

PUBLIC UTILITIES COMMISSION
505 Van Ness Avenue
San Francisco CA 94102-3298



Pacific Gas & Electric Company
ELC (Corp ID 39)
Status of Advice Letter 5796E
As of July 13, 2020

Subject: Modification to Electric Rule 21 to Revise the Effective Date For Smart Inverter Phase 3 Functions 1, 2, and 8 and Phase 2 Communication Requirements to June 22, 2020

Division Assigned: Energy

Date Filed: 03-27-2020

Date to Calendar: 04-03-2020

Authorizing Documents: None

Disposition:	Accepted
Effective Date:	03-23-2020

Resolution Required: No

Resolution Number: None

Commission Meeting Date: None

CPUC Contact Information:

edtariffunit@cpuc.ca.gov

AL Certificate Contact Information:

Kimberly Loo

415-973-4587

pgetariffs@pge.com

PUBLIC UTILITIES COMMISSION
505 Van Ness Avenue
San Francisco CA 94102-3298



To: Energy Company Filing Advice Letter

From: Energy Division PAL Coordinator

Subject: Your Advice Letter Filing

The Energy Division of the California Public Utilities Commission has processed your recent Advice Letter (AL) filing and is returning an AL status certificate for your records.

The AL status certificate indicates:

- Advice Letter Number
- Name of Filer
- CPUC Corporate ID number of Filer
- Subject of Filing
- Date Filed
- Disposition of Filing (Accepted, Rejected, Withdrawn, etc.)
- Effective Date of Filing
- Other Miscellaneous Information (e.g., Resolution, if applicable, etc.)

The Energy Division has made no changes to your copy of the Advice Letter Filing; please review your Advice Letter Filing with the information contained in the AL status certificate, and update your Advice Letter and tariff records accordingly.

All inquiries to the California Public Utilities Commission on the status of your Advice Letter Filing will be answered by Energy Division staff based on the information contained in the Energy Division's PAL database from which the AL status certificate is generated. If you have any questions on this matter please contact the:

Energy Division's Tariff Unit by e-mail to
edtariffunit@cpuc.ca.gov

March 27, 2020

Advice 5796-E

(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Modification to Electric Rule 21 to Revise the Effective Date For Smart Inverter Phase 3 Functions 1, 2, and 8 and Phase 2 Communication Requirements to June 22, 2020.

Purpose

The purpose of this advice letter is to revise Pacific Gas and Electric Company's PG&E) Electric Rule 21 based on the California Public Utilities Commission (CPUC) approval of a request submitted by Fronius USA LLC and Ginlong Solis USA to revise the deployment date for smart inverter Phase 3 functions 1,2, 3 and 8¹ Phase 2 Communication Requirements from March 22, 2020, until June 22, 2020.

Background

CPUC Rulemaking (R.)11-09-11² initiated on September 22, 2011, with the goal to review, and if necessary, revise the rules and regulation governing the interconnection of generation and storage facilities to the IOUs³ electrical distributions systems, as set out in the IOUs' respective Electric Rule 21 tariff.

One portion of R.11-09-11 addressed the establishment of a clear policy towards the use the deployment of communications-capable smart inverters. In the first of several decision relating to new "smart" inverters, Decision (D) 14-12-035⁴ established Phase 1

¹ Phase 3 Functions 1 (Monitor Key Data) and 8 (Scheduling) and Phase 3 Functions 2 (DER Disconnect and Reconnect) and 3 (Limit Maximum Active Power).

² R.11-09-011 - Order Instituting Rulemaking on the Commission's Own Motion to improve distribution level interconnection rules and regulations for certain classes of electric generators and electric storage resources.

³ California's Independently Owned Utilities consists of PG&E, Southern California Edison Company, and San Diego Gas & Electric Company.

⁴ D.14-12-035 - Interim Decision Adopting Revisions To Electric Tariff Rule 21 For Pacific Gas And Electric Company, Southern California Edison Company, And San Diego Gas & Electric Company To Require "Smart" Inverters.

that included new smart inverter functions. These were incorporated into Rule 21 in PG&E Advice Letter (AL) 4565-E⁵.

Subsequently, on June 23, 2016, CPUC D.16-06-052⁶ was issued. It captured the results of three years of discussion the Smart Inverter Working Group (SIWG)⁷ and as set out in Ordering Paragraph 9 and Appendix D, directed the IOUs to submit within 6 months proposed revisions to Rule 21 setting forth the:

- (i) technical requirements, testing and any certification for communications requirements as defined in “Phase 2” and
- (ii) for similar requirements for advance smart inverter functionality as defined in “Phase 3”.

As required by D. 16-06-052, on December 20, 2016, PG&E along with the other IOUs jointly submitted Advice Letter (AL) 4982-E⁸, and PG&E separately submitted AL 4983-E⁹. The purpose of AL 4982-E was “to modify Electric Tariff Rule 21, Generating Facility Interconnections, to incorporate communication requirements for generating facilities utilizing inverter-based technologies based on the Phase 2 recommendations put forth by the SIWG and as adopted in D.16-06-052 (or the Decision).” The purpose of AL 4983-E, a joint IOU Information-Only submission was “to provide both a status report and related Work Plan regarding further development of the Phase 3 Functions.” The CPUC by letter approved AL 4983-E and on April 6, 2017 in Resolution E-4832¹⁰ ordering paragraph 3 approved AL 4982-E. E-4832 Ordering Paragraph 2 and 3 told the IOUs they were “permitted to add a subsection of communications requirements in Electric Tariff Rule 21 to incorporate the Smart Inverter Working Group Phase 2 recommendation” and “the new subsection will become mandatory for generating facilities utilizing inverter-based technologies for which an interconnection request is submitted on or after the effective date which is defined as the later of:

⁵ AL 4565-E submitted January 20, 2015 - Revisions to Electric Tariff Rule 21 in Compliance with Decision 14-12-035.

⁶ D.16-06-052 - Alternate Decision Instituting Cost Certainty, Granting Joint Motions To Approve Proposed Revisions To Electric Tariff Rule 21, And Providing Smart Inverter Development A Pathway Forward For Pacific Gas And Electric Company, Southern California Edison Company, And San Diego Gas & Electric Company.

⁷ D.16-06-052, Finding of Fact 20.

⁸ AL 4982-E - Modifications to Electric Tariff Rule 21 to Incorporate Communication Requirements for Smart Inverters (Phase 2).

⁹ AL 4983-E - Information Only Filing – Joint Investor-Owned Utilities Status Report and Supporting Action Plan for the Development of Advanced Inverter Functions for Smart Inverters (Phase 3).

¹⁰ E-4832 - Resolution E-4832. Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E), Approval with Modification of Revisions to Electric Tariff Rule 21 to Incorporate Smart Inverter Working Group (SIWG) Phase 2 Communications Recommendations in Compliance with Decision (D.) 16-06-052.

- (a) March 1, 2018, or
- (b) Nine months after the release of the SunSpec Alliance Communication Protocol certification standard or the release of another industry-recognized communication protocol certification test standard.”

Final revisions to the Phase 3 recommendations were issued at the March 31, 2017, Smart Inverter Working Group (SIWG). On August 18, 2017, PG&E submitted AL 5129-E¹¹ “in compliance the California Public Utilities Commission’s (CPUC or Commission) Decisions (D.) 14-12-035 and 16-06-052 that addresses Phase 2 and 3 recommendation of the SIWG...in order to facilitate smart inverter deployment.” AL 5129-E updated Rule 21 with these recommendations, and at the same time included revisions to the smart inverter Phase 2 communications requirements. On April 25, 2018, CPUC Resolution E-4898¹² approved AL 5129-E with modification adopting these Phase 3 recommendations and requiring Functions 1 and 8 capable inverters be deployed on “9 months following SunSpec Alliance Communication Protocol Certification Test Standard”¹³ and Functions 2 and 3 capable inverters be deployed on the “Earlier of: 1) December 2019 or 2) 12 months after approval of the IEEE 1547.1 standard revision.”¹⁴

PG&E later submitted ALs 5302-E¹⁵, 5302-E-A, 5302-E-B and 5302-E-C. AL 5302-E’s purpose was to “to make additional modifications to the Rule 21 changes made in AL 5129-E for Phase 3 Smart Inverters pursuant to Resolution E-4898 (the Resolution) Ordering Paragraph 2.” It modified Rule 21 to make the effective date of Functions 1 and 8 to be February 22, 2019 since the SunSpec Alliance issued the SunSpec Common Smart Inverter Profile (CSIP) Conformance Test Procedures (SunSpec test procedure) on May 22, 2018 and February 22, 2019 is six months later. Before the final supplement, AL 5302-E-C, was completed, “due to the complex technical and procedural nature of the rollout of the Smart Inverter capabilities, on November 19, 2018, CALSSA¹⁶ submitted a petition-for-modification requesting a six-month extension of the deadline (from February 22, 2019, to August 22, 2019) to comply with both the Smart Inverter Phase II communications and Phase III, Functions 1 and 8, as established by E-4898.”¹⁷

¹¹ AL 5129-E Modifications to PG&E’s Electric Rule 21 Tariff and Interconnection Agreements and Forms to Incorporate Smart Inverter Phase 3 Modifications.

¹² E-4898- 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.

¹³ E-4998, Table 2: Final Effective Dates.

¹⁴ Ibid.

¹⁵ AL 5302-E submitted May 25, 2018 - Additional Modifications to the Electric Rule 21 Changes made

¹⁶ CALSSA, or California Solar & Storage Association (formerly known as CALSEA).

¹⁷ AL 5302-E-C page 4.

Therefore when PG&E submitted AL 5302-E-C¹⁸, PG&E noted, “The purpose of this supplemental advice letter is to make additional modifications to Electric Rule 21, Generating Facility Interconnections, to incorporate **a six month extension of time (until August 22, 2019)** to comply with the deadline for Smart Inverter Phase II communication requirements, pursuant to (i) Resolution E-4832, Ordering Paragraph (OP) 2 and 4, and for Phase III **Functions 1 and 8**, (ii) Resolution E-4898, OP 2.a. and (iii) the January 2, 2019, letter from the California Public Utilities Commission (CPUC or Commission) modifying the timelines” (emphasis added). AL 5302-E-C was approved May 14, 2019.

CALSSA again submitted a Petition for Modification of E-4832 and E-4898 on February 11, 2019, noting that “further extension of the effective date for certain inverter capabilities may be needed” to the February 22, 2019 smart inverter Phase 2 and 3 deployment date, and citing specific issues. In response the petition, the CPUC issued Resolution E-5000^{19,20} on July 11, 2019, in Ordering Paragraphs 10²¹ and 11²² that revised the deployment dates in Appendix D of E-4898 from those noted in (a) and (b) in the E-4898 discussion above to **January 22, 2020**.

On November 21, 2019, with the January 22, 2020 new smart inverter functionality deployment date approaching, CALSSA requested a third extension - “a two-month extension of the deadline to comply with Functions 1,2, 3 and 8 (collectively ‘smart inverter requirements’) ... CALSSA requested an extension from the deadline from January 22, 2020 to **March 22, 2020**”²³ in a letter to CPUC Executive Director Alice Stebbins. On December 24, 2019, the Energy Division of the CPUC shared a response letter²⁴, noting “We find the extension requested by CALSSA is necessary” and it agreed to extend the date to March 22, 2020. On Jan 6, 2020 CALSSA served notice to

¹⁸ AL 5302-E-C submitted February 20, 2019.

¹⁹ E-5000 - Resolution 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.

²⁰ E-5036 Resolution E-5036. Clarifies the testing requirements for smart inverter Phase 2 communications and corrects a typographical error in Resolution E-5000; E-5036 was issued December 5, 2019 modifying E-5000.

²¹ Ordering Paragraph 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. (emphasis added)

²² Ordering Paragraph 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. (emphasis added).

²³ As described in the response letter cited in Footnote 24.

the service list for E-5000 of the letter with the CPUC approval of the extension request to March 22, 2020.

A Tier 1 AL 5735-E²⁴ was submitted to update Rule 21 to reflect the revised the smart inverter deployment date for Function 1, 2, 3 and 8 from January 22, 2020, to March 22, 2020. It was approved February 7, 2019 and made effective January 10, 2020.

On March 17, 2020, Fronius USA LLC (Fronius) and Ginlong Solis USA (Ginlong) requested via the service list a several month delay citing travel and certification delays due to COVID-19 epidemic. The Commission in a response²⁵ dated March 20, 2020, granted an extension of three months (i.e., until June 22, 2020). This Tier 1 Advice Letter revises proposes to revise the deployment date for smart inverter Phase 3 functions 1,2, 3 and 8²⁶ Phase 2 Communication Requirements in Rule 21 from March 22, 2020, until June 22, 2020.

Tariff Revisions

PG&E updates the March 22, 2020, deployment date for Smart Inverter Functions 1, 2, 3, and 8 to June 22, 2020, in Rule 21 in the following locations:

- 1) Section Hh, 2.p Phase 3 Functions, Table of Phase 3 Effective Dates Pursuant to Resolutions E-4898 and E-5000. This includes a date change to the table header.
 - a. Function 1 – Monitor Key DER Data
 - b. Function 2 – DER Disconnect and Reconnect Command
 - c. Function 3 – Limit Maximum Power
 - d. Function 8 – Scheduling Power Value and Modes
- 2) Section Hh, 5.a Communications Requirements
- 3) Section Hh, 6.a Scheduling Capability Requirements [Function 8]
- 4) Section Hh, 7.a Monitoring and Telemetry Requirements [Function 1]

Protests

Any party wishing to protest this submittal may do so by letter sent via U.S. mail, facsimile or E-mail, no later than April 16, 2020 which is 20 days after the date of this submittal. Protests must be submitted to:

²⁴ https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5735-E.pdf

²⁵ CPUC Letter from Alice Stebbins, Executive Director dated March 20, 2020 subject: *Request of Fronius USA LLC and Ginlong Solis USA for Extension of Time to Comply with Rule 21 Smart Inverter Communications Requirements.*

²⁶ Phase 3 Functions 1 (Monitor Key Data) and 8 (Scheduling) and Phase 3 Functions 2 (DER Disconnect and Reconnect) and 3 (Limit Maximum Active Power).

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

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

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

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

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

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

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

Effective Date

PG&E requests that this Tier 1 advice submittal become effective March 20, 2020 the date of the CPUC letter, and prior to the original deployment date of March 22, 2020.

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 list for R.07-07-007 and R.09-09-009. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter submittals can also be accessed electronically at: <http://www.pge.com/tariffs/>.

_____/S/

Erik Jacobson
Director, Regulatory Relations

cc: Service List R.17-07-007

Attachments:

Public Attachment A – Clean version of updated Rule 21 Tariff

Public Attachment B – Redline of Rule 21 Tariff Revisions



ADVICE LETTER SUMMARY

ENERGY UTILITY



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

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

Utility type:

☒ ELC ☐ GAS ☐ WATER
☐ PLC ☐ HEAT

Contact Person: Kimberly Loo

Phone #: (415)973-4587

E-mail: PGETariffs@pge.com

E-mail Disposition Notice to: KELM@pge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 5796-E

Tier Designation: 1

Subject of AL: Modification to Electric Rule 21 to Revise the Effective Date For Smart Inverter Phase 3 Functions 1, 2, and 8 and Phase 2 Communication Requirements to June 22, 2020.

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

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

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

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: 3/20/20

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 A

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:

Clear Form

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
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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

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:

(T)

<u>Phase 3 Function #</u>			
	<u>Description</u>	<u>Effective Date (note)</u>	
1	Monitor Key DER Data	June 22, 2020	(T)
2	DER Disconnect and Reconnect Command (Cease to Energize and Return to Service)	June 22, 2020	(T)
3	Limit Maximum Active Power Mode	June 22, 2020	(T)
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	(T)

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

(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 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:

(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.

(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 June 22, 2020.

(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.

(Continued)



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 June 22, 2020. (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)



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Sheet 1

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Advice 5796-E
Decision

Issued by
Robert S. Kenney
Vice President, Regulatory Affairs

Submitted March 27, 2020
Effective March 20, 2020
Resolution



ELECTRIC TABLE OF CONTENTS

Sheet 20

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(Continued)

Advice 5796-E
March 27, 2020

Attachment B

Redline of Rule 21 Tariff Revisions



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

Table of Phase 3 Effective Dates Pursuant to Resolution E-4898 and
Resolution E-5000 and CPUC Letter of ~~December-March 204~~, 20**2019**
responding to a request to extend the date for Functions 1, 2, 3 and 8:

(T)

Phase 3 Function #			
	Description	Effective Date (note)	
1	Monitor Key DER Data	March-June 22, 2020	(T)
2	DER Disconnect and Reconnect Command (Cease to Energize and Return to Service)	March-June 22, 2020	(T)
3	Limit Maximum Active Power Mode	March-June 22, 2020	(T)
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	March-June 22, 2020	(T)

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

(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 ~~March-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: (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.

(Continued)

<i>Advice</i>	5735-E	<i>Issued by</i>	<i>Submitted</i>	January 10, 2020
<i>Decision</i>	D.14-12-035,	Robert S. Kenney	<i>Effective</i>	January 10, 2020
	D.16-06-052	<i>Vice President, Regulatory Affairs</i>	<i>Resolution</i>	



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 ~~March~~ June 22, 2020.

(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.

(Continued)

<i>Advice</i>	5735-E	<i>Issued by</i>	<i>Submitted</i>	January 10, 2020
<i>Decision</i>	D.14-12-035,	Robert S. Kenney	<i>Effective</i>	January 10, 2020
	D.16-06-052	<i>Vice President, Regulatory Affairs</i>	<i>Resolution</i>	



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 ~~March~~ June 22, 2020. (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)

<i>Advice</i>	5735-E	<i>Issued by</i>	<i>Submitted</i>	January 10, 2020
<i>Decision</i>	D.14-12-035,	Robert S. Kenney	<i>Effective</i>	January 10, 2020
	D.16-06-052	<i>Vice President, Regulatory Affairs</i>	<i>Resolution</i>	

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