

# Strategic Partnerships for Clean Energy and Economic Development: A Case Study

*Prepared for:*

**U.S. Department of Energy, Office of Indian Energy and Western Area Power Administration  
Webinar**

**Strategic Partnerships for Clean Energy and Economic Development**

*September 28, 2016*



[www.bluelakerancheria-nsn.gov](http://www.bluelakerancheria-nsn.gov)

# Today

## ❖ Introductions

- Jana Ganion, Energy Director, Blue Lake Rancheria
- James Zoellick, Senior Research Engineer, Schatz Energy Research Center, Humboldt State University

## ❖ Microgrid Project and Partnerships

## ❖ Additional Clean Energy Partnerships

## ❖ Q&A

Mad River Residents



Photo courtesy of fishingwithjd.com

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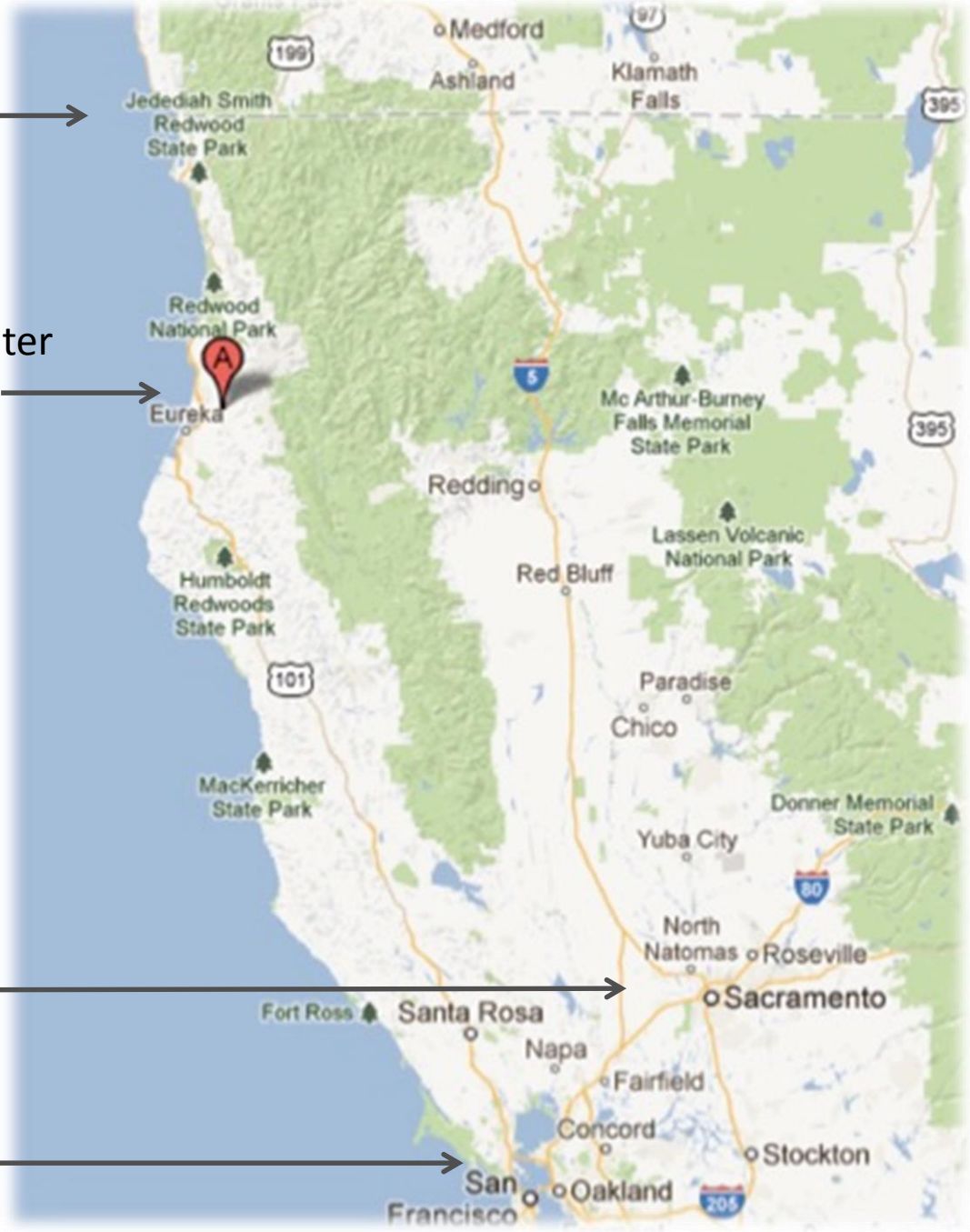


Oregon / California  
Border

Schatz Energy Research Center  
Humboldt State University  
Blue Lake Rancheria

Sacramento  
Region

San Francisco  
Bay Area



# Blue Lake Rancheria, California

- ❖ Federally Recognized (1908) | 51 Members
- ❖ Tribal Government | 15 Divisions | 30 Programs
- ❖ ~100 Acres of Trust Land along the Mad River
- ❖ Economic Enterprises | ~400 EEs | 2,000 Visitors Daily
- ❖ 2015-16 White House “Climate Action Champion”
- ❖ 2014 Integration Award from PG&E
- ❖ Appointed to ICEIWG, U.S. Dept. of Energy, Office of Indian Energy, Indian Country Energy and Infrastructure Working Group



# Schatz Energy Research Center

- ✧ **Founded in 1989; currently ~30 staff and ~10 undergraduate/graduate students**
- ✧ ***Mission: To promote clean and renewable energy***
- ✧ **Fuel cell and hydrogen technology**
  - First fuel cell car licensed to drive in the U.S. (1998)
  - First hydrogen fueling station in Thousand Palms, CA
  - Licensed fuel cell IP to four U.S. corporations
- ✧ **Work scope**
  - Energy access and quality assurance for solar off-grid lighting and other systems in Africa and Asia; World Bank's Lighting Global Initiative
  - Biomass Research Development Initiative ~\$6M U.S. DOE/USDA project
  - Electric Vehicle Modeling + Infrastructure
  - Hydrogen Vehicles + Infrastructure
  - Strategic Renewable Energy Planning
  - Renewable energy projects
  - Engineering
  - Safety
  - Feasibility studies
  - Student-led projects



# BLR Energy Vision

- ❖ **Climate Action / GHG Reductions / Community Resilience**
- ❖ Levelized (Predictable) Cost of Energy
- ❖ Economic Development
- ❖ Goals: 40% GHG Reductions by 2018 (2014 baseline)  
100% renewable energy by 2030



Microgrid  
Groundbreaking  
at BLR



# BLR Energy Activities

- ❖ Energy efficiency
- ❖ Community-scale renewables
  - Solar + battery storage
  - Microgrid
- ❖ PG&E demand response programs
- ❖ Biodiesel manufacturing and biodiesel public transit
- ❖ Food-energy and water-energy nexus (nexai?)
- ❖ Electric vehicle fleet and infrastructure (powered by solar + battery)
- ❖ Utility-scale renewables
  - Regional Solar



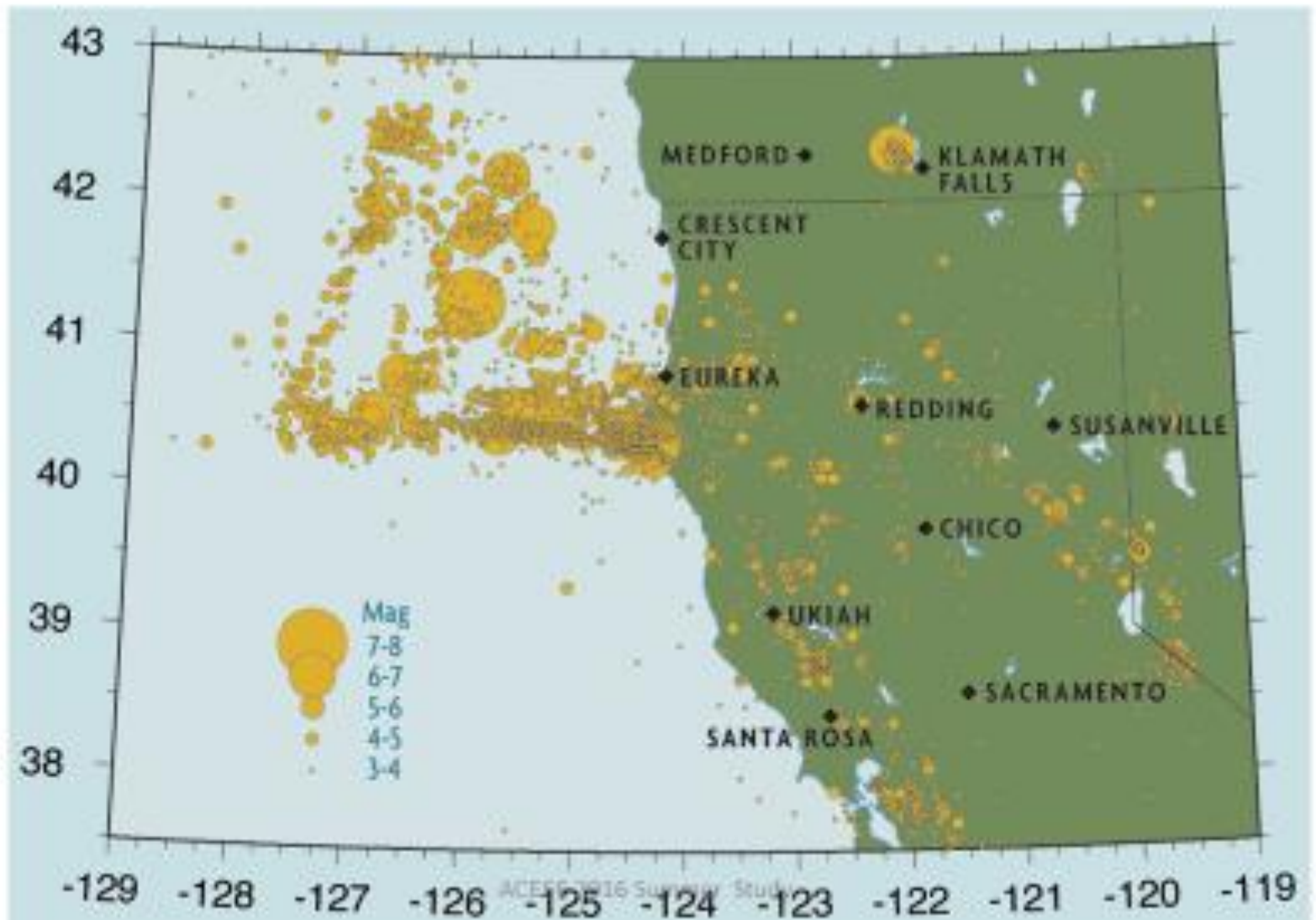
# Why Clean Energy + Microgrid?

- ❖ Climate Action
- ❖ Rising energy prices and tenuous supply
- ❖ Humboldt County—connected to larger grid by one ~70 MW transmission line.
- ❖ Resilience + Emergency: Fukushima (2011): 1,000+ vehicles at BLR.
- ❖ We know we are not first on the response list after “the big one.”





# Earthquakes Since 1900





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# Microgrid Design and Goals

- ❖ Powers a certified American Red Cross shelter-in-place
- ❖ Integrates renewables, storage, and controllable loads
  - 500kW Solar | 1MWh Battery storage
  - Existing generators
  - Loads: government office, casino, hotel, event center, others
- ❖ Meets >35% of annual energy production with renewables; displacing ~700MWh/year of grid energy
- ❖ Demonstrate finer-grained demand response ability
- ❖ Reduce GHG emissions by ~200 metric tons/year
- ❖ Saves 30% annual energy costs
- ❖ Replicable model



# Microgrid Partnerships

## ❖ Project Leader

- **Schatz Energy Research Center**
  - California Energy Commission EPIC grant lead
  - Project management
  - System integration engineering | Safety engineering
  - Student integration
- **Humboldt State University**
  - Engineering
  - Forestry
  - Communications
  - Student-led feasibility projects | Internships
  - Built-in focus on knowledge transfer to the Tribe
  - Value
- **HSU Sponsored Programs Foundation**



# Microgrid Partnerships (cont'd)

## ❖ Funding

- California Energy Commission
  - Electric Program Investment Charge (EPIC) grant – \$5M
  - Project Oversight
  - Initial Environmental Review
  - Tribal/State Partnership
- Blue Lake Rancheria Investment
- Partner Matching Funds

## ❖ Key Research & Testing Expertise Partners

- Idaho National Laboratory – Hardware-in-loop testing
- National Renewable Energy Laboratory – Cyber-security



# Microgrid Partnerships (cont'd)

## ❖ Utility-related Partners

- Pacific Gas & Electric Company (PG&E) – key
- California Public Utilities Commission (CPUC)

## ❖ Technology Partners

- Siemens | Tesla | REC Solar | Johnson Controls

## ❖ Contractor Partners

- Colburn Electric | GHD Engineering | Kernen Construction





# SERC / Tribal Partnerships



- ❖ Feasibility Studies | Energy Audits | Energy Efficiency
- ❖ Clean Energy Projects
  - Engineering | Design | Management | Safety
  - Grid Interconnection
  - Residential | Community | Utility
- ❖ Monitoring & Evaluation
- ❖ Training & Mentoring



# Additional Partnerships

## ❖ Tribal

- **BLR Tribal Government & Member Support**
  - Business Structure | Dev. Co. (Serraga Energy)
  - Tribal Utility | Facilities
  - Environmental Team
  - Legal, Finance, IT Teams
- Tribal Nations
- Tribal Liaisons

## ❖ Regional

- Redwood Coast Energy Authority (JPA)
  - Community Choice Aggregation
- Humboldt Bay Municipal Water District
- Humboldt Waste Management Authority
- City of Blue Lake
- Humboldt County Government
- Humboldt County Office of Emergency Services
- Contractors



# Additional Partnerships

## ❖ State

- California Energy Commission
- California Public Utilities Commission
- California Governor's Office of Planning and Research
- California Highway Patrol
- California Emergency Management Agency

## ❖ National

- U.S. Dept. of Interior
  - Bureau of Indian Affairs
  - Office of Indian Energy and Econ. Dev.
  - Division of Energy and Mineral Dev.
- U.S. Dept. of Energy
  - Office of Indian Energy
  - ICEIWG
  - National Renewable Energy Lab
  - Idaho National Lab
  - Lawrence Berkeley National Lab
  - Oakridge National Lab
- White House Administration
- U.S. Dept. of Agriculture
- U.S. Dept. of Commerce
- NOAA | ACOE | EPA
- Bureau of Ocean Energy Management



# Thank you. Questions?



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