

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



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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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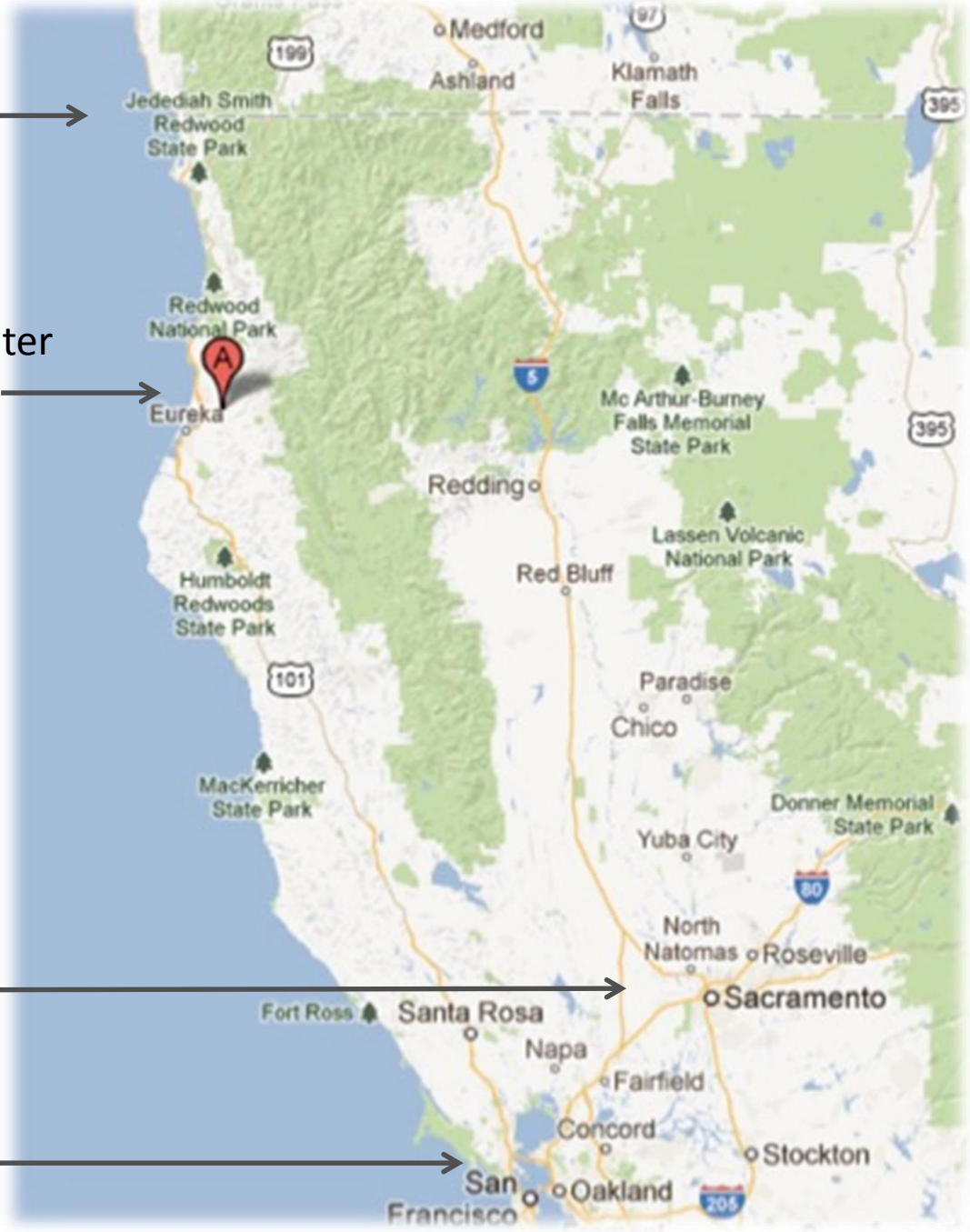


Oregon / California
Border

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

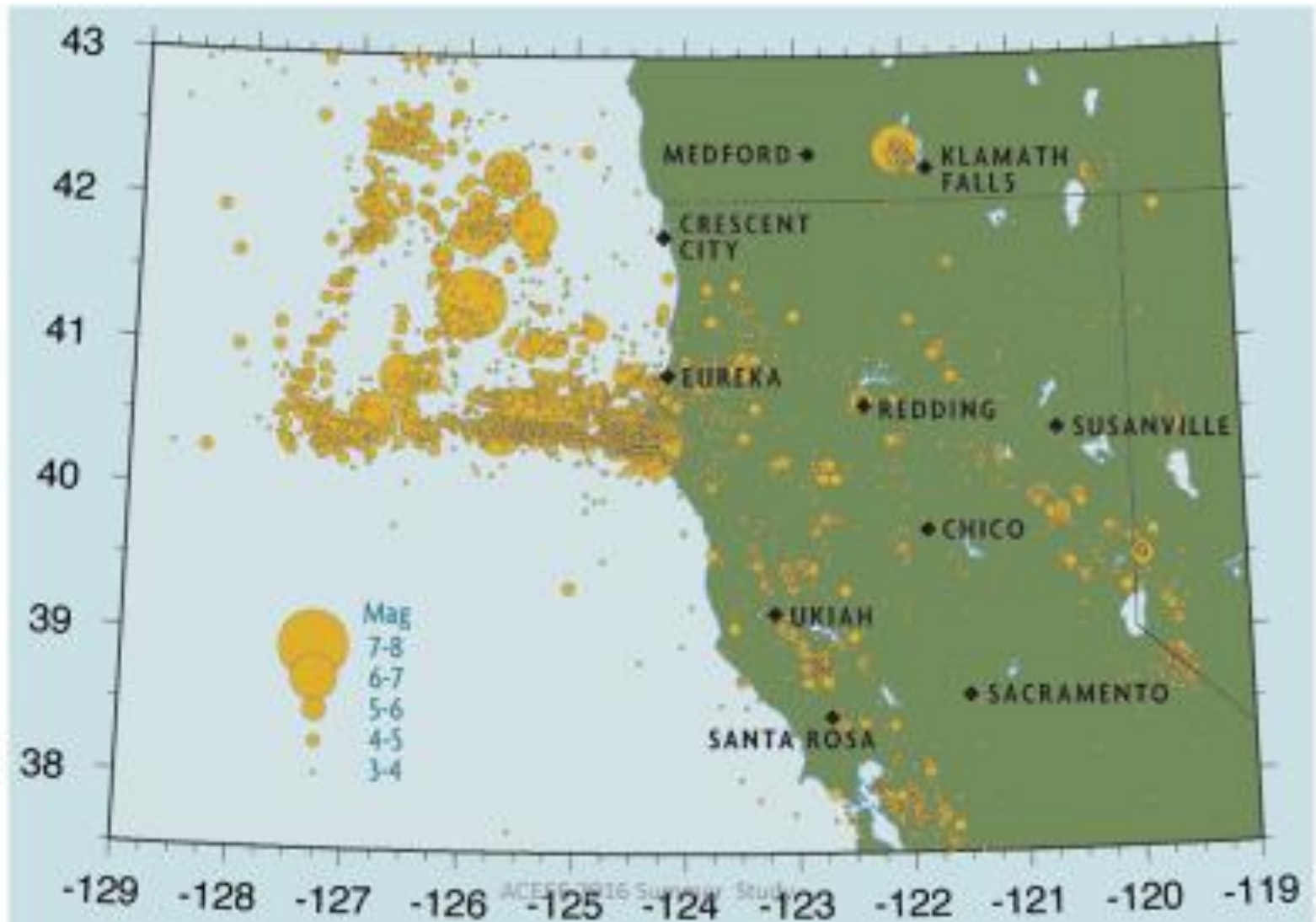


Why Clean Energy + Microgrid?

- ❖ 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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