

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



March 2, 2023

Advice Letter 6757-E-A

Sidney Bob Dietz II
Director, Regulatory Relations
Pacific Gas and Electric Company
77 Beale Street
San Francisco, California 94177
E-mail: PGETariffs@pge.com

SUBJECT: Modifications to Electric Rule 21 on Financial Security Posting Requirements

Dear Mr. Dietz:

Pacific Gas and Electric Company Advice Letter 6757-E-A is effective as of February 16, 2023.

Sincerely,

A handwritten signature in black ink that reads "Leuwam Tesfai".

Leuwam Tesfai
Deputy Executive Director for Energy and Climate Policy/
Director, Energy Division
California Public Utilities Commission

January 27, 2023

Advice 6757-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 on Financial Security Posting Requirements

Purpose

Pacific Gas and Electric Company (PG&E) hereby submits this Supplemental Tier 2 Advice Letter (AL) to propose replacement of the Financial Security posting requirement with the Bill-on-Estimate (BoE) Special Facilities Agreement (SFA) process. The BoE process achieves an enhanced level of cost certainty for interconnection customers by contracting and issuing the final system upgrade invoice after verifying field conditions, but prior to initiating construction. Additionally, the BoE process eliminates both the long-term financial burden for the Interconnection Customer to maintain the chosen financial security instrument throughout the system upgrade implementation process, as well as the related administrative burden for both the interconnection customer and PG&E related to financial security posting, monthly invoicing, and final cost true-up. Finally, the BoE process aligns with the Service Planning new business process and will allow PG&E to automate SFA and invoice tendering for interconnection customers, which will improve cycle times and greatly reduce human errors inherent to the current manual process.

This supplemental includes additional modifications to Electric Rule 21 and Form 79-1198-02. PG&E added Section 4, Bill on Estimate to Electric Rule 21. Form 79-1198-02 was modified to remove attachment C as it was redundant to section 2.9 of the form and the form did not contain milestones as milestones are written within the Rule 21 tariff not the interconnection agreement. Also, this supplemental advice letter replaces AL 6757-E in its entirety.

Background

The California Public Utilities Commission (CPUC or Commission) initiated in Rulemaking (R.) 11-09-011 Decision (D.)12-09-018 on September 13, 2012 to review and, if necessary, revise the rules and regulations governing the financial security process for

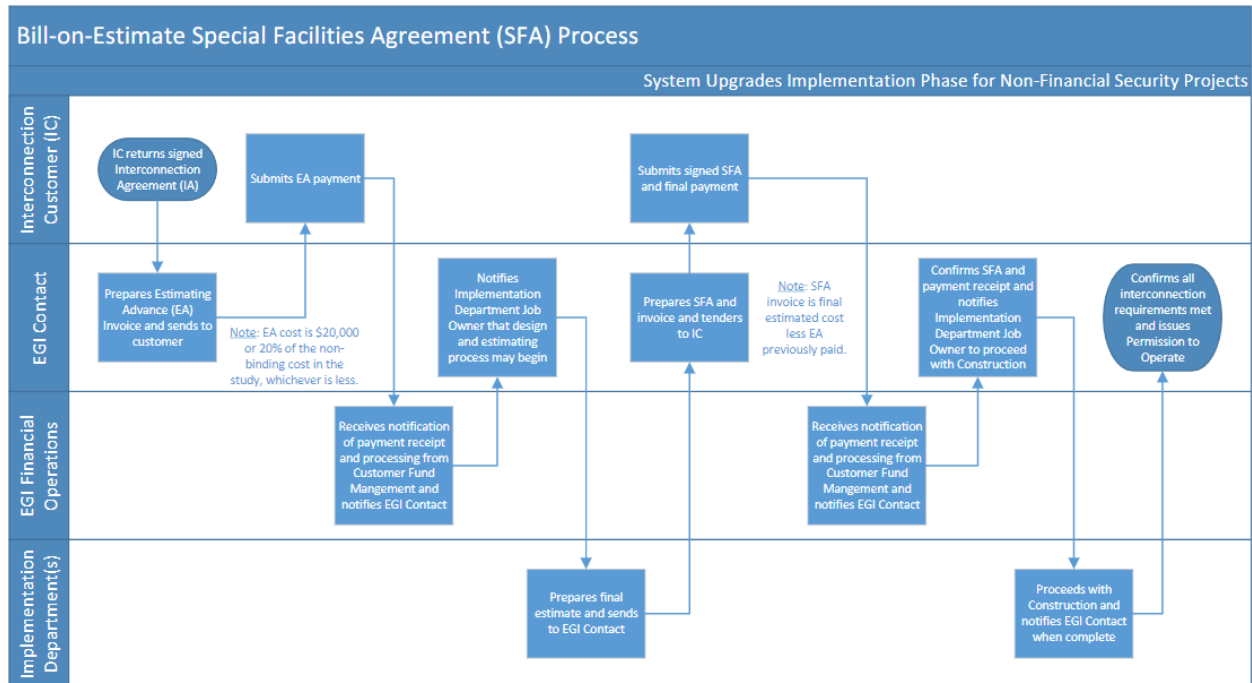
the distribution systems of the investor-owned utilities (IOUs)¹. [Working Group 3 Report](#) first introduced the process of Bill on Estimate and R. 17-07-00, [D. 20-09-035](#) section 5.2.4, Resolving Issue 15, when the commission ordered the utilities to present the Bill on Estimate proposal during an Interconnection Discussion Forum (IDF) no later than January 31, 2021. During and after the [Itemized Billing IDF presentation](#) on January 20, 2021, PG&E received positive feedback from customer representatives. We found that there was support to move to the BOE process.

This advice letter aims to replace the Financial Security process with a Bill on Estimate approach. The Bill on Estimate approach is described below. If approved, this Advice Letter would allow all Rule 21 interconnection customers, including NEM greater than 1 MW and Rule 21 Exporting projects, to sign a Special Facilities Agreement and be responsible for estimated costs rather than posting financial securities for actual costs to be trued up after construction.

Bill on Estimate (BOE):

As described in [Working Group 3 Report](#), “Under the bill-on-estimate construct, the interconnection customer’s cost responsibility is equal to the estimated cost provided by the utility before construction begins. The utility does not reconcile, and the cost estimate is itemized. Under reconciled billing, the customer pays a deposit at the time of the final estimate and may make further payments at other milestones. The utility reconciles based on actual costs and the final bill is not itemized.” Please refer to the flow chart below for a more descriptive outline of the process.

¹ IOUs or the investor-owned utilities, i.e., Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric (SDG&E).



Tariff Changes

Please Refer to the Rule 21 attachment for Revisions:

Please refer to Attachment 2 for Redline Rule 21. Majority of changes were made in section F4. However financial security is mentioned throughout the tariff and therefore please refer to the redline for all changes made within.

The revised Rule 21 sheets are included as Attachment 1.

Form Changes:

Please Refer to the attached Forms 79-1198-02 & 79-1200 for Revisions:

Please refer to Attachment 2 for Redline Forms 79-1198-02 & 79-1200 and for all changes made within.

Protests

Anyone wishing to protest this submittal may do so by letter sent electronically via E-mail, no later than February 16, 2023, which is 20 days after the date of this submittal. Protests must be submitted to:

CPUC Energy Division
ED Tariff Unit
E-mail: EDTariffUnit@cpuc.ca.gov

The protest shall also be electronically sent to PG&E via E-mail at the address shown below on the same date it is electronically delivered to the Commission:

Sidney Bob Dietz II
Director, Regulatory Relations
c/o Megan Lawson
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 information or legal argument; name and 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 5.2, this advice letter is submitted with a Tier 2 designation. PG&E requests that this Tier 2 advice submittal become effective upon CPUC Approval.

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 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/

Sidney Bob Dietz II
Director, Regulatory Relations

Attachments:

Attachment 1: Final Tariffs

Attachment 2: Redline Tariff Revisions

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



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 U39 E)

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) #: 6757-E-A

Tier Designation: 2

Subject of AL: Supplemental: Modifications to Electric Rule 21 on Financial Security Posting Requirements

Keywords (choose from CPUC listing): Rule 21

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

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #:

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:

No. of tariff sheets: 228

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 proposed¹: N/A

Pending advice letters that revise the same tariff sheets: 6635-E-A, 6682-E-A, 6782-E, 6788-E

¹Discuss in AL if more space is needed.

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

California Public Utilities Commission
Energy Division Tariff Unit Email:
EDTariffUnit@cpuc.ca.gov

Contact Name: Sidnev Bob Dietz II. c/o Megan Lawson
Title: Director, Regulatory Relations
Utility/Entity Name: Pacific Gas and Electric Company

Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email: PGETariffs@pge.com

Contact Name:
Title:
Utility/Entity Name:

Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email:

CPUC
Energy Division Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102

Clear Form

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
55176-E	Electric Sample Form No. 79-1198-02 Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Electrical Generating Facility Sized Greater than 1,000 kW Sheet 1	52524-E
55177-E	Electric Sample Form No. 79-1200 Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities Sheet 1	48679-E
55178-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 4	51706-E
55179-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 5	51707-E
55180-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 6	51708-E
55181-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 7	51709-E
55182-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 8	51710-E
55183-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 9	51711-E
55184-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 10	51712-E
55185-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 11	51713-E
55186-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 12	51714-E
55187-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 13	51715-E
55188-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 14	51716-E

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
55189-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 27	50332-E
55190-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 67	50216-E
55191-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 97	51741-E
55192-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 98	51742-E
55193-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 99	51743-E
55194-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 100	51744-E
55195-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 101	51745-E
55196-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 102	51746-E
55197-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 103	51747-E
55198-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 109	54207-E
55199-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 110	54208-E
55200-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 111	54209-E
55201-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 112	54210-E
55202-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 113	54211-E

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
55203-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 114	54212-E
55204-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 115	54213-E
55205-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 116	54214-E
55206-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 117	54215-E
55207-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 122	51766-E, 54222-E, 54223-E, 54224-E, 54225-E, 54226-E, 54227-E, 54228-E, 54229-E, 54230-E, 54231-E, 54232-E
55208-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 123	51767-E
55209-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 124	51779-E
55210-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 125	51780-E
55211-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 126	51781-E
55212-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 127	51782-E
55213-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 128	51783-E

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55214-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 129	51784-E
55215-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 130	51785-E
55216-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 131	51786-E
55217-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 132	51787-E
55218-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 133	51788-E
55219-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 134	51789-E
55220-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 135	51790-E
55221-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 136	51791-E**
55222-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 137	51792-E
55223-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 138	51793-E
55224-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 139	51794-E
55225-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 140	51795-E
55226-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 141	51796-E
55227-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 142	51797-E

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
55228-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 143	51798-E**
55229-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 144	51799-E
55230-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 145	51980-E*
55231-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 146	51801-E
55232-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 147	51802-E
55233-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 148	51803-E
55234-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 149	51804-E
55235-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 150	51805-E
55236-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 151	51806-E
55237-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 152	51807-E
55238-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 153	51808-E
55239-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 154	51809-E
55240-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 155	51810-E
55241-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 156	51811-E

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55242-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 157	53745-E
55243-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 158	51813-E
55244-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 159	51814-E
55245-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 160	51815-E
55246-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 161	51816-E
55247-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 162	51817-E
55248-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 163	51818-E
55249-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 164	51819-E
55250-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 165	50838-E
55251-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 166	50839-E
55252-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 167	50840-E
55253-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 168	50841-E
55254-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 169	51824-E
55255-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 170	50843-E

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55256-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 171	51826-E
55257-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 172	51827-E
55258-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 173	51828-E
55259-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 174	50847-E
55260-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 175	50848-E
55261-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 176	51831-E
55262-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 177	50850-E
55263-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 178	51833-E
55264-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 179	50852-E
55265-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 180	51835-E
55266-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 181	51836-E
55267-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 182	53828-E
55268-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 183	53829-E
55269-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 184	53830-E

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55270-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 185	53831-E
55271-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 186	53832-E
55272-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 187	51842-E
55273-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 188	51843-E
55274-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 189	51844-E
55275-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 190	51845-E
55276-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 191	51846-E
55277-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 192	51847-E
55278-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 193	51848-E
55279-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 194	51849-E
55280-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 195	51850-E
55281-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 196	51851-E
55282-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 197	51852-E
55283-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 198	51853-E

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55284-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 199	51854-E
55285-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 200	51855-E
55286-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 201	51856-E
55287-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 202	51857-E
55288-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 203	53948-E
55289-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 204	51859-E
55290-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 205	51860-E
55291-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 206	51861-E
55292-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 207	51862-E
55293-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 208	51863-E
55294-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 209	51864-E
55295-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 210	51865-E
55296-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 211	51866-E
55297-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 212	51867-E

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55298-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 213	51868-E
55299-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 214	51869-E
55300-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 215	51870-E
55301-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 216	51871-E
55302-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 217	51872-E
55303-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 218	51873-E
55304-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 219	51874-E
55305-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 220	53003-E
55306-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 221	53004-E
55307-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 222	53005-E
55308-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 223	53006-E
55309-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 224	53007-E
55310-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 225	53008-E
55311-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 226	53009-E

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55312-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 227	53010-E
55313-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 228	53011-E
55314-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 229	53012-E
55315-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 230	53755-E
55316-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 231	53756-E
55317-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 232	51879-E
55318-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 233	53757-E
55319-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 234	53017-E
55320-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 235	53758-E
55321-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 236	53759-E
55322-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 237	53760-E
55323-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 238	51885-E
55324-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 239	53761-E
55325-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 240	51887-E

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55326-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 241	51888-E
55327-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 242	51889-E
55328-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 243	51890-E
55329-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 244	51891-E
55330-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 245	51892-E
55331-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 246	51893-E
55332-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 247	51894-E
55333-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 248	51895-E
55334-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 249	51896-E
55335-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 250	51897-E
55336-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 251	51898-E
55337-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 252	51899-E
55338-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 253	51900-E
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Electric Sample Form No. 79-1198-02
Interconnection Agreement for Net Energy Metering (NEM2) and
Renewable Electrical Generating Facility Sized Greater than 1,000 kW

Sheet 1

**Please Refer to Attached
Sample Form**

(Continued)

Advice 6757-E-A
Decision

Issued by
Meredith Allen
Vice President, Regulatory Affairs

Submitted
Effective
Resolution

January 27, 2023



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

This *Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Electrical Generating Facility Sized Greater than 1,000 kW* (Agreement)¹ is entered into by and between _____ (Customer-Generator), and Pacific Gas and Electric Company (PG&E), a California Corporation. Customer-Generator and PG&E are sometimes also referred to in this Agreement jointly as “Parties” or individually as “Party.” In consideration of the mutual promises and obligations stated in this Agreement and its attachments, the Parties agree as follows:

1. SCOPE AND PURPOSE

This Agreement provides for Customer-Generator to interconnect and operate a Generating Facility in parallel with PG&E’s Electric System to serve the electrical loads connected to the electric service agreement ID number that PG&E uses to interconnect Customer-Generator’s Generating Facility. Customer-Generator’s Generating Facility is intended primarily to offset part or all of the Customer-Generator’s own electrical requirements. Consistent with, and in order to effectuate, the provisions of Sections 2827, and 2827.7 of the California Public Utilities Code and PG&E’s electric rate Schedule NEM2 (NEM2), Parties enter into this Agreement. This Agreement applies to the Customer-Generator’s Generating Facilities identified below with the specified characteristics and generating capacity, and does not allow interconnection or operation of facilities different than those described.

2. SUMMARY AND DESCRIPTION OF CUSTOMER-GENERATOR’S GENERATING FACILITY AND DESIGNATION OF OTHERWISE-APPLICABLE RATE SCHEDULE

- 2.1 A description of the Generating Facility, including a summary of its significant components and a single-line diagram showing the general arrangement of how Customer-Generator’s Generating Facility and loads are interconnected with PG&E’s Electric System, is attached to and made a part of this Agreement.
- 2.2 Generating Facility identification number: _____ (Assigned by PG&E).
- 2.3 Customer-Generator’s electric service agreement ID number: _____ (Assigned by PG&E).
- 2.4 Name and address used by PG&E to locate the electric service agreement ID number used to interconnect the Generating Facility with PG&E’s Electric System:

Name: _____

Address: _____

City/Zip Code: _____

¹ Additional forms are available on PG&E’s website at <http://www.pge.com/gen>.



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

- 2.5 The Gross Nameplate Rating of the Generating Facility is: _____ kW.
- 2.6 The Net Nameplate Rating of the Generating Facility is _____ kW.
- 2.7 The purpose of securing the Competition Transition Charge exemption available under Section 372 of the California Public Utilities Code (PUC), Producer hereby declares that the portion of the Generating Facility that is generating in a combined heat and power mode ☐ does / ☐ does not meet the requirements for Cogeneration as such term is used in Section 216.6 of the California Public Utilities Code.
- 2.8 Customer-Generator's otherwise-applicable rate schedule as of the execution of this Agreement _____.
- 2.9 The Generating Facility's expected date of Initial Operation is _____.
The expected date of Initial Operation shall be within two years of the date of this Agreement.
- 2.10 The Producer certifies that their inverter-based Generating Facilities will upon receiving permission to operate from PG&E fully comply with Section Hh of Rule 21 that is in effect at the time the application is received, including configuration of protective settings and default settings, in accordance with the specifications therein.

Distribution Provider may require a field verification of the Customer-Generator's inverter. Customer-Generator further agrees to cooperate fully with any such request and make their inverter available to the Distribution Provider for such verification. Customer-Generator understands that in the event the inverter is not set in accordance with Section Hh of Rule 21, Customer-Generator will need to cease operation of generating facility until verification is confirmed by Distribution Provider.

(Solar Inverter models and firmware versions that comply with Rule 21 Section Hh can be found at <https://www.energy.ca.gov/programs-and-topics/topics/renewable-energy/solar-equipment-lists>.)

Verification of compliance with such requirements shall be provided by the Customer-Generator upon request by PG&E in accordance with PG&E's Electric Rule 21.

An "existing inverter" is defined as an inverter that is a component of an existing Generating Facility that meets one or more of the following conditions:

- (a) it is already approved by PG&E for interconnection prior to September 9, 2017
- (b) the Customer-Generator has submitted the interconnection application prior to September 9, 2017,
- (c) the Customer-Generator provides evidence of having applied for an electrical permit for the Generating Facility installation that is dated prior to September 9, 2017 and submitted a complete interconnection application² no later than March 31, 2018, or

² A complete application consists all of the following without deficiencies:



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

- (d) the Customer-Generator provides evidence of a final inspection clearance from the governmental authority having jurisdiction over the Generating Facility prior to September 9, 2017.

All “existing inverters” are not required to be Smart Inverters and are only subject to Section H of Rule 21. Customer-Generator replacing an “existing inverter” certifies it is being replaced with either:

- (i) inverter equipment that complies with Section Hh of Rule 21, (encouraged); or
- (ii) a conventional inverter that is of the same size and equivalent ability to that of the inverter being replaced, as allowed in Rule 21 Section H.3.d.ii.

3. DOCUMENTS INCLUDED AND DEFINED TERMS

- 3.1 This Agreement includes the following exhibits that are specifically incorporated herein and made a part of this Agreement.

- Attachment A Additional Terms and Conditions for Projects Requiring Interconnection Facilities and/or Upgrades to PG&E’s Distribution and/or Transmission System
- Attachment B Final Study Report Including Description and Costs of the Generating Facility, Interconnection Facilities, Metering Equipment, Distribution and/or Network Upgrades
- Attachment C PG&E’s Agreement for Installation of Allocation of Special Facilities for Parallel Operation of Nonutility-Owned Generation and/or Electrical Standby Service (Form 79-280) (Special Facility Agreement), if applicable, (Formed by the Parties).
- Attachment D NEM2V or NEM2VMSH Storage (when applicable)
- Attachment E NEM2 Load Aggregation Customer-Generator Declaration Warranting NEM2 Aggregation Is Located on Same or Adjacent or Contiguous Property to Generator Parcel (when applicable)
- Attachment F Addendum for Net Energy Metering Multiple Tariff (when applicable)
- Attachment G Producer’s Warranty that the Generating Facility is a “Cogeneration Facility” Pursuant to Section 216.6 of the California Public Utilities Code (when applicable)

-
1. A completed Interconnection Application including all supporting documents and required payments,
 2. A completed signed Interconnection Agreement,
 3. Evidence of the Customer-Generator final inspection clearance from the governmental authority having jurisdiction over the generating system.



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

- Attachment H Producer's Warranty that the Generating Facility is an Eligible Biogas Electrical Generating Facility Pursuant to Section 2827.9 of the California Public Utilities Code (when applicable)
- Attachment I Schedule NEM2 Customer-Generator Warranty that it Meets the Requirements for an Eligible Customer-Generator and is an Eligible Renewable Electrical Generation Facility Pursuant to Section 2827.1 of the California Public Utilities Code (when applicable)
- Attachment J Operating Requirements for Energy Storage Device(s) (when applicable)
- Attachment K NEMFC Customer Agreement Starting January 1, 2017 Until California Air Resources Board Emission Standard is Established (when applicable)

In addition, PG&E Electric Tariff Rules and Rates, including but not limited to Electric Rules 2, 14, 15, 16, and 21, Schedule NEM2, and Customer-Generator's otherwise-applicable rate schedule, available at PG&E's website at www.pge.com or by request, are specifically incorporated herein and made part of this Agreement.

- 3.2 When initially capitalized, whether in the singular or in the plural, the terms used herein shall have the meanings assigned to them either in this Agreement or in PG&E's Electric Rule 21, Section C.

4. CUSTOMER BILLING AND PAYMENT

Customer-Generator initially selected Pacific Gas and Electric Company's electric rate schedule referenced in Section 2.7 of this Agreement as its otherwise-applicable rate schedule. Customer-Generator understands that they will be billed according to the otherwise-applicable rate schedule and Schedule NEM2.

5. TERM AND TERMINATION

- 5.1 This Agreement shall become effective as of the last date entered in Section 17 below. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:

- (a) The Parties agree in writing to terminate the Agreement.
- (b) Unless otherwise agreed in writing by the Parties, at 12:01 A.M. on the day following the date the electric service agreement ID number through which Customer-Generator's Generating Facility is interconnected to PG&E is closed or terminated.
- (c) At 12:01 A.M. on the 61st day after Customer-Generator or PG&E provides written Notice pursuant to Section 10 below to the other Party of Customer-Generator's or PG&E's intent to terminate this Agreement.

- 5.2 Customer-Generator may elect to terminate this Agreement pursuant to the terms of Section 5.1(c) for any reason. PG&E may elect to terminate this Agreement pursuant to the terms of Section 5.1(c) for one or more of the following reasons:

- (a) A change in applicable rules, tariffs, or regulations, as approved or directed by the Commission, or a change in any local, state or federal law, statute or regulation, either



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

of which materially alters or otherwise affects PG&E's ability or obligation to perform PG&E's duties under this Agreement; or,

- (b) Customer-Generator fails to take all corrective actions specified in PG&E's Notice that Customer-Generator's Generating Facility is out of compliance with the terms of this Agreement within the time frame set forth in such Notice; or,
- (c) Customer-Generator abandons the Generating Facility. PG&E shall deem the Generating Facility to be abandoned if PG&E determines, in its sole opinion, the Generating Facility is nonoperational and Customer-Generator does not provide a substantive response to PG&E Notice of its intent to terminate this Agreement as a result of Customer-Generator's apparent abandonment of the Generating Facility affirming Customer-Generator's intent and ability to continue to operate the Generating Facility; or,
- (d) Customer-Generator's Generating Facility ceases to meet all applicable safety and performance standards set out in Section 6.

5.3 Notwithstanding any other provisions of this Agreement, PG&E shall have the right to unilaterally file with the Commission, pursuant to the Commission's rules and regulations, an application to terminate this Agreement.

5.4 Any agreements attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

6. GENERATING FACILITY REQUIREMENTS

- 6.1 Customer-Generator's Generating Facility must meet all applicable safety and performance standards established by the National Electrical Code, the Institute of Electrical and Electronics Engineers, and accredited testing laboratories such as Underwriters Laboratories and, where applicable, rules of the Commission regarding safety and reliability including Rule 21.
- 6.2 Customer-Generator shall: (a) maintain the Generating Facility and Interconnection Facilities in a safe and prudent manner and in conformance with all applicable laws and regulations including, but not limited to, Section 6.1, and (b) obtain any governmental authorizations and permits required for the construction and operation of the Generating Facility and Interconnection Facilities. Customer-Generator shall reimburse PG&E for any and all losses, damages, claims, penalties, or liability it incurs as a result of Customer-Generator's failure to obtain or maintain any governmental authorizations and permits required for construction and operation of Customer-Generator's Generating Facility.
- 6.3 Customer-Generator shall not commence parallel operation of the Generating Facility until PG&E has provided express written approval. Such approval shall normally be provided no later than thirty (30) business days following PG&E's receipt of: (1) a completed *Generating Facility Interconnection Application for Non-Export or Certain Net Energy Metered Generating Facilities* (Form 79-1174-02), including all supporting documents and payments as described in the Application; (2) a signed and completed *Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Generating Facility Sized Greater than 1,000 kW* (Form 79-1198-02); and (3) a copy of the Customer-Generator's final inspection clearance from the governmental authority having jurisdiction over the Generating Facility. Such approval shall not be unreasonably withheld. PG&E shall have the right to have representatives present at the Commissioning Test as defined in Rule 21.



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

Customer-Generator shall notify PG&E at least five (5) business days prior to the initial testing.

- 6.4 In order to promote the safety and reliability of the customer Generating Facility, the Customer-Generator certifies that as a part of this interconnection request for NEM2, that all major solar system components are on the verified equipment list maintained by the California Energy Commission and certifies that other equipment, as determined by PG&E, has safety certification from a nationally recognized testing laboratory.
- 6.5 Customer-Generator certifies as a part of this interconnection request for NEM2 that
- (i) a warranty of at least 10 years has been provided on all equipment and on its installation, or
 - (ii) a 10-year service warranty or executed "agreement" has been provided ensuring proper maintenance and continued system performance.
- 6.6 Customers on this tariff must pay for the interconnection of their Generation Facilities as provided in Electric Rule 21, pursuant to Decision 16-01-044.

7. LIMITATION OF LIABILITY

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages of any kind whatsoever.

8. INSURANCE

Customer-Generator Facility is required to comply with standards and rules set forth in Section 6 and provide the following for insurance policies in place.

Customer-Generator shall furnish the required certificates and all endorsements to PG&E prior to Parallel Operation.

The certificate shall provide thirty (30) calendar days' written notice to PG&E prior to cancellation, termination, alteration, or material change of such insurance.

PG&E shall have the right to inspect or obtain a copy of the original policy or policies of insurance.

- 8.1 If at any time during this agreement the Customer-Generator fails to meet the requirements in Section 6 and is not self-insured under Section 8.3, the following insurance shall apply:

Customer-Generator shall procure and maintain a commercial general liability insurance policy at least as broad as the Insurance Services Office (ISO) commercial general liability coverage "occurrence" form; or, if Customer-Generator is an individual, then liability coverage with respect to premises and use at least as broad as the ISO homeowners' or personal liability Insurance occurrence policy form, or substitute, providing equivalent coverage no less than the following limits, based on generator size:



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

- (a) Two million dollars (\$2,000,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is greater than one hundred (100) kW; or One million dollars (\$1,000,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is greater than twenty (20) kW and less than or equal to one hundred (100) kW; or
- (b) Five hundred thousand dollars (\$500,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is twenty (20) kW or less;
- (c) Two hundred thousand dollars (\$200,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is ten (10) kW or less and the Generating Facility is connected to an account receiving residential service from PG&E.

The insurance shall, by endorsement:

- (a) Add PG&E as an additional insured;
 - (b) State that coverage provided is primary and is not in excess to or contributing with any insurance or self-insurance maintained by PG&E.
 - (c) Contain a severability of interest clause or cross-liability clause.
- 8.2 If Customer-Generator's Generating Facility is connected to an account receiving residential service from PG&E and the requirement of Section 8.1 prevents Customer-Generator from obtaining the insurance required in this Section, then upon Customer-Generator's written Notice to PG&E in accordance with Section 10.1, the requirements of Section 8.1 may be waived.
- 8.3 Customer-Generator may self-insure with approval from PG&E. Evidence of an acceptable plan to self-insure, at least thirty (30) calendar days' prior to operations shall be submitted. Customer-Generators such as state agencies that self-insure under this section are exempt from Section 9.1.

If Customer-Generator ceases to self-insure to the level required hereunder, or if Customer-Generator is unable to provide continuing evidence of Customer-Generator's ability to self-insure, Customer-Generator agrees to immediately obtain the coverage required under agreement.

- 8.4 All required certificates, endorsements or letters of self-insurance shall be issued and submitted via email to the following:

Pacific Gas and Electric Company
Attn: Insurance Department
77 Beale St.
San Francisco, CA 94105



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

9. INDEMNITY FOR FAILURE TO COMPLY WITH INSURANCE PROVISIONS

- 9.1 If Customer-Generator fails to comply with the insurance provisions of this Agreement, Customer-Generator shall, at its own cost, defend, save harmless and indemnify PG&E, its directors, officers, employees, agents, assignees, and successors in interest from and against any and all loss, liability, damage, claim, cost, charge, demand, or expense of any kind or nature (including attorney's fees and other costs of litigation) resulting from the death or injury to any person or damage to any property, including the personnel and property of the utility, to the extent that the utility would have been protected had Customer-Generator complied with all such insurance provisions. The inclusion of this Section 9.1 is not intended to create any expressed or implied right in Customer-Generator to elect not to provide any such required insurance.
- 9.2 The provisions of this Section 9 shall not be construed to relieve any insurer of its obligations to pay any insurance claims in accordance with the provisions of any valid insurance policy.

10. NOTICES

- 10.1 Any written notice, demand, or request required or authorized in connection with this Agreement (Notice) shall be deemed properly given if delivered in person or sent by first class mail, postage prepaid, to the person specified below:

If to PG&E: Pacific Gas and Electric Company
Attention: Electric Grid Interconnection – Contract Management
P.O. Box 770000
Mail Code N7L
San Francisco, CA 94177
Email: EGIContractMgmt@pge.com

If to Customer-Generator:

Customer-Generator Name: _____
Address: _____
City: _____
Phone: (____) _____
FAX: (____) _____

- 10.2 A Party may change its address for Notices at any time by providing the other Party notice of the change in accordance with Section 10.1.
- 10.3 The Parties may also designate operating representatives to conduct the daily communications, which may be necessary or convenient for the administration of this Agreement. Such designations, including names, addresses, and phone numbers may be communicated or revised by one Party's Notice to the other.



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

11. REVIEW OF RECORDS AND DATA

- 11.1 PG&E shall have the right to review and obtain copies of Customer-Generator's operations and maintenance records, logs, or other information such as Generating Facility availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to Customer-Generator's Generating Facility or its interconnection to PG&E.
- 11.2 Customer-Generator authorizes to release to the California Energy Commission (CEC) information regarding Customer-Generator's facility, including customer name and Generating Facility location, size, and operational characteristics, as requested from time to time pursuant to the CEC's rules and regulations.

12. ASSIGNMENT

Customer-Generator shall not voluntarily assign its rights nor delegate its duties under this Agreement without PG&E's written consent. Any assignment or delegation Customer-Generator makes without PG&E's written consent shall not be valid. PG&E shall not unreasonably withhold its consent to Customer-Generator's assignment of this Agreement.

13. NON-WAIVER

None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.

14. GOVERNING LAW, JURISDICTION OF COMMISSION, INCLUSION OF PG&E's TARIFF SCHEDULES AND RULES

- 14.1 This Agreement shall be interpreted, governed, and construed under the laws of the State of California as if executed and to be performed wholly within the State of California without giving effect to choice of law provisions that might apply to the law of a different jurisdiction.
- 14.2 This Agreement shall, at all times, be subject to such changes or modifications by the Commission as it may from time to time direct in the exercise of its jurisdiction.
- 14.3 The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the Tariff Schedules and Rules applicable to the electric service provided by PG&E, which Tariff Schedules and Rules are hereby incorporated into this Agreement by this reference.
- 14.4 Notwithstanding any other provisions of this Agreement, PG&E shall have the right to unilaterally file with the Commission, pursuant to the Commission's rules and regulations, an application for change in rates, charges, classification, service, tariff or rule or any agreement relating thereto.

15. AMENDMENT AND MODIFICATION

This Agreement can only be amended or modified by a writing signed by both Parties.



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

16. ENTIRE AGREEMENT

This Agreement, including any incorporated Tariff Schedules and Rules, contains the entire Agreement and understanding between the Parties, their agents, and employees as to the subject matter of this Agreement. Each party also represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement or in the incorporated Tariff Schedules and Rules.

17. SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

	<u>PACIFIC GAS AND ELECTRIC COMPANY</u>
_____ (Customer Generator's Name)	
_____ (Signature)	_____ (Signature)
_____ (Print Name)	_____ (Print Name)
_____ (Title)	_____ (Title)
_____ (Date)	_____ (Date)



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT A

Additional Terms and Conditions for Projects Requiring Interconnection Facilities and/or Upgrades to PG&E's Distribution and/or Transmission System

Section 1. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

1.1. Interconnection Facilities

1.1.1. The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Attachment B of this Agreement. The Distribution Provider shall provide a best estimate cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Distribution Provider.

1.1.2. The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Distribution Provider's Interconnection Facilities.

1.1.3. If the provisions of PG&E's Rule 21, or any other tariff or rule approved by the Commission, requires PG&E to own and operate a portion of the Interconnection Facilities, Producer and PG&E shall promptly execute a Special Facilities Agreement that establishes and allocates responsibility for the design, installation, operation, maintenance, and ownership of the Interconnection Facilities. This Special Facilities Agreement shall be attached to and made a part of this Agreement as Attachment D.

1.2. Distribution Upgrades

The Distribution Provider shall design, procure, construct, install, and own the Distribution Upgrades described in a Special Facilities Agreement attached to and made a part of this Agreement as Attachment D. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

Section 2. Cost Responsibility for Network Upgrades

2.1. Applicability

No portion of this Section 2 shall apply unless the interconnection of the Generating Facility requires Network Upgrades.

2.2. Network Upgrades

The Distribution Provider or the Distribution Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment B of this Agreement. If the Distribution Provider and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Distribution Provider elects to pay for Network



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Upgrades, the cost of the Network Upgrades, including overheads, shall be borne by the Interconnection Customer unless Section 2.2.1 directs otherwise.

2.2.1. Repayment of Amounts Advanced for Network Upgrades

To the extent that the CAISO Tariff provides for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, the Interconnection Customer shall be entitled to a cash repayment, equal to the total amount paid to the Distribution Provider and Affected System operator, if any, for Network Upgrades, including any tax gross-up or other tax-related payments associated with the Network Upgrades, and not otherwise refunded to the Interconnection Customer, to be paid to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Distribution Provider's Tariff and Affected System's Tariff for transmission services with respect to the Generating Facility. Any repayment shall include interest calculated in accordance with the methodology set forth in FERC's regulations at 18 C.F.R. §35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. The Interconnection Customer may assign such repayment rights to any person. To the extent that the CAISO Tariff does not provide for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, Interconnection Customer is not entitled to a cash repayment for amounts paid to the Distribution Provider and Affected System operator for Network Upgrades, and no cash repayment shall be made pursuant to this Agreement.

2.2.1.1. If the Interconnection Customer is entitled to a cash repayment pursuant to Section 2.2.1, the Interconnection Customer, the Distribution Provider, and any applicable Affected System operators may adopt any alternative payment schedule that is mutually agreeable so long as the Distribution Provider and said Affected System operators take one of the following actions no later than five years from the Commercial Operation Date: (1) return to the Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that the Distribution Provider or any applicable Affected System operators will continue to provide payments to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond twenty (20) years from the commercial operation date.

2.2.1.2. If the Generating Facility fails to achieve commercial operation, but it

or another generating facility is later constructed and requires use of the Network Upgrades, the Distribution Provider and Affected System operator shall at that time reimburse the Interconnection Customer for the amounts advanced for the Network Upgrades if the Interconnection Customer is entitled to a cash repayment pursuant to Section 2.2.1. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the generating facility, if different, is responsible for identifying the entity to which reimbursement must be made.



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2.3. Rights Under Other Agreements

Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Generating Facility.

Section 3. Taxes

3.1. Applicable Tax Laws and Regulation

The Parties agree to follow all applicable tax laws and regulations, consistent with CPUC policy and Internal Revenue Service requirements.

3.1.1 In the application of IRS Notice 2016-36, any Income Tax Component of Contribution (ITCC) for Interconnection Facilities, Distribution Upgrades and Network Upgrades (based on the enclosed estimates) will be billed to the Interconnection Customer and collected by the Distribution Provider.

3.2. Maintenance of Tax Status

Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect the Distribution Provider's tax-exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

Section 4. Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

Section 5. Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

5.1 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no



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subcontract had been made; provided, however, that in no event shall the Distribution Provider be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

- 5.2 The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.



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ATTACHMENT B

Final Study Report Including Description and Costs of the Generating Facility, Interconnection Facilities, Metering Equipment, Distribution and/or Network Upgrades

Final study report includes equipment, including the Generating Facility, Interconnection Facilities, and metering equipment itemized and identified as being owned by the Interconnection Customer, the Distribution Provider, or the Distribution Owner. The Distribution Provider will provide a best estimate itemized cost, including overheads, of its Interconnection Facilities and metering equipment, and a best estimate itemized cost of the annual operation and maintenance expenses associated with its Interconnection Facilities and metering equipment. Additionally, NEM program specific information relating to the Interconnection Customer's Generating Facility and any associated arrangements (i.e. NEM2, NEM2A, NEM2MT, NEM2V, NEM2VMSH (1 SDP), and NEMVMSH (DEV)) will be set forth in this attachment.

Final study report includes description of Upgrades and provides an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. The Distribution Provider shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.



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ATTACHMENT C

Rule 21 Special Facilities Agreement
(Formed by the Parties)



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ATTACHMENT D

**NEM2V or NEM2VMSH Storage
(when applicable)**

Applicants adding storage pursuant to Schedules NEM2V or NEM2VMSH under the Special Condition for storage must include proper documentation per PG&E's Distribution Interconnection Handbook (DIH).



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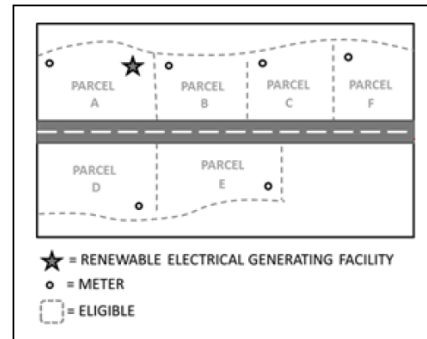
ATTACHMENT E

NEM Load Aggregation Customer-Generator Declaration Warranting NEM2 Aggregation Is Located on Same or Adjacent or Contiguous Property to Generator Parcel (when applicable)

In accordance with Schedule NEM2, I, Customer-Generator represent and warrant under penalty of perjury that:

1. The total annual output in kWh of the generator is less than or equal to 100% of the annual aggregated electrical load in kWh of the meters associated with the generator account, including the load on the generating account itself (before being offset by the generator); and
2. Each of the aggregated account meters associated with this NEM2 generator account are located either:
 - a. on the property where the renewable electrical generation facility is located, or
 - b. are located within an unbroken chain of contiguous parcels that are all solely owned, leased or rented by the customer-generator. For purposes of Load Aggregation, parcels that are divided by a street, highway, or public thoroughfare are considered contiguous, provided they are within an unbroken chain of otherwise contiguous parcels that are all solely owned leased or rented by the customer-generator.

For example, assume there are five parcels (A, B, C, D, E, and F) that form a cluster of contiguous parcels and D and E are separated from A, B, C and F by a street, highway, or public thoroughfare. For the purposes of participating in Load Aggregation, all five parcels are considered contiguous, provided they are otherwise contiguous and all are solely owned, leased or rented by the customer-generator. Refer to the diagram at left (for illustrative purposes only.)



3. PG&E reserves the right to request a parcel map to confirm the property meets the requirements of item 2 above; and
4. Customer-Generator agrees to notify PG&E if there is any change of status that makes any of the participating meters ineligible for meter aggregation to ensure that only eligible meters are participating; PG&E will require an updated Attachment and Declaration form; and
5. Upon request by PG&E, I agree to provide documentation that all aggregated meters meet the requirements of Rate Schedule NEM2 Special Condition 6 including but not limited to parcel maps and ownership records.

Customer Generator's Name

Signature

Date

Type/Print Name

Title

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ATTACHMENT F

Addendum for Net Energy Metering Multiple Tariff (when applicable)

This Addendum represents mutual agreement between PG&E and Customer to provide for an interim arrangement to accommodate interconnection under Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Electrical Generating Facility Sized Greater Than 1,000 kW consistent with the multiple tariff treatment provided in PG&E Schedule NEM, Special Condition 4 (NEMMT). The Parties enter into this Addendum pursuant to Rule 21 Section H.1.f.

1. MULTIPLE TARIFF GENERATING FACILITY DESCRIPTION

1.1. In addition to the requirements of Electric Rule 21 and the GIA, Customer will abide by the requirements in the interconnection and operation of its Generating Facility described below.

1.2. The Gross Nameplate Rating of the Generating Facility is:

1.2.1. Eligible Generator(s):

Biomass	NEM1: _____kW NEM2: _____kW	Digester gas	NEM1: _____kW NEM2: _____kW
Solar thermal	NEM1: _____kW NEM2: _____kW	Municipal solid waste	NEM1: _____kW NEM2: _____kW
Photovoltaic	NEM1: _____kW NEM2: _____kW	Landfill gas	NEM1: _____kW NEM2: _____kW
Wind	NEM1: _____kW NEM2: _____kW	Ocean wave	NEM1: _____kW NEM2: _____kW
Geothermal	NEM1: _____kW NEM2: _____kW	Ocean thermal	NEM1: _____kW NEM2: _____kW
Fuel cell	NEM1: _____kW NEM2: _____kW	Tidal current	NEM1: _____kW NEM2: _____kW
Small hydroelectric generation	NEM1: _____kW NEM2: _____kW	Storage/Batteries (NEM eligible only) _____amp hours _____ inverter kW	NEM1: _____kW NEM2: _____kW



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1.2.2. Non-Eligible Generator(s): _____ kW

1.2.3. Total Gross Nameplate Rating of the Generating Facility: _____ kW

1.3. The Net Nameplate Rating of the Generating Facility is:

1.3.1. Eligible Generator(s):

Biomass	NEM1: _____ kW NEM2: _____ kW	Digester gas	NEM1: _____ kW NEM2: _____ kW
Solar thermal	NEM1: _____ kW NEM2: _____ kW	Municipal solid waste	NEM1: _____ kW NEM2: _____ kW
Photovoltaic	NEM1: _____ kW NEM2: _____ kW	Landfill gas	NEM1: _____ kW NEM2: _____ kW
Wind	NEM1: _____ kW NEM2: _____ kW	Ocean wave	NEM1: _____ kW NEM2: _____ kW
Geothermal	NEM1: _____ kW NEM2: _____ kW	Ocean thermal	NEM1: _____ kW NEM2: _____ kW
Fuel cell	NEM1: _____ kW NEM2: _____ kW	Tidal current	NEM1: _____ kW NEM2: _____ kW
Small hydroelectric generation	NEM1: _____ kW NEM2: _____ kW	Storage/Batteries (NEM eligible only) _____ amp hours _____ inverter kW	NEM1: _____ kW NEM2: _____ kW

1.3.2. Non-Eligible Generator(s): _____ kW

1.3.3. Total Net Nameplate Rating of the Generating Facility: _____ kW



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1.4. The maximum level of power that may be exported by the Generating Facility to PG&E's Electric System is expected to be:

Biomass	NEM1: _____ kW NEM2: _____ kW	Digester gas	NEM1: _____ kW NEM2: _____ kW
Solar thermal	NEM1: _____ kW NEM2: _____ kW	Municipal solid waste	NEM1: _____ kW NEM2: _____ kW
Photovoltaic	NEM1: _____ kW NEM2: _____ kW	Landfill gas	NEM1: _____ kW NEM2: _____ kW
Wind	NEM1: _____ kW NEM2: _____ kW	Ocean wave	NEM1: _____ kW NEM2: _____ kW
Geothermal	NEM1: _____ kW NEM2: _____ kW	Ocean thermal	NEM1: _____ kW NEM2: _____ kW
Fuel cell	NEM1: _____ kW NEM2: _____ kW	Tidal current	NEM1: _____ kW NEM2: _____ kW
Small hydroelectric generation	NEM1: _____ kW NEM2: _____ kW	Storage/Batteries (NEM eligible only) _____ amp hours _____ inverter kW	NEM1: _____ kW NEM2: _____ kW

1.4.1. Non-Eligible Generator(s): _____ kW

1.4.2. Total maximum level of power that may be exported by the Generating Facility:
_____ kW

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT G

Producer's Warranty that the Generating Facility is a "Cogeneration Facility" Pursuant to Section 216.6 of the California Public Utilities Code (when applicable)

For the purpose of securing the Competition Transition Charge exemption available under Section 372 of the PU Code, Producer hereby declares that the Generating Facility meets the requirements for Cogeneration as such term is used in Section 216.6 of the PU Code (Cogeneration Requirements).

Producer warrants that, beginning on the date of Initial Operation and continuing throughout the term of this Agreement, the Generating Facility shall continue to meet the Cogeneration Requirements. If Producer becomes aware that its Generating Facility has ceased to meet the Cogeneration Requirements, Producer shall promptly provide PG&E with Notice of such change pursuant to Section 9.1 of the Agreement. If at any time during the term of this Agreement PG&E determines in its reasonable discretion that Producer's Generating Facility may no longer meet the Cogeneration Requirements, PG&E may require Producer to provide evidence that the Generating Facility continues to meet the Cogeneration Requirements within 15 business days of PG&E's request for such evidence. Additionally, PG&E may periodically (typically, once per year) inspect Producer's Generating Facility and/or require documentation from Producer to monitor the Generating Facility's compliance with the Cogeneration Requirements. If PG&E determines in its reasonable judgment that Producer either failed to provide evidence in a timely manner or that it provided insufficient evidence that its Generating Facility continues to meet the Cogeneration Requirements, then the Cogeneration status of the Generating Facility shall be deemed ineffective until such time as Producer again demonstrates to PG&E's reasonable satisfaction that the Generating Facility meets the requirements for a Cogeneration facility (the Cogeneration Status Change).

PG&E shall revise its records and the administration of this Agreement to reflect the Cogeneration Status Change and provide Notice to Producer of the Cogeneration Status Change pursuant to Section 9.1 of this Agreement. Such Notice shall specify the effective date of the Cogeneration Status Change. This date shall be the first day of the calendar year for which PG&E determines in its reasonable discretion that the Generating Facility first ceased to meet the Cogeneration Requirements. PG&E shall invoice the Producer's electric service account through which the Generating Facility is Interconnected with PG&E's Electric System for Competition Transition Charges (CTCs) that were not previously billed during the period between the effective date of the Status Change and the date of the Notice in reliance upon Producer's representations that the Generating Facility complied with the Cogeneration Requirements and therefore was eligible for the exemption from CTCs available under Section 372 of the PU Code.

Any amounts to be paid or refunded by Producer, as may be invoiced by PG&E pursuant to the terms of this warranty, shall be paid to PG&E within 30 days of Producer's receipt of such invoice.

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT H

Producer's Warranty that the Generating Facility is an Eligible Biogas Electrical Generating Facility Pursuant to Section 2827.9 of the California Public Utilities Code (when applicable)

Producer has declared that the Generating Facility meets the requirements for an Eligible Biogas Electrical Generating Facility, as defined in Section 2827.9 of the California Public Utilities Code (Eligibility Requirements).

Producer warrants that, beginning on the date of Initial Operation and continuing throughout the term of this Agreement, its Generating Facility shall continue to meet the Eligibility Requirements. If Producer becomes aware that the Generating Facility has ceased to meet the Eligibility Requirements, Producer shall promptly provide PG&E with Notice of such change pursuant to Section 9.1 of the Agreement. If at any time during the term of this Agreement PG&E determines in its reasonable discretion that Producer's Generating Facility may no longer meet the Eligibility Requirements, PG&E may require Producer to provide evidence that the Generating Facility continues to meet the Eligibility Requirements within 15 business days of PG&E's request for such evidence. Additionally, PG&E may periodically (typically, once per year) inspect Producer's Generating Facility and/or require documentation from Producer to monitor the Generating Facility's compliance with the Eligibility Requirements. If PG&E determines in its reasonable judgment that Producer either failed to provide evidence in a timely manner or that it provided insufficient evidence that its Generating Facility continues to meet the Eligibility Requirements, then the Distributed Energy Resources Generation status of the Generating Facility shall be deemed ineffective until such time as Producer again demonstrates to PG&E's reasonable satisfaction that the Generating Facility meets the requirements for a Distributed Energy Resources Generation facility (the Eligibility Status Change).

PG&E shall revise its records and the administration of this Agreement to reflect the Eligibility Status Change and provide Notice to Producer of the Eligibility Status Change pursuant to Section 9.1 of this Agreement. Such Notice shall specify the effective date of the Eligibility Status Change. This date shall be the first day of the calendar year for which PG&E determines in its reasonable discretion that the Generating Facility first ceased to meet the Eligibility Requirements. PG&E shall invoice the Producer for any tariff charges that were not previously billed during the period between the effective date of the Eligibility Status Change and the date of the Notice in reliance upon Producer's representations that the Generating Facility complied with the Eligibility Requirements and therefore was eligible for the rate treatment available under the Net Energy Metering provisions of PG&E's Schedule NEM-BIO, Experimental Biogas Net Energy Metering.

Any amounts to be paid or refunded by Producer, as may be invoiced by PG&E pursuant to the terms of this warranty, shall be paid to PG&E within 30 days of Producer's receipt of such invoice.

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ATTACHMENT I

Schedule NEM2 Customer-Generator Warranty that it Meets the Requirements for an Eligible Customer-Generator and is an Eligible Renewable Electrical Generation Facility Pursuant to Section 2827.1 of the California Public Utilities Code (when applicable)

(This Affidavit needs to be completed and submitted to PG&E by the Customer-Generator every time a new NEM2 interconnection agreement for a Renewable Electrical Generation Facility is executed or whenever there is a change in ownership of the Generating Facility).

Check Type of Renewable Electrical Generation Facility:

☐ biomass	☐ geothermal	☐ municipal solid waste
☐ solar thermal	☐ fuel cell	☐ landfill gas
☐ small hydroelectric generation	☐ ocean wave	☐ digester gas
☐ ocean thermal	☐ tidal current	☐ Storage/Batteries _____ amp hours _____ inverter kWh

NEM2 Customer-Generator (Customer) declares that:

- (1) It meets the requirements to be an "Eligible Customer-Generator" and it's Generating Facility.
- (2) (a) meets the requirements of an "Renewable Electrical Generation Facility", as defined in Section 2827(b)(5) of the California Public Utilities Code and
(b) satisfies the definitions of the renewable resource for the Renewable Electrical Generation Facility in the latest version of the California Energy Commission's (CEC's) Renewables Portfolio Standard (RPS) Eligibility Guidebook and the Overall Program Guidebook. ³ (Eligibility Requirements).

³ The RPS Guidebooks can be found at: <https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard>



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Included in these eligibility requirements (check as applicable) pursuant to Public Utilities Code section 2827(b)(5) and Public Resource Code Section 25741 paragraph 1(a):

- ☐ If the Renewable Electrical Generation Facility is a fuel cell, or otherwise uses renewable biogas or otherwise, Eligible Customer-Generator warrants that the fuel cell is powered solely with renewable fuel.
- ☐ If the Renewable Electrical Generation Facility is a Small hydroelectric generating facility, customer warrants that it will not cause an adverse impact on instream beneficial uses, nor cause a change in the volume or timing of streamflow).

If the Customer uses biogas or a renewable fuel as the fuel for their Renewable Electrical Generation Facility:

- ☐ Eligible Customer-Generator warrants that the Renewable Electrical Generation Facility is powered solely with renewable fuel.

Eligible Customer-Generator warrants that, beginning on the date of Initial Operation and continuing throughout the term of this Agreement, Eligible Customer-Generator and the Generating Facility shall continue to meet the Eligibility Requirements. If Eligible Customer-Generator or the Generating Facility ceases to meet the Eligibility Requirements, Eligible Customer-Generator shall promptly provide PG&E with Notice of such change pursuant to Section 11 of this Agreement. If at any time during the term of this Agreement PG&E determines, at its reasonable discretion, that Eligible Customer-Generator or Generating Facility may no longer meet the Eligibility Requirements, PG&E may require Eligible Customer-Generator to provide evidence, that Eligible Customer-Generator and/or Generating Facility continues to meet the Eligibility Requirements, within 20 business days of PG&E's request for such evidence. Additionally, PG&E may periodically (typically, once per year) inspect Producer's Generating Facility and/or require documentation from Eligible Customer-Generator to monitor the Generating Facility's compliance with the Eligibility Requirements – PG&E will provide a minimum of 10 business days notice to the Eligible Customer-Generator should PG&E decide an inspection is required. If PG&E determines in its reasonable judgment that Eligible Customer-Generator either failed to provide evidence in a timely manner or that it provided insufficient evidence that its Generating Facility continues to meet the Eligibility Requirements, then the Eligibility Status shall be deemed ineffective until such time as Eligible Customer-Generator again demonstrates to PG&E's reasonable satisfaction that Eligible Customer-Generator meets the requirements for an Eligible Customer-Generator and/or the Generating Facility meets the requirements for a Eligible electrical generating facility (the Eligibility Status Change).

PG&E shall revise its records and the administration of this Agreement to reflect the Eligibility Status Change and provide Notice to Eligible Customer-Generator of the Eligibility Status Change pursuant to Section 11 of this Agreement. Such Notice shall specify the effective date of the Eligibility Status Change. This date shall be the first day of the calendar year for which PG&E determines in its reasonable discretion that the Eligible Customer-Generator and/or Generating Facility first ceased to meet the Eligibility Requirements. PG&E shall invoice the Eligible Customer-Generator for any tariff charges that were not previously billed during the period between the effective date of the Eligibility Status Change and the date of the Notice in reliance upon Eligible Customer-Generator's representations that Eligible Customer-Generator and/or Generating Facility complied with the Eligibility Requirements and therefore was eligible for the rate treatment available under the Net Energy Metering provisions of PG&E's Schedule NEM2 Net Energy Metering Service for Eligible Customer-Generators.



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Any amounts to be paid or refunded by Eligible Customer-Generator, as may be invoiced by PG&E pursuant to the terms of this warranty, shall be paid to PG&E within 30 days of Eligible Customer-Generator's receipt of such invoice.

Unless otherwise ordered by the CPUC, this Agreement at all times shall be subject to such modifications as the CPUC may direct from time to time in the exercise of its jurisdiction.

I certify the above is true and correct,

Customer-Generator Signature: _____

Name: _____

Title: _____

Date: _____



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ATTACHMENT J

Operating Requirements for Energy Storage Device(s) (when applicable)

The following Operating Requirement(s) apply to the charging functions of the Generating Facility:

- ☐ Producer's storage device(s) will not consume power from Distribution Provider's Distribution System at any time.
- ☐ Producer's storage device(s) will not cause the Host Load to exceed its normal peak demand. Normal peak demand is defined as the highest amount of power required from the Distribution System by Producer's complete facilities without the influence or use of the energy storage device(s).
- ☐ To avoid upgrades or other technical mitigation items identified in the interconnection process, Producer has chosen the following Generating Facility operating constraint(s):

For the annual period between _____ [Month/Day] and _____ [Month/Day]

And during the hours of _____

The storage device(s) will consume no more than a total of ____ kW from the Distribution System.

This operating constraint voids the need for the following specific mitigation scope:

No other charging function limitation is required for this Generating Facility except the requirements above. Producer will be responsible for the costs of the corresponding upgrades or other technical mitigations if at any time the Producer elects to forego or violates the operating requirement.

Consistent with current load service Rules, Distribution Provider is not required to reserve capacity for load. Producer is responsible to contact the utility for any modification to its equipment or change in operations that may result in increased load demand per Electric Rule 3.C.

If any operating requirement is specified above, Distribution Provider reserves the right to ask for data at the 15-minute interval level at any time to verify that the operating requirement is being met. Distribution Provider will make such request via a written notice no more than once per calendar quarter. Producer must provide such data within 30 Calendar Days of the written request.

If the Generating Facility fails to adhere to the operating requirements at any time, it will be disconnected immediately in accordance with Rule 21 Section D.9 and not reconnected until an approved mitigation (e.g., supervising controls) is in place as determined by Distribution Provider.



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ATTACHMENT K

**NEMFC Customer Agreement Starting January 1, 2017 Until California Air
Resources Board Emission Standard is Established (when applicable)**

Starting January 1, 2017, Customer applying for Schedule NEMFC, as revised pursuant to Assembly Bill 1637 (2016), agree as follows:

That their Eligible Fuel Cell Electrical Generating Facility must meet the reduction in greenhouse gas emissions standard to be established as required by the California Public Utilities (PU) Code Section 2827.10.

Since the applicable standards are not yet released by the California Air Resources Board (ARB) and/or approved as may be needed by the California Public Utilities Commission (CPUC), Customer agrees and understands that their approval for participation in NEMFC is contingent on their system meeting the new standard within three months of when the new standard becomes available. Specifically, I, Customer, understand and agree that if my fuel cell generator does not meet the ARB emission standard I will not be eligible for NEMFC.

Specifically, I will be responsible for the following:

1. Payment of all interconnection costs, including fees, studies, system upgrades, and any other pertinent interconnection costs.
2. Payment of the following nonbypassable charges on all departed load served by the fuel cell installed at my premises including but not limited to,
 - a. Public Purpose Program Charges;
 - b. Nuclear Decommissioning;
 - c. Department of Water Resources Bond Charges; and
 - d. Competition Transition Charge;
 - e. Other charges that the CPUC determines are to be charged on departed load and for which there is no exception for fuel cells pursuant to Schedule E-DCG.
3. I understand that I may be required to take service on standby tariff pursuant to Schedule S and pursuant to PU Code Section 2827.10(f)(2)(A).
4. I further understand that I will not be eligible for Rate Schedule NEMFC and will no longer receive any credit for any exports to the grid.

(Company Name)

(Signature)

(Print Name)

(Title)

(Date)



Electric Sample Form No. 79-1200
Rule 21 Generator Interconnection
Agreement for Exporting Generating Facilities

Sheet 1

**Please Refer to Attached
Sample Form**

(Continued)

Advice 6757-E-A
Decision

Issued by
Meredith Allen
Vice President, Regulatory Affairs

Submitted
Effective
Resolution

January 27, 2023



*Pacific Gas and
Electric Company®*

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

**RULE 21
GENERATOR INTERCONNECTION AGREEMENT
FOR
EXPORTING GENERATING FACILITIES
BETWEEN
PACIFIC GAS AND ELECTRIC COMPANY
AND
[CUSTOMER NAME]
FOR PROJECT:
[Project Name]
[City, State Zip]

[PG&E Log I.D]
[Queue# XXXX-RD]**

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

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RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

This Interconnection Agreement ("Agreement" or "GIA") is made and entered into this _____ day of _____, 20____, by _____ ("Distribution Provider"), and _____ ("Interconnection Customer") each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties."

Distribution Provider Information

[Contact information to be supplied]

Interconnection Customer Information

[Contact information to be supplied]

Interconnection Customer Application No: _____

WHEREAS, Interconnection Customer proposes to interconnect to the Distribution System;

WHEREAS, the basis for the Parties entering into this Agreement is that Interconnection Customer is a Qualifying Facility ("QF") and will sell all of its exports to the grid to the Distribution Provider under a power purchase agreement ("PPA") entered into pursuant to the Public Utility Regulatory Policies Act of 1978 ("PURPA"); or

WHEREAS, the basis for the Parties entering into this Agreement is:

(Insert Description or N/A)

THEREFORE, in consideration of the mutual covenants set forth herein, the Parties agree as follows:

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

Article 1. Scope and Limitations of Agreement

1.1. Applicability

This Agreement shall be used for an interconnection governed by the Distribution Provider's California Public Utilities Commission-("CPUC") approved Electric Rule 21 ("Rule 21") of a Generating Facility that sells all of its exports to the grid to the Distribution Provider. This Agreement is not applicable to NEM Producers, Non-Export Producers and non-compensated exporting Producers.

1.2. Purpose

This Agreement incorporates in its entirety the Distribution Provider's California Public Utilities Commission ("CPUC") approved Electric Rule 21 ("Rule 21"), subject to any modifications the CPUC may direct in the exercise of its jurisdiction. This Agreement governs the terms and conditions under which the Interconnection Customer's Generating Facility will interconnect with, and operate in parallel with, the Distribution Provider's Distribution System. In the event of inconsistency between this Agreement and the terms of Rule 21, the provisions of the latter shall control.

1.3. No Agreement to Purchase of Deliver Power

This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power. The purchase or delivery of power and other services that the Interconnection Customer may require will be covered under separate agreements, if any. The Interconnection Customer will be responsible for separately making all necessary arrangements (including scheduling) for delivery of electricity.

1.4. Limitations

Nothing in this Agreement is intended to affect any other agreement between the Distribution Provider and the Interconnection Customer.

1.5. Responsibilities of the Parties

1.5.1. The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.

1.5.2. The Interconnection Customer shall construct, interconnect, operate and maintain its Generating Facility and construct, operate, and maintain its Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, and in accordance with this Agreement, and with Good Utility Practice.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

- 1.5.3. The Distribution Provider shall construct, operate, and maintain its Distribution System, Transmission System, Interconnection Facilities, Distribution Upgrades and Network Upgrades in accordance with this Agreement, and with Good Utility Practice.
- 1.5.4. The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory, and Operating Requirements in effect at the time of construction and other applicable national and state codes and standards. The Interconnection Customer agrees to design, install, maintain, and operate its Generating Facility so as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the system or equipment of the Distribution Provider and any Affected Systems. The Interconnection Customer shall comply with the Distribution Provider's Interconnection Handbook. In the event of a conflict between the terms of this GIA and the terms of the Distribution Provider's Interconnection Handbook, the terms in this GIA shall govern.
- 1.5.5. Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of change of ownership. The Distribution Provider and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the Distribution Provider's Transmission System, Distribution System, personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Attachments to this Agreement.
- 1.5.6. The Distribution Provider shall coordinate with Affected Systems to support the interconnection.
- 1.5.7. The Interconnection Customer shall maintain QF status during the term of this Agreement.
- 1.6. Parallel Operation Obligations
- Once the Generating Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Generating Facility in the applicable balancing authority area, including, but not limited to; 1) the rules and procedures concerning the operation of generation set forth in Rule 21 or by the applicable system operator(s) for the Distribution Provider's Distribution System and; 2) the Operating Requirements set forth in Attachment 5 of this Agreement.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

1.7. Metering

The Interconnection Customer shall be responsible for the Distribution Provider's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair, and replacement of metering and data acquisition equipment specified in Attachments 2 and 3 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements. Nothing in this provision replaces or alters the metering requirements in the Interconnection Customer's PPA.

1.8. Reactive Power

1.8.1. The Interconnection Customer shall design its Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Interconnection and the Generating Facility shall be capable of operating within a power factor range of 0.9 leading to 0.9 lagging, unless the Distribution Provider has established different requirements that apply to all similarly situated generators in the balancing authority area on a comparable basis. Operation outside this range is acceptable provided the reactive power of the Generating Facility is used to meet the reactive power needs of the Host Loads or that reactive power is otherwise provided under tariff by Distribution Provider. The Interconnection Customer shall notify Distribution Provider if it is using the Generating Facility for power factor correction. Unless otherwise agreed upon by the Interconnection Customer and Distribution Provider, Generating Facilities shall automatically regulate power factor, not voltage, while operating in parallel with Distribution Provider's Distribution System.

1.9. Capitalized Terms

Capitalized Terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 or the body of this Agreement.

1.10. Smart Inverters

Producer certifies that their inverter-based Generating Facilities will upon receiving permission to operate from PG&E fully comply with Section Hh of Rule 21 that is in effect at the time the application is received, including configuration of protective settings and default settings, in accordance with the specifications therein.

Distribution Provider may require a field verification of the Interconnection Customer's inverter. Interconnection Customer further agrees to cooperate fully with any such request and make their inverter available to the Distribution Provider for such verification. Interconnection Customer understands that in the event the inverter is not set in accordance with Section Hh of Rule 21, Interconnection Customer will need to cease operation of generating facility until verification is confirmed by Distribution Provider.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

(Smart inverter models and firmware versions that comply with Rule 21 Section Hh can be found at <http://www.gosolarcalifornia.org/equipment/inverters.php>.)

Verification of compliance with such requirements shall be provided by the Interconnection Customer upon request by PG&E in accordance with PG&E's Electric Rule 21.

An "existing inverter" is defined as an inverter that meets one or more of the following conditions:

- (a) it is already approved by PG&E for interconnection prior to September 9, 2017
- (b) the Interconnection Customer has submitted the interconnection application prior to September 9, 2017,
- (c) the Interconnection Customer provides evidence of having applied for an electrical permit for the Generating Facility installation that is dated prior to September 9, 2017 and submitted a complete interconnection application¹ no later than March 31, 2018, or
- (d) the Interconnection Customer provides evidence of a final inspection clearance from the governmental authority having jurisdiction over the Generating Facility prior to September 9, 2017.

All "existing inverters" are not required to be Smart Inverters and are only subject to Section H of Rule 21. Interconnection Customer replacing an "existing inverter" certifies it is being replaced with either:

- (i) inverter equipment that complies with Section Hh of Rule 21, (encouraged); or
- (ii) a conventional inverter that is of the same size and equivalent ability to that of the inverter being replaced, as allowed in Rule 21 Section H.3.d.ii.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1. Equipment Testing and Inspection

2.1.1. Pursuant to Rule 21, the Interconnection Customer shall test and inspect its Generating Facility and Interconnection Facilities prior to

¹ A complete application consists all of the following without deficiencies:

- 1. A completed Interconnection Application including all supporting documents and required payments,
- 2. A completed signed Interconnection Agreement,
- 3. Evidence of the Interconnection Customer final inspection clearance from the governmental authority having jurisdiction over the generating system.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

interconnection. The Interconnection Customer shall notify the Distribution Provider of such activities no fewer than five Business Days (or as may be agreed to by the Parties) prior to such testing and inspection. Testing and inspection shall occur on a Business Day. The Distribution Provider may, at its own expense, send qualified personnel to the Generating Facility site to inspect the interconnection and observe the testing. The Interconnection Customer shall provide the Distribution Provider a written test report when such testing and inspection is completed.

- 2.1.2. The Distribution Provider shall provide the Interconnection Customer written acknowledgment that it has received the Interconnection Customer's written test report. Such written acknowledgment shall not be deemed to be or construed as any representation, assurance, guarantee, or warranty by the Distribution Provider of the safety, durability, suitability, or reliability of the Generating Facility or any associated control, protective, and safety devices owned or controlled by the Interconnection Customer or the quality of power produced by the Generating Facility.

2.2. Authorization Required Prior to Parallel Operation

- 2.2.1. The Distribution Provider shall use Reasonable Efforts to list applicable parallel operation requirements in Attachment 5 of this Agreement. Additionally, the Distribution Provider shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. The Distribution Provider shall make Reasonable Efforts to cooperate with the Interconnection Customer in meeting requirements necessary for the Interconnection Customer to commence parallel operations by the in-service date.
- 2.2.2. The Interconnection Customer shall not operate its Generating Facility in parallel with the Distribution Provider's Distribution System without prior written authorization of the Distribution Provider. The Distribution Provider will provide such authorization once the Distribution Provider receives notification that the Interconnection Customer has complied with all applicable parallel operation requirements. Such authorization shall not be unreasonably withheld, conditioned, or delayed.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

2.3. Right of Access

- 2.3.1. Upon reasonable notice, the Distribution Provider may send a qualified person to the premises of the Interconnection Customer at or immediately before the time the Generating Facility first operates in parallel to inspect the interconnection, and observe the commissioning of the Generating Facility (including any required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Distribution Provider at least five (5) Business Days prior to conducting any on-site verification testing of the Generating Facility.
- 2.3.2. Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Distribution Provider shall have access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.
- 2.3.3. Costs associated with this Article are subject to the relevant provisions of Rule 21.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1. Effective Date

This Agreement shall become effective upon execution by the Parties.

3.2. Term of Agreement

This Agreement shall become effective on the Effective Date and shall remain in effect for a period of _____ years from the Effective Date or such other longer period as the Parties may agree and shall be automatically renewed for each successive one-year period thereafter, unless terminated earlier in accordance with article 3.3 of this Agreement.

3.3. Termination

No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.

- 3.3.1. 1The Interconnection Customer may terminate this Agreement at any time by giving the Distribution Provider twenty (20) Business Days written notice.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

- 3.3.2. Either Party may terminate this Agreement after Default pursuant to article 7.6.
- 3.3.3. In addition, if the basis for Rule 21 applicability for this interconnection is based on the Interconnection Customer maintaining QF status and selling all its exports to the grid to Distribution Provider under a PURPA PPA, then this provision applies and Distribution Provider may terminate this Agreement if Interconnection Customer fails to maintain its QF status for the term of this Agreement or upon termination of Interconnection Customer's PURPA PPA.
- 3.3.3.1. If Section 3.3.3 applies, Interconnection Customer is responsible for maintaining QF status and must notify Distribution Provider sixty (60) Calendar Days in advance of Interconnection Customer failing to maintain its QF status, selling to a third-party, or termination of its PURPA PPA. If Interconnection Customer fails to provide such notice, it is wholly responsible for any penalties incurred from any Governmental Authority or the California Independent System Operator Corporation ("CAISO"), including penalties and charges incurred by the Distribution Provider, as a result of this failure to notify the Distribution Provider.
- 3.3.3.2. If Interconnection Customer is no longer eligible for a Rule 21 interconnection, then Distribution Provider may terminate this Agreement.
- 3.3.4. Upon termination of this Agreement, the Generating Facility will be disconnected from the Distribution Provider's Distribution System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this GIA or such non-terminating Party otherwise is responsible for these costs under this GIA.
- 3.3.5. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of the termination.
- 3.3.6. The provisions of this article shall survive termination or expiration of this Agreement.
- 3.3.7. If the Generating Facility no longer falls within the scope and description provided in Section 1.1 of this Agreement, this Agreement is terminated.
- 3.4. Temporary Disconnection
- Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.



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3.4.1. Emergency Conditions

"Emergency Condition" shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of the Distribution Provider, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Distribution System, the Distribution Provider's Interconnection Facilities or any Affected Systems(s); or (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Generating Facility or the Interconnection Customer's Interconnection Facilities. Under Emergency Conditions, the Distribution Provider may immediately suspend interconnection service and temporarily disconnect the Generating Facility. The Distribution Provider shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer's operation of the Generating Facility. The Interconnection Customer shall notify the Distribution Provider promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Distribution Provider's Distribution System or any Affected Systems. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2. Routine Maintenance, Construction, and Repair

The Distribution Provider may interrupt interconnection service or curtail the output of the Generating Facility and temporarily disconnect the Generating Facility from the Distribution Provider's Distribution System when necessary for routine maintenance, construction, and repairs on the Distribution Provider's Distribution System and/or Transmission System. The Distribution Provider shall provide the Interconnection Customer with five Business Days notice prior to such interruption. The Distribution Provider shall use Reasonable Efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer.

3.4.3. Forced Outages

During any forced outage, the Distribution Provider may suspend interconnection service to effect immediate repairs on the Distribution Provider's Distribution System and/or Transmission System. The Distribution Provider shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, the Distribution Provider shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

3.4.4. Adverse Operating Effects

The Distribution Provider shall notify the Interconnection Customer as soon as practicable if, based on Good Utility Practice, operation of the Generating Facility may cause disruption or deterioration of service to other customers served from the same electric system, or if operating the Generating Facility could cause damage to the Distribution Provider's Distribution System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Distribution Provider may disconnect the Generating Facility. The Distribution Provider shall provide the Interconnection Customer with five Business Day notice of such disconnection, unless the provisions of article 3.4.1 apply.

3.4.5. Modification of the Generating Facility

The Interconnection Customer must receive written authorization from the Distribution Provider before making any change to the Generating Facility that may have a material impact on the safety or reliability of the Distribution System and/or the Transmission System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without the Distribution Provider's prior written authorization, the latter shall have the right to temporarily disconnect the Generating Facility.

3.4.6. Reconnection

The Parties shall cooperate with each other to restore the Generating Facility, Interconnection Facilities, and the Distribution Provider's Distribution System and/or Transmission System to their normal operating state as soon as reasonably practicable following a temporary disconnection.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1. Interconnection Facilities

- 4.1.1. The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Attachment 2 of this Agreement. The Distribution Provider shall provide a best estimate cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

facilities by agreement of the Interconnection Customer, such other entities, and the Distribution Provider.

4.1.2. The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Distribution Provider's Interconnection Facilities.

4.1.3. If the provisions of PG&E's Rule 21, or any other tariff or rule approved by the Commission, requires PG&E to own and operate a portion of the Interconnection Facilities, Producer and PG&E shall promptly execute an Special Facilities Agreement that establishes and allocates responsibility for the design, installation, operation, maintenance, and ownership of the Interconnection Facilities. This Special Facilities Agreement shall be attached to and made a part of this Agreement as Attachment G.

4.2. Distribution Upgrades

The Distribution Provider shall design, procure, construct, install, and own the Distribution Upgrades described in a Special Facilities Agreement attached to and made a part of this Agreement as Attachment G. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

Article 5. Cost Responsibility for Network Upgrades

5.1. Applicability

No portion of this Article 5 shall apply unless the interconnection of the Generating Facility requires Network Upgrades.

5.2. Network Upgrades

The Distribution Provider or the Distribution Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment 6 of this Agreement. If the Distribution Provider and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Distribution Provider elects to pay for Network Upgrades, the actual cost of the Network Upgrades, including overheads, shall be borne by the Interconnection Customer unless Section 5.2.1 directs otherwise.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

5.2.1. Repayment of Amounts Advanced for Network Upgrades

To the extent that the CAISO Tariff, currently Section 12.3.2 of Appendix Y, provides for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, the Interconnection Customer shall be entitled to a cash repayment, equal to the total amount paid to the Distribution Provider and Affected System operator, if any, for Network Upgrades, including any tax gross-up or other tax-related payments associated with the Network Upgrades, and not otherwise refunded to the Interconnection Customer, to be paid to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Distribution Provider's Tariff and Affected System's Tariff for transmission services with respect to the Generating Facility. Any repayment shall include interest calculated in accordance with the methodology set forth in FERC's regulations at 18 C.F.R. §35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. The Interconnection Customer may assign such repayment rights to any person. To the extent that the CAISO Tariff does not provide for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, Interconnection Customer is not entitled to a cash repayment for amounts paid to the Distribution Provider and Affected System operator for Network Upgrades, and no cash repayment shall be made pursuant to this Agreement.

5.2.1.1. If the Interconnection Customer is entitled to a cash repayment pursuant to Article 5.2.1, the Interconnection Customer, the Distribution Provider, and any applicable Affected System operators may adopt any alternative payment schedule that is mutually agreeable so long as the Distribution Provider and said Affected System operators take one of the following actions no later than five years from the Commercial Operation Date: (1) return to the Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that the Distribution Provider or any applicable Affected System operators will continue to provide payments to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond twenty (20) years from the commercial operation date.

5.2.1.2. If the Generating Facility fails to achieve commercial operation, but it or another generating facility is later constructed and requires use of the Network Upgrades, the Distribution Provider and Affected System operator shall at that time reimburse the

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

Interconnection Customer for the amounts advanced for the Network Upgrades if the Interconnection Customer is entitled to a cash repayment pursuant to Article 5.2.1. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the generating facility, if different, is responsible for identifying the entity to which reimbursement must be made.

5.3. [Intentionally Omitted]

5.4. Rights Under Other Agreements

Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Generating Facility.

Article 6. Milestones

6.1. Milestones

The Parties shall agree on milestones for which each Party is responsible and list them in Attachment 4 of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Uncontrollable Force Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (1) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (2) requesting appropriate amendments to Attachment 4. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless it will suffer significant uncompensated economic or operational harm from the delay, (2) attainment of the same milestone has previously been delayed, or (3) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

Article 7. Assignment, Liability, Indemnity, Uncontrollable Force, Consequential Damages, and Default

7.1. Assignment

This Agreement may be assigned by either Party upon fifteen (15) Business Days prior written notice and opportunity to object by the other Party; provided that:

- 7.1.1. Either Party may assign this Agreement without the consent of the other Party to any affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement, provided that the Interconnection Customer promptly notifies the Distribution Provider of any such assignment;
- 7.1.2. The Interconnection Customer shall have the right to assign this Agreement, without the consent of the Distribution Provider, for collateral security purposes to aid in providing financing for the Generating Facility, provided that the Interconnection Customer will promptly notify the Distribution Provider of any such assignment.
- 7.1.3. Any attempted assignment that violates this article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. An assignee is responsible for meeting the same financial, credit, and insurance obligations as the Interconnection Customer. Where required, consent to assignment will not be unreasonably withheld, conditioned or delayed.

7.2. Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages, except as authorized by this Agreement.

7.3. Indemnity

- 7.3.1. This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in article 7.2.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

- 7.3.2. The Parties shall at all times indemnify, defend, and hold the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or failure to meet its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.
- 7.3.3. If an indemnified person is entitled to indemnification under this article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this article, to assume the defense of such claim, such indemnified person may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.
- 7.3.4. If an indemnifying party is obligated to indemnify and hold any indemnified person harmless under this article, the amount owing to the indemnified person shall be the amount of such indemnified person's actual loss, net of any insurance or other recovery.
- 7.3.5. Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this article may apply, the indemnified person shall notify the indemnifying party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying party.

7.4. Consequential Damages

Other than as expressly provided for in this Agreement, neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

7.5. Uncontrollable Force

- 7.5.1. As used in this article, an Uncontrollable Force Event shall mean "any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm, flood, earthquake, explosion, breakage or accident to machinery or equipment, any curtailment, order, regulation or restriction imposed by governmental, military or lawfully established civilian



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

authorities, or any other cause beyond the reasonable control of the Distribution Provider or Interconnection Customer which could not be avoided through the exercise of Good Utility Practice. An Uncontrollable Force Event does not include an act of negligence or intentional wrongdoing by the Party claiming Uncontrollable Force."

- 7.5.2. If an Uncontrollable Force Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Uncontrollable Force Event (Affected Party) shall promptly notify the other Party, either in writing or via the telephone, of the existence of the Uncontrollable Force Event. The notification must specify in reasonable detail the circumstances of the Uncontrollable Force Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Uncontrollable Force Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Uncontrollable Force Event cannot be mitigated by the use of Reasonable Efforts. The Affected Party will use Reasonable Efforts to resume its performance as soon as possible.

7.6. Default

- 7.6.1. No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of an Uncontrollable Force Event as defined in this Agreement or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in article 7.6.2, the defaulting Party shall have 60 calendar days from receipt of the Default notice within which to cure such Default; provided however, if such Default is not capable of cure within 60 calendar days, the defaulting Party shall commence such cure within 20 calendar days after notice and continuously and diligently complete such cure within six months from receipt of the Default notice; and, if cured within such time, the Default specified in such notice shall cease to exist.
- 7.6.2. If a Default is not cured as provided in this article, or if a Default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this article will survive termination of this Agreement.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

Article 8. Insurance

8.1. General Liability and Additional Insurance

The Interconnection Customer shall, at its own expense, maintain in force general liability insurance without any exclusion for liabilities related to the interconnection undertaken pursuant to this Agreement. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. The Interconnection Customer shall obtain additional insurance only if necessary as a function of owning and operating a generating facility. Such insurance shall be obtained from an insurance provider authorized to do business in California. Certification that such insurance is in effect shall be provided upon request of the Distribution Provider, except that the Interconnection Customer shall show proof of insurance to the Distribution Provider no later than ten (10) Business Days prior to the anticipated Parallel Operation date. An Interconnection Customer of sufficient credit-worthiness may propose to self-insure for such liabilities, and such a proposal shall not be unreasonably rejected.

8.2. Maintenance of Insurance

The Distribution Provider agrees to maintain general liability insurance or self-insurance consistent with the Distribution Provider's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Distribution Provider's liabilities undertaken pursuant to this Agreement.

8.3. Notification

The Parties further agree to notify each other whenever an accident or incident occurs resulting in any injuries or damages that are included within the scope of coverage of such insurance, whether or not such coverage is sought.

Article 9. Confidentiality

9.1. Definition of Confidential Information

The confidentiality provisions applicable to this Agreement are set forth in Section D.7, Confidentiality of Rule 21 and in the following provisions included in this Article.

9.1.1. Release of Confidential Information

Neither Party shall release or disclose Confidential Information to any other person, employees, consultants, or to parties who may be or considering providing financing to or equity participation with Interconnection Customer, or to potential purchasers or assignees of Interconnection

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Customer, on a need-to-know basis in connection with these procedures, unless such person has first been advised of the confidentiality provisions of this Article and has agreed to comply with such provisions. Notwithstanding the foregoing, a Party providing Confidential Information to any person shall remain primarily responsible for any release of Confidential Information in contravention of this Article.

9.1.2. Rights

Each Party retains all rights, title, and interest in the Confidential Information that each Party discloses to the other Party. The disclosure by each Party to the other Party of Confidential Information shall not be deemed a waiver by either Party or any other person or entity of the right to protect the Confidential Information from public disclosure.

9.1.3. No Warranties

By providing Confidential Information, neither Party makes any warranties or representations as to its accuracy or completeness. In addition, by supplying Confidential Information, neither Party obligates itself to provide any particular information or Confidential Information to the other Party nor to enter into any further agreements or proceed with any other relationship or joint venture.

9.1.4. Standard of Care

Each Party shall use at least the same standard of care to protect Confidential Information it receives as it uses to protect its own Confidential Information from unauthorized disclosure, publication or dissemination; however, in no case shall a Party use less than reasonable care in protecting Confidential Information. Each Party may use Confidential Information solely to fulfill its obligations to the other Party under this Agreement or its regulatory requirements.

9.1.5. Order of Disclosure

If a court or a Government Authority or entity with the right, power, and apparent authority to do so requests or requires either Party, by subpoena, oral deposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirement(s) so that the other Party may seek an appropriate protective order or waive compliance. Notwithstanding the absence of a protective order or waiver, the Party may disclose such Confidential Information which, in the opinion of its counsel, the Party is legally compelled to disclose. Each Party will use Reasonable Efforts to obtain reliable assurance that confidential treatment will be accorded any Confidential Information so furnished.

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9.1.6. Remedies

The Parties agree that monetary damages would be inadequate to compensate a Party for the other Party's Breach of its obligations under this Article. Each Party accordingly agrees that the other Party shall be entitled to equitable relief, by way of injunction or otherwise, if the first Party Breaches or threatens to Breach its obligations under this Article, which equitable relief shall be granted without bond or proof of damages, and the receiving Party shall not plead in defense that there would be an adequate remedy at law. Such remedy shall not be deemed an exclusive remedy for the Breach of this Article but shall be in addition to all other remedies available at law or in equity. The Parties further acknowledge and agree that the covenants contained herein are necessary for the protection of legitimate business interests and are reasonable in scope. No Party, however, shall be liable for indirect, incidental, or consequential or punitive damages of any nature or kind resulting from or arising in connection with this Article.

Article 10. Disputes

10.1. Dispute Resolution

Any dispute arising between the Parties regarding a Party's performance of its obligations under this Agreement or requirements related to the interconnection of the Generating Facility shall be resolved according to the procedures in Rule 21.

Article 11. Taxes

11.1. Applicable Tax Laws and Regulation

The Parties agree to follow all applicable tax laws and regulations, consistent with CPUC policy and Internal Revenue Service requirements.

11.2. Maintenance of Tax Status

Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect the Distribution Provider's tax-exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

Article 12. Miscellaneous

12.1. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of California (where the Point

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

of Interconnection is located), without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

12.2. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

12.3. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

12.4. Waiver

12.4.1. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

12.4.2. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Distribution Provider. Any waiver of this Agreement shall, if requested, be provided in writing.

12.5. Entire Agreement

This Agreement, including all Attachments, and any incorporated tariffs or Rules, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

12.6. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original, but all constitute one and the same instrument.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

12.7. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

12.8. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

12.9. Security Arrangements

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. All public utilities are expected to meet basic standards for system infrastructure and operational security, including physical, operational, and cyber-security practices.

12.10. Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

12.11. Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

12.11.1. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Distribution Provider be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

12.11.2. The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

12.12. CPUC Modification

Unless otherwise ordered by the CPUC, this Agreement at all times shall be subject to such modifications as the CPUC may direct from time to time in the exercise of its jurisdiction.

12.13. Review of Records and Data

12.13.1. The Distribution Provider shall have the right to review and obtain copies of Interconnection Customer's operations and maintenance records, logs, or other information such as, unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to Interconnection Customer's Generating Facility or its interconnection with Distribution Provider's Distribution System.

12.13.2. The Interconnection Customer authorizes the Distribution Provider to release to the California Energy Commission ("CEC"), the CAISO, and/or the CPUC information regarding the Generating Facility, including the Interconnection Customer's name and location, and the size, location and operational characteristics of the Generating Facility, as requested from time to time pursuant to the CEC's, CAISO's, or CPUC's rules and regulations.

Article 13. Notices

13.1. General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

currier service, or sent by first class mail, postage prepaid, to the person specified below:

If to the Interconnection Customer:
[Contact information to be supplied]

If to the Distribution Provider:
[Contact information to be supplied]

13.2. Billing and Payment

Billings and payments shall be sent to the addresses set out below:

Interconnection Customer:
[Contact information to be supplied]

Distribution Provider
[Contact information to be supplied]



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13.3. Alternative Forms of Notice

Any notice or request required or permitted to be given by either Party to the other and not required by this Agreement to be given in writing may be so given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out below:

If to the Interconnection Customer:
[Contact information to be supplied]

If to the Distribution Provider:
[Contact information to be supplied]

13.4. Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's Operating Representative:
[Contact information to be supplied]

Distribution Provider's Operating Representative:
[Contact information to be supplied]

13.5. Changes to the Notice Information

Either Party may change this information by giving five Business Days written notice prior to the effective date of the change.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

Article 14. Signatures

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

(Interconnection Customer Name)

(Distribution Provider Name)

(Signature)

(Signature)

(Print Name)

(Print Name)

(Title)

(Title)

(Date)

(Date)

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING — ATTACHMENT A —

Glossary of Terms

Affected System - An electric system other than the Distribution Provider's Distribution System that may be affected by the proposed interconnection, including but not limited to the Transmission System.

Applicable Laws and Regulations - All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

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

Contact Information – Contact information will include the name of business, contact name, business address including city, state and zip, phone number, e-mail address, and any other pertinent information that may be required to communicate with the Parties.

Default - The failure of a breaching Party to cure its breach under the Agreement.

Distribution Owner - The entity that owns, leases or otherwise possesses an interest in the portion of the Distribution System at the Point of Interconnection and may be a Party to the Agreement to the extent necessary.

Distribution Provider - The public utility (or its designated agent) that owns, controls, or operates transmission or distribution facilities used for the transmission of electricity and provides distribution service to the Interconnection Customer. The term Distribution Provider should be read to include the Distribution Owner when the Distribution Owner is separate from the Distribution Provider.

Distribution System - Those non-CAISO transmission and distribution facilities, owned, controlled and operated by the Distribution Provider that are used to provide distribution service, which facilities and equipment are used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which Distribution Systems operate differ among areas.

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

Generating Facility - The Interconnection Customer's device for the production or storage of electricity identified in Attachment 2 of the Agreement but shall not include the Interconnection Customer's Interconnection Facilities.

Good Utility Practice - Any of the practices, methods and acts engaged in or approved by a significant portion of the electric 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

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING — ATTACHMENT A —

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 the Interconnection Customer, the Distribution Provider, or any Affiliate thereof.

Interconnection Customer - Any entity, including the Distribution Provider, Distribution Owner or any of the affiliates or subsidiaries of either, that proposes to interconnect its Generating Facility with the Distribution Provider's Distribution System. The definition of "Interconnection Customer" in this Agreement is intended to be identical to and used interchangeably with the definition of "Producer" in Rule 21.

Interconnection Facilities - The Distribution Provider's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Distribution Provider's Distribution System. Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades or Network Upgrades.

Interconnection Handbook - A handbook, developed by the Distribution Provider and posted on the Distribution Provider's website or otherwise made available by the Distribution Provider, describing the technical and operational requirements for wholesale generators and loads connected to the Distribution System, as such handbook may be modified or superseded from time to time. In the event of a conflict between the terms of this Agreement and the terms of the Distribution Provider's Interconnection Handbook, the terms in this Agreement shall govern.

Network Upgrades - Additions, modifications, and upgrades to the Distribution Provider's Transmission System required at or beyond the point at which the Distribution System connects to the Distribution Provider's Transmission System to accommodate the interconnection of the Generating Facility to the Distribution Provider's Distribution System. Network Upgrades do not include Distribution Upgrades.

Operating Requirements - Any operating and technical requirements that may be applicable due to Regional Transmission Organization, the CAISO, balancing authority area, or the Distribution Provider's requirements, including those set forth in the Agreement.

Party or Parties - The Distribution Provider, Distribution Owner, Interconnection Customer, Producer or any combination of the above.

Point of Interconnection - The point where the Interconnection Facilities connect with the Distribution Provider's Distribution System.

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING — ATTACHMENT A —

Reasonable Efforts - With respect to an action required to be attempted or taken by a Party under the Agreement, 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.

Transmission System - Those facilities owned by the Distribution Provider that have been placed under the CAISO's operational control and are part of the CAISO Grid.

Upgrades - The required additions and modifications to the Distribution Provider's Distribution System and Transmission System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT B —

**One-line Diagram Depicting the Generating Facility, Interconnection
Facilities, Metering Equipment, and Upgrades**



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT C —

Final Study Report Including Description and Costs of the Generating Facility, Interconnection Facilities, Metering Equipment, Distribution and/or Network Upgrades

Final study report includes equipment, including the Generating Facility, Interconnection Facilities, and metering equipment itemized and identified as being owned by the Interconnection Customer, the Distribution Provider, or the Distribution Owner. The Distribution Provider will provide a best estimate itemized cost, including overheads, of its Interconnection Facilities and metering equipment, and a best estimate itemized cost of the annual operation and maintenance expenses associated with its Interconnection Facilities and metering equipment. Additionally, NEM program specific information relating to the Interconnection Customer's Generating Facility and any associated arrangements (i.e. NEM2, NEM2A, NEM2MT, NEM2V, NEM2VMSH (1 SDP), and NEMVMSH (DEV)) will be set forth in this attachment.

Final study report includes description of Upgrades and provides an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. The Distribution Provider shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT D —

Milestones

In-Service Date: _____

Critical milestones and responsibility as agreed to by the Parties:

	<u>Milestones</u>	<u>Date</u>	<u>Responsible Party</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____

Agreed to by:

For the Distribution Provider _____ Date _____

For the Distribution Owner (If Applicable) _____ Date _____

For the Interconnection Customer _____ Date _____



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT E —

Additional Operating Requirements for the Distribution Provider's Distribution System and Affected Systems Needed to Support the Interconnection Customer's Needs

The Distribution Provider shall also provide requirements that must be met by the Interconnection Customer prior to initiating parallel operation with the Distribution Provider's Distribution System.



*Pacific Gas and
Electric Company®*

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT F —

**Rule 21 Special Facilities Agreement
(Formed between the Parties)**



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

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GENERATING FACILITY INTERCONNECTIONS

Sheet 27

C. DEFINITIONS (Cont'd.)

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.

(D)
(D)

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.

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.

k_{OF} : The per-unit frequency change corresponding to 1 per-unit power output change (frequency droop), unitless used in Section P.

(P)

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

(P)

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

(Continued)



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Sheet 67

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

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.											

(D)
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(D)

(Continued)



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GENERATING FACILITY INTERCONNECTIONS

Sheet 97

- F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.)
3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)
- b. Independent Study Process (Cont'd.)

(D)

(D)

- iv) Modifications

(T)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 98

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

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

b. Independent Study Process (Cont'd.)

iv) Modifications (Cont'd.)

(T)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 99

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

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

b. Independent Study Process (Cont'd.)

iv) Modifications (Cont'd.)

(T)

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.b.v, shall constitute a Material Modification.

(P)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 100

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

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

b. Independent Study Process (Cont'd.)

- v) Scope and Purpose of the Interconnection Facilities Study and Study Deposit (T)

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.

(Continued)



ELECTRIC RULE NO. 21
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Sheet 101

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

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

b. Independent Study Process (Cont'd.)

vi) Waiver of the Interconnection Facilities Study

(T)

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.

(Continued)



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GENERATING FACILITY INTERCONNECTIONS

Sheet 102

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

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

b. Independent Study Process (Cont'd.)

vii) Timing of the Interconnection Facilities Study (T)

The Interconnection Facilities Study shall be completed and provided to Applicant within sixty (60) Business Days after 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 submits the Interconnection Facilities Study deposit for Generating Facilities with a Gross Nameplate Rating of 5 MW or less. (T)

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. (T)

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. (T)

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. (T)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 103

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

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

b. Independent Study Process (Cont'd.)

viii) Interconnection Facilities Study Results Meeting

(T)

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.

(D)

(D)

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. Distribution Provider shall inform Applicant of the Detailed Study start date.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 109

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

(D)

(D)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 110

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

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

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

vi) Modifications

(T)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 111

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

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

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

vi) Modifications (Cont'd.)

(T)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 112

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

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

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

vii) Scope and Purpose of the DGS Phase II Interconnection Study and Study Deposit (T)

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.

viii) Waiver of the DGS Phase II Interconnection Study (T)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 113

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

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

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

ix) DGS Phase II Interconnection Study Procedures (T)

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 114

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

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

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

ix) DGS Phase II Interconnection Study Procedures (Cont'd.) (T)

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.

x) DGS Phase II Interconnection Study Results Meeting (T)

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 115

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

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

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

x) DGS Phase II Interconnection Study Results Meeting (Cont'd.) (T)

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.

xi) Timing of the DGS Phase II Interconnection Study (T)

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 116

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

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

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

- xii) Withdrawal and Reallocation of Cost to Interconnection Requests in a Distribution Study Group (T)

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 reevaluated 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 the withdrawing Applicant, will be the responsibility of remaining Applicants in the Distribution Group and will be reallocated in accordance with E.4.e.

(T)
(T)

- xiii) Restudy (T)

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 117

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

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

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

xiv) Automatic Timing Extension

(T)

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.

d. WDT Transmission Cluster Study Process

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. Distribution Provider shall inform Applicant of the Detailed Study start date.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 122

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

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.

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(D)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 123

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

4. BILL ON ESTIMATE

Bill on Estimate is a process intended for projects with interconnection upgrades where the cost of the upgrade is borne by the customer. Once the Applicant is deemed to be financially responsible for the upgrades and returns a signed Interconnection Agreement then the Bill on Estimate process will begin.

The Applicant will be provided with an Estimating Advance that is nonrefundable. The estimating advance is \$20,000 or 20% of the non-binding cost estimate, whichever is less. The itemized non-binding cost estimate will be provided in the completed study. Once the non-binding cost estimate payment is received PG&E will verify field conditions and begin the design phase of the interconnection upgrade. Upon completion of the design phase of the interconnection upgrade, the Applicant will receive a Special Facilities Agreement that contains the final cost of the upgrades less the Estimating Advance. Once the payment and Special Facilities Agreement is signed and returned to PG&E, then the construction phase can begin. There will be no reconciliation in this process.

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(N)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 124

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 125

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 126

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 Facility 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,

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 127

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 128

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 129

- F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (L)
6. 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 130

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 131

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 132

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 133

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

6. 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 134

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 135

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.

8. DESIGN AND CONSTRUCTION TIMELINE

The standard timeline for design and construction of interconnection-related Distribution Upgrades is as follows:

- i) 60 business days for design and 60 business days for construction, or
- ii) Design and construct timelines as agreed to between Applicant and Distribution Provider.

Distribution Provider shall use Reasonable Efforts to comply with these timelines and shall work with Applicant to reach a reasonable timeline when an emergency occurs.

The 60-day clock commences upon payment and after Applicant has done everything necessary on its end to prepare for construction.

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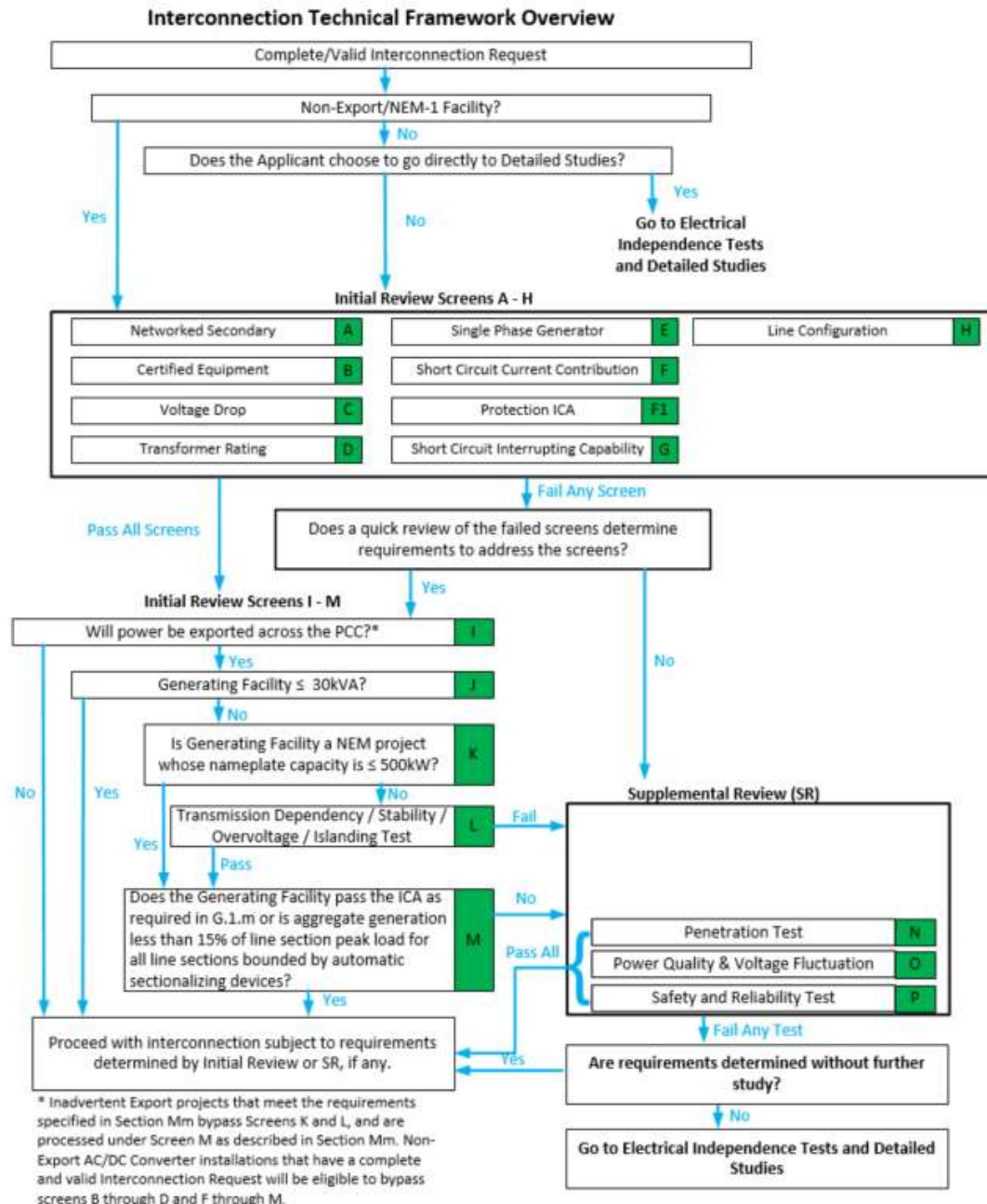


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GENERATING FACILITY INTERCONNECTIONS

Sheet 136

G. ENGINEERING REVIEW DETAILS

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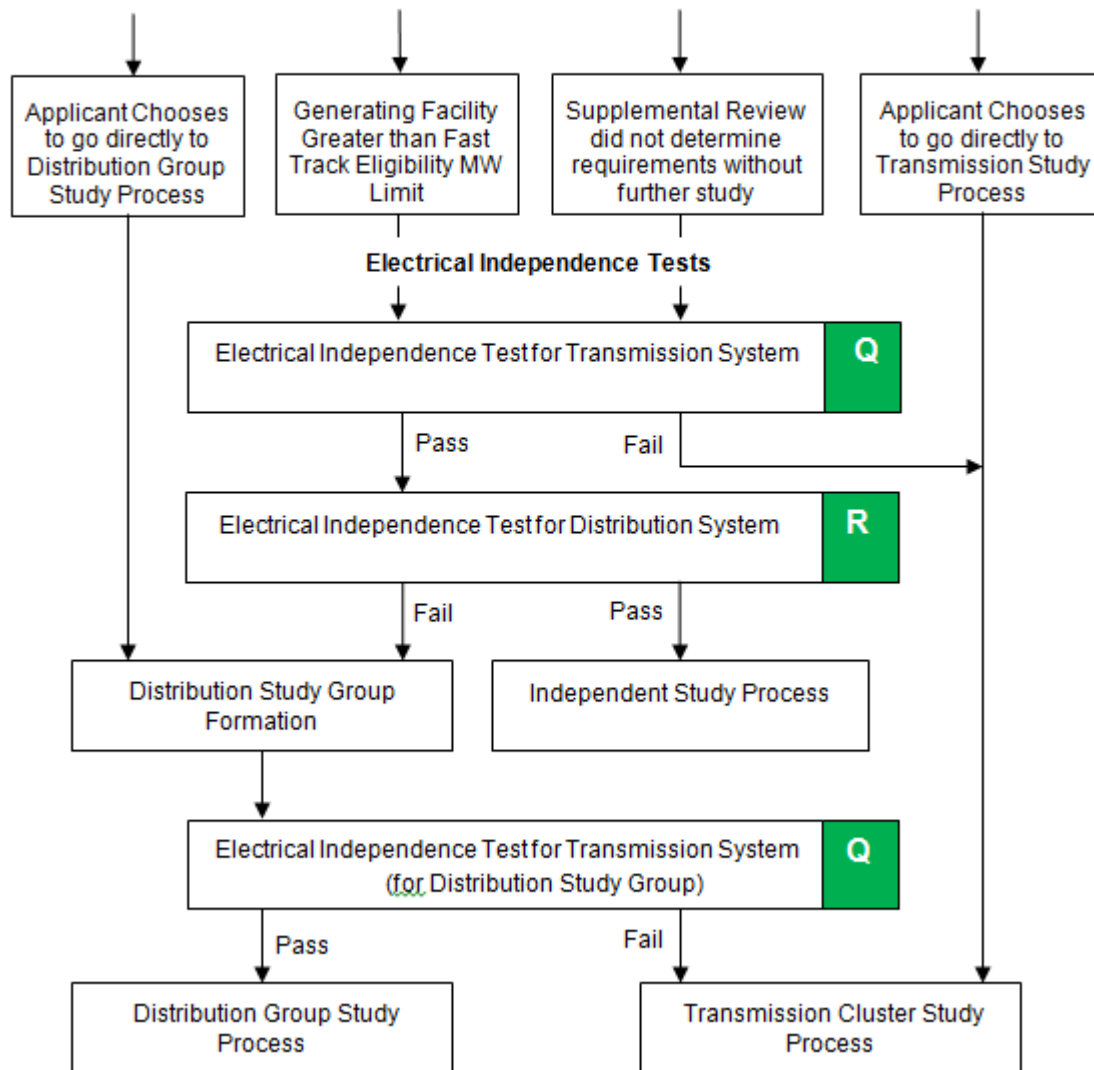


ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 137

G. ENGINEERING REVIEW DETAILS (Cont'd.)

Interconnection Technical Framework- Overview



(L)

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 138

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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 139

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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 140

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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 141

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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 142

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. Screens F and F1:

Screen F: Is the Short Circuit Current Contribution Ratio within acceptable limits?

- If Yes (pass), continue to Screen F1.
- If No (fail), continue to Screen F1 pursuant to Section G.1.

Note: This Screen does not apply to Generating Facilities with a Gross Rating of 30 kVA or less.

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)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 143

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

1. INITIAL REVIEW SCREENS (Cont'd.)

f. Screens F and F1:

Screen F1: Is the per unit short circuit current contribution under allowable levels?

Is the short circuit current contribution less than or equal to 1.2 per unit or is the Generating Facility Gross Nameplate Rating multiplied by its per unit contribution less than the Protection Integrated Capacity Analysis (ICA) Value multiplied by 1.2 per unit?

- If Yes to either (pass), continue to Screen G.
- If No to both (fail), continue to Screen G pursuant to Section G.1.

Significance: Generating systems with a per unit short circuit contribution of 1.2 or less can bypass this screen and directly use the ICA because ICA calculations assume that Generating Facilities have a per unit short circuit contribution of 1.2. For Generating Facilities with a per unit short circuit contribution greater than 1.2, the Distribution Provider will use the Protection ICA Value¹ at the point of interconnection in conjunction with the Generating Facility's per unit short circuit contribution to determine whether the facility passes Screen F1.

g. Screen G: Is the Short Circuit Interrupting Capability Exceeded?

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

¹ The protection limit is one of the components of the ICA Value that pertains to sensing faults on the grid.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 144

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

1. INITIAL REVIEW SCREENS (Cont'd.)

**g. Screen G: Is the Short Circuit Interrupting Capability Exceeded?
(Cont'd)**

Note: This Screen does not apply to Generating Facilities with a Gross Rating of 30 kVA or less.

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.

**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 30 kVA or less

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.

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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 145

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?

- If Yes, Continue to Screen J. This includes Options 5, 6, 9, 10, and 11.
- If No, then to ensure that the Generating Facility does not export across the PCC, the Generating Facility must incorporate Options 1, 2, 3, 4, 7, or 8 below. Following that selection, Screen J, K, L, and M are skipped and Initial Review is complete. If Option 8 is used, see section Mm1 to determine screen application.

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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 146

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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 147

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.

Option 6: Inadvertent Export utilizing UL-1741 or UL-1741 SA/SB listed grid support (Non-Islanding) inverters as described in Section Mm.

Option 7: Non-Export utilizing Non-Export AC/DC Converter as described in Section O.

Option 8: Non-Export utilizing Certified Power Control Systems with an open loop response time no more than two seconds as described in Section Mm1.

Option 9: Limited Export utilizing Certified Power Control Systems with an open loop response time no more than two seconds as described in Section Mm2.

Option 10: Non-Export with Inadvertent Export utilizing Certified Power Control Systems with an open loop response time greater than two seconds and no more than ten seconds as described in Section Mm3.

Option 11: Limited Export with Inadvertent Export utilizing Certified Power Control Systems with an open loop response time greater than two seconds and no more than ten seconds as described in Section Mm4.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 148

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.)

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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 149

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

1. INITIAL REVIEW SCREENS (Cont'd.)

j. Screen J: Is the Gross Rating of the Generating Facility 30 kVA or less?

- If Yes (pass), skip Screens K, L and M; Initial Review is complete.
- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 150

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

1. INITIAL REVIEW SCREENS (Cont'd.)

I. Screen L: Transmission Dependency, and Stability, Overvoltage, and
Islanding Tests

Is the Interconnection Request for an area where: (i) there are known, or posted, transient/dynamic stability limitations, or (ii) the proposed Generating Facility has interdependencies, known to Distribution Provider, with earlier-queued Transmission System interconnection requests, , or (iii) islanding conditions are possible based on PG&E's currently adopted and published screening policies with respect to antiislanding, or (iv) transmission ground fault overvoltage is possible based on PG&E's currently adopted and published screening policies with respect to overvoltage screening. Where (i) or (ii) or (ii) or (iv) above are met, the impacts of this Interconnection Request to the Transmission System may require further 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.

PG&E will apply anti-islanding screens as described in Distribution Provider's Distribution Generation Interconnection Handbook.*

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* Decision 21-06-002 R. 17-07-007 Ordering Paragraph 13 adopted Issue 18 regarding anti-islanding screens.

(P)/(L)
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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 151

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

1. INITIAL REVIEW SCREENS (Cont'd.)

- m. Screen M: When ICA Values are available at the requested Point of Interconnection, the Distribution Provider shall compare the ICA Values to the Gross Nameplate Rating or typical PV Generation Profile.

For Interconnection Requests based on Gross Nameplate Rating:

- a. Is the Generating Facility aggregate Gross Nameplate Rating less than or equal to 90% of the lowest value in the ICA-SG 576 Profile? or
- b. Is the Generating Facility aggregate Gross Nameplate Rating less than or equal to 90% of the lowest value in the ICA-OF 576 Profile?

If the response is "yes" to both a) and b), the Interconnection Request passes Screen M.

If the response is "no" to either a) or b), the Interconnection Request fails Screen M and must be evaluated under the Supplemental Review to determine mitigation requirements.

For Interconnection Requests based on typical PV Generation Profile:

- a. Is the Generating Facility Generation Profile based on PVWatts® or equivalent less than or equal to 90% of the ICA-SG 576 value in any hour? or
- b. Is the Generating Facility Generation Profile based on PVWatts® or equivalent less than or equal to 90% of the ICA-OF 576 value in any hour?

If the response is "yes" to both a) and b), the Interconnection Request passes Screen M.

If the response is "no" to either a) or b), the Interconnection Request fails Screen M and must be evaluated under the Supplemental Review to determine mitigation requirements.

(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 152

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

1. INITIAL REVIEW SCREENS (Cont'd.)

m. Screen M (Cont'd):

When ICA Values are not available at the requested Point of Interconnection, Screen M should be evaluated as follows:

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?

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 153

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

If the failure(s) cannot be addressed in Supplemental Review for Screens N through P, and generation is 100% or less of than the applicable ICA value (lowest value of the ICA-SG profile or lowest value at each hour) the Distribution Provider must identify a reason and inform the customer why a specific technical constraint is not captured by the ICA and why the project must proceed to Electrical Independence Tests and Detailed Studies. Utilities also must address any concerns in the context of the Screen that triggers the mitigation or detailed study.

a. Screen N: Penetration Test

If Integration Capacity Analysis Values are available at the requested Point of Interconnection, evaluate Screen N as follows:

i) Penetration Level Using ICA-SG 576 Profile:

For Interconnection Requests based on Gross Nameplate Rating: Is the Generating Facility aggregate Gross Nameplate Rating less than or equal to 100% of the lowest value in the ICA-SG 576 Profile?

For Interconnection Requests based on typical PV Generation Profile: Is the Generating Facility Generation Profile, based on PVWatts® or equivalent, less than or equal to 100% of the ICA-SG 576 Profile in any hour?

ii) Screen F1: Did the Interconnection Request pass Screen F1?

If yes to both of the above (pass), continue to Screen O.

If "no" to either or both of the above(fail), the Distribution Provider must perform a quick review of the failure within Supplemental Review and determine the requirements to address the failure.

- If the Distribution Provider requires mitigations or Electrical Independence Tests and Detailed Studies, the Distribution Provider must provide the Customer the reason why.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 154

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (Cont'd)

ii) Screen F1: Did the Interconnection Request pass Screen F1 (Cont'd)?

- If voltage is a prevailing constraint, then the full range of smart inverter functions including the volt/var function will be used in power flow analysis for the evaluation of the proposed project. This will reveal if the proposed project causes any voltage impacts of concern. If concerns related to steady state voltage, thermal, or protection exist and the Distribution Provider can identify simple upgrades through power flow analysis (e.g., installation of voltage regulator devices or protection devices to mitigate reduction of reach), then the Distribution Provider will determine the mitigation requirements within Screen N. When larger upgrades or complex protection evaluation is required, Screen N will fail, and the technical evaluation will be conducted under the Electrical Independence Tests or Detailed Study process.
- If no reason for further study is identified, or if requirements to address the failure can be identified in screen N, proceed 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 Integration Capacity Analysis Values are not available, evaluate Screen N as follows:

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 155

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (Cont'd)

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?

- If yes (pass), continue to Screen O.
- If no (fail), a quick review of the failure may determine the requirements to address the failure. If voltage is a prevailing constraint, then the full range of smart inverter functions including the volt/var function will be used in power flow analysis for the evaluation of the proposed project. This will reveal if the proposed project causes any voltage impacts of concern. If concerns related to steady state voltage, thermal, or protection exist and the Distribution Provider can identify simple upgrades through power flow analysis (e.g., installation of voltage regulator devices or protection devices to mitigate reduction of reach), then the Distribution Provider will determine the mitigation requirements within Screen N. When larger upgrades or complex protection evaluation is required, Screen N will fail, and the technical evaluation will be conducted under Electrical Independence Tests and Detailed Studies. 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: 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 156

G. ENGINEERING REVIEW DETAILS (Cont'd.)

(L)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (Cont'd.)

Note 2: 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.

Note 3: 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 4: 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.

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 1547-2018, 7.2 or utility practice similar to IEEE 1547-2018, 7.2?

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(P)/(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 157

G. ENGINEERING REVIEW DETAILS (Cont'd.)

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)?
- iv) Can it be determined within the Supplemental Review that the Generating Facility will not cause any voltage impacts considering the settings of the Volt-Var function and the characteristics of the circuit segment?
- If yes to all of the above (pass), continue to Screen P.
- 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 158

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 159

- 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.
- If Distribution Provider determines that no interdependencies exist, 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 Interconnection Request may be studied under the WDT Transmission Cluster Study Process as set forth in Section F.3.d. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 160

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.

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.

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.

** The currently effective CAISO Tariff can be accessed at the following CAISO website
<http://www.caiso.com/rules/Pages/Regulatory/Default.aspx>

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 161

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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 162

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 163

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.

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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 164

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 165

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)/(L)

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 166

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (L)
- This section is consistent with the requirements of IEEE 1547-2018. In the event of conflicts, this Rule shall take precedence. (P)/(L)
(P)/(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. (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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 167

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
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
- 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. (L)
- 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)/(L)
(P)/(L)
(L)
- 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)
(P)/(L)
(L)
(L)
- b. Momentary Paralleling Generating Facilities
- 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)/(L)
(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 168

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.) (L)
- 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 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). 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). (P)/(L)
(L)
(L)
(L)
(L)
(P)/(L)
(L)
(L)
(P)/(L)
- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 169

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 170

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
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)
- Except as otherwise stated, the RPA for all performance requirements shall be met at the PCC. (P)/(L)
- When the Generating Facility is less than 500KVA or when the Generating Facility operates under one of the non-exporting options or inadvertent export of no longer than 30 seconds, the RPA may be the POC. (P)/(L)
- 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)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 171

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 172

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 173

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS
(Cont'd.)

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.			

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 174

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)/(L)

d. Flicker

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)
|
(L)
(P)/(L)
(P)/(L)
(L)
|
(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 175

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS
(Cont'd.)

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).

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)

(L)
(P)/(L)
(L)

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 176

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS
(Cont'd.)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency (Cont'd.)

Table H.2
Frequency Trip Settings

<u>Generating Facility Rating</u>	<u>Frequency Range</u> <u>(Assuming 60Hz Nominal)</u>	<u>Maximum Trip Time [1]</u> <u>(Assuming 60 Cycles per Second)</u>
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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 177

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS
(Cont'd.)

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)

(L)

(P)/(L)

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 178

- H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (L)
(Cont'd.)
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)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 179

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS
(Cont'd.)

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) (IEEE 1547-2018). 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.

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.

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(P)/(L)
(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 180

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. 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.

e. Non-Export AC/DC Converters

A Non-Export AC/DC Converter must satisfy the definition in Section C.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 181

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS
(Cont'd.)

(L)

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.

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.

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS

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".

(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 182

**Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS (Cont'd.)**

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The inverter requirements are intended to be consistent with UL 1741 - 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.

The Smart Inverter default settings and default activation states may be modified upon mutual agreement between Applicant or Producer and Distribution Provider.

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).

^{*}Any DC V2G Electric Vehicle Service Equipment (EVSE) that has UL 1741 certification - but not UL 1741 SA certification, any subsequent UL 1741 supplement certification required in Rule 21, or Smart Inverter Working Group-recommended smart inverter functions - may interconnect initially for the purpose of participating in the Emergency Load Reduction Program (ELRP), subject to all other Rule 21 interconnection requirements.

PG&E may request the termination of this interconnection pathway via a Tier 2 Advice Letter after the 2024 ELRP season if the market has developed to provide multiple V2G capable EVSEs that meet the full smart inverter certification standards required in Rule 21. Termination of this pathway would not affect previously interconnected EVSE, and they may continue to operate parallel to the grid as per their Interconnection Agreement.

^{**} V2G DC EVSE manufactured in an earlier year will be deemed to meet certification requirements and allowed to interconnect as long as the EVSE: (1) met all applicable certification requirements in the year of manufacture (the "model year"); (2) the model year is no more than five years old; and (3) the EVSE does not impose any safety risks due to not complying with applicable requirements at the time of interconnection.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 183

**Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS (Cont'd.)**

(L)

Process for changing default settings for new Interconnection Requests (Cont'd):

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.

Process for changing default settings for Generating Facilities with an executed Interconnection Agreement:

When grid changes or Generating Facility changes require that the Smart Inverter operating parameters be reevaluated, the Distribution Provider or Producer may request changes to the 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 upon.

**1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION
REQUIREMENTS**

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 184

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

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;
- (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 58.5 Hz to 60.5 Hz, inclusive, and are stable for at least 15 seconds; and
- (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.

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).

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 185

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS (Cont'd.)

(L)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION
REQUIREMENTS (Cont'd.)

b. Momentary Paralleling Generating Facilities

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.

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 1547-4.1.8.3). 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 1547-4.1.8.2).

d. Visible Disconnect Required

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 186

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.)

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, 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 187

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 188

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).	
b. Voltage Trip and Ride-Through Settings	
The voltage ranges in Table Hh-.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) 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 189

- 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 PCC varies from and remains outside near Nominal voltage for the predetermined parameters set forth in Table Hh-.1, the Smart Inverter's Protective Functions shall cause the Smart Inverter(s) to become isolated from Distribution Provider's Distribution System:
1. The Smart Inverter shall stay connected to the Distribution Provider's Transmission or Distribution System while the grid remains within the "Ride-Through Until" voltage-time range and must stay connected in the corresponding "Operating Mode."
 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.
 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.
 4. 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.
 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.
 6. Different voltage-time settings could be permitted by the Distribution Provider. (L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 190

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS (Cont'd.)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip and Ride-Through Settings (Cont'd.)

(ii) Voltage Disturbances (Cont'd.)

Table Hh.1: Voltage Ride-Through Table

Region	Voltage at Point of Common Coupling (% Nominal Voltage)	Ride-Through Until	Operating Mode	Maximum Trip Time
High Voltage 2 (HV2)	$V \geq 120$			0.16 seconds
High Voltage 1 (HV1)	$110 < V < 120$	12 seconds	Momentary Cessation	13 seconds
Near Nominal (NN)	$88 \leq V \leq 110$	Indefinite	Continuous Operation	Not Applicable
Low Voltage 1 (LV1)	$70 \leq V < 88$	20 seconds	Mandatory Operation	21 seconds
Low Voltage 2 (LV2)	$50 \leq V < 70$	10 seconds	Mandatory Operation	11 seconds
Low Voltage 3 (LV3)	$V < 50$	1 seconds	Momentary Cessation	1.5 seconds

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 191

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 1547-4.1.3)	
d. Flicker	
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 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.	
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 1547-4.1.2) (See Section G.1.i, line configuration).	(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 192

**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.2, the Generating Facility's Protective Functions shall cease to energize Distribution Provider's Distribution or Transmission System within the stated maximum trip time.

(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.

The frequency values are shown in Table Hh.2. 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 active 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 193

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency (Cont'd.)

(i) Frequency Ride-Through Requirements(Cont'd.)

Table Hh.2: Frequency Ride-Through and Trip Settings Table

System Frequency Default Settings (Hz)	Minimum Range of Adjustability (Hz)	Ride-Through Until	Ride-Through Operational Mode	Maximum Trip Time
$f > 62$	62 - 64	No Ride Through	Not Applicable	0.16 seconds
$60.5 < f \leq 62$	60.1 - 62	299 seconds	Mandatory Operation	300 seconds
$58.5 \leq f \leq 60.5$	Not Applicable	Indefinite	Continuous Operation	Not Applicable
$57.0 \leq f < 58.5$	57 - 59.9	299 seconds	Mandatory Operation	300 seconds
$f < 57.0$	53 - 57	No Ride Through	Not Applicable	0.16 seconds

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 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 194

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.)

(L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

g. Harmonics (Cont'd.)

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.

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.

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:

- (i) Default Power Factor setting: Absorbing reactive power at 0.95 lagging power factor.
- (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 active power output.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 195

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

i. Fixed Power Factor (Cont'd.)

(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 active power output.

j. Dynamic Volt/VAR Operations

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 active power output. This dynamic Volt/VAR capability shall be able to be activated or deactivated in accordance with Distribution Provider requirements.

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.

The Smart Inverter shall be capable of providing dynamic reactive power compensation (dynamic Volt/VAR operation) within the following constraints:

- 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.
- The ractive power provided shall be per the range irrespective of active power output, but the maximum reactive power provided to the system shall be as directed by the Distribution Provider.
- Reduction of active power output is allowed to meet the required reactive power ranges.

(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 196

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

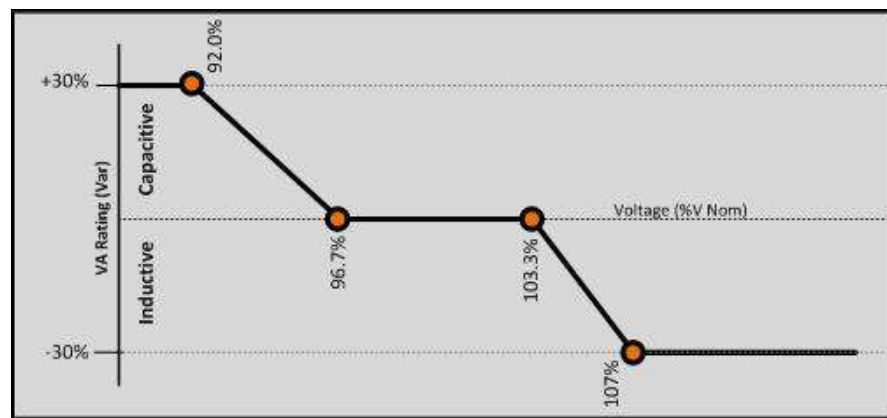
Table Hh-4 and Figure Hh-1 depict the default settings, which should be applied for all inverter sizes. Specific volt/var settings may be required for larger Generating Facilities (such as 100 kw or greater), or for specific areas with the Distribution Systems as determined by the Distribution Provider.

Default Open Loop Response Time for volt/var operation should be five (5) seconds.

Table Hh-4: Voltage and Reactive Default Settings

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



(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 197

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

k. Ramp Rate Requirements

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.

- 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-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 reduce their active power output as a function of system frequency, in accordance with the following:

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 198

**Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS (Cont'd.)**

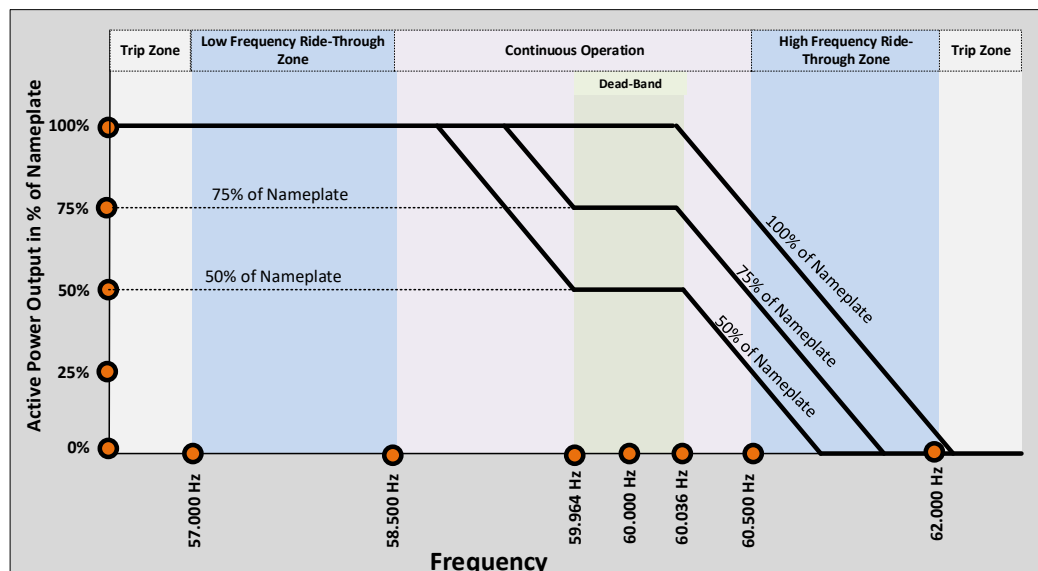
(L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

I. Frequency-Watt Requirements (Cont'd.)

- 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 active power output.
- 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.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 199

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)

2. PREVENTION OF INTERFERENCE (Cont'd.)

m. Voltage-Watt Default Settings 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 reduce their active power output 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:

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 200

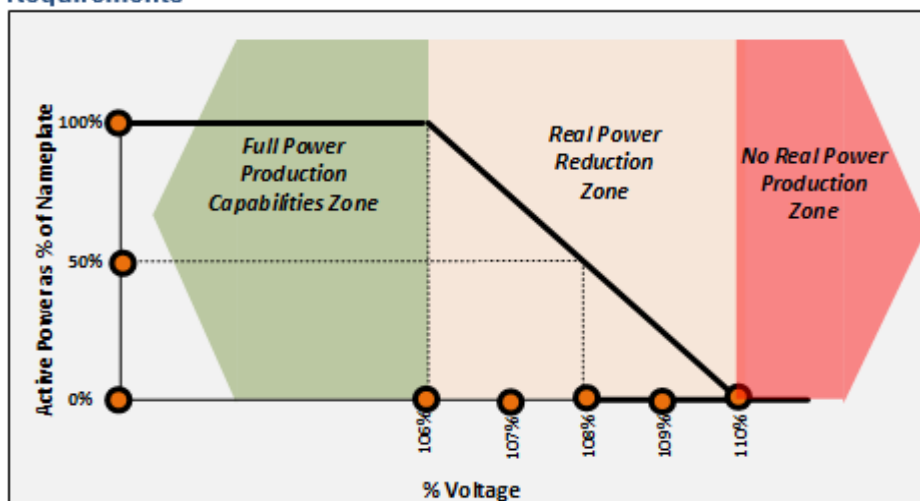
Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS (Cont'd.)

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

**Figure HH-3 – Volt-Watt
Requirements**



Percent (%) of nominal voltage

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 201

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 or Producer, 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:

	<u>Function</u>	<u>State</u>
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.

* These functions must be activated for Interconnection Requests submitted on or after February 22, 2019.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 202

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS (Cont'd.)

(L)

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.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 203

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.)	(L)
2. PREVENTION OF INTERFERENCE (Cont'd.)	
q. Load Shedding or Transfer	
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 active power output is shed within 0.1 seconds of Smart Inverter disconnection.	
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.	
	(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 204

- Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)
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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 205

- Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)
5. COMMUNICATION REQUIREMENTS
- 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) 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) other communication options as are mutually agreed to are by Applicant and the Distribution Provider. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 206

- Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (L)
5. COMMUNICATION REQUIREMENTS (Cont'd.)
- 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 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. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 207

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.)	(L)
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.	(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 208

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.	
The utilization of this function is permissible under mutual agreement between the utility and the generating facility before the effective date.	
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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 209

- 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

Sheet 210

Hh. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.)	(L)
7. MONITORING AND TELEMETRY REQUIREMENTS	
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.	
The utilization of this function is permissible under mutual agreement between the utility and the generating facility before the effective date.	
Smart Inverter shall have the capability to communicate its performance information including:	
(i) Smart Inverter production or consumption of active power (Watts).	
(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)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 211

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 212

- 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)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 213

**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.

The utilization of these functions is permissible under mutual agreement between the utility and the generating facility before the effective date.

Smart Inverters shall have the capabilities of accepting an operational controls through communications in accordance to the following:

- (i) Cease to energize control command. 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
- (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
- (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 active power output to the specified percent of real power capacity of the Smart Inverter or to a specified real power value.
- (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.
- (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)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 214

**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

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.

* Only duly authorized employees of utility are allowed to connect to, disconnect from, or perform any work upon Utility's facilities.

(L)

(Continued)



San Francisco, California

Cal. P.U.C. Sheet No. 55300-E
Cal. P.U.C. Sheet No. 51870-E

Sheet 215

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 216

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 217

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.

The standard timeline for installation of Net Generation Output Meters is as follows:

- i) 20 business for design and 20 business days for construction, or
- ii) design and construction timelines as agree with the customer.

The 20-day clock commences upon payment and after the customer had done everything necessary on their end to prepare for construction. By mutual agreement, Applicant and Distribution Provider may agree to a timeline that is different from the timeline described above.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 218

J. METERING, MONITORING AND TELEMETERING (Cont'd.)

(L)

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.

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.

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.

(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 219

- J. METERING, MONITORING AND TELEMETERING (Cont'd.) (L)
6. LOCATION
- 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.
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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 220

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. INFORMAL DISPUTE RESOLUTION 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. Informal Dispute Resolution

To initiate Informal Dispute Resolution, the aggrieved Party may submit a written notice ("notice") to the other party pursuant to either Section K.2.a.(i) (Bilateral Negotiations) or K.2.a.(ii) (Expedited Bilateral Negotiations).

This notice shall:

- specify whether the aggrieved Party is invoking the Informal Dispute Resolution procedures pursuant to either Section K.2.a.(i) (Bilateral Negotiations) or K.2.a.(ii) (Expedited Bilateral Negotiations);
- state the specific dispute and the relief sought; and
- contain all relevant known facts pertaining to the dispute.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 221

K. DISPUTE RESOLUTION PROCESS (Cont'd)

(L)

2. INFORMAL DISPUTE RESOLUTION PROCEDURES (Cont'd)

a. Informal Dispute Resolution (Cont'd)

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, and Rule21.Disputes@cpuc.ca.gov.

(i) Bilateral Negotiations

- 1) The receiving Party shall acknowledge the notice within five (5) Calendar Days of its receipt.
- 2) 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 of receiving Party's receipt of the notice.
- 3) The 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 of receiving Party's receipt of the notice.
- 4) 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.
- 5) Parties may by mutual agreement extend any deadline identified in this section.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 222

K. DISPUTE RESOLUTION PROCESS (Cont'd)

(L)

2. INFORMAL DISPUTE RESOLUTION PROCEDURES (Cont'd)

a. Informal Dispute Resolution (Cont'd)

(ii) Expedited Bilateral Negotiations

- 1) The receiving Party shall acknowledge the notice within five (5) Calendar Days of its receipt.
- 2) 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 of receiving Party's receipt of the notice.
- 3) 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 ten (10) Business Days of receiving Party's receipt of the notice.
- 4) Within fifteen (15) Business 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.
- 5) Parties may by mutual agreement extend any deadline identified in this section.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 223

K. DISPUTE RESOLUTION PROCESS (Cont'd.)

(L)

2. INFORMAL DISPUTE RESOLUTION PROCEDURES (Cont'd.)

- b. If a resolution of a dispute raised as part of section K.2.a 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 224

K. DISPUTE RESOLUTION PROCESS (Cont'd.)

(L)

3. EXPEDITED INTERCONNECTION DISPUTE RESOLUTION PROCESS

The Expedited Interconnection Dispute Resolution process ("Expedited Process") may be used to resolve eligible disputes between the Distribution Provider and an Applicant according to the following procedures.

For a complete description of all Expedited Process rules and requirements, please refer to Resolution ALJ-347, Exhibit A "Expedited Interconnection Dispute Resolution Process FINAL". Information can also be found on the Commission's website at <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/rule-21-interconnection/expedited-interconnection-dispute-resolution>. In the event of a conflict between the terms of this section and the terms of Resolution ALJ-347, the terms of Resolution ALJ-347 shall govern.

a. Eligibility

i) An Applicant may apply for Expedited Process at any stage of the interconnection process if it can demonstrate that:

- it has, in compliance with Section K.2 requirements, invoked the Section K.2.a Informal Dispute Resolution procedures and has been unable to resolve the dispute in accordance with Section K.2.aⁱⁱ;
- it has, in compliance with Section K.2 requirements, invoked the Section K.2.b Informal Dispute Resolution procedures and has been unable to resolve the dispute in accordance with Section K.2.bⁱⁱ;
- the subject matter of the dispute at issue concerns whether one or both parties' actions are compliant with established interconnection rules and/or are reasonable, cost efficient and necessarily required under those rules to ensure safe and reliable interconnection.

ⁱⁱ The Commission's Energy Division has the discretion to grant waivers to this eligibility requirement when the Applicant and Distribution Provider have already engaged in a dispute resolution process equivalent to Section K.2.a or K.2.b, including equivalent duration and with equivalent opportunity for both parties to understand the facts of the dispute and prepare responses. The Applicant or Distribution Provider must make a request to the Energy Division to waive the requirement.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 225

K. DISPUTE RESOLUTION PROCESS (Cont'd.)

3. EXPEDITED INTERCONNECTION DISPUTE RESOLUTION PROCESS (Cont'd)

(L)

a. Eligibility (Cont'd)

- ii) The Energy Division has the authority to determine that a dispute is not eligible for this process in response to notice submitted in Section K.2.b.

b. Initiation of Expedited Process by Applicant

To request a resolution of a dispute pursuant to the Expedited Process, the Applicant shall download a PDF application form from the CPUC Expedited Interconnection Dispute Resolution Webpage (<https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/rule-21-interconnection/expedited-interconnection-dispute-resolution>), complete the application, and email an electronic PDF application form to Rule21.disputes@cpuc.ca.gov.

i) The Applicant shall include the following in the PDF application form:

- all relevant known facts pertaining to the dispute;
- the specific dispute and the relief sought;
- express notice by the Applicant that it is requesting resolution using the Commission's Expedited Process;
- a description of all efforts to date to resolve the dispute directly with the Distribution Provider, including at minimum a showing that the Applicant meets the eligibility requirements described above; and
- names of all Interconnection Dispute Resolution Panel members who may have a conflict of interest as defined in Public Utilities Code Section 769.5(b)(1).

- ii) The Applicant shall also attach to the PDF application form all materials that may aid in review of the dispute, including a copy of the Interconnection Request, any interconnection study performed for that Interconnection Request, and all correspondence between the Applicant and the Distribution Provider relevant to the dispute. For treatment of confidential materials, please refer to Resolution ALJ-347 and the relevant notes on pages 1 and 3 of the PDF application form.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 226

K. DISPUTE RESOLUTION PROCESS (Cont'd.) (236)

3. EXPEDITED INTERCONNECTION DISPUTE RESOLUTION PROCESS (Cont'd)

(L)

b. Initiation of Expedited Process by Applicant (Cont'd)

iii) The Applicant shall serve this written notice on:

- Energy Division (Rule21.Disputes@cpuc.ca.gov);
- the Distribution Provider's email address set forth in the Generator Interconnection Agreement or Interconnection Request, if there is no Generator Interconnection Agreement;
- the ombudsman designated by Distribution Provider; and
- any other interested persons. "Interested persons" for the purposes of this section are defined as the applicant, utility, a person who has submitted comments on the recommendation of the Review Sub- Panel, or a person who has a demonstrable interest in the outcome of the dispute and has written Energy Division requesting to be added to the distribution list for the dispute.

Please refer to Resolution ALJ-347 for more information and instructions for applying to the Commission for the Expedited Process.

c. Eligibility Verification

- i) The Energy Division will evaluate the submission of an Expedited Process written notice and notify the Applicant and the Distribution Provider of the dispute's eligibility within three (3) Business Days of receiving the request.
- ii) The Energy's Division's notice shall contain specific instructions regarding how the Expedited Process will be resolved. Please refer to Resolution ALJ-347 for more information.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 227

K. DISPUTE RESOLUTION PROCESS (Cont'd.)

3. EXPEDITED INTERCONNECTION DISPUTE RESOLUTION PROCESS (Cont'd.)

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d. Distribution Provider Response

i) Upon receiving notice from the Energy Division of the dispute's eligibility for the Expedited Process, the Distribution Provider shall have five (5) Business Days to serve its response to the Sub-Panel (as defined in Resolution ALJ-347) assigned to the dispute, the Applicant, Energy Division and other interested persons in accordance with the procedures outlined in Resolution ALJ-347.

ii) The Distribution Provider's response shall include:

- the relevant known facts pertaining to the dispute, including the dispute's impact on safe and reliable grid operations;
- its position on the dispute as presented by the Applicant;
- a response to the relief requested by the Applicant; and
- a description of the efforts to date to resolve the dispute directly with the Applicant.

iii) The Distribution Provider shall also include in its response a copy of documentation in its possession that was not previously submitted in the Applicant's written notice that requested the Expedited Process that Distribution Provider believes may aid in review of the dispute, including the Applicant's Interconnection Request, any interconnection study performed for that Interconnection Request, and all correspondence between the Applicant and the Distribution Provider relevant to the dispute. For treatment of confidential materials, please refer to Resolution ALJ-347 and the relevant notes on pages 1 and 3 of the PDF application form.

The Distribution Provider shall serve this written notice on:

- Energy Division (Rule21.Disputes@cpuc.ca.gov);
- the Applicant's email address set forth in Applicant's written notice requesting the Expedited Process; and
- any other interested persons in accordance with the procedures outlined in Resolution ALJ-347.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 228

K. DISPUTE RESOLUTION PROCESS (Cont'd.)

3. EXPEDITED INTERCONNECTION DISPUTE RESOLUTION PROCESS (Cont'd)

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e. Comments on Review Sub-Panel Recommendations

The Review Sub-panel will issue recommendations to the Executive Director of the Commission on how to resolve an Expedited Process's dispute.

Within five (5) Business Days of the issuance of the Review Sub-Panel's recommendations, Applicant, Distribution Provider, and any other interested persons may serve comments on those recommendations via Rule21.Disputes@cpuc.ca.gov.

The Applicant and Distribution Provider may serve a reply to any comments within three (3) Business Days of the last day for service of opening comments via Rule21.Disputes@cpuc.ca.gov.

Please refer to Resolution ALJ-347 and <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/rule-21-interconnection/expedited-interconnection-dispute-resolution> for more information regarding the service requirements.

f. Appealing the Executive Director's Order

Upon receipt of the Review Sub-Panel's recommendations, the Executive Director of the Commission will issue an order resolving the dispute within thirty (30) Calendar Days.

Within ten (10) Calendar Days of the issuance of the Executive Director's Order, the Applicant, Distribution Provider, or any interested person may appeal the Order and request Commission review. Such a request must set forth specifically the grounds on which the requester considers the Order to be unlawful or erroneous. Requests for review should be emailed to Rule21.Disputes@cpuc.ca.gov.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 229

K. DISPUTE RESOLUTION PROCESS (Cont'd.)

(L)

3. EXPEDITED INTERCONNECTION DISPUTE RESOLUTION PROCESS
(Cont'd)

g. Withdrawal

At any time following Applicant's submission of a written notice under this Section, the Applicant may withdraw its notice. If the Applicant and Distribution Provider reach a settlement independent of the Commission, it is not necessary for the Commission to approve the settlement.

Notices of withdrawal should be sent to all interested parties and Rule21.Disputes@cpuc.ca.gov. Please refer to Resolution ALJ-347 for more information regarding the service requirements.

4. FORMAL COMPLAINT

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 230

K. DISPUTE RESOLUTION PROCESS (Cont'd.)

5. 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. Applicant and Distribution Provider may by mutual agreement suspend performance of their respective obligations under this Rule and any Implementing Agreements while the dispute is active.

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).

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 231

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.)

1. INTRODUCTION (Cont'd.)

The tests described here, together with the technical requirements in Section H, Hh, and P 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 after September 8, 2017, pursuant to Section Hh and P of this Rule.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 232

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 233

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.)

**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;
- (3) In-rush Current in amps;
- (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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 234

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** 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.

Non-Export AC/DC Converters must satisfy the requirements in its definition in Section C.

** An exemption exists for DC V2G Electric Vehicle Service Equipment (EVSE) interconnecting for the purpose of participating in the Emergency Load Reduction Program, see footnote * in the opening paragraphs of Section Hh.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 235

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.)

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

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 & 1547.1)	UL 1741 - 46	X	X	X	X	X
DC Isolation	IEEE 1547.1(8) -5.6	X	X	-	-	-
Dielectric Voltage Withstand	IEEE 1547.1-2020, 5.5.3	X	X	-	X	X
Dielectric Voltage Withstand	IEEE 1547.1-2020, 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	IEEE 1547.1(8) -5.6	X	X	-	-	-
DC Injection	IEEE 1547.1-2020, 5.9	-	-	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			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	L3.e	X	X	X	X	X
Anti-Islanding (non-Smart Inverters)	L3.b	(2)	-	-	(2)	(2)
Non-Export	L3.c	(3)	(3)	(3)	(3)	(3)
In-rush Current	L3.d	-	-	-	-	(4)
Synchronization	L3.f	(5)	(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)	UL 1741 SA - SA14	-	X	-	-	-
Volt-Watt (VW)	UL 1741 SA - SA15	-	X	-	-	-
Markings and Instructions	UL 1741 SA6, SA16	-	X	-	-	-
Disable Permit Service	UL 1741 SA – SA17	-	X	-	-	-
Limit Active Power	UL 1741SA – SA18	-	X	-	-	-
DC Injection (2022)	IEEE 1547.1-2020	-	-	X	-	-
Anti-islanding (Smart Inverters) (2022)	UL 1741SB – SB3	-	-	X	-	-
Low and High Voltage Ride-through (L/H VRT) (2022)	UL 1741SB – SB3	-	-	X	-	-
Low and High Frequency Ride-through (L/H FRT) (2022)	UL 1741SB – SB3	-	-	X	-	-
Normal and Soft-Start Ramp Rate (RR) (2022)	UL 1741SB – SB3	-	-	X	-	-
Specified Power Factor (2022)	UL 1741SB – SB3	-	-	X	-	-
Volt/Var Mode (Q(V)) (2022)	UL 1741SB – SB3	-	-	X	-	-
Frequency-Watt(FW) (2022)	UL 1741SB – SB3	-	-	X	-	-
Volt-Watt (VW) (2022)	UL 1741SB – SB3	-	-	X	-	-
Constant Reactive Power (2022)	UL 1741SB – SB3	-	-	X	-	-
Disable Permit Service (2022)	UL 1741SB – SB3	-	-	X	-	-
Limit Active Power (2022)	UL 1741SB – SB3	-	-	X	-	-
Markings and Instructions (2022)	UL 1741SB – SB5	-	-	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 Sections H or P.

(8) IEEE 1547.1 refers to 2005 revision.

(9) Smart Inverter which have tested under UL1741SB and IEEE 1547.1-2020

(10) Effective August 1, 2022.

"X" = Required

"-" = Not Required

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 236

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

<u>Test No.</u>	<u>Type Test</u>
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 Supplemental 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.

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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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 237

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.)

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).

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 238

- 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 1547-5.1.2A). 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)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 239

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.)

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

[1] – IEEE 1547-2018, 4.10

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).

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)

(L)
(P)/(L)
(L)

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(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 240

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 241

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 242

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 243

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 244

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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 245

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 <i>Inverters, Converters and Controllers for Use in Independent Power Systems</i> , 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 246

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 247

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 248

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 249

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 250

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 251

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 252

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 253

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 254

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 255

- 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 1547-4.3.3. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 256

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 257

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 258

- 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)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 259

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

(L)
(P)/(L)
(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 SB-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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 260

- Mm. INADVERTENT EXPORT FOR INTERCONNECTION REQUESTS (L)
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. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 261

**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)



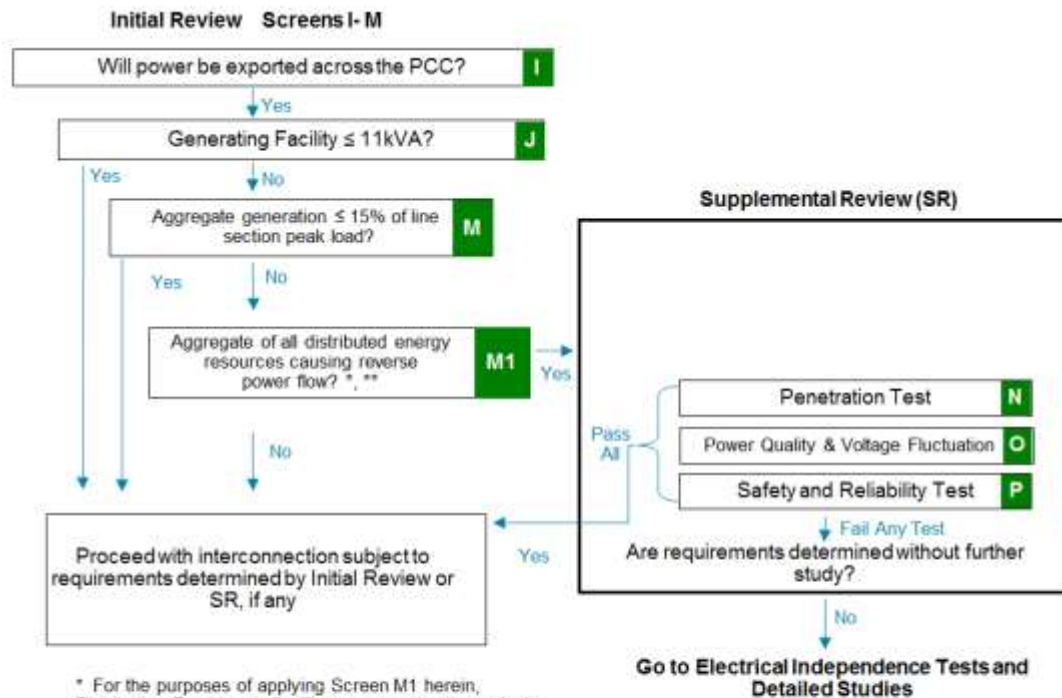
ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 262

**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
GENERATING FACILITY INTERCONNECTIONS

Sheet 263

Mm1. OPTION 8: Non-Export Utilizing Certified Power Control Systems

(L)

The following are the minimum requirements for Non-Export systems that use certified power control systems (PCS) with an open loop response time (OLRT) no more than two seconds. It should be noted that other factors relevant to the Interconnection Study process may necessitate additional technical requirements that are not explicitly noted here.

1. Use a PCS that passes the requirements of the 2019 Underwriters Laboratories (UL) Power Control Systems Certification Requirements Decision (CRD) test protocol. Non-Export systems may use a PCS that passes later published revisions to the CRD test protocol or may use a PCS that is certified to the UL 1741 certification standard, if UL incorporates the test protocol for PCS into UL 1741 in the future. The NRTL evaluation must have determined that the PCS conforms to the non-exporting functionality in accordance with the relevant CRD or UL published standard.
2. Use a PCS that is certified with an OLRT of two seconds or less, as provided in the PCS's specification data sheets.
3. The PCS must reduce export to zero or less within two seconds of commencing export. A PCS that is certified with an open-loop response time of two seconds or less, and a time to reach steady state of 10 seconds or less, meets this requirement.
4. Set the PCS to not export (zero-export).
5. Use only UL 1741 listed grid-support non-islanding inverters as approved by this tariff.
6. Maintain voltage fluctuations at the limits specified in Electric Rule 2.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 264

Mm1. OPTION 8: Non-Export Utilizing Certified Power Control Systems (Cont'd)

(L)

The evaluation of a Non-Export system requesting interconnection under this section:

1. Shall omit evaluation for screen D;
2. Shall utilize the Generating Facility's Gross Nameplate Rating for screens F, F1, and G;
3. If the Non-export system has an aggregate PCS controlled nameplate greater than 600 kVA and the maximum reported steady state value of the PCS is greater than 1% of the PCS controlled nameplate (as provided in the NRTL testing reports), the evaluation may utilize the following calculation when determining the impacts to the grid under screens I, J, K, M, N, and O: The sum of the nameplate values of the exporting DER resource (if any) plus the maximum percentage steady state value of the PCS (as provided in the NRTL testing reports) times PCS controlled nameplate capacity.
4. Screen P may be applied using the Generating Facility's Gross Nameplate Rating for evaluations that use fault current calculations. For other evaluations under screen P, the value identified in 3 above may be used.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 265

Mm2. OPTION 9: Limited Export Utilizing Certified Power Control Systems

(L)

The following are minimum requirements for limited export systems that use certified power control systems (PCS) with an open loop response time (OLRT) no more than two seconds to maintain a level of export that is lower than the nameplate rating. It should be noted that other factors relevant to the Interconnection Study process may necessitate additional technical requirements that are not explicitly noted here.

1. Use a PCS that passes the requirements of the 2019 Underwriters Laboratories (UL) Power Control Systems Certification Requirements Decision (CRD) test protocol. Limited export systems may use a PCS that passes later published revisions to the CRD test protocol, or may use a PCS that is certified to the UL 1741 certification standard, if UL incorporates the test protocol for PCS into UL 1741 in the future. The NRTL evaluation must have determined that the PCS conforms to the export limiting functionality in accordance with the relevant CRD or UL published Standard.
2. Use a PCS that is certified with an OLRT of two seconds or less as provided in the PCS's specification data sheets.
3. The PCS must reduce export to the approved export limit, or less, within two seconds of exceeding the approved export limit. A PCS that is certified with an open-loop response time of two seconds or less, and a time to reach steady state of ten seconds or less, meets this requirement.
4. Set the PCS to not exceed the proposed level of export.
5. Use only UL 1741 listed grid-support non-islanding inverters as approved by this tariff.
6. Maintain voltage fluctuations at the limits specified in Electric Rule 2.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 266

Mm2. OPTION 9: Limited Export Utilizing Certified Power Control Systems (Cont'd)

(L)

The evaluation of a limited export system requesting interconnection under this section:

1. Shall utilize the Generating Facility's Gross Nameplate Rating for screens F, F1, and G.
2. If the maximum steady state value is greater than 1% of the PCS controlled nameplate (as provided in the NRTL testing reports) utilize the requested limited export value plus the maximum steady state value of the PCS times the PCS controlled nameplate, to evaluate the impacts to the grid under screens D, I, J, K, M, N, and O. If the maximum steady state value is less than 1% of the PCS controlled nameplate (as provided in the NRTL testing reports), utilize only the requested limited export value under screens D, I, J, K, M, N and O.
3. Screen P shall be applied using the Generating Facility's Gross Nameplate Rating for evaluations that use fault current calculations. For other evaluations under screen P, the value identified in 2 above may be used.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 267

Mm3. OPTION 10: Non-Export with Inadvertent Export Utilizing Certified Power Control Systems (L)

The following are the minimum requirements for Non-Export systems that use certified power control systems (PCS) with an open loop response time (OLRT) between two and ten seconds. It should be noted that other factors relevant to the Interconnection Study process may necessitate additional technical requirements that are not explicitly noted here.

1. Have a nameplate capacity equal to or less than 1,000 kVA.
2. Use a PCS that passes the requirements of the 2019 Underwriters Laboratories (UL) Power Control Systems Certification Requirements Decision (CRD) test protocol. Non-Export may use a PCS that pass later published revisions to the CRD test protocol, or may use a PCS that is certified to the UL 1741 certification standard, if UL incorporates the test protocol for PCS into UL 1741 in the future. The NRTL evaluation must have determined that the PCS conforms to the non-exporting functionality in accordance with the relevant CRD or UL published standard.
3. Use a PCS that is certified with an OLRT of no more than ten seconds, as provided in the PCS's specification data sheets.
4. Set the PCS to not export (zero-export).
5. Use only UL 1741 listed grid-support non-islanding inverters as approved by this tariff.
6. Maintain voltage fluctuations at the limits specified in Electric Rule 2. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 268

Mm3. OPTION 10: Non-Export with Inadvertent Export Utilizing Certified Power Control Systems (Cont'd) (L)

The Distribution Provider evaluating Generating Facilities requesting interconnection under this section shall:

1. Apply screens A through M using the aggregate nameplate inverter rating.
2. Notify the applicant if supplemental review is required, and if so, require the applicant to identify, within 15 business days of being notified, the frequency of inadvertent export, the real power level in watts of inadvertent export, and the time duration of inadvertent export.
3. If distribution upgrades are identified, use screen P to recognize power control parameters, taking into account local feeder conditions; the customer's operating profile; and the magnitude, duration, and frequency of anticipated export;
4. Complete supplemental review within 15 days of receiving the required information specified under 2 above.
5. If the applicant does not provide the operating profile information within the specified 15 business days, perform supplemental review based on information included in the interconnection request within 30 business days of the request for customer operating profile information.
6. Use only the largest facility in the line section for aggregate evaluation for subsequent interconnection requests.

(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 269

Mm4. OPTION 11: Limited Export with Inadvertent Export Utilizing Certified Power Control Systems (L)

The following are the minimum requirements for limited export controlled systems that use certified power control systems (PCS) with an open loop response time (OLRT) between two and ten seconds to maintain a level of export that is lower than the nameplate rating. It should be noted that other factors relevant to the Interconnection Study process may necessitate additional technical requirements that are not explicitly noted here.

1. Have a nameplate capacity equal to or less than 1,000 kVA.
2. Use a PCS that passes the requirements of the 2019 Underwriters Laboratories (UL) Power Control Systems Certification Requirements Decision (CRD) test protocol. Limited export systems may use a PCS that pass later published revisions to the CRD test protocol, or may use a PCS that is certified to the UL 1741 certification standard, if UL incorporates the test protocol for PCS into UL 1741 in the future. The NRTL evaluation must have determined that the PCS conforms to the export limiting functionality in accordance with the relevant CRD or UL published standard.
3. Use a PCS that is certified with an OLRT of no more than ten seconds, as provided in the PCS's specification data sheets.
4. Set the PCS to not to exceed the proposed level of export.
5. Use only UL 1741 listed grid-support non-islanding inverters as approved by this tariff.
6. Maintain voltage fluctuations at the limits specified in Electric Rule 2. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 270

Mm4. OPTION 11: Limited Export with Inadvertent Export Utilizing Certified Power Control Systems (Cont'd) (L)

The Distribution Provider evaluating Generating Facilities requesting interconnection under this section shall:

1. Apply screens A through M using the aggregate nameplate inverter rating.
2. Notify the applicant if supplemental review is required, and if so, require the applicant to identify, within 15 business days of being notified, the frequency of inadvertent export, the real power level in watts of inadvertent export, and the time duration of inadvertent export.
3. If distribution upgrades are identified, use screen P to recognize power control parameters, taking into account local feeder conditions; the customer's operating profile; and the magnitude, duration, and frequency of anticipated export.
4. Complete supplemental review within 15 days of receiving the required information specified under 2 above.
5. If the applicant does not provide the operating profile information within the specified 15 business days, perform supplemental review based on information included in the interconnection request within 30 business days of the request for customer operating profile information. (L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 271

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.

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)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 272

- 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)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 273

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

Sheet 274

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS**

(P)/(L)

When requirements for “Smart Inverter” are specified in this section, those requirements can also be met by a “DER Interconnection System” as defined in this tariff

The inverter requirements are intended to be consistent with UL 1741 – Supplement SB using as the source requirement document ANSI/IEEE 1547-2018 and IEEE 1547.1-2020 Standard for Interconnecting Distributed Resources with Electric Power Systems where possible. In the event of conflict between this Rule and UL 1741 – Supplement SB and/or IEEE 1547-2018 or IEEE 1547.1-2020, this Rule shall take precedence.

The Smart Inverter default settings and default activation states may be modified upon mutual agreement between Applicant or Producer and Distribution Provider.

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.

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 275

P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd) (P)/(L)

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.

Process for changing default settings for Generating Facilities with an executed Interconnection Agreement:

When grid changes or Generating Facility changes require that the Smart Inverter operating parameters be reevaluated, the Distribution Provider or Producer may request changes to the 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 upon.

1. General Interconnection and Protective Function Requirements

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.

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 276

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

1. General Interconnection and Protective Function Requirements (Cont'd)

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;
- (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 58.8 Hz to 61.2 Hz, inclusive, and are stable for at least 15 seconds; and
- (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.

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)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 277

P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd) (P)/(L)

1. General Interconnection and Protective Function Requirements (Cont'd)

a. Protective Functions Required (Cont'd)

- (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 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).

b. Momentary Paralleling Smart Inverter Generating Facilities

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.

Smart Inverters 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)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 278

P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd) (P)/(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). 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).

d. Visible Disconnect Required

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.)
- (ii) Include markings or signage that clearly indicates open and closed positions.
- (iii) be capable of being reached:

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 279

P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd) (P)/(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) 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.

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.

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 280

P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd) (P)/(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 Smart Inverter, Distribution Provider and Producer may agree upon other arrangements.

g. Generating Facilities that use certified Power Control Systems (PCS) must use PCS listed in a Distribution Provider pre-approved list.

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:

Except as otherwise stated, the RPA for all performance requirements shall be met at the PCC.

When the Generating Facility is less than 500KVA or when the Generating Facility operates under one of the non-exporting options or inadvertent export of no longer than 30 seconds, the RPA may be the Point of Generating Resource Connection (POC).

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 281

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

a. Voltage Regulation

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.

b. Voltage Trip and Ride-Through Setting

The voltage ranges in Table P-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) 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 P-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.

(P)/(L)

(Continued)



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GENERATING FACILITY INTERCONNECTIONS

Sheet 282

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

b. Voltage Trip and Ride-Through Setting (Cont'd)

ii) Voltage Disturbances

Whenever Distribution Provider's Distribution System voltage at the RPA varies from and remains outside the Continuous Operation region for the predetermined parameters set forth in Table P-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 P-1a:

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."
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 sec.
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 $0.5 \leq V < 0.7$ or $0.7 \leq V < 0.88$ pu region, the Smart Inverter shall restore available current within 2 seconds.
4. Different voltage-time settings could be permitted by the Distribution Provider.

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 283

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

b. Voltage Trip and Ride-Through Setting (Cont'd)

ii) Voltage Disturbances (Cont'd)

Table P-1a: Smart Inverter Voltage Trip Settings

Shall Trip Function	Voltage Trip Default Settings (p.u. of nominal voltage)	Voltage Range of Shall Trip Function (p.u. of nominal voltage)	Default Clearing Time (s)
OV2	1.20	$V \geq 1.20$	0.16
OV1	1.10	$1.10 \leq V < 1.20$	13.0
Continuous Operation	NA	$0.88 < V < 1.10$	NA
UV1	0.88	$0.50 < V \leq 0.88$	21.0
UV2	0.50	$V \leq 0.50$	2.0

Table P-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 Energize	NA	0.16
$1.10 < V \leq 1.20$	Momentary Cessation	12	0.083
$0.88 \leq V \leq 1.10$	Continuous Operation	Infinite	NA
$0.70 \leq V < 0.88$	Mandatory Operation	20	NA
$0.50 \leq V < 0.70$	Mandatory Operation	10	NA
$V < 0.50$	Momentary Cessation	1	0.083

iii) Voltage Phase Angle Change Ride-Through

Voltage phase angle change ride-through as specified in IEEE 1547-2018, 6.5.2.6.

(P)/(L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 284

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

c. Paralleling

The Smart Inverter 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)

d. Flicker

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 P 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.

e. Integration with Distribution Provider's Distribution System Grounding

The grounding scheme of the Smart Inverter 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) (See Section G.1.i, line configuration).

(P)/(L)

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 285

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

f. Frequency

Distribution Provider controls system frequency, and the Smart Inverter 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 P 2a, the Smart Inverter's Protective Functions shall cease to energize Distribution Provider's Distribution or Transmission System within the stated maximum trip time.

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 P-2b, and shall disconnect from the electric grid during a high or low frequency event that is outside that frequency-time range as indicated in Table P-2a.

Table P-2a: Frequency Trip Settings Table

Shall Trip Function	Frequency Trip Default Setting (Hz)	Resulting Range of Shall Trip Function (Hz)	Default Clearing Time (s)
OF2	62.0	$f \geq 62.0$	0.16
OF1	61.2	$61.2 \leq f < 62$	300
Continuous Operation	NA	$58.5 < f < 61.2$	NA
UF1	58.5	$56.5 < f \leq 58.5$	300
UF2	56.5	$f \leq 56.5$	0.16

(P)/(L)

(Continued)



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GENERATING FACILITY INTERCONNECTIONS

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

f. Frequency (Cont'd)

i) Frequency Ride-Through Requirements (Cont'd)

Table P-2b: Frequency Ride-Through Settings Table

Frequency (Hz)	Operating Mode	Minimum time(s)
$f > 62.0$	No Ride-Through requirements apply to this range	NA
$61.2 < f \leq 61.8$	Mandatory Operation	299
$58.8 \leq f \leq 61.2$	Continuous Operation	Infinite
$57.0 \leq f < 58.8$	Mandatory Operation	299
$F < 57.0$	No Ride-Through requirements apply to this range	NA

ii) Rate of Change of Frequency (ROCOF) Ride-through

Smart Inverter shall not trip for frequency excursion having magnitude rates of change of frequency (ROCOF) that is less than or equal to 3.0Hz per second as specified in IEEE 1547-2018, section 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-through region (and corresponding duration times), or high frequency region (and corresponding duration times).

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Sheet 287

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(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. 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. The harmonic distortion of a Smart Inverter shall be evaluated using the same criteria as for the 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.

i. Smart Inverter Reactive Power Requirements

Smart Inverter Reactive Power capabilities shall comply with IEEE 1547-2018, Section 5.2 Category B requirement.

j. Dynamic Volt/Var Operations

The Smart Inverter shall be capable of supporting dynamic reactive power compensation (dynamic Volt/Var operation) within the following constraints:

- 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 P-4.

(P)/(L)

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GENERATING FACILITY INTERCONNECTIONS

Sheet 288

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

Dynamic Volt/Var Operations Default Settings

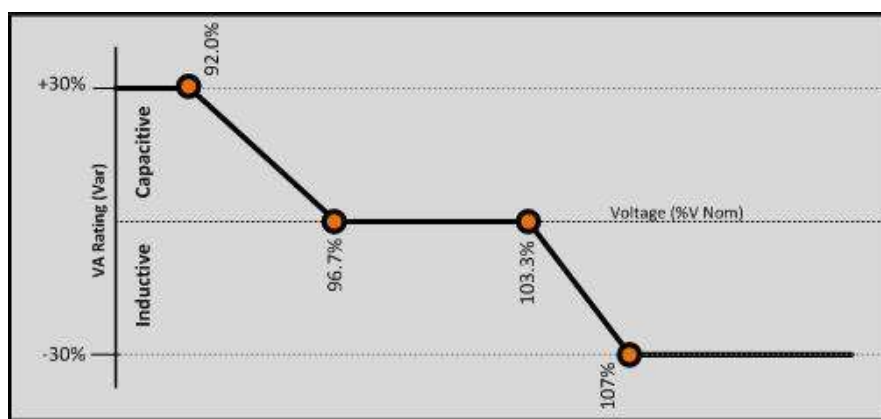
Table P-4 and Figure P-1 depict the default setting, which should be applied for all inverter size. Specific volt/var settings may be required for larger generating facilities (such as 100 kW or greater) or for specific areas with the Distribution System as determined by the Distribution Provider.

Default Open Loop Response Time for volt/var operation setting should be five (5) seconds.

Table P-4: Voltage and Reactive Default Settings

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 P-1: Voltage and Reactive Default Settings



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(Continued)



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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

k. Enter Service Ramp Rate Requirements

The Smart Inverter is required to have the following ramp controls.

- Enter Service ramp control requirements as outlined in IEEE 1547-2018 section 4.10.3 with following default settings:
 - Delay enter service shall be 15 seconds per P.1.a.ii
 - Default Enter Service Duration shall be 50 seconds

l. Frequency Droop (Frequency Power, Frequency Watt) Requirements

Smart Inverters shall change their real power production as function of system frequency in accordance with IEEE 1547-2018, 6.5.2.7 with the following default settings: Deadband 36 mHz, db_{OF} and db_{UF} . k_{OF} and k_{UF} would be 0.05, open loop response time of 5 seconds.

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

m. Voltage-Watt Default Settings Requirements

Smart Inverters shall reduce their real power production as a function measured voltage at the inverter terminal or at the Generating Facility Point of Common Coupling (PCC) in accordance with the following:

When the measured voltage is greater than 106% of nominal voltage (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 illustrate the required rate of reduction. When export of active power is controlled, a certified inverter and control system shall be used.

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P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)

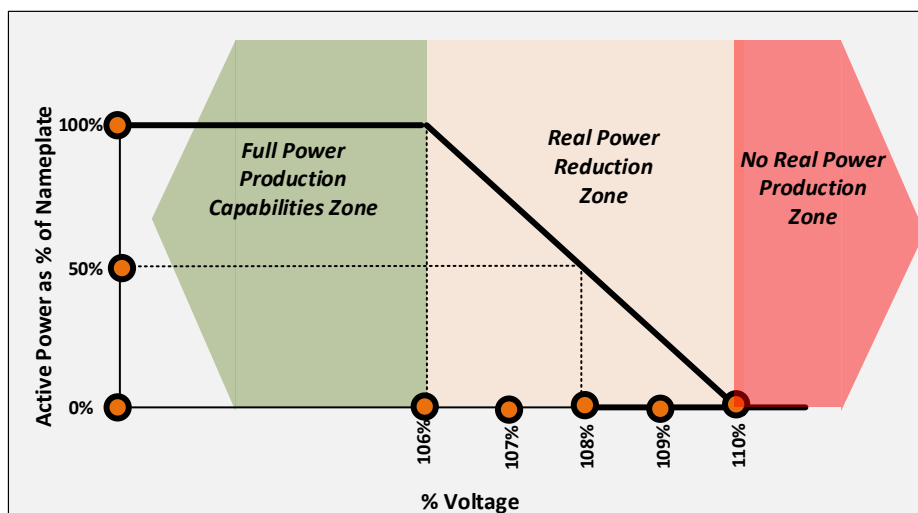
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2. Prevention of Interference (Cont'd)

m. Voltage-Watt Default Settings Requirements

- When the measured voltage is greater than 110% of nominal voltage (Example: 132 volts on a 120 volts nominal), the export of active power to the grid at the PCC or the production of active power by the Smart Inverter shall be reduced to 0 watts.
- Open Loop response time shall be 5 seconds.

Figure P-3: Volt-Watt Requirements



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 permissible under mutual agreement between Distribution Provider and the generating facility before the effective date.

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

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:

Table P-4: Default Activation States

Function	State
Anti-islanding	Activated
Low/High Voltage Ride Through	Activated
Low/High Frequency Ride Through	Activated
Dynamic Volt/Var operations	Activated
Enter Service Ramp Control	Activated
Storage Inverter Normal Operation Ramp Control	Activated
Fixed power factor	Deactivated
Reconnect by "soft-start" methods	Activated
Frequency/Watt	Activated
Volt/Watt	Activated
Constant Reactive Power Mode	Deactivated
Set Active Power Function Mode(Optional)	Activated under mutual agreement
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.

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(Continued)



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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

p. Load Shedding or Transfer

The voltage and frequency ride-through requirements of P.2.b.ii) and P.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 Generating Facility prior to any voltage disturbance, and the Generation Facility disconnects from the Distribution Provider's Distribution or Transmission System, along with Generating Facility load, such that the net change in real power flow from or to the Distribution Provider's Distribution or Transmission System is less than 10% of the aggregate Smart Inverter capacity; or b) Generating Facility load real power demand equal to 90% to 120% of the predisturbance aggregate Smart Inverter real power is shed within 0.1 seconds of Smart Inverter disconnection.

q. Measurement and Calculation Accuracy

Smart Inverter shall meet minimum steady-state and transient measurement and calculation accuracy as required in IEEE 1547-2018, Section 4.4.

r. Prioritization of Smart Inverter Responses

- a) The response to disable permit to service as specified in section P.8.a shall take precedence over any other tripping requirements.
- b) Prioritization of tripping requirements not related to disabling permit to service shall meet IEEE 1547-2018 section 4.7.

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

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 Applicant.

t. Ride-through of Conservative 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 support shall be in accordance with IEEE 1547-2018, 6.4.2.5.

v. Transition between performance operating regions:

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 section 5.3.5. 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.

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

2. Prevention of Interference (Cont'd)

x. Generating Facility Rapid Voltage Changes (RVC)

Generating step or ramp changes shall meet the requirements as specified in IEEE 1547-2018 section 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.

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.

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.

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Sheet 296

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

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.

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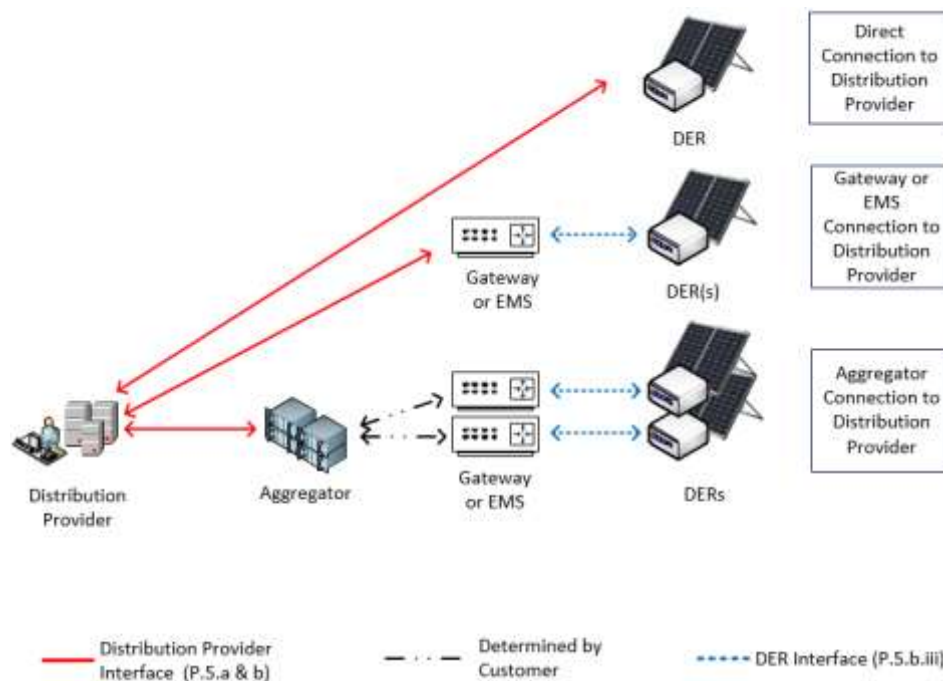
**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

5. Communication Requirements

Should communications to the Distribution Provider be required, Generating Facilities utilizing inverter-based technologies must adhere to the following communication requirements for communications between the Distribution Provider and the Generating Facility. The diagram below shows the interface requirements as applicable for section P.5. The Distribution Provider Interface (solid red line) is described in Sections P.5.a and P.5.b. The local DER interface at the Generating Facility (dotted blue line) is described in Section P.5.b.iii. The top row shows a direct connection between the Distribution Provider and the DER. The middle row shows a connection between the Distribution Provider and a gateway (GW) or Energy Management System (EMS). The lower row shows a connection between the Distribution Provider and an aggregator.

Figure P-5: Generating Facility Communications



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GENERATING FACILITY INTERCONNECTIONS

Sheet 298

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

5. Communication Requirements (Cont'd)

The communications requirements herein shall be between

- (i) the Distribution Provider and the individual DER, GW, or EMS;
 - (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 mutually agreed to by Applicant and Distribution Provider.
- a. The communications requirements in this Section pertain to communications between the Distribution Provider and communications option selected, or required, from section P.5. This Rule does not specify the communication between the selected communication option and Smart Inverter but performance will be enforced by 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 as defined in the latest final version of the Common Smart Inverter Profile (CSIP), the Interconnection Handbook, Cyber Security 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.

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

5. Communication Requirements (Cont'd)

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. Cybersecurity and privacy requirements (these may additionally or alternatively be included in the application-level protocol implementation guide (e.g., CSIP); and,

C. 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

D. 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.

(P)/(L)

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

5. Communication Requirements (Cont'd)

b. Additional communication protocol requirements shall also apply to
Generating Facilities utilizing inverter-based technologies as
provided in the following documents (Cont'd):

iii. Communication Protocol and Performance Requirements

A. Communication performance requirements for the interface
to the Generating Facility shall comply with IEEE 1547-2018,
10.8.

B. The protocol requirements at the Generating Facility shall be
per IEEE 1547-2018, 10.7.

a. If choosing IEEE 2030.5 as the protocol, then CSIP
certification is required.

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**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

6. Scheduling Capability Requirements

Generating Facilities which incorporate Smart Inverters shall incorporate scheduling capabilities with minimum scheduling memory capability of at least 24 events. The utilization of this function is permissible under mutual agreement between Distribution Provider and the generating facility before the effective date. Each event is composed of modifications to each, selected group of, or all of the following Smart Inverter function:

- Modifications to the voltage and reactive set-points of the Dynamic volt/var function.
- Modifications to the reactive power set-points for the fixed power factor function.
- Modifications to the voltage and watt-reduction level set-points for the volt/watt function.

The Generating Facility's scheduling capability requirement herein shall be met by one or more of the following options:

- Scheduling capability requirements may be implemented at the GW/EMS. The GW/EMS shall communicate the necessary commands to the Smart Inverters within 10 minutes, or by mutual agreement, from when the GW/EMS receives the scheduling information.
- Scheduling capability requirements may be implemented at the DER within the Generating Facility.
- 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 Inverter within 15 minutes of the aggregator receiving the scheduling information.
- Other options may be utilized by mutual agreement between the Applicant and Distribution Provider

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GENERATING FACILITY INTERCONNECTIONS

Sheet 302

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

6. Scheduling Capability Requirements (Cont'd)

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.

7. Monitoring and Telemetry Requirements

The Smart Inverter shall have the capability to communicate its performance information per IEEE 1547-2018, 10.5 Table 29, unless otherwise provided by PG&E, pursuant to its Distribution Generation Interconnection Handbook:

- a. Smart Inverter production or consumption of active power (watts).
- b. Smart Inverter consumption or production of reactive power (vars)
- c. Phase measured at the AC terminals of the Smart Inverter (volts)
- d. Frequency measured at the AC terminals of the Smart Inverter (Hz)
- e. Connection Status
- f. Alarm Status

When the Generating Facility includes energy-storage with Smart Inverters, the following monitoring and telemetry capability is required:

The Smart Inverter shall be capable of communicating the operational state of charge as a percent of energy storage capacity. (P)/(L)

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GENERATING FACILITY INTERCONNECTIONS

Sheet 303

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

7. Monitoring and Telemetry Requirements (Cont'd)

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:

- In-Service

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 P.6

- Not In-Service

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 P.6

Monitoring and performance information should be communicated in aggregate at the Generating Facility as follows:

- 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.
- When a Generating Facility includes Smart Inverters and other technologies such as synchronous or induction generation systems, the Generating Facility shall communicate the following:
 - The production or consumption of active and reactive power shall be communicated in aggregate of all Smart Inverters within the Generating Facility.
 - The production or consumption of active and reactive power shall be communicated in aggregate of all the other technologies within the Generating Facility.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 304

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

7. Monitoring and Telemetry Requirements (Cont'd)

Monitoring and performance information should be communicated in aggregate at the Generating Facility as follows (Cont'd):

- 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.
- 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.
- 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 305

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

8. Control through communication capabilities

The utilization of these functions are permissible under mutual agreement between Distribution Provider and the generating facility before the effective date. Smart Inverters shall have the capabilities of accepting operational controls through communications in accordance to the following:

a. 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.

b. 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.

c. 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 seconds 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.

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. Under mutual agreement, the Smart Inverter may be required to reduce active power below the level needed to support host customer load.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 306

**P. SMART INVERTER GENERATING FACILITY DESIGN AND OPERATING
REQUIREMENTS FOR UL1741SB INVERTERS (Cont'd)**

(P)/(L)

8. Control through communication capabilities (Cont'd)

d. 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. The utilization of this function is permissible under mutual agreement between Distribution Provider and the generating facility before the effective date.

e. 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 P.6.

f. Transition between operating modes

Transition between modes shall commence in no more than 30 seconds 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.

Ramping of 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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 307

Appendix A Forms Associated with Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
AUTHORIZATION TO RECEIVE CUSTOMER INFORMATION			
79-1095	Authorization to Receive Customer Information or Act Upon a Customer's Behalf	Rule 21	Authorization for Third Party
PRE-APPLICATION REQUEST			
79-1181	Rule 21 Pre-Application Report Request	Rule 21	For Generator Developer to request basic info about local distribution circuit
COST ENVELOPE			
79-1182	Cost Envelope Option Non-NEM Request	Rule 21	Non-NEM Customer Only
79-1183	Cost Envelope Option Non-NEM Agreement Appendix	Rule 21	Non-NEM Customer Only
79-1184	Cost Envelope Option NEM Request	Rule 21	NEM Customer Only
79-1185	Cost Envelope Option NEM Agreement Appendix	Rule 21	NEM Customer Only
GENERATOR INTERCONNECTION APPLICATION (most Rule 21 programs)			
79-1174-02	Rule 21 Generator Interconnection Application	• NEM/NEM2 • NEMEXP • NEMMT • NEMA • NEMFC • NEMV/NEMV2, • NEMVMASH/ NEM2VMSH • NEM2VSOM • RES-BCT • Rule 21 • Export • Non-export	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.)
79-1174-02A	Rule 21 Generator Interconnection Application – Attachment A Customer and Project Information	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment A to Form 79-1174-02
79-1174-02B	Rule 21 Generator Interconnection Application – Attachment B Non-Export	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment B to Form 79-1174-02

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 308

Appendix A (Cont'd.) Forms Associated with Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
GENERATOR INTERCONNECTION APPLICATION (most Rule 21 programs) (Cont'd)			
79-1174-02C	Rule 21 Generator Interconnection Application – Attachment C Export	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment C to Form 79-1174-02
79-1174-02D	Rule 21 Generator Interconnection Application – Attachment D Solar (PV) Technology	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment D to Form 79-1174-02
79-1174-02E	Rule 21 Generator Interconnection Application – Attachment E Wind Turbine Technology	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment E to Form 79-1174-02
79-1174-02F	Rule 21 Generator Interconnection Application – Attachment F Machine-Based Technology	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment F to Form 79-1174-02 Rule 21 Generator Interconnection Application – Attachment F Machine-Based Technology
79-1174-02G	Rule 21 Generator Interconnection Application – Attachment F Machine-Based Technology	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment G to Form 79-1174-02
79-1174-02H	Rule 21 Generator Interconnection Application – Attachment H Energy Storage Technology	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment H to Form 79-1174-02
79-1174-02I	Rule 21 Generator Interconnection Application – Attachment I RES-BCT	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment I to Form 79-1174-02

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 309

Appendix A (Cont'd.) Forms Associated with Rule 21 Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
GENERATOR INTERCONNECTION APPLICATION (most Rule 21 programs) (Cont'd)			
79-1174-02J	Rule 21 Generator Interconnection Application – Attachment I RES-BCT	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment J to Form 79-1174-02
79-1174-02K	Rule 21 Generator Interconnection Application – Attachment K NEMFC Load Aggregation	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment K to Form 79-1174-02
79-1174-02L	Rule 21 Generator Interconnection Application – Attachment K NEMFC Load Aggregation	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment L to Form 79-1174-02
79-1174-02M	Rule 21 Generator Interconnection Application – Attachment M NEMVMASH Single Service Delivery Point	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment M to Form 79-1174-02
79-1174-02N	Rule 21 Generator Interconnection Application – Attachment N NEMVMASH Development	NEM (NEMEXP, NEMMT and NEMA), NEMFC, NEMV, NEMVMASH, RES-BCT, Rule 21	Attachment N to Form 79-1174-02 Rule 21 Generator Interconnection Application – Attachment N NEMVMASH Development
NEM and NEM2			
STANDARD NEM			
79-1151A	Agreement be used with 79-1151B Application Agreement And Customer Authorization Net Energy Metering For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less	Standard NEM	NEM Customer Only Interconnection
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	Standard NEM2	NEM2 Application to be used with 79-1151B-02 Interconnection Agreement

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 310

Appendix A (Cont'd.) Forms Associated with Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
STANDARD NEM (Cont'd)			
79-1151B	Application - Net Energy Metering Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less	Standard NEM	NEM Customer Only 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	Standard NEM2	NEM2 Application to be used with 79-1151A-02 Interconnection Agreement
79-1217	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	Standard NEM2 + ≤ 10kw storage	Customer Authorization for Third Party Information
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	Standard NEM + ≤ 10 storage	NEM Customer Only 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	Standard NEM2 + ≤ 10 storage	For NEM2 pair storage scenarios using Power Control Systems to ensure NEM integrity
79-1218	Agreement And Customer Authorization Net Energy Metering (NEM2) Interconnection For Solar And/Or Wind Electric Generating Facilities Of 30 Kilowatts Or Less For New Residential Construction	Standard NEM2 for New Construction	Customer Authorization for Third Party Information for New Residential Construction

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 311

Appendix A (Cont'd.) Forms Associated with Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
EXPANDED NEM			
79-1220	Interconnection Agreement for Net Energy Metering (NEM) of a Renewable Electric Generating Facility of 1,000 kW or Less, Except Solar or Wind Facilities of 30 kW or Less, and Virtual Net Energy Metering (NEMV) of a Renewable Electric Generating Facility of 1,000 kW or Less.	Expanded NEM	NEM Customer Only Interconnection Agreement
79-1220-02	Interconnection Agreement for Net Energy Metering (NEM) of a Renewable Electric Generating Facility of 1,000 kW or Less, Except Solar or Wind Facilities of 30 kW or Less, and Virtual Net Energy Metering (NEMV) of a Renewable Electric Generating Facility of 1,000 kW or Less.	Expanded NEM	NEM2 Interconnection Agreement
LARGE NEM ≥ 1MW			
79-1198-02	Interconnection Agreement For Net Energy Metering (NEM2) And Renewable Electrical Generating Facility Sized Greater Than 1,000 Kw	>1MW NEM2	FT and Detailed Study Interconnection Agreement for >1MW NEM2 Generating Facilities
NEMA			
79-1153	NEM Load Aggregation Appendix	NEM – NEMA	NEM Customer Only - Use as an Appendix with Form 79-1151A, 79-1220, or 79-1069
79-1153-02	NEM2A Load Aggregation Appendix	NEM2 – NEM2A	Use as an Appendix with Form 79-1151A-02, 79-1220-02 or 79-1069-02
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
NEMMT (Multiple Tariff)			
79-1069	Generating facility Interconnection Agreement (Multiple Tariff)	NEM, Rule 21	NEM Customer Only NEMMT Interconnection Agreement used with Form 79-1174-02
79-1069-02	Generating Facility Interconnection Agreement (Multiple Tariff NEM2MT)	NEM2, Rule 21	NEM2MT Interconnection Agreement used with Form 79-1174-02
MISCELLANEOUS NEM FORMS			
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
79-1114	NEM 2010 Early True-up Request Form	NEM	NEM Customer Only

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GENERATING FACILITY INTERCONNECTIONS

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Appendix A (Cont'd.) Forms Associated with Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
MISCELLANEOUS NEM FORMS (Cont'd)			
79-1155	Schedules NEM, NEMV, NEMVMASH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation	NEM, Rule 21	NEM Customer Only
79-1155-02	Schedules NEM2, NEM2V, NEM2VMASH, Net Surplus Electricity (NSE) Renewable Energy Credits Compensation	NEM2 NEM2V NEM2VMASH, Rule 21	NEM2 Customer Only
NEMFC (Fuel Cell)			
79-1010	Interconnection Agreement for Net Energy Metering of Fuel Cell Generating Facilities	NEM, Rule 21	NEMFC Interconnection Agreement used with Form 79-1174-02
NEMV/NEM2V			
See 79-1220 and 79-1220-02		See the Expanded NEM Section Above	
NEMVMASH/NEM2VMASH			
79-1189	Eligible Low Income Development Virtual Net Energy Metering (NEM2VMASH) Interconnection Agreement for Multifamily Affordable Housing with Solar Generation Totaling 1 MW or Les	NEM2VMASH s	NEM2VMASH Interconnection Agreement
79-1125	NEM / NEMV / NEMVMASH Inspection Report	NEM	NEM Customer Only
79-1195	Eligible Low Income Development Virtual Net Energy Metering (NEMVMASH) Interconnection Agreement for Multifamily Affordable Housing with Solar Generation Totaling 1 MW or Less	NEMVMASH, Rule 21	NEM Customer Only NEMVMASH Interconnection Agreement
NEM2VSOM			
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.
RES-BCT			
79-1191	Interconnection Agreement for Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) Generating Facility	Rule 21	RES-BCT Interconnection Agreement
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

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 313

Appendix A (Cont'd.) Forms Associated with Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
RULE 21 NON-EXPORT			
79-973	Generating Facility Interconnection Agreement For Non-Export Generating Facilities (Rule 21 Interconnection Agreement)	Rule 21 Non-Export RES-BCT	Interconnection Agreement used for RESBCT and non-NEM generation with Application 79-1197
79-992	Customer Generation Agreement (Third party Generator on Premises, Non-Exporting)	3-Party Rule 21	Third Party Non-Exporting Interconnection Agreement
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
79-988	Generating Facility Interconnection Agreement (Third Party Non-Exporting)	3-Party Rule 21	Third Party Non-Exporting Interconnection Agreement
79-1212	Rule 21 Non-Export Generator Interconnection Notification	Rule 21	Notification Form for New Non-Export Interconnection
79-1213	Agreement and Customer Authorization Non-Export Generating Facility Sized 30 Kilowatts or Less	Rule 21	Interconnect and Operate a Non-Export Generating Facility
79-1214	Notification-Only Pilot Program Developer Eligibility Application	Rule 21	Eligibility to Participate in the Notification-only Pilot Program
STORAGE			
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
RULE 21 EXPORT FOR SALE INTERCONNECTION FORMS			
79-1145	Rule 21 Exporting Generator Interconnection Request	Rule 21	For Exporting Generator
79-1200	Rule 21 Generator Interconnection Agreement For Exporting Generating Facilities	Rule 21	FT and Detailed Study Interconnection Agreement for Exporting Generating Facilities

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 314

Appendix A (Cont'd.) Forms Associated with Generator Interconnection Tariffs Subject to Rule 21			
Form Number	Title	Associated Tariffs	Use Guidance
RULE 21 OTHER AGREEMENTS			
INDEPENDENT STUDY & DISTRIBUTION GROUP STUDY PROCESS STUDY AGMT			
79-1162	Rule 21 Detailed Study Agreement	Rule 21	Independent Study and Distribution Group Study Process Study 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 79-1174-02
MATERIAL MODIFICATIONS			
79-1211	Generating Facility Material Modification Notification Worksheet	Rule 21	Used to make Material Modifications to the Generating Facility
SPECIAL FACILITIES AGREEMENT			
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- this form is required every time facilities above and beyond what is required to serve a standard customer – load and a meter.
79-255	Agreement for Installation or Allocation of Special Facilities	Rule 21	Installation or Allocation of Special Facility
79-702	Appendix A: Detail of Special Facilities Charges to be used in concert with form 79-280	Rule 21	Used with Form 79-280- this appendix specifies the detail employed in determining the total charges assessed for the special facilities in the SFA
79-1100	Electric Rule 21 - Agreement to Install Applicant Requested NGOM Special Facilities for Solar Performance Metering	Rule 21	Installation of Solar Generation Performance Metering Equipment
STANDBY			
79-285	Special Agreement for Electrical Standby Service	Rule 21	Standby Service - Use this form for all generators connected in parallel not eligible for any of the NEM tariffs. Back-up generators (BUGs) do not pay standby and consequently this form is not applicable to them

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San Francisco, California

	Revised	Cal. P.U.C. Sheet No.	55400-E
<i>Cancelling</i>	Revised	Cal. P.U.C. Sheet No.	53885-E

Sheet 315

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Advice 6757-E-A
Decision

Issued by
Meredith Allen
Vice President, Regulatory Affairs

Submitted
Effective
Resolution

January 27, 2023



San Francisco, California

Cal. P.U.C. Sheet No. 55402-E
Cal. P.U.C. Sheet No. 54834-E

Sheet 20

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ELECTRIC TABLE OF CONTENTS

Sheet 25

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79-1191	Generating Facility Interconnection Agreement For Local Government Renewable Energy Self- Generation Bill Credit Transfer (RES-BCT).....	49295-E
79-1197	Local Government Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) Re- Allocation Request	48676-E
79-1198-02	Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Electrical Generating Facility Sized Greater than 1,000 kW	55176-E (T)
79-1199	Agreement and Customer Authorization Non-Export Standalone Energy Storage of 30 Kilowatts or Less	48678-E
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79-1211	Generating Facility Material Modification Notification Worksheet.....	50316-E
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Advice 6757-E-A
January 27, 2023

Attachment 2

Redline Tariff Revisions

For convenience of the reader, PG&E has included redline revisions in Attachment 2. Redline revisions are included for Electric Forms 79-1198-02 and 79-1200, and Electric Rule 21.



Electric Sample Form No. 79-1198-02
Interconnection Agreement for Net Energy Metering (NEM2) and
Renewable Electrical Generating Facility Sized Greater than 1,000 kW

Sheet 1

**Please Refer to Attached
Sample Form**

(Continued)

Advice 6757-E-A
Decision

Issued by
Meredith Allen
Vice President, Regulatory Affairs

Submitted
Effective
Resolution

January 5, 2023



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

This *Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Electrical Generating Facility Sized Greater than 1,000 kW* (Agreement)¹ is entered into by and between _____ (Customer-Generator), and Pacific Gas and Electric Company (PG&E), a California Corporation. Customer-Generator and PG&E are sometimes also referred to in this Agreement jointly as “Parties” or individually as “Party.” In consideration of the mutual promises and obligations stated in this Agreement and its attachments, the Parties agree as follows:

1. SCOPE AND PURPOSE

This Agreement provides for Customer-Generator to interconnect and operate a Generating Facility in parallel with PG&E’s Electric System to serve the electrical loads connected to the electric service agreement ID number that PG&E uses to interconnect Customer-Generator’s Generating Facility. Customer-Generator’s Generating Facility is intended primarily to offset part or all of the Customer-Generator’s own electrical requirements. Consistent with, and in order to effectuate, the provisions of Sections 2827, and 2827.7 of the California Public Utilities Code and PG&E’s electric rate Schedule NEM2 (NEM2), Parties enter into this Agreement. This Agreement applies to the Customer-Generator’s Generating Facilities identified below with the specified characteristics and generating capacity, and does not allow interconnection or operation of facilities different than those described.

2. SUMMARY AND DESCRIPTION OF CUSTOMER-GENERATOR’S GENERATING FACILITY AND DESIGNATION OF OTHERWISE-APPLICABLE RATE SCHEDULE

- 2.1 A description of the Generating Facility, including a summary of its significant components and a single-line diagram showing the general arrangement of how Customer-Generator’s Generating Facility and loads are interconnected with PG&E’s Electric System, is attached to and made a part of this Agreement.
- 2.2 Generating Facility identification number: _____ (Assigned by PG&E).
- 2.3 Customer-Generator’s electric service agreement ID number: _____ (Assigned by PG&E).
- 2.4 Name and address used by PG&E to locate the electric service agreement ID number used to interconnect the Generating Facility with PG&E’s Electric System:

Name: _____

Address: _____

City/Zip Code: _____

¹ Additional forms are available on PG&E’s website at <http://www.pge.com/gen>.



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

- 2.5 The Gross Nameplate Rating of the Generating Facility is: _____ kW.
- 2.6 The Net Nameplate Rating of the Generating Facility is _____ kW.
- 2.7 The purpose of securing the Competition Transition Charge exemption available under Section 372 of the California Public Utilities Code (PUC), Producer hereby declares that the portion of the Generating Facility that is generating in a combined heat and power mode ☐ does / ☐ does not meet the requirements for Cogeneration as such term is used in Section 216.6 of the California Public Utilities Code.
- 2.8 Customer-Generator's otherwise-applicable rate schedule as of the execution of this Agreement _____.
- 2.9 The Generating Facility's expected date of Initial Operation is _____.
The expected date of Initial Operation shall be within two years of the date of this Agreement.
- 2.10 The Producer certifies that their inverter-based Generating Facilities will upon receiving permission to operate from PG&E fully comply with Section Hh of Rule 21 that is in effect at the time the application is received, including configuration of protective settings and default settings, in accordance with the specifications therein.

Distribution Provider may require a field verification of the Customer-Generator's inverter. Customer-Generator further agrees to cooperate fully with any such request and make their inverter available to the Distribution Provider for such verification. Customer-Generator understands that in the event the inverter is not set in accordance with Section Hh of Rule 21, Customer-Generator will need to cease operation of generating facility until verification is confirmed by Distribution Provider.

(Solar Inverter models and firmware versions that comply with Rule 21 Section Hh can be found at <https://www.energy.ca.gov/programs-and-topics/topics/renewable-energy/solar-equipment-lists>.)

Verification of compliance with such requirements shall be provided by the Customer-Generator upon request by PG&E in accordance with PG&E's Electric Rule 21.

An "existing inverter" is defined as an inverter that is a component of an existing Generating Facility that meets one or more of the following conditions:

- (a) it is already approved by PG&E for interconnection prior to September 9, 2017
- (b) the Customer-Generator has submitted the interconnection application prior to September 9, 2017,
- (c) the Customer-Generator provides evidence of having applied for an electrical permit for the Generating Facility installation that is dated prior to September 9, 2017 and submitted a complete interconnection application² no later than March 31, 2018, or

² A complete application consists all of the following without deficiencies:

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- (d) the Customer-Generator provides evidence of a final inspection clearance from the governmental authority having jurisdiction over the Generating Facility prior to September 9, 2017.

All “existing inverters” are not required to be Smart Inverters and are only subject to Section H of Rule 21. Customer-Generator replacing an “existing inverter” certifies it is being replaced with either:

- (i) inverter equipment that complies with Section Hh of Rule 21, (encouraged); or
- (ii) a conventional inverter that is of the same size and equivalent ability to that of the inverter being replaced, as allowed in Rule 21 Section H.3.d.ii.

3. DOCUMENTS INCLUDED AND DEFINED TERMS

- 3.1 This Agreement includes the following exhibits that are specifically incorporated herein and made a part of this Agreement.

Attachment A Additional Terms and Conditions for Projects Requiring Interconnection Facilities and/or Upgrades to PG&E’s Distribution and/or Transmission System

Attachment B Final Study Report Including Description and Costs of the Generating Facility, Interconnection Facilities, Metering Equipment, Distribution and/or Network Upgrades ~~and Cost Responsibility~~

~~Attachment C Expected Date of Initial Operation~~

Attachment C PG&E’s Agreement for Installation of Allocation of Special Facilities for Parallel Operation of Nonutility-Owned Generation and/or Electrical Standby Service (Form 79-280) (Special Facility Agreement), if applicable, (Formed by the Parties).

Attachment D NEM2V or NEM2VMSH Storage (when applicable)

Attachment E NEM2 Load Aggregation Customer-Generator Declaration Warranting NEM2 Aggregation Is Located on Same or Adjacent or Contiguous Property to Generator Parcel (when applicable)

Attachment F Addendum for Net Energy Metering Multiple Tariff (when applicable)

Attachment G Producer’s Warranty that the Generating Facility is a “Cogeneration Facility” Pursuant to Section 216.6 of the California Public Utilities Code (when applicable)

-
1. A completed Interconnection Application including all supporting documents and required payments,
 2. A completed signed Interconnection Agreement,
 3. Evidence of the Customer-Generator final inspection clearance from the governmental authority having jurisdiction over the generating system.

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- Attachment H Producer's Warranty that the Generating Facility is an Eligible Biogas Electrical Generating Facility Pursuant to Section 2827.9 of the California Public Utilities Code (when applicable)
- Attachment I Schedule NEM2 Customer-Generator Warranty that it Meets the Requirements for an Eligible Customer-Generator and is an Eligible Renewable Electrical Generation Facility Pursuant to Section 2827.1 of the California Public Utilities Code (when applicable)
- Attachment J Operating Requirements for Energy Storage Device(s) (when applicable)
- Attachment K NEMFC Customer Agreement Starting January 1, 2017 Until California Air Resources Board Emission Standard is Established (when applicable)

In addition, PG&E Electric Tariff Rules and Rates, including but not limited to Electric Rules 2, 14, 15, 16, and 21, Schedule NEM2, and Customer-Generator's otherwise-applicable rate schedule, available at PG&E's website at www.pge.com or by request, are specifically incorporated herein and made part of this Agreement.

- 3.2 When initially capitalized, whether in the singular or in the plural, the terms used herein shall have the meanings assigned to them either in this Agreement or in PG&E's Electric Rule 21, Section C.

4. CUSTOMER BILLING AND PAYMENT

Customer-Generator initially selected Pacific Gas and Electric Company's electric rate schedule referenced in Section 2.7 of this Agreement as its otherwise-applicable rate schedule. Customer-Generator understands that they will be billed according to the otherwise-applicable rate schedule and Schedule NEM2.

5. TERM AND TERMINATION

- 5.1 This Agreement shall become effective as of the last date entered in Section 17 below. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:
- (a) The Parties agree in writing to terminate the Agreement.
 - (b) Unless otherwise agreed in writing by the Parties, at 12:01 A.M. on the day following the date the electric service agreement ID number through which Customer-Generator's Generating Facility is interconnected to PG&E is closed or terminated.
 - (c) At 12:01 A.M. on the 61st day after Customer-Generator or PG&E provides written Notice pursuant to Section 10 below to the other Party of Customer-Generator's or PG&E's intent to terminate this Agreement.
- 5.2 Customer-Generator may elect to terminate this Agreement pursuant to the terms of Section 5.1(c) for any reason. PG&E may elect to terminate this Agreement pursuant to the terms of Section 5.1(c) for one or more of the following reasons:
- (a) A change in applicable rules, tariffs, or regulations, as approved or directed by the Commission, or a change in any local, state or federal law, statute or regulation, either

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of which materially alters or otherwise affects PG&E's ability or obligation to perform PG&E's duties under this Agreement; or,

- (b) Customer-Generator fails to take all corrective actions specified in PG&E's Notice that Customer-Generator's Generating Facility is out of compliance with the terms of this Agreement within the time frame set forth in such Notice; or,
- (c) Customer-Generator abandons the Generating Facility. PG&E shall deem the Generating Facility to be abandoned if PG&E determines, in its sole opinion, the Generating Facility is nonoperational and Customer-Generator does not provide a substantive response to PG&E Notice of its intent to terminate this Agreement as a result of Customer-Generator's apparent abandonment of the Generating Facility affirming Customer-Generator's intent and ability to continue to operate the Generating Facility; or,
- (d) Customer-Generator's Generating Facility ceases to meet all applicable safety and performance standards set out in Section 6.

5.3 Notwithstanding any other provisions of this Agreement, PG&E shall have the right to unilaterally file with the Commission, pursuant to the Commission's rules and regulations, an application to terminate this Agreement.

5.4 Any agreements attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

6. GENERATING FACILITY REQUIREMENTS

6.1 Customer-Generator's Generating Facility must meet all applicable safety and performance standards established by the National Electrical Code, the Institute of Electrical and Electronics Engineers, and accredited testing laboratories such as Underwriters Laboratories and, where applicable, rules of the Commission regarding safety and reliability including Rule 21.

6.2 Customer-Generator shall: (a) maintain the Generating Facility and Interconnection Facilities in a safe and prudent manner and in conformance with all applicable laws and regulations including, but not limited to, Section 6.1, and (b) obtain any governmental authorizations and permits required for the construction and operation of the Generating Facility and Interconnection Facilities. Customer-Generator shall reimburse PG&E for any and all losses, damages, claims, penalties, or liability it incurs as a result of Customer-Generator's failure to obtain or maintain any governmental authorizations and permits required for construction and operation of Customer-Generator's Generating Facility.

6.3 Customer-Generator shall not commence parallel operation of the Generating Facility until PG&E has provided express written approval. Such approval shall normally be provided no later than thirty (30) business days following PG&E's receipt of: (1) a completed *Generating Facility Interconnection Application for Non-Export or Certain Net Energy Metered Generating Facilities* (Form 79-1174-02), including all supporting documents and payments as described in the Application; (2) a signed and completed *Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Generating Facility Sized Greater than 1,000 kW* (Form 79-1198-02); and (3) a copy of the Customer-Generator's final inspection clearance from the governmental authority having jurisdiction over the Generating Facility. Such approval shall not be unreasonably withheld. PG&E shall have the right to have representatives present at the Commissioning Test as defined in Rule 21.



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Customer-Generator shall notify PG&E at least five (5) business days prior to the initial testing.

- 6.4 In order to promote the safety and reliability of the customer Generating Facility, the Customer-Generator certifies that as a part of this interconnection request for NEM2, that all major solar system components are on the verified equipment list maintained by the California Energy Commission and certifies that other equipment, as determined by PG&E, has safety certification from a nationally recognized testing laboratory.
- 6.5 Customer-Generator certifies as a part of this interconnection request for NEM2 that
- (i) a warranty of at least 10 years has been provided on all equipment and on its installation, or
 - (ii) a 10-year service warranty or executed "agreement" has been provided ensuring proper maintenance and continued system performance.
- 6.6 Customers on this tariff must pay for the interconnection of their Generation Facilities as provided in Electric Rule 21, pursuant to Decision 16-01-044.

7. LIMITATION OF LIABILITY

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages of any kind whatsoever.

8. INSURANCE

Customer-Generator Facility is required to comply with standards and rules set forth in Section 6 and provide the following for insurance policies in place.

Customer-Generator shall furnish the required certificates and all endorsements to PG&E prior to Parallel Operation.

The certificate shall provide thirty (30) calendar days' written notice to PG&E prior to cancellation, termination, alteration, or material change of such insurance.

PG&E shall have the right to inspect or obtain a copy of the original policy or policies of insurance.

- 8.1 If at any time during this agreement the Customer-Generator fails to meet the requirements in Section 6 and is not self-insured under Section 8.3, the following insurance shall apply:

Customer-Generator shall procure and maintain a commercial general liability insurance policy at least as broad as the Insurance Services Office (ISO) commercial general liability coverage "occurrence" form; or, if Customer-Generator is an individual, then liability coverage with respect to premises and use at least as broad as the ISO homeowners' or personal liability Insurance occurrence policy form, or substitute, providing equivalent coverage no less than the following limits, based on generator size:



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(a) — Two million dollars (\$2,000,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is greater than one hundred (100) kW; or

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- ~~(b)~~(a) One million dollars (\$1,000,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is greater than twenty (20) kW and less than or equal to one hundred (100) kW; or
- ~~(e)~~(b) Five hundred thousand dollars (\$500,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is twenty (20) kW or less;
- ~~(d)~~(c) Two hundred thousand dollars (\$200,000) for each occurrence if the Gross Nameplate Rating of the Generating Facility is ten (10) kW or less and the Generating Facility is connected to an account receiving residential service from PG&E.

The insurance shall, by endorsement:

- (a) Add PG&E as an additional insured;
 - (b) State that coverage provided is primary and is not in excess to or contributing with any insurance or self-insurance maintained by PG&E.
 - (c) Contain a severability of interest clause or cross-liability clause.
- 8.2 If Customer-Generator's Generating Facility is connected to an account receiving residential service from PG&E and the requirement of Section 8.1 prevents Customer-Generator from obtaining the insurance required in this Section, then upon Customer-Generator's written Notice to PG&E in accordance with Section 10.1, the requirements of Section 8.1 may be waived.
- 8.3 Customer-Generator may self-insure with approval from PG&E. Evidence of an acceptable plan to self-insure, at least thirty (30) calendar days' prior to operations shall be submitted. Customer-Generators such as state agencies that self-insure under this section are exempt from Section 9.1.

If Customer-Generator ceases to self-insure to the level required hereunder, or if Customer-Generator is unable to provide continuing evidence of Customer-Generator's ability to self-insure, Customer-Generator agrees to immediately obtain the coverage required under agreement.

- 8.4 All required certificates, endorsements or letters of self-insurance shall be issued and submitted via email to the following:

Pacific Gas and Electric Company
Attn: Insurance Department
77 Beale St.
San Francisco, CA 94105



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9. INDEMNITY FOR FAILURE TO COMPLY WITH INSURANCE PROVISIONS

- 9.1 If Customer-Generator fails to comply with the insurance provisions of this Agreement, Customer-Generator shall, at its own cost, defend, save harmless and indemnify PG&E, its directors, officers, employees, agents, assignees, and successors in interest from and against any and all loss, liability, damage, claim, cost, charge, demand, or expense of any kind or nature (including attorney's fees and other costs of litigation) resulting from the death or injury to any person or damage to any property, including the personnel and property of the utility, to the extent that the utility would have been protected had Customer-Generator complied with all such insurance provisions. The inclusion of this Section 9.1 is not intended to create any expressed or implied right in Customer-Generator to elect not to provide any such required insurance.
- 9.2 The provisions of this Section 9 shall not be construed to relieve any insurer of its obligations to pay any insurance claims in accordance with the provisions of any valid insurance policy.

10. NOTICES

- 10.1 Any written notice, demand, or request required or authorized in connection with this Agreement (Notice) shall be deemed properly given if delivered in person or sent by first class mail, postage prepaid, to the person specified below:

If to PG&E: Pacific Gas and Electric Company
Attention: Electric Grid Interconnection – Contract Management
P.O. Box 770000
Mail Code N7L
San Francisco, CA 94177
Email: EGIContractMgmt@pge.com

If to Customer-Generator:

Customer-Generator Name: _____
Address: _____
City: _____
Phone: (____) _____
FAX: (____) _____

- 10.2 A Party may change its address for Notices at any time by providing the other Party notice of the change in accordance with Section 10.1.
- 10.3 The Parties may also designate operating representatives to conduct the daily communications, which may be necessary or convenient for the administration of this Agreement. Such designations, including names, addresses, and phone numbers may be communicated or revised by one Party's Notice to the other.

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11. REVIEW OF RECORDS AND DATA

- 11.1 PG&E shall have the right to review and obtain copies of Customer-Generator's operations and maintenance records, logs, or other information such as Generating Facility availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to Customer-Generator's Generating Facility or its interconnection to PG&E.
- 11.2 Customer-Generator authorizes to release to the California Energy Commission (CEC) information regarding Customer-Generator's facility, including customer name and Generating Facility location, size, and operational characteristics, as requested from time to time pursuant to the CEC's rules and regulations.

12. ASSIGNMENT

Customer-Generator shall not voluntarily assign its rights nor delegate its duties under this Agreement without PG&E's written consent. Any assignment or delegation Customer-Generator makes without PG&E's written consent shall not be valid. PG&E shall not unreasonably withhold its consent to Customer-Generator's assignment of this Agreement.

13. NON-WAIVER

None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.

14. GOVERNING LAW, JURISDICTION OF COMMISSION, INCLUSION OF PG&E's TARIFF SCHEDULES AND RULES

- 14.1 This Agreement shall be interpreted, governed, and construed under the laws of the State of California as if executed and to be performed wholly within the State of California without giving effect to choice of law provisions that might apply to the law of a different jurisdiction.
- 14.2 This Agreement shall, at all times, be subject to such changes or modifications by the Commission as it may from time to time direct in the exercise of its jurisdiction.
- 14.3 The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the Tariff Schedules and Rules applicable to the electric service provided by PG&E, which Tariff Schedules and Rules are hereby incorporated into this Agreement by this reference.
- 14.4 Notwithstanding any other provisions of this Agreement, PG&E shall have the right to unilaterally file with the Commission, pursuant to the Commission's rules and regulations, an application for change in rates, charges, classification, service, tariff or rule or any agreement relating thereto.

15. AMENDMENT AND MODIFICATION

This Agreement can only be amended or modified by a writing signed by both Parties.



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16. ENTIRE AGREEMENT

This Agreement, including any incorporated Tariff Schedules and Rules, contains the entire Agreement and understanding between the Parties, their agents, and employees as to the subject matter of this Agreement. Each party also represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement or in the incorporated Tariff Schedules and Rules.

17. SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

	<u>PACIFIC GAS AND ELECTRIC COMPANY</u>
<i>(Customer Generator's Name)</i>	
<i>(Signature)</i>	<i>(Signature)</i>
<i>(Print Name)</i>	<i>(Print Name)</i>
<i>(Title)</i>	<i>(Title)</i>
<i>(Date)</i>	<i>(Date)</i>

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ATTACHMENT A

Additional Terms and Conditions for Projects Requiring Interconnection Facilities and/or Upgrades to PG&E's Distribution and/or Transmission System

Section 1. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

1.1. Interconnection Facilities

1.1.1. The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Attachment B of this Agreement. The Distribution Provider shall provide a best estimate cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Distribution Provider.

1.1.2. The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Distribution Provider's Interconnection Facilities.

1.1.3. If the provisions of PG&E's Rule 21, or any other tariff or rule approved by the Commission, requires PG&E to own and operate a portion of the Interconnection Facilities, Producer and PG&E shall promptly execute a Special Facilities Agreement that establishes and allocates responsibility for the design, installation, operation, maintenance, and ownership of the Interconnection Facilities. This Special Facilities Agreement shall be attached to and made a part of this Agreement as Attachment D.

1.2. Distribution Upgrades

The Distribution Provider shall design, procure, construct, install, and own the Distribution Upgrades described in a Special Facilities Agreement attached to and made a part of this Agreement as Attachment D. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.
~~The Distribution Provider shall design, procure, construct, install, and own the Distribution Upgrades described in Attachment B of this Agreement. If the Distribution Provider and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.~~

Section 2. Cost Responsibility for Network Upgrades

2.1. Applicability

No portion of this Section ~~25~~ shall apply unless the interconnection of the Generating Facility requires Network Upgrades.

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2.2. Network Upgrades

The Distribution Provider or the Distribution Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment B of this Agreement. If the Distribution Provider and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Distribution Provider elects to pay for Network Upgrades, the ~~actual~~ cost of the Network Upgrades, including overheads, shall be borne by the Interconnection Customer unless Section 2.2.1 directs otherwise.

2.2.1. Repayment of Amounts Advanced for Network Upgrades

To the extent that the CAISO Tariff provides for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, the Interconnection Customer shall be entitled to a cash repayment, equal to the total amount paid to the Distribution Provider and Affected System operator, if any, for Network Upgrades, including any tax gross-up or other tax-related payments associated with the Network Upgrades, and not otherwise refunded to the Interconnection Customer, to be paid to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Distribution Provider's Tariff and Affected System's Tariff for transmission services with respect to the Generating Facility. Any repayment shall include interest calculated in accordance with the methodology set forth in FERC's regulations at 18 C.F.R. §35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. The Interconnection Customer may assign such repayment rights to any person. To the extent that the CAISO Tariff does not provide for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, Interconnection Customer is not entitled to a cash repayment for amounts paid to the Distribution Provider and Affected System operator for Network Upgrades, and no cash repayment shall be made pursuant to this Agreement.

2.2.1.1. If the Interconnection Customer is entitled to a cash repayment pursuant to Section 2.2.1, the Interconnection Customer, the Distribution Provider, and any applicable Affected System operators may adopt any alternative payment schedule that is mutually agreeable so long as the Distribution Provider and said Affected System operators take one of the following actions no later than five years from the Commercial Operation Date: (1) return to the Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that the Distribution Provider or any applicable Affected System operators will continue to provide payments to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond twenty (20) years from the commercial operation date.

2.2.1.2. If the Generating Facility fails to achieve commercial operation, but it



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or another generating facility is later constructed and requires use of the Network Upgrades, the Distribution Provider and Affected System operator shall at that time reimburse the Interconnection Customer for the amounts advanced for the Network Upgrades if the Interconnection Customer is entitled to a cash repayment pursuant to Section 2.2.1. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the generating facility, if different, is responsible for identifying the entity to which reimbursement must be made.

2.3. Rights Under Other Agreements

Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Generating Facility.

~~Section 3. Billing, Payment, Milestones, and Financial Security~~

~~3.1. Billing and Payment Procedures and Final Accounting~~

~~3.1.1. The Distribution Provider shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs, including any applicable taxes, of Interconnection Facilities and Upgrades contemplated by this Agreement on a monthly basis, or as otherwise agreed by the Parties. The Interconnection Customer shall pay each bill within 30 calendar days of receipt, or as otherwise agreed to by the Parties.~~

~~3.1.2. Within twelve months of completing the construction and installation of the Distribution Provider's Interconnection Facilities and/or Upgrades described in the Attachments to this Agreement, the Distribution Provider shall provide the Interconnection Customer with a final accounting report of any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such facilities or Upgrades, and (2) the Interconnection Customer's previous aggregate payments to the Distribution Provider for such facilities or Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous aggregate payments, the Distribution Provider shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the Distribution Provider within 30 calendar days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Distribution Provider shall refund to the Interconnection Customer an amount equal to the difference within 30 calendar days of the final accounting report.~~

~~3.2. Expected Date of Initial Operation~~



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3.3. Financial Security Arrangements

~~For projects studied under the Fast Track Interconnection Review Process, no more than 120 Calendar Days after the Effective Date of this agreement, the Interconnection Customer shall provide the Distribution Provider, at the Interconnection Customer's option, a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the Distribution Provider and is consistent with the Uniform Commercial Code of the jurisdiction where the Point of Interconnection is located.~~

~~For projects studied under the Detailed Study Interconnection Review Process, The Interconnection Customer is obligated to provide all necessary Interconnection Financial Security required under Rule 21 Section F.4.~~

~~Regardless of Review Process, such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Distribution Provider's Interconnection Facilities and Upgrades and shall be reduced on a dollar-for-dollar basis for payments made to the Distribution Provider under this Agreement during its term.~~

~~In addition:~~

~~3.3.1. The guarantee must be made by an entity that meets the creditworthiness requirements of the Distribution Provider, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.~~

~~3.3.2. The letter of credit or surety bond must be issued by a financial institution or insurer reasonably acceptable to the Distribution Provider and must specify a reasonable expiration date.~~

Section 43. Taxes

43.1. Applicable Tax Laws and Regulation

The Parties agree to follow all applicable tax laws and regulations, consistent with CPUC policy and Internal Revenue Service requirements.

~~34.1.1 In the application of IRS Notice 2016-36, any Income Tax Component of Contribution (ITCC) for Interconnection Facilities, Distribution Upgrades and Network Upgrades (based on the enclosed estimates) will be billed to the Interconnection Customer and collected by the Distribution Provider as per Section 3.1.1. The Distribution Provider shall true-up the final ITCC charges based on actual final costs and will either refund any excess ITCC collected by the Distribution Provider or bill the Interconnection Customer the additional ITCC charges that are required.~~

43.2. Maintenance of Tax Status

Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect the Distribution Provider's ~~tax exempt~~tax-exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

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Section **54.** Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

Section **65.** Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

65.1 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Distribution Provider be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

65.2 The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT B

Final Study Report Including Description and Costs of the Generating Facility, Interconnection Facilities, Metering Equipment, Distribution and/or Network Upgrades ~~and Cost Responsibility~~

Final study report includes equipment, including the Generating Facility, Interconnection Facilities, and metering equipment itemized and identified as being owned by the Interconnection Customer, the Distribution Provider, or the Distribution Owner. The Distribution Provider will provide a best estimate itemized cost, including overheads, of its Interconnection Facilities and metering equipment, and a best estimate itemized cost of the annual operation and maintenance expenses associated with its Interconnection Facilities and metering equipment. Additionally, NEM program specific information relating to the Interconnection Customer's Generating Facility and any associated arrangements (i.e. NEM2, NEM2A, NEM2MT, NEM2V, NEM2VMSH (1 SDP), and NEMVMSH (DEV)) will be set forth in this attachment.

Final study report includes description of Upgrades and provides an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. The Distribution Provider shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.

Total Project Costs:

Cost Category	Amount Subject to Cost of Ownership (\$)	Amount NOT Subject to Cost of Ownership (\$)	Total Cost Category Amount (\$)
~~Interconnection Facilities Costs- (from final study Cost Estimate)~~			
~~Distribution Upgrade Costs- (from final study Cost Estimate)~~			
Total Project Costs			



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

The Interconnection Customer has elected the following by placing a check mark against it for Cost-of-Ownership for the applicable Interconnection Facilities and/or Distribution Upgrade. Details on the scope that is subject to Cost-of-Ownership are found in the Final Study Report cost table in Attachment B for Interconnection Facilities and Distribution Upgrades. These Cost-of-Ownership charges shall commence on the date Special Facilities are first available for Applicant's use, as such date is established in PG&E's records. PG&E will notify Applicant, in writing, of such commencement date.

A. ☐ Monthly Cost of Ownership Charge

\$ _____ x _____ (current percentage rate) = \$ _____

B. ☐ Equivalent One-Time Charge (in lieu of recurring Monthly Cost of Ownership Charge)

\$ _____ / month x 12 months x _____ (present worth factor) = \$ _____



**INTERCONNECTION AGREEMENT FOR NET
ENERGY METERING (NEM2) AND RENEWABLE
ELECTRICAL GENERATING FACILITY SIZED
GREATER THAN 1,000 kW**

ATTACHMENT C

Expected Date of Initial Operation

~~Interconnection Customer may request Distribution Provider to construct, and Distribution Provider shall construct, using Reasonable Efforts to accommodate Interconnection Customer's Expected Date of Initial Operation. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Uncontrollable Force Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone and propose the earliest reasonable alternate date by which it can attain this and future milestones.~~

~~Expected Date of Initial Operation: _____~~

~~For the Interconnection Customer _____ Date _____~~



*Pacific Gas and
Electric Company®*

**INTERCONNECTION AGREEMENT FOR NET
ENERGY METERING (NEM2) AND RENEWABLE
ELECTRICAL GENERATING FACILITY SIZED
GREATER THAN 1,000 kW**

ATTACHMENT ~~CD~~

Rule 21 Special Facilities Agreement
(Formed by the Parties)

**INTERCONNECTION AGREEMENT FOR NET
ENERGY METERING (NEM2) AND RENEWABLE
ELECTRICAL GENERATING FACILITY SIZED
GREATER THAN 1,000 kW**

ATTACHMENT DE

**NEM2V or NEM2VMSH Storage
(when applicable)**

Applicants adding storage pursuant to Schedules NEM2V or NEM2VMSH under the Special Condition for storage must include proper documentation per PG&E's Distribution Interconnection Handbook (DIH).

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

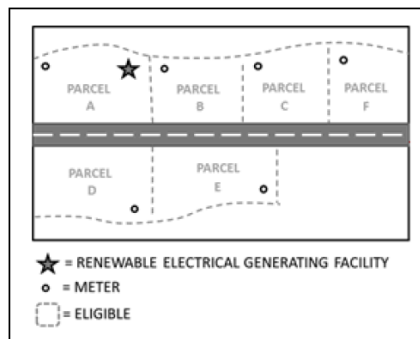
ATTACHMENT E

NEM Load Aggregation Customer-Generator Declaration Warranting NEM2 Aggregation Is Located on Same or Adjacent or Contiguous Property to Generator Parcel (when applicable)

In accordance with Schedule NEM2, I, Customer-Generator represent and warrant under penalty of perjury that:

1. The total annual output in kWh of the generator is less than or equal to 100% of the annual aggregated electrical load in kWh of the meters associated with the generator account, including the load on the generating account itself (before being offset by the generator); and
2. Each of the aggregated account meters associated with this NEM2 generator account are located either:
 - a. on the property where the renewable electrical generation facility is located, or
 - b. are located within an unbroken chain of contiguous parcels that are all solely owned, leased or rented by the customer-generator. For purposes of Load Aggregation, parcels that are divided by a street, highway, or public thoroughfare are considered contiguous, provided they are within an unbroken chain of otherwise contiguous parcels that are all solely owned leased or rented by the customer-generator.

For example, assume there are five parcels (A, B, C, D, E, and F) that form a cluster of contiguous parcels and D and E are separated from A, B, C and F by a street, highway, or public thoroughfare. For the purposes of participating in Load Aggregation, all five parcels are considered contiguous, provided they are otherwise contiguous and all are solely owned, leased or rented by the customer-generator. Refer to the diagram at left (for illustrative purposes only.)



3. PG&E reserves the right to request a parcel map to confirm the property meets the requirements of item 2 above; and
4. Customer-Generator agrees to notify PG&E if there is any change of status that makes any of the participating meters ineligible for meter aggregation to ensure that only eligible meters are participating; PG&E will require an updated Attachment and Declaration form; and
5. Upon request by PG&E, I agree to provide documentation that all aggregated meters meet the requirements of Rate Schedule NEM2 Special Condition 6 including but not limited to parcel maps and ownership records.

Customer Generator's Name

Signature

Date

Type/Print Name

Title

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT F

Addendum for Net Energy Metering Multiple Tariff (when applicable)

This Addendum represents mutual agreement between PG&E and Customer to provide for an interim arrangement to accommodate interconnection under Interconnection Agreement for Net Energy Metering (NEM2) and Renewable Electrical Generating Facility Sized Greater Than 1,000 kW consistent with the multiple tariff treatment provided in PG&E Schedule NEM, Special Condition 4 (NEMMT). The Parties enter into this Addendum pursuant to Rule 21 Section H.1.f.

1. MULTIPLE TARIFF GENERATING FACILITY DESCRIPTION

1.1. In addition to the requirements of Electric Rule 21 and the GIA, Customer will abide by the requirements in the interconnection and operation of its Generating Facility described below.

1.2. The Gross Nameplate Rating of the Generating Facility is:

1.2.1. Eligible Generator(s):

Biomass	NEM1: _____kW NEM2: _____kW	Digester gas	NEM1: _____kW NEM2: _____kW
Solar thermal	NEM1: _____kW NEM2: _____kW	Municipal solid waste	NEM1: _____kW NEM2: _____kW
Photovoltaic	NEM1: _____kW NEM2: _____kW	Landfill gas	NEM1: _____kW NEM2: _____kW
Wind	NEM1: _____kW NEM2: _____kW	Ocean wave	NEM1: _____kW NEM2: _____kW
Geothermal	NEM1: _____kW NEM2: _____kW	Ocean thermal	NEM1: _____kW NEM2: _____kW
Fuel cell	NEM1: _____kW NEM2: _____kW	Tidal current	NEM1: _____kW NEM2: _____kW
Small hydroelectric generation	NEM1: _____kW NEM2: _____kW	Storage/Batteries (NEM eligible only) _____amp hours _____ inverter kW	NEM1: _____kW NEM2: _____kW



INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

1.2.2. Non-Eligible Generator(s): _____ kW

1.2.3. Total Gross Nameplate Rating of the Generating Facility: _____ kW

1.3. The Net Nameplate Rating of the Generating Facility is:

1.3.1. Eligible Generator(s):

Biomass	NEM1: _____ kW NEM2: _____ kW	Digester gas	NEM1: _____ kW NEM2: _____ kW
Solar thermal	NEM1: _____ kW NEM2: _____ kW	Municipal solid waste	NEM1: _____ kW NEM2: _____ kW
Photovoltaic	NEM1: _____ kW NEM2: _____ kW	Landfill gas	NEM1: _____ kW NEM2: _____ kW
Wind	NEM1: _____ kW NEM2: _____ kW	Ocean wave	NEM1: _____ kW NEM2: _____ kW
Geothermal	NEM1: _____ kW NEM2: _____ kW	Ocean thermal	NEM1: _____ kW NEM2: _____ kW
Fuel cell	NEM1: _____ kW NEM2: _____ kW	Tidal current	NEM1: _____ kW NEM2: _____ kW
Small hydroelectric generation	NEM1: _____ kW NEM2: _____ kW	Storage/Batteries (NEM eligible only) _____ amp hours _____ inverter kW	NEM1: _____ kW NEM2: _____ kW

1.3.2. Non-Eligible Generator(s): _____ kW

1.3.3. Total Net Nameplate Rating of the Generating Facility: _____ kW

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

1.4. The maximum level of power that may be exported by the Generating Facility to PG&E's Electric System is expected to be:

Biomass	NEM1: _____ kW NEM2: _____ kW	Digester gas	NEM1: _____ kW NEM2: _____ kW
Solar thermal	NEM1: _____ kW NEM2: _____ kW	Municipal solid waste	NEM1: _____ kW NEM2: _____ kW
Photovoltaic	NEM1: _____ kW NEM2: _____ kW	Landfill gas	NEM1: _____ kW NEM2: _____ kW
Wind	NEM1: _____ kW NEM2: _____ kW	Ocean wave	NEM1: _____ kW NEM2: _____ kW
Geothermal	NEM1: _____ kW NEM2: _____ kW	Ocean thermal	NEM1: _____ kW NEM2: _____ kW
Fuel cell	NEM1: _____ kW NEM2: _____ kW	Tidal current	NEM1: _____ kW NEM2: _____ kW
Small hydroelectric generation	NEM1: _____ kW NEM2: _____ kW	Storage/Batteries (NEM eligible only) _____ amp hours _____ inverter kW	NEM1: _____ kW NEM2: _____ kW

1.4.1. Non-Eligible Generator(s): _____ kW

1.4.2. Total maximum level of power that may be exported by the Generating Facility:
_____ kW

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT G

Producer's Warranty that the Generating Facility is a "Cogeneration Facility" Pursuant to Section 216.6 of the California Public Utilities Code (when applicable)

For the purpose of securing the Competition Transition Charge exemption available under Section 372 of the PU Code, Producer hereby declares that the Generating Facility meets the requirements for Cogeneration as such term is used in Section 216.6 of the PU Code (Cogeneration Requirements).

Producer warrants that, beginning on the date of Initial Operation and continuing throughout the term of this Agreement, the Generating Facility shall continue to meet the Cogeneration Requirements. If Producer becomes aware that its Generating Facility has ceased to meet the Cogeneration Requirements, Producer shall promptly provide PG&E with Notice of such change pursuant to Section 9.1 of the Agreement. If at any time during the term of this Agreement PG&E determines in its reasonable discretion that Producer's Generating Facility may no longer meet the Cogeneration Requirements, PG&E may require Producer to provide evidence that the Generating Facility continues to meet the Cogeneration Requirements within 15 business days of PG&E's request for such evidence. Additionally, PG&E may periodically (typically, once per year) inspect Producer's Generating Facility and/or require documentation from Producer to monitor the Generating Facility's compliance with the Cogeneration Requirements. If PG&E determines in its reasonable judgment that Producer either failed to provide evidence in a timely manner or that it provided insufficient evidence that its Generating Facility continues to meet the Cogeneration Requirements, then the Cogeneration status of the Generating Facility shall be deemed ineffective until such time as Producer again demonstrates to PG&E's reasonable satisfaction that the Generating Facility meets the requirements for a Cogeneration facility (the Cogeneration Status Change).

PG&E shall revise its records and the administration of this Agreement to reflect the Cogeneration Status Change and provide Notice to Producer of the Cogeneration Status Change pursuant to Section 9.1 of this Agreement. Such Notice shall specify the effective date of the Cogeneration Status Change. This date shall be the first day of the calendar year for which PG&E determines in its reasonable discretion that the Generating Facility first ceased to meet the Cogeneration Requirements. PG&E shall invoice the Producer's electric service account through which the Generating Facility is Interconnected with PG&E's Electric System for Competition Transition Charges (CTCs) that were not previously billed during the period between the effective date of the Status Change and the date of the Notice in reliance upon Producer's representations that the Generating Facility complied with the Cogeneration Requirements and therefore was eligible for the exemption from CTCs available under Section 372 of the PU Code.

Any amounts to be paid or refunded by Producer, as may be invoiced by PG&E pursuant to the terms of this warranty, shall be paid to PG&E within 30 days of Producer's receipt of such invoice.

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT H

Producer's Warranty that the Generating Facility is an Eligible Biogas Electrical Generating Facility Pursuant to Section 2827.9 of the California Public Utilities Code (when applicable)

Producer has declared that the Generating Facility meets the requirements for an Eligible Biogas Electrical Generating Facility, as defined in Section 2827.9 of the California Public Utilities Code (Eligibility Requirements).

Producer warrants that, beginning on the date of Initial Operation and continuing throughout the term of this Agreement, its Generating Facility shall continue to meet the Eligibility Requirements. If Producer becomes aware that the Generating Facility has ceased to meet the Eligibility Requirements, Producer shall promptly provide PG&E with Notice of such change pursuant to Section 9.1 of the Agreement. If at any time during the term of this Agreement PG&E determines in its reasonable discretion that Producer's Generating Facility may no longer meet the Eligibility Requirements, PG&E may require Producer to provide evidence that the Generating Facility continues to meet the Eligibility Requirements within 15 business days of PG&E's request for such evidence. Additionally, PG&E may periodically (typically, once per year) inspect Producer's Generating Facility and/or require documentation from Producer to monitor the Generating Facility's compliance with the Eligibility Requirements. If PG&E determines in its reasonable judgment that Producer either failed to provide evidence in a timely manner or that it provided insufficient evidence that its Generating Facility continues to meet the Eligibility Requirements, then the Distributed Energy Resources Generation status of the Generating Facility shall be deemed ineffective until such time as Producer again demonstrates to PG&E's reasonable satisfaction that the Generating Facility meets the requirements for a Distributed Energy Resources Generation facility (the Eligibility Status Change).

PG&E shall revise its records and the administration of this Agreement to reflect the Eligibility Status Change and provide Notice to Producer of the Eligibility Status Change pursuant to Section 9.1 of this Agreement. Such Notice shall specify the effective date of the Eligibility Status Change. This date shall be the first day of the calendar year for which PG&E determines in its reasonable discretion that the Generating Facility first ceased to meet the Eligibility Requirements. PG&E shall invoice the Producer for any tariff charges that were not previously billed during the period between the effective date of the Eligibility Status Change and the date of the Notice in reliance upon Producer's representations that the Generating Facility complied with the Eligibility Requirements and therefore was eligible for the rate treatment available under the Net Energy Metering provisions of PG&E's Schedule NEM-BIO, Experimental Biogas Net Energy Metering.

Any amounts to be paid or refunded by Producer, as may be invoiced by PG&E pursuant to the terms of this warranty, shall be paid to PG&E within 30 days of Producer's receipt of such invoice.

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT I

Schedule NEM2 Customer-Generator Warranty that it Meets the Requirements for an Eligible Customer-Generator and is an Eligible Renewable Electrical Generation Facility Pursuant to Section 2827.1 of the California Public Utilities Code (when applicable)

(This Affidavit needs to be completed and submitted to PG&E by the Customer-Generator every time a new NEM2 interconnection agreement for a Renewable Electrical Generation Facility is executed or whenever there is a change in ownership of the Generating Facility).

Check Type of Renewable Electrical Generation Facility:

☐ biomass	☐ geothermal	☐ municipal solid waste
☐ solar thermal	☐ fuel cell	☐ landfill gas
☐ small hydroelectric generation	☐ ocean wave	☐ digester gas
☐ ocean thermal	☐ tidal current	☐ Storage/Batteries _____ amp hours _____ inverter kWh

NEM2 Customer-Generator (Customer) declares that:

- (1) It meets the requirements to be an “Eligible Customer-Generator” and it’s Generating Facility.
- (2) (a) meets the requirements of an “Renewable Electrical Generation Facility”, as defined in Section 2827(b)(5) of the California Public Utilities Code and
(b) satisfies the definitions of the renewable resource for the Renewable Electrical Generation Facility in the latest version of the California Energy Commission’s (CEC’s) Renewables Portfolio Standard (RPS) Eligibility Guidebook and the Overall Program Guidebook. ³ (Eligibility Requirements).

³ The RPS Guidebooks can be found at: <https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard>

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

Included in these eligibility requirements (check as applicable) pursuant to Public Utilities Code section 2827(b)(5) and Public Resource Code Section 25741 paragraph 1(a):

- ☐ If the Renewable Electrical Generation Facility is a fuel cell, or otherwise uses renewable biogas or otherwise, Eligible Customer-Generator warrants that the fuel cell is powered solely with renewable fuel.
- ☐ If the Renewable Electrical Generation Facility is a Small hydroelectric generating facility, customer warrants that it will not cause an adverse impact on instream beneficial uses, nor cause a change in the volume or timing of streamflow).

If the Customer uses biogas or a renewable fuel as the fuel for their Renewable Electrical Generation Facility:

- ☐ Eligible Customer-Generator warrants that the Renewable Electrical Generation Facility is powered solely with renewable fuel.

Eligible Customer-Generator warrants that, beginning on the date of Initial Operation and continuing throughout the term of this Agreement, Eligible Customer-Generator and the Generating Facility shall continue to meet the Eligibility Requirements. If Eligible Customer-Generator or the Generating Facility ceases to meet the Eligibility Requirements, Eligible Customer-Generator shall promptly provide PG&E with Notice of such change pursuant to Section 11 of this Agreement. If at any time during the term of this Agreement PG&E determines, at its reasonable discretion, that Eligible Customer-Generator or Generating Facility may no longer meet the Eligibility Requirements, PG&E may require Eligible Customer-Generator to provide evidence, that Eligible Customer-Generator and/or Generating Facility continues to meet the Eligibility Requirements, within 20 business days of PG&E's request for such evidence. Additionally, PG&E may periodically (typically, once per year) inspect Producer's Generating Facility and/or require documentation from Eligible Customer-Generator to monitor the Generating Facility's compliance with the Eligibility Requirements – PG&E will provide a minimum of 10 business days notice to the Eligible Customer-Generator should PG&E decide an inspection is required. If PG&E determines in its reasonable judgment that Eligible Customer-Generator either failed to provide evidence in a timely manner or that it provided insufficient evidence that its Generating Facility continues to meet the Eligibility Requirements, then the Eligibility Status shall be deemed ineffective until such time as Eligible Customer-Generator again demonstrates to PG&E's reasonable satisfaction that Eligible Customer-Generator meets the requirements for an Eligible Customer-Generator and/or the Generating Facility meets the requirements for a Eligible electrical generating facility (the Eligibility Status Change).

PG&E shall revise its records and the administration of this Agreement to reflect the Eligibility Status Change and provide Notice to Eligible Customer-Generator of the Eligibility Status Change pursuant to Section 11 of this Agreement. Such Notice shall specify the effective date of the Eligibility Status Change. This date shall be the first day of the calendar year for which PG&E determines in its reasonable discretion that the Eligible Customer-Generator and/or Generating Facility first ceased to meet the Eligibility Requirements. PG&E shall invoice the Eligible Customer-Generator for any tariff charges that were not previously billed during the period between the effective date of the Eligibility Status Change and the date of the Notice in reliance upon Eligible Customer-Generator's representations that Eligible Customer-Generator and/or Generating Facility complied with the Eligibility Requirements and therefore was eligible for the rate treatment available under the Net Energy Metering provisions of PG&E's Schedule NEM2 Net Energy Metering Service for Eligible Customer-Generators.



**INTERCONNECTION AGREEMENT FOR NET
ENERGY METERING (NEM2) AND RENEWABLE
ELECTRICAL GENERATING FACILITY SIZED
GREATER THAN 1,000 kW**

Any amounts to be paid or refunded by Eligible Customer-Generator, as may be invoiced by PG&E pursuant to the terms of this warranty, shall be paid to PG&E within 30 days of Eligible Customer-Generator's receipt of such invoice.

Unless otherwise ordered by the CPUC, this Agreement at all times shall be subject to such modifications as the CPUC may direct from time to time in the exercise of its jurisdiction.

I certify the above is true and correct,

Customer-Generator Signature: _____

Name: _____

Title: _____

Date: _____

INTERCONNECTION AGREEMENT FOR NET ENERGY METERING (NEM2) AND RENEWABLE ELECTRICAL GENERATING FACILITY SIZED GREATER THAN 1,000 kW

ATTACHMENT J

Operating Requirements for Energy Storage Device(s) (when applicable)

The following Operating Requirement(s) apply to the charging functions of the Generating Facility:

- ☐ Producer's storage device(s) will not consume power from Distribution Provider's Distribution System at any time.
- ☐ Producer's storage device(s) will not cause the Host Load to exceed its normal peak demand. Normal peak demand is defined as the highest amount of power required from the Distribution System by Producer's complete facilities without the influence or use of the energy storage device(s).
- ☐ To avoid upgrades or other technical mitigation items identified in the interconnection process, Producer has chosen the following Generating Facility operating constraint(s):

For the annual period between _____ [Month/Day] and _____ [Month/Day]

And during the hours of _____

The storage device(s) will consume no more than a total of ____ kW from the Distribution System.

This operating constraint voids the need for the following specific mitigation scope:

No other charging function limitation is required for this Generating Facility except the requirements above. Producer will be responsible for the costs of the corresponding upgrades or other technical mitigations if at any time the Producer elects to forego or violates the operating requirement.

Consistent with current load service Rules, Distribution Provider is not required to reserve capacity for load. Producer is responsible to contact the utility for any modification to its equipment or change in operations that may result in increased load demand per Electric Rule 3.C.

If any operating requirement is specified above, Distribution Provider reserves the right to ask for data at the 15-minute interval level at any time to verify that the operating requirement is being met. Distribution Provider will make such request via a written notice no more than once per calendar quarter. Producer must provide such data within 30 Calendar Days of the written request.

If the Generating Facility fails to adhere to the operating requirements at any time, it will be disconnected immediately in accordance with Rule 21 Section D.9 and not reconnected until an approved mitigation (e.g., supervising controls) is in place as determined by Distribution Provider.



**INTERCONNECTION AGREEMENT FOR NET
ENERGY METERING (NEM2) AND RENEWABLE
ELECTRICAL GENERATING FACILITY SIZED
GREATER THAN 1,000 kW**

ATTACHMENT K

**NEMFC Customer Agreement Starting January 1, 2017 Until California Air
Resources Board Emission Standard is Established (when applicable)**

Starting January 1, 2017, Customer applying for Schedule NEMFC, as revised pursuant to Assembly Bill 1637 (2016), agree as follows:

That their Eligible Fuel Cell Electrical Generating Facility must meet the reduction in greenhouse gas emissions standard to be established as required by the California Public Utilities (PU) Code Section 2827.10.

Since the applicable standards are not yet released by the California Air Resources Board (ARB) and/or approved as may be needed by the California Public Utilities Commission (CPUC), Customer agrees and understands that their approval for participation in NEMFC is contingent on their system meeting the new standard within three months of when the new standard becomes available. Specifically, I, Customer, understand and agree that if my fuel cell generator does not meet the ARB emission standard I will not be eligible for NEMFC.

Specifically, I will be responsible for the following:

1. Payment of all interconnection costs, including fees, studies, system upgrades, and any other pertinent interconnection costs.
2. Payment of the following nonbypassable charges on all departed load served by the fuel cell installed at my premises including but not limited to,
 - a. Public Purpose Program Charges;
 - b. Nuclear Decommissioning;
 - c. Department of Water Resources Bond Charges; and
 - d. Competition Transition Charge;
 - e. Other charges that the CPUC determines are to be charged on departed load and for which there is no exception for fuel cells pursuant to Schedule E-DCG.
3. I understand that I may be required to take service on standby tariff pursuant to Schedule S and pursuant to PU Code Section 2827.10(f)(2)(A).
4. I further understand that I will not be eligible for Rate Schedule NEMFC and will no longer receive any credit for any exports to the grid.

(Company Name)

(Signature)

(Print Name)

(Title)

(Date)



Electric Sample Form No. 79-1200
Rule 21 Generator Interconnection
Agreement for Exporting Generating Facilities

Sheet 1

**Please Refer to Attached
Sample Form**

(Continued)

Advice 6757-E-A
Decision

Issued by
Meredith Allen
Vice President, Regulatory Affairs

Submitted
Effective
Resolution

January 5, 2023



*Pacific Gas and
Electric Company®*

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

**RULE 21
GENERATOR INTERCONNECTION AGREEMENT
FOR
EXPORTING GENERATING FACILITIES
BETWEEN
PACIFIC GAS AND ELECTRIC COMPANY
AND
[CUSTOMER NAME]
FOR PROJECT:
[Project Name]
[City, State Zip]

[PG&E Log I.D]
[Queue# XXXX-RD]**

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

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RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

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- 12.9 Security Arrangements
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Article 13. Notices

- 13.1 General
- 13.2 Billing and Payment
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- 13.5 Changes to the Notice Information

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Article 14. Signatures

Attachment 1A – Glossary of Terms

Attachment 2B – One-line Diagram Depicting the Generating Facility, Interconnection Facilities, Metering Equipment, and Upgrades Description and Costs of the Generating Facility, Interconnection Facilities, and Metering Equipment

Attachment 3C – Final Study Report Including Description and Costs of the Generating Facility, Interconnection Facilities, Metering Equipment, Distribution and/or Network Upgrades One-line Diagram Depicting the Generating Facility, Interconnection Facilities, Metering Equipment, and Upgrades

Attachment 4D – Milestones

Attachment 5E – Additional Operating Requirements for the Distribution Provider's Distribution System and Affected Systems Needed to Support the Interconnection Customer's Needs

Attachment 6F – PG&E's Agreement for Installation of Allocation of Special Facilities for Parallel Operation of Nonutility-Owned Generation and/or Electrical Standby Service (Form 79-280) (Special Facility Agreement), if applicable, (Formed by the Parties). Distribution Provider's Description of its Upgrades and Cost Responsibility



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

This Interconnection Agreement ("Agreement" or "GIA") is made and entered into this _____ day of _____, 20__, by _____ ("Distribution Provider"), and _____ ("Interconnection Customer") each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties."

Distribution Provider Information

[Contact information to be supplied]

Interconnection Customer Information

[Contact information to be supplied]

Interconnection Customer Application No: _____

WHEREAS, Interconnection Customer proposes to interconnect to the Distribution System;

WHEREAS, the basis for the Parties entering into this Agreement is that Interconnection Customer is a Qualifying Facility ("QF") and will sell all of its exports to the grid to the Distribution Provider under a power purchase agreement ("PPA") entered into pursuant to the Public Utility Regulatory Policies Act of 1978 ("PURPA"); or

WHEREAS, the basis for the Parties entering into this Agreement is:

(Insert Description or N/A)

THEREFORE, in consideration of the mutual covenants set forth herein, the Parties agree as follows:

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

Article 1. Scope and Limitations of Agreement

1.1. Applicability

This Agreement shall be used for an interconnection governed by the Distribution Provider's California Public Utilities Commission-("CPUC") approved Electric Rule 21 ("Rule 21") of a Generating Facility that sells all of its exports to the grid to the Distribution Provider. This Agreement is not applicable to NEM Producers, Non-Export Producers and non-compensated exporting Producers.

1.2. Purpose

This Agreement incorporates in its entirety the Distribution Provider's California Public Utilities Commission ("CPUC") approved Electric Rule 21 ("Rule 21"), subject to any modifications the CPUC may direct in the exercise of its jurisdiction. This Agreement governs the terms and conditions under which the Interconnection Customer's Generating Facility will interconnect with, and operate in parallel with, the Distribution Provider's Distribution System. In the event of inconsistency between this Agreement and the terms of Rule 21, the provisions of the latter shall control.

1.3. No Agreement to Purchase or Deliver Power

This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power. The purchase or delivery of power and other services that the Interconnection Customer may require will be covered under separate agreements, if any. The Interconnection Customer will be responsible for separately making all necessary arrangements (including scheduling) for delivery of electricity.

1.4. Limitations

Nothing in this Agreement is intended to affect any other agreement between the Distribution Provider and the Interconnection Customer.

1.5. Responsibilities of the Parties

1.5.1. The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.

1.5.2. The Interconnection Customer shall construct, interconnect, operate and maintain its Generating Facility and construct, operate, and maintain its Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, and in accordance with this Agreement, and with Good Utility Practice.

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- 1.5.3. The Distribution Provider shall construct, operate, and maintain its Distribution System, Transmission System, Interconnection Facilities, Distribution Upgrades and Network Upgrades in accordance with this Agreement, and with Good Utility Practice.
- 1.5.4. The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory, and Operating Requirements in effect at the time of construction and other applicable national and state codes and standards. The Interconnection Customer agrees to design, install, maintain, and operate its Generating Facility so as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the system or equipment of the Distribution Provider and any Affected Systems. The Interconnection Customer shall comply with the Distribution Provider's Interconnection Handbook. In the event of a conflict between the terms of this GIA and the terms of the Distribution Provider's Interconnection Handbook, the terms in this GIA shall govern.
- 1.5.5. Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of change of ownership. The Distribution Provider and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the Distribution Provider's Transmission System, Distribution System, personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Attachments to this Agreement.
- 1.5.6. The Distribution Provider shall coordinate with Affected Systems to support the interconnection.
- 1.5.7. The Interconnection Customer shall maintain QF status during the term of this Agreement.
- 1.6. **Parallel Operation Obligations**
- Once the Generating Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Generating Facility in the applicable balancing authority area, including, but not limited to; 1) the rules and procedures concerning the operation of generation set forth in Rule 21 or by the applicable system operator(s) for the Distribution Provider's Distribution System and; 2) the Operating Requirements set forth in Attachment 5 of this Agreement.

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1.7. Metering

The Interconnection Customer shall be responsible for the Distribution Provider's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair, and replacement of metering and data acquisition equipment specified in Attachments 2 and 3 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements. Nothing in this provision replaces or alters the metering requirements in the Interconnection Customer's PPA.

1.8. Reactive Power

1.8.1. The Interconnection Customer shall design its Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Interconnection and the Generating Facility shall be capable of operating within a power factor range of 0.9 leading to 0.9 lagging, unless the Distribution Provider has established different requirements that apply to all similarly situated generators in the balancing authority area on a comparable basis. Operation outside this range is acceptable provided the reactive power of the Generating Facility is used to meet the reactive power needs of the Host Loads or that reactive power is otherwise provided under tariff by Distribution Provider. The Interconnection Customer shall notify Distribution Provider if it is using the Generating Facility for power factor correction. Unless otherwise agreed upon by the Interconnection Customer and Distribution Provider, Generating Facilities shall automatically regulate power factor, not voltage, while operating in parallel with Distribution Provider's Distribution System.

1.9. Capitalized Terms

Capitalized Terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 or the body of this Agreement.

1.10. Smart Inverters

Producer certifies that their inverter-based Generating Facilities will upon receiving permission to operate from PG&E fully comply with Section Hh of Rule 21 that is in effect at the time the application is received, including configuration of protective settings and default settings, in accordance with the specifications therein.

Distribution Provider may require a field verification of the Interconnection Customer's inverter. Interconnection Customer further agrees to cooperate fully with any such request and make their inverter available to the Distribution Provider for such verification. Interconnection Customer understands that in the event the inverter is not set in accordance with Section Hh of Rule 21, Interconnection Customer will need to cease operation of generating facility until verification is confirmed by Distribution Provider.

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(Smart inverter models and firmware versions that comply with Rule 21 Section Hh can be found at <http://www.gosolarcalifornia.org/equipment/inverters.php>.)

Verification of compliance with such requirements shall be provided by the Interconnection Customer upon request by PG&E in accordance with PG&E's Electric Rule 21.

An "existing inverter" is defined as an inverter that meets one or more of the following conditions:

- (a) it is already approved by PG&E for interconnection prior to September 9, 2017
- (b) the Interconnection Customer has submitted the interconnection application prior to September 9, 2017,
- (c) the Interconnection Customer provides evidence of having applied for an electrical permit for the Generating Facility installation that is dated prior to September 9, 2017 and submitted a complete interconnection application¹ no later than March 31, 2018, or
- (d) the Interconnection Customer provides evidence of a final inspection clearance from the governmental authority having jurisdiction over the Generating Facility prior to September 9, 2017.

All "existing inverters" are not required to be Smart Inverters and are only subject to Section H of Rule 21. Interconnection Customer replacing an "existing inverter" certifies it is being replaced with either:

- (i) inverter equipment that complies with Section Hh of Rule 21, (encouraged); or
- (ii) a conventional inverter that is of the same size and equivalent ability to that of the inverter being replaced, as allowed in Rule 21 Section H.3.d.ii.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1. Equipment Testing and Inspection

2.1.1. Pursuant to Rule 21, the Interconnection Customer shall test and inspect its Generating Facility and Interconnection Facilities prior to

¹ A complete application consists all of the following without deficiencies:

- 1. A completed Interconnection Application including all supporting documents and required payments,
- 2. A completed signed Interconnection Agreement,
- 3. Evidence of the Interconnection Customer final inspection clearance from the governmental authority having jurisdiction over the generating system.

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interconnection. The Interconnection Customer shall notify the Distribution Provider of such activities no fewer than five Business Days (or as may be agreed to by the Parties) prior to such testing and inspection. Testing and inspection shall occur on a Business Day. The Distribution Provider may, at its own expense, send qualified personnel to the Generating Facility site to inspect the interconnection and observe the testing. The Interconnection Customer shall provide the Distribution Provider a written test report when such testing and inspection is completed.

- 2.1.2. The Distribution Provider shall provide the Interconnection Customer written acknowledgment that it has received the Interconnection Customer's written test report. Such written acknowledgment shall not be deemed to be or construed as any representation, assurance, guarantee, or warranty by the Distribution Provider of the safety, durability, suitability, or reliability of the Generating Facility or any associated control, protective, and safety devices owned or controlled by the Interconnection Customer or the quality of power produced by the Generating Facility.

2.2. Authorization Required Prior to Parallel Operation

- 2.2.1. The Distribution Provider shall use Reasonable Efforts to list applicable parallel operation requirements in Attachment 5 of this Agreement. Additionally, the Distribution Provider shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. The Distribution Provider shall make Reasonable Efforts to cooperate with the Interconnection Customer in meeting requirements necessary for the Interconnection Customer to commence parallel operations by the in-service date.
- 2.2.2. The Interconnection Customer shall not operate its Generating Facility in parallel with the Distribution Provider's Distribution System without prior written authorization of the Distribution Provider. The Distribution Provider will provide such authorization once the Distribution Provider receives notification that the Interconnection Customer has complied with all applicable parallel operation requirements. Such authorization shall not be unreasonably withheld, conditioned, or delayed.

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2.3. Right of Access

- 2.3.1. Upon reasonable notice, the Distribution Provider may send a qualified person to the premises of the Interconnection Customer at or immediately before the time the Generating Facility first operates in parallel to inspect the interconnection, and observe the commissioning of the Generating Facility (including any required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Distribution Provider at least five (5) Business Days prior to conducting any on-site verification testing of the Generating Facility.
- 2.3.2. Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Distribution Provider shall have access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.
- 2.3.3. Costs associated with this Article are subject to the relevant provisions of Rule 21.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1. Effective Date

This Agreement shall become effective upon execution by the Parties.

3.2. Term of Agreement

This Agreement shall become effective on the Effective Date and shall remain in effect for a period of _____ years from the Effective Date or such other longer period as the Parties may agree and shall be automatically renewed for each successive one-year period thereafter, unless terminated earlier in accordance with article 3.3 of this Agreement.

3.3. Termination

No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.

- 3.3.1. 1The Interconnection Customer may terminate this Agreement at any time by giving the Distribution Provider twenty (20) Business Days written notice.



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- 3.3.2. Either Party may terminate this Agreement after Default pursuant to article 7.6.
- 3.3.3. In addition, if the basis for Rule 21 applicability for this interconnection is based on the Interconnection Customer maintaining QF status and selling all its exports to the grid to Distribution Provider under a PURPA PPA, then this provision applies and Distribution Provider may terminate this Agreement if Interconnection Customer fails to maintain its QF status for the term of this Agreement or upon termination of Interconnection Customer's PURPA PPA.
- 3.3.3.1. If Section 3.3.3 applies, Interconnection Customer is responsible for maintaining QF status and must notify Distribution Provider sixty (60) Calendar Days in advance of Interconnection Customer failing to maintain its QF status, selling to a third-party, or termination of its PURPA PPA. If Interconnection Customer fails to provide such notice, it is wholly responsible for any penalties incurred from any Governmental Authority or the California Independent System Operator Corporation ("CAISO"), including penalties and charges incurred by the Distribution Provider, as a result of this failure to notify the Distribution Provider.
- 3.3.3.2. If Interconnection Customer is no longer eligible for a Rule 21 interconnection, then Distribution Provider may terminate this Agreement.
- 3.3.4. Upon termination of this Agreement, the Generating Facility will be disconnected from the Distribution Provider's Distribution System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this GIA or such non-terminating Party otherwise is responsible for these costs under this GIA.
- 3.3.5. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of the termination.
- 3.3.6. The provisions of this article shall survive termination or expiration of this Agreement.
- 3.3.7. If the Generating Facility no longer falls within the scope and description provided in Section 1.1 of this Agreement, this Agreement is terminated.

3.4. Temporary Disconnection

Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.

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3.4.1. Emergency Conditions

"Emergency Condition" shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of the Distribution Provider, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Distribution System, the Distribution Provider's Interconnection Facilities or any Affected Systems(s); or (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Generating Facility or the Interconnection Customer's Interconnection Facilities. Under Emergency Conditions, the Distribution Provider may immediately suspend interconnection service and temporarily disconnect the Generating Facility. The Distribution Provider shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer's operation of the Generating Facility. The Interconnection Customer shall notify the Distribution Provider promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Distribution Provider's Distribution System or any Affected Systems. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2. Routine Maintenance, Construction, and Repair

The Distribution Provider may interrupt interconnection service or curtail the output of the Generating Facility and temporarily disconnect the Generating Facility from the Distribution Provider's Distribution System when necessary for routine maintenance, construction, and repairs on the Distribution Provider's Distribution System and/or Transmission System. The Distribution Provider shall provide the Interconnection Customer with five Business Days notice prior to such interruption. The Distribution Provider shall use Reasonable Efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer.

3.4.3. Forced Outages

During any forced outage, the Distribution Provider may suspend interconnection service to effect immediate repairs on the Distribution Provider's Distribution System and/or Transmission System. The Distribution Provider shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, the Distribution Provider shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

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3.4.4. Adverse Operating Effects

The Distribution Provider shall notify the Interconnection Customer as soon as practicable if, based on Good Utility Practice, operation of the Generating Facility may cause disruption or deterioration of service to other customers served from the same electric system, or if operating the Generating Facility could cause damage to the Distribution Provider's Distribution System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Distribution Provider may disconnect the Generating Facility. The Distribution Provider shall provide the Interconnection Customer with five Business Day notice of such disconnection, unless the provisions of article 3.4.1 apply.

3.4.5. Modification of the Generating Facility

The Interconnection Customer must receive written authorization from the Distribution Provider before making any change to the Generating Facility that may have a material impact on the safety or reliability of the Distribution System and/or the Transmission System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without the Distribution Provider's prior written authorization, the latter shall have the right to temporarily disconnect the Generating Facility.

3.4.6. Reconnection

The Parties shall cooperate with each other to restore the Generating Facility, Interconnection Facilities, and the Distribution Provider's Distribution System and/or Transmission System to their normal operating state as soon as reasonably practicable following a temporary disconnection.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1. Interconnection Facilities

4.1.1. The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Attachment 2 of this Agreement. The Distribution Provider shall provide a best estimate cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such

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facilities by agreement of the Interconnection Customer, such other entities, and the Distribution Provider.

4.1.2. The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Distribution Provider's Interconnection Facilities.

4.1.3. If the provisions of PG&E's Rule 21, or any other tariff or rule approved by the Commission, requires PG&E to own and operate a portion of the Interconnection Facilities, Producer and PG&E shall promptly execute an Special Facilities Agreement that establishes and allocates responsibility for the design, installation, operation, maintenance, and ownership of the Interconnection Facilities. This Special Facilities Agreement shall be attached to and made a part of this Agreement as Attachment G~~Appendix G.~~

4.2. Distribution Upgrades

~~The Distribution Provider shall design, procure, construct, install, and own the Distribution Upgrades described in a Special Facilities Agreement attached to and made a part of this Agreement as Appendix G~~Attachment G. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.~~The Distribution Provider shall design, procure, construct, install, and own the Distribution Upgrades described in Attachment 6 of this Agreement. If the Distribution Provider and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.~~

Article 5. Cost Responsibility for Network Upgrades

5.1. Applicability

No portion of this Article 5 shall apply unless the interconnection of the Generating Facility requires Network Upgrades.

5.2. Network Upgrades

The Distribution Provider or the Distribution Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment 6 of this Agreement. If the Distribution Provider and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located

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on land owned by the Interconnection Customer. Unless the Distribution Provider elects to pay for Network Upgrades, the actual cost of the Network Upgrades, including overheads, shall be borne by the Interconnection Customer unless Section 5.2.1 directs otherwise.

5.2.1. Repayment of Amounts Advanced for Network Upgrades

To the extent that the CAISO Tariff, currently Section 12.3.2 of Appendix Y, provides for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, the Interconnection Customer shall be entitled to a cash repayment, equal to the total amount paid to the Distribution Provider and Affected System operator, if any, for Network Upgrades, including any tax gross-up or other tax-related payments associated with the Network Upgrades, and not otherwise refunded to the Interconnection Customer, to be paid to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Distribution Provider's Tariff and Affected System's Tariff for transmission services with respect to the Generating Facility. Any repayment shall include interest calculated in accordance with the methodology set forth in FERC's regulations at 18 C.F.R. §35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. The Interconnection Customer may assign such repayment rights to any person. To the extent that the CAISO Tariff does not provide for cash repayment to interconnection customers for contribution to the cost of Network Upgrades, Interconnection Customer is not entitled to a cash repayment for amounts paid to the Distribution Provider and Affected System operator for Network Upgrades, and no cash repayment shall be made pursuant to this Agreement.

5.2.1.1. If the Interconnection Customer is entitled to a cash repayment pursuant to Article 5.2.1, the Interconnection Customer, the Distribution Provider, and any applicable Affected System operators may adopt any alternative payment schedule that is mutually agreeable so long as the Distribution Provider and said Affected System operators take one of the following actions no later than five years from the Commercial Operation Date: (1) return to the Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that the Distribution Provider or any applicable Affected System operators will continue to provide payments to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond twenty (20) years from the commercial operation date.

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5.2.1.2. If the Generating Facility fails to achieve commercial operation, but it or another generating facility is later constructed and requires use of the Network Upgrades, the Distribution Provider and Affected System operator shall at that time reimburse the Interconnection Customer for the amounts advanced for the Network Upgrades if the Interconnection Customer is entitled to a cash repayment pursuant to Article 5.2.1. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the generating facility, if different, is responsible for identifying the entity to which reimbursement must be made.

5.3. [Intentionally Omitted]

5.4. Rights Under Other Agreements

Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Generating Facility.

Article 6. ~~Billing, Payment, and Milestones, and Financial Security~~

~~6.1. Billing and Payment Procedures and Final Accounting~~

~~6.1.1. The Distribution Provider shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs, including any applicable taxes, of Interconnection Facilities and Upgrades contemplated by this Agreement on a monthly basis, or as otherwise agreed by the Parties. The Interconnection Customer shall pay each bill within 30 calendar days of receipt, or as otherwise agreed to by the Parties.~~

~~6.1.2. Within twelve months of completing the construction and installation of the Distribution Provider's Interconnection Facilities and/or Upgrades described in the Attachments to this Agreement, the Distribution Provider shall provide the Interconnection Customer with a final accounting report of any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such facilities or Upgrades, and (2) the Interconnection Customer's previous aggregate payments to the Distribution Provider for such facilities or Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous aggregate payments, the Distribution Provider shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the~~



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~~Distribution Provider within 30 calendar days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Distribution Provider shall refund to the Interconnection Customer an amount equal to the difference within 30 calendar days of the final accounting report.~~

6.2.6.1. Milestones

The Parties shall agree on milestones for which each Party is responsible and list them in Attachment 4 of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Uncontrollable Force Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (1) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (2) requesting appropriate amendments to Attachment 4. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless it will suffer significant uncompensated economic or operational harm from the delay, (2) attainment of the same milestone has previously been delayed, or (3) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

6.3. Financial Security Arrangements

~~At least 20 Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of the Distribution Provider's Interconnection Facilities and Upgrades, the Interconnection Customer shall provide the Distribution Provider, at the Interconnection Customer's option, a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the Distribution Provider and is consistent with the Uniform Commercial Code of the jurisdiction where the Point of Interconnection is located. Such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Distribution Provider's Interconnection Facilities and Upgrades and shall be reduced on a dollar for dollar basis for payments made to the Distribution Provider under this Agreement during its term. In addition:~~

- ~~6.3.1. The guarantee must be made by an entity that meets the creditworthiness requirements of the Distribution Provider and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.~~
- ~~6.3.2. The letter of credit or surety bond must be issued by a financial institution or insurer reasonably acceptable to the Distribution Provider and must specify a reasonable expiration date.~~

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Article 7. Assignment, Liability, Indemnity, Uncontrollable Force, Consequential Damages, and Default

7.1. Assignment

This Agreement may be assigned by either Party upon fifteen (15) Business Days prior written notice and opportunity to object by the other Party; provided that:

- 7.1.1. Either Party may assign this Agreement without the consent of the other Party to any affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement, provided that the Interconnection Customer promptly notifies the Distribution Provider of any such assignment;
- 7.1.2. The Interconnection Customer shall have the right to assign this Agreement, without the consent of the Distribution Provider, for collateral security purposes to aid in providing financing for the Generating Facility, provided that the Interconnection Customer will promptly notify the Distribution Provider of any such assignment.
- 7.1.3. Any attempted assignment that violates this article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. An assignee is responsible for meeting the same financial, credit, and insurance obligations as the Interconnection Customer. Where required, consent to assignment will not be unreasonably withheld, conditioned or delayed.

7.2. Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages, except as authorized by this Agreement.

7.3. Indemnity

- 7.3.1. This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in article 7.2.

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- 7.3.2. The Parties shall at all times indemnify, defend, and hold the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or failure to meet its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.
- 7.3.3. If an indemnified person is entitled to indemnification under this article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this article, to assume the defense of such claim, such indemnified person may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.
- 7.3.4. If an indemnifying party is obligated to indemnify and hold any indemnified person harmless under this article, the amount owing to the indemnified person shall be the amount of such indemnified person's actual loss, net of any insurance or other recovery.
- 7.3.5. Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this article may apply, the indemnified person shall notify the indemnifying party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying party.

7.4. Consequential Damages

Other than as expressly provided for in this Agreement, neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

7.5. Uncontrollable Force

- 7.5.1. As used in this article, an Uncontrollable Force Event shall mean "any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm, flood, earthquake, explosion, breakage or accident to machinery or equipment, any curtailment, order, regulation or restriction imposed by governmental, military or lawfully established civilian



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authorities, or any other cause beyond the reasonable control of the Distribution Provider or Interconnection Customer which could not be avoided through the exercise of Good Utility Practice. An Uncontrollable Force Event does not include an act of negligence or intentional wrongdoing by the Party claiming Uncontrollable Force."

- 7.5.2. If an Uncontrollable Force Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Uncontrollable Force Event (Affected Party) shall promptly notify the other Party, either in writing or via the telephone, of the existence of the Uncontrollable Force Event. The notification must specify in reasonable detail the circumstances of the Uncontrollable Force Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Uncontrollable Force Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Uncontrollable Force Event cannot be mitigated by the use of Reasonable Efforts. The Affected Party will use Reasonable Efforts to resume its performance as soon as possible.

7.6. Default

- 7.6.1. No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of an Uncontrollable Force Event as defined in this Agreement or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in article 7.6.2, the defaulting Party shall have 60 calendar days from receipt of the Default notice within which to cure such Default; provided however, if such Default is not capable of cure within 60 calendar days, the defaulting Party shall commence such cure within 20 calendar days after notice and continuously and diligently complete such cure within six months from receipt of the Default notice; and, if cured within such time, the Default specified in such notice shall cease to exist.
- 7.6.2. If a Default is not cured as provided in this article, or if a Default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this article will survive termination of this Agreement.

Article 8. Insurance

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8.1. General Liability and Additional Insurance

The Interconnection Customer shall, at its own expense, maintain in force general liability insurance without any exclusion for liabilities related to the interconnection undertaken pursuant to this Agreement. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. The Interconnection Customer shall obtain additional insurance only if necessary as a function of owning and operating a generating facility. Such insurance shall be obtained from an insurance provider authorized to do business in California. Certification that such insurance is in effect shall be provided upon request of the Distribution Provider, except that the Interconnection Customer shall show proof of insurance to the Distribution Provider no later than ten (10) Business Days prior to the anticipated Parallel Operation date. An Interconnection Customer of sufficient credit-worthiness may propose to self-insure for such liabilities, and such a proposal shall not be unreasonably rejected.

8.2. Maintenance of Insurance

The Distribution Provider agrees to maintain general liability insurance or self-insurance consistent with the Distribution Provider's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Distribution Provider's liabilities undertaken pursuant to this Agreement.

8.3. Notification

The Parties further agree to notify each other whenever an accident or incident occurs resulting in any injuries or damages that are included within the scope of coverage of such insurance, whether or not such coverage is sought.

Article 9. Confidentiality

9.1. Definition of Confidential Information

The confidentiality provisions applicable to this Agreement are set forth in Section D.7, Confidentiality of Rule 21 and in the following provisions included in this Article.

9.1.1. Release of Confidential Information

Neither Party shall release or disclose Confidential Information to any other person, employees, consultants, or to parties who may be or considering providing financing to or equity participation with Interconnection Customer, or to potential purchasers or assignees of Interconnection Customer, on a need-to-know basis in connection with these procedures, unless such person has first been advised of the confidentiality provisions

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of this Article and has agreed to comply with such provisions. Notwithstanding the foregoing, a Party providing Confidential Information to any person shall remain primarily responsible for any release of Confidential Information in contravention of this Article.

9.1.2. Rights

Each Party retains all rights, title, and interest in the Confidential Information that each Party discloses to the other Party. The disclosure by each Party to the other Party of Confidential Information shall not be deemed a waiver by either Party or any other person or entity of the right to protect the Confidential Information from public disclosure.

9.1.3. No Warranties

By providing Confidential Information, neither Party makes any warranties or representations as to its accuracy or completeness. In addition, by supplying Confidential Information, neither Party obligates itself to provide any particular information or Confidential Information to the other Party nor to enter into any further agreements or proceed with any other relationship or joint venture.

9.1.4. Standard of Care

Each Party shall use at least the same standard of care to protect Confidential Information it receives as it uses to protect its own Confidential Information from unauthorized disclosure, publication or dissemination; however, in no case shall a Party use less than reasonable care in protecting Confidential Information. Each Party may use Confidential Information solely to fulfill its obligations to the other Party under this Agreement or its regulatory requirements.

9.1.5. Order of Disclosure

If a court or a Government Authority or entity with the right, power, and apparent authority to do so requests or requires either Party, by subpoena, oral deposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirement(s) so that the other Party may seek an appropriate protective order or waive compliance. Notwithstanding the absence of a protective order or waiver, the Party may disclose such Confidential Information which, in the opinion of its counsel, the Party is legally compelled to disclose. Each Party will use Reasonable Efforts to obtain reliable assurance that confidential treatment will be accorded any Confidential Information so furnished.

9.1.6. Remedies

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The Parties agree that monetary damages would be inadequate to compensate a Party for the other Party's Breach of its obligations under this Article. Each Party accordingly agrees that the other Party shall be entitled to equitable relief, by way of injunction or otherwise, if the first Party Breaches or threatens to Breach its obligations under this Article, which equitable relief shall be granted without bond or proof of damages, and the receiving Party shall not plead in defense that there would be an adequate remedy at law. Such remedy shall not be deemed an exclusive remedy for the Breach of this Article but shall be in addition to all other remedies available at law or in equity. The Parties further acknowledge and agree that the covenants contained herein are necessary for the protection of legitimate business interests and are reasonable in scope. No Party, however, shall be liable for indirect, incidental, or consequential or punitive damages of any nature or kind resulting from or arising in connection with this Article.

Article 10. Disputes

10.1. Dispute Resolution

Any dispute arising between the Parties regarding a Party's performance of its obligations under this Agreement or requirements related to the interconnection of the Generating Facility shall be resolved according to the procedures in Rule 21.

Article 11. Taxes

11.1. Applicable Tax Laws and Regulation

The Parties agree to follow all applicable tax laws and regulations, consistent with CPUC policy and Internal Revenue Service requirements.

11.2. Maintenance of Tax Status

Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect the Distribution Provider's tax-exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

Article 12. Miscellaneous

12.1. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of California (where the Point of Interconnection is located), without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party

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expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

12.2. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

12.3. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

12.4. Waiver

12.4.1. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

12.4.2. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Distribution Provider. Any waiver of this Agreement shall, if requested, be provided in writing.

12.5. Entire Agreement

This Agreement, including all Attachments, and any incorporated tariffs or Rules, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

12.6. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original, but all constitute one and the same instrument.

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12.7. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

12.8. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

12.9. Security Arrangements

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. All public utilities are expected to meet basic standards for system infrastructure and operational security, including physical, operational, and cyber-security practices.

12.10. Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

12.11. Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

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12.11.1. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Distribution Provider be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

12.11.2. The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

12.12. CPUC Modification

Unless otherwise ordered by the CPUC, this Agreement at all times shall be subject to such modifications as the CPUC may direct from time to time in the exercise of its jurisdiction.

12.13. Review of Records and Data

12.13.1. The Distribution Provider shall have the right to review and obtain copies of Interconnection Customer's operations and maintenance records, logs, or other information such as, unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to Interconnection Customer's Generating Facility or its interconnection with Distribution Provider's Distribution System.

12.13.2. The Interconnection Customer authorizes the Distribution Provider to release to the California Energy Commission ("CEC"), the CAISO, and/or the CPUC information regarding the Generating Facility, including the Interconnection Customer's name and location, and the size, location and operational characteristics of the Generating Facility, as requested from time to time pursuant to the CEC's, CAISO's, or CPUC's rules and regulations.

Article 13. Notices

13.1. General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national



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currier service, or sent by first class mail, postage prepaid, to the person specified below:

If to the Interconnection Customer:
[Contact information to be supplied]

If to the Distribution Provider:
[Contact information to be supplied]

13.2. Billing and Payment

Billings and payments shall be sent to the addresses set out below:

Interconnection Customer:
[Contact information to be supplied]

Distribution Provider
[Contact information to be supplied]

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

13.3. Alternative Forms of Notice

Any notice or request required or permitted to be given by either Party to the other and not required by this Agreement to be given in writing may be so given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out below:

If to the Interconnection Customer:
[Contact information to be supplied]

If to the Distribution Provider:
[Contact information to be supplied]

13.4. Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's Operating Representative:
[Contact information to be supplied]

Distribution Provider's Operating Representative:
[Contact information to be supplied]

13.5. Changes to the Notice Information

Either Party may change this information by giving five Business Days written notice prior to the effective date of the change.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES

Article 14. Signatures

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

(Interconnection Customer Name)

(Distribution Provider Name)

(Signature)

(Signature)

(Print Name)

(Print Name)

(Title)

(Title)

(Date)

(Date)

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING — ATTACHMENT A —

Glossary of Terms

Affected System - An electric system other than the Distribution Provider's Distribution System that may be affected by the proposed interconnection, including but not limited to the Transmission System.

Applicable Laws and Regulations - All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

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

Contact Information – Contact information will include the name of business, contact name, business address including city, state and zip, phone number, e-mail address, and any other pertinent information that may be required to communicate with the Parties.

Default - The failure of a breaching Party to cure its breach under the Agreement.

Distribution Owner - The entity that owns, leases or otherwise possesses an interest in the portion of the Distribution System at the Point of Interconnection and may be a Party to the Agreement to the extent necessary.

Distribution Provider - The public utility (or its designated agent) that owns, controls, or operates transmission or distribution facilities used for the transmission of electricity and provides distribution service to the Interconnection Customer. The term Distribution Provider should be read to include the Distribution Owner when the Distribution Owner is separate from the Distribution Provider.

Distribution System - Those non-CAISO transmission and distribution facilities, owned, controlled and operated by the Distribution Provider that are used to provide distribution service, which facilities and equipment are used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which Distribution Systems operate differ among areas.

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

Generating Facility - The Interconnection Customer's device for the production or storage of electricity identified in Attachment 2 of the Agreement but shall not include the Interconnection Customer's Interconnection Facilities.

Good Utility Practice - Any of the practices, methods and acts engaged in or approved by a significant portion of the electric 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

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING — ATTACHMENT A —

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 the Interconnection Customer, the Distribution Provider, or any Affiliate thereof.

Interconnection Customer - Any entity, including the Distribution Provider, Distribution Owner or any of the affiliates or subsidiaries of either, that proposes to interconnect its Generating Facility with the Distribution Provider's Distribution System. The definition of "Interconnection Customer" in this Agreement is intended to be identical to and used interchangeably with the definition of "Producer" in Rule 21.

Interconnection Facilities - The Distribution Provider's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Distribution Provider's Distribution System. Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades or Network Upgrades.

Interconnection Handbook - A handbook, developed by the Distribution Provider and posted on the Distribution Provider's website or otherwise made available by the Distribution Provider, describing the technical and operational requirements for wholesale generators and loads connected to the Distribution System, as such handbook may be modified or superseded from time to time. In the event of a conflict between the terms of this Agreement and the terms of the Distribution Provider's Interconnection Handbook, the terms in this Agreement shall govern.

Network Upgrades - Additions, modifications, and upgrades to the Distribution Provider's Transmission System required at or beyond the point at which the Distribution System connects to the Distribution Provider's Transmission System to accommodate the interconnection of the Generating Facility to the Distribution Provider's Distribution System. Network Upgrades do not include Distribution Upgrades.

Operating Requirements - Any operating and technical requirements that may be applicable due to Regional Transmission Organization, the CAISO, balancing authority area, or the Distribution Provider's requirements, including those set forth in the Agreement.

Party or Parties - The Distribution Provider, Distribution Owner, Interconnection Customer, Producer or any combination of the above.

Point of Interconnection - The point where the Interconnection Facilities connect with the Distribution Provider's Distribution System.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING — ATTACHMENT A —

Reasonable Efforts - With respect to an action required to be attempted or taken by a Party under the Agreement, 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.

Transmission System - Those facilities owned by the Distribution Provider that have been placed under the CAISO's operational control and are part of the CAISO Grid.

Upgrades - The required additions and modifications to the Distribution Provider's Distribution System and Transmission System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT B —

One-line Diagram Depicting the Generating Facility, Interconnection Facilities, Metering Equipment, and Upgrades

Description and Costs of the Generating Facility, Interconnection Facilities and Metering Equipment

~~Equipment, including the Generating Facility, Interconnection Facilities, and metering equipment shall be itemized and identified as being owned by the Interconnection Customer, the Distribution Provider, or the Distribution Owner. The Distribution Provider will provide a best estimate itemized cost, including overheads, of its Interconnection Facilities and metering equipment, and a best estimate itemized cost of the annual operation and maintenance expenses associated with its Interconnection Facilities and metering equipment.~~

RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT C —

Final Study Report Including Description and Costs of the Generating Facility, Interconnection Facilities, Metering Equipment, Distribution and/or Network Upgrades

Final study report includes equipment, including the Generating Facility, Interconnection Facilities, and metering equipment itemized and identified as being owned by the Interconnection Customer, the Distribution Provider, or the Distribution Owner. The Distribution Provider will provide a best estimate itemized cost, including overheads, of its Interconnection Facilities and metering equipment, and a best estimate itemized cost of the annual operation and maintenance expenses associated with its Interconnection Facilities and metering equipment. Additionally, NEM program specific information relating to the Interconnection Customer's Generating Facility and any associated arrangements (i.e. NEM2, NEM2A, NEM2MT, NEM2V, NEM2VMSH (1 SDP), and NEMVMSH (DEV)) will be set forth in this attachment.

Final study report includes description of Upgrades and provides an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. The Distribution Provider shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.

One-line Diagram Depicting the Generating Facility, Interconnection Facilities, Metering Equipment, and Upgrades



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT D —

Attachment D

Milestones

In-Service Date: _____

Critical milestones and responsibility as agreed to by the Parties:

	<u>Milestones</u>	<u>Date</u>	<u>Responsible Party</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____

Agreed to by:

For the Distribution Provider _____ Date _____

For the Distribution Owner (If Applicable) _____ Date _____

For the Interconnection Customer _____ Date _____



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT E —

Additional Operating Requirements for the Distribution Provider's Distribution System and Affected Systems Needed to Support the Interconnection Customer's Needs

The Distribution Provider shall also provide requirements that must be met by the Interconnection Customer prior to initiating parallel operation with the Distribution Provider's Distribution System.



RULE 21 GENERATOR INTERCONNECTION AGREEMENT FOR EXPORTING GENERATING FACILITIES — ATTACHMENT **FGF —**

Rule 21 Special Facilities Agreement (Formed between the Parties)

~~Distribution Provider's Description of its Upgrades and Cost Responsibility~~

~~The Distribution Provider shall describe Upgrades and provide an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. The Distribution Provider shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.~~

Rule 21 Redline Tariff Revisions

These redline revisions only include modified sheets that have language changes in this advice letter (AL 6757-E-A). These do not include sheets that only show location changes. Where Electric Rule 21 has been revised, the affected sheets are included in Attachment 1.

In this advice letter and accordance to CPUC General Order 96-B, 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
	6635-E-A	Supplemental: Modifications to Electric Tariff Rule 21 to Incorporate IEEE 1547.1-2020 Test Procedures into Testing Regime for Phase 2 and 3 Requirements in Compliance with Resolutions E-5000 and E5036	In this advice letter, revisions are made pursuant to Resolutions E-5000 and E-5036.
	6788-E	Clean-Up Electric Tariffs	In this advice letter, an incorrect section reference is corrected.
	6757-E-A	Modifications to Electric Rule 21 on Financial Security Posting Requirements	In this advice letter, revisions are made to place the Financial Security process with a Bill on Estimate Approach.



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 26

C. DEFINITIONS (Cont'd.)

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.~~

(D)
(D)

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.

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.

k_{of}: The per-unit frequency change corresponding to 1 per-unit power output change (frequency droop), unitless used in Section P.

(P)

k_{uf}: The per-unit frequency change corresponding to 1 per-unit power output change (frequency droop), unitless used in Section P.

(P)

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

(P/L)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 66

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

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.											

g. Cost Reconciliation

~~Unless agreed to otherwise between Applicant and Distribution Provider, Distribution Provider shall provide Applicant a detailed reconciliation of the costs on interconnection facilities and distribution upgrades within 12 months of project completion.~~

(D)
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(D)

(Continued)



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Sheet 91

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

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

b. Independent Study Process (Cont'd.)

~~iv) Initial Posting of Interconnection Financial Security~~

(D)

~~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.~~

(D)

iv) Modifications

(T)

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.

(Continued)

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Sheet 92

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

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

b. Independent Study Process (Cont'd.)

iv) Modifications (Cont'd.)

(T)

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.

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Sheet 93

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

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

b. Independent Study Process (Cont'd.)

iv) Modifications (Cont'd.)

(T)

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~~b~~.v, shall constitute a Material Modification.

(T)

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.

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

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

(T)

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.

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Sheet 95

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

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

b. Independent Study Process (Cont'd.)

vii) Waiver of the Interconnection Facilities Study

(T)

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.

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

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

b. Independent Study Process (Cont'd.)

viii) Timing of the Interconnection Facilities Study

(T)

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 submits the Interconnection Facilities Study deposit ~~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.~~

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(T)

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.

(Continued)



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Sheet 97

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

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

b. Independent Study Process (Cont'd.)

~~ixviii)~~ **Interconnection Facilities Study Results Meeting**

(T)

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**

(D)

~~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.~~

(D)

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. Distribution Provider shall inform Applicant of the Detailed Study start date.

(Continued)



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Sheet 103

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

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.~~

(D)

(D)

(Continued)



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Sheet 104

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

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

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

vii) Modifications

(T)

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.

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

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

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

vii) Modifications (Cont'd.)

(T)

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.

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

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

(T)

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~~viii) Waiver of the DGS Phase II Interconnection Study

(T)

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.

(Continued)



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Sheet 107

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

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

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

ix) DGS Phase II Interconnection Study Procedures

(T)

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.

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

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

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

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

(T)

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

(T)

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.

(Continued)



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

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

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

x*i*) DGS Phase II Interconnection Study Results Meeting (Cont'd.) (T)

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.

x*ii*) Timing of the DGS Phase II Interconnection Study (T)

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.

~~x*iii*) Second and Third Postings of Interconnection Financial Security~~ (D)

~~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.~~

(D)

(Continued)



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

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

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

xiiiv) Withdrawal and Reallocation of Cost to Interconnection Requests in a Distribution Study Group (T)

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 reevaluated 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.

(T)
(T)

xiiiv) 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.

(T)

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.

(Continued)



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

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

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

xiv) Automatic Timing Extension

(T)

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.

d. WDT Transmission Cluster Study Process

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. Distribution Provider shall inform Applicant of the Detailed Study start date.

(Continued)



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Sheet 116

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

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. BILL ON ESTIMATE

Bill on Estimate is a process intended for projects with interconnection upgrades where the cost of the upgrade is borne by the customer. Once the Applicant is deemed to be financially responsible for the upgrades and returns a signed Interconnection Agreement then the Bill on Estimate process will begin.

(N)

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The Applicant will be provided with an Estimating Advance that is nonrefundable. The estimating advance is \$20,000 or 20% of the non-binding cost estimate, whichever is less. The itemized non-binding cost estimate will be provided in the completed study. Once the non-binding cost estimate payment is received PG&E will verify field conditions and begin the design phase of the interconnection upgrade. Upon completion of the design phase of the interconnection upgrade, the Applicant will receive a Special Facilities Agreement that contains the final cost of the upgrades less the Estimating Advance. Once the payment and Special Facilities Agreement is signed and returned to PG&E, then the construction phase can begin. There will be no reconciliation in this process.

(N)

~~4. INTERCONNECTION FINANCIAL SECURITY~~

(D)

~~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:~~

(D)

(Continued)

Advice 5988-E-A
Decision D.20-09-035

Issued by
Robert S. Kenney
Vice President, Regulatory Affairs

Submitted
Effective
Resolution

May 19, 2021
May 19, 2021



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 117

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

~~(D)~~

~~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.~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 118

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

~~(D)~~

~~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.~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 119

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

~~(D)~~

~~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~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 120

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

~~(D)~~

~~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~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 121

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

~~(D)~~

~~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~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 122

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

~~(D)~~

~~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~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 123

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

~~(D)~~

~~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.~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 124

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

~~(D)~~

~~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~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 125

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

~~(D)~~

~~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.~~

~~(D)~~

(Continued)

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Decision D.20-09-035

Issued by
Robert S. Kenney
Vice President, Regulatory Affairs

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Resolution	



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 126

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

~~(D)~~

~~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.~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 127

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

~~(D)~~

~~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.~~

~~(D)~~

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 128

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

(D)

~~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.~~

(D)

(Continued)

**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.
Braun Blaising Smith Wynne, P.C.
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
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
Dish Wireless L.L.C.

East Bay Community Energy Ellison
Schneider & Harris LLP
Engineers and Scientists of California

GenOn Energy, Inc.
Goodin, MacBride, Squeri, Schlotz &
Ritchie
Green Power Institute
Hanna & Morton
ICF

iCommLaw
International Power Technology
Intertie

Intestate Gas Services, Inc.

Johnston, Kevin
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
McClintock IP
McKenzie & Associates

Modesto Irrigation District
NLine Energy, Inc.
NRG Solar

OnGrid Solar
Pacific Gas and Electric Company
Peninsula Clean Energy

Pioneer Community Energy

Public Advocates Office

Redwood Coast Energy Authority
Regulatory & Cogeneration Service, Inc.

Resource Innovations

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
Stoel Rives LLP

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