

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE



October 3, 2019

Advice Letter 5616-E

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

SUBJECT: Updates to Rule 21 Pursuant to Resolution E-5000 Ordering Paragraphs 10 and 11 Regarding Compliance Deadlines for Phase 3 Functions 1, 2, 3 and 8, and Phase 2 Communications

Dear Mr. Jacobson:

Advice Letter 5616-E is effective as of August 13, 2019.

Sincerely,

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

Edward Randolph
Deputy Executive Director for Energy and Climate Policy/
Director, Energy Division

August 13, 2019

Advice 5616-E

(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Updates to Rule 21 Pursuant to Resolution E-5000 Ordering Paragraphs 10 and 11 Regarding Compliance Deadlines for Phase 3 Functions 1, 2, 3 and 8, and Phase 2 Communications

Purpose

The purpose of this Tier 1 advice letter is to update the Pacific Gas and Electric (“PG&E”) Electric Rule 21 for the effective date of Phase 3 Functions 1, 2, 3 and 8, and Phase 2 Communications from August 22, 2019 to January 22, 2020, pursuant to the California Public Utilities Commission (“Commission” or “CPUC”) Resolution E-5000¹ Ordering Paragraph 10 and 11.

Background

On February 11, 2019 California Solar and Storage Association (CALSSA) filed a Petition for Modification of Resolutions E-4832 and E-4898 (“Petition”). Resolution E-5000 Among several requests it makes of the Commission, it seeks to a further extension of the effective date for certain inverter capabilities.

Regarding Phase 3 Functions 1 and 8, and Phase 2 Communications, CALSSAs requests:

Issue 7: Deadline Extension

Sub-issue 7.1: Compliance Deadline for Phase 2 and Functions 1 and 8 of Phase 3

¹ E-5000 “Clarifies smart inverter communications requirements in response to the Petition of the California Solar & Storage Association for Modification of Resolution E-4832 and Resolutions E-4898” issued July 12, 2019.

Petition

In the Petition, CALSSA asserts that, “if it is difficult and time-consuming for the Commission to work through disagreements, the Commission may need to consider another extension to allow market participants enough time to demonstrate compliance.”

E-5000 notes in responding to this request:

Conclusion

This Resolution finds that a five-month extension of the compliance deadline for the Phase 2 communications requirements and for Functions 1 (Monitor Key Data) and 8 (Scheduling) of Phase 3 is warranted. As such, the compliance deadline for Phase 2 and for Phase 3 Functions 1 and 8 is extended until January 22, 2020. The IOUs shall keep Energy Division staff regularly apprised of implementation progress.

Regarding Phase 3 Functions 2 and 3, CALSSA requests:

Sub-issue 7.2: Compliance Deadline for Phase 3 Functions 2 and 3

Petition

The Petition does not address the compliance deadline for Phase 3 Functions 2 (DER Disconnect and Reconnect) and 3 (Limit Maximum Active Power).

E-5000 notes in responding to this request:

Conclusion

This Resolution finds that the harmonization of the compliance deadline for Phase 3 Functions 2 (DER Disconnect and Reconnect) and 3 (Limit Maximum Active Power) with that for Phase 2 and Functions 1 (Monitor Key Data) and 8 (Scheduling) of Phase 3 is reasonable and approved. As such, the compliance deadline for Phase 3 Functions 2 and 3 is extended until January 22, 2020.

Hence, Resolution E-5000 Ordering Paragraphs 10 and 11 require:

10. The compliance deadline for the **Phase 2 communications** requirements and for **Phase 3 Functions 1** (Monitor Key Data) **and 8** (Scheduling) is extended until January 22, 2020. This direction alters deadlines established by Resolutions E-4832 and E-4898. Changes to the original ordering paragraphs are shown in Appendix D.

11. The compliance deadline for **Phase 3 Functions 2** (DER Disconnect and Reconnect) **and 3** (Limit Maximum Active Power) is extended until January 22, 2020. This direction alters deadlines established by Resolution E-4898. Changes to the original ordering paragraph are shown in Appendix D.

The changes shown in Appendix D are made in Resolution E-4898² Ordering Paragraph 2a:

2. Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric shall each file a supplemental Tier 1 compliance Advice Letter within 30 days to modify Electric Rule 21 Tariff to incorporate the changes as ordered herein:

a. The IOUs shall incorporate the ~~consensus-based~~ effective dates in ~~Table 2 of this Resolution~~; *in the following table*:

<u><i>Function</i></u>	<u><i>Effective Date</i></u>
<u><i>Function 1 Monitor Key DER Data</i></u>	<u><i>January 22, 2020</i></u>
<u><i>Function 2 DER Disconnect and Reconnect Command (Cease to Energize and Return to Service)</i></u>	<u><i>January 22, 2020</i></u>
<u><i>Function 3 Limit Maximum Active Power Mode</i></u>	<u><i>January 22, 2020</i></u>
<u><i>Function 4 Set Active Power Mode</i></u>	<u><i>12 months after approval of a nationally recognized standard that includes the function.</i></u>
<u><i>Function 5 Frequency Watt Mode</i></u>	<u><i>9 months following SunSpec Alliance Communication Protocol Certification Test Standard.</i></u>
<u><i>Function 6 Volt Watt Mode</i></u>	<u><i>9 months following SunSpec Alliance Communication Protocol Certification Test Standard.</i></u>
<u><i>Function 7 Dynamic Reactive Support</i></u>	<u><i>12 months after approval of a nationally recognized standard that includes the function.</i></u>
<u><i>Function 8 Scheduling Power Values and Modes</i></u>	<u><i>January 22, 2020</i></u>

² Resolution E-4898, "Approval, with Modifications, of Request for Modifications to Electric Rule 21 Tariff to Incorporate Smart Inverter Phase 3 Advanced Functions in Compliance with Decision 16-06-052", issued April 27, 2018.

Tariff Revisions

Accordingly, PG&E updates its Rule 21 table in Section:

- Hh. Smart Inverter Generating Facility Design and Operating Requirements
- 2. Prevention of Interference
- p. Phase 3 Functions

PG&E updates the Effective Date for functions 1, 2, 3 and 8 to January 22, 2020.

PG&E also updates the date the requirements become mandatory to January 22, 2020, in the following sections of Rule 21:

- Hh.5.a on Communications Requirements
- Hh.6.a on Function 8 relating to Scheduling
- Hh.7.a on Function 1 relating to Monitoring requirements.

Protests

Anyone wishing to protest this advice letter may do so by letter sent via U.S. mail, facsimile or E-mail, no later than September 3, 2019, which is 21 days³ after the date of this submittal. Protests must be submitted to:

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

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

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

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

³ The 20-day protest period concludes on a holiday, therefore, PG&E is moving this date to the following business day.

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

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

Any person (including individuals, groups, or organizations) may protest or respond to an advice letter (General Order 96-B, Section 7.4). The protest shall contain the following information: specification of the advice letter protested; grounds for the protest; supporting factual information or legal argument; name, telephone number, postal address, and (where appropriate) e-mail address of the protestant; and statement that the protest was sent to the utility no later than the day on which the protest was submitted to the reviewing Industry Division (General Order 96-B, Section 3.11).

Effective Date

PG&E requests that this Tier 1 advice letter become effective upon date of submittal, which is August 13, 2019.

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 filings can also be accessed electronically at: <http://www.pge.com/tariffs/>.

/S/

Erik Jacobson
Director, Regulatory Relations

Attachments

cc: Service Lists R.11-09-011 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 U39E)

Utility type:

- ELC GAS WATER
 PLC HEAT

Contact Person: Yvonne Yang

Phone #: (415)973-2094

E-mail: PGETariffs@pge.com

E-mail Disposition Notice to: Yvonne.Yang@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) #: 5616-E

Tier Designation: 1

Subject of AL: Updates to Rule 21 Pursuant to Resolution E-5000 Ordering Paragraphs 10 and 11 Regarding Compliance Deadlines for Phase 3 Functions 1, 2, 3 and 8, and Phase 3 Communications

Keywords (choose from CPUC listing): Compliance

AL Type: Monthly Quarterly Annual One-Time Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: Resolution E-5000

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: 8/13/19

No. of tariff sheets: 6

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: N/A

¹Discuss in AL if more space is needed.

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

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

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

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

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
44781-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 201	43705-E
44782-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 204	43707-E
44783-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 207	43708-E
44784-E	ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 209	43710-E
44785-E	ELECTRIC TABLE OF CONTENTS Sheet 1	44756-E
44786-E	ELECTRIC TABLE OF CONTENTS Sheet 20	44777-E



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 204

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

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 January 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:

(T)
(D)

- (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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 207

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

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 January 22, 2020.

(T)
(D)
(D)

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 209

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

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 January 22, 2020.

(T)
(D)
(D)

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)

(Continued)



ELECTRIC TABLE OF CONTENTS

Sheet 1

TABLE OF CONTENTS

SCHEDULE	TITLE OF SHEET	CAL P.U.C. SHEET NO.	
Title Page.....		44785-E	(T)
Rate Schedules.....	44680,44681,44757,44683,44684,44685,43935,44177-E		
Preliminary Statements.....	44686,44687,42856*,43670,41723,40591,44724,44725-E		
Rules.....	43022,43023,	44786-E	(T)
Maps, Contracts and Deviations.....		37960-E	
Sample Forms...40925*,37631,41151*,41573*, 37632,41152*,41153,37769,44035,40671,37169-E			

(Continued)

Advice 5616-E
Decision

Issued by
Robert S. Kenney
Vice President, Regulatory Affairs

Submitted
Effective
Resolution

August 13, 2019
August 13, 2019



ELECTRIC TABLE OF CONTENTS

Sheet 20

RULE	TITLE OF SHEET	CAL P.U.C. SHEET NO.
Rules (Cont'd)		
Rule 21	Generating Facility Interconnections..... 42298,42299,42300,42301,42302,42303,42304,42305,42306,42307,42308,42309,42310,42311,42312,42313,42314,42315,42316,42317,42318,42319,42320,42321,42322,42323,42324,42325,42326,42327,42328,42329,42330,42331,42332,42333,42334,42335,42336,42337,42338,42339,42340,42341,42342,42343,42344,42345,42346,42347,42348,42349,42350,42351,42352,42353,42354,42355,42356,42357,42358,42359,42360,42361,42362,42363,42364,42365,42366,42367,42368,42369,42370,42371,42372,42373,42374,42375,42376,42377,42378,42379,42380,42381,42382,42383,42384,42385,42386,42387,42388,42389,42390,42391,42392,42393,42394,42395,42396,42397,42398,42399,42400,42401,42402,42403,42404,42405,42406,42407,42408,42409,42410,42411,42412,42413,42414,42415,42416,42417,42418,42419,42420,42421,42422,42423,42424,42425,42426,42427,42428,42429,42430,42431,42432,42433,42434,42435,42436,42437,42438,42439,42440,42441,42442,42443,42444,42445,42446,42447,42448,42449,42450,42451,42452,42453,42454,42455,42456,42457,42458,42459,42460,42461,42462,42463,42464,42465,42466,42467,42468,42469,42470,42471,42472,42473,42474,42475,42476,42477,42478,42479,42480,42481,42482,42483,42484,42485,42486,42487,42488,42489,42490,42491,42492,43700,43701,43702,43703,43704, 44781 ,43706,42500, 44782 , 44783 , 44784 ,43708,43709,43710,43711,43712,43713, (T)42510,42511,42512,42513,42514,42515,42516,42517,42518,42519,42520,42521,42522,42523,42524,42525,42526,42527,42528,42529,42530,42531,42532,42533,42534,42535,42536,42537,42538,42539,42540,42541,42542,42543,42544,42545,42546,42547,42548,42549,42550,42551,42552,42553,42554,42555,43945,42557,43946,42294-E	
Rule 22	Direct Access Service 33491,29165,29166,29167,29168,29169,29170,29171,14896,30872,30873,32758,32992,32993,32994,32995,30879,30880,30881,30882,30883,30884,30885,30886,30887,30888,30889,30890,30891,30892,30893,30894,30895,43002,30897,30898,30899,30900,30901,30902,30903,30904,30905,30906,30907,30908,30910,30911,30912,30913,30914,30915,33492,30493,30494,30495,30496,30497,30498,30923,30924,30925,30926,33499,33500,33501,33502,33503-E	
Rule 22.1	Direct Access Service Switching Exemption Rules..... 44759,32404,44760,44761,44762,44763,44764,44765,44766,44767,44768,44769,44770,44771,44772,44773,44774-E	
Rule 23	Standby Service..... 25527*,25528*,32810,25530*,25531*25532*,25533*,25534*,30933,29202,25537*,25538*,29471,25540*,25541*,25542*,25543*,25544*,29472,27268,30934,30935,30936,30937,30938,30939,35427,30941,30942,30943,30944,30945,30946,30947,30948,30949,30950,30951,30952,43003,43004,30955,30956,30957,30958,32811,30960,30961,30962-E	
Rule 23.2	Community Choice Aggregation Open Season25575,25576,25577,27270,27271-E	
Rule 24	Direct Participation Demand Response 33694,36693,35814,35856,36694,36695,33818,36696,35820,36697,36698,35823,36699,35825,36700,36701,35828,35829,35830,35831,35832,35833,35834,35835,35836,35837,36702,35839,35840,36703-E	
Rule 25	Release Of Customer Data To Third Parties34333,34334,34335,34336,34337-E	
Rule 27	Privacy and Security Protections for Energy Usage Data 32189,32190,32191,32192,32193,32194,32195,32196,32197,32198,32199,32200,32201,32202,32203,32204,32205-E	
Rule 27.1	Access to Energy Usage and Usage-Related Data While Protecting Privacy of Personal Data34311,34312,34313,34314,34315-E	
Rule 28	Mobilehome Park Utility Upgrade Program..... 41093,34628,34629,34630,34631,34632,35416,35417-E	

(Continued)

Advice 5616-E
August 13, 2019

Attachment 2
Redlined Tariffs



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 201

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

2. PREVENTION OF INTERFERENCE (Cont'd.)

p. Phase 3 Functions

(N)

Table of Phase 3 Effective Dates Pursuant to Resolution E-4898 and Resolution E-5000:

Phase 3 Function #		
	Description	Effective Date (note)
1	Monitor Key DER Data	January 20, 2020 August 22, 2019 , which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.
2	DER Disconnect and Reconnect Command (Cease to Energize and Return to Service)	January 20, 2020 Earlier of: 1) December 2019 or 2) 12 months after approval of the IEEE 1547.1 standard revision.
3	Limit Maximum Active Power Mode	January 20, 2020 Earlier of: 1) December 2019 or 2) 12 months after approval of the IEEE 1547.1 standard revision.
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	January 20, 2020 August 22, 2019 , which is 9 months following SunSpec Alliance Communication Protocol Certification Test Standard.

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

(N)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 204

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

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 ~~January 22, 2020. August 22, 2019, nine (9) months following the approval of the SunSpec Alliance Communication Protocol Certification Test Standard.~~ 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:

(T)
|
(T)

- (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.

(D)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 207

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

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 ~~January 22, 2020. August 22, 2019, nine (9) months following the approval of the SunSpec Alliance Communication Protocol Certification Test Standard.~~

(T)
|
|
(T)

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.

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ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 209

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

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 January 22, 2020. (T)
August 22, 2019, nine (9) months following the approval of the |
SunSpec Alliance Communication Protocol Certification Test |
Standard. (T)

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)

(Continued)

**PG&E Gas and Electric
Advice Submittal List
General Order 96-B, Section IV**

AT&T	Downey & Brand	Pioneer Community Energy
Albion Power Company	East Bay Community Energy	Praxair
Alcantar & Kahl LLP	Ellison Schneider & Harris LLP	
	Energy Management Service	
Alta Power Group, LLC	Engineers and Scientists of California	Redwood Coast Energy Authority
Anderson & Poole	Evaluation + Strategy for Social Innovation	Regulatory & Cogeneration Service, Inc.
	GenOn Energy, Inc.	SCD Energy Solutions
Atlas ReFuel	Goodin, MacBride, Squeri, Schlotz & Ritchie	
BART	Green Charge Networks	SCE
	Green Power Institute	SDG&E and SoCalGas
Barkovich & Yap, Inc.	Hanna & Morton	
P.C. CalCom Solar	ICF	SPURR
California Cotton Ginners & Growers Assn	International Power Technology	San Francisco Water Power and Sewer
California Energy Commission	Intestate Gas Services, Inc.	Seattle City Light
California Public Utilities Commission	Kelly Group	Sempra Utilities
California State Association of Counties	Ken Bohn Consulting	Southern California Edison Company
Calpine	Keyes & Fox LLP	Southern California Gas Company
	Leviton Manufacturing Co., Inc. Linde	Spark Energy
Cameron-Daniel, P.C.	Los Angeles County Integrated Waste Management Task Force	Sun Light & Power
Casner, Steve	Los Angeles Dept of Water & Power	Sunshine Design
Cenergy Power	MRW & Associates	Tecogen, Inc.
Center for Biological Diversity	Manatt Phelps Phillips	TerraVerde Renewable Partners
City of Palo Alto	Marin Energy Authority	Tiger Natural Gas, Inc.
	McKenzie & Associates	
City of San Jose	Modesto Irrigation District	TransCanada
Clean Power Research	Morgan Stanley	Troutman Sanders LLP
Coast Economic Consulting	NLine Energy, Inc.	Utility Cost Management
Commercial Energy	NRG Solar	Utility Power Solutions
County of Tehama - Department of Public Works		Utility Specialists
Crossborder Energy	Office of Ratepayer Advocates	
Crown Road Energy, LLC	OnGrid Solar	Verizon
Davis Wright Tremaine LLP	Pacific Gas and Electric Company	Water and Energy Consulting Wellhead Electric Company
Day Carter Murphy	Peninsula Clean Energy	Western Manufactured Housing Communities Association (WMA)
		Yep Energy
Dept of General Services		
Don Pickett & Associates, Inc.		
Douglass & Liddell		