

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



March 3, 2017

Advice Letters 4920-E and 4920-E-A

Erik Jacobson
Director, Regulatory Relations
Pacific Gas and Electric Company
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, California 94177

**SUBJECT: Modifications to Electric Rule 21 Tariff to Reflect Agreement Reached on
the Advanced Inverter Inadvertent Export Option**

Dear Mr. Jacobson:

Advice Letters 4920-E and 4920-E-A are effective as of October 21, 2016.

Sincerely,

A handwritten signature in cursive script that reads "Edward Randolph".

Edward Randolph
Director, Energy Division

February 24, 2017

Advice 4920-E-A

(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Supplemental: Modifications to Electric Rule 21 Tariff to Reflect Agreement Reached on the Advanced Inverter Inadvertent Export Option

Pacific Gas and Electric Company (PG&E) hereby submits for filing the following changes to its tariff schedules. The revised tariff sheets are listed on Attachment 1 and are attached hereto.

Purpose

The purpose of this supplemental filing is to make changes to the tariff sheets originally contained within Advice 4920-E, filed on September 21, 2016. These changes are made in accordance with General Order (GO) 96-B, General Rules 7.5.1, which authorizes utilities to make changes or provide additional information to a previous filing via the filing of a supplemental advice letter.

This advice letter supplements Advice 4920-E in part, and does not change the original integrity of that filing except as described herein.

Background

On September 21, 2016, PG&E filed Advice 4920-E (Advice Letter) to implement a new Inadvertent Export option for generating facilities that utilize UL-1741 or UL 1741 SA-listed grid support (non-islanding) inverters in accordance with California Public Utilities Commission (CPUC or Commission) Decision (D.) 16-06-052 (Decision) and the collaborative stakeholder process described therein. The other investor-owned utilities (IOUs)¹ filed similar advice letters.²

¹ The IOUs include PG&E, Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E).

² See SCE Advice 3475-E and SDG&E Advice 2959-E.

On October 11, 2016, the IOUs received a protest from stakeholders who had participated in the collaborative process.³ In their protest, stakeholders highlighted six areas of concern with the IOUs' advice letters that they felt fell short of the outcome that they had envisioned. The first issue related to the technical review screens that are applicable to Inadvertent Export projects. The remaining five issues addressed concerns or requested clarifications regarding the energy export limitation. PG&E and the other IOUs filed replies to the protest on October 18, 2016.

On November 8, 2016, the Commission's Energy Division hosted a workshop where parties were able to further discuss the items highlighted in the protest. This resulted in the IOUs circulating updates to the proposed tariff modifications on November 18, 2016. The most significant modifications were the removal of the applicability of Rule 21 technical review Screens K and L to eligible Inadvertent Export projects and the insertion of a new Screen M1 to further facilitate the ability of these projects to successfully pass Fast Track Initial Review. Changes were also proposed to the tariff language addressing the energy export limitation to clarify the nature of the requirement.

On November 29, 2016, SolarCity, on behalf of the other stakeholders, provided a response to the proposed modifications circulated by the IOUs. In that response, SolarCity highlighted that the joint stakeholders felt that the IOUs' November 18 proposal was a positive step forward, but also highlighted two remaining concerns related to (1) including a coincidence factor as part of Screen M1 to address the unlikelihood of Inadvertent Exporting systems all exporting simultaneously (Item #1)⁴ and (2) further modifying the proposed energy export limitation tariff language to treat the requirement as an operating criteria as opposed to a limit (Item #2).

PG&E, on behalf of the other IOUs, hosted a follow-up call with stakeholders and the Energy Division on December 6, 2016 to discuss a path forward on the remaining two issues noted above. During the call, the IOUs agreed to adopt the requested changes to the energy export criteria, which effectively resolved Item #2 pending the changes being formally filed for approval with the Commission. In regards to Item #1, the IOUs explained that while they were not necessarily opposed to utilizing a coincidence factor as part of the Screen M1 review, additional data was needed to determine the

³ Parties to the protest included ABB Product Group, Fronius USA, SolarCity Corporation (SolarCity), Sunrun Inc., and Enphase Energy, Inc.

⁴ In their response, the joint stakeholders stated that Screens M and M1 will be used to study the "highly unlikely scenario" of all eligible Inadvertent Export systems exporting simultaneously, which, while reflecting a "worst case" scenario, treats these Inadvertent Exporting systems as if "they have the same operating behavior as NEM (net energy metering) systems" and "defeats one of the main purposes of installing them." The response went on to explain the position that export from these Inadvertent Export systems is primarily a response to the behavior of load. As such, the joint stakeholders expressed the need for a coincidence factor to appropriately consider the operating behavior of these Inadvertent Export systems during the technical review process.

appropriateness and, if appropriate, what that coincidence factor should be to strike the necessary balance between ascertaining the likely impact of these projects on the grid while maintaining safety and reliability for all customers. The IOUs requested to review internally how best to collect the necessary data to facilitate this coincidence factor review and committed to providing an update to stakeholders.

During that internal review, the IOUs determined that it was not practical to implement the metering modifications that would be necessary to collect the data to determine a specific coincidence factor at this time. Therefore, as an alternative, the IOUs proposed implementing the new Inadvertent Export option with a zero coincidence factor, but internally monitoring via existing Rule 21 study processes if the use of a zero coincidence factor resulted in system issues. To the extent the coincidence factor needs to be revised to account for future system conditions and/or issues, the IOUs would file advice letters explaining the rationale and requesting Commission approval before any changes in practice were implemented. This alternate proposal was circulated to stakeholders on January 27, 2017, and discussed during a subsequent stakeholder call on February 10, 2017. On the call, stakeholders expressed support for the alternate proposal and asked clarifying questions, which the IOUs responded to.

Discussion

Technical Review Screen Applicability

In Advice 4920-E, PG&E proposed revisions to Section G.1.i of Rule 21 to clarify the applicability of Screen I, which reviews whether power will be exported across the point of common coupling, to Inadvertent Export projects. Corresponding updates were also made to the flowchart included in Section G. As noted above, stakeholders expressed concerns with how the technical review screens were going to be applied to projects eligible for the new Inadvertent Export option.⁵ To resolve these concerns but still maintain the IOUs' ability to study these projects in a manner that ensures the safety and reliability of the grid, the proposed tariff changes filed herein specify that Inadvertent Export projects that meet the requirements of Section Mm bypass Screens K and L, and are processed under Screen M as described in Section Mm. As described in Section Mm, if these projects fail Screen M, which reviews line section capacity, instead of failing Fast Track Initial Review, these projects are then reviewed under the new Screen M1. Screen M1 reviews reverse power flows resulting from the aggregate of distributed energy resources (DERs), but utilizes a zero coincidence factor when considering the impact of other Inadvertent Export systems that meet the requirements of Section Mm such that those Inadvertent Export systems do not impact Screen M1's aggregate analysis determination for the individual Inadvertent Export

⁵ To be eligible, projects must meet the criteria in the new sub-Section Mm, *Inadvertent Export Utilizing UL-1741 or UL-1741 SA-Listed Grid Support (Non-Islanding) Inverters*, that was added in Advice 3475-E. These projects are also referred to as selecting "Option 6" under Screen I.

project being evaluated. If the Inadvertent Export projects pass Screen M1, they are deemed as then passing Fast Track Initial Review. If they fail, they continue on with Fast Track Supplemental Review.

Energy Export Operating Criteria

In Advice 4920-E, PG&E included the following requirements related to energy export and monitoring for eligible Inadvertent Export projects in the new sub-Section Mm based on the language agreed upon during the collaborative stakeholder process:⁶

- 1.c – The Generating Facility must limit export to not exceed its nameplate rating (kVA-gross) multiplied by 0.1 hours per day (e.g., for a 100 kVA-gross nameplate Generating Facility, the maximum energy allowed to be exported for one day is 10 kWh and the maximum energy allowed to be exported for a 30-day period is 300 kWh); and,
- 2.b – Must limit the total energy export within the allowable energy export outlined above in 1.c in a 30-day period and issue a notification (e.g., electronic notification, alarm, etc.) if that energy export limit is exceeded.

However, subsequent to filing the Advice Letter, stakeholders expressed concern about the characterization of these requirements as limitations as opposed to operating criteria, and proposed the following changes to facilitate the desired outcome of the requirements:

- 1.c – The Generating Facility's total energy export must ~~limit export to~~ 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 one day is 10 kWh and~~ the maximum energy allowed to be exported for a 30-day period is 300 kWh); and,
- 2.b – Must ~~limit~~ monitor that the total energy export is maintained within the allowable energy export outlined above in 1.c ~~in a 30-day period and issue~~ provide an indication or a notification (e.g., electronic notification, alarm, etc.) if that energy export limit is exceeded.

As noted above, the IOUs agreed with these proposed changes during the December 6, 2016 stakeholder call.

⁶ The collaborative stakeholder process consisted of three formal stakeholder calls and back-and-forth written correspondence that ultimately culminated in the filing of a consensus document by PG&E (on behalf of stakeholders) on August 8, 2016 entitled "*Principles for Developing Tariff Language for an 'Option 6' Inadvertent Export Application Utilizing UL-1741 Certified (Non-Islanding) Inverters or UL-1741 SA Listed Grid Support (Non-Islanding) Inverters.*"

Tariff Revisions

Pursuant to the discussion above, the following supplemental changes are proposed to the Rule 21 modifications previously filed in Advice 4920-E.

- The flowchart included in Section G is modified to specify that Inadvertent Export projects that meet the requirements of Section Mm bypass Screens K and L, and are processed under Screen M as described in Section Mm.
- In Section G.1.i, the sentence that was added to the second bullet point in Advice 4920-E is removed.
- In Sections G.1.j and G.1.m, a footnote is added to specify that Inadvertent Export projects that meet the requirements of Section Mm bypass Screens K and L, and are processed under Screen M as described in Section Mm.
- In sub-Section Mm, a new Section 3, *Applicability of Engineering Review Screens*, and a corresponding flow chart are added to describe how eligible Inadvertent Export projects are processed under Screens M and M1, if applicable.
- Changes are made to Section Mm.1.c and 2.b as described above.

No cost information is required for this advice filing.

This advice filing will not increase any rate or charge, cause the withdrawal of service, or conflict with any other schedule or rule.

Protests

At the authorization of Energy Division, PG&E is requesting a shortened protest period. Anyone wishing to protest this filing may do so by letter sent via U.S. mail, by facsimile or electronically, any of which must be received no later than March 1, 2017, which is 5 days after the date of this filing. 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 B10C
P.O. Box 770000
San Francisco, California 94177

Facsimile: (415) 973-1448
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

PG&E requests that this Tier 2 supplemental advice filing become effective on the same day as the original Advice Letter, which is October 21, 2016.

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.14-07-002, R.12-11-005, and R.11-09-011. 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 filings can also be accessed electronically at: <http://www.pge.com/tariffs/>.

/S/

Erik Jacobson
Director, Regulatory Relations

Attachments

cc: Mary Claire Evans, Energy Division
Marc Monbouquette, Energy Division
Jeffrey Kwan, Energy Division
Gabriel Petlin, Energy Division
Bob White, ABB Product Group Solar
Tristan Kreager, Fronius USA
Jason Keyes, Counsel for SolarCity
Steven Rymsha, Sunrun Inc.
John Berdner, Enphase Energy Inc.
Service Lists R.14-07-002, R.12-11-005, and R.11-09-011

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY ENERGY UTILITY

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

Company name/CPUC Utility No. **Pacific Gas and Electric Company (ID U39 E)**

Utility type:

☒ ELC

☐ GAS

☐ PLC

☐ HEAT

☐ WATER

Contact Person: Kingsley Cheng

Phone #: (415) 973-5265

E-mail: k2c0@pge.com and PGETariffs@pge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric

GAS = Gas

PLC = Pipeline

HEAT = Heat

WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: **4920-E-A**

Tier: 2

Subject of AL: **Supplemental: Modifications to Electric Rule 21 Tariff to Reflect Agreement Reached on the Advanced Inverter Inadvertent Export Option**

Keywords (choose from CPUC listing): Compliance, Metering, Rules

AL filing type: ☐ Monthly ☐ Quarterly ☐ Annual ☒ One-Time ☐ Other _____

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: D.16-06-052

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: _____

Is AL requesting confidential treatment? If so, what information is the utility seeking confidential treatment for: No

Confidential information will be made available to those who have executed a nondisclosure agreement: N/A

Name(s) and contact information of the person(s) who will provide the nondisclosure agreement and access to the confidential information: _____

Resolution Required? ☐ Yes ☒ No

Requested effective date: **October 21, 2016**

No. of tariff sheets: **16**

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: **Electric Rule 21**

Service affected and changes proposed: N/A

Pending advice letters that revise the same tariff sheets: **Advice 4894-E, 4941-E-A, and 4982-E**

Protests, dispositions, and all other correspondence regarding this AL are due no later than 5 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:

California Public Utilities Commission

Energy Division

EDTariffUnit

505 Van Ness Ave., 4th Flr.

San Francisco, CA 94102

E-mail: EDTariffUnit@cpuc.ca.gov

Pacific Gas and Electric Company

Attn: Erik Jacobson

Director, Regulatory Relations

c/o Megan Lawson

77 Beale Street, Mail Code B10C

P.O. Box 770000

San Francisco, CA 94177

E-mail: PGETariffs@pge.com

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
40122-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 124	37884-E
40123-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 133	36919-E
40124-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 136	36922-E
40125-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 137	36923-E
40126-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 218	
40127-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 219	
40128-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 220	
40129-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 221	
40130-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 222	37888-E
40131-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 223	37889-E
40132-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 224	37890-E
40133-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 225	37891-E
40134-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 226	37892-E
40135-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 227	37009-E

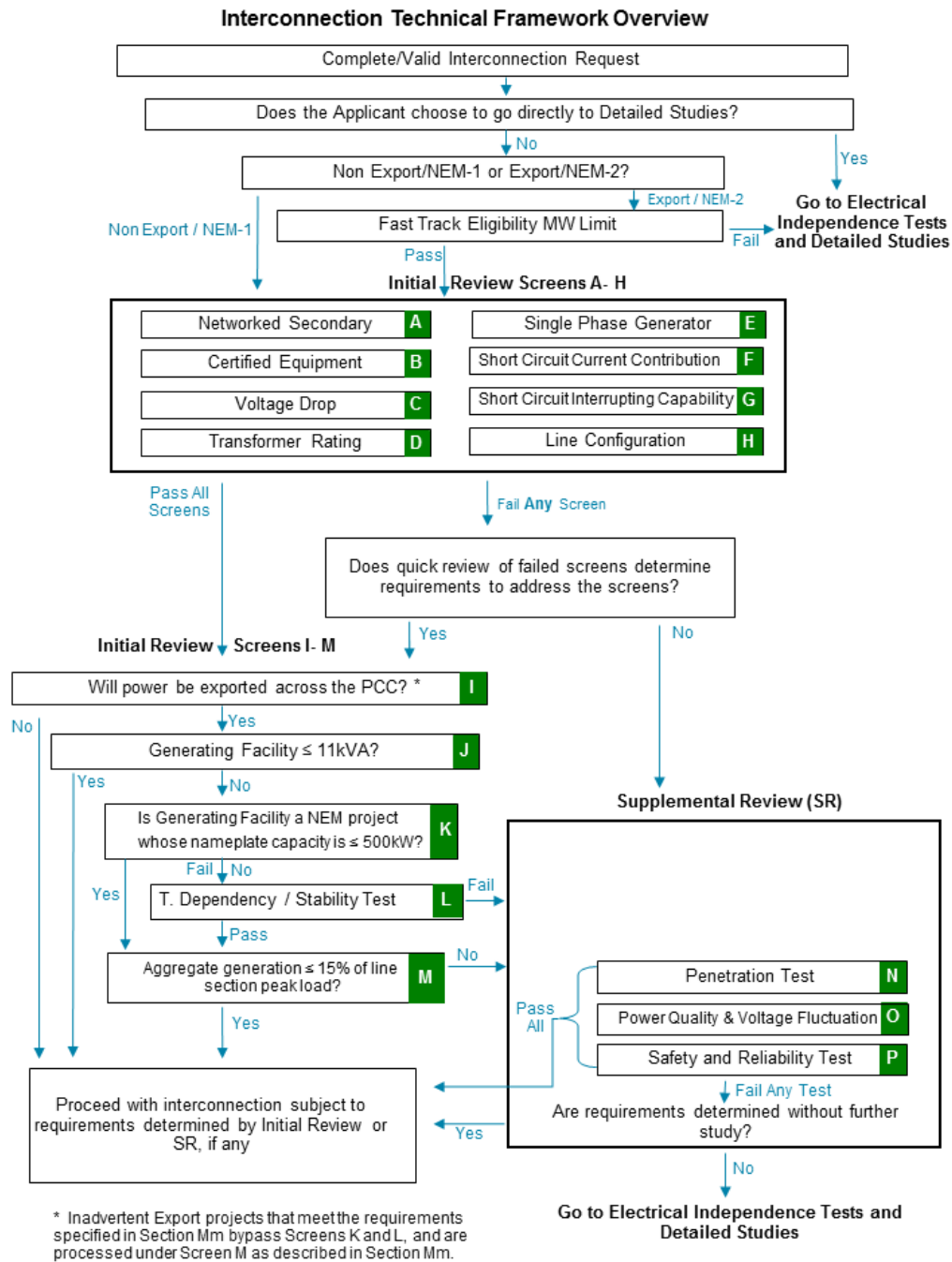
Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
40136-E	ELECTRIC TABLE OF CONTENTS Sheet 1	40114-E
40137-E	ELECTRIC TABLE OF CONTENTS Sheet 20	37895-E



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 124

G. ENGINEERING REVIEW DETAILS



(N)

(N)
|
(N)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 133

G. ENGINEERING REVIEW DETAILS (Cont'd.)

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?

- If Yes, Continue to Screen J. This includes Options 5 and 6 below. (N)
- If No, then to ensure that the Generating Facility does not export across the PCC, the Generating Facility must incorporate one of the first four options shown below. Following that selection, Initial Review is complete. (T)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 136

G. ENGINEERING REVIEW DETAILS (Cont'd.)

1. INITIAL REVIEW SCREENS (Cont'd.)

j. Screen J: Is the Gross Rating of the Generating Facility 11 kVA or less?

- If Yes (pass), skip Screens K, L and M; Initial Review is complete.
- If No (fail), continue to Screen K.ⁱ

(N)

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. (N)
(N)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 137

G. ENGINEERING REVIEW DETAILS (Cont'd.)

1. INITIAL REVIEW SCREENS (Cont'd.)

I. Screen L: Transmission Dependency and Transmission Stability Test

Is the Interconnection Request for an area where: (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. Where (i) or (ii) above are met, the impacts of this Interconnection Request to the Transmission System may require Detailed Study.

- 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.

m. Screen M: 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

(N)

- 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.

ⁱⁱ Inadvertent Export systems that meet the requirements specified in Section Mm are processed under Screen M as described in Section Mm.

(N)
(N)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 218

**Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS
UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-
ISLANDING) INVERTERS**

(N)

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.

(N)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 219

- Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS (N)
UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-
ISLANDING) INVERTERS (Cont'd.)
- 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. (N)

(Continued)

Advice 4920-E-A
Decision

Issued by
Robert S. Kenney
Vice President, Regulatory Affairs

Date Filed February 24, 2017
Effective
Resolution



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 220

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS
UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-
ISLANDING) INVERTERS (Cont'd.)

(N)

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.

(N)

(Continued)



U 39

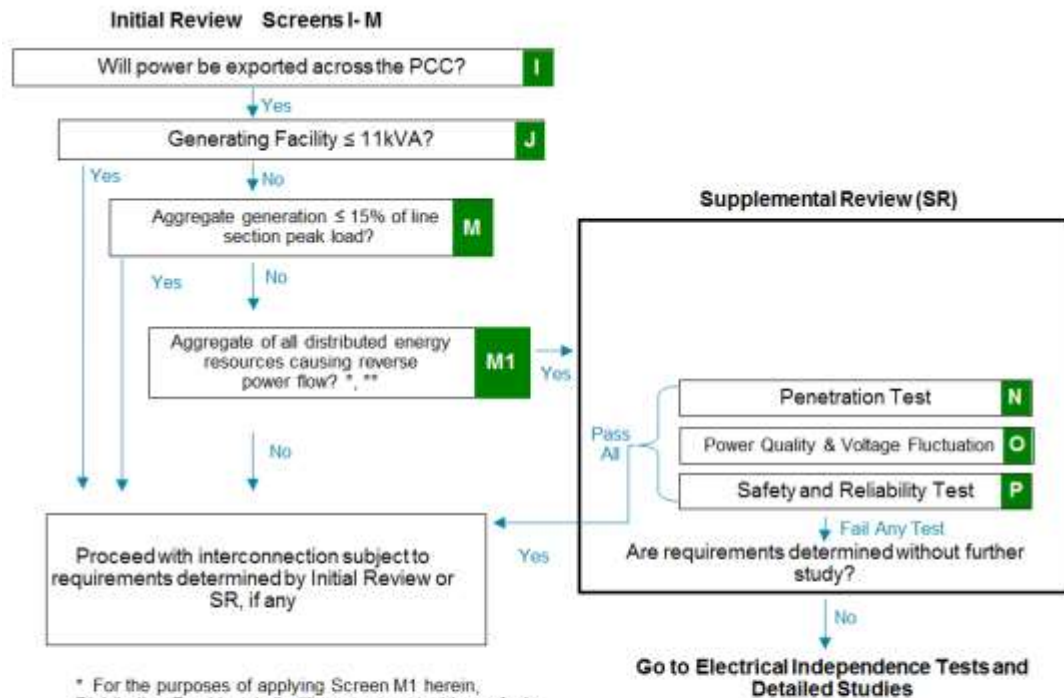
ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 221

Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS
UTILIZING UL-1741 CERTIFIED OR SA LISTED GRID SUPPORT (NON-
ISLANDING) INVERTERS (Cont'd.)

(N)

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.

(N)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 222

Appendix A Forms Associated with Rule 21 <u>Generating Facility Interconnections</u>			
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			
79-978	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
79-997	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
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

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ELECTRIC RULE NO. 21
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
NEM and Non-Export Interconnection Forms (Cont'd.)			
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 And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less	NEM2, Rule 21	NEM2S Application to be used with 79-1151A Interconnection Agreement
79-1124***	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
79-1131***	NEMV Application and Interconnection Agreement for a Solar (PV) or Wind Generating Facility of 1 MW or Less <i>Serving Multiple Tenants Served at a Single Service Delivery Point</i>	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 <i>Serving Multiple Tenants Served at a Single Service Delivery Point</i>	NEM2V, Rule 21	NEM2V Interconnection Agreement

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ELECTRIC RULE NO. 21
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
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 Application and Interconnection Agreement for a Renewable Electrical Generation Facility of 1 Megawatt or Less Serving Multi-Tenant And Multi-Meter Properties at a Single Service Delivery Point	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)
Other NEM and Non-Export Forms			
79-1125	NEM / NEMV / NEMVMASH Inspection Report	NEM, Rule 21	
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
79-1153 ****	NEM Load Aggregation Appendix	NEM, Rule 21	Use as an Appendix with Form 79-1151A, 79-978, 79-1137 or 79-1069

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

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Appendix A (Cont'd.) Forms Associated with Rule 21 Generating Facility Interconnections			
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Other NEM and Non-Export Forms (Cont'd.)			
79-1153-02****	NEM2A Load Aggregation Appendix	NEM2, Rule 21	Use as an Appendix with Form 79-1151A-02, 79-978-02, 79-1137-02 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, NEM2VMASH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation	NEM2 NEM2V NEM2VMASH, 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.)
79-1174-02	Rule 21 Generator Interconnection Application	NEM2 (NEM2EXP, NEM2MT and NEM2A), NEMFC, NEM2V, NEM2VMASH, 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, NEM2VMASH, 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.)
Export for Sale Interconnection Forms			
79-1144	Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities Interconnecting Under the Fast Track Process	Rule 21	To be used with the GIA For Exporting GFs Interconnecting Under The Detailed Study Process

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San Francisco, California

Cal. P.U.C. Sheet No. 40134-E
Cal. P.U.C. Sheet No. 37892-E

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**** For NEMA expanded customers, use the online 79-1174 form.

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San Francisco, California

Cal. P.U.C. Sheet No. 40135-E
Cal. P.U.C. Sheet No. 37009-E

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Preliminary Statements.....	40121,35423,38226,37737,34373,37727,38194*-E		
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Advice 4920-E-A
Decision

Issued by
Robert S. Kenney
Vice President, Regulatory Affairs

Date Filed
Effective
Resolution

February 24, 2017



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**PG&E Gas and Electric
Advice Filing List
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AT&T	Don Pickett & Associates, Inc.	OnGrid Solar
Albion Power Company	Douglass & Liddell	Pacific Gas and Electric Company
Alcantar & Kahl LLP	Downey & Brand	Praxair
Anderson & Poole	Ellison Schneider & Harris LLP	Regulatory & Cogeneration Service, Inc.
Atlas ReFuel	Evaluation + Strategy for Social Innovation	SCD Energy Solutions
BART	G. A. Krause & Assoc.	SCE
Barkovich & Yap, Inc.	GenOn Energy Inc.	SDG&E and SoCalGas
Bartle Wells Associates	GenOn Energy, Inc.	SPURR
Braun Blaising McLaughlin & Smith, P.C.	Goodin, MacBride, Squeri, Schlotz & Ritchie	San Francisco Water Power and Sewer
Braun Blaising McLaughlin, P.C.	Green Charge Networks	Seattle City Light
CENERGY POWER	Green Power Institute	Sempra Energy (Socal Gas)
CPUC	Hanna & Morton	Sempra Utilities
California Cotton Ginners & Growers Assn	ICF	SoCalGas
California Energy Commission	International Power Technology	Southern California Edison Company
California Public Utilities Commission	Intestate Gas Services, Inc.	Southern California Gas Company (SoCalGas)
California State Association of Counties	Kelly Group	Spark Energy
Calpine	Ken Bohn Consulting	Sun Light & Power
Casner, Steve	Leviton Manufacturing Co., Inc.	Sunshine Design
Center for Biological Diversity	Linde	Tecogen, Inc.
City of Palo Alto	Los Angeles County Integrated Waste Management Task Force	TerraVerde Renewable Partners
City of San Jose	Los Angeles Dept of Water & Power	TerraVerde Renewable Partners, LLC
Clean Power	MRW & Associates	Tiger Natural Gas, Inc.
Clean Power Research	Manatt Phelps Phillips	TransCanada
Coast Economic Consulting	Marin Energy Authority	Troutman Sanders LLP
Commercial Energy	McKenna Long & Aldridge LLP	Utility Cost Management
Cool Earth Solar, Inc.	McKenzie & Associates	Utility Power Solutions
County of Tehama - Department of Public Works	Modesto Irrigation District	Utility Specialists
Crossborder Energy	Morgan Stanley	Verizon
Crown Road Energy, LLC	NLine Energy, Inc.	Water and Energy Consulting
Davis Wright Tremaine LLP	NRG Solar	Wellhead Electric Company
Day Carter Murphy	Nexant, Inc.	Western Manufactured Housing Communities Association (WMA)
Defense Energy Support Center	ORA	YEP Energy
Dept of General Services	Office of Ratepayer Advocates	Yelp Energy
Division of Ratepayer Advocates	Office of Ratepayer Advocates, Electricity Planning and Policy B	