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#### Economic Considerations for Microgrid Deployment

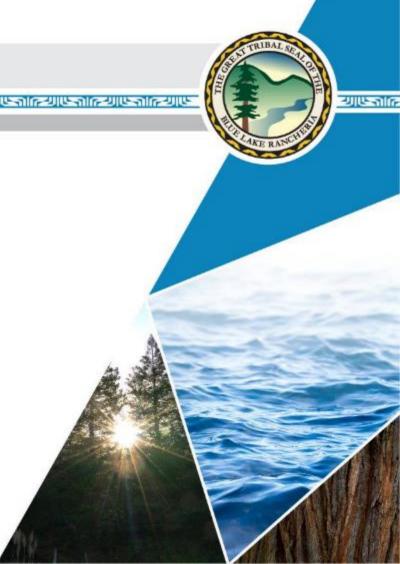
2020 Integrated Energy Policy Report Update

Remote Workshop

California Energy Commission

7/9/2020





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



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# 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



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Reduces GHGs by ~200 tons per year; reduces electricity costs by \$200,000 per year

# Facility Microgrid "Solar+"





- 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
- ln emergencies: supplies lifeline sectors to public; emergency responders
  - Important where these facilities are the only community resource
- Sector Se

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Photo: Theindychannel.com

# 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







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# 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
    - Second Se
  - 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
  - Sector States and States and States and States Stat
  - 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



