cont'd.)

(6) Time delay on restart after Distribution Provider source is stable

(7) Distribution Provider system fault detection (if used)

(8) Synchronizing controls (if applicable)

(9) Other Interconnection Protective Functions that may be required as part of the Generator Interconnection Agreement

Commissioning Test shall include visual inspections of the interconnection equipment and protective settings to confirm compliance with the interconnection requirements.

b. Review, Study, and Additional Commissioning Test Verification Costs

A Producer shall be responsible for the reasonably incurred costs of the reviews, studies and additional Commissioning Test verifications conducted pursuant to Section E of this Rule. If the initial Commissioning Test verification is not successful through no fault of Distribution Provider, Distribution Provider may impose upon Producer a cost based charge for subsequent Commissioning Test verifications. All Costs for additional Commissioning Test verifications shall be paid by Producer within thirty days of receipt of Distribution Provider's invoice. The invoice provided by Distribution Provider shall consist of the hourly rate multiplied by the hours incurred by Distribution Provider and will separately specify the amount of time spent on-site from that spent in roundtrip travel to the Commissioning Test site. Additional cost, if any, will be specified on the invoice. If the initial Commissioning Test verification is not successful through the fault of Distribution Provider, that visit will not be considered the initial Commissioning Test verification. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

c. Other Checks and Tests

Other checks and tests that may need to be performed include:

(1) Verifying final Protective Function settings

(2) Trip test (L.5.g)

(3) In-service tests (L.5.h)

d. Certified Equipment

Generating Facilities qualifying for interconnection through the Fast Track process incorporate Certified Equipment that have, at a minimum, passed the Type Tests and Production Tests described in this Rule and are judged to have little or no potential impact on Distribution Provider's Distribution or Transmission System. For such Generating Facilities, it is necessary to perform only the following tests:

(1) Protective Function settings that have been changed after Production Testing will require field verification. Tests shall be performed using injected secondary frequencies, voltages and currents, applied waveforms, at a test connection using a Generator to simulate abnormal Distribution Provider voltage or frequency, or varying the set points to show that the device trips at the measured (actual) Distribution Provider voltage or frequency.

(2) The Non-Islanding function shall be checked by operating a load break disconnect switch to verify the Interconnection equipment ceases to energize Distribution Provider's Distribution or Transmission System and does not re-energize it for the required time delay after the switch is closed. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

d. Certified Equipment (Cont'd.)

(3) The Non-Exporting function shall be checked using secondary injection techniques. This function may also be tested by adjusting the Generating Facility output and local loads to verify that the applicable Non-Exporting criteria (i.e., reverse power or underpower) are met.

The Supplemental Review or an Interconnection Study may impose additional components or additional testing.

e. Non-Certified Equipment

Non-certified Equipment shall be subjected to the appropriate tests described in Type Testing (Section L.3) as well as those described in Certified Equipment Commissioning Tests (Section L.5.d). With Distribution Provider's approval, these tests may be performed in the factory, in the field as part of commissioning, or a combination of both. Distribution Provider, at its discretion, may also approve a reduced set of tests for a particular Generating Facility or, for example, if it determines it has sufficient experience with the equipment.

f. Verification of Settings

At the completion of Commission testing, Producer shall confirm all devices are set to Distribution Provider-approved settings. Verification shall be documented in the Commissioning Test Certification. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

5. COMMISSIONING TESTING (Cont'd.)

g. Trip Tests

Interconnection Protective Functions and devices (e.g. reverse power relays) that have not previously been tested as part of the Interconnection Facilities with their associated interrupting devices (e.g. contactor or circuit breaker) shall be trip tested during commissioning. The trip test shall be adequate to prove that the associated interrupting devices open when the protective devices operate. Interlocking circuits between Protective Function devices or between interrupting devices shall be similarly tested unless they are part of a system that has been tested and approved during manufacturing.

h. In-service Tests

Interconnection Protective Functions and devices that have not previously been tested as part of the Interconnection Facilities with their associated instrument transformers or that are wired in the field shall be given an in-service test during commissioning. This test will verify proper wiring, polarity, CT/PT ratios, and proper operation of the measuring circuits. The in-service test shall be made with the power system energized and carrying a known level of current. A measurement shall be made of the magnitude and phase angle of each Alternating Current (AC) voltage and current connected to the protective device and the results compared to expected values. For protective devices with built-in Metering Functions that report current and voltage magnitudes and phase angles, or magnitudes of current, voltage, and real and reactive power, the metered values may be used for in-service testing. Otherwise, portable ammeters, voltmeters, and phase-angle meters shall be used. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

6. PERIODIC TESTING

Periodic Testing of Interconnection-related Protective Functions shall be performed as specified by the manufacturer, or at least every four years. All Periodic Tests prescribed by the manufacturer shall be performed. Producer shall maintain Periodic Test reports or a log for inspection by Distribution Provider. Periodic Testing conforming to Distribution Provider test intervals for the particular Line Section may be specified by Distribution Provider under special circumstances, such as high fire hazard areas. Batteries used to activate any Protective Function shall be checked and logged once per month for proper voltage. Once every four years, the battery must be either replaced or a discharge test performed.

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS

This Section describes the additional Type Tests necessary to qualify a device as Certified under this Rule. These Type Tests are not contained in Underwriters Laboratories UL 1741 Standard *Inverters, Converters and Controllers for Use in Independent Power Systems,* or other referenced standards.

a. Non-Exporting Test Procedures

The Non-Exporting test is intended to verify the operation of relays, controllers and inverters designed to limit the export of power and certify the equipment as meeting the requirements of Screen I, Options 1 and 2, of the review process. Tests are provided for discrete relay packages and for controllers and inverters with the intended Functions integrated. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 25237
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test

This version of the Non-Exporting test procedure is intended for discrete reverse power and underpower relay packages provided to meet the requirements of Options 1 and 2 of Screen I. It should be understood that in the reverse power application, the relay will provide a trip output with power flowing in the export (toward Distribution Provider's Distribution or Transmission System) direction.

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired export power flow of 0.5 secondary watts (the minimum pickup setting, assumes 5 amp and 120V CT/PT secondary). Apply nominal voltage with minimum current setting at zero (0) degrees phase angle in the trip direction. Increase the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2% of the expected power. For relays with adjustable settings, repeat this test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay does not operate (measured watts will be zero or negative). (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 2: Leading Power Factor Test

Apply rated voltage with a minimum pickup current setting (calculated value for system application) and apply a leading power factor load current in the non-trip direction (current lagging voltage by 135 degrees). Increase the current to relay rated current and verify that the relay does not operate. For relays with adjustable settings, this test should be repeated at the minimum, midpoint, and maximum settings.

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Increase the current level to pickup (about 10 times higher than at 0 degrees) and verify that the relay operates. Repeat for phase angles of 90, 180 and 270 degrees and verify that the relay does not operate.

Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and current at 180 degrees from tripping direction, to simulate normal load conditions (for three-phase relays, use Ia at 180, Ib at 60 and Ic at 300 degrees). Remove phase-1 voltage and observe that the relay does not operate. Repeat for phases-2 and 3. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 5: Load Current Test

Using the pickup settings determined in Step 1, apply rated voltage and current at 180 degrees from the tripping direction, to simulate normal load conditions (use Ia at 180, Ib at 300 and Ic at 60 degrees). Observe that the relay does not operate.

Step 6: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and 2 times rated current, to simulate an unbalanced fault in the non-trip direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 180 degrees, Ib at 0 degrees, and Ic at 180 degrees). Observe that the relay, especially single phase, does operate properly.

Step 7: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 8: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 9: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand capability test described in L.3.e.

ii) Discrete Underpower Relay Test

This version of the Non-Exporting test procedure is intended for discrete underpower relay packages and meets the requirements of Option 2 of Screen I. A trip output will be provided when import power (toward Producer's load) drops below the specified level.

Note: For an underpower relay, pickup is defined as the highest power level at which the relay indicates that the power is less than the set level. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired power flow pickup level of 5% of peak load minimum pickup setting. Apply rated voltage and current at 0 (zero) degrees phase angle in the direction of normal load current.

Decrease the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2% of the expected power. For relays with adjustable settings, repeat the test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay operates (measured watts will be zero or negative).

Step 2: Leading Power Factor Test

Using the pickup current setting determined in Step 1, apply rated voltage and rated leading power factor load current in the normal load direction (current leading voltage by 45 degrees). Decrease the current to 145% of the pickup level determined in Step 1 and verify that the relay does not operate. For relays with adjustable settings, repeat the test at the minimum, midpoint, and maximum settings. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Decrease the current level to pickup (about 10% of the value at 0 degrees) and verify that the relay operates. Repeat for phase angles 90, 180 and 270 degrees and verify that the relay operates for any current less than rated current.

Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and 25% of rated current in the normal load direction, to simulate light load conditions. Remove phase 1 voltage and observe that the relay does not operate. Repeat for Phases-2 and 3.

Step 5: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and two times rated current, to simulate an unbalanced fault in the normal load direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 0 degrees, Ib at 180 degrees, and Ic at 0 degrees). Observe that the relay (especially single-phase types) operates properly. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 6: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings.

Step 7: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 8: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand test described in Section L.3.e. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

iii) Tests for Inverters and Controllers with Integrated Functions

Inverters and controllers designed to provide reverse or underpower functions shall be tested to certify the intended operation of this function. Two methods are acceptable:

Method 1: If the inverter or controller utilizes external current/voltage measurement to determine the reverse or underpower condition, then the inverter or controller shall be functionally tested by application of appropriate secondary currents and potentials as described in the Discrete Reverse Power Relay Test, Section L.7.a.i of this Rule.

Method 2: If external secondary current or voltage signals are not used, then unit-specific tests must be conducted to verify that power cannot be exported across the PCC for a period exceeding two seconds. These may be factory tests, if the measurement and control points are integral to the unit, or they may be performed in the field.

iv) Tests for Inadvertent Export Inverters

Test requirements for certified inverters with integrated functions for Inadvertent Export shall verify the performance requirements specified in Section Mm of this Rule. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

v) Interim Tests for Non-Export AC/DC Converters ("Converter")

Step 1: Limitation of Back-feed Under Steady State Conditions

Apply the nominal DC operating voltage of the Converter across its DC terminals with a battery source or simulated equivalent of a battery source. Vary the battery source by 100%, 75%, 50%, 25%, and 10% of Converter rated output power. The measured steady-state DC current component at each of the AC terminals of the Converter is required to be less than 0.5% of the Converter's rated RMS AC current. This test is to be repeated for 80% nominal DC operating voltage and for 125% nominal DC operating voltage. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant.

Step 2: Back-feed Under Fault Conditions – DC Output Shorted

With a battery source or simulated equivalent of a battery source connected to the DC terminals, apply rated conditions of the Converter then short its DC terminals for 200 milliseconds. After 5 cycles of inducing the short circuit, record the measured peak current at each of the AC terminals of the Converter. These peak currents within this time interval are each required to be less than 0.5% of the Converter's rated RMS AC current. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant. (L)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

v) Interim Tests for Non-Export AC/DC Converters ("Converter") (Cont'd.)

Step 3: Back-feed Under Fault Conditions – AC Input Shorted: Phase-Ground, Phase-Phase, and 3-Phase

With a battery source or simulated equivalent of a battery source connected to the DC terminals, apply rated conditions of the Converter, then apply a short between any two phases on the grid side of the Converter for 200 milliseconds. After 5 cycles of inducing the short circuit, record the measured peak current at each of the AC terminals of the Converter. These peak currents within this time interval are each required to be less than 0.5% of the Converter's rated RMS AC current. This test is to be repeated for phase-ground and 3-phase shorts. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant.

Step 4: Back-feed Under Fault Conditions – Component Faults

Distribution Provider can elect to test for back-feed under the condition of a short circuit across certain components which are internal to the Converter. Potential tests can include inducing a short circuit across different terminals for electronic switches and/or across different terminals for internal transformers. Ultimately, the components used for testing will be chosen on a case-by-case basis and will depend on the Converter's circuit topology. Testing requirements can be modified upon mutual agreement of the Distribution Provider and the Applicant.

Step 5: Harmonics Testing

Under normal loading conditions at 10%, 25%, 50%, 75%, and 100% of the Converter's rated power output, conduct harmonic current distortion measurements on each of the AC terminals. Measurements should be below the maximum harmonic current distortion requirements given in IEEE 1547-2018 7.34.3.3. (L)/(P)

(Continued)

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (L)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

b. In-rush Current Test Procedures

This test will determine the maximum In-rush Current drawn by the Generator.

i) Locked-Rotor Method

Use the test procedure defined in NEMA MG-1 (manufacturer's data is acceptable if available).

ii) Start-up Method

Install and setup the Generating Facility equipment as specified by the manufacturer. Using a calibrated oscilloscope or data acquisition equipment with appropriate speed and accuracy, measure the current draw at the Point of Interconnection as the Generating Facility starts up and parallels with Distribution Provider's Distribution or Transmission System. Startup shall follow the normal, manufacturer-specified procedure. Sufficient time and current resolution and accuracy shall be used to capture the maximum current draw within 5%. In-rush Current is defined as the maximum current draw from Distribution Provider during the startup process, using a 10-cycle moving average. During the test, Distribution Provider source, real or simulated, must be capable of maintaining voltage within +/- 5% of rated at the connection to the unit under test. Repeat this test five times. Report the highest 10-cycle current as the In-rush Current. A graphical representation of the time-current characteristic along with the certified In-rush Current must be included in the test report and made available to Distribution Provider. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 26348
GENERATING FACILITY INTERCONNECTIONS

M. INADVERTENT EXPORT (L)

Under certain operating conditions, an Applicant may choose to completely offset their facility load by installing generation systems which are optimally sized to meet their peak demand with load following functionality on the Generator controls to ensure conditional export of electrical power from the Generating Facility to Distribution Provider's Distribution or Transmission System. In situations where the loading changes rapidly and/or the Generator cannot ramp down quickly enough, the Generating Facility may need to export small amounts of power for limited duration. The event of exporting uncompensated power for a short time is referred to as Inadvertent Export.

The following are the minimum requirements for Inadvertent Export systems. Other factors relevant to the interconnection study process (e.g. 15% screen results, short circuit current ratio, etc.) may necessitate additional technical requirements (e.g. reclose block, transfer trip, ground bank, etc.) that are not explicitly noted here. Inadvertent Export may not be available for interconnections to Networked Secondary Systems.

1. For Inadvertent Export interconnection requests, additional Protective Functions and equipment to detect Distribution or Transmission System faults (per Distribution Provider's standard practices) may be required over and above the basic Protective Functions and equipment associated with the four options in the Export Screen. Protective Functions may include, but are not limited to, directional overcurrent/voltage-restraint overcurrent Protective Functions for line-to-line fault detection and overcurrent/overvoltage Protective Functions for line-to-ground detection. The addition of a ground bank or ground detector may also be necessary. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 26449
GENERATING FACILITY INTERCONNECTIONS

M. INADVERTENT EXPORT (Cont'd.) (L)

2. The effect on equipment ratings can be mitigated by limiting the amount of inadvertent export allowed. To a large degree, Voltage Regulation may be similarly handled. The amount of Inadvertent Export is dependent on specific Distribution Provider requirements and should be limited to the lesser of the following values:

   a. 50% of the Generating Facility Capacity, or

   b. 10% of the continuous conductor rating in watts at 0.9 power factor for the lowest rated feeder conductor upstream of the GF (i.e. 200kW @ 12kV), or

   c. 110% of the largest load block in the facility, or

   d. 500kW or some other maximum level indicated by Distribution Provider

3. In addition to the limits above, the following are required:

   a. A reverse power Protective Function will be provided to trip the connected Generator(s) within two seconds if the proposed amount of Inadvertent Export is exceeded.

   b. The frequency of Inadvertent Export occurrences should be less than two occurrences per 24-hour period.

   c. A separate reverse power or underpower Protective Function will be required (in addition to the reverse power Protective Function described in 3a. above) to trip the connected Generator(s) if the duration of reverse power or underpower (i.e. ANY export) exceeds 60 seconds. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (L)

The following are the minimum requirements for Inadvertent Export systems that meet the criteria specified below. Other factors relevant to the interconnection study process (e.g., 15% screen results, short circuit current ratio, etc.) may necessitate additional technical requirements (e.g., reclose block, transfer trip, ground bank, etc.) that are not explicitly noted here. Inadvertent Export may not be available for interconnections to Networked Secondary Systems.

The certified control functions internal to the inverter control or external control system may be used to replace the discrete reverse/under power relay functions described in Section M provided the requirements outlined below are met.

1) All of the following requirements must be met by the Generating Facility to qualify for Inadvertent Export under this Section.

   a. The Generating Facility must utilize only UL-1741 certified or UL-1741 SA listed grid support non-islanding inverters; and,

   b. The Generating Facility must have an aggregate maximum nameplate capacity of 500 kVA or less; and,

   c. The Generating Facility's total energy export must not exceed its nameplate rating (kVA-gross) multiplied by 0.1 hours per day over a rolling 30-day period (e.g., for a 100 kVA-gross nameplate Generating Facility, the maximum energy allowed to be exported for a 30-day period is 300 kWh) ; and,

   d. Export from the Generating Facility across the PCC to the Distribution System is less than 100 kVA. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (Cont'd.) (L)

2) To govern the level of Inadvertent Export allowable under this Section, the Generating Facility must utilize a NRTL-certified control system or NRTL-certified inverter system that meets all of the following requirements.

a. Must result in the Generating Facility disconnecting from the Distribution System, ceasing to energize the Distribution System or halting energy production within two (2) seconds after either:

i. The period of continuous export exceeds 30 seconds;

or,

ii. The level of export exceeds 100 kVA.

b. Must monitor that the total energy export is maintained within the allowable energy export outlined above 1.c and provide an indication or notification (e.g., electronic, alarm) if that energy export limit is exceeded.

c. Failure of the of the control or inverter system for more than thirty (30) seconds, resulting from loss of control signal, loss of control power or a single component failure or related control sensing of the control circuitry, must result in the Generating Facility entering Non-Export operation where no energy is exported across to the PCC to the Distribution System.

Interim approval of the control or inverter system may be permitted upon mutual agreement of PG&E and the Producer. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (Cont'd.) (L)

3) Applicability of Engineering Review Screens.

Inadvertent Export systems that meet the requirements described herein are processed under Initial Review Screens A through J as described in Section H. If these systems fail Screen J, they then bypass Screens K and L and are processed under Screens M and M1 as described below.

Screen M: Is the aggregate Generating Facility capacity on the Line Section less than 15% of Line Section peak load for all line sections bound by automatic sectionalizing devices?

- If Yes (pass), Initial Review is complete.
- If No (fail), continue to Screen M1.

Screen M1: Is the aggregate of all distributed energy resources (DER) causing reverse power flow (1) at a line section with a voltage regulator device(s) or (2) at a protection device, including the circuit breaker / field recloser?*,**

- If No (pass), existing DER does not cause reverse power flow at (1) or (2) and Initial Review is complete.
- If Yes (fail), existing DER causes reverse power flow at (1) or (2); fail Initial Review and Supplemental Review is required.

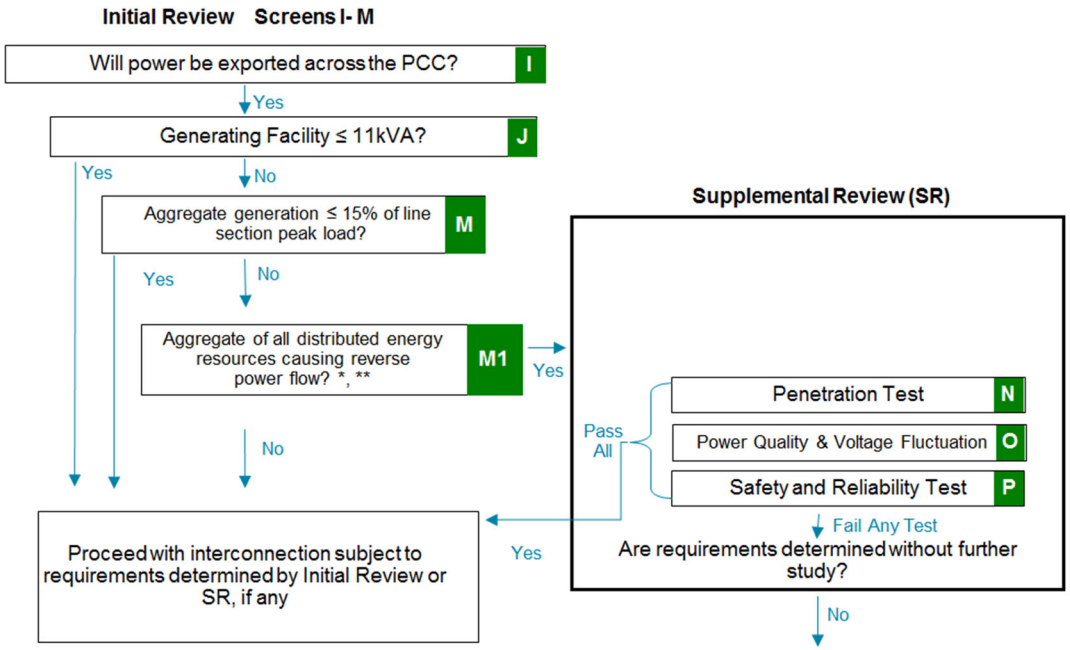
* For the purposes of applying Screen M1 herein, Distribution Provider shall utilize a zero coincidence factor when considering the impact of other Inadvertent Export systems that meet the requirements of Section Mm (i.e., projects that qualify for Option 6 under Section G.1.i) such that those Inadvertent Export systems do not impact Screen M1's aggregate analysis determination for the individual Inadvertent Export project being evaluated.

** The presence of existing non-certified DER on the line section may require additional review to ensure safe and reliable grid operation. (L)

(Continued)

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-ISLANDING) INVERTERS (Cont'd.) (L)

3) Applicability of Engineering Review Screens. (Cont'd.)



* For the purposes of applying Screen M1 herein, Distribution Provider shall utilize a zero coincidence factor when considering the impact of other Inadvertent Export systems that meet with the requirements of Section Mm (i.e., projects that qualify for Option 6 under Section G.1.i) such that those Inadvertent Export systems do not impact Screen M1's aggregate analysis determination for the individual analysis determination for the individual Inadvertent Export project being evaluated.

** The presence of existing non-certified DER on the line section may require additional review to ensure safe and reliable grid operation. (L)

(Continued)

ELECTRIC RULE NO. 21 Sheet 26953
GENERATING FACILITY INTERCONNECTIONS

Mm1. NON-EXPORT UTILIZING CERTIFIED POWER CONTROL SYSTEMS (P)

Generating Facilities that use certified power control systems to meet the **non-export** requirements shall meet the following six specifications.

i. Uses a power control system that has passed the requirements of the most recent UL Power Control Systems CRD test protocol;

ii. The power control system has an open-loop response time of no more than 2(two) seconds as provided in the power control system specification and certification data sheets;

iii. The Generating Facility uses only UL 1741 certified and/or UL 1741 SA listed grid-support non-islanding inverters;

iv. The power control system is set to zero-export;

v. The power control system must reduce export to below zero export in two seconds or less;

vi. The operation of the Generating Facility power control system shall maintain voltage fluctuations limits specified in Electric Rule 2.

Once satisfying the first six specifications above, the evaluation of **a non-export** Generating Facility requesting interconnection under this section shall also:

i. Omit evaluation for Screen D.
ii. Utilize the Generating Facility's gross nameplate rating for Screens F and G

Once satisfying the first six specifications above, the evaluation of a **limited export** Generating Facility requesting interconnection under this section shall also utilize the:

i. Approved limited export value to determine the impacts to the grid and in Screens D, I, J, K, M, N, O, and P;
~~i.~~ii. Generating Facility's gross nameplate rating for Screens F and G. (P)

(Continued)

ELECTRIC RULE NO. 21 Sheet 27053
GENERATING FACILITY INTERCONNECTIONS

Mm2. INADVERTENT EXPORT UTILIZING CERTIFIED POWER CONTROL SYSTEMS (P)

Generating Facilities that use certified power control systems to meet the inadvertent export requirements shall meet the following seven specifications:

i. The Generating Facility aggregate maximum gross nameplate capacity shall not exceed 1000KVA;

ii. Use power control systems that have passed the requirements of the most recent UL Power Control Systems CRD test protocol;

iii. The power control system has an open-loop response time of no more than 10(ten) seconds as provided in the control system specification and certification data sheets;

iv. The Generating Facility uses only UL 1741 certified and/or UL 1741 SA listed grid-support non-islanding inverters;

v. The power control system is set to zero-export;

vi. The power control system must reduce export to below zero export in 10(ten) seconds or less;

vii. The operation of the Generating Facility power control system shall maintain voltage fluctuations limits specified in Electric Rule 2.

The Distribution Provider evaluating Generating Facilities requesting interconnection under this section shall:

i. Apply Screens A through M using the aggregate inverter nameplate rating;

If Supplemental Review is required, within 15 BD days of being notified by the Distribution Provider, the applicant shall identify and provide to the Distribution Provider the frequency of inadvertent export, the real power level in watts of inadvertent export and the time duration of inadvertent export; (P)

(Continued)

Mm2. INADVERTENT EXPORT UTILIZING CERTIFIED POWER CONTROL SYSTEMS (CONT'D.) (P)

iii. If distribution upgrades are identified, Screen P shall recognize power control parameters taking into account local feeder conditions, customer's operating profile and the magnitude, duration, and frequency of anticipated export during the review of Screen P;

iv. Complete Supplemental Review within 15 days of receiving the required information specified under ii. above in this section;

v. If the Interconnection Customer does not provide the operating profile information within the specified 15 Business Days, Distribution Provider will perform Supplemental Review based on information included in the Interconnection Request within 30 Business Days of the request for customer operating profile information;

vi. Only the largest facility operating under this Rule 21 section in the line section shall be used for aggregate evaluation for subsequent interconnection requests. (P)

(Continued)

N. EXPEDITED INTERCONNECTION PROCESS FOR NON-EXPORT ENERGY STORAGE GENERATING FACILITIES (L)

Applicants with Interconnection Requests for Non-Export Energy Storage Generating Facilities who meet the requirements outlined below are eligible for expedited interconnection in accordance with the Fast Track Process technical review requirements of Section F.2.[1] Applicants with Non-Export AC/DC Converters that meet the requirements outlined in O. below are also eligible. (L) (L)/(P) (L)

1. ELIGIBILITY REQUIREMENTS

Applicants seeking to interconnect a Generating Facility under the provisions of this Section N must meet the following eligibility requirements.

a. Applicant must electronically submit a completed Interconnection Request, including completing all application fields and submitting all supporting documentation necessary to facilitate the expedited review as required by Distribution Provider. Such documentation may include, but is not limited to, single line diagrams with specific details, manufacturer data sheets for proposed equipment, description of control systems, validation of the right to do business in the state, etc. Distribution Provider shall clearly communicate these requirements as part of the application process. Applicant shall select this process option in the Interconnection Request.

b. Applicant's Generating Facility must meet the requirements outlined in Section N.2 below.

c. Applicant's Interconnection Request must be eligible for and select the Fast Track Process.

d. Applicant's Interconnection Request must pass Fast Track Initial Review and not require any Interconnection Facilities, Distribution Upgrades or Network Upgrades to remain eligible under this Section. As such, Interconnection Requests that select the Cost Envelope Option are not eligible.

e. Applicants selecting this section shall use the corresponding interconnection agreement type provided for eligible Generating Facilities. (L)

[1] ~~In accordance with Advice 4941-E-A, the provisions provided for in Section N are being implemented under a pilot approach with a July 1, 2017 through June 30, 2018 reporting period. As such, the provisions may be continued, modified and/or withdrawn as determined by the Commission~~ (P) (P)

(Continued)

N. EXPEDITED INTERCONNECTION PROCESS FOR NON-EXPORT ENERGY STORAGE GENERATING FACILITIES (Cont'd.) (L)

2. GENERATING FACILITY ELIGIBILITY CRITERIA

An Applicant's Generating Facility must meet and adhere to the following criteria.

a. The Generating Facility must be comprised solely of the following specific categories of generation technology: Non-Exporting battery storage.

b. The Generating Facility must have an aggregate maximum inverter nameplate rating of no greater than 500 kW. There is no limitation on an energy storage device's kWh capacity rating.

c. The Generating Facility must be located behind an existing single retail meter and Point of Common Coupling with a single, clearly marked and accessible disconnect. No other Generators, other than isolated back-up Generators, may be at the same Point of Interconnection or Point of Common Coupling.

d. The Generating Facility must utilize Option 3 or Option 4 to meet the non-export protection requirements of Screen I in Section G.1.i.

e. The Generating Facility must have a single or coordinated control system for all charging functions if utilizing multiple inverters. The control system must also ensure that there is no increase in the Interconnection Customer's existing peak load demand.

f. The Generating Facility must utilize only inverter-based, UL 1741 and UL 1741 SA-listed equipment. Additionally, all installed equipment must meet Distribution Provider's current electric service requirements with no violations or variances. (L)

(Continued)

O. Non-Export AC/DC CONVERTER ELIGIBILITY CRITERIA (L)

Applicants with Non-Export AC/DC Converters who meet the eligibility criteria below qualify for the expedited interconnection process outlined in Section N of this Rule.

1. The Non-Export AC/DC Converter must have an aggregate maximum inverter nameplate rating of no greater than 500 kW. There is no limitation on an energy storage device's kWh capacity rating.

2. Applicant's Interconnection Request must be eligible for and select the Fast Track Process.

3. Applicant's Interconnection Request must pass Fast Track Initial Review and not require any Interconnection Facilities, Distribution Upgrades or Network Upgrades to remain eligible under this Section.

4. Applicants selecting this section shall use the corresponding interconnection agreement type provided for Non-Export AC/DC Converters eligible under this Section. As such, Interconnection Requests that select the Cost Envelope Option are not eligible.

5. Applicant's Non-Export AC/DC converter must meet the Certification requirements in the Section C Definition of "Non-Export AC/DC Converters". (L)

(Continued)

ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

(L)

Appendix A Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	Title	Associated Tariffs	Use Guidance
Pre-Application Request			
79-1181	Rule 21 Pre-Application Report Request	Rule 21	For Generator Developer to request basic info about local distribution circuit
Study Agreement			
79-1162	Rule 21 Detailed Study Agreement	Rule 21	Independent Study and Distribution Group Study Process Study Agreement
NEM and Non-Export Interconnection Forms			
79-973	Generating Facility Interconnection Agreement For Non-Export Generating Facilities (Rule 21 Interconnection Agreement)	Rule 21	Interconnection Agreement used for RESBCT and non-NEM generation with Application 79-974 and 79-1112
79-978	Interconnection Agreement for Net Energy Metering of Solar or Wind Electric Generating Facilities of 1,000 kW or Less, Other Than Facilities of 30 kW or Less	NEM, Rule 21	Solar and/or Wind > 30 kW and ≤ 1 MW expanded NEM used with Form 79-1174-02
79-978-02	Interconnection Agreement for Net Energy Metering (NEM2) of Solar or Wind Electric Generating Facilities of 1,000 Kilowatts or Less, Other than Facilities of 30 Kilowatts or Less	NEM2, Rule 21	Solar and/or Wind > 30 kW and ≤ 1 MW expanded NEM2 used with Form 79-1174-02
79-992	Customer Generation Agreement (Third party Generator on Premises, Non-Exporting)	Rule 21	Used with Forms 79-1174
79-997	Interconnection Agreement for Net Energy Metering of Biogas Digester Generating Facilities	NEM, Rule 21	NEMBIO (Closed to new applicants), NEMBIOA Interconnection Agreement used with Form 79-1174
79-1010	Interconnection Agreement for Net Energy Metering of Fuel Cell Generating Facilities	NEM, Rule 21	NEMFC Interconnection Agreement used with Form 79-1174
79-1069	Generating facility Interconnection Agreement (Multiple Tariff)	NEM, Rule 21	NEMMT Interconnection Agreement used with Form 79-1174
79-1069-02	Generating Facility Interconnection Agreement (Multiple Tariff NEM2MT)	NEM2, Rule 21	NEM2MT Interconnection Agreement used with Form 79-1174-02

(Continued)

ELECTRIC RULE NO. 21 Sheet 27557
GENERATING FACILITY INTERCONNECTIONS

~~79-1109 ***~~	~~Virtual Net Energy Metering Application and Interconnection Agreement For The Building Owner of Multifamily Affordable Housing With A Solar Generating Facility of 1 Megawatt or Less~~	~~NEM, Rule 21~~	~~NEMV Interconnection Agreement used with Form 79-974~~

(L)

(Continued)

Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	Title	Associated Tariffs	Use Guidance
NEM and Non-Export Interconnection Forms (Cont'd.)			
~~79-1193~~	~~AGREEMENT AND CUSTOMER AUTHORIZATION Net Energy Metering (NEM) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less with Energy Storage of 10 Kilowatts Or Less or Energy Storage with Power Control System Certification~~	~~NEM~~	~~For NEM pair storage scenarios using Power Control Systems to ensure NEM integrity~~
~~79-1193-02~~	~~AGREEMENT AND CUSTOMER AUTHORIZATION Net Energy Metering (NEM2) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less with Energy Storage of 10 Kilowatts Or Less or Energy Storage with Power Control System Certification~~	~~NEM2~~	~~For NEM2 pair storage scenarios using Power Control Systems to ensure NEM integrity~~
79-1070	Export Addendum to Generating Facility Interconnection Agreement for Non-Export Generating Facilities (Form 79-973) Sized 2 Megawatts or Less	Rule 21	Export addendum used with Form 79-973
79-1109 ***	Virtual Net Energy Metering Application and Interconnection Agreement For The Building Owner of Multifamily Affordable Housing With A Solar Generating Facility of 1 Megawatt or Less	NEM, Rule 21	NEMV Interconnection Agreement used with Form 79-974
79-1109-02***	NEM2VMSH Virtual Net Energy Metering Application and Interconnection Agreement for the Building Owner of Multifamily Affordable Housing with a Solar Generating Facility of 1 Megawatt or Less	NEM2VMSH, Rule 21	NEM2VMSH Interconnection Agreement used with Form 79-1174-02
~~79-1151A~~	~~Net Energy Metering Interconnection for Solar And/or Wind Electric Generating Facilities Of 30 Kilowatts Or Less Agreement and Customer Authorization~~	~~NEM, Rule 21~~	~~NEMS Interconnection Agreement be used with 79-1151B Application~~
~~79-1151A-02~~	~~Agreement And Customer Authorization - Net Energy Metering (NEM2) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less~~	~~NEM2, Rule 21~~	~~NEM2S Application to be used with 79-1151A Interconnection Agreement~~
~~79-1151B~~	~~Net Energy Metering Interconnection For Solar And/or Wind Electric Generating Facilities Of 30 Kilowatts Or Less Application~~	~~NEM, Rule 21~~	~~NEMS Application to be used with 79-1151A Interconnection Agreement~~
~~79-1151B-02~~	~~Application - Net Energy Metering (NEM2) Interconnection For Solar~~	~~NEM2, Rule 21~~	~~NEM2S Application to be used with 79-1151A-02 Interconnection Agreement~~

(L)

(Continued)

	~~And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less~~		
79-1124 ***	Eligible Low Income Development Virtual Net Energy Metering Application and Interconnection Agreement for Multifamily Affordable Housing with Solar Generation Totaling 1 Megawatt or Less	NEMVMASH, Rule 21	NEMVMASH Interconnection Agreement
79-1124-02***	Eligible Low Income Development Virtual Net Energy Metering (NEM2VMSH) Application and Interconnection Agreement for Multifamily Affordable Housing with Solar Generation Totaling 1 Megawatt or Less	NEM2VMSH, Rule 21	NEM2VMSH Interconnection Agreement
79-1130	Request to Opt-out of / Opt-in to Compensation for Surplus Electricity	NEM	AB 920- Opt not to receive compensation for net annual excess energy
79-1131 ***	NEMV Application and Interconnection Agreement for a Solar (PV) or Wind Generating Facility of 1 MW or Less *Serving Multiple Tenants Served at a Single Property Delivery Point*	NEM, Rule 21	NEMV Interconnection Agreement
79-1131-02***	NEM2V Application and Interconnection Agreement for a Solar (PV) or Wind Generating Facility of 1 MW or Less *Serving Multiple Tenants Served at a Single Property Delivery Point*	NEM2V, Rule 21	NEM2V Interconnection Agreement
79-1136	PG&E Interconnection Agreement For an Existing Small Generating Facility Interconnecting to the Distribution System under Rule 21	Rule 21	Used for existing QFs with Form 79-974 (L)

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ELECTRIC RULE NO. 21 Sheet 27759
GENERATING FACILITY INTERCONNECTIONS

Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	Title	Associated Tariffs	Use Guidance
NEM and Non-Export Interconnection Forms (Cont'd.)			
~~79-1124-02***~~	~~Eligible Low Income Development Virtual Net Energy Metering (NEM2VMSH) Application and Interconnection Agreement for Multifamily Affordable Housing with Solar Generation Totaling 1 Megawatt or Less~~	~~NEM2VMSH, Rule 21~~	~~NEM2VMSH Interconnection Agreement~~
~~79-1131***~~	~~NEMV Application and Interconnection Agreement for a Solar (PV) or Wind Generating Facility of 1 MW or Less *Serving Multiple Tenants Served at a Single Property Delivery Point*~~	~~NEM, Rule 21~~	~~NEMV Interconnection Agreement~~
~~79-1131-02***~~	~~NEM2V Application and Interconnection Agreement for a Solar (PV) or Wind Generating Facility of 1 MW or Less *Serving Multiple Tenants Served at a Single Property Delivery Point*~~	~~NEM2V, Rule 21~~	~~NEM2V Interconnection Agreement~~
79-1137	Interconnection Agreement for Net Energy Metering for a Renewable Electrical Generation Facility of 1,000 kW or Less, Except Solar or Wind (SB 489)	NEM, Rule 21	NEMV, NEMEXP, NEMEXPM Interconnection Agreement typically used with Forms 79-974 and 79-1142 Applications
79-1137-02	Interconnection Agreement for Net Energy Metering (NEM2/NEM2V) for a Renewable Electricity Generation Facility of 1,000 Kilowatts or Less, Except Solar or Wind	NEM2, NEM2V, Rule 21	NEM2V, NEM2EXP, NEM2EXPM Interconnection Agreement typically used with Forms 79-1174-02
79-1142 ***	NEMV Interconnection Application for a Renewable Electrical Generation Facility of 1 Megawatt or Less	NEM, Rule 21	Used with Form 79-1137 (L)
~~79-973~~	~~Generating Facility Interconnection Agreement For Non-Export Generating Facilities (Rule 21 Interconnection Agreement)~~	~~Rule 21~~	~~Interconnection Agreement used for RESBCT and non-NEM generation with Application 79-974 and 79-1112~~
~~79-992~~	~~Customer Generation Agreement (Third party Generator on Premises, Non-Exporting)~~	~~Rule 21~~	~~Used with Forms 79-1174~~
~~79-1070~~	~~Export Addendum to Generating Facility Interconnection Agreement for Non-Export Generating Facilities (Form 79-973) Sized 2 Megawatts or Less~~	~~Rule 21~~	~~Export addendum used with Form 79-973~~
~~79-1136~~	~~PG&E Interconnection Agreement For an Existing Small Generating Facility Interconnecting to the Distribution System under Rule 21~~	~~Rule 21~~	~~Used for existing QFs with Form 79-974 (L)~~

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79-1151A	Net Energy Metering Interconnection for Solar And/or Wind Electric Generating Facilities Of 30 Kilowatts Or Less Agreement and Customer Authorization	NEM, Rule 21	NEMS Interconnection Agreement be used with 79-1151B Application
79-1151A-02	Agreement And Customer Authorization - Net Energy Metering (NEM2) Internconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less	NEM2, Rule 21	NEM2S Application to be used with 79-1151A Interconnection Agreement
79-1151B	Net Energy Metering Interconnection For Solar And/or Wind Electric Generating Facilities Of 30 Kilowatts Or Less Application	NEM, Rule 21	NEMS Application to be used with 79-1151A Interconnection Agreement
79-1151B-02	Application - Net Energy Metering (NEM2) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less	NEM2, Rule 21	NEM2S Application to be used with 79-1151A-02 Interconnection Agreement
79-1155	Schedules NEM, NEMV, NEMVMASH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation	NEM, Rule 21	
79-1155-02	Schedules NEM2, NEM2V, NEM2VMSH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation	NEM2 NEM2V NEM2VMSH, Rule 21	

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ELECTRIC RULE NO. 21 Sheet 27~~860~~
GENERATING FACILITY INTERCONNECTIONS

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Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	Title	Associated Tariffs	Use Guidance
Other NEM and Non-Export Forms (Cont'd.)			
79-1174 (Attach-ments A through N)	Rule 21 Generator Interconnection Application	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Rule 21 customer interconnection application form for expanded net-energy metered (all NEM > 30 kw and all non-Solar/Wind NEM), NEMFC, NEMV, NEMVMASH, RES-BCT, and non-export and limited export Rule 21 generation. (Standard NEM for solar and/or wind ≤ 30 kw will continue to use the 79-1151B application.)
79-1174-02 (Attach-ments A through N)	Rule 21 Generator Interconnection Application	NEM2 (NEM2EXP, NEM2MT and NEM2A), NEMFC, NEM2V, NEM2VMSH, RES-BCT, Rule 21	Rule 21 customer interconnection application form for expanded net-energy metered (all NEM2 > 30 kw and all non-Solar/Wind NEM), NEMFC, NEM2V, NEM2VMSH, RES-BCT, and non-export and limited export Rule 21 generation. (Standard NEM for solar and/or wind ≤ 30 kw will continue to use the 79-1151B application.)
79-1192	Interconnection Agreement for Non-Export Storage Generating Facilities 500KW or Less	Rule 21	Used for expedited interconnection of non-export energy storage, pursuant to Rule 21 Section N, PG&E AL 4941-E & E-A and D.16-06-052, & Attachment C, Section II.1
~~79-1199~~	~~Agreement And Customer Authorization Non-Export Stand-Alone Energy Storage Of 30 Kilowatts Or Less~~	~~Rule 21~~	~~Interconnection Agreement For non-export storage ≤ 30 kW~~
~~79-1206-02~~	~~Eligible Low-Income Development Virtual Net Energy Metering (NEM2VSOM) Interconnection Agreement For The Solar On Multifamily Affordable Housing~~	~~NEM2VSOM~~	~~NEM2VSOM Interconnection agreement for solar 1 MW or less.~~

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	~~(SOMAH) Program With Solar Generation Totaling 1 Mw Or Less~~		
~~79-1130~~	~~Request to Opt out of / Opt in to Compensation for Surplus Electricity~~	~~NEM~~	~~AB 920- Opt not to receive compensation for net annual excess energy~~
~~79-1202 ****~~	~~Load Aggregation Appendix~~	~~NEM, NEM2, Rule 21~~	~~Use as an Appendix with Form 79-1151A, 79-1151A-02, 79-978, 79-978-02,79-1137, 79-1137-02, 79-1069 or 79-1069-02~~
~~79-1155~~	~~Schedules NEM, NEMV, NEMVMASH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation~~	~~NEM, Rule 21~~	
~~79-1155-02~~	~~Schedules NEM2, NEM2V, NEM2VMSH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation~~	~~NEM2 NEM2V NEM2VMSH, Rule 21~~	
~~79-1174~~	~~Rule 21 Generator Interconnection Application~~	~~NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21~~	~~Rule 21 customer interconnection application form for expanded net-energy metered (all NEM > 30 kw and all non-Solar/Wind NEM), NEMFC, NEMV, NEMVMASH, RES-BCT, and non-export and limited export Rule 21 generation. (Standard NEM for solar and/or wind ≤ 30 kw will continue to use the 79-1151B application.)~~

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ELECTRIC RULE NO. 21 Sheet 27961
GENERATING FACILITY INTERCONNECTIONS

Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections				
Form Number	Title	Associated Tariffs	Use Guidance	
Other NEM and Non-Export Forms (Cont'd.)				
~~79-1174-02~~	~~Rule 21 Generator Interconnection Application~~	~~NEM2 (NEM2EXP, NEM2MT and NEM2A), NEMFC, NEM2V, NEM2VMSH, RES-BCT, Rule 21~~	~~Rule 21 customer interconnection application form for expanded net energy metered (all NEM2 > 30 kw and all non-Solar/Wind NEM), NEMFC, NEM2V, NEM2VMSH, RES-BCT, and non-export and limited export Rule 21 generation. (Standard NEM for solar and/or wind ≤ 30 kw will continue to use the 79-1151B application.)~~	
79-1193	AGREEMENT AND CUSTOMER AUTHORIZATION Net Energy Metering (NEM) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less with Energy Storage of 10 Kilowatts Or Less or Energy Storage with Power Control System Certification	NEM	For NEM pair storage scenarios using Power Control Systems to ensure NEM integrity	
79-1193-02	AGREEMENT AND CUSTOMER AUTHORIZATION Net Energy Metering (NEM2) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less with Energy Storage of 10 Kilowatts Or Less or Energy Storage with Power Control System Certification	NEM2	For NEM2 pair storage scenarios using Power Control Systems to ensure NEM integrity	
79-1199	Agreement And Customer Authorization Non-Export Stand-Alone Energy Storage Of 30 Kilowatts Or Less	Rule 21	Interconnection Agreement For non-export storage ≤ 30 kW	
79-1202 ****	Load Aggregation Appendix	NEM, NEM2, Rule 21	Use as an Appendix with Form 79-1151A, 79-1151A-02, 79-978, 79-978-02,79-1137, 79-1137-02, 79-1069 or 79-1069-02	
79-1206-02	Eligible Low-Income Development Virtual Net Energy Metering (NEM2VSOM) Interconnection Agreement For The Solar On Multifamily Affordable Housing (SOMAH) Program With Solar Generation Totaling 1 Mw Or Less	NEM2VSOM	NEM2VSOM Interconnection agreement for solar 1 MW or less.	

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ELECTRIC RULE NO. 21 Sheet 27961
GENERATING FACILITY INTERCONNECTIONS

Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
Form Number	Title	Associated Tariffs	Use Guidance
Export for Sale Interconnection Forms			
79-1145	Rule 21 Exporting Generator Interconnection Request	Rule 21	Preferred online application: https://www.pge.com/en_US/large-business/services/alternatives-to-pge/electric-generation-interconnection.page
79-1197	Local Government Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) Re-Allocation Request	RES-BCT	Use to establish RES-BCT benefiting account re-allocations
79-1198-02	Interconnection Agreement For Net Energy Metering (NEM2) And Renewable Electrical Generating Facility Sized Greater Than 1,000 Kw	NEM2	FT and Detailed Study Interconnection Agreement for >1MW NEM2 Generating Facilities
79-1200	Rule 21 Generator Interconnection Agreement For Exporting Generating Facilities	Rule 21	FT and Detailed Study Interconnection Agreement for Exporting Generating Facilities
Other Agreements			
79-280	Agreement for Installation of Allocation of Special Facilities for Parallel Operation of Non-Utility-Owned Generation and/or Electrical Standby Service (Electric Rules 2 and 21)	Rule 21	Special Facilities Agreement to be used with Form 79-702

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*** The application section of these forms is replaced by 79-1174.
**** For NEMA expanded customers, use the online 79-1174 form.

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APPENDIX B (L)

Unit Cost Guide

Distribution Provider shall publish a Unit Cost Guide for facilities generally required to interconnect generation in Distribution Provider's Distribution System. The Unit Cost Guide shall not be binding for actual facility costs and is provided only for additional cost transparency, developer reference, and Distribution Provider's reference when preparing the cost estimate provided in any applicable studies. The Unit Cost Guide shall not replace the estimated cost provided by Distribution Provider in an Interconnection Study or an initial or supplemental review under the Fast Track Process.

The Unit Cost Guide shall include the anticipated cost of procuring and installing Interconnection Facilities and Distribution Upgrades generally utilized by the Applicant. An annual adjustment shall be performed within the Unit Cost Guide for five (5) years to account for the anticipated timing of procurement to accommodate a potential range of Commercial Operation Dates.

The Unit Cost Guide shall be updated annually in accordance with the process set forth in D.16-06-052. (L)

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PG&E Gas and Electric
Advice Submittal List
General Order 96-B, Section IV

AT&T
Albion Power Company

Alta Power Group, LLC
Anderson & Poole

Atlas ReFuel
BART

Barkovich & Yap, Inc.
California Cotton Ginners & Growers Assn
California Energy Commission

California Hub for Energy Efficiency Financing

California Alternative Energy and Advanced Transportation Financing Authority
California Public Utilities Commission
Calpine

Cameron-Daniel, P.C.
Casner, Steve
Cenergy Power
Center for Biological Diversity

Chevron Pipeline and Power
City of Palo Alto

City of San Jose
Clean Power Research
Coast Economic Consulting
Commercial Energy
Crossborder Energy
Crown Road Energy, LLC
Davis Wright Tremaine LLP
Day Carter Murphy

Dept of General Services
Don Pickett & Associates, Inc.
Douglass & Liddell

East Bay Community Energy Ellison Schneider & Harris LLP Energy Management Service
Engineers and Scientists of California

GenOn Energy, Inc.
Goodin, MacBride, Squeri, Schlotz & Ritchie
Green Power Institute
Hanna & Morton
ICF
IGS Energy
International Power Technology
Intestate Gas Services, Inc.
Kelly Group
Ken Bohn Consulting
Keyes & Fox LLP
Leviton Manufacturing Co., Inc.

Los Angeles County Integrated Waste Management Task Force
MRW & Associates
Manatt Phelps Phillips
Marin Energy Authority
McKenzie & Associates

Modesto Irrigation District
NLine Energy, Inc.
NRG Solar

Office of Ratepayer Advocates
OnGrid Solar
Pacific Gas and Electric Company
Peninsula Clean Energy

Pioneer Community Energy

Redwood Coast Energy Authority
Regulatory & Cogeneration Service, Inc.
SCD Energy Solutions
San Diego Gas & Electric Company

SPURR
San Francisco Water Power and Sewer
Sempra Utilities

Sierra Telephone Company, Inc.
Southern California Edison Company
Southern California Gas Company
Spark Energy
Sun Light & Power
Sunshine Design
Tecogen, Inc.
TerraVerde Renewable Partners
Tiger Natural Gas, Inc.

TransCanada
Utility Cost Management
Utility Power Solutions
Water and Energy Consulting Wellhead Electric Company
Western Manufactured Housing Communities Association (WMA)
Yep Energy