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Economic Considerations for Microgrid Deployment



2020 Integrated Energy Policy Report Update

Remote Workshop

California Energy Commission

7/9/2020

BLUE LAKE RANCHERIA

A Federally Recognized Tribal Government



Tribal Government Microgrid Investment Rationale

- Resilience / reliability / continuity of operations
- Decarbonization
- Energy/electrified transportation lifeline sectors support social services and are “economy-enabling”
- Track and reinvest ‘found’ revenues (e.g., bill savings)
- Take a ‘patient payback’ approach for infrastructure (e.g., ~10 years)
- Creates a positive feedback loop – more resilient infrastructure at predictable and/or lower costs and with rapid GHG reductions



❖ Blue Lake Rancheria has several microgrids

1. Community scale in operation
2. Facility scale in final commissioning / partial operation
3. Two expansion projects
4. Two campus-scale in design
5. Residential in design



Community Microgrid

- ❁ Public/private partnership
 - ❁ Blue Lake Rancheria, Schatz Energy Research Center, PG&E, Siemens, Tesla, CEC, CPUC, Idaho National Laboratory, others
- ❁ Funded by Tribe and a CEC EPIC grant
- ❁ Solar + storage backbone
- ❁ Powers a 6-building campus
 - ❁ Tribal government offices, economic enterprises
 - ❁ Critical infrastructure, lifeline sectors, EV charging
 - ❁ American Red Cross shelter
- ❁ Can seamlessly island and reconnect to grid
- ❁ **Reduces GHGs by ~200 tons per year; reduces electricity costs by \$200,000 per year**



Facility Microgrid “Solar+”



Photo: Theindychannel.com

- ❁ Public/private partnership
 - ❁ Blue Lake Rancheria, Schatz Energy Research Center, PG&E, SunPower, Tesla, CEC, Lawrence Berkeley National Laboratory, others
 - ❁ Funded by Tribe and CEC EPIC
- ❁ Powers fuel station / convenience store complex and EV charging
 - ❁ Replicable, low-carbon ‘resilience package’ for commercial buildings
- ❁ Solar + battery storage backbone; can seamlessly island
- ❁ Advanced building controls – efficiency, demand response, balance
- ❁ In business as usual (BAU): lowers costs, GHGs, improves COOP
- ❁ In emergencies: supplies lifeline sectors to public; emergency responders
 - ❁ Important where these facilities are the only community resource
- ❁ **Est. to reduce GHGs by ~50 tons per year; save ~40% on electric bills**

Climate-smart microgrids are working

- ❁ Public Safety Power Shutoff (PSPS) - 10/9/19
- ❁ Served ~10,000 people (~10% of the county)
- ❁ Supplied general public & response agencies
 - ❁ Provided critical medical housing in hotel
 - ❁ Credited with saving lives in the event
 - ❁ Fuels (electricity, gas, diesel, propane), ice, water, food, internet access, device charging, ATMs
 - ❁ Fuel for local clinic to keep medicines cold
 - ❁ Electric Vehicle (EV) charging
 - ❁ Community Support Center | Business Center
 - ❁ *Times-Standard* regional paper of record published onsite
- ❁ The PSPS did its job – no wildfires
- ❁ The microgrids did their job – regional support



Microgrids as Solutions

- Build low-carbon microgrids for stacked benefits
 - Localized resilience, more jobs, GHG and pollution reduction
- How are microgrids valued; how do we fund them?
 - Value of reduced costs in business-as-usual operation
 - Value of emergency continuity of operation – social and economic support
 - FEMA, CalOES as operational and funding partners
 - Value of leveraging private (non-grant) investment for zero-carbon power for energy, transportation
 - Value need to move fast to incorporate zero-carbon resources, increase COOP in climate-change-amplified volatility (wildfires, floods, other disasters)
- How to best build and manage microgrids?
 - Increase regional expertise/capacity
 - Ensure safety and wider grid ecosystem benefits
 - Regional utility owned and operated?
 - Inter-jurisdictional issues, interconnection policy lag
- Microgrid knowledge transfer
 - Avoid inappropriate technology, increase standardization, lower capital, O&M costs
- Microgrids and/or grid segmentation?
 - Humboldt County recent examples

