Clay Faber – Director
Regulatory Affairs
8330 Century Park Ct
San Diego, CA 92123

CFaber@sdge.com

April 6, 2021

ADVICE LETTER 3734-E
San Diego Gas & Electric Company (U 902-E)

ADVICE LETTER 6153-E
Pacific Gas & Electric Company (U 39-E)

ADVICE LETTER 4462-E
Southern California Edison Company (U 338-E)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

SUBJECT: JOINT SUBMITTAL - SAN DIEGO GAS & ELECTRIC EVALUATION PROCESS AND CRITERIA TO ASSESS MICROGRID DIFFERENT ISOLATION TECHNOLOGIES PURSUANT TO DECISION 21-01-018

PURPOSE

San Diego Gas & Electric Company, Southern California Edison Company and Pacific Gas and Electric Company (Joint Utilities) submit this Tier 2 advice letter to comply with the requirement of Decision (D.) 21-01-018 (Decision) to define the criteria and evaluation process to assess different isolation technologies, including utility-scale technologies capable of handling California's complexity and diversity as specified by the Decision.

BACKGROUND

On September 12, 2019, the Commission initiated Rulemaking (R.) 19-09-009 to design a framework for the commercialization of microgrids in accordance with Senate Bill (SB) 1339 and to account for the Commission's commitment to technologies and activities that may be useful for achieving overall resiliency goals.

The *Assigned Commissioner's Scoping Memo and Ruling for Track 1* divided the proceeding into three tracks.[1] Track 1 encompasses the Commission's goal of deploying resiliency solutions in areas that are prone to outage events and wildfires, with the goal of putting some

[1] *Assigned Commissioner's Scoping Memo and Ruling for Track 1* (December 20, 2019), at 2.

microgrid and other resiliency strategies in place by spring or summer 2020, if not sooner.[2,3] Track 2 of this proceeding encompasses the more complex issues and contours of SB 1339 implementation, including developing standards, protocols, guidelines, methods, rates, and tariffs to support and reduce barriers to microgrid deployment statewide, while prioritizing system, public, and worker safety, and avoiding cost shifts between customers.

On July 23, 2020, the assigned Administrative Law Judge issued a ruling with a proposal prepared by the Commission's Energy Division, titled, *Facilitating the Commercialization of Microgrids Pursuant to Senate Bill 1339* (Staff Proposal). The Staff Proposal recommended requiring the utilities to develop a pilot program to evaluate the safety and reliability of utilizing low-cost methods to provide electrical isolation for backup power applications and to identify and propose solutions for any implementation and deployment issues.[4]

On January 21, 2021, the Commission issued the Decision adopting microgrid rates, tariffs, and rules to facilitate the commercialization of microgrids pursuant to SB 1339. The Decision's Ordering Paragraph (OP) 9 adopts the Staff Proposal's recommendation, with modification, by requiring the utilities to evaluate low-cost, reliable electrical isolation methods.

Within 30 days of issuance of the Decision, OP 9 requires the utilities to file Tier 2 advice letters that define their proposed criteria and evaluation process to assess different technologies to isolate customer premises "to safely provide backup power from distributed generation or a storage resource to customer loads during a wider grid outage..."[5] In addition, the Decision encourages coordination and collaboration between the Joint Utilities on evaluation plans to reduce the potential for duplicative efforts.[6]

In this advice letter, the Joint Utilities submit a common evaluation criteria and process "to develop a pathway for diverse technologies to support disconnection of a premise's entire electrical service to support electrical isolation during a wider grid outage," pursuant to Section 3.5.3 of the Decision.[7] The evaluation criteria and process also help to ensure that the evaluations and assessments are open, transparent, and subject to equitable treatment of different technologies and suppliers on a non-preferential basis, and that the evaluations also include utility-scale technologies capable of handling California's complex and diverse energy needs safely and reliably, as required by the Decision.

The Joint Utilities' evaluation criteria and assessment process described below address each of the requirements set forth in OP 9 of the Decision.

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2 *Id.* at 3.

3 On June 11, 2020, the Commission adopted Decision (D.) 20-06-017 that included a number of requirements to accelerate the interconnection of resiliency projects in advance of the upcoming wildfire season; modernize tariffs to maximize social resiliency benefits; and promote collaborative engagement between large investor-owned utilities (utilities) and local and tribal governments.

4 Administrative Law Judge's Ruling, July 23, 2020, Attachment 1 – Staff Proposal, at 24.

5 Decision, Finding of Fact 28, at 105.

6 Decision, at 79.

7 *Id*., Conclusion of Law 20, at 108-109.

DISCUSSION – EVALUATION CRITERIA AND PROCESS

A microgrid allows customers to electrically island and isolate themselves from the Utility being the source. When islanded, onsite generation resources continue to operate and provide power to the premise, which creates the potential for electrical current to back-feed onto the grid absent an isolation device, or transfer switch.

The potential to back-feed and energize the distribution line cannot be understated. While the Joint Utilities support technologies that allow the customer to self-supply power during a Public Safety Power Shutoff (PSPS) event, if not properly isolated from the grid or a failure occurs by the isolating device, the distribution line could become energized. Such back-feed introduces the same fire potential risk the Joint Utilities are trying to mitigate with PSPS. In addition, the safety of our employees, contractors and the public will depend on the ability for the isolation device to function properly and prevent back-feed of a de-energized distribution line. Visible electrical isolation devices are the Utilities' best way to protect against back-feed to keep our workers and the public safe.

The Joint Utilities support new technologies to enable microgrids that will ensure system, worker, and public safety, in accordance with PU Code §8371(d). However, equipment connected behind the meter and those that physically touch the Joint Utilities' meters on customer premises must be certified to the most current industry standards and codes. Standards development organizations (SDOs)[8] publish industry standards for a broad range of equipment. The United States Occupational Safety and Health Administration (OSHA) further enforces additional standards that ensure occupational safety for workers.[9] In accordance with federal regulations, OSHA maintains a list of Nationally Recognized Testing Laboratories (NRTLs) that test and certify electrical equipment to all applicable national standards.

The Supplier Technical Checklist outlined in Attachment A provides a comprehensive list of the technical requirements that any supplier must provide to the Joint Utilities in order to complete the evaluation process for new isolation technology. In addition to certifications, all device installations must meet National and California Electrical Code requirements, including permitting though the local authority/government with jurisdiction.

1. Process for submittal of isolation technology by a third-party to Joint Utilities.

Any supplier that desires to submit isolation technology for evaluation and review by the Joint Utilities must send an email[10] to the Utilities with the subject line: "Request for Evaluation of Isolation Technology." In that email, the supplier should provide, among other information:

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[8] Underwriters Laboratories (UL), Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute (ANSI), National Electrical Manufacturers Association (NEMA), National Fire Protection Association (NFPA), among others.

[9] 29 CFR Part 1910.

[10] Upon approval of this advice letter, the Joint Utilities will notice the service list with the advice letter and provide a dedicated email address for each utility for suppliers to submit requests for technology evaluation.

- full contact information for the supplier, including email, phone number, and physical mailing address;
- state clearly if this technology is being tested with another Utility to ensure appropriate coordination of resources;
- a detailed narrative description of the isolation technology or device;
- proof that such technology or device has received NRTL certification to the most current industry standards adopted by the applicable SDOs and communication from the national standard organization why that standard applies to this technology;[11]
- independent lab testing results justifying the certification and already completed for the electrical isolation technology or device;
- detailed technical drawings, diagrams, manuals, and pictures of the technology or device;
- proposed relationship with the Utility and customer, and impacts on customer service and experience;[12] and
- any other information that the supplier believes may be helpful to Joint Utilities in evaluating the technical, safety and operational aspects of the technology or device for use or installation by the respective customers of the Joint Utilities or for use or installation on a utility-scale level.

2. Required timeframe for Joint Utilities to respond to the suppliers with a specific evaluation plan for the submitted technology.

Within 60 days of receiving the required information (contingent on emergency events occurring at the Utility), Joint Utilities will contact the supplier and request any follow-up information needed, schedule technical meetings, ask for a demonstration of the technology or device, or make other relevant requests necessary for Joint Utilities to conduct their respective evaluations of the technology or device. In addition, Joint Utilities will provide the supplier with a draft "test and evaluation" agreement that will include terms and conditions for conducting the evaluation and assessment, modeled on the Commission's requirements for standard technology demonstration projects funded by utility customers under its Electric Program Investment Charge and Smart Grid Pilots decisions.[13]

3. Required timeframe for completion of an initial evaluation by Joint Utilities.

Each of the Joint Utilities will notify the supplier via email when they have determined that they have received sufficient information to properly evaluate the technology or device. Unless otherwise noted in the email, each of the Joint Utilities will complete its evaluation and provide

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[11] The supplier should consult with SDOs regarding what standards and test procedures are applicable to the specific technology or device.

[12] Utility troubleshooters provide 24/7 customer service. Troubleshooters will be unable to commence field work until customer-owned isolation technology installed at the meter socket is removed.

[13] See D.20-08-042, at 2-7, summarizing prior CPUC decisions adopting criteria for technology demonstration projects; D.13-03-032, at 6-8, summarizing CPUC criteria for approval of Smart Grid-related pilot technologies under Smart Grid decisions.

its written report on the evaluation within 90 days. The Joint Utilities will also keep the supplier reasonably informed about the progress of the evaluation, including any issues that are noted or delays in reviewing submittal.

4. **Process for engaging with and providing Joint Utilities feedback to the submitter of the technology.**

Consistent with other iterative and collaborative technology evaluations, Joint Utilities and the supplier will reasonably cooperate with each other to complete the evaluation in a reasonable timeframe. Joint Utilities and the supplier will establish a reasonable schedule of calls, meetings, or other means of providing feedback and progress during the evaluation process.

5. **Expectations for engagement by and response to Joint Utilities feedback from submitter of the technology.**

During the evaluation process, the supplier may receive requests for additional information and responses to interim test and assessment results from Joint Utilities. The supplier should respond as soon as reasonably practicable given the circumstances, keeping in mind that the evaluation process may be delayed if the supplier is not able to promptly respond.

6. **Process for identifying which, if any, standards or safety requirements are applicable and must be certified or tested by a Nationally Recognized Testing Laboratory (*e.g.*, Intertek, UL).**

Suppliers shall seek certification at a NRTL to the most current industry standards adopted by the applicable SDO. The supplier is responsible for asking the SDO, what specific standards would apply that align with their technology or if a new standard needs to be developed. This process should be completed in advance of submittal to the Joint Utilities, of which may yield additional standards or safety requirements certification based on the technology type and its unique characteristics. It is wholly the responsibility of the supplier to demonstrate readiness prior to the Joint Utilities conducting the evaluations and assessments.

The submitted technology must comply with the most current applicable standards, such as and not limited to those identified in Table 1. In addition, the submitted technology must meet OSHA standards to ensure the worker's safety and to identify specific hazardous conditions at the jobsite.[14]

7. **Identification of which evaluation steps can be completed prior to certification or testing by a Nationally Recognized Testing Laboratory and which must be completed after certification or testing.**

For the Joint Utilities' evaluations and assessments to be safe and complete, the submitted technology must undergo product testing and final report by the NRTL prior to the Joint Utilities' evaluation and assessments.

[14] 29 CFR Part 1910

8. **Discussion of circumstances when lab or field testing by the Joint Utilities will be required in addition to certification by a Nationally Recognized Testing Laboratory to applicable standards (*e.g.*, UL 414 and UL 1741).**

The Joint Utilities understand that the process outlined in this advice letter applies solely to isolation technologies at the meter. As part of the evaluation and assessment, the Joint Utilities will require lab and/or field testing to validate the safety, reliability, and functionality of the technology or device. The technology or device must meet OSHA standards to ensure worker safety and to identify specific hazardous conditions.

9. **Justification by Joint Utilities for repeating any testing (*e.g.*, high-voltage, environmental performance testing) already completed as part of certification to a national standard by a Nationally Recognized Testing Laboratory.**

The Joint Utilities may in some circumstances need to replicate testing completed by the supplier or its contracted third-party. Based on the Joint Utilities' experience with nascent technologies that have not been deployed for mass-market commercial use, anomalies are often found during utility testing of products that previously have been tested by suppliers.

The Joint Utilities will collaborate with the supplier to detect and address any such anomalies that affect the safety, reliability, inter-operability, and performance of the technology or device for utility-grade tariffed customer service and interconnection. Once remediation has occurred, the utility will conduct regression testing to validate intended performance and functionality. In addition, depending on location of installation and technology, additional measures may be required before final approval, including training of Utility workforce, development of new Utility standards or updates to existing standards, and coordination changes to ensure that operation of the technology does not conflict with or introduce safety challenges outside of daily tasks incurred by the Utility.

10. **Identification of an evaluation approach for examining the use of advanced metering infrastructure, and technologies that leverage it, to enable electrical isolation as a viable resilience strategy, as identified on page 4 of the July 3, 2020, R.19-09-009 scoping ruling.**

Attachment A Supplier Technical Checklist contains the general evaluation approach for examining isolation technologies, including advanced metering infrastructure (AMI). The Joint Utilities will make clear evaluation criteria used for the assessment of any AMI proposed for review by the supplier – *e.g.*, physical inspections, power on/off, voltage variations, full load testing, light load testing, no load testing, disconnect/reconnect if applicable, firmware, and configuration updates if applicable, hardware/software interface (including cybersecurity), local, and remote functionalities.

11. **Discussion of circumstances when customer-supplied technology would be allowed and justification by Joint Utilities for any circumstances requiring utility-supplied technology**

Technologies installed within the utility workspace must demonstrably mitigate any safety risk and not pose interoperability issues with utility infrastructure, such as the meter. Further, the isolation device must not interfere with the utilities' ability to retrieve meter data, secure customer data and control the connection and disconnection of customer premises.

The Joint Utilities' evaluation criteria and plans will support functional testing of submitted technology that touches, connects to, or affects the utility meter or meter functionality, both during initial installation and upon subsequent operation and maintenance. The evaluation process will dictate, on a case-by-case basis, whether the technology will be customer-supplied or utility-supplied.

The Joint Utilities' evaluation and assessment reports regarding different supplier technologies and devices will also include, as appropriate, any legal issues associated with the technologies and devices, including ownership and open access to the technologies and devices. The installation of customer-supplied and/or customer-owned equipment between the utility meter and the customer panel raises a variety of concerns that will be resolved in collaboration with suppliers based on the specific supplier technologies.

When an isolation device is installed between the utility service point and the meter there may be situations where utility or third-party access to the device is necessary. For example, in case of device failure that impacts service to the customer, the utility would need access to the diagnostic information to restore power safely and avoid unnecessary delayed response. Additionally, any insights that would provide information on the health of the installation, such as potential hot sockets or arcing, should be provided to the utility to ensure safety and to prevent potential fire incidents.[15]

Decision on utility, third-party, or customer ownership of the isolation device will depend on:

- the results of the technical safety and reliability evaluation conducted under this the process in this advice letter;
- impacts to customer service and experience;
- commercial and manufacturing availability in compliance with the technical evaluation; and
- any formal guidance and approval required from the Commission, as appropriate.

In particular, whether the device is customer-owner or utility-owned, novel agreements and processes may be necessary to govern the following:

- IOU and supplier roles/responsibilities during the installation process

[15] For example, PG&E's SmartMeter technology currently has capabilities to provide information on the health of the meter socket, such as temperatures above 130 degrees Fahrenheit for consecutive periods of time. This temperature information helps ensure safety and prevent potential fire incidents at the customer panel. Third-party electrical isolation technologies installed between a PG&E SmartMeter and the meter socket would no longer allow PG&E to monitor the meter socket health with the embedded SmartMeter technology.

- IOU and supplier roles/responsibility to respond to customer requests for service (including unexpected disconnection from the grid and after-hours calls)
- IOU and supplier ability/responsibility to inspect and maintain the installation/configuration (including configuration of panel connection to customer device)
- IOU/supplier ability/responsibility to remove the customer device (either for a short period for inspection or for an indefinite period due to device failure)
- IOU/supplier ability/responsibility to re-install customer device following removal
- IOU/supplier ability/responsibility to understand current status of the device
- Defined processes/procedures/limitations for IOU/supplier to activate the device and disconnect and reconnect customer from the grid.
- Processes/limitations on aggregations of customers simultaneously disconnecting or reconnecting to the grid
- IOU/supplier ability/responsibility to manually override the device in response to customer request.
- IOU ability to verify that customer generation equipment will revert to anti-islanding functionality in the event the isolation switch is inoperable or removed.
- Additional consumer protections as needed to ensure safe, reliable service.

The Joint Utilities will collaborate with suppliers to determine mutually acceptable processes, procedures, and agreements to address the above concerns and other issues that may be identified, either under a customer ownership or utility ownership scenario.

12. Process and proposed timeframe for completing detailed evaluation by Joint Utilities, inclusive of a determination and explanation regarding whether the proposed technology is approved for use and for reflecting that determination in the Joint Utilities' service rule

See response to section 3, above.

13. Process and frequency for reporting, to the Commission, summaries and outcomes of technology evaluations undertaken by Joint Utilities, including information from the perspective of the submitter of the technology and a summary of any irresolvable disputes between the evaluating utility and the submitter of the technology.

The Joint Utilities' evaluation and assessment reports will be provided upon request to the Commission and will include comments on the reports by the respective suppliers, based on advance availability of the draft reports to the suppliers. Information and results may be considered proprietary and will require agreement from supplier.

EFFECTIVE DATE

This filing is subject to Energy Division disposition and should be classified as Tier 2 pursuant to OP 9 of the Decision which Joint Utilities respectfully request become effective on May 6, 2021, which 30 days subsequent to the date of this submittal.

PROTEST

Anyone may protest this Advice Letter to the California Public Utilities Commission. The protest must state the grounds upon which it is based, including such items as financial and service impact, and should be submitted expeditiously. The protest must be made in writing and must be received by April 26, 2021, which is 20 days from the date filed. There is no restriction on who may file a protest. The address for mailing or delivering a protest to the Commission is:

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

Copies of the protest should also be sent via e-mail to the attention of the Energy Division Tariff Unit (EDTariffUnit@cpuc.ca.gov). A copy of the protest should also be sent via e-mail to the address shown below on the same date it is mailed or delivered to the Commission.

SDG&E

Attn: Greg Anderson
Regulatory Tariff Manager
E-Mail: GAnderson@sdge.com and SDGETariffs@sdge.com

PG&E

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

SCE

Gary A. Stern, Ph.D.
Managing Director, State Regulatory Operations
Southern California Edison Company
8631 Rush Street
Rosemead, California 91770
Telephone: (626) 302-9645
Facsimile: (626) 302-6396
E-mail: AdviceTariffManager@sce.com

Tara S. Kaushik
Managing Director, Regulatory Relations

c/o Karyn Gansecki
Southern California Edison Company
601 Van Ness Avenue, Suite 2030
San Francisco, California 94102
Facsimile: (415) 929-5544
E-mail: Karyn.Gansecki@sce.com

NOTICE

A copy of this filing has been served on the utilities and interested parties shown on the attached list and Service List R.19-09-009, by either providing them a copy electronically or by mailing them a copy hereof, properly stamped and addressed.

Address changes should be directed to SDG&E Tariffs by e-mail at SDGETariffs@sdge.com.

/s/ Clay Faber

CLAY FABER
Director – Regulatory Affairs

California Public Utilities Commission

ADVICE LETTER SUMMARY

ENERGY UTILITY

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

Company name/CPUC Utility No.: San Diego Gas & Electric (U902)

Utility type:
☑ ELC ☐ GAS ☐ WATER
☐ PLC ☐ HEAT

Contact Person: Joff Morales
Phone #: 858-650-4098
E-mail: JMorales@sdge.com
E-mail Disposition Notice to: SDGETariffs@sdge.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 3734-E

Tier Designation: 2

Subject of AL: Joint Submittal - San Diego Gas & Electric Evaluation Process to Assess Microgrid Isolation Technologies Pursuant to Decision 21-01-018

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 #: D.21-01-018

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: N/A

Summarize differences between the AL and the prior withdrawn or rejected AL: N/A

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: 5/6/21

No. of tariff sheets: N/A

Estimated system annual revenue effect (%):

Estimated system average rate effect (%):

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: N/A

Service affected and changes proposed[1]: N/A

Pending advice letters that revise the same tariff sheets: N/A

[1]Discuss in AL if more space is needed.

Clear Form

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: Greg Anderson
Title:
Utility Name: San Diego Gas & Electric
Address: 8330 Century Park Court, CP32C
City: San Diego
State: California Zip: 92123
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email: GAnderson@sdge.com

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

Clear Form

General Order No. 96-B
ADVICE LETTER SUBMITTAL MAILING LIST

cc: (w/enclosures)

Public Utilities Commission
CA. Public Avocates (CalPA)
R. Pocta
F. Oh
Energy Division
M. Ghadessi
M. Salinas
L. Tan
R. Ciupagea
Tariff Unit
CA Energy Commission
B. Penning
B. Helft
Advantage Energy
C. Farrell
Alcantar & Kahl LLP
M. Cade
K. Harteloo
AT&T
Regulatory
Barkovich & Yap, Inc.
B. Barkovich
Biofuels Energy, LLC
K. Frisbie
Braun & Blaising, P.C.
S. Blaising
D. Griffiths
Buchalter
K. Cameron
M. Alcantar
CA Dept. of General Services
H. Nanjo
California Energy Markets
General
California Farm Bureau Federation
K. Mills
California Wind Energy
N. Rader
Cameron-Daniel, P.C.
General
City of Poway
Poway City Hall
City of San Diego
L. Azar
J. Cha
D. Heard
F. Ortlieb
H. Werner
M. Rahman
Clean Energy Renewable Fuels, LLC
P. DeVille
Clean Power Research
T. Schmid
G. Novotny
Commercial Energy
J. Martin
regulatory@commercialenergy.net
Davis Wright Tremaine LLP
J. Pau
Douglass & Liddell
D. Douglass
D. Liddell
Ellison Schneider Harris & Donlan LLP
E. Janssen
C. Kappel
Energy Policy Initiatives Center (USD)
S. Anders
Energy Regulatory Solutions Consultants
L. Medina
Energy Strategies, Inc.
K. Campbell
EQ Research
General
Goodin, MacBride, Squeri, & Day LLP
B. Cragg
J. Squeri
Green Charge
K. Lucas
Hanna and Morton LLP
N. Pedersen
JBS Energy
J. Nahigian
Keyes & Fox, LLP
B. Elder
Manatt, Phelps & Phillips LLP
D. Huard
R. Keen
McKenna, Long & Aldridge LLP
J. Leslie
Morrison & Foerster LLP
P. Hanschen
MRW & Associates LLC
General
NLine Energy
M. Swindle
NRG Energy
D. Fellman
Pacific Gas & Electric Co.
M. Lawson
M. Huffman
Tariff Unit
RTO Advisors
S. Mara
SCD Energy Solutions
P. Muller
Shute, Mihaly & Weinberger LLP
O. Armi
Solar Turbines
C. Frank
SPURR
M. Rochman
Southern California Edison Co.
K. Gansecki
TerraVerde Renewable Partners LLC
F. Lee
TURN
M. Hawiger
UCAN
D. Kelly
US Dept. of the Navy
K. Davoodi
US General Services Administration
D. Bogni
Valley Center Municipal Water Distr
G. Broomell
Western Manufactured Housing
Communities Association
S. Dey
Copies to
AddisScott9@aol.com
ckingaei@yahoo.com
clower@earthlink.net
hpayne3@gmail.com
puainc@yahoo.com
Service List(s)
R.19-09-009

Attachment A
Supplier Technical Checklist

The criteria, standards, and requirements outlined below are necessary for the Joint Utilities to begin the technical evaluation process for any new behind the meter isolation technology.

1. Certified test report by a Nationally Recognized Testing Laboratory documenting the tests completed and their results. A certified test report documenting the tests and their results. The test report will be signed by the supplier's chief engineer and include all charts, graphs, and data recorded during testing, including a full copy of the exponent report.

2. Proof of compliance with the most current certifications to applicable national standards, including detailed test results and meta data, in advance of evaluation by the Joint Utilities.[1] The standards identified in Table 1 below shall be applied, but not limited, to the microgrid ecosystem.

3. Compliance with the following tariffs relating to interconnection, cybersecurity, and customer data privacy:

    a) Rule 21 – Generation Facility Interconnection (section Hh.1c)

    b) Rule 25 – Release of Customer Data to Third Parties

    c) Rule 27 – Privacy and Security Protections for Energy

    d) Rule 27.1 – Access to Energy Usage and Usage-Related Data While Protecting of Personal Data

4. No product shall be installed on customer premise before all test and certification requirements are met and approved by Joint Utilities.

5. Detailed description and cutsheets of the new product or technology.

6. Electrical schematics, firmware/software schematics, detailed description of operating system (e.g., sync settings), failure mechanism, and communications systems.

7. Installation, maintenance documents, and training materials, plus details on the O&M cost projections.

8. A full functioning system to be installed in the Utilities' labs. Utility testing is necessary to validate the new technology, confirm application with internal equipment unique to each Utility, and develop internal standards to train workforce.

    a) *Lab Testing:* 6-8 samples, 3+ months. Collaborations amongst the Joint Utilities on certain tests can be allowed.

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[1] It is wholly the responsibility of the supplier to demonstrate readiness prior to Joint Utilities conducting evaluations and assessments, including applicable cyber security standards and penetration testing results. Additional standards and/or safety requirements certification may be identified, depending on the technology type and integration with Utility system.

b) *Functional and Integration Testing:* 3+ month duration, where each Utility will conduct its own independent end to end testing.

c) *Pilot Testing:* Field test, with a joint effort from the supplier, where the device is installed at a customer's premise. The pilot identifies areas for possible training for Utility field personnel and validate field functionality in various climate zones. The duration of the pilot may vary unless agreed upon between the supplier and Utility.

Table 1 – Devices and Standards

Device	Applicable Suggested Behind the Meter Standard[2]
Transfer Switch	▪ UL 1008: Transfer Switch Equipment ▪ NFPA 110: Emergency and Standby Power Systems ▪ IEEE 446: IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications ▪ NEMA ICS10: Automatic Transfer Switches
Metered-Mounted Transfer Switch	▪ UL 1008M: Meter-Mounted Transfer Switch Equipment, which includes parameters for UL 414 Safety Meter Sockets Standard ▪ UL 508: Industrial Control Equipment for Electric Motors ▪ UL 1449: Surge Protective Devices ▪ ANSI C12.1: Code for Electricity Metering – Service Switch ▪ OSHA 1910.147: standard for service and maintenance of equipment that can energize and harm employees. ▪ UL 489: Circuit Breakers
Electric Meter	▪ UL 2735: Electric Utility Meter Safety Standard and Conformity Assessment ▪ ANSI C12.1: Code for Electricity Metering
Meter Socket	▪ UL 414: Safety Meter Sockets Standard, updated in 2020 for heat-rise test ▪ ANSI C12.1: Code for Electricity Metering
Smart Inverter	▪ UL 1741: Test Procedure for Inverters, Converters, Controllers, and DER Equipment ▪ IEEE 1547: Standard for Interconnecting Distributed Resources with Electric Power Systems ▪ IEEE 2030.5: Standard for Communications Protocol

[2] General standards currently required for equipment that comprises a microgrid. The standards that apply to any technology or equipment depend on the unique characteristics and function of that equipment. Consultation with SDOs may be necessary to confirm which national standards may be applicable to the isolation technologies, depending on equipment design.

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.
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
Cenergy Power
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

East Bay Community Energy Ellison Schneider & Harris LLP Energy Management Service
Engineers and Scientists of California

GenOn Energy, Inc.
Goodin, MacBride, Squeri, Schlotz & Ritchie
Green Power Institute
Hanna & Morton
ICF
IGS Energy
International Power Technology
Intestate Gas Services, Inc.
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
McKenzie & Associates

Modesto Irrigation District
NLine Energy, Inc.
NRG Solar

Office of Ratepayer Advocates
OnGrid Solar
Pacific Gas and Electric Company
Peninsula Clean Energy

Pioneer Community Energy

Redwood Coast Energy Authority
Regulatory & Cogeneration Service, Inc.
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
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