

# Interconnection Discussion Forum

## Q1 2022

Hosted by CPUC Energy Division Interconnection Team

February 16, 2022 | 1:00-4:00 PM

Held virtually via WebEx



California Public  
Utilities Commission

# Meeting Logistics

Today's agenda and slides have been distributed to the IDF participant list. If any updates are required after this meeting, they will be distributed again within the week.

All attendees (except panelists) are automatically on Mute.

If you have questions: unmute yourself, send them via **chat directly to Jimmy Mahady (CPUC Regulatory Analyst) or raise your hand.**

# Ground rules

Interconnection Discussion Forum is structured to stimulate an honest dialogue and engage different perspectives

Interconnection Discussion Forum is expressly not part of the formal proceeding

Keep discussion respectful

Chat feature is only for Q&A or technical issues. Do not start sidebar conversations with panelists

# Agenda

*Note: If needed, we can shorten or extend timing below to accommodate for exchange.*

**1:00 – 1:10 PM – Welcome and Introduction (Lead Facilitator: Jimmy Mahady, CPUC Energy Division)**

**1:10 – 1:40 PM – IOUs to present on Load and Generation Streamlining per [Resolution E-5165](#) OP 2 (Lead Presenters: PG&E, SCE and SDG&E)**

**1:40 – 1:45 PM – Break**

**1:45 – 2:15 PM – Utilities to Present on Progress towards Aggregator Agreements per [Decision 21-06-002](#) OP 19 (Lead Presenters: PG&E, SCE and SDG&E).**

**2:15 – 2:35 PM – Stakeholder Concern Regarding Utility Service Requirements:**

- **American Solar Concern Regarding [PG&E Service Requirements](#) Issue: AC Disconnect Switch (Lead Presenter: American Solar).**

**2:35 – 2:40 PM – Wrap up and next steps (Lead Facilitator: Jimmy Mahady, CPUC Energy Division)**

# Streamlined Process for Load and Generation Update

February 16, 2022



Together, Building  
a Better California



# Intro to YourProject Portal

- YourProjects portal is a single, unified portal where customers can apply for Load and Generation simultaneously for residential projects
- ACE-IT, SNEM, and CCO will be combined into the single YourProjects making it easier for customers to get services
- YourProjects portal is live and new functionalities will be rolled out soon
  - Currently the portal is only accepting generator interconnection and wholesale load projects
- Your Projects portal will allow residential Zero Net Energy (ZNE) customers with no meter # to apply, including subdivision projects
- YourProjects allows the customer to submit a single application for load and generator but the application is still being processed in parallel by PG&E's interconnection and Service Planning teams



# Update On YourProject Portal

- Unique Identifier functionality is already rolled out in YourProjects as of December 2021
  - Customers can identify their projects using one reference number specifically for generation projects
- On Feb 22, 2022, PG&E will be introducing new YourProjects functionalities:
  - New retail load applications
  - New load and generator applications for residential projects (includes ZNE)
  - Relocate or alter PG&E facilities
  - Applications for revisions to current services, I.E. homes/buildings, outdoor equipment, electric vehicle charging stations (V1G)

- Thus far, PG&E has only received one V2G-AC project and no V2G-DC Project
- The functionalities to collect the V2G data has not been integrated into our portal. The V2G functionalities will be integrated into our portal soon. In the meantime, please continue to apply as instructed previously
- Simultaneous residential load and generator applications will be the foundation for the same process for V2G
- PG&E is still exploring a simplified parallel process for load and generator projects. Since V2G inverter technology is so new and is still being tested, we recommend a “Walk before Run” approach

# Interconnection Discussion Forum

In Compliance with Resolution E-5165 Ordering Paragraph 2

February 16, 2022

# Purpose and Overview

**Report on efforts to offer single, streamlined process to customers submitting interconnection requests that include both load and generation at IDF meeting within 120 days of the issuance of [Resolution E-5165 issued on November 4, 2021].**

- Purpose and Overview
- Resolution E-5165
  - Background
  - E-5165 Ordering Paragraph 2 Efforts
- Summary

# Background

## Resolution E-5165:

- Issued on November 4, 2021
- Five Ordering Paragraphs related to bidirectional V2G DC and V2G AC
- This update is related to Resolution E-5165 Ordering Paragraph 2
- Related documents:
  - Decision 20-09-035 ([LINK](#))
  - SCE AL 4510-E ([LINK](#))

## Resolution E-5165 Summary

*In Decision 20-09-035, the California Public Utilities Commission (CPUC) adopted Proposals 23e - allowing interconnection applicants with a Vehicle-to-Grid Direct Current Electric Vehicle Supply Equipment (V2G DC EVSE) system to request permission to switch to bidirectional mode after completing the Rule 21 interconnection process - and 23i - exempting V2G Alternating Current (AC) system pilots, temporarily, from Rule 21 smart inverter requirements. Ordering Paragraph 42 directed San Diego Gas & Electric (SDG&E), Southern California Edison (SCE), and Pacific Gas and Electric (PG&E) to file a Tier 3 Advice Letter to request approval of the implementation steps for these two proposals after presenting them at a Vehicle-to-Grid Workshop.*

*Approves, with modifications, the Joint Advice Letter (AL) San Diego Gas & Electric Company AL 3774-E, Southern California Edison Company AL 4510-E, and Pacific Gas and Electric Company AL 6209-E that **allows vehicle-to-grid direct current (V2G DC) projects connected as load-only to enable bidirectional mode and implements a temporary pathway to interconnection for V2G alternating current (AC) pilots** ([Resolution E-5165, PDF Page 2](#))*

# Resolution E-5165 OP 2: Status Update on Efforts

## Efforts

### Planning Sessions:

- Internal stakeholder meetings to brainstorm potential solutions to simplify the interconnection processes of load + gen facilities
- Development of Use Cases, specifically identification of projects that can benefit of such changes

## Discussions

- Although few projects have requested interconnection of bidirectional V2G DC and AC, SCE manages hundreds of load + gen interconnections with no significantly quantifiable issues
- Given the maturity of V2G technology, learning opportunities continue to exist, specially with the continued development of key technical/national standards and related pilots (EPIC Project)
- Customers already have the option of parallelizing interconnection requests, if they so desire.

## Outcomes

### Preliminarily,

- Opportunity has been identified to develop a single, centralize landing page for customers planning to interconnection projects that include both load + gen
- Bidirectional V2G projects may seem to be the ones that may benefit from these efforts
- SCE has been and will continue to implement the processes outlined within approved tariffs/rules

# Summary

- SCE will continue exploration of a centralized landing page for the interconnection of gen + load projects.
- Regarding V2G projects: we will all continue to learn through the increased adoption of the technology and related efforts, such as EPIC-funded V2G demonstration projects. Any learnings will be instrumental to inform potential changes to the interconnection of these facilities.

## Related Topics:

- Accelerated Permission-To-Operate (PTO) Process
  - SCE Presentation ([LINK](#)) and Checklist ([LINK](#))
- Notification-Only Pilot
  - SCE's Pilot Information ([LINK](#))



# STREAMLINING STUDY PROCESSES

FOR LOAD + GENERATION PROJECTS

INTERCONNECTION DISCUSSION FORUM  
Q1 2022

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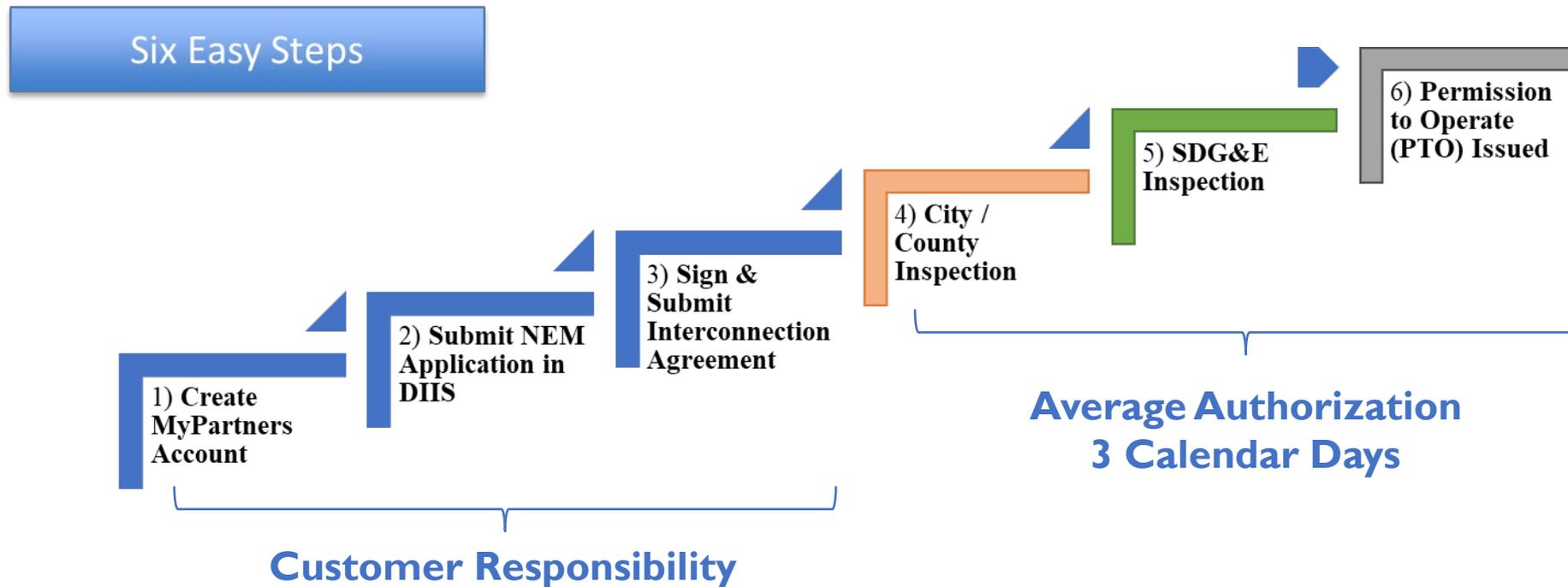
# DISTRIBUTION INTERCONNECTION INFORMATION SYSTEM (DIIS) APPLICATION PORTAL

*Current Status*



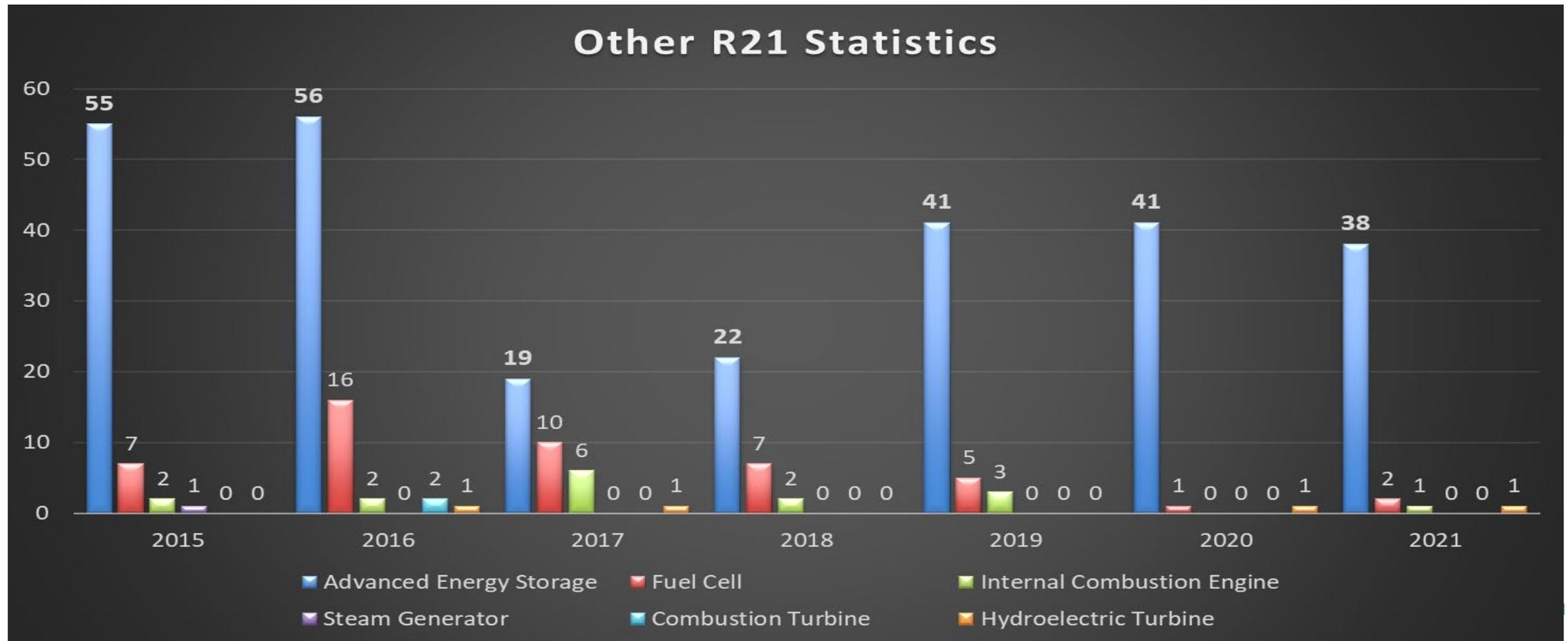
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- NEM  $\leq$ 30kW Applications
  - NEM > 30kW Applications
  - NEM-AGG, NEM-V, SOMAH Applications
  - V2G Applications
  - Automated Authority Having Jurisdiction Electrical Releases
  - Other Rule 21 Interconnection Applications
    - Export
    - Inadvertent Export
    - Non-Export
  - Backup Generator Applications
  - Renewable Meter Adapter Requests
  - Reverse Power Flow Analysis

# AUTOMATED APPLICATION PROCESS



*SDG&E's automated process has eliminated many of the administrative type customer application deficiencies that existed prior to its implementation.*

# OTHER RULE 21 APPLICATION STATISTICS



\*Other Rule 21 Apps <1% of all applications.

# PARALLEL REVIEW PROCESSES



- Contractor begins Service Planning INITIATION Process and then contacts Customer Generation.
- Contractor completes and submits Form 142-05203 Generator Interconnection Application (GIA) via email to [Netmetering@sdge.com](mailto:Netmetering@sdge.com).
- If Account/Premise is created, then project is submitted via the DIIS Application Portal. If service Account/Premise not available, then review is done manually via email communication internally until application is submitted through the DIIS Application portal.
- Proven track record of successful interconnection projects submitted and processed in parallel, not serial:
  - V2G DC EVSE Projects – School District Projects (2)
  - Distribution Facility – 5-MW Solar PV + Advanced Energy Storage
  - Medical Facility – 2-MW Fuel Cell
  - 10+ Battery Vehicle charging stations throughout service territory

# 5-minute Break



# *Status Update:* Template Aggregator Agreement

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# Regulatory Background

## **D.21-06-002, Ordering Paragraph (OP) 19:**

- Proposal F-2 is adopted. The Utilities shall work with stakeholders to finalize the template Aggregator Agreement.
- No later than one year from the issuance of this decision, Utilities shall submit a Tier 2 Advice Letter requesting approval of the template.
- If consensus is not reached, Utilities shall file a Tier 3 Advice Letter and include all stakeholder recommendations and positions.

## **Working Group Proposal F2 Highlights:**

- The aggregator must have a signed agreement with the Utility.
- Ensures the aggregator can manage customer communications with Utilities.
- Includes minimal requirements: functionality, cybersecurity, customer privacy.
- No contractual obligation for the Utility but defines aggregator responsibilities.
- WG 2 Report: “The Working Group proposes to develop forms and agreements to allow DER Aggregators to fulfill Rule21 Requirements.”

# Is a Template Aggregator Agreement Necessary?

- The IOUs do not believe that a generic *Aggregator Agreement* is needed at this time to:
  - Qualify Aggregators
  - Define functional, cybersecurity and privacy requirements
  - Enable communications
- Utilities will *only* use aggregator services (communicate with/to aggregators) under the aegis of a pilot/program
  - There is currently no *global mandate* for aggregator services to be enabled (including setting up communications) for smart inverter functionalities or any other service
  - Utilities will need specific program/pilot *contracts* which are enforceable as they are signed by all parties
  - Aggregators would presumably require this as well before providing any services

# Existing Use Cases Eliminate the Need

There are existing Commission-approved programs that implement contracts between IOUs and Aggregators that:

- Define the exact services provided by aggregators on behalf of customers
- Define the technologies aggregators may contract for
- Define the terms and conditions (T&Cs) for aggregators to provide services, including:
  - Financial Terms
  - Performance and Maintenance Obligations
  - Remediation/Default Terms
  - Customer Privacy
  - Legal Language (Indemnification, Confidentiality, Insurance, etc.)
  - Any applicable Cybersecurity Requirements
  - Any applicable Technical Requirements
  - Testing
- As part of these Aggregator Programs, customers must authorize aggregators to perform services on their behalf (e.g., through signed form).

# Example: SCE Partnership Pilot (Distribution Deferral)

- Provides PP contractual terms detailed on previous slide using the Technology Neutral Pro Forma (TNPF). TNPF is also used for a variety of energy procurement contracts.
- Defines technical details of services being provided by aggregators.
- Requires CSIP Certification for Aggregators of inverter-based DERs.
- Requires conformance to SCE DERMS IEEE 2030.5 Aggregator Requirements\*:
  - Defines what is needed from aggregators to complete registration, provisioning, and commissioning processes.
  - Includes monitoring and control requirement where CSIP is either silent or there is optionality in the standard – for instance, when should alarms be sent? When DERs see a low voltage event or trip off due to the event?
- Requires conformance to SCE Cybersecurity Requirements as Appendix to the TNPF.

\* This specification is a separate document called out in TNPF. CSIP Compatible.



# Wrap Up

## Summary:

- An interconnection agreement is a contract between the IOU and customer.
- Aggregator services are provided via other programs or procurement mechanisms through a contract between an aggregator and the IOU.
- Aggregator-IOU contracts should define all requirements necessary for aggregators to meet the objectives of the program, pilot, etc. – including communications.

## Therefore:

It is unnecessary and duplicative to have an Aggregator Agreement as a condition of interconnection and separate Aggregator Contracts to provide aggregated services.

## Caveat:

Future Commission decisions may require smart inverter services to be provided by aggregators on behalf of customers at which time an Aggregator Agreement may be revisited.

# Questions?



# Appendix



# TNPF Communications Requirement

4.7. Metering and Communications Systems. To the extent applicable as set forth in Appendix X, Seller shall install all metering, communications systems and equipment for the Project (“Communications Systems”) at Seller’s sole cost and expense that is necessary to, at all times during the Delivery Term, (i) enable Seller to meet Buyer’s instructions in accordance with 4.8, (ii) enable Buyer to remotely dispatch (e.g. immediately disconnect for safety and reliability) and monitor the status of the Project on an aggregate and individual resource basis, (iii) permit Buyer to have real time information access to the operations of the Project, including the ability to measure increases and decreases in real time load/production, and (iv) provide Distribution Services. All electric metering equipment and submeters, whether owned by Seller or by a third party, which are installed on Seller’s side of the Delivery Point, as applicable, shall be operated, maintained and tested by and/or on behalf of Seller in accordance with Prudent Electrical Practices; provided that if the electric metering equipment test is conducted by the interconnecting utility, testing shall be conducted in accordance with the procedures and the standards generally applied by such utility. In the event that, during the Delivery Term, Buyer develops its own system that allows Buyer to exercise greater monitoring or more efficient dispatch of the Project, upon Buyer’s notice Seller shall, at Seller’s expense, promptly enable its Communications Systems to interface with Buyer’s system such that Buyer may monitor and dispatch the Project through Buyer’s system.

# TNPF Distribution Service Types

Distribution Services shall consist of the Project's ability to provide, and the provision of, one or more of the following services that are checked as applicable:

Distribution Capacity Services: which is provided by decreasing net loading on distribution infrastructure during the Operating Parameters through decreasing electrical consumption or increasing generation, in accordance with the Operating Parameters set forth below to mitigate thermal overload conditions and ensure local distribution safety and reliability;

Voltage Support Services: *not available at this time*

Reliability (Back-Tie) Services: which is provided by decreasing net loading on distribution infrastructure through decreasing electrical consumption or increasing generation, in accordance with the Operating Parameters set forth below to reduce thermal loading for local distribution safety and reliability operations (e.g. emergency and planned switching)

Resiliency (Microgrid) Services: *not available at this time*

# Service Requirements Issue

American Solar will present regarding a concern that American Solar has regarding PG&E's service requirements (the following two pages are an overview of American Solar's concern).

## American Solar Proposed Topic for IDF Q1 2022 (Feb 16, 2022):

### Background:

- American Solar has been installing PV systems (as well as battery energy storage systems) in PGE territory for 14 years. We have installed small PV only systems through 600+ kW commercial systems. All are behind the meter and net metered interconnections.
- Until recently, when site requirements dictated it, our systems used a single, compliant disconnecting means to disable the generator on the site (the PV system) located within 10 feet of the meter. This disconnect included both the generator (PV) as well as loads for the site. Such disconnecting means were reviewed, approved and inspected on multiple sites over many years.
- On these sites (frequently estate residences on large lots), the location of the generator may be 200-1000 ft or more away from the service entrance and meter for the property. An appropriate PV disconnecting means is provided before being combined with site loads, and a circuit to the compliant disconnecting switch adjacent to the meter.
- Providing a disconnect switch that only disconnects the generator (PV) and no load adjacent to the meter (and all other PGE, AHJ and fire marshal requirements) can be an extraordinarily expensive and overengineered solution when the generator (PV inverters) are located at a distance from the meter.
- Starting recently, during the engineering review, PGE has begun to require a disconnect switch for the generator (PV) that has no loads on the same disconnect switch.

### Question:

Does PGE's Greenbook require that we provide a disconnect switch that solely isolates the generator with no additional loads? Our AC disconnect switch *with the generator (PV) and additional loads* will "electrically isolate the customer's generator from the PG&E system in order to establish a clearance point for maintenance and repair work in accordance with PG&E safety rules and practices." Therefore it meets the Disconnect Switch Requirements under 060559. See <https://www.pge.com/includes/docs/pdfs/shared/customerservice/nonpgeutility/electrictransmission/handbook/060559.pdf>

The explicit wording of the requirements under 060559 requires isolating the generator and makes no mention of load. The purpose of the requirements may be met by a common disconnect that isolates the generator as well as load. Any maintenance and repair work by PGE would be limited to PGE's equipment and would be isolated from the generator by the common disconnect.

We believe PGE is not appropriately interpreting its own regulations in 060559 and its past practice. PGE's disconnect switch requirements for the generator (PV) in 060559:

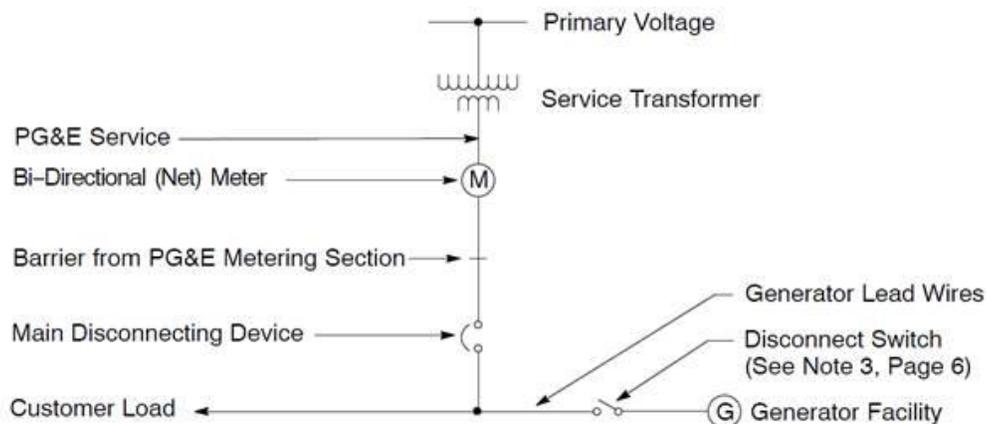
- Does not explicitly exclude loads,
- Is not justified by providing additional safety or operational advantages, and
- Should not limit loads on the disconnect switch as long as the disconnect switch meets all of the **explicit** requirements.

Challenge:

It is not **stated** anywhere in 060559 that the generator (PV) circuits cannot share the handled disconnect with site electrical loads. Safety, maintenance and repair work to PGE's equipment (or to the customer's equipment given PV rapid shutdown requirements) do not require that the Disconnect Switch solely isolate the generator (PV) without the addition of any loads.

However, PGE's NEM group has indicated that it will enforce a requirement that the AC disconnect switch **only** isolate the generator (PV) – and no additional loads. They pointed to the SLD in Figure 2 on page 6 of 060559 (and the similar one in Figure 3) as indicating an explicit requirement that no load exist on the generator circuit behind the disconnect switch. Other regulatory documents do not state requirements in drawings without noting that the drawing shows the only allowable configuration.

PGE stated that the reason for this was so that PGE personnel could provide service to customers *on their loads* while isolating the generator (PV) for maintenance purposes. It has never been our experience that PGE explores load circuits (or any other circuit) on the customer side of the equipment. Of course, required breakers and disconnects would allow separation of loads and the generator (PV) in other portions of the SLD for the residence, if required.



**Figure 2**  
**Typical Disconnect Switch Wiring Diagram**

# Wrap up and closing thoughts

Please feel free to share additional feedback and questions with [Jimmy.Mahady@cpuc.ca.gov](mailto:Jimmy.Mahady@cpuc.ca.gov)

# Thank you!

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