

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



October 12, 2016

Advice Letter 4914-E

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

**SUBJECT: Modifications to PG&E's Electric Rule 21 Tariff Pursuant to D.14-12-035
to Reflect the Approval Date of Inverter Based Technologies
Requirements**

Dear Mr. Jacobson:

Advice Letter 4914-E is effective as of September 13, 2016.

Sincerely,

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

Edward Randolph
Director, Energy Division



Erik Jacobson
Director
Regulatory Relations

Pacific Gas and Electric Company
77 Beale St., Mail Code B10C
P.O. Box 770000
San Francisco, CA 94177

Fax: 415-973-1448

September 13, 2016

Advice 4914-E

(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Modifications to Pacific Gas and Electric Company's Electric Rule 21 Tariff Pursuant to Decision 14-12-035 to Reflect the Approval Date of Inverter Based Technologies Requirements

Purpose

In compliance with Ordering Paragraph (OP) 4 the California Public Utilities Commission's (CPUC or Commission) Decision (D.) 14-12-035,¹ Pacific Gas and Electric Company (PG&E) respectfully submits this advice letter to update PG&E's Electric Rule 21 Tariff to reflect the approval date of Supplemental SA of UL 1741 (with California requirements).

Background

The Commission opened Rulemaking (R.) 11-09-011 on September 22, 2011 to review and, if required, revise the rules and regulations governing interconnecting generation and storage resources to the electric distribution systems of PG&E, Southern California Edison Company (SCE) and San Diego Gas & Electric Company (SDG&E) (together, the investor-owned utilities or IOUs), which are generally set forth in Electric Rule 21.

To develop proposals to incorporate additional inverter functionality, the parties to this proceeding created the Smart Inverter Working Group (SIWG). In January 2014, the SIWG issued its "Recommendations for Updating the Technical Requirements for Inverters in Distributed Energy Resources."

On May 13, 2014 the Commission issued the Assigned Commissioner's Amended Scoping Memo and Ruling (ACR) requiring the IOUs to file proposed revisions to Rule 21 in order to incorporate the SIWG January 2014 recommendations.

¹ 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, was adopted on December 18, 2014 [the Decision].

On July 18, 2014, pursuant to the ACR and utilizing the January 2014 SIWG recommendations as starting point, the IOUs filed and served in the R.11-09-011 docket a draft Advice Letter to facilitate the deployment of smart inverter capabilities. On August 18, 2014, parties filed comments on the IOUs' proposed revisions to Rule 21.

On December 22, 2014, the Commission issued D.14-12-035, which adopted the IOUs' revisions to Rule 21 with modifications. Accordingly, PG&E filed Advice 4565-E on January 20, 2015 to revise relevant section of Rule 21 and add Section Hh to Rule 21 that addresses the inverter based technologies and incorporates the functionalities unique to smart inverters.

While Advice 4565-E was approved with an effective date of January 20, 2015, the Commission established in D.14-12-035 that the use of smart inverters will become mandatory at the later of December 31, 2015 or twelve (12) months after the date the Supplement SA of UL-1741 (with California requirements) is approved by the full UL-1741 Standards Technical Panel. On September 8, 2016, the UL announced the approval of the new UL 1741 Supplement A (SA) to test and certify inverters and other utility interconnected distributed generation equipment for grid support functions enabling smarter, safer, reactive grid interconnection. Thus, pursuant to OP 4 of D.14-12-035, PG&E is updating Rule 21 to reflect the date the use of smart inverters will become mandatory based upon the approval date of the Supplement SA of UL-1741 (with California requirements).

Tariff Revisions

The proposed changes to Rule 21 are as follow:

Section H:

Section H shall also continue to be used for interconnection of inverter based technologies until September 8, 2017 ~~the later of two dates: either (1) December 31, 2015 or (2) twelve (12) months after the date the Supplement SA of UL-1741 (with CA requirements) is approved by the full UL-1741 Standards Technical Panel (STP).~~ 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.

Section H.3.d.i:

Inverter based systems may continue to be installed per Section H until September 8, 2017 ~~the later of either (1) December 31, 2015 or (2) twelve (12) months after the date the Supplement SA of UL-1741 (with California requirements) is approved.~~ Section Hh, may be used in all or in part, for inverter based technologies by mutual agreement of the Distribution Provider and the Applicant.

Section Hh:

Section H shall continue to be used for interconnection of inverter based technologies until September 8, 2017 ~~the later of two dates: either (1) December 31, 2015 or (2) twelve (12) months after the date the Supplement SA of UL-1741, (with CA requirements) is approved by the full UL-1741 Standards Technical Panel (STP).~~ 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.

The filing would not increase any current rate or charge, cause the withdrawal of service, or conflict with any rate schedule or rule.

Protests

Anyone wishing to protest this filing may do so by letter sent via U.S. mail, facsimile or E-mail, no later than October 3, 2016, which is 20 days after the date of this filing. Protests must be submitted to:

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

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

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

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

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

Facsimile: (415) 973-1448
E-mail: PGETariffs@pge.com

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

Effective Date

PG&E requests that this Tier 1 advice filing become effective upon date of filing, September 13, 2016.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service list for R.14-07-002, R.12-11-005, and R.11-09-011. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter filings can also be accessed electronically at: <http://www.pge.com/tariffs/>.

/S/

Erik Jacobson
Director, Regulatory Relations

Attachments

cc: Service Lists R.14-07-002, R.12-11-005, and R.11-09-011
Marc Monbouquette, Energy Division
Mary Claire Evans, Energy Division
Gabriel Petlin, Energy Division
Jeffrey Kwan, Energy Division

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY ENERGY UTILITY

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

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

Utility type:

ELC GAS
 PLC HEAT WATER

Contact Person: Kingsley Cheng

Phone #: (415) 973-5265

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

EXPLANATION OF UTILITY TYPE

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

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: **4914-E**

Tier: **1**

Subject of AL: **Modifications to Pacific Gas and Electric Company's Electric Rule 21 Tariff Pursuant to Decision 14-12-035 to Reflect the Approval Date of Inverter Based Technologies Requirements**

Keywords (choose from CPUC listing): Compliance, Rules

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

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: D.14-12-035

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

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

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

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

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

Resolution Required? Yes No

Requested effective date: **September 13, 2016**

No. of tariff sheets: **5**

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

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

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

Tariff schedules affected: **Electric Rule 21**

Service affected and changes proposed: N/A

Pending advice letters that revise the same tariff sheets: **4894-E**

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

California Public Utilities Commission
Energy Division
EDTariffUnit
505 Van Ness Ave., 4th Flr.
San Francisco, CA 94102
E-mail: EDTariffUnit@cpuc.ca.gov

Pacific Gas and Electric Company
Attn: Erik Jacobson
Director, Regulatory Relations
c/o Megan Lawson
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, CA 94177
E-mail: PGETariffs@pge.com

**ATTACHMENT 1
Advice 4914-E**

**Cal P.U.C.
Sheet No.**

Title of Sheet

**Cancelling Cal
P.U.C. Sheet No.**

| | | |
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| 37438-E | ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 149 | 36935-E |
| 37439-E | ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 164 | 36950-E |
| 37440-E | ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS Sheet 165 | 36951-E |
| 37441-E | ELECTRIC TABLE OF CONTENTS Sheet 1 | 37428-E |
| 37442-E | ELECTRIC TABLE OF CONTENTS RULES Sheet 21 | 37012-E* |



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 149

G. ENGINEERING REVIEW DETAILS (Cont'd.)

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.

Section H shall also continue to be used for interconnection of inverter based
 technologies until September 8, 2017. Following such date, Section Hh shall
 apply for interconnection of inverter based technologies. Until such date,
 Section Hh may be used in all or in part, for inverter based technologies by
 mutual agreement of the Distribution Provider and the Applicant.

(T)

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 164

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

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. (T)

ii) The replacement of an existing inverter to an inverter that is of equal or greater ability than the original is allowed per Section H. Section Hh may be used in all or in part, for replacement inverter-based technologies by mutual agreement of the Distribution Provider and the Applicant.

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.

(Continued)



ELECTRIC RULE NO. 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 165

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

4. SUPPLEMENTAL GENERATING FACILITY REQUIREMENTS (Cont'd.)

b. Transfer Trip

For a Generating Facility that cannot detect Distribution or Transmission System faults (both line-to-line and line-to-ground) or the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds, Distribution Provider may require a Transfer Trip system or an equivalent Protective Function.

c. Reclose Blocking

Where the aggregate Generating Facility capacity exceeds 15% of the peak load on any automatic reclosing device, Distribution Provider may require additional Protective Functions, including, but not limited to reclose-blocking on some of the automatic reclosing devices.

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.

(T)

¹ "The Standard for Inverters, Converters, and Controllers for Use in Independent Power Systems".

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Sheet 1

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Advice Letter No: 4914-E
 Decision No. 14-12-035

Issued by
Steven Malnight
 Senior Vice President
 Regulatory Affairs

Date Filed September 13, 2016
 Effective September 13, 2016
 Resolution No. _____



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Sheet 21

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

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