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# Energy Resilience and ZEV



California Energy Commission Workshop on Zero Emission Vehicle Resilience and  
Three Revolutions in Transportation

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**BLUE LAKE RANCHERIA**

*A Federally Recognized Tribal Government*

# Tribal Gov't “Climate-smart” Resilience

- Build “Climate-smart” infrastructure across lifeline sectors

- Energy

- Water

- Food

- Communications/IT

- Transportation**

- Biodiesel manufacturing

- ZEV charging stations

- Transition government fleet to ZEV

- Community/employee/low-income ZEV programs

- Achieve zero net greenhouse gas emissions by 2030

- Support community and economy with resilient, reliable, clean infrastructure.



# Microgrid Details

- Two microgrids in operation (more in development)
  - Community scale – powers government offices, economic enterprises, lifeline sectors
  - Facility scale – powers fuel station / convenience store complex
- Both have solar PV + battery storage backbone generation w/ smart controls
  - With legacy gensets for deep emergency back up
- Both seamlessly island from the larger grid
- **Both microgrids have ZEV level 2 charging**
  - **4 ports now; another 10 ports by ~11/2020**
- Funding mix: Tribe, EPIC, SGIP, CALeVIP, Partner match
- Public / private partnerships



# Climate-smart infrastructure is working

- Public Safety Power Shutoff (PSPS)
- 10/9/19 - served ~10% of the region
- Electric Vehicle (EV) charging**
  - Provided direct charging for the region
    - Many residential and regional EV chargers non-functional due to lack of back up power
  - Enabled vehicle-to-grid functions
- The PSPS did its job – no wildfires
- Microgrids did their job – regional support for electrified transportation



# Wildfire Outages + Microgrid Reflections

- PSPS outages were relatively short
- If outages would have lasted longer, there would have been other issues
  - **Cellular / internet communications outages - which impacts ZEV charging station functions (data, customer billing, coordination with electrical systems)**
  - **Limitations to longevity and availability (per day) of back up power in some cases**
    - Reliant on local generation and supply chains
- **Mega-wildfires and related grid outages predicted for the next decade**



2017 wildfire adjacent to Blue Lake Rancheria  
Photo credit: CalTrans

# Microgrids as ZEV Solutions

- Microgrid design considerations for ZEV charging
  - Trickle and level 2 chargers - manageable in microgrids
  - Fast chargers - design challenges (big power use / spikes)
  - May need to control charging volumes as load shed strategy
    - When islanded
- How to best manage microgrids w/ ZEV charging infrastructure operationally and economically?
  - Expertise/capacity; Ensure safety
  - Grid ecosystem benefits – vehicle-to-grid, demand response
  - Economies of scale – rates, apps/signage, O&M, IT networks
  - Utility / CCA owned and operated?
- How are ZEV microgrids valued; how do we fund them?
  - Business as usual vs. in emergencies
  - Broad/public vs. narrow/private benefits

