Microgrids Proceeding R.19-09-009 Workshop

Track 5 Proposals on Multi-Property Microgrid Tariff

Grid Resiliency and Microgrids Team, Energy Division

March 26, 2024, 10:00 am – 4:00 pm

California Public Utilities Commission

WebEx and Call-In Information

Join by Computer:

https://cpuc.webex.com/cpuc/j.php?MTID=m4723ebea416e21fc6290124b96f88fe4

Join by Phone:

1-855-282-6330 (U.S. Toll Free)

1-415-655-0002 (U.S. Toll)

Access Code: 2484 809 1660

(Staff recommends using your computer's audio if possible.)

Notes:

- Today's presentations will be available shortly after the meeting on https://www.cpuc.ca.gov/resiliencyandmicrogrids.
- The presentation portion of this meeting will be recorded and posted on https://www.cpuc.ca.gov/resiliencyandmicrogrids.
- While one or more Commissioners and/or their staff may be present, no decisions will be made at this meeting.

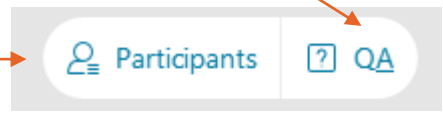
WebEx Logistics

- All attendees are muted on entry by default.
- Questions can be asked verbally during Q&A segments using the "raise hand" function.
  - The host will unmute you during Q&A portions [and you will have a maximum of 2 minutes to ask your question].
  - Please lower your hand after you've asked your question by clicking on the "raise hand" again.
  - If you have another question, please "re-raise your hand" by clicking on the "raise hand" button twice.
- Questions can also be written in the Q&A box and will be answered verbally during Q&A segments.
- Closed Captioning can be turned on by clicking the "cc" button the lower left of your screen.

WebEx Tip

Access the written Q&A panel here

1. Click here to access the attendee list to raise and lower your hand.



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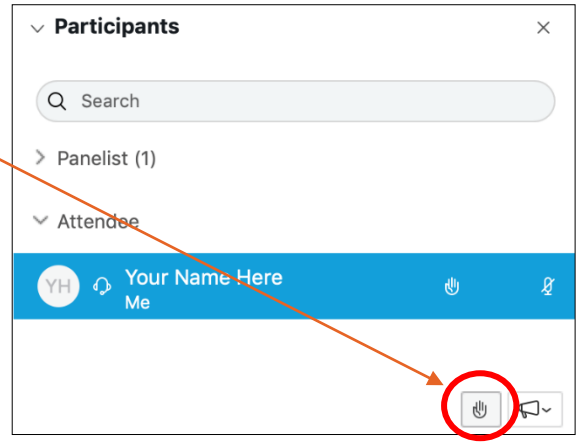

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Agenda

I. Introduction *(CPUC Staff)* • WebEx logistics, agenda review • Proceeding history, multi-property microgrid tariff guiding principles & requirements	**10:00a – 10:15a**
II. Joint IOUs Proposal *(PG&E: Jeremy Donnell, SCE: Eduyng Castano, SDG&E: Stacy Fuhrer)*	**10:15a – 11:30a**
III. Microgrid Resources Coalition (MRC) Proposal *(Baird Brown)*	**11:30a – 12:00p**
LUNCH (60 min)	**12:00p – 1:00p**
IV. Applied Medical Resources (AMR) Proposal *(Steven Jensen)*	**1:00p – 1:30p**
V. Clean Coalition Proposal *(Ben Schwartz)*	**1:30p – 2:00p**
VI. Green Power Institute (GPI) Proposal *(Tam Hunt)*	**2:00p – 2:30p**
BREAK (15 min)	**2:30p – 2:45p**
VII. PearlX Proposal *(Mollie Corcoran)*	**2:45p – 3:15p**
VIII. Sunnova Community Microgrids California (SCMC) Proposal *(Marc Burns, Jamie Charles, Adam Miller)*	**3:15p – 3:45p**
IX. Closing Remarks	**3:45p – 3:50p**

Background and Context

R.19-09-009 Proceeding History

- SB 1339 (2018, Stern) – CPUC, in cooperation with CEC and CAISO, to facilitate the commercialization of microgrids for distribution customers of large electrical corporations.
- Order Instituting Rulemaking issued opening R.19-09-009 in Sept. 2019.
- Five decisions 2020-2024:
  - D.20-06-017 (Track 1) – Accelerate resiliency projects in response to wildfire/PSPS; IOU outreach to and data access for local govts and tribes; PG&E Community Microgrids Enablement Program and Tariff (CMEP/CMET); PG&E temporary generation to mitigate outages due to PSPS.

R.19-09-009 Proceeding History

- D.21-01-018 (Track 2) – Revisions to IOU Electric Service Rules 2 and 18/19 to facilitate more complex microgrids; Microgrid Incentive Program (MIP) to support multi-property microgrids in disadvantaged and vulnerable communities.
- D.21-07-011 (Track 3) – Suspend capacity reservation component of standby charge for highly utilized and available microgrids meeting CARB DG criteria air pollution standards.
- D.21-12-004 (Track 4, Phase 1) – Approved battery storage resources to support system summer reliability and local resiliency.
- D.23-04-034 (Track 4, Phase 2) – Approved MIP implementation plan.

Track 5: Multi-property Microgrid Tariff

- Track 5 is focused on developing a multi-property microgrid tariff.
  - What guiding principles should the Commission adopt to assist in the development of a microgrid multi-property tariff?
  - Should PG&E, SCE, and SDG&E form a multi-property tariff for statewide application?
  - Should the tariff be modeled from PG&E's Community Microgrid Enablement Tariff (CMET)?
  - Should the tariff align with or impact environmental and social justice (ESJ) communities?
- R.19-09-009 re-assigned to President Alice Reynolds on March 4, 2024.

Multi-property Microgrid Tariff Guiding Principles

- See ALJ Rulings August 8, 2023, and October 23, 2023.
- Guiding Principles:

1. Provide rules, terms, and conditions defining the relationship between the utility and the microgrid.
2. Align with all applicable Commission policies and state and local permitting requirements.
3. Align with existing electric service rules (e.g., Rule 2) and existing interconnection processes.

Multi-property Microgrid Tariff Guiding Principles

4. Provide equitable service and universal access while avoiding discriminatory practices.

5. Avoid cross-subsidization and cost shifts between participants and non-participants. Prohibited in P.U.C. § 8371(d).

6. Contain sufficient information and details to facilitate evaluation by Commission staff, the Joint IOUs, and stakeholders.

Multi-property Microgrid Tariff Proposal Requirements

- See ALJ Rulings August 8, 2023, and October 23, 2023.
- Proposal Requirements:

1. Comply with P.U.C § 218 rules for electrical corporations.
2. Define and standardize the technical, operational, and regulatory requirements for microgrids that utilize a utility distribution system to provide resiliency services to two or more end users.
3. Define roles, responsibilities, and requirements for all parties.
4. Address and prioritize safety and system reliability, including but not limited to, public and worker safety, utility system protection, and cybersecurity.

Multi-property Microgrid Tariff Proposal Requirements

5. Comply with existing rules, regulations, and other tariffs. If barriers or conflicts are identified, propose potential solutions.
6. Allow for the utility to always maintain control of its distribution system.
7. Ensure generation and storage resources with the ability to operate in parallel with a utility are interconnected to that utility's distribution system.
8. Do not prohibit generation resource technologies.
9. Require all generation resources to comply with all applicable emissions standards.
10. Do not restrict ownership of generation or storage resources.

Multi-property Microgrid Tariff Proposal Requirements

11. Do not unduly restrict third-party owned resources from participating in markets/programs or providing services during normal conditions.
12. Address service quality for all electricity delivered.
13. Establish mechanisms to ensure consumer and ratepayer protection.
14. Address communications and telemetry between microgrid and utility.
15. Address metering, billing, and settlement processes for delivered electricity.
16. Explain how pricing is established, if relevant.

Tariff Proposals Submitted into the Record

- PG&E, SCE, and SDG&E submitted proposals on October 9, 2023.
- Six parties submitted voluntary proposals on December 15, 2023.
  - Applied Medical Resources Corporation (AMR)
  - Clean Coalition
  - Green Power Institute (GPI)
  - Microgrid Resources Coalition (MRC)
  - PearlX Infrastructure LLC (PearlX)
  - Sunnova Community Microgrids California, LLC (Sunnova)

Joint IOUs Proposal

Joint IOUs
Multi-Property Microgrid Tariff Proposal

March 26, 2024

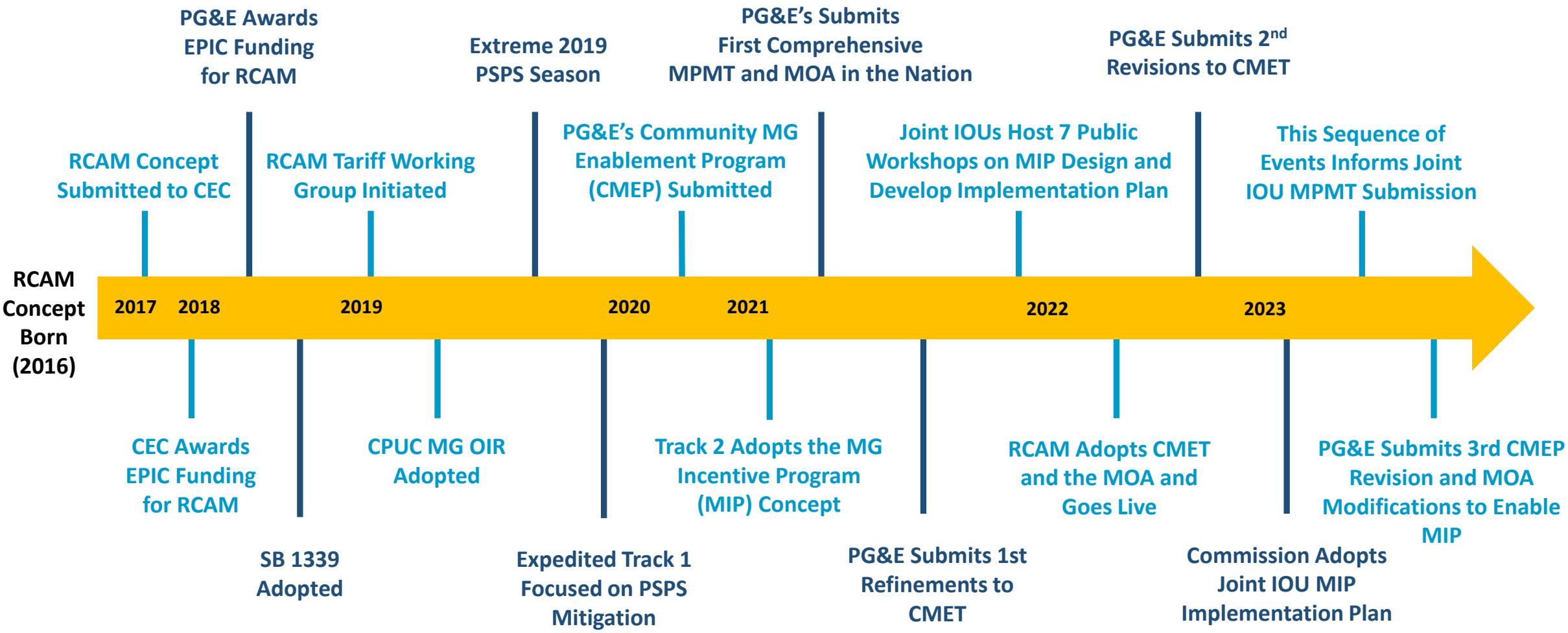
Presented by: Jeremy Donnell (PG&E)
Stacy Fuhrer (SDG&E)
Eduyng Castano (SCE)

PG&E's CMET was built upon the shoulders of nascent industry developments and a timely EPIC pilot

Community Microgrids are at a very early stage of commercial development & involve complex engineering, operational, commercial & regulatory considerations

- Leveraged insights from the PG&E/RCEA RCAM EPIC Pilot – one of the first joint operational community microgrids in the US
- Leveraged insights from early community microgrid tariff & enabling program developments across the US, including work by the entities to the right
- Engaged consultant that supported development of Hawaii's draft microgrid tariff & interconnection rule changes

Nearly 10 Years Ago PG&E, RCEA, and SERC Embraced the Concept of Community Microgrids



Today, California is recognized as the thought leader and a hub of innovation for a sustainable Community Microgrid Framework

PG&E Has Incorporated Years of Learnings into the Current Iteration of the CMET and MOA

Safety and cybersecurity must be first priority

- Do not compromise them under any circumstance

Carefully and thoughtfully address the gaps in the pathway to community microgrids

- Islanded operations, roles and responsibilities, and integration with existing policies/processes are key

Do not recreate the wheel

- Leverage existing frameworks, processes, and expertise wherever it makes sense

Remember that the tariff is one piece of a much larger microgrid puzzle

- The microgrid tariff needs must mesh with adjacent/integrated frameworks

Clear division of ownership, roles and responsibilities is key to a successful partnership model

- Without it things get messy really quickly

After accounting for all those constraints, ensure the end-product is user friendly

- Do not overcomplicate the tariff and allow sufficient flexibility via an operating agreement

What is the Scope of the Joint IOUs Multi-Property Microgrid Tariffs?

- Tariff Structure and Eligibility
- Microgrid Resource Requirements
- Generator Interconnection and Microgrid Islanding (i.e., Interconnection Studies & Microgrid Islanding Study)
- Utility Role & Responsibilities
- Blue Sky Conditions & Applicable Tariffs/Rules
- Microgrid Development (Construction & Testing)
- Microgrid Island Mode Operational Structure & Procedures (i.e., Microgrid Operating Agreement)

The Joint IOUs MPMTs are carefully designed to fill in all gaps necessary to enable pathways for commercialization of community microgrids in California

Roles and Responsibilities are Unambiguous, Leverage Each Party's Strengths, and Respect Key Interests

- **IOUs remain Distribution Service provider**
  - The IOU provides Distribution Service for the customers and resources within the multi-property microgrid during Blue Sky and Island Modes pursuant to all applicable CPUC rules.

- **IOUs remain Distribution System Operator (DSO)**
  - The IOU as utility distribution owner and operator is responsible for distribution service in both Blue Sky and Island Modes, including determination of Emergency Events under which Island Mode operation will be initiated.

- **Communities determine the resilience needs addressed and the resource mix**
  - The local community sponsoring the CMG plays a determinative role in selecting the generation resources that best fit their local priorities. This ensures local preferences are embedded into the tradeoffs between cost, emissions profile, and resiliency capabilities of the microgrid.

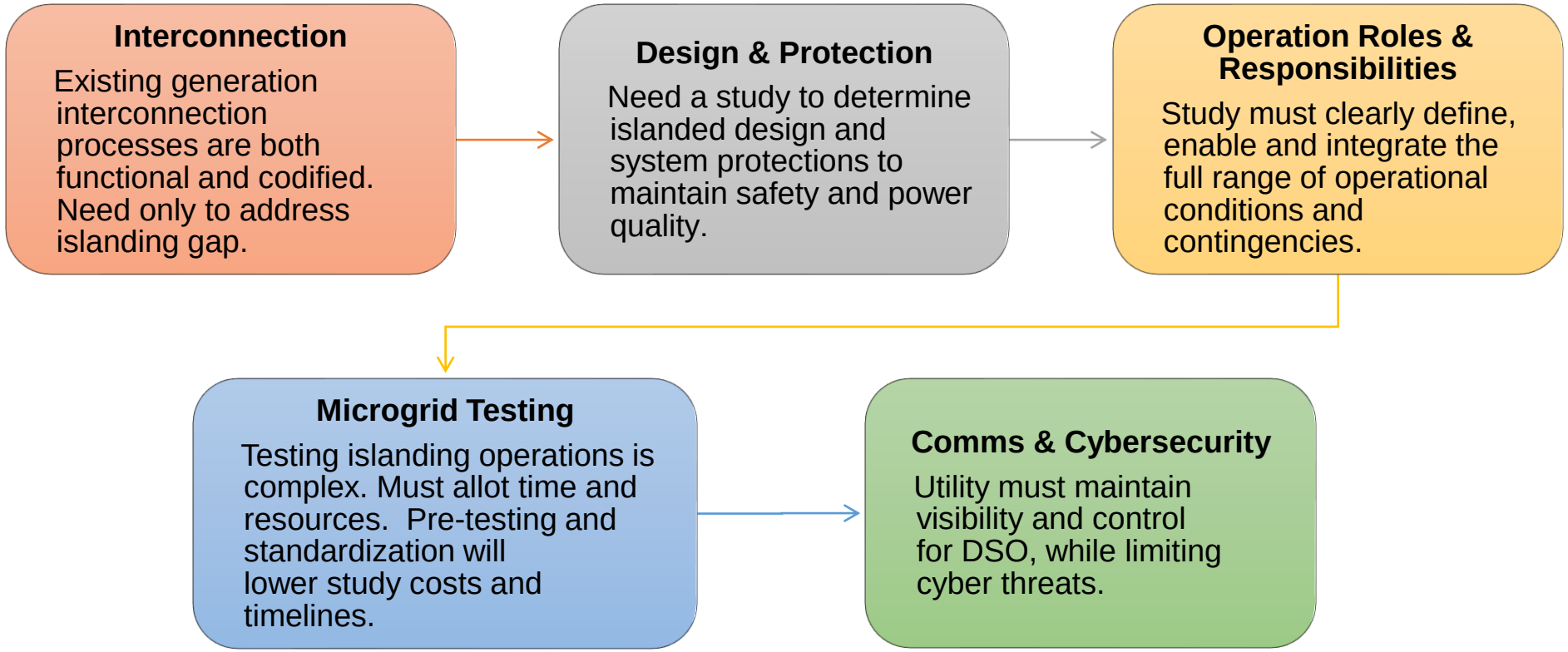
- **The Community and the Community Microgrid Aggregator/Authority jointly determine the DER ownership structure and bilateral contract structure**
  - There are no restrictions placed on how DER ownership is structured and the local community and the CMG aggregator determine how to structure their bilateral relationship.

- **"Community Microgrid Aggregator/Authority" operates DER in both blue sky and islanded modes**
  - The CMG Aggregator/Authority coordinates control of distributed resources, including Community Microgrid Resources and any demand side management resources, consistent with relevant provisions of Electric Rule 2, the WDAT, and Electric Rule 21 including frequency and voltage and other power quality requirements.

- **CPUC retains jurisdiction whether in blue sky or islanded operations**
  - At all times, the CPUC retains its essential role enforcing safety, California policy, and customer protection.

IOUs' Multi-Property Community Microgrid Enablement Tariff

Tackling the Complex Technical, Safety, Security and Operational Challenges of a Community Microgrid

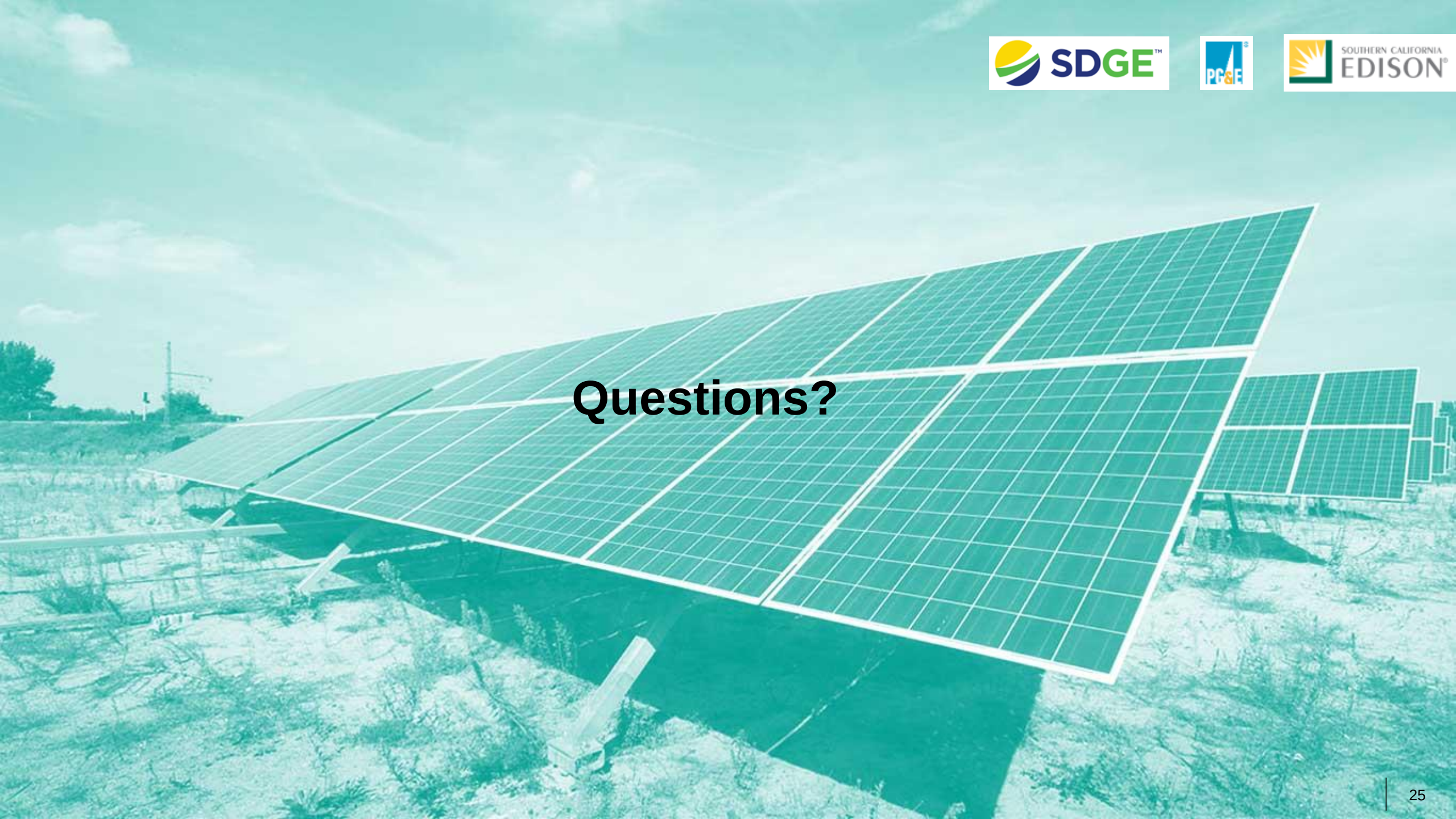


Accounting of Joint IOU's Multi-Property Microgrid Tariff Variations

	PG&E	SCE	SDG&E
Tariff Name	Community Microgrid Enablement Tariff (CMET)	Multi-Property Microgrid Tariff (MPMT)	Multi-Premise Microgrid Enablement Tariff (MPMET)
Microgrid Parameters	Limit CMET projects to 20MW in aggregated export capacity	Limits generation resources interconnected to SCE's Distribution System to those operated at 50 kV or below.	No size limits.
Applicant Experience	Requires at least one current member of development team to have completed at least one microgrid project of similar size and capacity or has begun construction of one	Requires at least one current member of development team to have completed at least one microgrid project of similar size and capacity or has begun construction of one	Requires attestation that Applicant has, or will obtain, technical partner that has experience with development & operation of grid-forming and grid-following resources
MPMT Pre-Application Process	Optional Pre-Application Consultation and Report	Optional Pre-Application Consultation and Report	Neither includes or precludes early consultation with SDG&E.

	PG&E	SCE	SDG&E
MPMT Application Process*	Requires application form to be formally entered into CMET	Details MPMT Application Package including required forms, agreements, maps, and associated costs where applicable	Requires application and SDG&E will have optional initial consultation and technical consultation.
MIS Costs	Applicant is responsible for the actual costs of the MIS study (deposit not yet established) and subsequent Microgrid Special Facilities costs pursuant to Electric Rule 2	$1,200 MPMT Application Fee Applicant is responsible for the actual costs of the MIS study ($75,000 study deposit). Costs of Added Facilities identified in the MIS Study are the responsibility of the applicant.	Applicant is responsible for the actual costs of the MIS study (deposit not yet established) and subsequent Microgrid Special Facilities costs pursuant to Electric Rule 2
Limitations on "Services Agreements"– Blue Sky Operation	No limitations. CMG Authority responsible for managing contracts in accordance with generator interconnection agreement, CAISO market rules and MOA. Violation of MOA may result in termination of microgrid.	No limitations. CMG Authority responsible for managing contracts in accordance with generator interconnection agreement, CAISO market rules and MOA. Violation of MOA may result in termination of microgrid	No limitations. During Island Mode CMG Authority is responsible for ensuring any contracts/participation in programs do not interfere with the ability of SDG&E to provide safe and reliable Distribution Service. Violation of MOA may result in termination of microgrid.

*Note, this is a separate application process from MIP


Questions?

Discussion and Q&A

WebEx Tip

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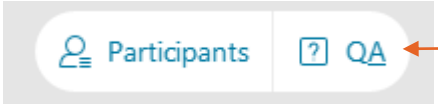
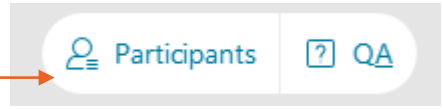


Access the written Q&A panel here

Option 2:

1. Click here to access the attendee list to raise and lower your hand.



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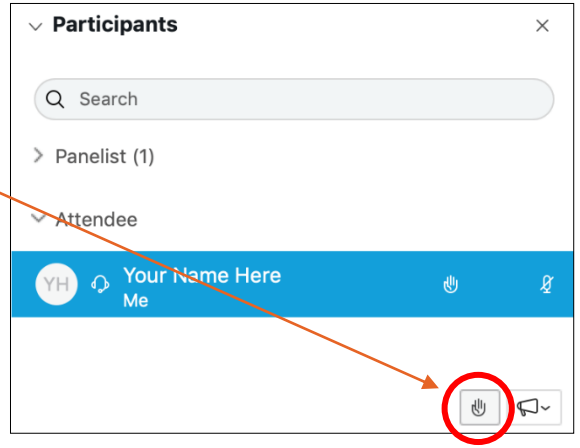
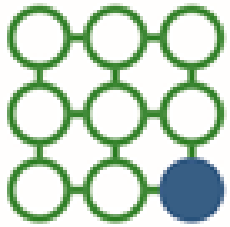


Microgrid Resources Coalition (MRC) Proposal

Multi-Property Microgrid Tariff Proposals

Rulemaking 19-09-009
Track 5
March 26, 2024



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Transition Progress

- While US greenhouse gas emissions are falling, the current rate of decline is not sufficient to meet national and international climate commitments and goals. US net greenhouse gas emissions remain substantial and would have to decline by more than 6% per year on average, reaching net-zero emissions around midcentury, to meet current national mitigation targets and international temperature goals; by comparison, US greenhouse gas emissions decreased by less than 1% per year on average between 2005 and 2019.
  - National Climate Assessment 2023, https://nca2023.globalchange.gov/

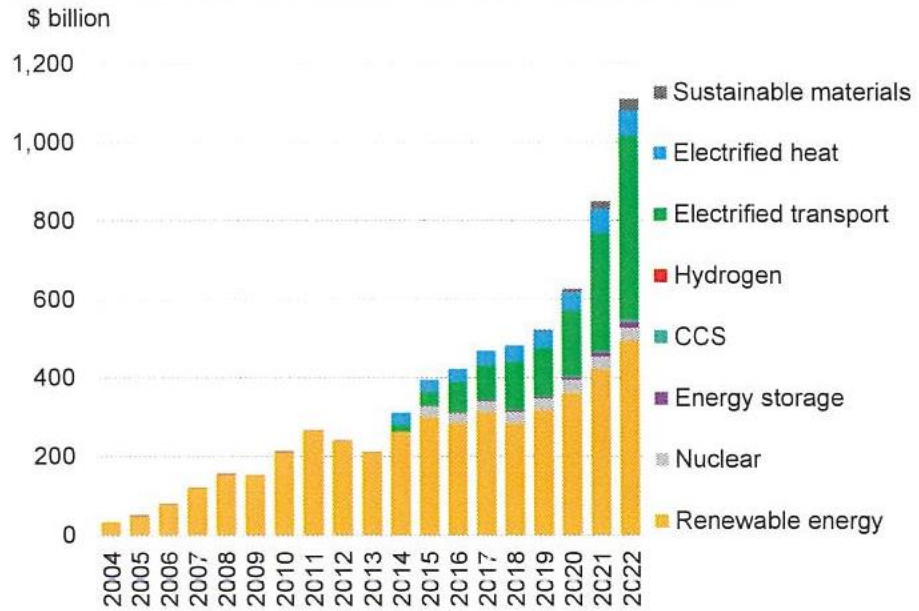
Finance Shortfall

- To get on track for global net zero, according to Bloomberg New Energy Outlook, energy transition and grid investment need to average $4.55 trillion between 2023 and 2030. This is more than three times the total spent in 2022.
  - https://assets.bbhub.io/professional/sites/24/energy-transition-investment-trends-2023.pdf

$1.11 trillion Global energy transition investment in 2022

31% 2021-2022 increase in energy transition investment

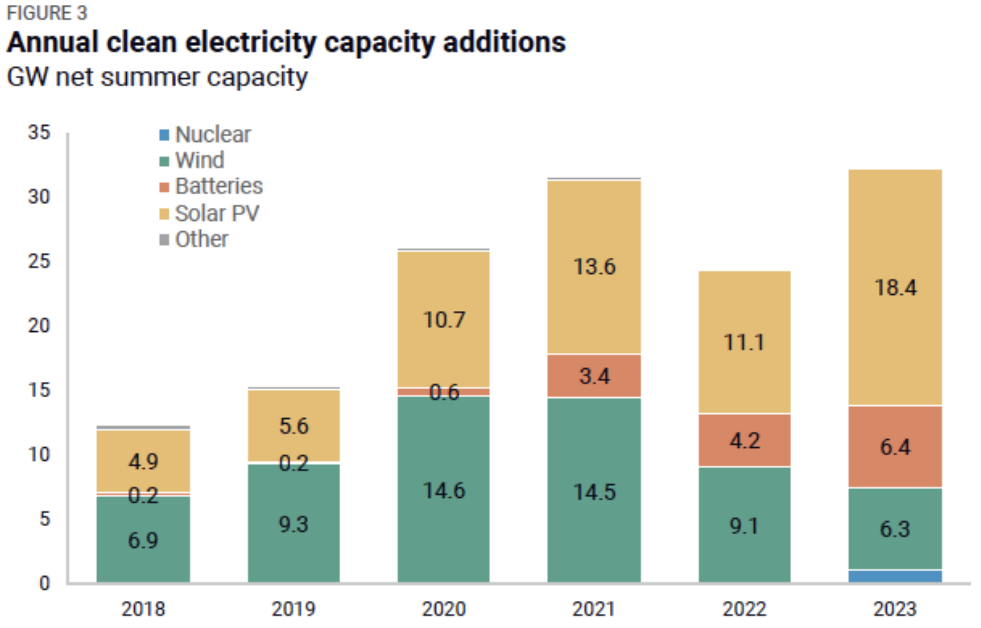
3x Increase in investment levels needed to get on track for net zero



Source: BloombergNEF. Note: start-years differ by sector but all sectors are present from 2019 onward; see Appendix for more detail. Nuclear figures start in 2015.

Regulatory and Logistic Delays

- The biggest barriers to deployment between now and 2030 are non-cost in nature—like siting and permitting delays, backlogged grid interconnect queues, and supply chain challenges. Tackling these non-cost barriers will be critical for the IRA to achieve its full clean energy deployment and emissions reduction potential.
  - https://energyinnovation.org/publication/clean-investment-in-2023-assessing-progress-in-electricity-and-transport/



What is a Microgrid?

- "Microgrid" means an interconnected system of loads and energy resources, including, but not limited to, distributed energy resources, energy storage, demand response tools, or other management, forecasting, and analytical tools, appropriately sized to meet customer needs, within a clearly defined electrical boundary that can act as a single, controllable entity, and can connect to, disconnect from, or run in parallel with, larger portions of the electrical grid, or can be managed and isolated to withstand larger disturbances and maintain electrical supply to connected critical infrastructure.

- Sized to meet customer load

Commercialization

- Built without ratepayer funds
- Finance:

$$\frac{\text{Revenue}}{\text{Debt Cost + O\&M}} = \text{Debt Service Coverage Ratio}$$

- Revenues come primarily from internal customers
- The microgrid typically has limited export ability
- Export opportunities are poor

Single Controllable Entity

- All internal resources are under common control
  - Includes generation, thermal and electric storage, and internal load shifting and shedding capability
- Exports can be fine tuned
- If one resource fails, others can pick up the slack
- Interconnection

Microgrids are Safer than the Grid

- Microgrid internal controls are digitized
  - The operator has better resource visibility than the grid operator
- Our members operate microgrids worldwide
  - No fires
  - No deaths
  - No serious injuries to people or property
- Filings in this docket make fact-free statements
- Commission should seek facts

Rule 18

- Applies to microgrids that use their own wires
- We propose removing any restriction not required by Section 218
  - Commission allowed a micro-exception in Track 1
  - Limited to municipal entities in emergencies
- We propose eliminating restrictions on master metering to the extent possible
- Take advantage of Supreme Court ruling on retail suppliers that don’t serve the public

Multi-Property Tariff

- Illegally shifts costs to microgrid customers
  - Forces ”donation” of capacity investment to utility
  - Does not permit microgrid to self-fund
- Treat the microgrid as an entity
  - Full time operation
  - Run by its own operator in island mode
- Allow customers to use the microgrid generation
  - Provide a ”contract price” for energy
  - Self-negotiated or municipally approved if residential
  - Pay other utility charges as usual
- Exports at wholesale or other available tariff

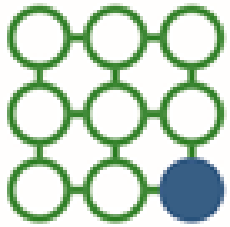
Rule 21

- Should treat microgrid as a single controllable entity
  - Internal control abilities provide safety for grid
- Based on expected operation
  - Don’t assume all resources export at midday
  - Don’t assume batteries charge at 6 p.m.
  - Assume exports are limited
- Operating Agreement
  - Microgrids must connect or disconnect in balance
  - Can elect when to island (subject to override)

Other Proposals

- Improve export opportunities
  - Wholesale sales - WDAT Tariff
  - Demand flex
  - QFs
  - Specific tariff – e.g Miramar
  - DIDF
- Micro-utilities
  - Commission has clear obligation to regulate
  - We suggest a proceeding to clarify the regulatory construct for micro-utilities
  - Particularly applicable to new subdivisions

Questions?



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Discussion and Q&A

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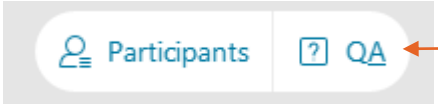

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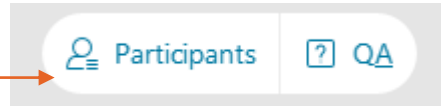

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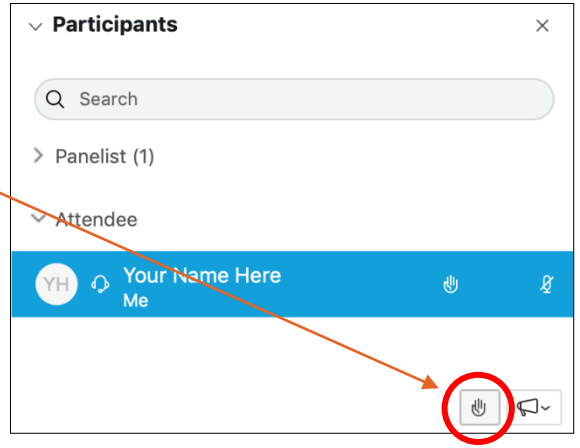


LUNCH BREAK (60 Minutes)

Applied Medical Resources (AMR) Proposal

Multiple Property Microgrid Tariff Presentation

by Applied Medical Resources Corporation

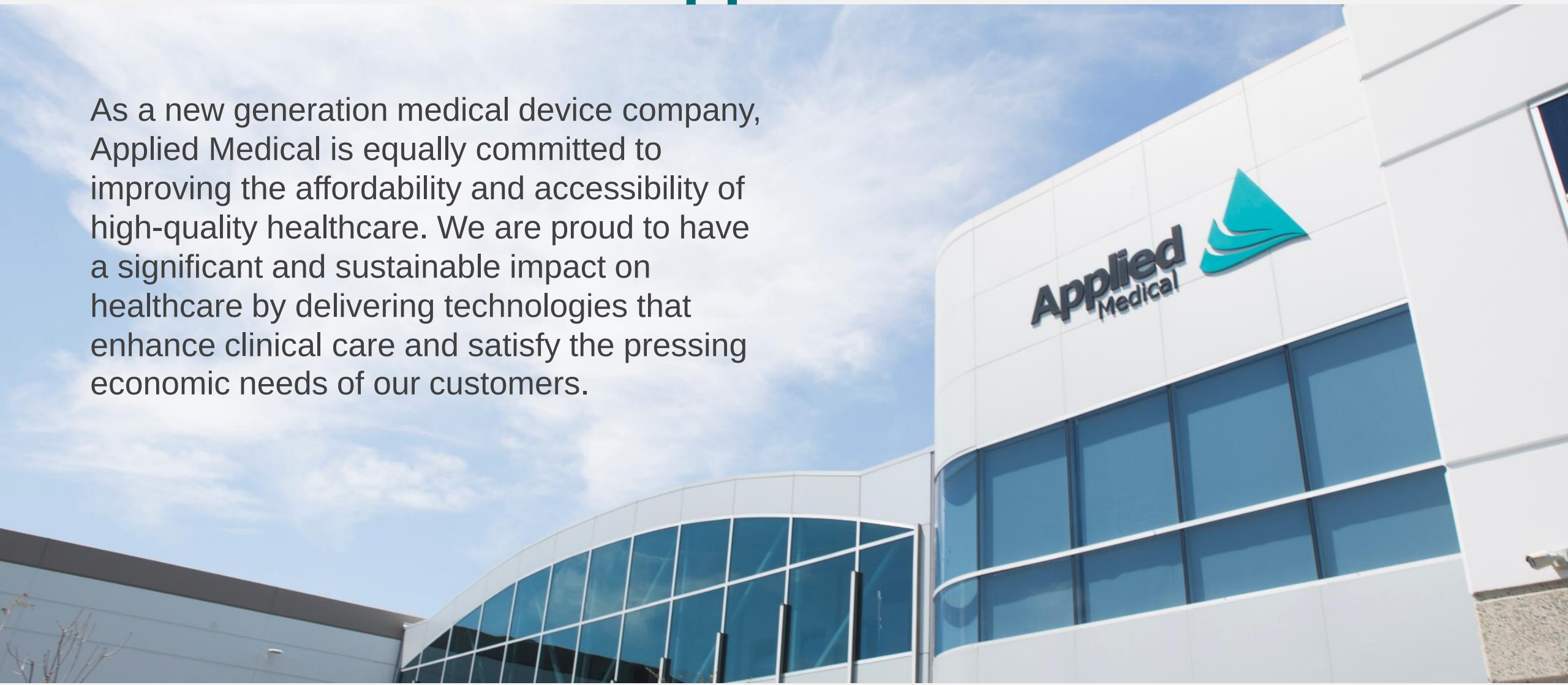
March 26, 2024

Agenda

1. About Applied Medical (AMR)
2. AMR's experience developing multiple-property microgrids in SCE territory
3. AMR's proposed changes to Rules 2, 16, and 18
4. AMR's response to opening comments
5. Precedent for promoting interconnection predictability
6. Q&A

Applied Medical

About Applied Medical



As a new generation medical device company, Applied Medical is equally committed to improving the affordability and accessibility of high-quality healthcare. We are proud to have a significant and sustainable impact on healthcare by delivering technologies that enhance clinical care and satisfy the pressing economic needs of our customers.

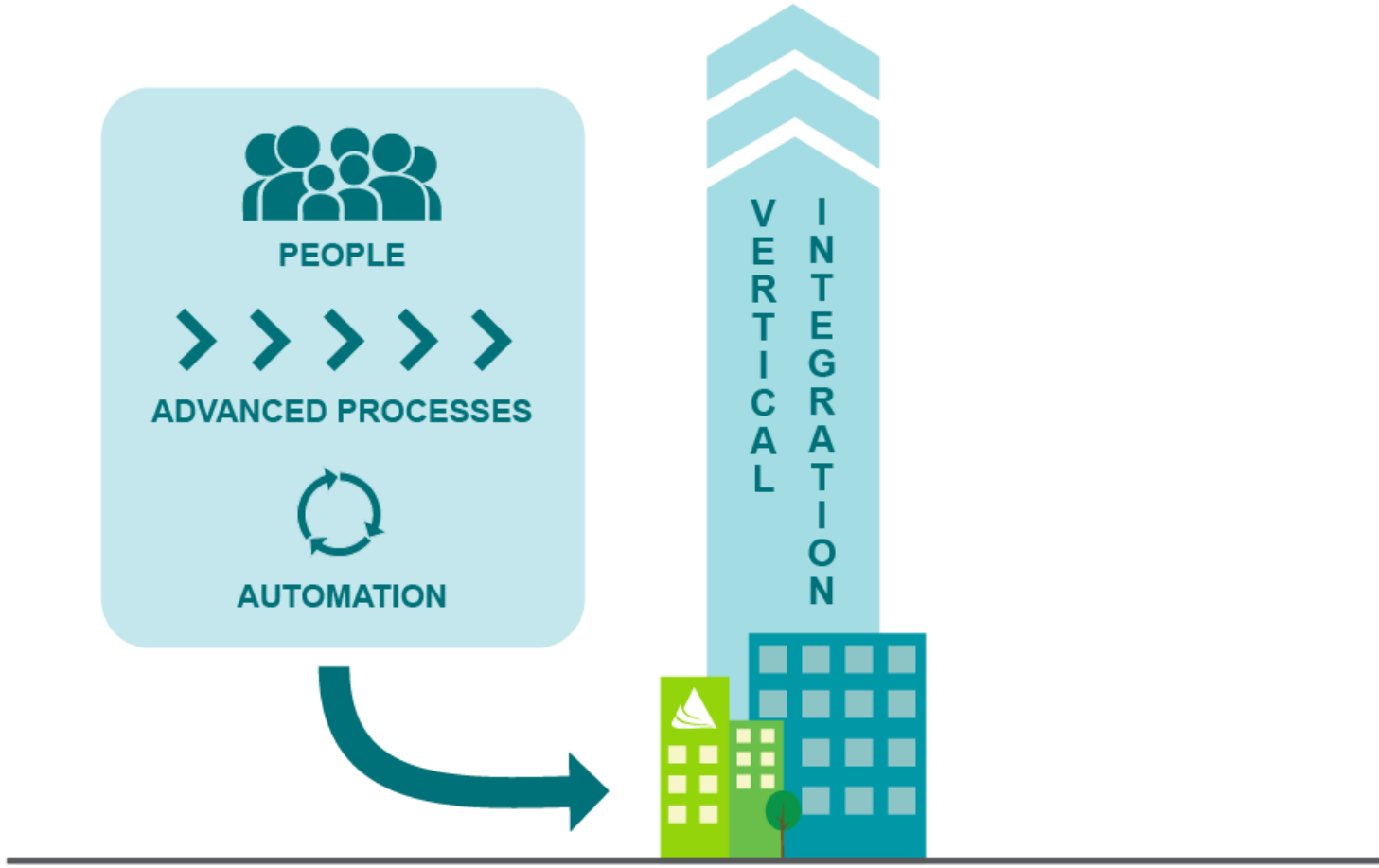
Vertical Integration

We have kept supply lines short, vertically integrated and local, while investing in:

PEOPLE

ADVANCED PROCESSES

AND AUTOMATION



Applied Medical

Product Offerings

Voyant®
Intelligent Energy System

Laparoscopy

Protectors and Systems

GelSeal®
Technology

Endourology

Vascular/Cardiovascular

Applied Medical

LAKE FOREST **CAMPUS MAP**

LAKE FOREST CAMPUS BUILDINGS:

- **L201**
  20161 WINDROW
- **L202**
  20162 WINDROW
- **L203**
  20202 WINDROW

RANCHO SANTA MARGARITA **CAMPUS MAP**

Applied Medical

RSM CAMPUS BUILDINGS:

R100
29977 AVENIDA DE LAS BANDERAS

R101
22872 AVENIDA EMPRESA

R102
22822 AVENIDA EMPRESA

R103
22982 ARROYO VISTA

R104
22942 ARROYO VISTA

R105
30200 AVENIDA DE LAS BANDERAS

R106
30281 ESPERANZA

R107
30331 ESPERANZA

R108
30152 AVENTURA

R109
30152 ESPERANZA

R110
22432 EMPRESA

R111
30322 ESPERANZA

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22931 ARROYO VISTA

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30142 AVENIDA DE LAS BANDERAS

R115
30251 ESPERANZA

R116
22362 GILBERTO

R117
30085 COMERCIO

R118
30071 TOMAS

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23061 ARROYO VISTA

R120
29962 AVENIDA DE LAS BANDERAS

RANCHO SANTA MARGARITA **CAMPUS MAP**

Applied Medical

RSM CAMPUS BUILDINGS:

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R101
22872 AVENIDA EMPRESA

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22942 ARROYO VISTA

R105
30200 AVENIDA DE LAS BANDERAS

R106
30281 ESPERANZA

R107
30331 ESPERANZA

R108
30152 AVENTURA

R109
30152 ESPERANZA

R110
22432 EMPRESA

R111
30322 ESPERANZA

R113
22931 ARROYO VISTA

R114
30142 AVENIDA DE LAS BANDERAS

R115
30251 ESPERANZA

R116
22362 GILBERTO

R117
30085 COMERCIO

R118
30071 TOMAS

R119
23061 ARROYO VISTA

R120
29962 AVENIDA DE LAS BANDERAS

AMR's Proposed Rule 2 Change

Electric Rule 2. Section H. Added Facilities.

Subsection 1.

"Where an applicant requests and SCE agrees to install facilities which are in addition to, or in substitution for the standard facilities SCE would normally install, the costs thereof shall be borne by the applicant. **Where the customer seeks to develop a microgrid that is compliant with Section 218, SCE shall agree to install facilities which are in addition to, or in substitution for the standard facilities SCE would normally install, and that meet nationally recognized safety and reliability standards, the costs thereof shall be borne by the applicant.** Such costs shall include continuing ownership costs as may be applicable…"

Proposed edit in **bold font**

Desired Effect

Standardize multi-property microgrid interconnections and provide certainty to microgrid operators, whereby IOU shall support interconnection by installing added facilities that meet all required nationally recognized safety and reliability standards. No costs shifted because all costs covered by the microgrid applicant.

Applied Medical

AMR's Proposed Rule 16 Change

Electric Rule 16. Section F. Added Facilities.

Subsection 2. Service Relocation or Rearrangement.

Subsection b. Applicant Convenience.

"Any relocation or rearrangement of SCE's existing Service Facilities at the request of Applicant (aesthetics, building additions, remodeling, etc.) and agreed upon by SCE shall be performed in accordance with Section D above except that Applicant shall pay SCE its total estimated costs. **Where the customer seeks to develop a microgrid that is compliant with Section 218, SCE shall agree to install facilities which are in addition to, or in substitution for the standard facilities SCE would normally install, and that meet nationally recognized safety and reliability standards, the costs thereof shall be borne by the applicant."**

Proposed edit in **bold font**

Desired Effect

Standardize multi-property microgrid interconnections and provide certainty to microgrid operators, whereby IOU shall support interconnection by relocating or rearranging existing facilities as necessary, meeting all required nationally recognized safety and reliability standards. No costs shifted because all costs covered by the microgrid applicant.

Applied Medical

AMR's Proposed Rule 18 Change

Electric Rule 18. Supply to Separate Premises and Use by Others

Section C. Other Uses or Premises

Other Uses or Premises. A customer shall not use electricity received from SCE upon other Premises for other purposes than those specified in the customer's application or in the rate schedule applied except:

1. For SCE's Operating Convenience as defined in SCE's Rule 1, or

2. Where, pursuant to Decision 21-01-018, behind-the-meter microgrids owned by public agencies or a third-party that primarily serves a facility operated by, or on behalf of, a public agency are permitted to supply electricity to a critical facility owned or operated by, or on behalf of, a public agency on an adjacent Premises to conduct emergency and/or critical operations during a grid outage. The public agency, third-party owner of the microgrid, or the customer at the adjoining Premises is required to install, own, and maintain a device, subject to SCE's review and approval, that prohibits parallel operations of the service line between the Premises during normal operation. This exception is subject to the limitation of Public Utilities Code Section 218. Additionally, this exception is available until SCE has reached the ten-project cap for customer projects that have completed the interconnection process and received permission to operate in SCE's service territory, or

[Proposed edit] 3. "Where a customer operates a microgrid that serves the customer's other Premises but that otherwise complies with Public Utilities Code Section 218."

Desired Effect

Standardize multi-property microgrid interconnections and provide certainty to microgrid operators, by clarifying that a microgrid customer may utilize power purchased from IOU within a Section 218 compliant microgrid, including among Other Premises separated by a public street or easement.

Applied Medical

AMR's Response to Opening Comments

Opening Comments

SCE argued:

1. AMR's proposals are outside the scope of this proceeding.
2. AMR's request would "impair" SCE's service to other customers.
3. The utility should have discretion to decline added facilities proposals that require SCE to abandon, sell, or replace existing assets.
4. AMR should bring its case to the CPUC for individual determination.

The Joint IOUs and CUE argued:

1. The law requires IOUs to control and operate multi-property microgrids.
2. Role of utilities in community microgrids.

AMR's Response

SCE

1. Track 5 is scoped to address multi-property microgrids, not community microgrids only.
2. SCE shifted its explanation for declining to interconnect AMR's microgrid.
3. SCE has never identified any need to abandon, sell, or replace its existing facilities.
4. Litigation should not be the preferred path for an IOU to meaningfully consider a multi-property microgrid proposal.

Joint IOUs and CUE

1. PUC Sections 218 and 399.2 do not prohibit AMR's privately owned non-export microgrid.

Applied Medical

Precedent for Promoting Interconnection Predictability

R.17.07.007. Order Instituting Rulemaking to Consider Streamlining Interconnection of Distributed Energy Resources and Improvements to Rule 21.

- On September 20, 2020, the CPUC issued D.20-09-035 which approved requested changes to remove discretion by utilities, under Rule 21, to deny customers the ability to use third parties (rather than the utility itself) to construct upgrades for new “interconnection facilities.”
- Investor-owned utilities relinquished unfettered discretion to deny third party upgrades. Working Group members, including utilities, agreed to standards for builder eligibility to ensure safety.
- The Commission concluded that these proposed changes “*would promote regulatory simplicity and lead to more timely and cost-effective interconnections.*” (D.20-09-035, p. 97)

Applied Medical

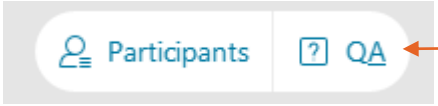
Thank You

Q&A

Discussion and Q&A

WebEx Tip

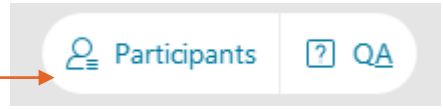
Option 1:



Access the written Q&A panel here

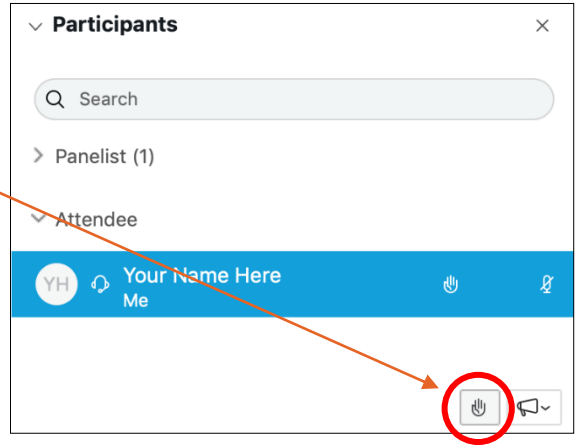
Option 2:

1. Click here to access the attendee list to raise and lower your hand.



2. Raise your hand by clicking the hand icon.

3. Lower it by clicking again.



Clean Coalition Proposal

Financing and Deploying Community Microgrids via the Resilient Energy Subscription (RES)

Ben Schwartz
Policy Manager
Clean Coalition
626-232-7573 mobile
ben@clean-coalition.org

Mission

To accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise.

Renewable Energy End-Game

100% renewable energy; 25% local, interconnected within the distribution grid and ensuring resilience without dependence on the transmission grid; and 75% remote, fully dependent on the transmission grid for serving loads.

The Resilient Energy Subscription (RES) addresses three Community Microgrid financing challenges

The RES helps finance Community Microgrids while properly valuing their significant resilience benefits, addressing these three challenges:

1. **Establishing** initial Community Microgrids to provide resilience to Critical Community Facilities (CCFs).
2. **Enhancing** Community Microgrids to offer resilience opportunities within the initial Community Microgrid footprint.
3. **Expanding** Community Microgrids to larger footprints that can guarantee resilience to a wider list of facilities and include additional communities.

Critical Community Facilities (CCFs) in a Southern California community.

Resilient Energy Subscription (RES) defined

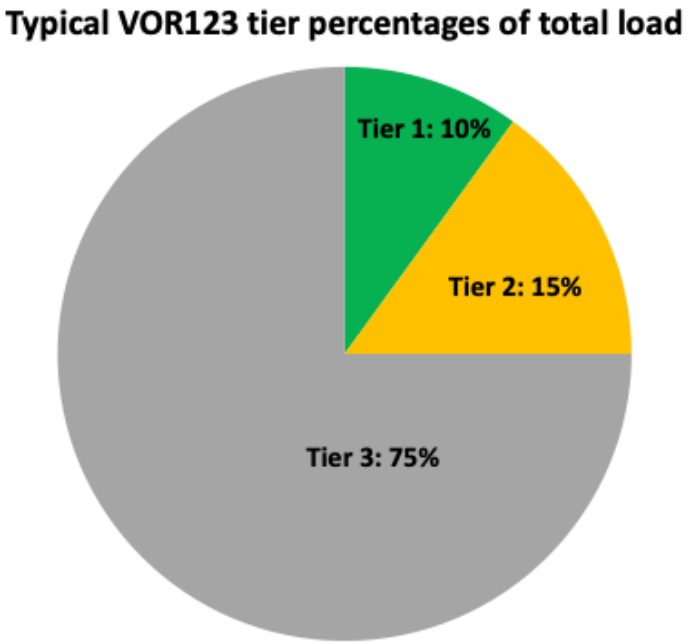
- A straightforward fee-based market mechanism that finances the enhancement and expansion of Community Microgrids
  - Community Microgrids provide guaranteed daily delivery of locally generated renewable energy during grid outages, ensuring unparalleled energy resilience.

- Allows any facility within the footprint of a Community Microgrid to procure this unparalleled energy resilience
  - A facility pays a simple monthly $/kWh fee — separate from any existing rate tariffs — on top of their normal electricity rates for guaranteed daily delivery of locally generated renewable energy during grid outages.
  - Usually reserved for a facility's most critical loads.

- Facilitates the deployment and expansion of Community Microgrids
  - Allows the Community Microgrid owner-operators to recover the cost-of-service (COS) required to meet contracted RES obligations.
  - COS is determined by the capital expenditures (capex) associated with Community Microgrid assets, operational expenditures (opex) associated with operations and maintenance (O&M), and an appropriate rate of return.

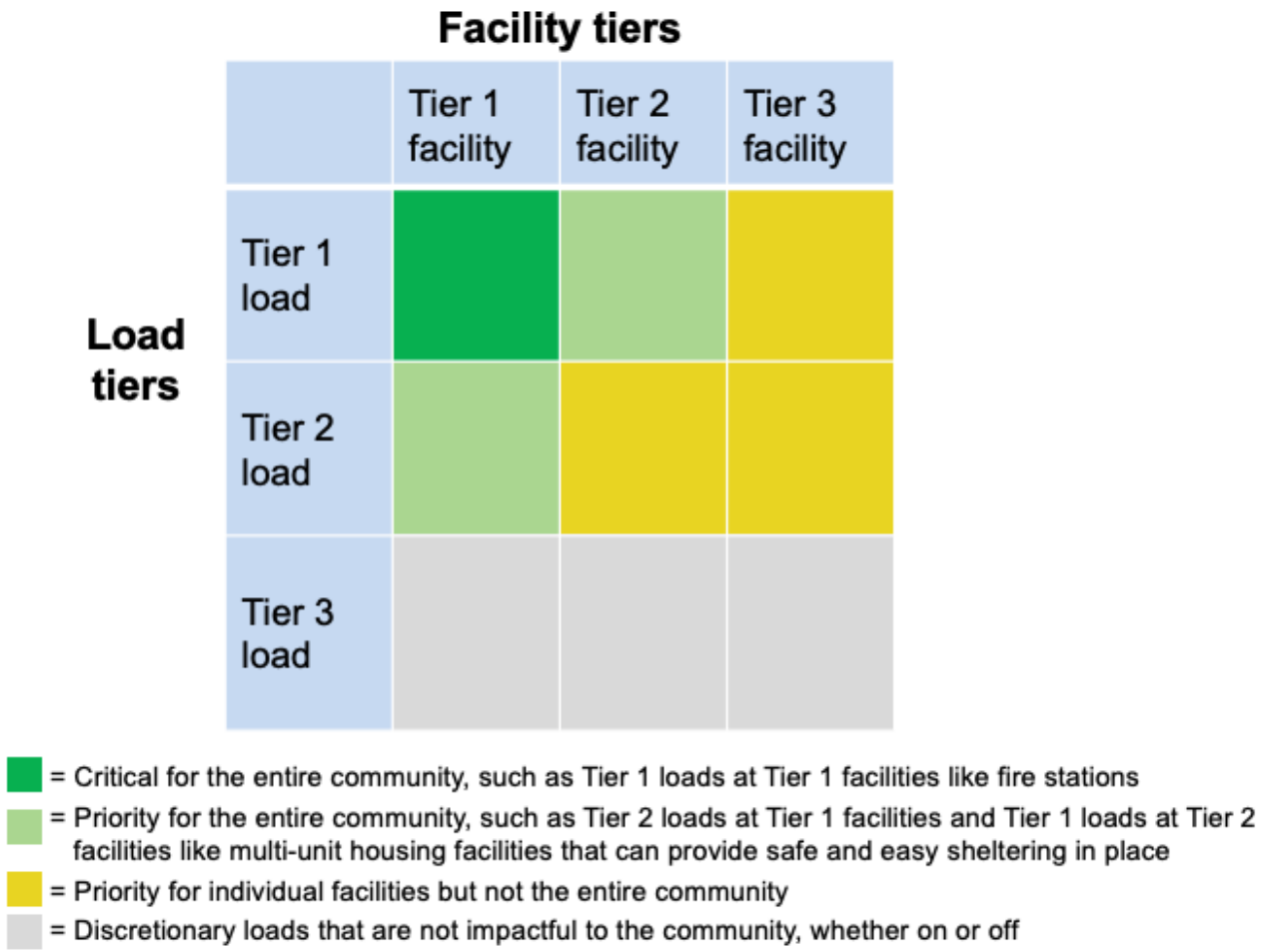
VOR123 depends on tiering electricity loads

- The Clean Coalition's VOR123 approach standardizes resilience values for three tiers of loads, regardless of facility type or location:
  - **Tier 1, usually about 10% of the total load, are mission-critical, life-sustaining loads** that warrant 100% resilience.
  - **Tier 2, or priority loads, usually about 15% of the total load**, should be maintained as long as doing so does not threaten the ability to maintain Tier 1 loads.
  - **Tier 3 are discretionary loads** that make up the remaining loads, usually about 75% of the total load. Maintained when doing so does not threaten Tier 1 & 2 resilience.



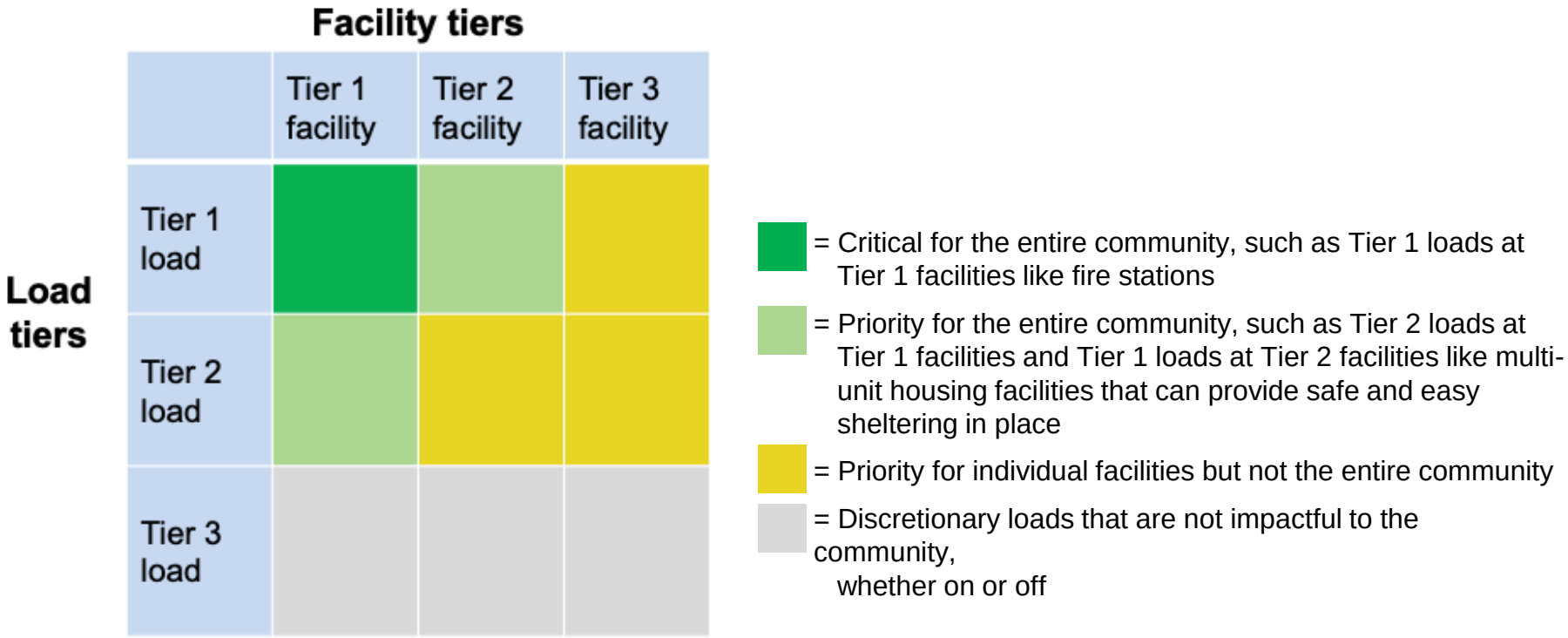
VOR123 for a Community Microgrid

- The VOR123 principles for an individual facility can also be applied to a larger grid area by tiering facilities, in addition to tiering loads:



VOR123 for a Community Microgrid

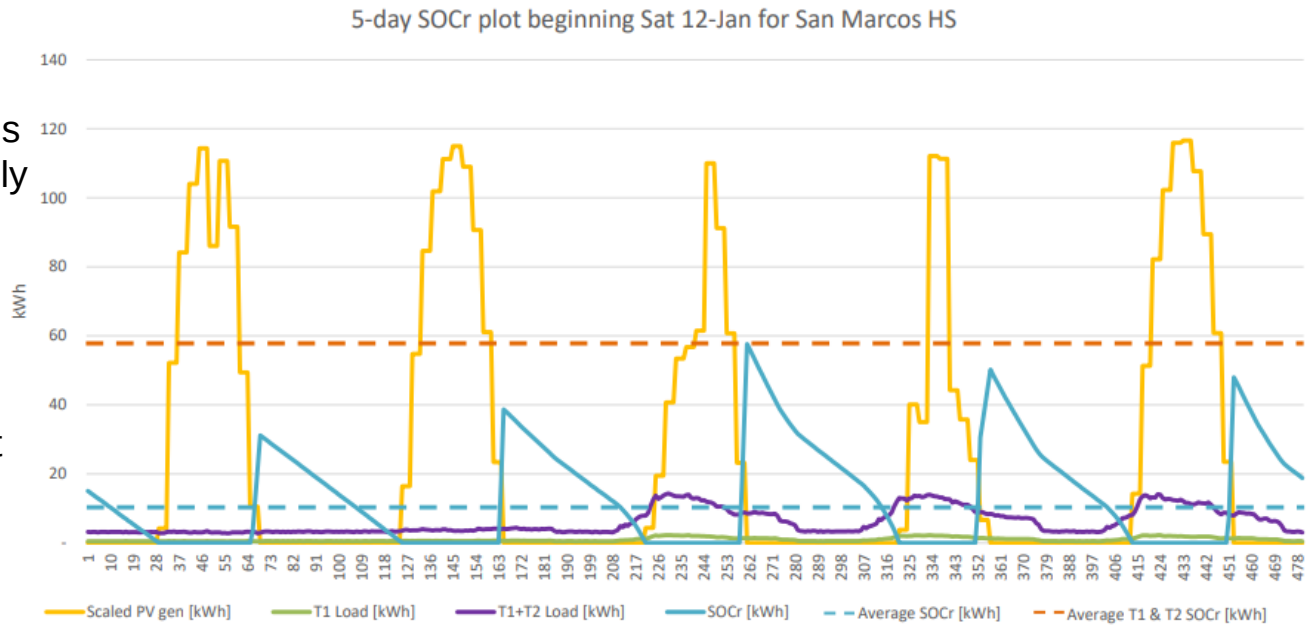
- The top emphasis is to provision 100% resilience for Tier 1 loads at Tier 1 facilities (the darker green square in the chart).
  - Tier 1 facilities include CCFs such as fire stations and emergency shelters — and can also include grocery stores, data centers, pharmacies, gas stations, EV charging stations, & apartment complexes that can provide sheltering-in-place during grid outages.
- The second emphasis is for Tier 1 loads at Tier 2 facilities and Tier 2 loads at Tier 1 facilities (the lighter green squares).



RES feasibility: Community Microgrid owner-operator perspective

- ROE for the Community Microgrid owner depends on the following factors:
  - Microgrid financial inflows:
    - RES fees*
    - Energy sold to the utility on an everyday basis
    - Solar and battery energy storage system (BESS) financial incentives
  - Microgrid financial outflows:
    - Microgrid capital expenditures (capex)
    - Microgrid operational expenditures (opex)

* Income from RES fees depends on the maximum guaranteed daily energy from the Community Microgrid. The Clean Coalition calculates this quantity using its state-of-charge for resilience (SOCr) methodology, which analyzes BESS capacity against actual solar generation and site load profiles.



RES feasibility: Community Microgrid owner-operator perspective

Analysis factors from a 2021 design for a Community Microgrid in Southern California:

Microgrid financial outflows:

	Year:	Capex	Opex
PV		$3,000,000	$7,000
BESS		$1,400,000	$5,000
Microgrid hardware + MC2		$500,000	$15,000
PV+BESS incentives		-$1,800,000	
Total annual expense:	1	$3,100,000	$27,000
	2	$-	$27,000
30-year analysis	3	$-	$27,000
	4	$-	$27,000

Microgrid financial Inflows:

	RES fees
RES fee ($/kWh)	$0.20
Guaranteed daily load (kWh)	2,300
Total annual income:	$165,000
	$165,000
	$165,000
	$165,000

	Sales to utility
Tariff to utility	$0.10
Annual PV sold (kWh)	2,400,000
	$236,000
	$236,000
	$236,000
	$236,000

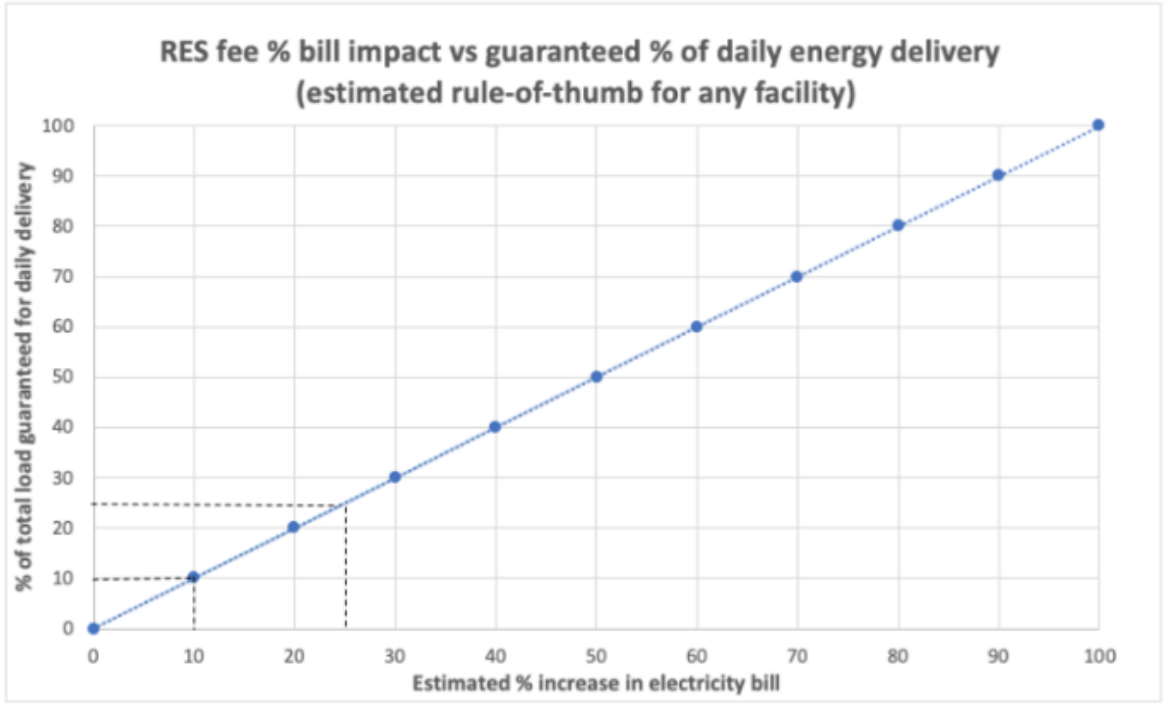
With these expenses and income, the Community Microgrid owner will see an internal rate of return (IRR) of at least **9%.**

RES feasibility analysis results

- The Clean Coalition's analysis shows:
  - A **value-appropriate** RES subscription ratio of 1.0 (1% bill increase per 1% guaranteed load coverage) for the subscriber is feasible.
  - A **positive IRR** of 9% for the Community Microgrid owner is feasible.
- *Therefore, the RES is financially feasible for all stakeholders.*

Key Takeaways:

- RES allows Community Microgrids to be deployed at scale and expanded, as more facilities desire resilient energy guarantees.
- RES provides a revolutionary and straightforward approach for financing Community Microgrids and delivering unparalleled resilience to communities.
- RES enables a greater harmonization between local energy needs and societal planning in a way that helps put the people first.



Backup Slides

Grand Orcas Community Microgrid plan for the entire OPALCO territory

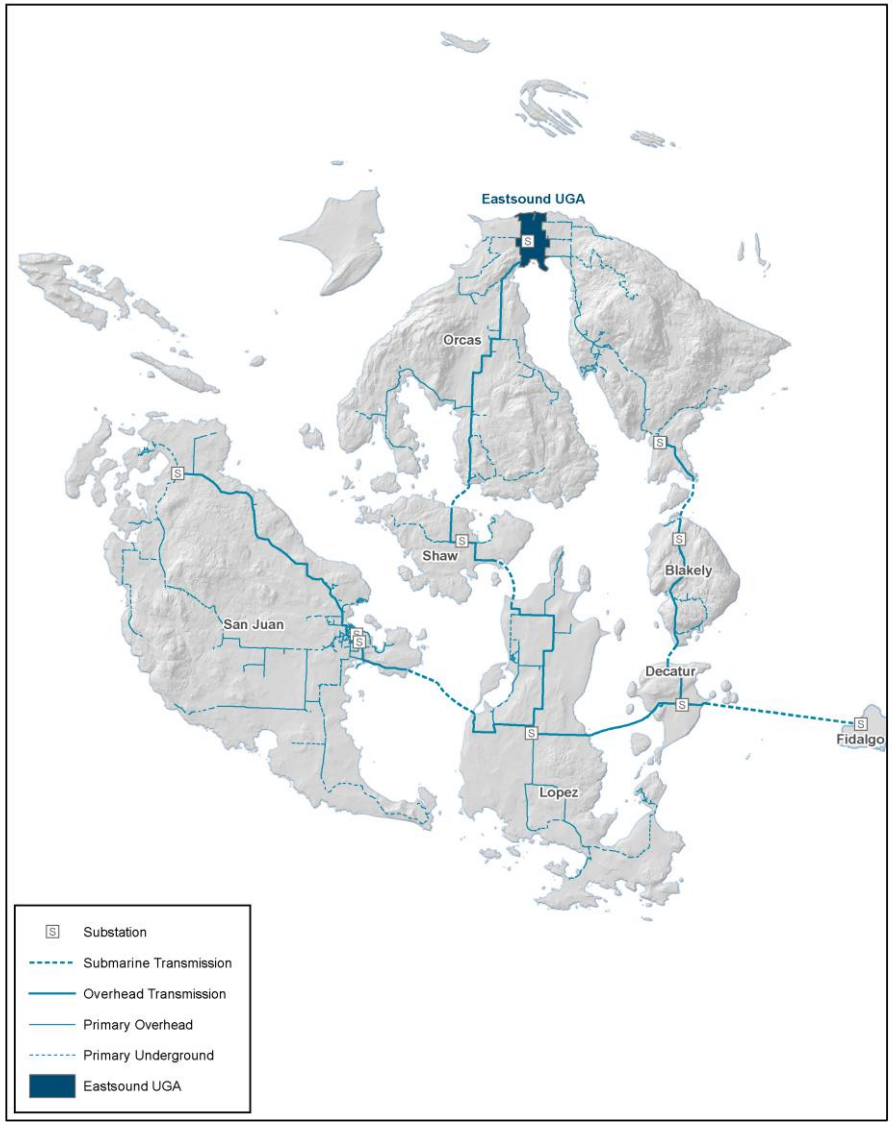


Figure 1: OPALCO's service territory covers San Juan County and includes 20 islands. Eastsound is shaded towards the top of Orcas Island and represents the initial Orcas Community Microgrid location. Over time, the Community Microgrid will expand to cover all of Orcas and then eventually the entire OPALCO service territory.

Eastsound Tier 1 & 2 facilities map

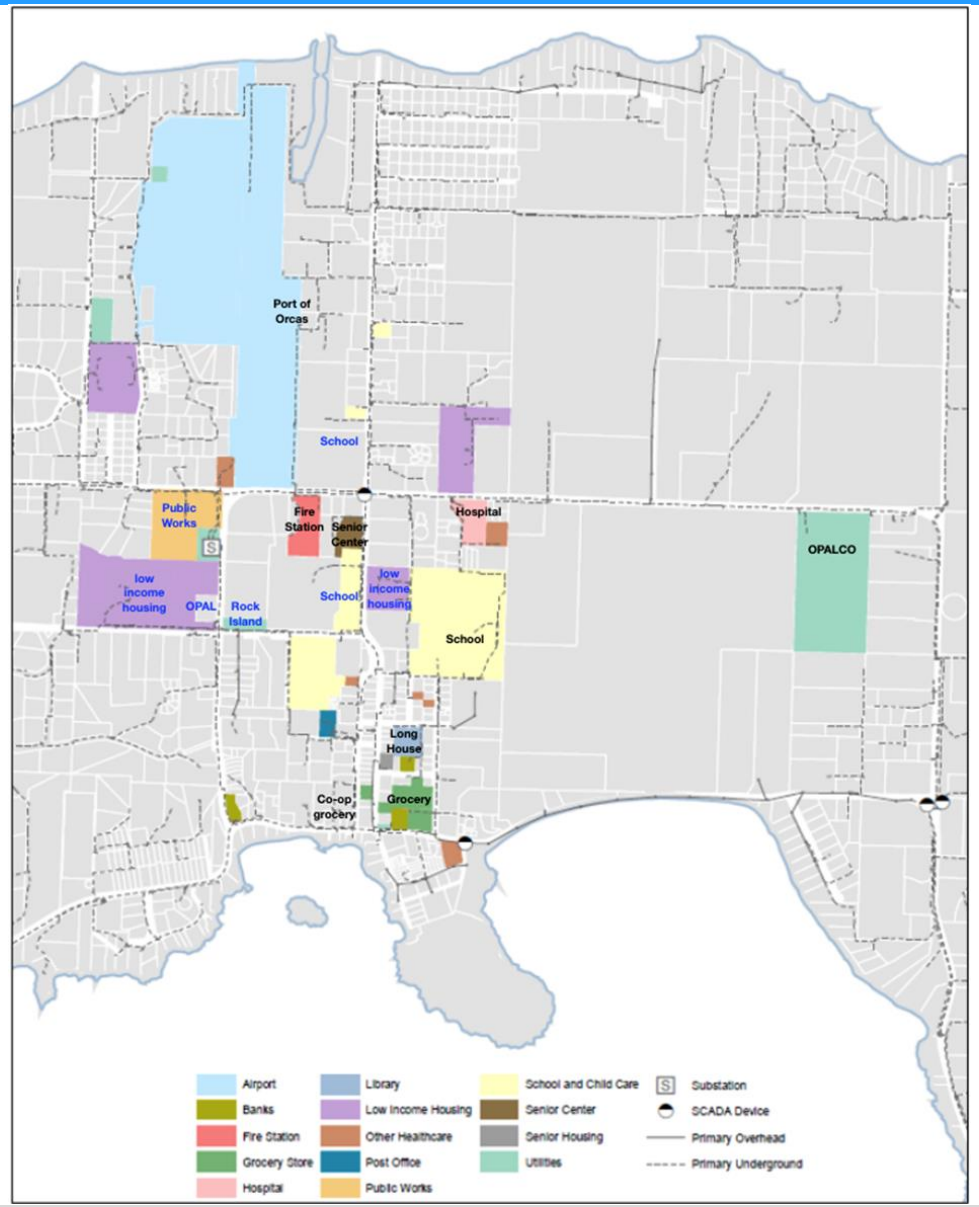


Figure 2: Eastsound facilities that are being provisioned with priority Community Microgrid resilience in the initial Orcas Community Microgrid design are shaded. Tier 1 Critical Community Facilities (CCFs) are shaded and labeled with black text, while Tier 2 CCFs are shaded in blue text. Figures 3 and 4 further depict the initial Orcas Community Microgrid in block diagram form.

Eastsound Tier 1 & 2 facilities block diagram

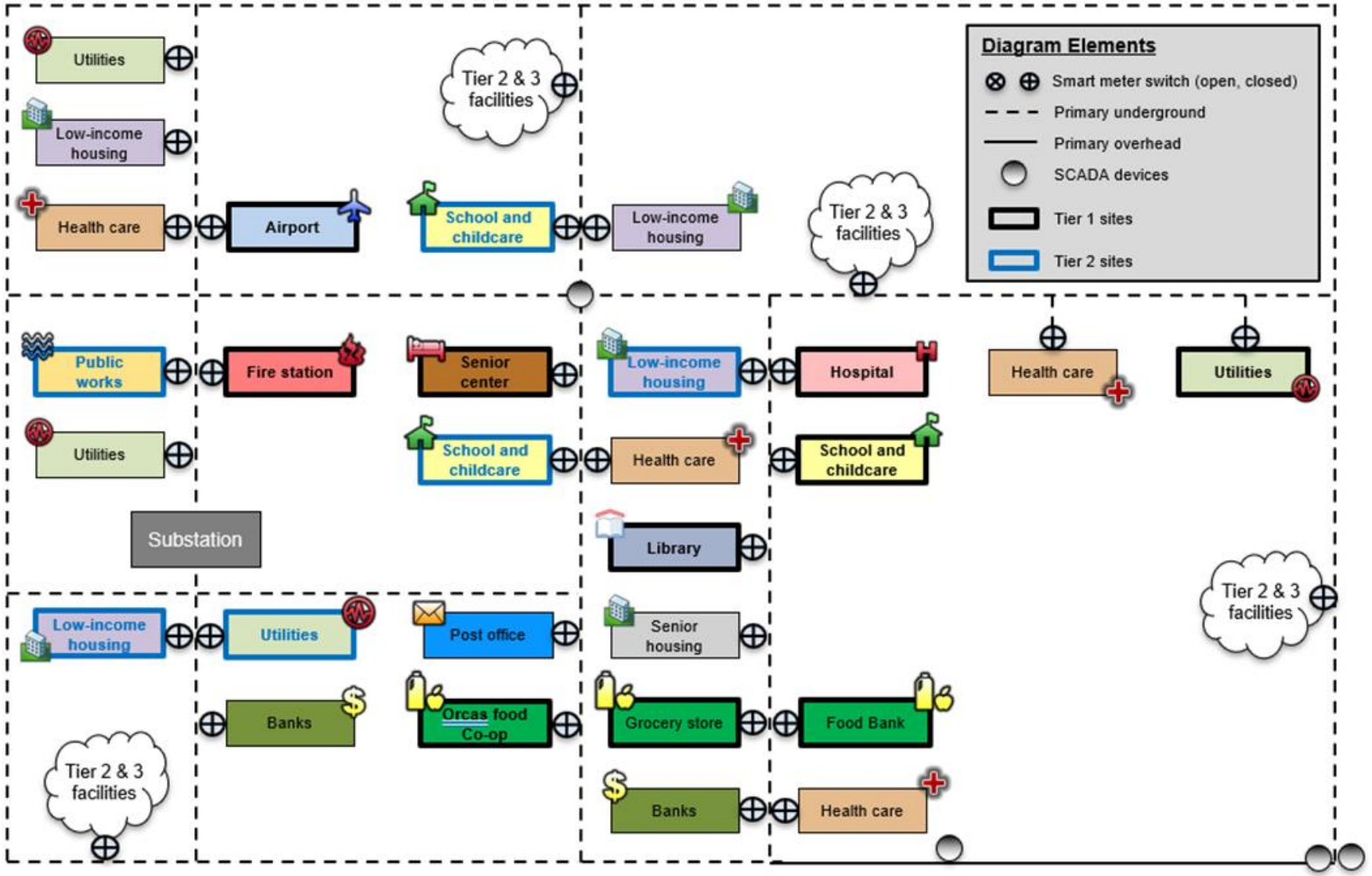
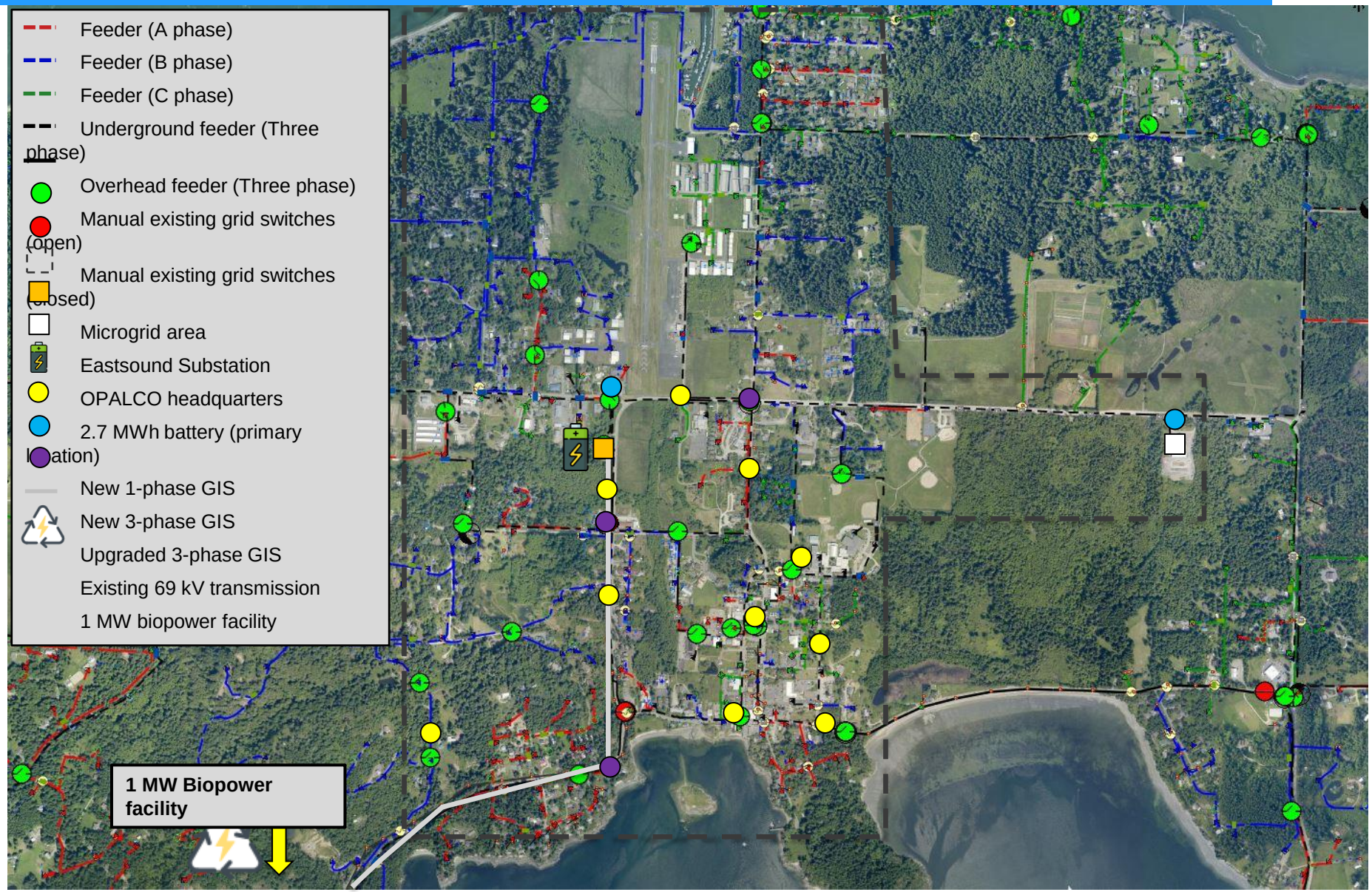
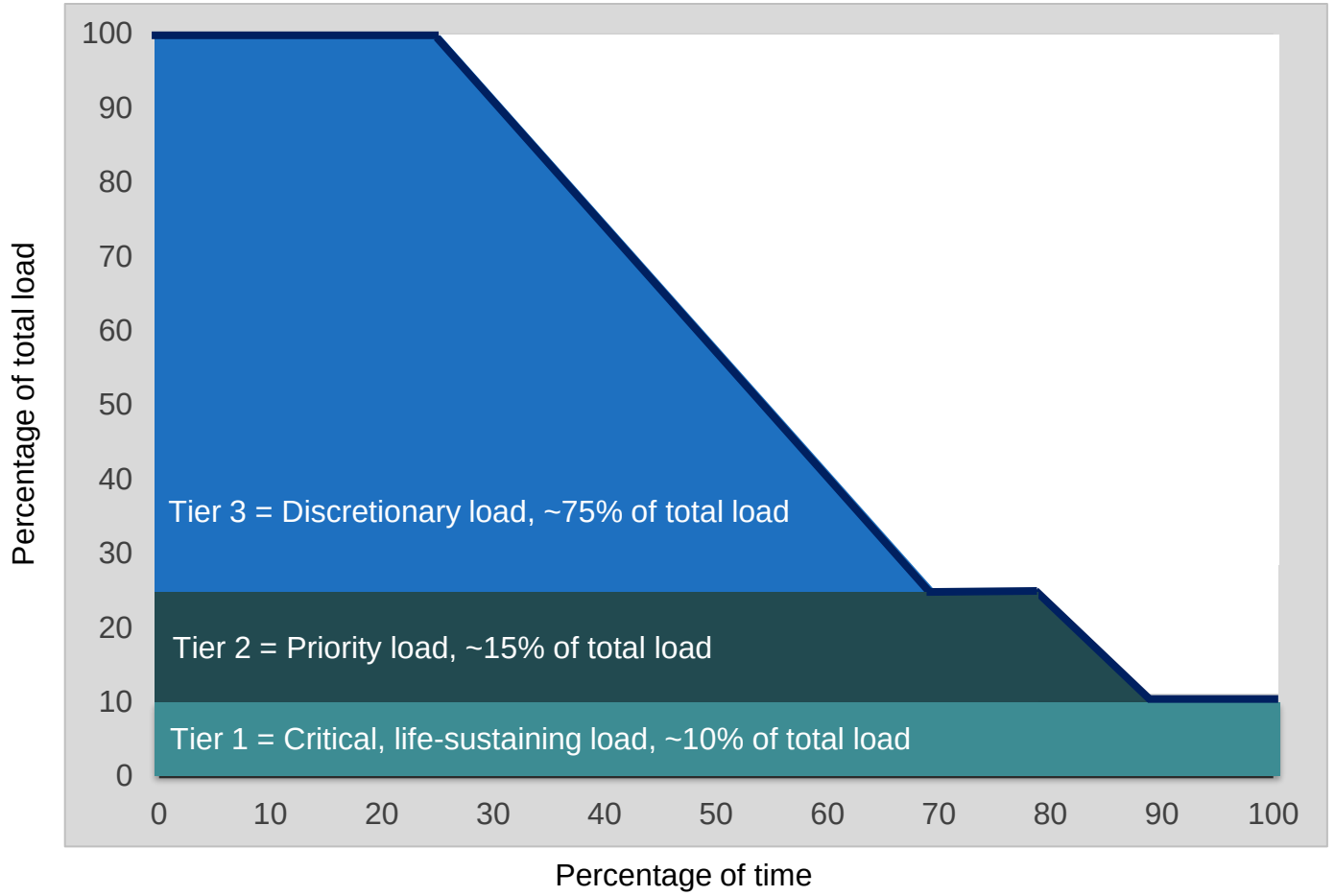


Figure 3: Noteworthy facilities in Eastsound and within the target grid area of the initial Orcas Community Microgrid. This figure reflects the block diagram version of the grid area shown in Figure 2.

OCM map for Orcas Island

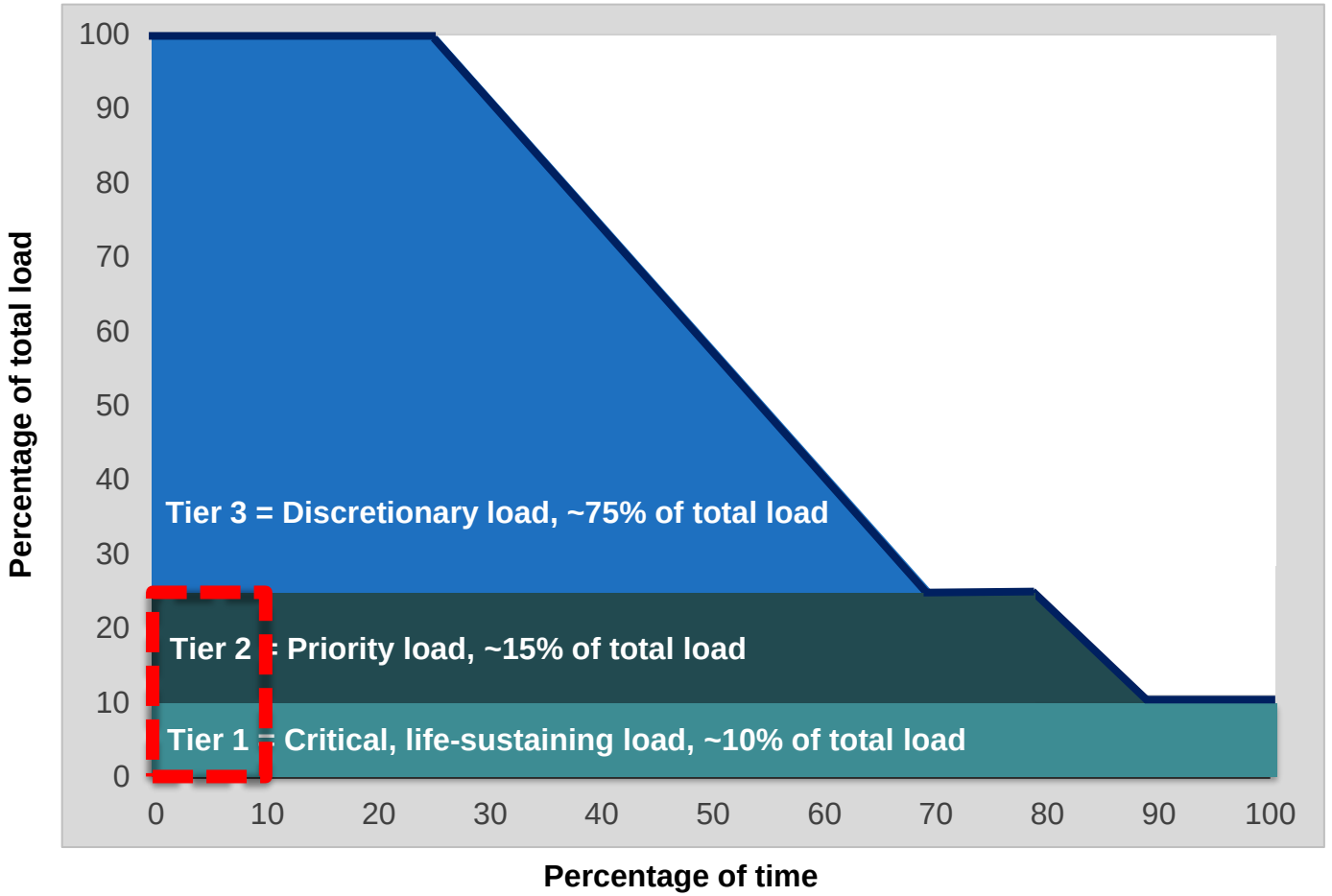


Typical load tier resilience from a Solar Microgrid



Percentage of time online for Tier 1, 2, and 3 loads for a Solar Microgrid designed for the University of California Santa Barbara (UCSB) with enough solar to achieve net zero and 200 kWh of energy storage per 100 of kW solar.

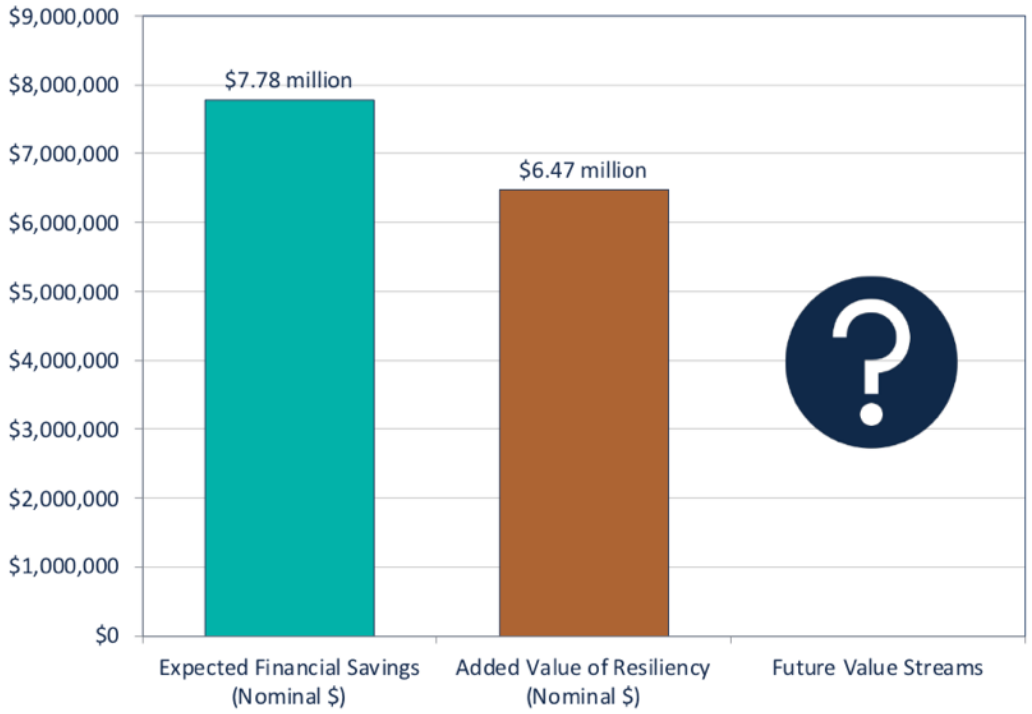
Diesel generators are designed for limited resilience



A typical diesel generator is configured to maintain 25% of the normal load for two days. If diesel fuel cannot be resupplied within two days, goodbye. This is hardly a solution for increasingly necessary long-term resilience. In California, Solar Microgrids provide a vastly superior trifecta of economic, environmental, and resilience benefits.

VOR123 yields a 25% typical adder

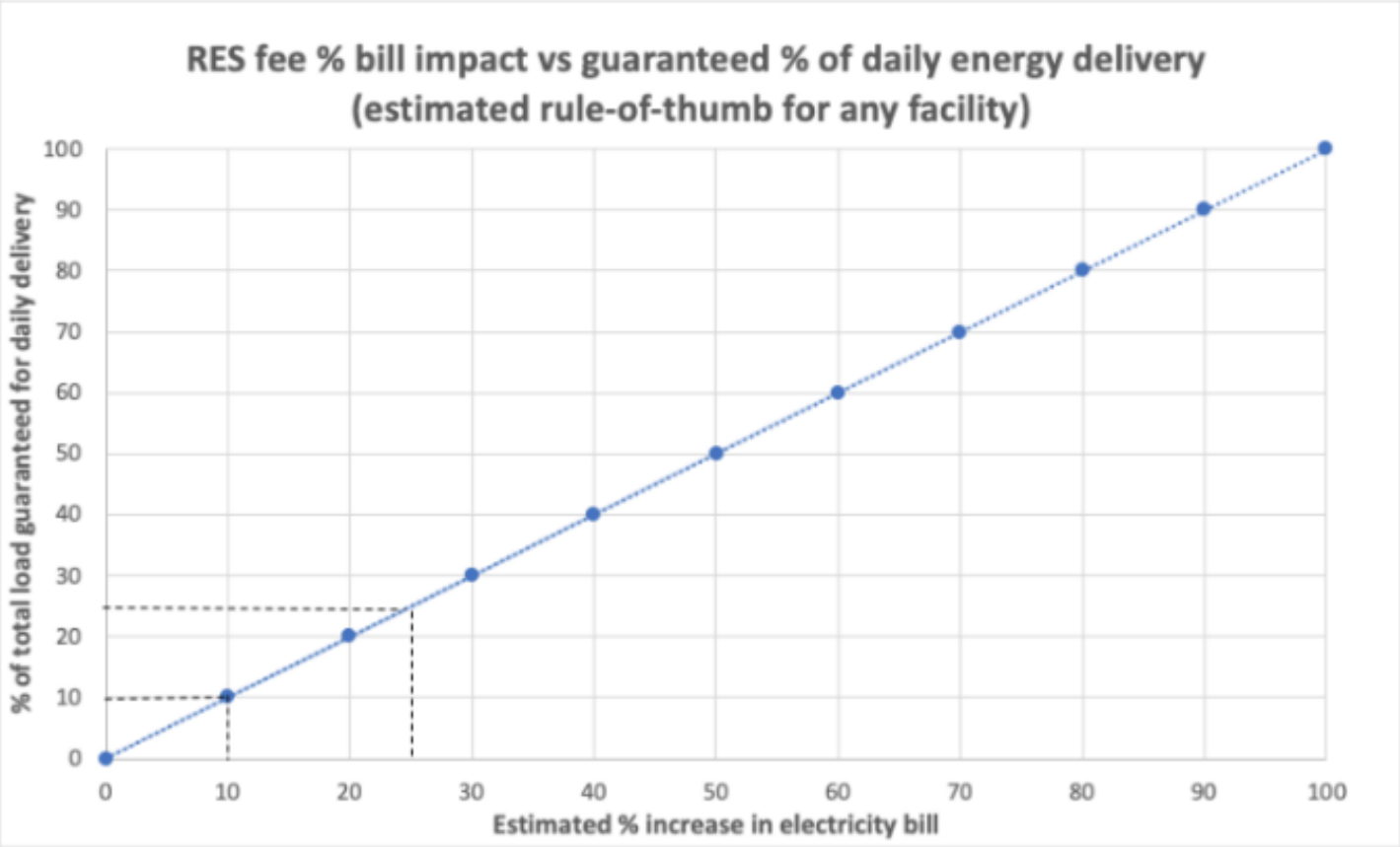
- Based on this tiering system, the Clean Coalition arrived at **25% as the typical VOR123 adder** that a site should be willing to pay for resilience.
- The Clean Coalition has validated the 25% adder using four approaches: Cost-of-service, Department of Energy multiplier, market-based, and avoided diesel generator cost (see https://clean-coalition.org/disaster-resilience/#adder).
- We also applied VOR123 to the Solar Microgrids for the Santa Barbara Unified School District (SBUSD), which is getting significant resilience benefits for free:



Bill savings and resilience value accruing to the SBUSD from six Solar Microgrid sites plus eight additional solar-only sites.

COS for expanding a Community Microgrid via RES

- Once an initial Community Microgrid is established for serving the CCFs, incremental COS will be low for expanding the Community Microgrid via the market-based RES.
- Each 1% of load that a facility secures via a RES will result in an approximately 1% electricity bill increase:



RES feasibility:
Community Microgrid owner perspective

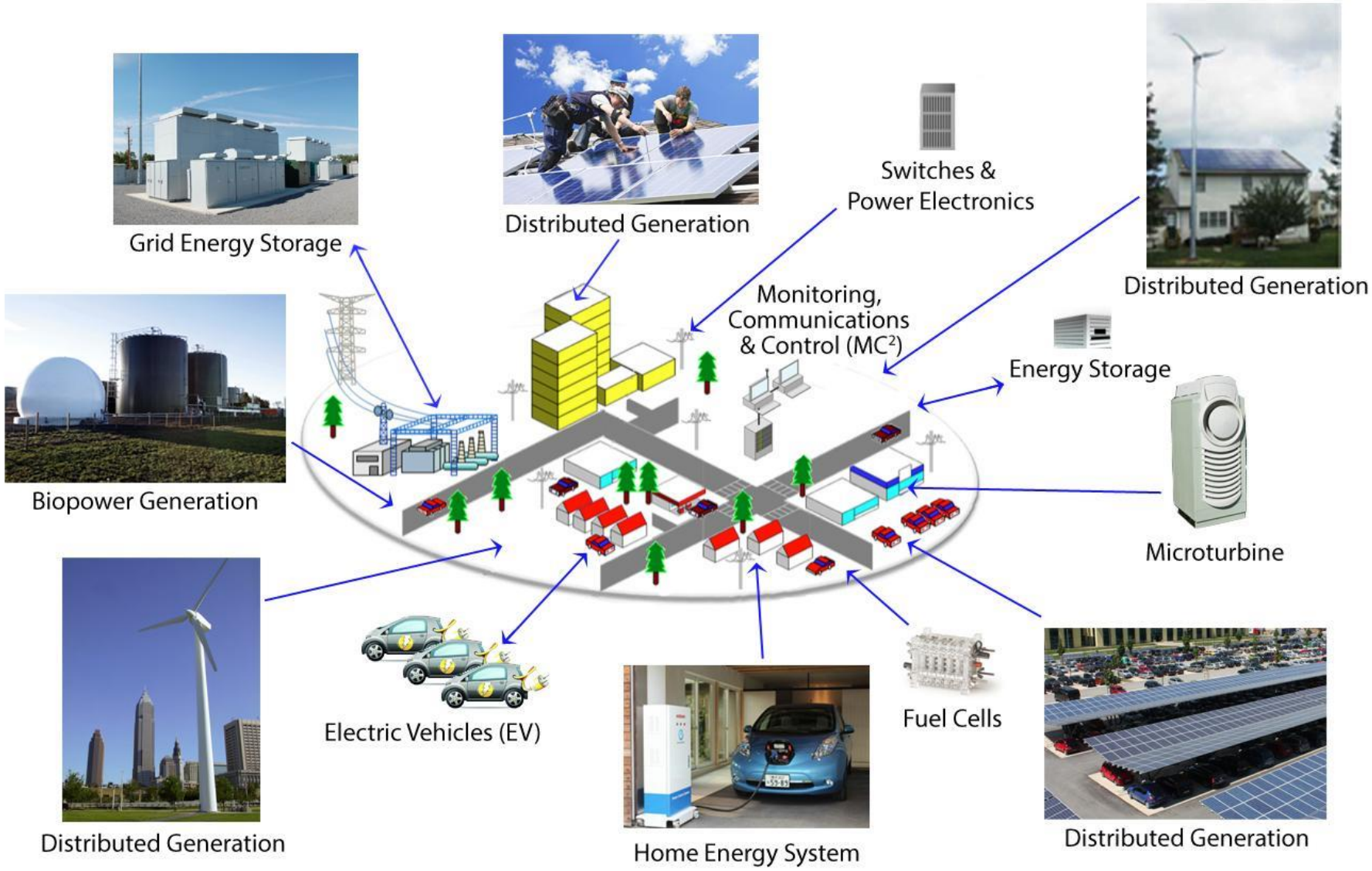
Clean Coalition

Analysis factors from a real-world design for a Community Microgrid in Southern California:

Factor	Amount	Units
RES fee	0.20	$/kWh
Tariff for energy sold to utility	0.10	$/kWh
Daily site load guaranteed by RES	2,300	kWh
PV+BESS financial incentives	1,800,000	$
PV size	1,500	kW
PV capex	3,000,000	$
BESS size	2,000	kWh
BESS capex	1,400,000	$
Microgrid hardware + MC2*	500,000	$
PV annual opex	7,000	$/year
BESS annual opex	5,000	$/year
Microgrid MC2 annual opex	15,000	$/year

* MC2 = Monitoring, Communications, and Controls for a microgrid.

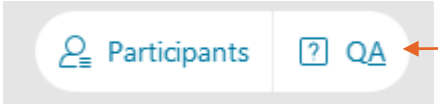
Heading


Grid Energy Storage
Distributed Generation
Switches &
Power Electronics
Distributed Generation
Monitoring,
Communications
& Control (MC²)
Energy Storage
Biopower Generation
Microturbine
Distributed Generation
Electric Vehicles (EV)
Fuel Cells
Home Energy System
Distributed Generation

Discussion and Q&A

WebEx Tip

Option 1:



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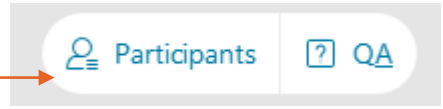

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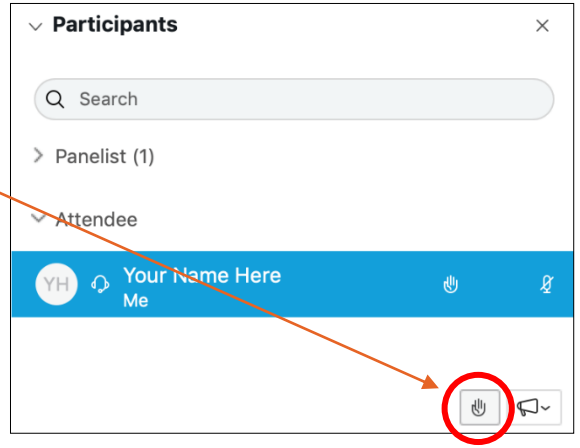


Green Power Institute (GPI) Proposal

GPI Proposal for a Community Microgrid Tariff

March 26, 2024

CPUC workshop summary presentation

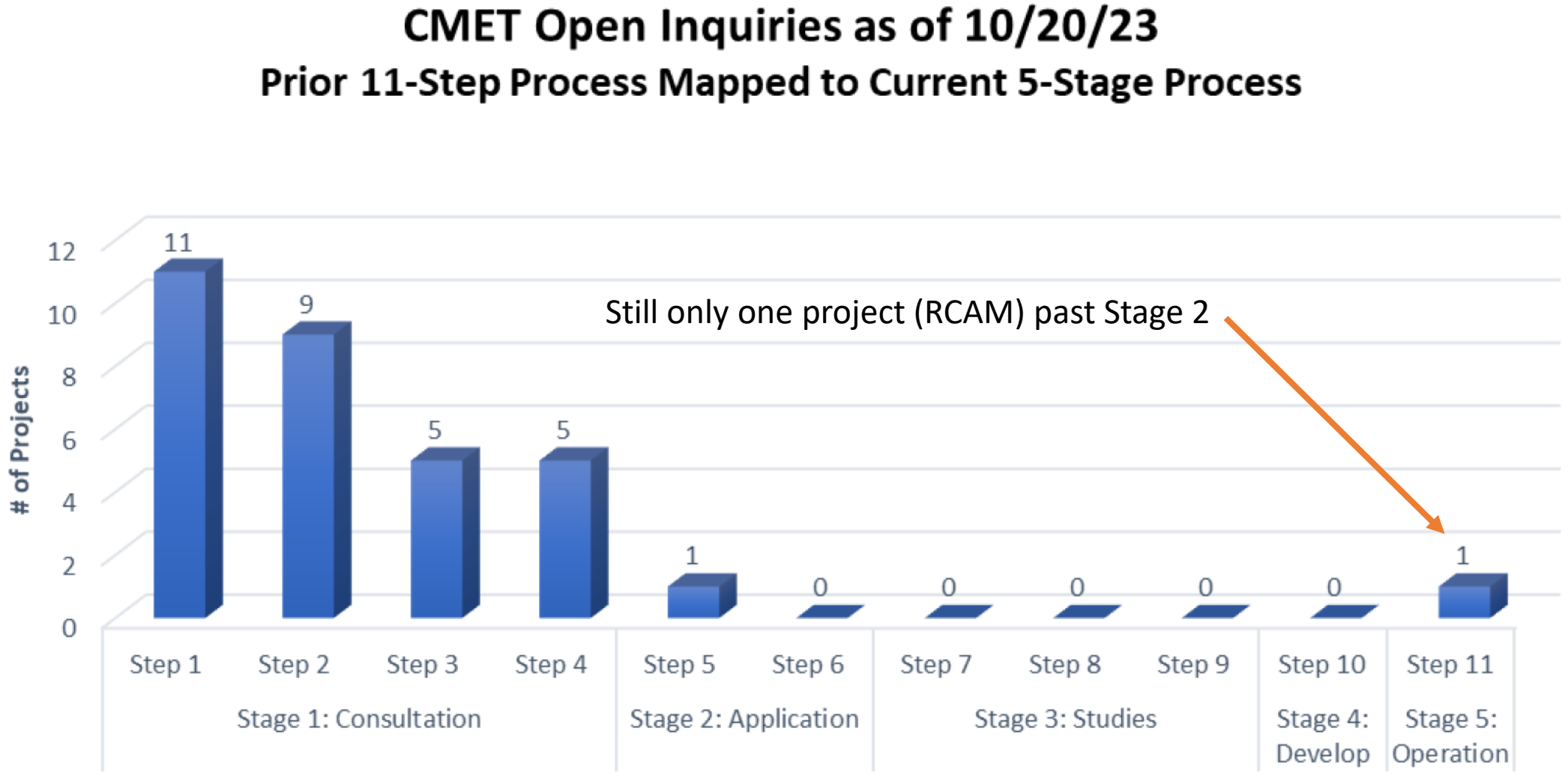
GPI is a special project of the Pacific Institute

PACIFIC INSTITUTE
REIMAGINING WATER FOR A CHANGING WORLD

SB 1339 requires “commercializing” microgrids

- What does this mean in the context of rates and tariffs?
- SB 1339 states, *inter alia*:
  - By December 1, 2020 …
  - Without shifting costs between ratepayers, develop separate large electrical corporation rates and tariffs, as necessary, to support microgrids, while ensuring that system, public, and worker safety are given the highest priority. The separate rates and tariffs shall not **compensate** a customer for the use of diesel backup or natural gas generation … except for natural gas generation that is a distributed energy resource.
- This language makes it clear that the Legislature considered compensation to be a key aspect of commercialization
- Efforts to date lack the key feature that is required for commercialization of microgrids: a clear and predictable compensation mechanism for the value of services provided to customers and the grid.

The sad history of microgrids in California



We need donkeys not unicorns

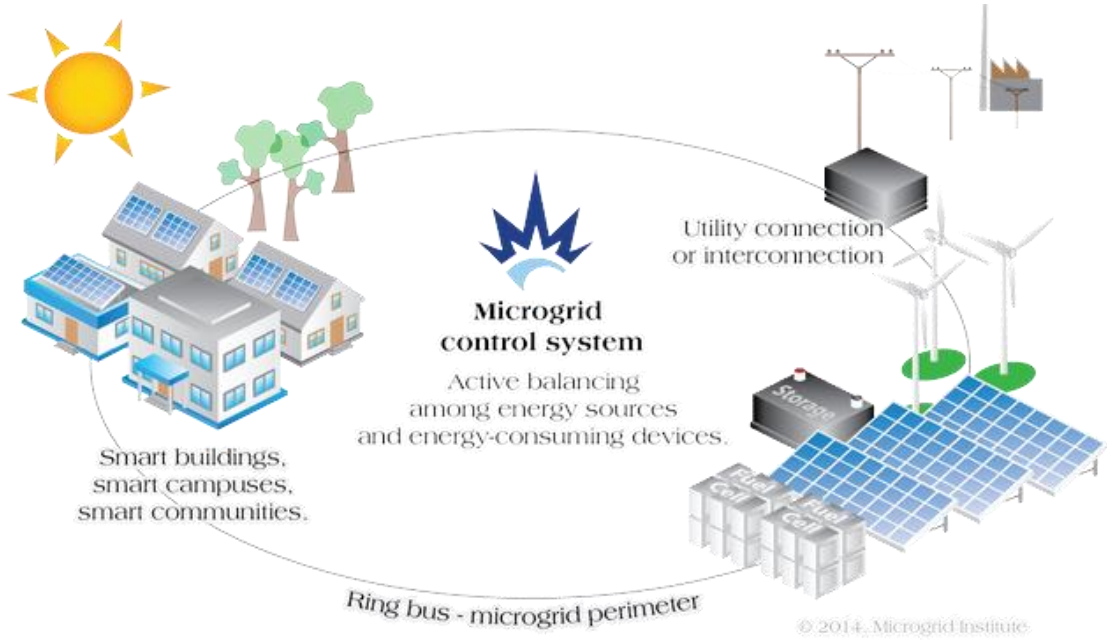
- GPI's proposals seek to commercialize microgrids as commonly-occurring "donkeys" rather than the highly unusual "unicorns" like RCAM that require large amounts of grant funding.
- To date, California's community microgrids have been unicorns, but we need donkeys

Compensation is key for commercializing MGs

- GPI proposed two compensation options for community microgrids (CMG)
  - **<u>Compensation component #1: Internal sales</u>**
    - Voluntary contractual agreement between customers and CMG in order to provide resilience and local power
    - Avoided Cost Calculator (ACC) values for the specific location set the price that utility pays for (opt-in) microgrid customers
    - The utility still bills each customer and acts as a pass-through for power provided by the CMG to the customer
    - This avoids issues with the CMG operator being regulated as a utility under Section 218, similar to PG&E's existing Green Savers program for local solar power

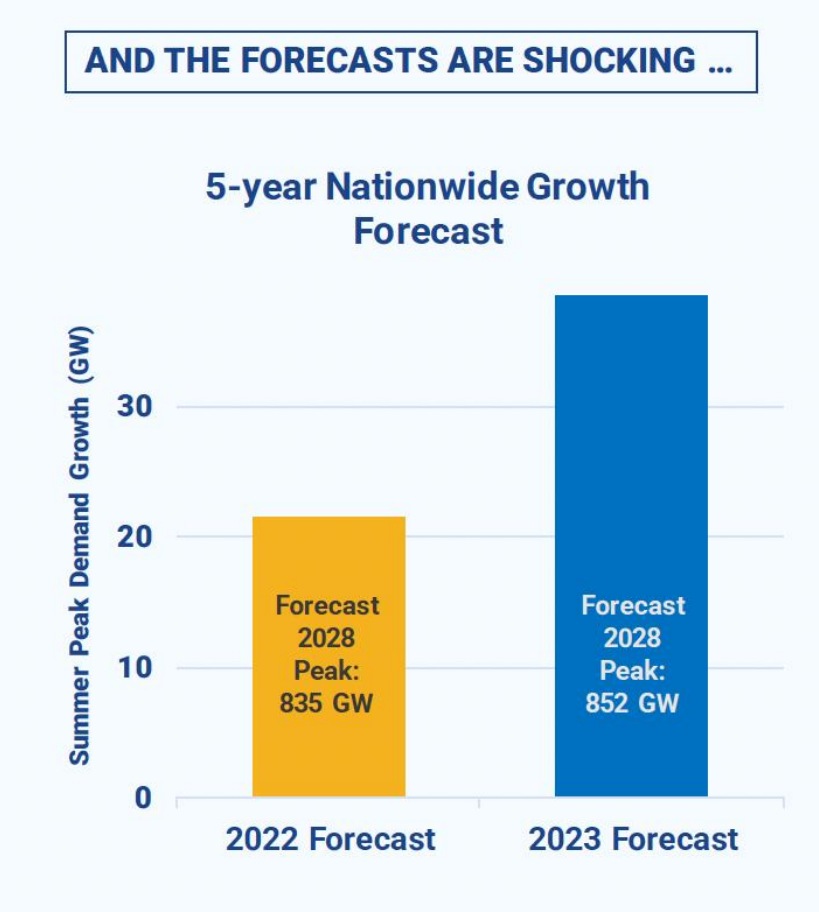
For true resilience, CMGs must be over-sized

- For example, if a CMG has a normal 1 MW load, a 1 MW solar system and 4 MWh battery would provide up to 4 hours of maximum power during grid outages
- Some PSPS have been multiple days
- Some grid outages and/or PSPS will occur during cloudy/stormy periods, **when solar is not producing**
- In order for renewables-focused grids to provide resilience longer than a few hours they must be "over-sized" to avoid simply relying on BUGs
- If our 1 MW load wanted at least two days of resilient power without relying on backup generators it **would need approximately 12 MW of solar and 48 MWh of storage**
- This is what it means to be "over-sized"



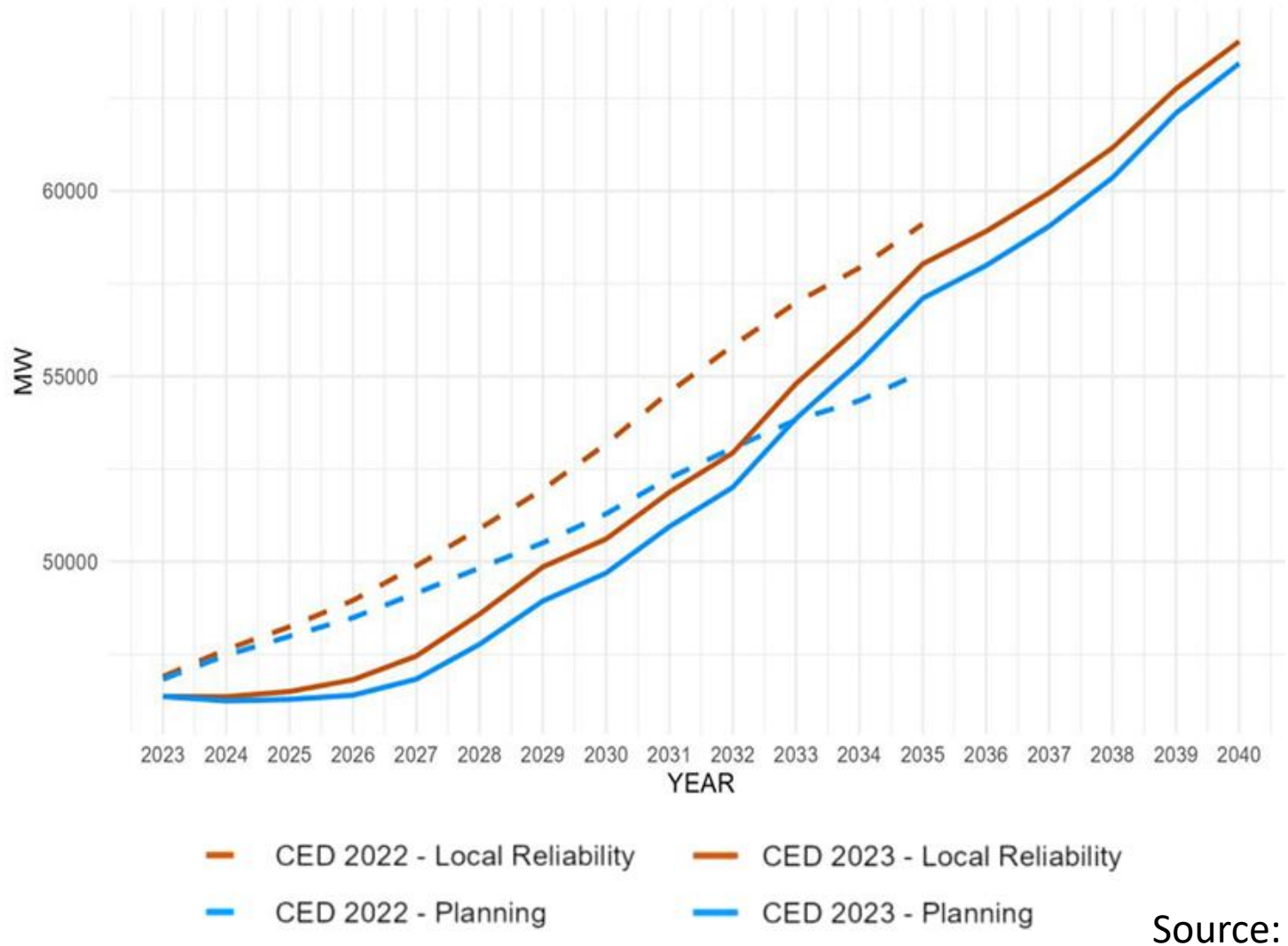
Exports are necessary for economic viability of over-sized grids

- In order to make over-sized CMGs economically viable owners will need to be able to export power for compensation
- It is a public good to have more green DERS exporting power to the grid
- Grid demand is growing rapidly in recent years so RPS milestones are being increasingly challenged



Source: Grid Strategies Nov. 2023

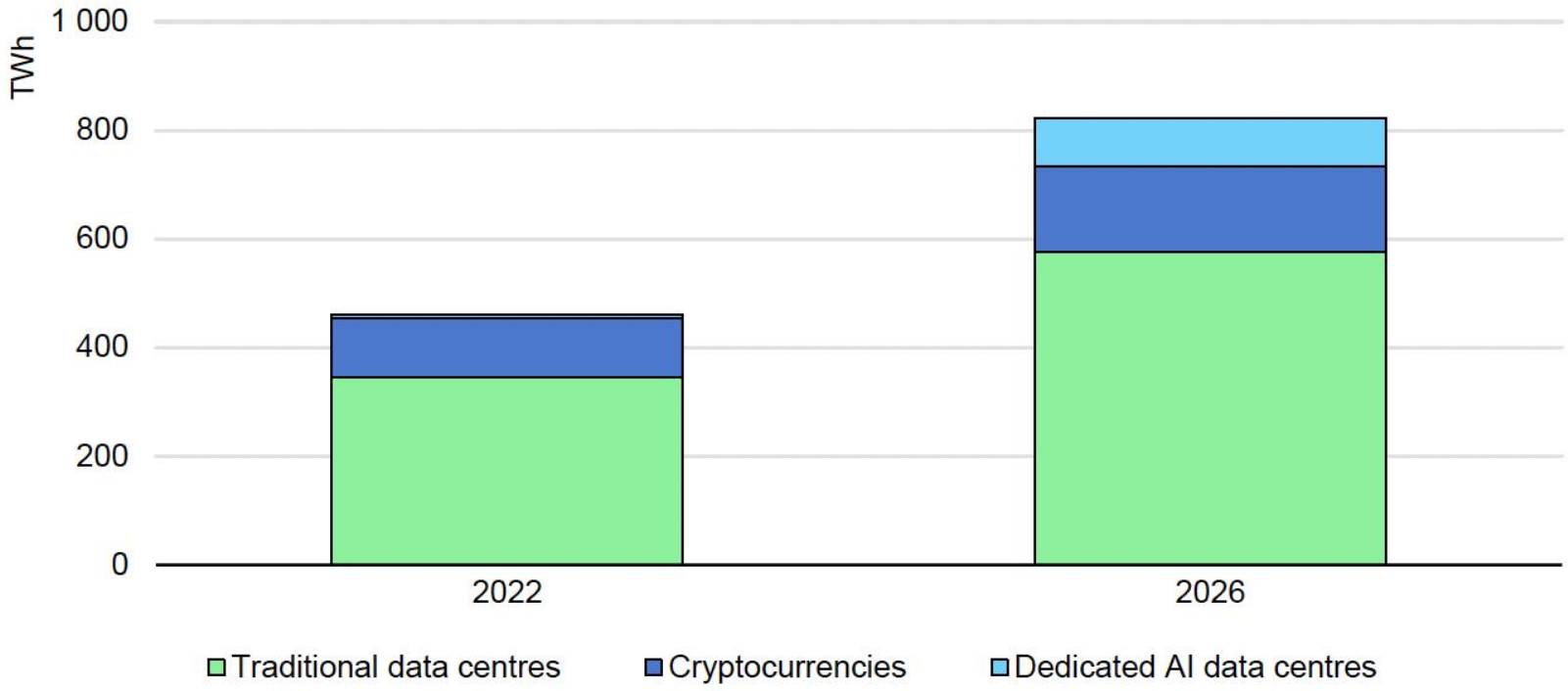
CEC's 2023 demand forecasts show about 10 GW of new demand in the next decade



Source: CEC 2023 demand forecast

New data center demand, crypto and AI suggest even higher growth

Estimated electricity demand from traditional data centres, dedicated AI data centres and cryptocurrencies, 2022 and 2026, base case



Note: Data centre electricity demand excludes consumption from data network centres.

Sources: IEA forecast based on data and projections from Data Centres and Data Transmission Networks; Joule (2023), Alex de Vries, The growing energy footprint of artificial intelligence; Crypto Carbon Ratings Institute, Indices; Ireland Central Statistics Office, Data Centres Metered Electricity Consumption 2022; and Danish Energy Agency, Denmark's Energy and Climate Outlook 2018.

Source: IEA Electricity 2024

Compensating for exports

- **<u>Compensation component #2: Export sales</u>**
  - GPI wants to promote “over-sized” renewable energy CMGs rather than fossil-fuel focused CMGs
  - To make such CMGs economically viable and financeable there will need to be an export compensation model b/c by being “over-sized” these CMGs will, by definition, generally produce more power than internal customers need
  - GPI proposes a new “resilience avoided cost” category of export sales under the well-established PURPA framework

“Resilience avoided cost” under PURPA

- This new category of avoided costs could include the following benefits that all ratepayers will enjoy, not just the CMG customers:

  - Reduced line losses from increasing local generation
  - Reduced transmission construction from increasing local generation
  - Alternative to building new transmission and/or distribution lines for improved community resilience (see e.g. PG&E’s approved microgrid resiliency pilot and recent proposed decision modifying that program in A.21-06-022)
  - Reduced wildfire risk due to reduced new distribution and/or transmission lines
  - Critical facility improved resilience during grid outages
  - Reduced need for backup generators at critical facilities and other facilities that would otherwise use backup generators during grid outages
  - Equity issues such as improved service and reduced local air pollution
  - Reduced Blue Sky Social Burden, for disadvantaged and vulnerable communities, determined by tools for calculating the value of resilience such as ReNCAT
  - Improved Community Resilience Metric (CRM)
  - Improved public and private EV charging opportunities in grid outages
  - Improved EV rideshare company charging opportunities in grid outages
  - Load shedding
  - Frequency regulation, voltage and reactive power support, synthetic inertia…
  - Supporting state and local renewable energy and climate emissions targets

Our compensation proposals do not shift costs

- By definition, the two components of our proposed compensation mechanism do not entail cost shifts
- This is because they are both defined as the “avoided cost” to ratepayers, which under both policy structures are crafted specifically to not shift costs between classes of ratepayers

Thank you!

- Tam Hunt, GPI Legal Director
- Greg Morris, Executive Dir.
- Sahm White, Consultant

Discussion and Q&A

WebEx Tip

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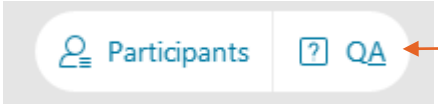

Access the written Q&A panel here

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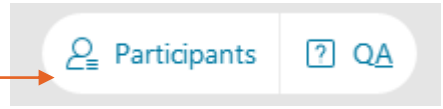

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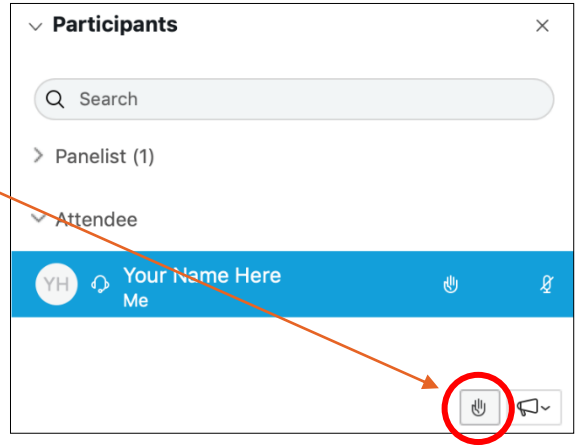

BREAK (15 Minutes)

PearlX Proposal

PearlX

MULTI-PROPERTY MICROGRID TARIFF

MARCH 25, 2024

Creating new traditions.

PearlX

INTRODUCTION

- PearlX finances and develops clean, reliable, smart grid power systems, including distributed solar and battery storage, that provide resilience and lower-cost electricity to renters, and allow renters to be part of the energy transition.
- PearlX supports the development of microgrid projects that encompass multiple properties and serve the needs of multifamily housing tenants, especially low- and middle-income tenants.
- A viable multi-property microgrid tariff can help developers overcome the split incentive problem and expand the opportunity for clean energy and resiliency infrastructure to all Californians regardless of residence type or income.

PearlX

IOU PROPOSED TARIFFS

- The IOU proposed “CMET” tariffs fail to align with SB 1339 (2018) and the ESJ Action Plan.
- A viable MPMT will need to be commercially viable and maximum value of microgrid components, including distributed solar and storage assets.
- Proposals to limit the use of microgrid operations to only grid outages diminish economic benefits of microgrids.
- Project caps are arbitrary and unnecessary.

PearlX

PEARLX'S MPMT PROPOSAL

- Third-party owners and developers should operate the microgrid.
- Customers should be allowed to fund or furnish their own distribution infrastructure.
- Microgrids should operate full-time, not only during outages.
- Microgrids should be able to participate in wholesale and retail markets.
- Projects should be able to be split across more than one tariff to provide additional flexibility.

PearlX project in Victorville, CA

PearlX

FINAL THOUGHTS

PearlX project in Hemet, CA

PearlX urges the Commission to find a middle-ground compromise solution for multi-property microgrids to help further enable microgrid policy in California.

PearlX

See you in the future.

Discussion and Q&A

WebEx Tip

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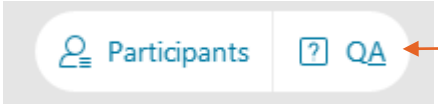

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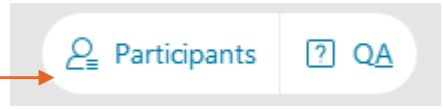

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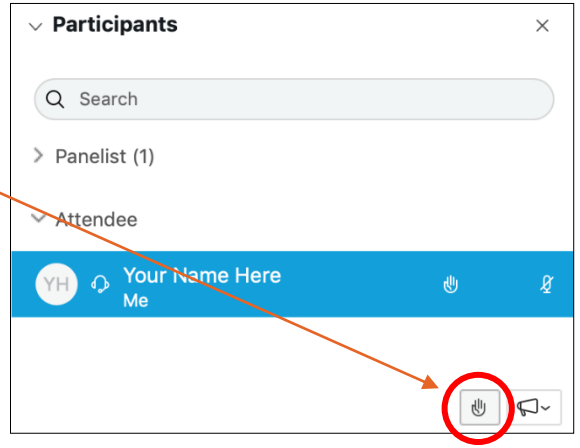


Sunnova Community Microgrids California (SCMC) Proposal

Public Workshop on R.19-09-009 Track 5 Proposals

Adam Miller, VP Microgrids
Jamie Charles, Manager, Grid Services Policy
Marc Burns, AGC, Consumer and Regulatory Compliance

Sunnova Track 5 Overview

- Sunnova Community Microgrids of California (SCMC) was created to develop communities designed for homeowners and businesses to share power across property lines

- Sunnova has also prepared comments on the CMET in order to enable a streamlined interconnection process

- Both paths could enable development of community microgrids that deliver sustainable, resilient electricity and contribute to the grid

Sunnova Energy International Inc. (NYSE: NOVA) is a leading national solar and energy storage service provider, with customers across the U.S. and its territories. Sunnova's goal is to be the source of clean, affordable and reliable energy, with a simple mission:

POWERING ENERGY INDEPENDENCE™

A Better Energy Service at a Better Price

Leading Technology from Top Brands

Excellent Customer Service & Online Tools

25-Year Protection Plans

Flexible Financing Options

Local Experts & National Support

WHAT'S THE PROBLEM?

THE HILL

California may need to invest up to $50B in readying grid for electrification influx: report

BY SHARON UDASIN – 05/11/2023

Price tag for preparing for electric vehicle demand is $50 billion barring additional measures to **reduce cost or manage load**

Peak load could increase 56% from 2025-2023

Microgrids are another possible solution for areas that face natural disaster threats, many electricity experts say.

Today's news

San Francisco Chronicle

2.6 million PG&E customers lost power in storms from New year's eve to Jan 15, according to the utility.

San Francisco Chronicle

CALIFORNIA WILDFIRES

Power outages hit some of state's poorest communities hard

Los Angeles Times

Mass storm outages bring misery across California, exposing power grid's vulnerabilities

WHAT'S THE COMMISSION'S AUTHORITY AND RESPONSIBILITY?

“The Commission has never foreclosed itself, even if it could, from acting favorably on an application for a certificate, the consideration of which is so peculiarly within its own jurisdiction. The discretion of the Commission in such matters is very broad.”

San Diego & Coronado Ferry Co. v. Railroad Cmte. of Calif., 210 Cal. 504, 513 (1930).

The Commission Has Broad Authority

“Public utilities are expected to provide for the public necessities not only today, but to anticipate for all future developments reasonably to be foreseen. The necessity to be provided for is not only the existing urgent need, but the need to be expected in the future, so far as it may be anticipated from the development of the community, the growth of industry, the increase in wealth and population, and all the elements to be expected in the progress of a community."

The Public Utilities Commission …
must take action to help transition
the microgrid … to a successful, cost-effective, safe, and reliable commercial product that helps California meet its future energy goals and provides end-use electricity customers new ways to manage their individual energy needs."

SB 1339, at Section 1(e)

SB 1339(d) "Key issues facing commercializing microgrids that must be addressed include all the following:"

(1) How microgrids operate and their value.

(2) Improving the electrical grid with microgrids.

(3) How microgrids can play a role in implementing policy goals.

(4) How microgrids can support California's policies to integrate a high concentration of distributed energy resources on the electrical grid.

(5) How microgrids operate in the current California regulatory framework.

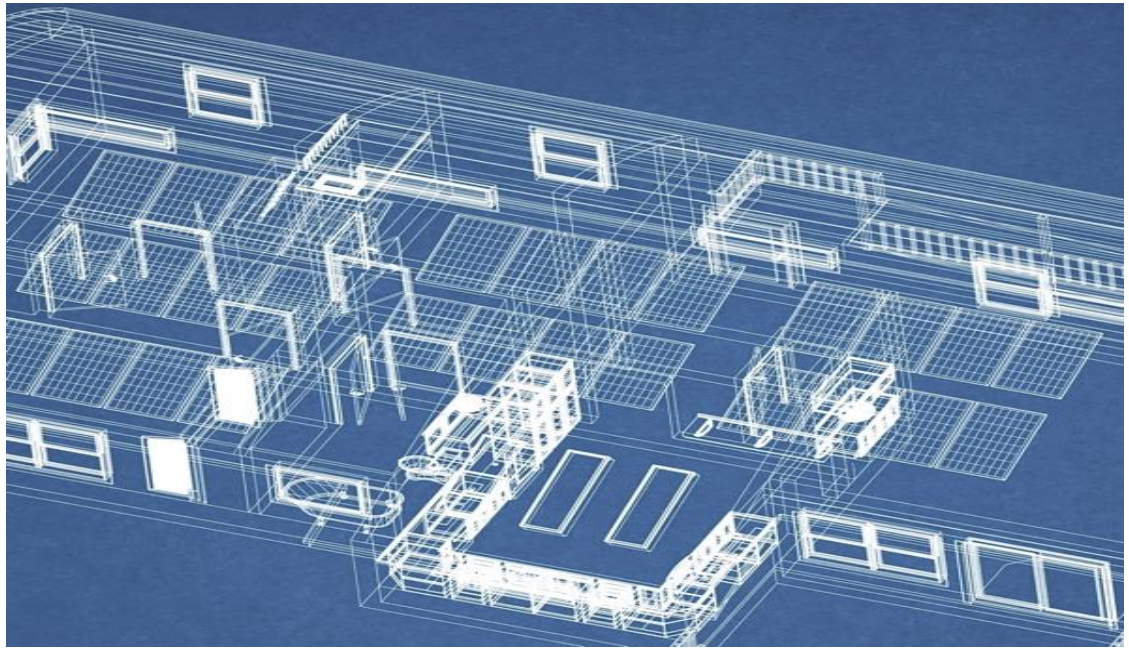
(6) Microgrid technical challenges.

WHAT'S SCMC'S PROPOSAL?

Design for Community Microgrids

Customer Expectations

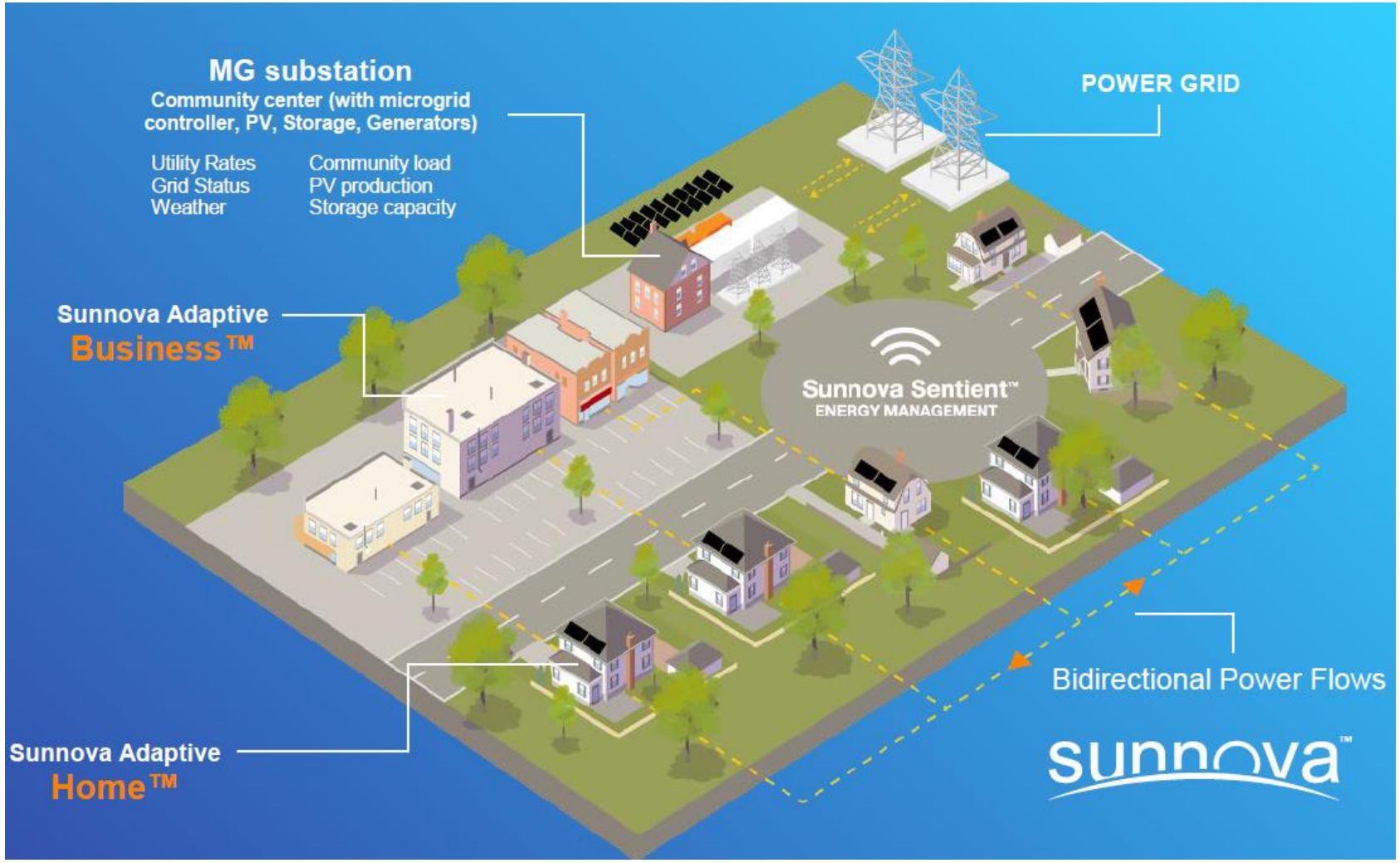
- Reliability: 99% to 100%
  - Sunnova model would provide 82% of power from sustainable sources
  - Island from the grid for 300 hours
- Sustainability: 75% to 100%
- Reasonable, predictable prices



Design with Microgrids in Mind…

- Microgrids allow homeowners to increase size of solar leading to lower unit costs
- Designing communities for microgrid at the onset avoids cost of implementing and replacing legacy distribution

Microgrid Guidelines for “True Energy Democratization”



- Distribution network designed for homeowners and businesses to share power across property lines
- Manage when the neighborhood can independently island from legacy grid
- Reduce transmission impact to utility
- Provide services to grid helping customers who aren't part of microgrid
- Keep pace with population growth, safety and sustainability goals

“Any concerns regarding anticompetitive behavior, including predatory pricing, can best be addressed by the Commission’s complaint or investigatory process rather than requiring cost justification tariffs.”

D.15-07-011, Decision Granting Application for Authorization to Establish Market-Based Rates and Conditions of Service and for Approval of Exemptions Related to Secured Financing Transactions, issued July 23, 2015. See also D.19.-05-023, Order Granting Rehearing of Decision (D.) 16-02-020, Superseding Decision, and Ordering the Opening of a Phase II on Refunds, issued May 19, 2019.

The SCMC Microgrid Proposal:

- Is ***NOT*** a variation of the CMET
- Does ***NOT*** rely on Section 2780
- Does ***NOT*** allow for unregulated or predatory rates
- Is ***NOT*** intended to be the exclusive microgrid tariff

SCMC's Microgrid Would Provide:

- A streamlined interconnection process for a microgrid that is an electrical corporation that proposes to connect to an IOU's distribution system
  - Recommendation: one commercial master meter for the community microgrid
- The operational rules for the interconnection between the IOU and the electrical corporation microgrid
- A framework for identifying and quantifying the benefits the electrical corporation microgrid provides to the IOU and appropriate compensation from the IOU to the electrical corporation microgrid for such benefits
- A framework for identifying and quantifying the benefits the IOU provides to the electrical corporation microgrid and appropriate compensation from the IOU to the electrical corporation microgrid for such benefits

SCMC's Microgrid Would:

1. Be certificated by the Commission.
2. Charge market-based rates.
3. Adopt and implement appropriate consumer protections subject to Commission oversight.
4. Be subject to and comply with all applicable industry best practices, standards, and codes, as well as all permitting requirements.
5. Make post-certificate project-specific filings commensurate with limited infrastructure, including rates and technical information.
6. Undertake other appropriate functions and activities in accordance with applicable law and Commission oversight.

WHAT'S SCMC'S PROPOSAL FOR THE CMET?

Microgrids can and should be used for customers to “better manage their own usage” through “new ways to manage their individual energy needs” and “innovative and custom operations.”

SB 1339 at Section 1(a)

Summary of Proposed Changes to CMET

- technical qualifications to oversee the construction and operation of an electrical project of similar size and scope and employ licensed contractors to perform such work
- exchange of energy and other attributes between or among the CMET Customers and Project Resources
- crediting and compensation of the CMET Customers and CMG Aggregator in connection with such exchanges
- permit operation of the Microgrid as a coordinated asset for the purpose of selling products and services outside of the Microgrid boundary
- compensation for products and services provided to or that benefit the IOU’s distribution system
- not bill for the exchange of energy and other attributes within microgrid during Island Mode
- allow design and construction of distribution infrastructure for a new development that will be part of the microgrid, to be owned and operated by IOU and cost of construction reimbursed by IOU
- allow master metering of microgrid

CONCLUSION

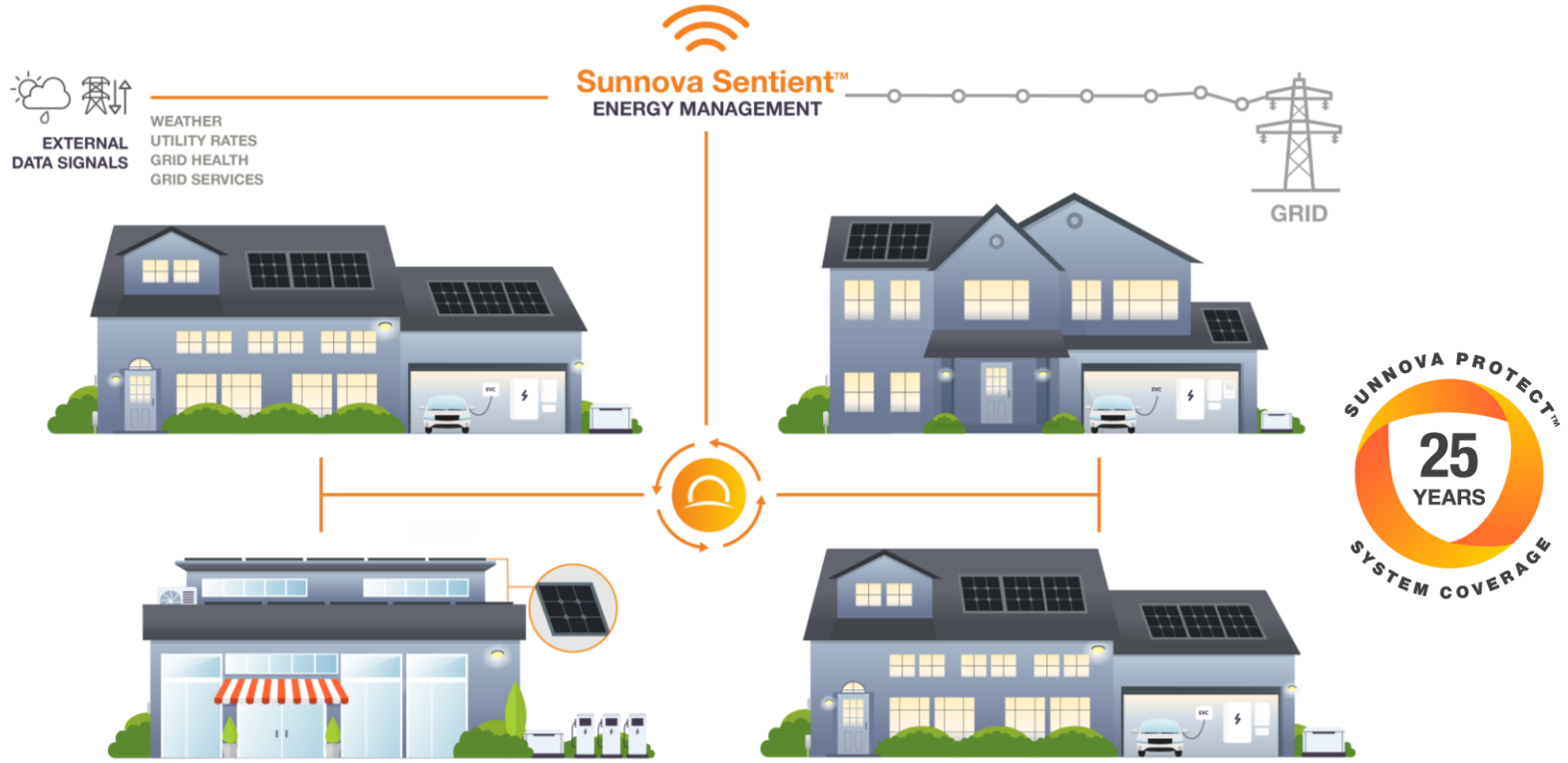
Adam Miller, VP Microgrids
Jamie Charles, Manager, Grid Services Policy
Marc Burns, AGC, Consumer and Regulatory Compliance

APPENDIX

Sunnova Adaptive Community™

Providing communities with cleaner, more affordable and reliable power through a better energy service

Sunnova Adaptive Community™ microgrid design for new homes and developments



Integrated

By unifying all Sunnova Adaptive Community™ technologies with real-time data on energy usage, grid status, utility rates, time of day, weather and more, customers get a holistic energy service through a single provider.

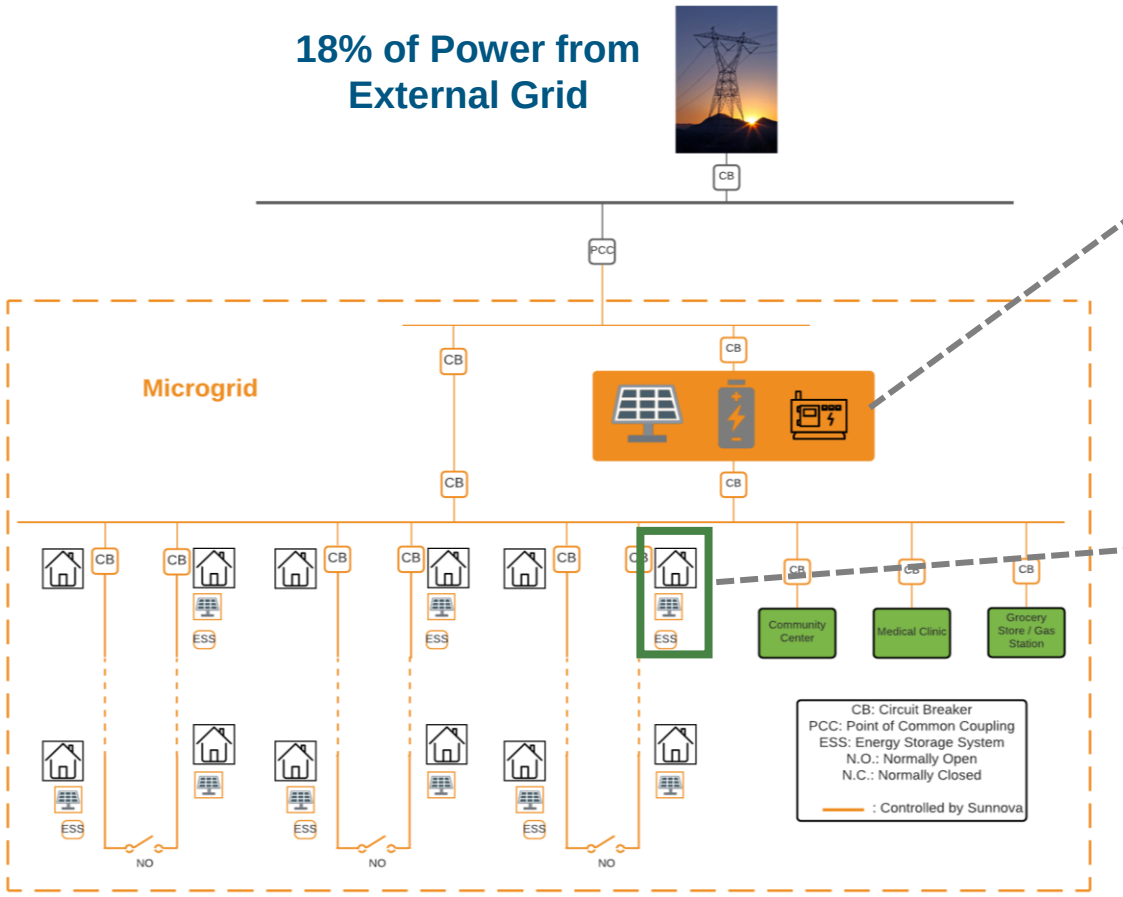
Resilient

The Sunnova Adaptive Community™ provides unparalleled reliability by anticipating and preparing for outage events. It minimizes energy disruptions and empowers customers with the flexibility to manage their preferences.

Insightful

The Sunnova Adaptive Community™ is powered by our intelligent energy management platform, Sunnova Sentient™, which combines data insights, AI and machine learning to optimize and automate the energy ecosystem.

Our Simulated Micro-utility Application in California



Microgrid Facility

- 300 kW Solar Array
  - Ground-mount solar garden (1.6 acres)
  - Roof-mounted community/retail
- 2,000 kWh Battery Storage
  - Stores excess energy
  - Powers entire community for up to 2 hours
- 2 MW Generator/Fuel Cell
  - 8 hours of emergency use per year
  - 120 hours of grid services use per year
  - Can power entire community
  - Tier 4 (low emissions)

Nanogrid

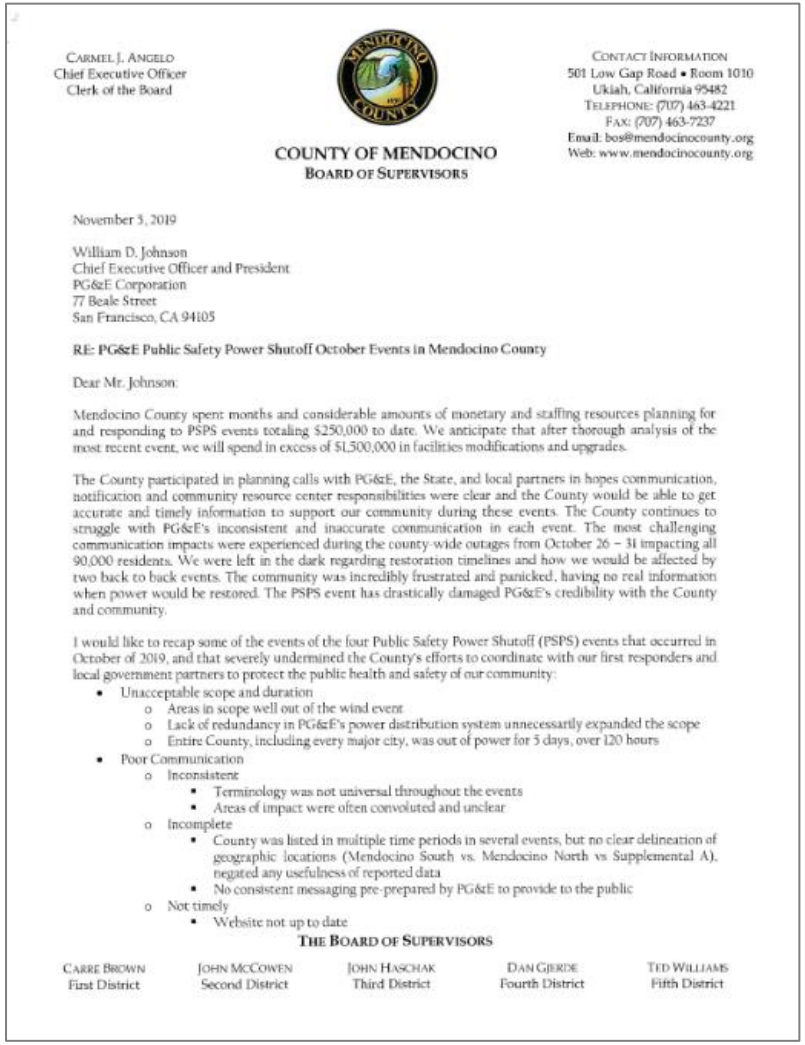
- 76% of Power from Behind the Meter
- 7 kW Rooftop Solar
- Two 10 kWh Battery Storage Units
  - Controlled by Sunnova Adaptive Home™

Impact of power shutoffs on customers

“ **Undue burden on vulnerable populations, particularly our oxygen dependent and senior populations.**

“ **Difficulty obtaining life-sustaining oxygen supplies.**

“ **Extreme cold, putting elderly and homeless at risk for hypothermia**



CARMEL J. ANGELO
Chief Executive Officer
Clerk of the Board

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TELEPHONE: (707) 463-4221
FAX: (707) 463-7237
Email: bos@mendocinocounty.org
Web: www.mendocinocounty.org

COUNTY OF MENDOCINO
BOARD OF SUPERVISORS

November 3, 2019

William D. Johnson
Chief Executive Officer and President
PG&E Corporation
77 Beale Street
San Francisco, CA 94105

RE: PG&E Public Safety Power Shutoff October Events in Mendocino County

Dear Mr. Johnson:

Mendocino County spent months and considerable amounts of monetary and staffing resources planning for and responding to PSPS events totaling $250,000 to date. We anticipate that after thorough analysis of the most recent event, we will spend in excess of $1,500,000 in facilities modifications and upgrades.

The County participated in planning calls with PG&E, the State, and local partners in hopes communication, notification and community resource center responsibilities were clear and the County would be able to get accurate and timely information to support our community during these events. The County continues to struggle with PG&E's inconsistent and inaccurate communication in each event. The most challenging communication impacts were experienced during the county-wide outages from October 26 – 31 impacting all 90,000 residents. We were left in the dark regarding restoration timelines and how we would be affected by two back to back events. The community was incredibly frustrated and panicked, having no real information when power would be restored. The PSPS event has drastically damaged PG&E's credibility with the County and community.

I would like to recap some of the events of the four Public Safety Power Shutoff (PSPS) events that occurred in October of 2019, and that severely undermined the County's efforts to coordinate with our first responders and local government partners to protect the public health and safety of our community:

- Unacceptable scope and duration
  - Areas in scope well out of the wind event
  - Lack of redundancy in PG&E's power distribution system unnecessarily expanded the scope
  - Entire County, including every major city, was out of power for 5 days, over 120 hours
- Poor Communication
  - Inconsistent
    - Terminology was not universal throughout the events
    - Areas of impact were often convoluted and unclear
  - Incomplete
    - County was listed in multiple time periods in several events, but no clear delineation of geographic locations (Mendocino South vs. Mendocino North vs Supplemental A), negated any usefulness of reported data
    - No consistent messaging pre-prepared by PG&E to provide to the public
  - Not timely
    - Website not up to date

THE BOARD OF SUPERVISORS

CARRE BROWN	JOHN MCCOWEN	JOHN HASCHAK	DAN GJERDE	TED WILLIAMS
First District	Second District	Third District	Fourth District	Fifth District

Discussion and Q&A

WebEx Tip

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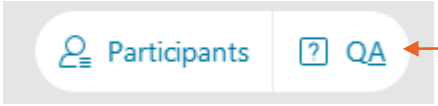

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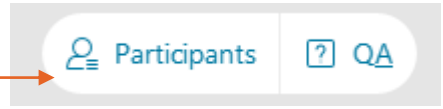

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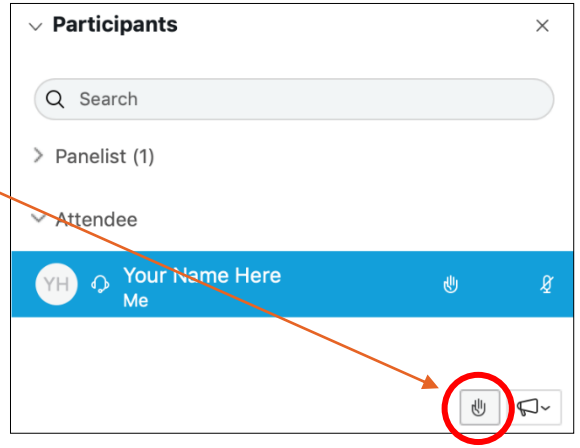

For more information:

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Patrick Saxton
Patrick.Saxton@cpuc.ca.gov

https://www.cpuc.ca.gov/resiliencyandmicrogrids/