

Sustainability and Microgrids at Blue Lake Rancheria



Presented to the National Tribal Energy Summit | Washington D.C.

September 25, 2019

BLUE LAKE RANCHERIA

A Federally Recognized Tribal Government



Today's topics

- 🌐 Tribal Background
- 🌐 Tribal Vision
- 🌐 Investment Rationale
- 🌐 Projects
- 🌐 Future Strategies
- 🌐 Q&A

Indian Island king tide flooding. Photo credit: Aldaron Laird



Blue Lake Rancheria Background

- Wiyot Ancestral Territory
- Federally Recognized 1908
- Terminated 1958; Restored 1983
- Organized by Constitution and Ordinances
- Governed by elected, five-member Tribal Business Council
- ~100 acres of trust land spanning the Mad River





🌐 Tribal Government Departments

- 🏠 Education
- 🏠 Environmental Protection
- 🏠 Tribal Historic Preservation
- 🏠 Utility Authority
- 🏠 IT
- 🏠 Facilities
- 🏠 Office of Emergency Services
- 🏠 Regulatory
- 🏠 Police
- 🏠 Fire
- 🏠 Court
- 🏠 Real Estate and Housing
- 🏠 Healthcare
- 🏠 Transportation
- 🏠 Communications
- 🏠 Finance
- 🏠 Grants and Contracts
- 🏠 Food and Nutrition

Economic Enterprises

- 400+ employees
 - A top 10 regional employer
 - New projects and economic benefits (direct, indirect, and induced)
 - Provides funding for tribal and regional initiatives
 - Education
 - Public safety
 - Food sovereignty
 - Water resources
- Blue Lake Casino
 - Blue Lake Hotel
 - Sapphire Palace Event Center
 - Alice's Restaurant
 - Sushi Blue
 - Lily Pad Café
 - Wave Lounge
 - Powers Creek Brewery (opening soon)
 - The Play Station 777
 - Resiliency Training & Innovation Center (RTIC)
 - Tektet, LLC
 - Serraga Energy, LLC
 - Toma Resilience Campus



Tribal Vision

- 🌐 Lower, predictable costs of **energy, transportation**, food, water, and communications/IT (i.e., the “lifeline sectors”).
 - 🚧 Economy-enabling infrastructure
 - 🚧 Cost-effective continuity of operations and resilience
- 🌐 Zero-carbon solutions for climate mitigation + adaptation
 - 🚧 Net zero greenhouse gas emissions by 2030



Investment Rationale - Need for Global Climate Action

- 🌐 Antarctic ice sheets – contain ~200 feet of sea level rise; melt is accelerating (NASA)
- 🌐 Greenland ice sheet lost 12.5 billion tons of ice in one day (8/2/19) (NOAA)
 - 🚫 Contains ~20 feet of sea level rise within it, and melt is accelerating
- 🌐 Energy-related CO2 emissions rose by 1.7 percent in 2018 (NOAA)
- 🌐 Larger storms and wildfires | more extreme heat days
- 🌐 Species die-offs (e.g., pollinators)
- 🌐 Feedback loops – accelerating
 - 🚫 Arctic permafrost melt could release ~1,600 gigatons of CO2 (remaining global budget is ~360 gigatons) (National Geographic)
- 🌐 **Inequitable effects: people with less resources disproportionately impacted**
- 🌐 Further reading: NOAA; NASA; <https://www.ipcc.ch/sr15/>



Investment Rationale - Need for Local Action

🌐 Global climate amplifies local conditions

🌐 Local impacts

- 🚒 Wildfires
- 🚒 Unpredictable/Volatile Weather/Extreme Storms
- 🚒 Landslides
- 🚒 Drought
- 🚒 High and Extreme Heat Days
- 🚒 Floods



- We also live on shaky ground
- Earthquake / tsunami risks
 - Triple Junction
 - Cascadia Subduction Zone
 - Pacific Rim
- One of few global locations that can cause a 9.0 or greater earthquake

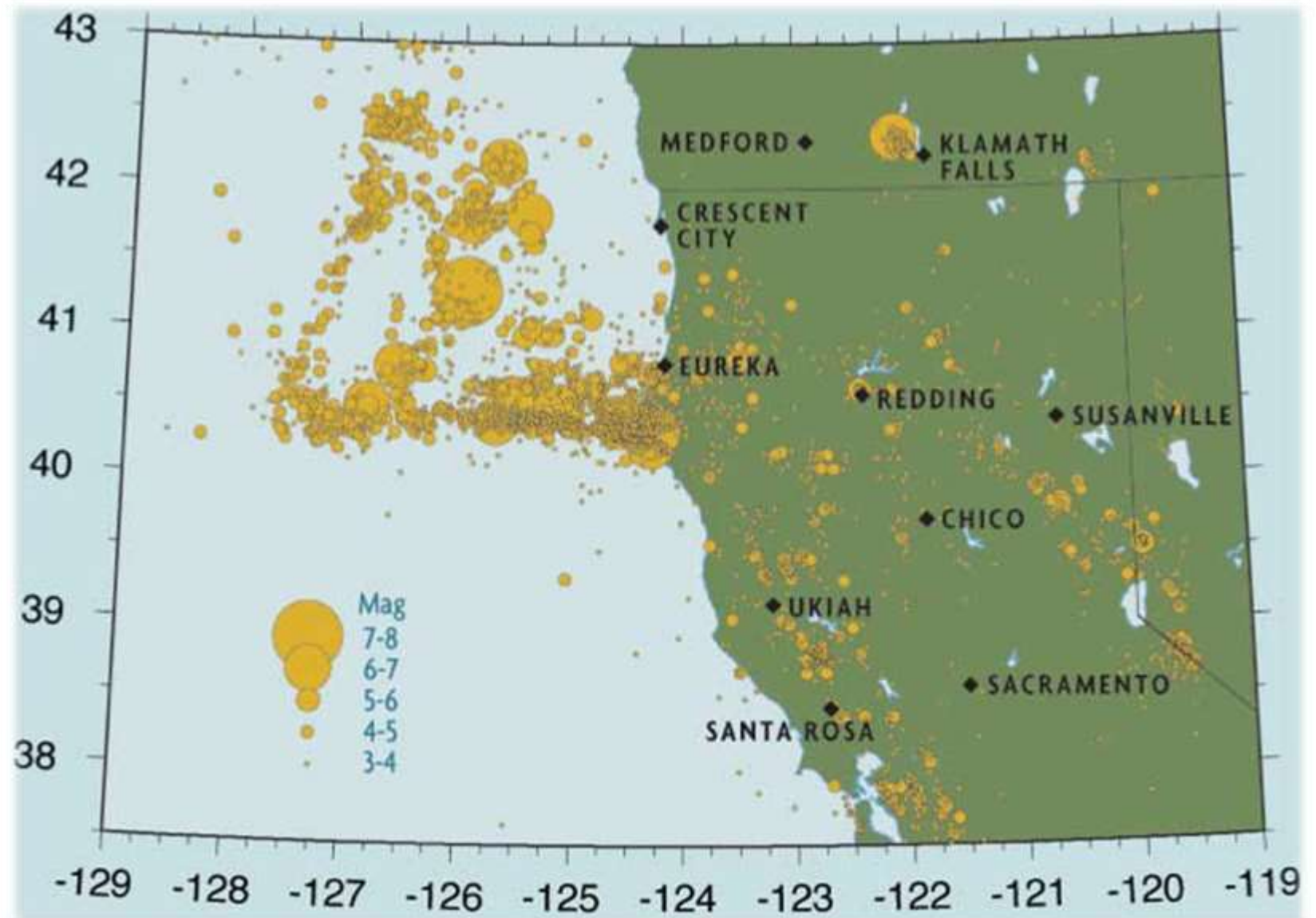


Image credit: Humboldt State University





2017
Highway 299 Landslide
Credit: CalTrans



2017
Highway 101 Landslide
Credit: CalTrans



Investment Rationale – Local Specifics

- 🌐 Sea Level Rise (SLR)
 - 🚨 *Fastest SLR on Pacific Coast (Humboldt County)*
- 🌐 Ocean acidification, reduced oxygen, and temperature rise
 - 🚨 Extremely warm temperature “blobs” 2014; 2019
 - 🚨 Impacts to local/tribal fisheries and mariculture
 - 🚨 Amplifies other issues (e.g., plastics, dioxins)
- 🌐 Nuclear waste repository Humboldt Bay
 - 🚨 \$1.02 billion in remediation and management costs;
 - 🚨 On a seismically active bluff vulnerable to SLR and cement casing lifespan issues



Lifeline Sectors & Projects: Energy

Community Microgrid at BLR

- What is a microgrid?
 - Mini electrical grid; can “island” from, and reconnect to the larger grid
 - Can generate and use its own power for as long as needed
- Community-scale; auto load-shed; seamless islanding
- Powers a 6-building campus
 - Government offices, economic enterprises, critical infrastructure
- Generation: 420kW (AC) solar PV; 2MWh battery storage; legacy gensets
- Saves \$200,000 per year on electricity costs alone; adds jobs
- Lowers greenhouse gas emissions by ~200 tons per year.

Community microgrid at BLR cont'd

- Supports regional emergency responders
 - Emergency preparedness trainings and emergency operations centers (EOCs) for response agencies
 - U.S. Coast Guard
 - FEMA
 - Certified American Red Cross shelter
- Power supports other lifeline sectors
 - Transportation (EV charging stations) >>
 - Water grid / wastewater systems
 - Food
 - Communication/IT (broadband)



“Solar+” Facility Microgrid at Blue Lake Rancheria



- ⊗ Microgrid partners
 - ⊗ Blue Lake Rancheria, Schatz Energy Research Center, PG&E, SunPower, Tesla, California Energy Commission, Lawrence Berkeley National Laboratory, many others.
- ⊗ At fuel station / convenience store complex
- ⊗ Solar PV (60kW) + battery storage (106kw/169kwh)
- ⊗ Can island from, and reconnect to, the larger grid
- ⊗ Advanced building controls – efficiency, demand response
- ⊗ Creates a replicable, low-carbon ‘resilience package’
- ⊗ In business as usual lowers costs, GHGs, improves COOP
- ⊗ In emergencies:
 - ⊗ Supply lifeline sectors to public; emergency responders
 - ⊗ Important in areas where these facilities are the only community resource



Future Projects

- Student-led feasibility studies (e.g., ~600kW new solar; clean air shelters)
- New net-zero buildings within another microgrid
 - Tribal Administration and Justice Building (government operations, police, court)
 - Fire Department and Transit Building
 - Solar + storage + Tier 4 gensets
 - Includes 8 residences
- Toma Resilience Campus (opens ~2021)
 - Workforce Development | Trainings
 - Job Creation
 - Clean Air Shelter



Thank you.

For more information and
tours of the microgrids,
please contact me.

Jana Ganion

jganion@bluelakerancheria-nsn.gov

