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
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
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
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
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

違って 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
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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