

City of Berkeley

Microgrid Solutions

CPUC Workshop - R.19.09-009



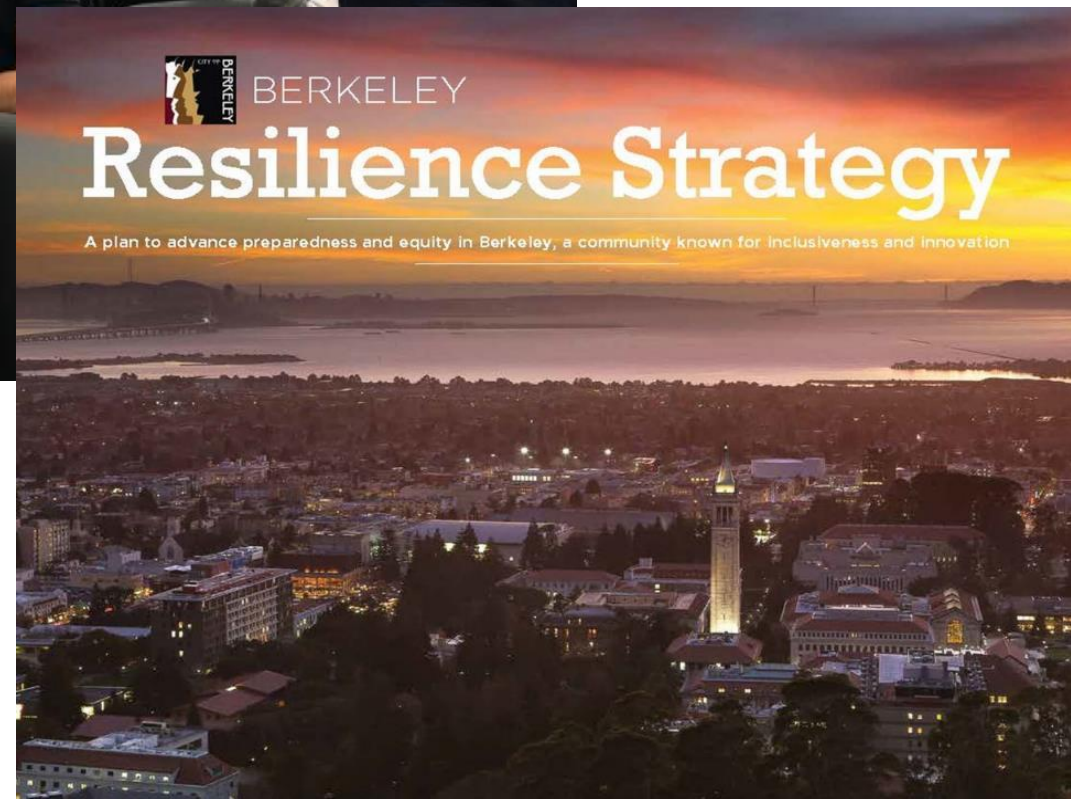
December 12, 2019
City of Berkeley
Office of Energy & Sustainable Development

Microgrids Provide Community Resilience

- Clean Energy
- Energy Assurance
 - Natural Disasters
 - Public Safety Power Shutoffs (PSPS)
- Electrification & decarbonization



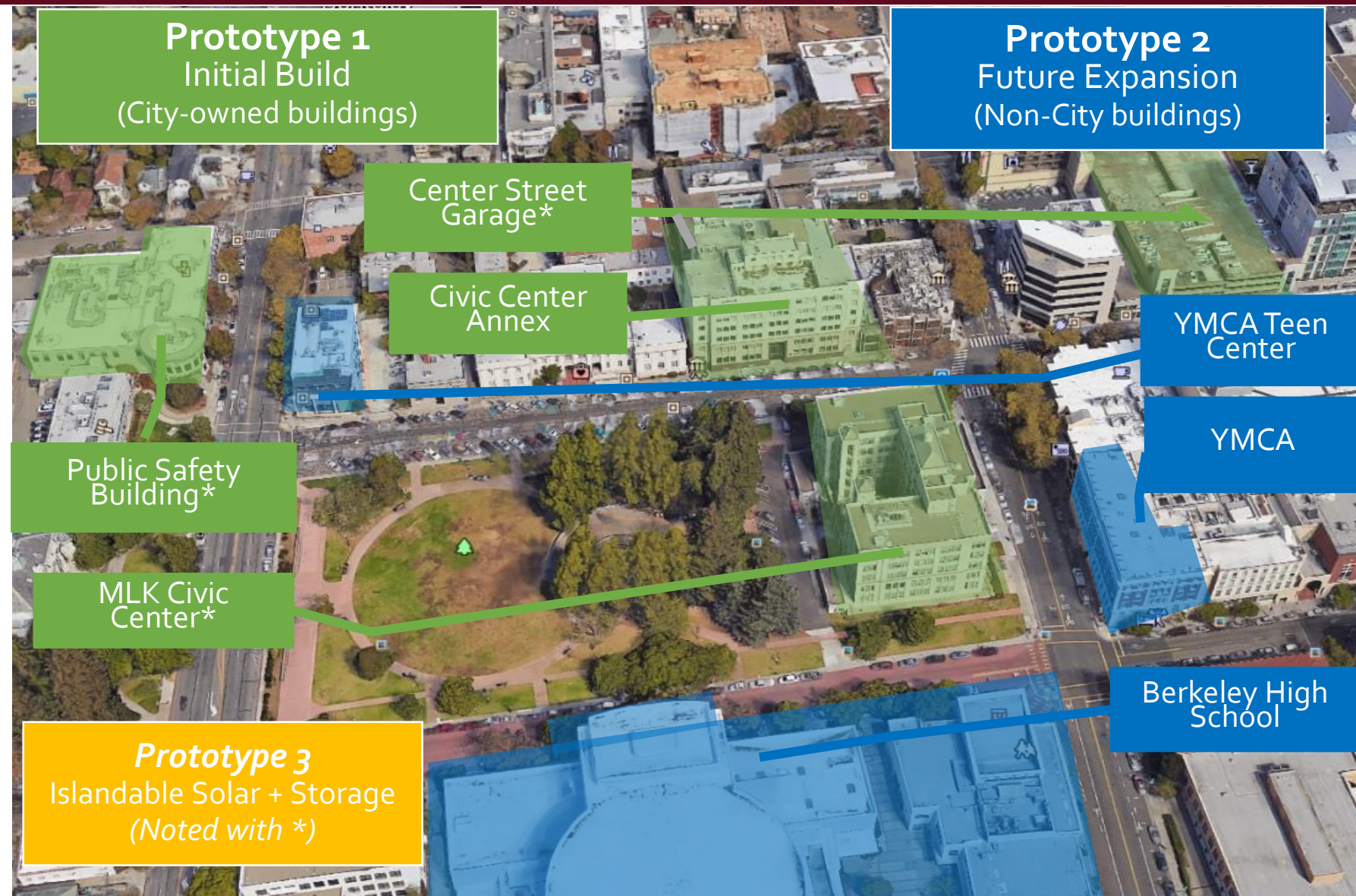
Photo: Emily Raguso, Berkeleyside



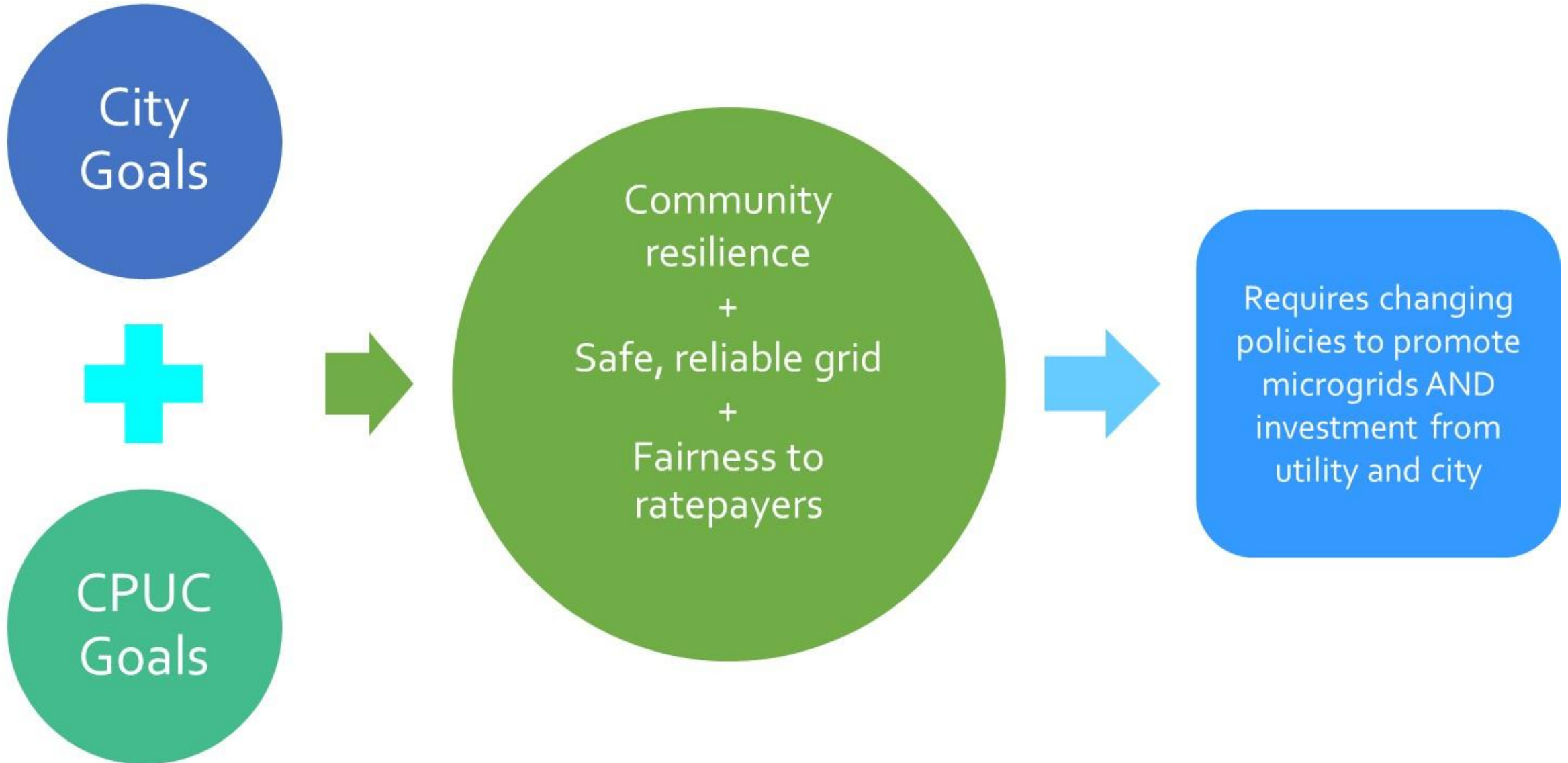
The Berkeley Energy Assurance Transformation (BEAT) Project



- \$1.5 million CEC grant, 2017-2019
- Feasibility study for a pilot clean energy microgrid to:
 - Provide community resilience
 - Connect 4-7 buildings across several blocks
 - Be in a downtown, built-out environment
 - Develop public/private partnerships



Shared Goals & Opportunities



How CPUC Can Facilitate Change



1. **Operational:** Require IOUs to dedicate resources to community-serving microgrid projects
2. **Technical:** Require IOUs to upgrade technology while addressing potential inequitable impacts
3. **Financial:** Update Rule 2 to reflect the true costs of ownership
4. **Regulatory:** Update RES-BCT rate to support microgrid development

1. Dedicated Resources & Access to Information

Problem: IOUs do not have sufficient dedicated resources and staffing to support community-serving microgrid projects. Microgrid developers need access to specific information, including:

- Current infrastructure and conditions to inform designs
- Knowledge of any upcoming planned infrastructure construction
- Estimate of potential costs and relevant tariffs in order to determine financial feasibility of projects



1. Dedicated Resources & Access to Information



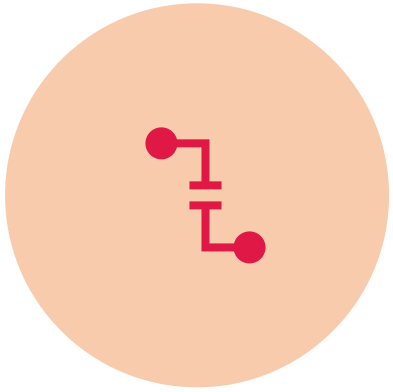
Short-Term Solution: Require IOUs to set aside funding to support microgrid implementation – particularly community-serving microgrids in areas of high hazard risks and/or affected by PSPS events. Provide microgrid developers with access to information and relevant IOU staff (in project management, engineering, interconnection) throughout project design and implementation.



Challenges:

- The ability and time it will take for IOUs to identify, hire, and train staff.
- Balancing privacy concerns about sharing infrastructure or customer information with microgrid developers' needs for developing plans.

2. Require Upgrading Technology Equitably



Problem: Microgrids currently cannot use existing utility distribution lines because they do not have the technical capabilities to automatically shut off non-microgrid customers during grid outages. The alternative approach of building new dedicated distribution lines for the microgrid has prohibitively high capital and ongoing costs.

2. Require Upgrading Technology Equitably



Short-Term Solution: Require that IOUs install “smart” technology (and/or other solutions necessary) on existing distribution lines that could easily and automatically enable islanding of microgrid customers during a grid outage – therefore enabling microgrids to use existing distribution lines. This could also have benefits in PSPS events.

Note to consider equity impacts – Safeguards should be put in place to ensure that IOUs do not inequitably use this technology to more quickly and easily shut-off power to financially vulnerable customers who may fall behind on paying a utility bill.



Challenges:

- Cost to IOUs to implement smart controls/technologies on existing distribution lines.
- Consideration of potential negative equity impacts to customers whose power could be turned off more easily.

3. Rule 2



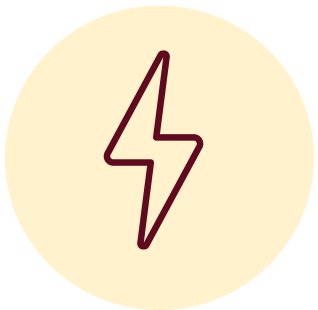
Problem: The cost of ownership and operation and maintenance (O&M) rate for special facilities (i.e. new distribution lines) under Rule 2 is prohibitively expensive at 0.53 % per month of the cost of ownership (6.36% per year, or over 100% of capital costs within 16 years).

3. Rule 2



Medium-Term Solution: Reduce O&M costs to enable the investment of non-ratepayer capital to upgrade distribution systems.

- **Option 1:** Consider whether Rule 2 should apply to community microgrids that provide a public benefit; or
- **Option 2:** Reduce the Rule 2 Special Facility O&M to better reflect the true costs of ownership of the specific new special equipment (e.g. 0.5% of capital costs in the first year, with a 5% annual growth rate¹)

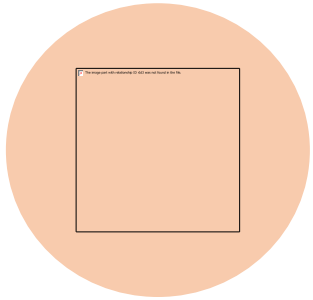


Challenges:

- For option 1, develop criteria to determine which projects should be subject to Rule 2.
- Any Rule 2 charges would need to ensure there is no unfair burden of cost shifting to ratepayers.

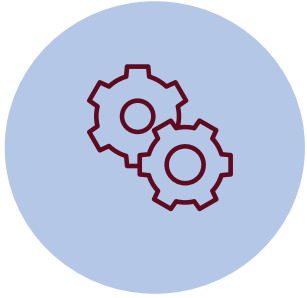
¹ Based on guidance from LBNL/Stanford and FERC/U.S. Energy Information Administration

4. Update RES-BCT



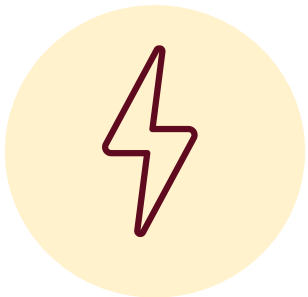
Problem: Current NEM & RES-BCT tariffs were not designed for microgrids. There are short and long term adjustments that can make them more attractive for microgrid development. For example, microgrids may need large batteries in order to meet the needs of powering multiple buildings in an outage, but there are limitations on battery sizing.

4. Update RES-BCT



Short-Term Solutions:

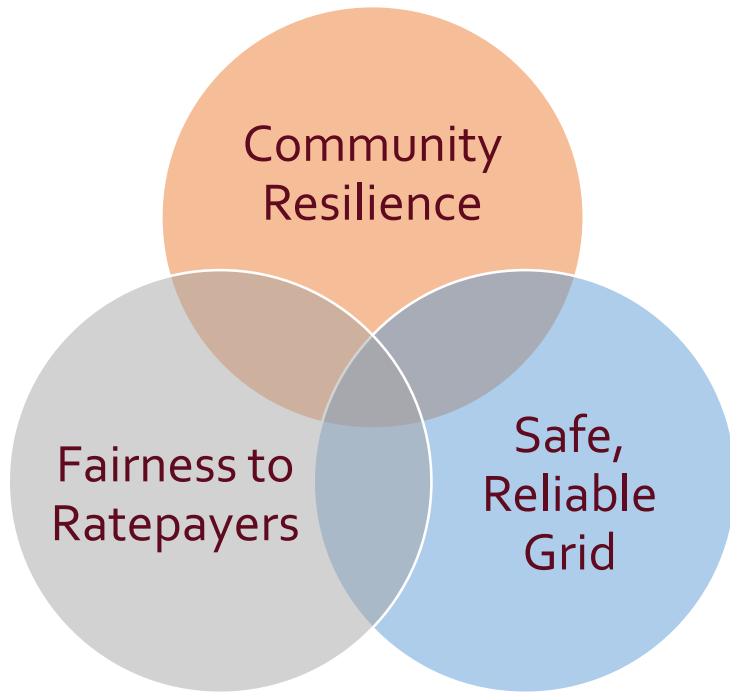
- Allow RES-BCT customers to include larger capacity energy storage systems to provide resilience benefits, consistent with NEM proposed updates (e.g. larger than 150% of generation size).



Challenges:

- Alignment with NEM, SGIP, and other potential tariffs and incentives.
- Assure grid has capability to safely balance exported generation from batteries.

Summary



1. **Operational:** Require IOUs to dedicate resources to community-serving microgrid projects
2. **Technical:** Require IOUs to upgrade technology while addressing potential inequitable impacts
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Thank You!



More information at: <https://www.cityofberkeley.info/microgrid/>

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