

# Partnerships to Advance Energy Projects



U.S. Department of Energy, Office of Indian Energy

2020 Tribal Energy Webinar Series

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**BLUE LAKE RANCHERIA**

*A Federally Recognized Tribal Government*



- 🌀 **Blue Lake Rancheria Tribe**
  - 🇺🇸 Government; nation; community
- 🌀 Federally Recognized 1908
- 🌀 Terminated 1958; Restored 1983
- 🌀 Governed by elected, five-member Tribal Business Council
- 🌀 ~100 acres of trust land spanning the Mad River
- 🌀 Top 10 employers in rural Humboldt County
  - 🇺🇸 ~400 employees



# Tribal Government Climate Resilience Strategy

## 🌐 Build “climate-smart” infrastructure

🚫 Energy :: Water :: Food :: Transportation :: Communications/IT

🌐 The “lifeline sectors”

🚫 Improved continuity of operations (COOP)

🚫 Improved community health (lower pollution)

🚫 Economy-enabling investments

🚫 Lower, predictable costs

🚫 More jobs

## 🌐 Achieve zero-carbon solutions

🚫 Pairing climate mitigation\* + adaptation\*\* = zero greenhouse gas emissions by 2030



\*mitigation = reducing climate-forcing emissions

\*\*adaptation = dealing with impacts already here, via zero carbon solutions to avoid making the underlying climate problem worse.



# Why Climate Smart?

- ❁ Global sea level rise (SLR)
  - ❁ Antarctic ice sheets contain ~200 feet of sea level rise
  - ❁ Melting is earlier than estimated and accelerating
- ❁ Global feedback loops – accelerating
  - ❁ Arctic permafrost melt could release ~1,600 gigatons of CO<sub>2</sub> (remaining global budget is ~360 gigatons) (National Geographic)
  - ❁ New Methane leaks in the Arctic, Antarctic, fracking, coal, others
    - ❁ Methane is over 80 times more potent than CO<sub>2</sub> as a greenhouse gas
- ❁ Local conditions *amplified* by global climate issues
  - ❁ Drought, high and extreme heat days; more wildfires, air pollution
  - ❁ Unpredictable weather, extreme storms, landslides and floods
  - ❁ Increased ocean acidification and temperatures
  - ❁ Humboldt County has fastest SLR on the Pacific Coast
- ❁ See: <https://climate.nasa.gov> | <https://noaa.gov/climate>



Photo Credit: H. Patton,  
Flickr Creative Commons

## 🌊 Earthquake/tsunami risk

- 🚫 Cascadia Subduction Zone
- 🚫 Can achieve ~9.0 earthquake
- 🚫 Entire Pacific Coast can be impacted at one time
  - 🌊 Due to relatively low local population, Humboldt may be lower priority for response

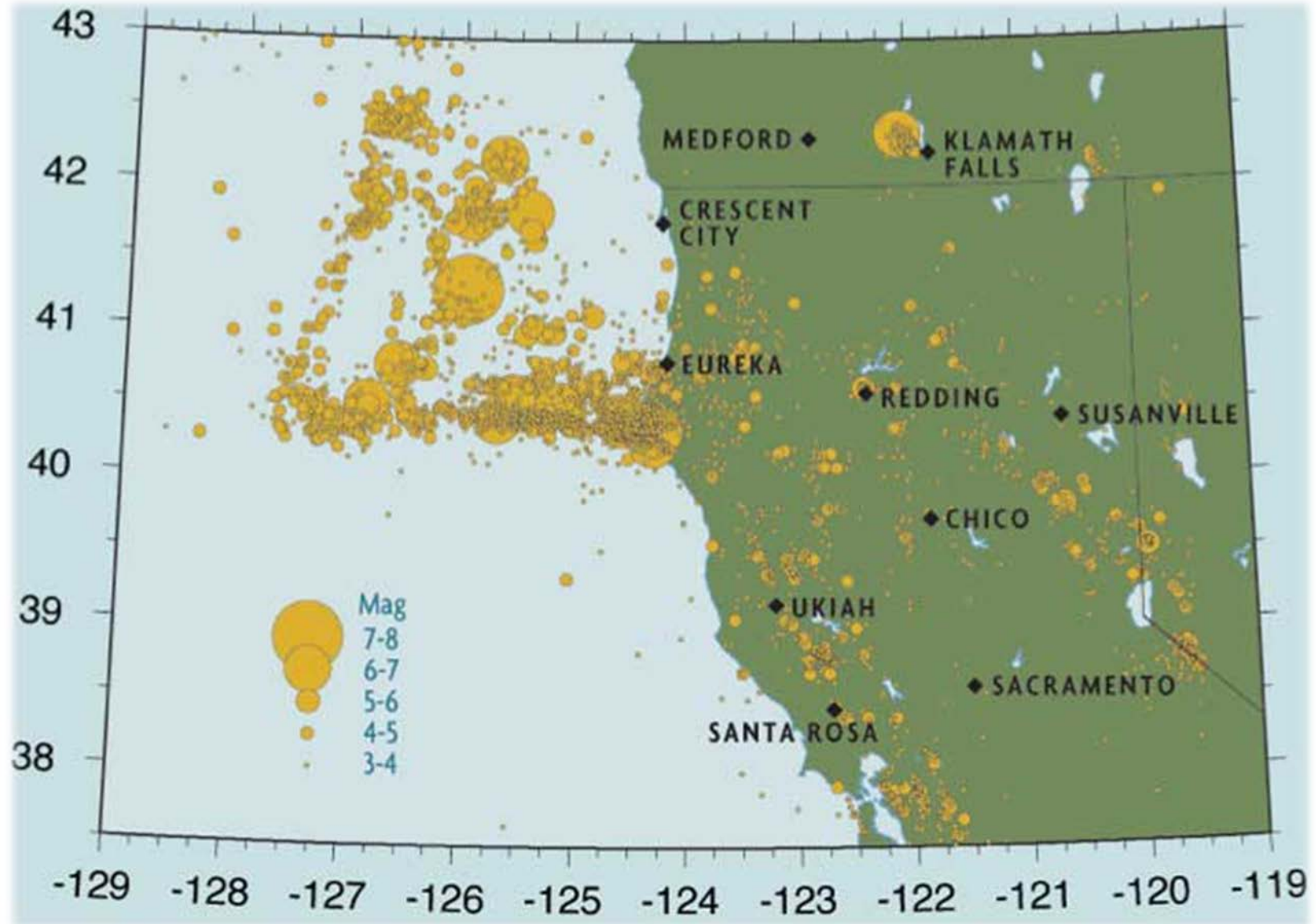


Image credit: Humboldt State University

What are we doing about changing conditions and risks?



- Climate-smart lifeline sectors
  - Energy
    - Three microgrids w/solar + storage
      - At community, facility, and campus scales
  - Highly efficient water grid
  - Electrified transportation
  - Reliable communications
    - High speed internet access
  - Onsite food production
- Social, economic, environmental benefits

# Illustrative Microgrid Partnerships

## Feasibility

- Student-led studies (technical, economics)
- Schatz Energy Research Center
- HSU Sponsored Programs Foundation (grant lead)
- Pacific Gas and Electric Company (PG&E)

## Project

- Regulatory - California Public Utilities Commission (CPUC); California Energy Commission (CEC)
- Funders - CEC Electric Program Investment Charge (EPIC) Grant; Blue Lake Rancheria Tribal Government (capital investments, match); vendors' match
- Integration engineering lead - Schatz Energy Research Center
- Research, testing, commissioning - Idaho National Laboratory, DOE OIE (TA), LBNL, NREL others
- Vendors - PG&E, Siemens, Tesla, REC Solar, SunPower, Dark Sky (Apple), engineering contractors, others



# Illustrative Microgrid Partnerships



Photo: Theindychannel.com

## Operations & Maintenance

- Blue Lake Rancheria teams
- Schatz Energy Research Center
- Technology and contractor vendors
- Research and development community
- Emergency response agencies
  - E.g., FEMA; CalOES; American Red Cross
  - Funding sources (pre- and post-disaster)

## Expansion projects

## Science and data

- NOAA; NASA
- California Strategic Growth Council





# Climate-smart infrastructure is working

- Public Safety Power Shutoff (PSPS)
  - Electrical grid outage to prevent wildfires
- Served ~10,000 people in 30 hrs (10/9/2019)
- Supplied general public & emergency response
  - Provided critical medical housing in hotel
    - Credited with saving four lives
  - Fuels (electricity, gas, diesel, propane)
    - Electric Vehicle (EV) charging
  - Supplies (ice, water, food, internet access, device charging, ATMs)
  - Community Support Center; Business Center
- The PSPS apparently did its job – no wildfires
- The microgrids did their job – regional support



# Partnerships for Capacity

- Build low-emission microgrids for stacked benefits; resilience, jobs, pollution reduction
- How to best build and manage microgrids?
- Gaps in capacity can be addressed via partners
  - Increase expertise/capacity (e.g., grant writing)
  - Ensure safety and grid ecosystem benefits
  - Tribal utility owned and operated?
- Regional utility partnership paradigm
  - Partnership can be an approach philosophy
  - Becomes more knowledgeable, trusted, and cooperative over time



# Residential Solar Energy + EV Transportation

- Start with smaller projects to vet partners
- Feasibility Partners
  - Humboldt State Univ., College of the Redwoods, Students
  - Schatz Energy Research Center
  - Redwood Coast Energy Authority (CCA)
  - PG&E
- Funding Partners
  - Tribal Utility
  - GRID Alternatives
  - Programs
    - Donations; CA SASH; VW Trust / One Stop Shop
- Construction Partners
  - Home owner(s) / tenant(s)
  - GRID Alternatives; vendors
  - Local volunteers (tribal members, students)



# Wraparound Partnership Examples

## Education

- “Pathmakers”
  - K-12 Makerspace Program; culturally responsive
  - STEAM education and entrepreneurship
- Scholarships to incentivize high school graduation
- Undergraduate/graduate studies onsite
  - Feasibility projects; Internships | Fellowships for Clean Energy Studies



## Workforce Development

- Resiliency Training and Innovation Center
  - Emergency preparedness
  - Regional planning (e.g., “Tsunami Con”)
  - 1,000+ certifications earned since 2017
- Grow with Google



# Partner Hub to Develop Decarbonized Resilience

- Funding by Economic Development Administration
- Develop zero-carbon solutions (products, services, policy) for climate-smart community resilience and the new, zero carbon marketplace
- Rural innovations – build local capacity
  - Training / event space
  - Business Incubator
  - Spark!Lab and other ‘makerspaces’
  - Demonstration Kitchen
  - Retail Store | Café
- Over 20 partners at the tribal, local, state, and federal levels
- Open in ~2023



**TOMA**  
RESILIENCE CAMPUS

‘Power everything we do with electricity, and create that electricity from zero-carbon sources.’



For (interesting) further reading....

- Intergovernmental Panel on Climate Change Special Report <https://www.ipcc.ch/sr15/>
- United Nations Environment Programme *Emissions Gap Report (2019)* <https://wedocs.unep.org/bitstream/handle/20.500.11822/30798/EGR19ESEN.pdf?sequence=13>
- Climate Impact Lab <https://www.impactlab.org/>
- Rhodium Group Climate Risk Data <https://rhg.com/impact/climate-risk/>

Thank you.



- Jana Ganion, Sustainability and Government Affairs Director, Blue Lake Rancheria
- [jganion@bluelakerancheria-nsn.gov](mailto:jganion@bluelakerancheria-nsn.gov)
- 2019 “Green Power Leadership Award (Direct Project Engagement)” U.S. EPA
- 2019 “Microgrids for Greater Good Award (Grid-Connected)” *Microgrid Knowledge*
- 2018 “Project of the Year for DER Integration” *POWERGRID International* and *DistribuTECH*
- 2017 “Whole Community Preparedness Award” FEMA
- 2015-2016 “Climate Action Champion” White House and U.S. Dept. of Energy