

## Resiliency and Microgrids Working Group (RMWG)

### Multi-Property, Multi-Customer Microgrids Tariff Discussion Prompt and Questions

#### I. Overview

##### Background

Under existing CPUC rules and state law, customers throughout California are allowed to build and operate microgrids. Customers interested in installing microgrids that primarily serve their own load on a single property can benefit from several existing programs, such as the Self Generation Incentive Program and the Net Energy Metering tariffs, and may be fast-tracked for interconnection under Electric Rule 21. In contrast, the rules and procedures for developing microgrids that serve multiple customers across multiple properties are much less well-developed.

##### Objective

The objective of this phase of the resiliency and microgrids working group is to facilitate the commercialization of multi-property microgrids by fostering a shared understanding of how such microgrids could interact with the public interest. The questions and discussion prompts below aim to provide draft guidance on the various elements that merit consideration when developing a tariff proposal.

The topics and discussion prompts put forward in this list were developed through preliminary discussions staff had with various stakeholders. Accordingly, they by no means constitute a comprehensive list of all possible of tariff elements. Additionally, some of the questions may be appropriate for more than one tariff element.

**Policy and Technical Questions** - Staff is not advocating for the prioritization of one tariff element over another. However, staff has identified two subcategories, and they are identified by one or two asterisks.

- \* Policy Questions - These are policy questions that are foundational and may need to be addressed first when developing a tariff.
- \*\* Technical Questions – These are technical questions related to areas where it may be valuable to hear from stakeholders, including microgrid developers and/or utilities, that have had firsthand experience with the issues when developing or approving microgrid projects.

**Proposal Narrative and Tariff Language** – Some of the requirements that results from these prompts may be included in either the actual proposed tariff language or the narrative of what the tariff does. In other words, what are the requirements that pertain to the tariff language itself, and what are the requirements that can be addressed as part of a narrative proposal presenting the tariff?

For example, the discussion prompts include questions about fire ignition risk. It may be that the requirements do not go into the tariff and instead into the contract agreement. The proposal will need to clarify where fire ignition would be addressed.

## Proposed Guiding Principles

These are proposed guiding principles to clarify the scope of what a tariff proposal would be expected to address and what it would not. Alternatively, if a tariff proposal violates the guiding principles, it would need to explain why.

- The tariff/rate schedule must ensure that utility ratepayers have consumer protection controls.
- The principle must be consistent with existing statutes such as the Public Utilities Code 218.
- If a microgrid is not a cost-effective method of service for the microgrid participants, all assets and distribution upgrades necessary for microgrid operations should be paid for by the third-party owner or the microgrid participants.
- If microgrids are a commercial offering, microgrid participants are free to choose their services. Non-participating ratepayers need to be protected from unnecessary costs.

## II. Tariff Elements

For the purposes of this RMWG discussion, the categories of tariff elements have been grouped as project characteristics, operational security and safety, rules and regulations, application and study process, consumer protection, finances and compensation, and change management.

### Project Characteristics

- What purpose or function does the microgrid serve for the customers within the microgrid?
- What needs will the microgrid serve for non-participants in the microgrid?
- Where are these resources located?
- What technologies are involved? Are all resources eligible? Is it limited to renewable or emissions-free resources? What requirements, if any, should be defined to ensure consistency with state greenhouse gas and criteria air pollution reduction goals? \*
- What types of controls are in place to prevent backflow during islanding? What types of controls are in place to govern dispatch during blue sky conditions? \*\*
- How should the level of reliability delivered by multi-customer microgrids be established and governed? \*\*

### Operational Security & Safety

- How is fire ignition risk and back-feeding mitigated? What telemetry is being shared with the utility and through what protocols?  
*Context:* Proposals should address the cybersecurity and operational safety dimensions of microgrids. Proposals should also address system protection and advanced testing challenges related to multi-customer microgrids.
- What are the functional and physical requirements and labeling to ensuring safe connection and disconnection of microgrids? \*\*  
*Context:* To ensure the safety of the field personnel and the public.
- How will microgrids operating in islanding-mode guarantee that they do not back-feed the utility systems? \*\*  
*Context:* For microgrid operation pursuant to Rule 18/19, the primary safety concern is the possibility of back-feed from one customer premise to another and then back onto the distribution system. The utility would need to ensure that the islanding scheme which initiates the feed from one facility to the other includes the appropriate interlocking/isolation of sectionalizing devices to ensure that during intended island operation, there is no possibility of back-feed into the utility system from any of the adjacent premises included in the microgrid.

- How will energization of behind-the-meter overhead infrastructure within a multi-property, multi-customer microgrid be prevented during adverse weather conditions that pose an unacceptable risk of igniting fires (contact with other conductors, contact with wind-blown debris) or other issues (such as compromised safety and damages from falling conductor/poles)? \*  
*Context:* Energization of behind-the-meter overhead infrastructure that is part of a multi property microgrid must not recreate the risk that the de-energization of the utility grid was intended to mitigate, whether due to adverse weather conditions, contact with objects/debris, or other issues.

## Ownership and Operations

- Who owns what assets (e.g., generation/storage, controllers, distribution assets)?  
*Context:* Proposals should consider equipment ownership and whether the equipment owner maintains operational control over that equipment.
- Who operates each asset during normal grid conditions? Who operates each asset during islanded mode? Who decides when to switch to islanded mode?  
*Context:* Proposals should clearly define the roles and responsibilities of counterparties.
- How will the utility control center know that the third-party microgrid is in operation and safely isolated from the larger utility grid? \*\*  
*Context:* The utility needs to be certain that following de-energization of distribution facilities for planned or unplanned outages, the de-energized facilities can be safely maintained/repaired without risk of unexpected re-energization.
- Will the microgrids be allowed to attempt reconnection to the grid via seamless self-synchronization technology, or will the microgrid be required to de-energize prior to reconnection (in which case the utility system is the synchronizing source)? \*\*  
*Context:* The utility will need to approve the installation and its protective settings, and a procedure developed between the utility's control center and the third-party operating the microgrid (including the sharing of telemetry and real-time operating states) to ensure reconnection is successful and does not damage equipment.
- How will the microgrids maintain their operational readiness? \*\*  
*Context:* Operational readiness for the microgrids will require testing in coordination with the utility. Readiness and testing will help to ensure the microgrid works as intended and does not pose a public safety risk.
- What obligations do the microgrid operators have over time? Describe the respective maintenance and inspection roles and responsibilities for the equipment at the interfaces to the distribution system. \*  
*Context:* Ownership and maintenance go together. For example, if the IOU does not own or maintain the cable between adjacent facilities, the IOU would need to inspect and review the disconnect/anti-parallel devices at both premises' respective interfaces with the distribution system. This would trigger a review of the control system owned and used by the adjacent premises to ensure the disconnect/anti-parallel device interface is designed to prevent back-feed to the utility system. The control system review would likely include some level of inspection of behind the meter customer facilities.

- Who would own and maintain the facilities between premises involved in the microgrid? What happens if the microgrid provider goes out of business? What role, if any, would the utility play?  
*Context:* Ensuring the long-term service and safety of the electrical system is of paramount importance.

## Rules and Regulations

- How does the proposed tariff clearly distinguish between the equipment that the utility owns and controls and the equipment the project resources owns and controls?
- How does the proposed tariff impact and integrate with existing approved rules, regulations and processes including impacts to other regulatory jurisdiction(s)?  
*Context:* Proposals should address to what extent they rely on existing rules and regulations or require amendments or new regulations to support the proposal.
- What rules and standards should apply to microgrids that can be identified or incorporated by reference?  
*Context:* Microgrids should be subject to local building codes and all applicable national electric standards.
- How will the command and control of the microgrid be managed during islanded mode?
- Describe how safe and reliable energy distribution in compliance with Public Utilities Code 218 is coordinated to ensure a clear hierarchy of control authority for the electric distribution system operator.
- What obligations, if any, does the Commission have to regulate agreements by which one premises provides retail electric service to an adjacent premise? \*  
*Context:* The Commission regulates all retail electric service via tariffs and rules that govern the services provided by the utility to its customers. To the extent one premise provides similar services to an adjacent premise, the same regulations should be imposed to ensure safe and equitable service.

## Application and Study Process

- To streamline the approval process, should there be standards, specifications, or guiding principles that would set minimum design criteria, thresholds or best practices related to the planning, design, and engineering for the microgrid development process?
  - Should the microgrids be subject to thresholds for voltage, electrical capacity, and distance between electrical facilities? \*\*
  - If establishing specific thresholds is difficult, is it possible to develop guiding principles based on current microgrid projects?

*Context:* The design of a multi-customer, multi-property microgrid is situation-specific; generalized thresholds may be difficult, if not impossible, to develop. That said, if an microgrid is intended to support low voltage auxiliary systems with relatively small loads at an adjacent premise, and the electrical facilities are physically close, then a low voltage cable makes sense and would likely be cost effective. If the operation involves electrical facilities with higher loads that are geographically more

distant, then a medium voltage connection with a step-down transformer may be necessary to feed the auxiliary systems in emergencies.

As with the voltage of the microgrid, the distance, size, and phase (i.e., single- or three-phase) of any required cabling depends on the situation. It may not be possible to adopt general criteria that specifies allowed voltages, phase, cable size and cabling distances. There are many different factors that are highly dependent on the application. These factors include:

- Criticality of the facility (facility purpose and use to the public at large);
  - Power consumption needs for “critical only” load (which would need to be clearly defined);
  - Consideration of the distance between facilities;
  - Cost affordability and responsibility relative to enhanced utility service (Rule 2- special facilities); and
  - Reliability of customer facilities (age and reliability of equipment feeding the critical facility) and capability of the operator to always balance demand and supply reliably within the microgrid.
- How should the microgrid customer’s interconnection application and study process be structured?
    - \*
    - Should there be a non-binding pre-application process?
    - Similar to an interconnection application, should there be a fee for the formal application and study process, with any unused money refunded?
    - How much time should be allowed for the utility to process applications, perform the necessary studies?
    - If the applicant elects to move forward, how much time should be allowed for negotiation of the Microgrid Operating Agreement?
  - What changes to the assumptions used in the interconnection study process would trigger a restudy?
    - Material changes in forecast loads and/or projected resource additions/retirements, and/or unanticipated changes in grid topology, may be triggers for a restudy of a multi-customer microgrid. For multi-customer microgrids, the primary safety concern is the possibility of unexpected back-feed from any customer premise onto the distribution facilities. The IOU’s microgrid islanding study will need to account for all reasonably probable combinations of injections onto, and withdrawals from, the distribution system comprising the multi-customer microgrid. If the microgrid utilizes the distribution system in islanded mode, the protection scheme must be evaluated for safe operation in both grid connected and islanded mode.
    - Should the applicant be responsible for the costs of the restudy?
    - Would the costs of any resulting utility upgrades, paid by the applicant under Rule 2, be subject to reimbursement from applicable incentive funds? (For example, incentive funds from the Microgrid Incentive Program. However, please note that the tariff development is independent from, but may help support, the Microgrid Incentive Program).

- What qualifying criteria related to experience, licenses, or certifications, if any, would be reasonable for parties seeking to develop multi-customer microgrids such as engineering, financial or other credentials.
- What are the obligations for a microgrid developer and operator? Who will own, maintain, and operate the sectionalizing devices? How can the tariff ensure worker, public, and system safety under that proposal?
- Is there consideration for the minimum qualifying experience or requirements for entities wishing to create multi-customer microgrids to ensure appropriate qualifications and experience and financial viability? At what point should the obligations be imposed?  
*Context:* These requirements may include engineering, financial and customer choice (i.e., the ability to opt-in or opt-out of the multi-customer microgrid).
- Who is responsible for determining the electrical boundaries and the customers included within the electrical boundary of the microgrid to be evaluated during the microgrid islanding study? How will the boundaries of a multi-customer microgrid be determined? \*  
*Context:* For example, in the Community Microgrid Engagement Tariff, the boundaries of a multi-customer microgrid need to be determined in consultation with the utility. The boundaries cannot be determined without first identifying the location of the customers to be served by the microgrid. The multi-customer microgrid pre-application, application and study process will assist in defining sensible boundaries for multi-customer microgrids.
- What is the role and responsibility of the utility during the development of multi-customer microgrid projects? Describe the interaction between the utility and the microgrid developer and the process flow related to early project development as it progresses towards the interconnection application and associated studies. \*
- What roles and responsibilities would the utility assume? Would the utility own, maintain, and operate the sectionalizing devices necessary to disconnect/reconnect the microgrid from/to the remainder of the distribution system? Will the utility have operational control of enough generating resources within multi-customer microgrids to ensure power flows, voltages, and frequency on utility infrastructure inside the microgrid and that it remains within acceptable limits?

## Consumer Protection

- How will a microgrid customer be assured of a reasonable level of reliability during islanded conditions?
- If peer-to-peer transactions are part of the intended microgrid operation under the tariff, how can customers be assured that that energy charges set by other customers within the microgrid, are just and reasonable? \*
- Can customers within the proposed microgrid boundary opt out by declining to participate in the microgrid services? \*

- If microgrid participants are paying a third-party for microgrid services, what information, notifications, and controls will be in place to ensure participants are not paying excessive costs for the microgrid services? \*
- How will a reasonable level of reliability for the microgrids be enforced? \*\*  
*Context:* Expanding the opportunities for electric service means the safety and reliability of a greater number of customers would be dependent on their adjacent customers, not on the utility.

### Finances and Compensation

- What evaluation process should be developed to ensure that the multi-customer microgrid would provide a cost-effective method of service for the microgrid participants compared to alternatives?
- What mechanism will be in place to ensure that costs do not shift from participating to non-participating customers?
- How are the financial transactions between a microgrid and microgrid participant structured?
- Are there subscription fees or up-front power purchase agreement payments that would obligate the microgrid owner/developer that include maintenance and service guarantees?  
*Context:* SB 1339 explicitly prohibits the shifting of costs. The Commission has the statutory obligation to ensure all jurisdictional retail electric sales are just and reasonable.
- Should there be an economic feasibility assessment to validate viability of the proposed microgrid performed prior to determining the necessity for electric distribution system upgrades?
- The tariff proposals should consider the energy/services settlement.
  - Describe how energy is settled and define the ancillary services, if any, that are provided by the generator.
  - Is energy and ancillary services settled at a fair market price? How is this price established? For example, PG&E's CMET relies on the existing CAISO settlement processes to establish fair market prices for the energy and ancillary services of the interconnected generator.
- Are utility ratepayers providing compensation? If so, how is it calculated?

### Change Management

- How does the proposed tariff contemplate how to integrate additional generation and manage for load growth during the operational term?
- Are all microgrid project resources owned by the same entity or are multiple generation owners contemplated?  
*Context:* For example, PG&E's approach is to define threshold for Material Modifications of the electrical conditions which would require a re-study of the microgrid. Multiple generation owners are allowed on a microgrid.
- What obligations exist for the sponsors of multi-customer microgrids over time?

*Context:* This should include the maintenance and testing of the behind the meter distributed energy resources that the utility will control for purposes of ensuring power flows, voltages, and frequency on utility facilities within the multi-customer microgrid are always at acceptable levels.