

Climate Actions Blue Lake Rancheria

Prepared for:

U.S. Department of Energy Tribal Leader Forum

March 4th, 2015



www.bluelakerancheria-nsn.gov

Overview

- ❖ Introductions
 - Jana Ganion, Energy Director
- ❖ Climate Data
- ❖ Local Actions to Date
- ❖ Future Efforts

Mad River Residents



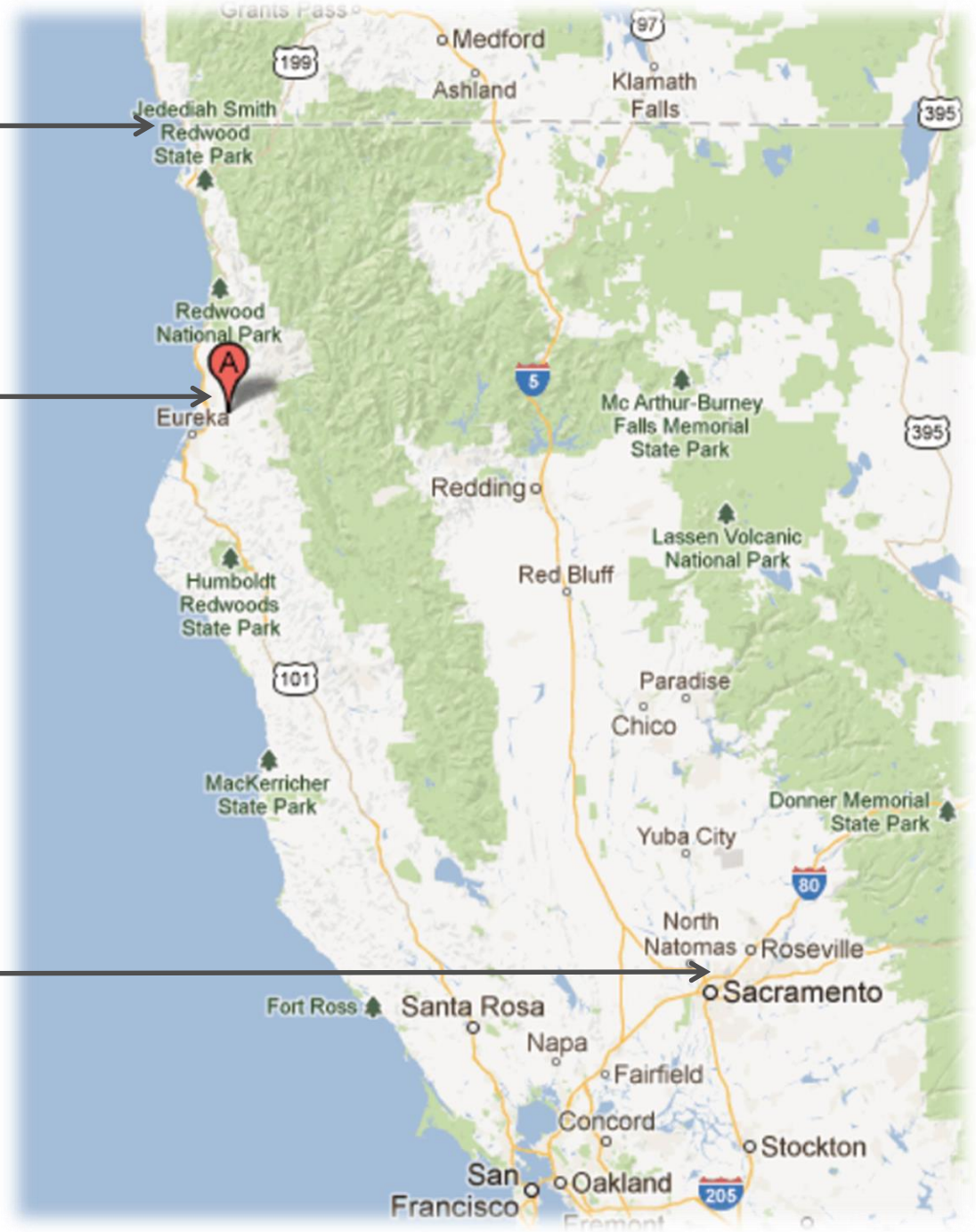
Photo courtesy of fishingwithjd.com

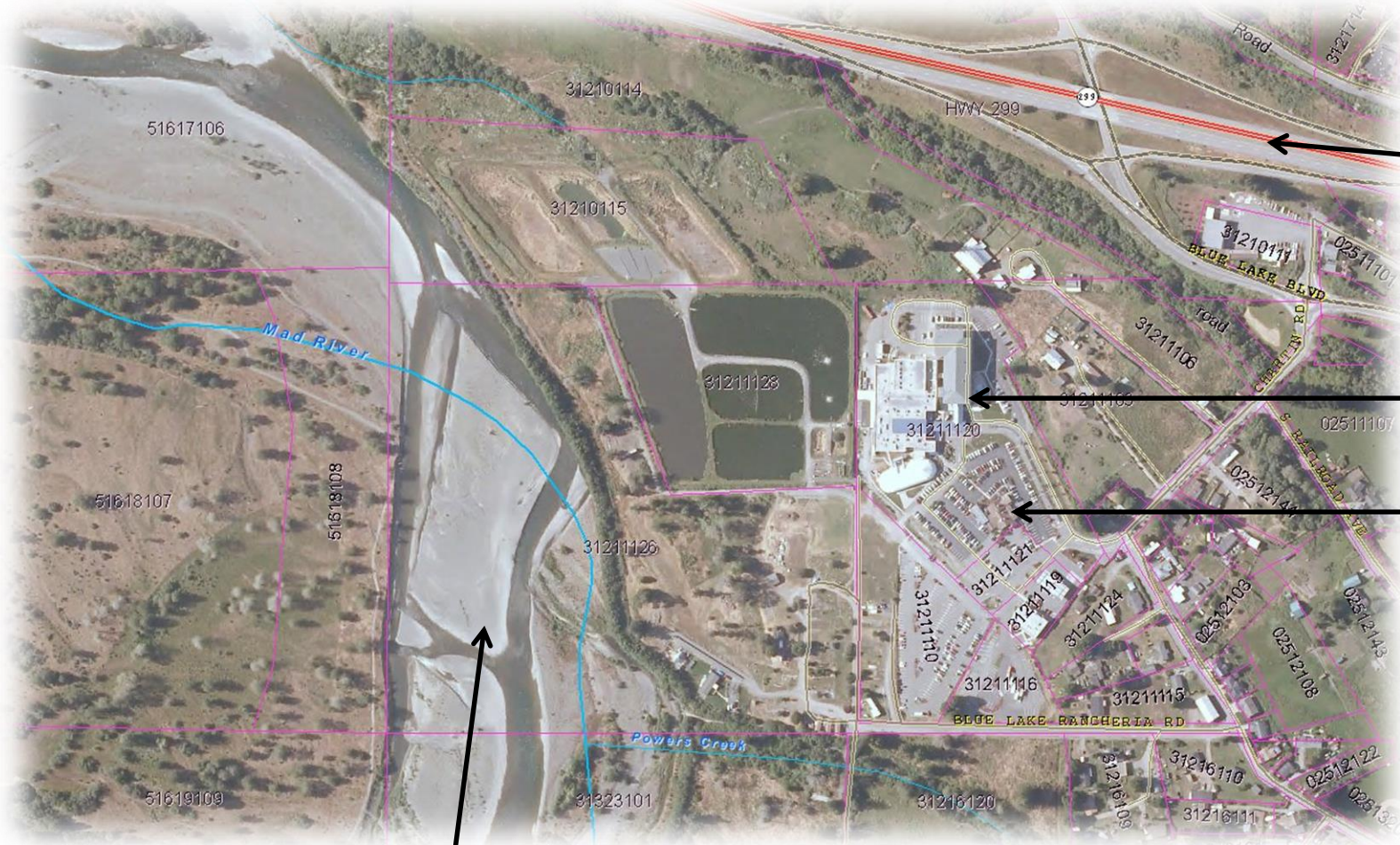
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Oregon / California
Border

Blue Lake Rancheria

Sacramento
Region





Hwy 299
(connects the
Pacific Coast
to Interstate 5)

Casino & Hotel

Tribal Office

Mad River



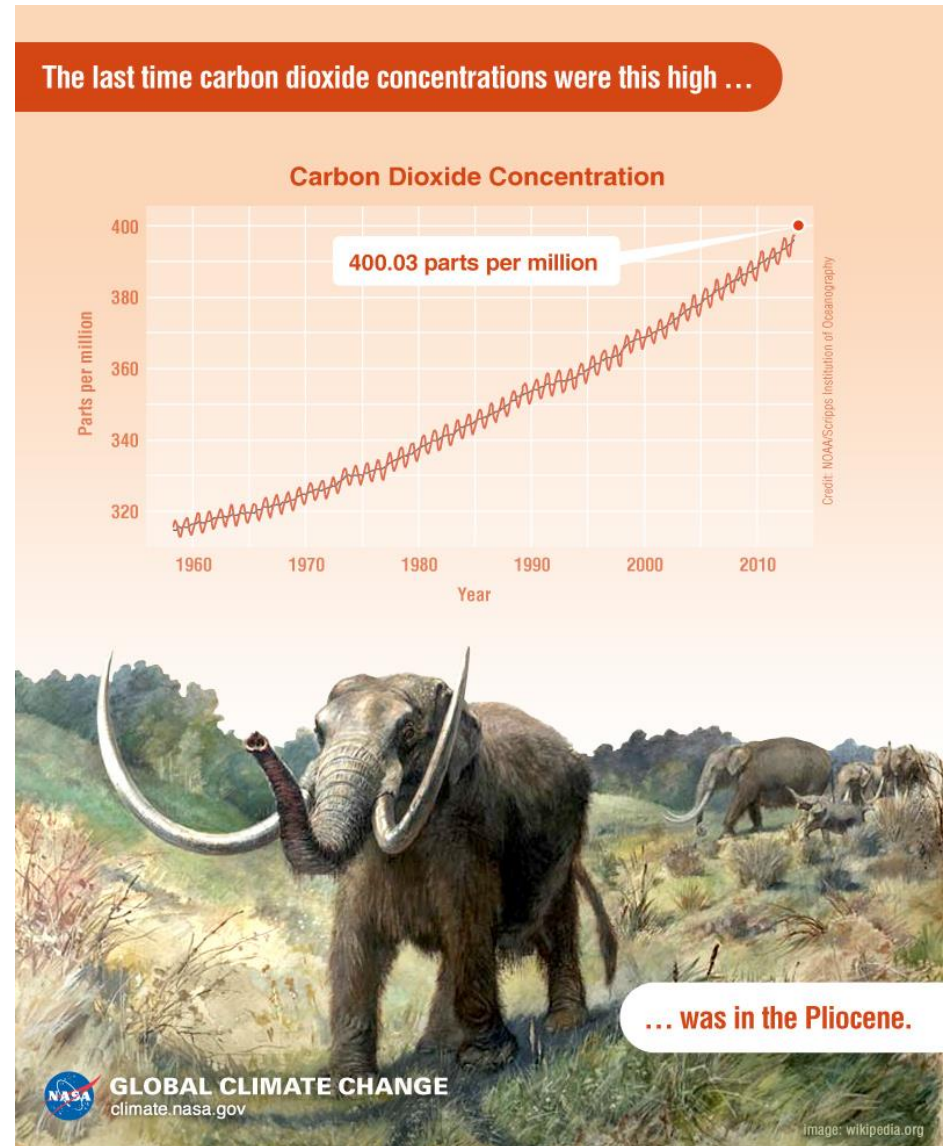
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Climate Change Data - Global

- ✧ **2014: Warmest Year in Modern Record** (NOAA)
- ✧ **Global sea level rise: ~6.7 inches** in the last century - and, in the last decade, the rate has nearly doubled. (NASA)
- ✧ **“Scientific evidence for warming of the climate system is unequivocal.”** (IPCC)



<http://climate.nasa.gov>

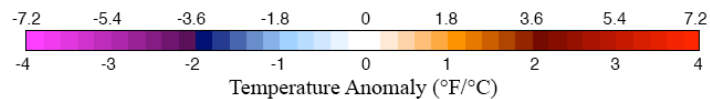
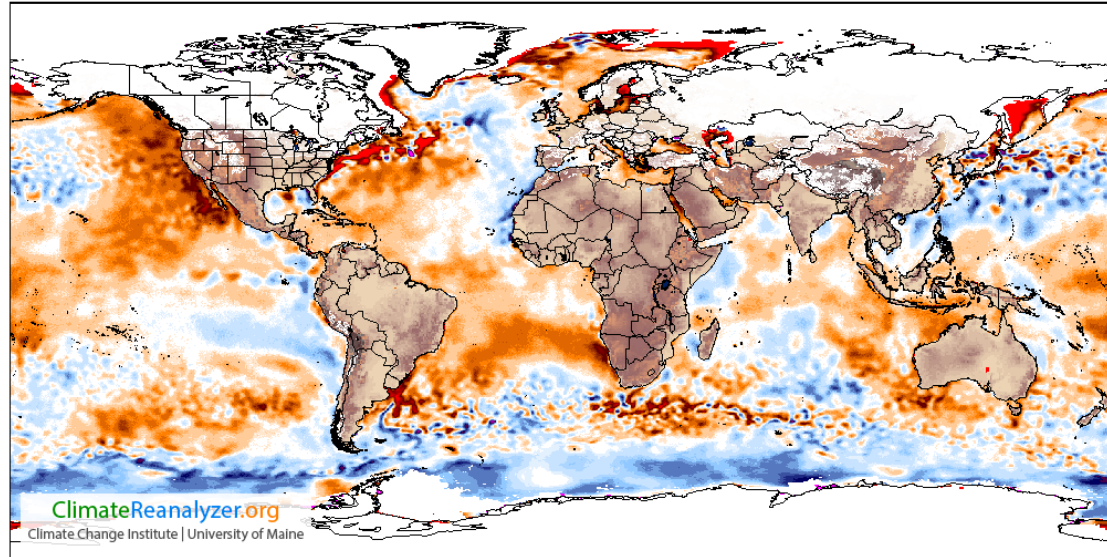


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Ocean Effects

Sea Surface T Anomaly
NCEP GFS (0.25°x0.25°)

Forecast Valid - Wed 0000 UTC, Feb 11, 2015
000h from Wed 0000 UTC, Feb 11, 2015



World + 0.92 °C	Northern Hemisphere + 1.34 °C	North Atlantic + 0.51 °C
Equatorial Pacific + 0.52 °C	Southern Hemisphere + 0.51 °C	North Pacific + 0.75 °C

The water temperature in the Gulf of Maine increased eight (8) times faster than the rest of the world's oceans in recent years, some readings are 21 degrees (F) higher than normal.

Source, 2014 Study by Andrew Pershing, Gulf of Maine Research Institute.

http://pamola.um.maine.edu/DailySummary/frames/GFS-025deg/DailySummary/GFS-025deg_WORLD-CED_SST_anom.png

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Local Climate Change Impacts

- ❖ Big Wildfires
- ❖ Severe Drought
- ❖ Water Shortages
- ❖ Heavy Rains & Floods
- ❖ Extreme Weather
- ❖ Infrastructure Damage
- ❖ Threats to Life & Safety

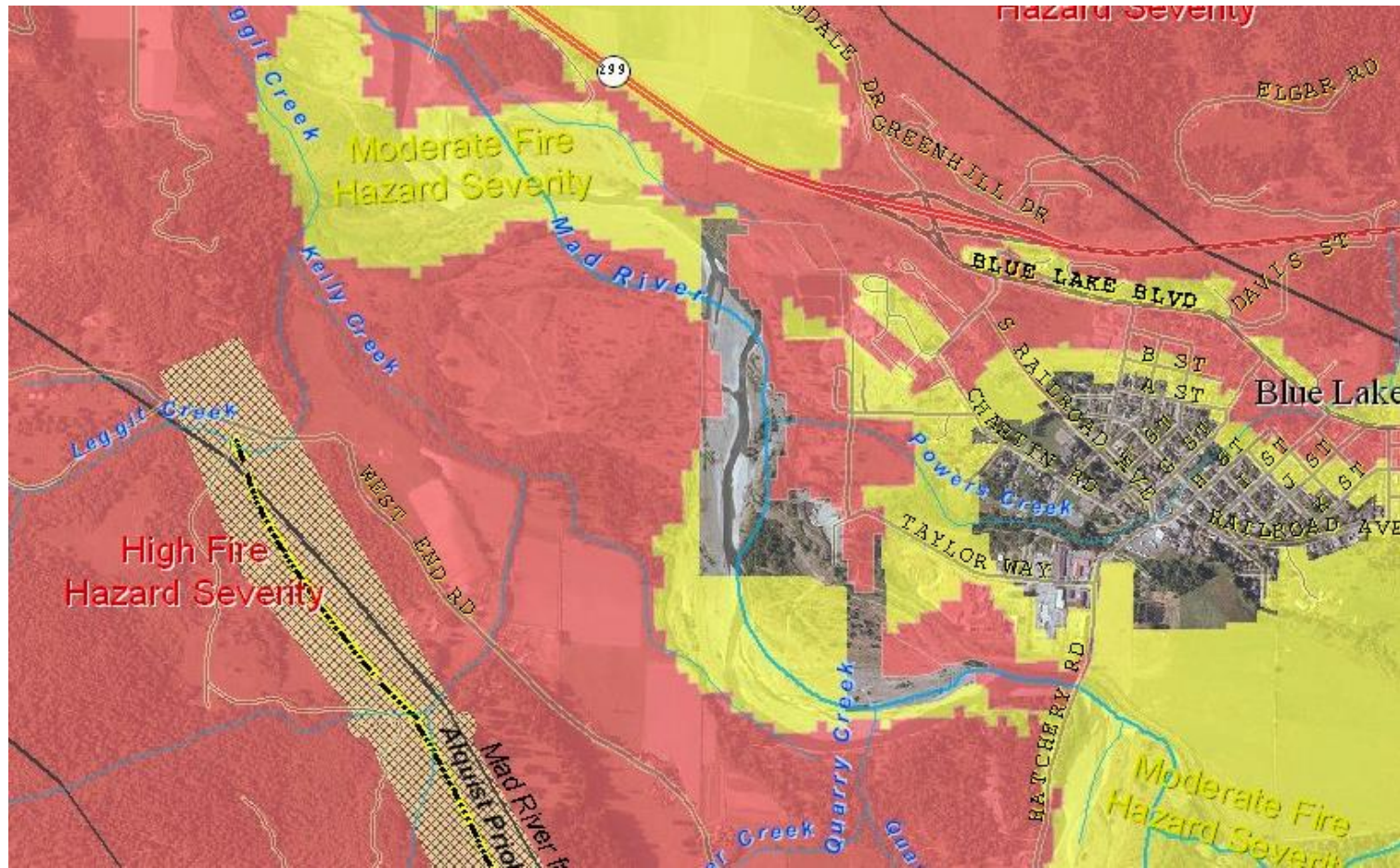


Drought

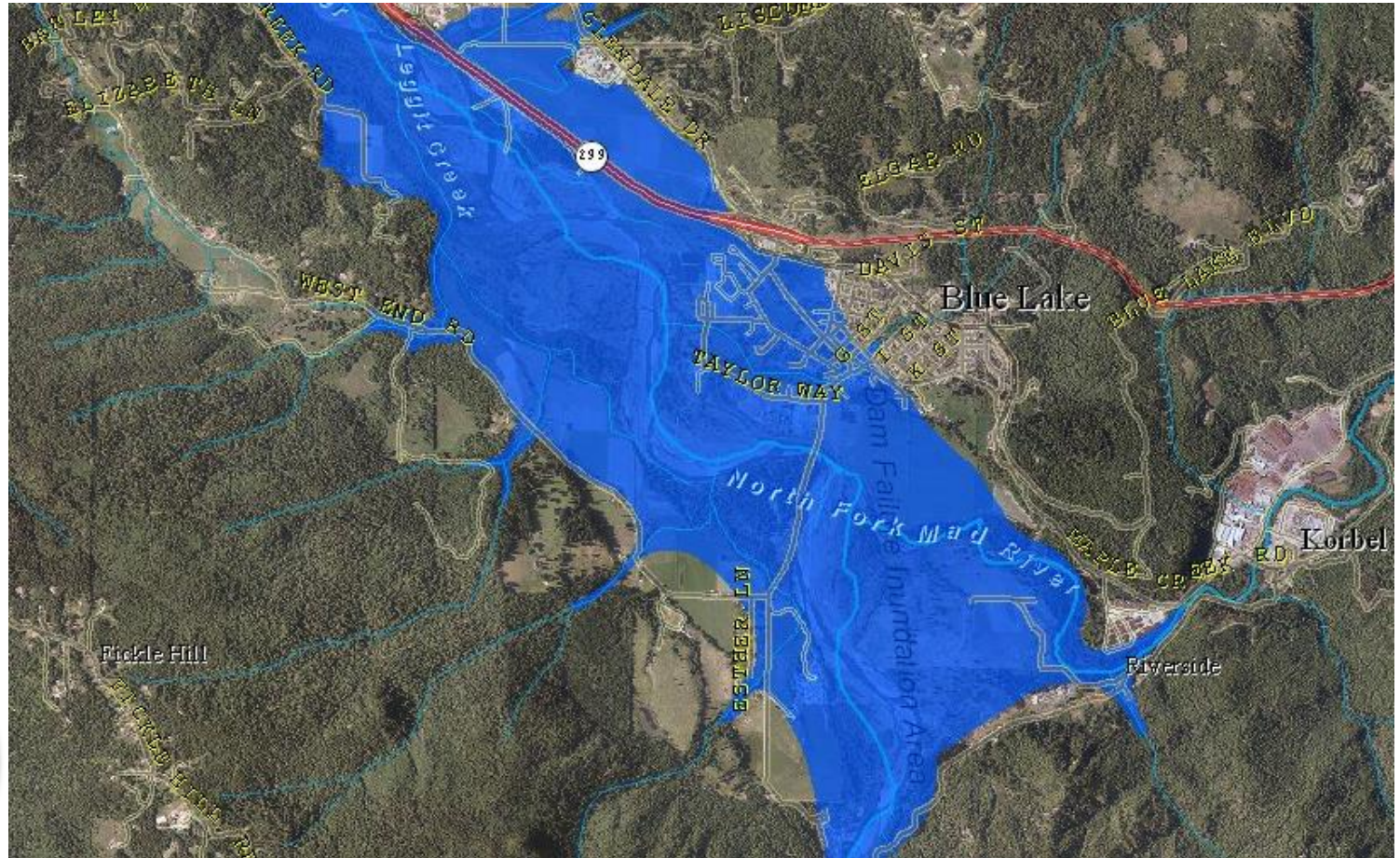
❖ 2012, 2013, 2014, Blue-Green Algae in the Mad River



High Fire Hazard Severity



Heavy Rains & Flooding



Infrastructure Damage

- ✘ Many of the most recent infrastructure plans and data in our region are focused squarely on climate change impacts.
- ✘ Our relatively rural, isolated area makes this even more critical.





BLR Climate Actions

❖ Reduce Greenhouse Gas Reductions

- Energy efficiency upgrades
- Transition from fossil fuels to green fuels
- Transition from conventional energy to renewable energy
- Support regional GHG reductions

❖ Improve Community Resiliency

- Develop energy security through islanded power capability onsite
- Develop water, food, shelter, and communications security
- Create long-term operability as a regional emergency site.



Current Actions

❖ Energy Efficiency Upgrades

- Fuel Station and Tribal Government Offices: reduced power consumption by ~20% and ~15% respectively (2014); savings of ~\$20,000 per year.
- Smart meter analysis by utility, simple rate changes, savings of ~\$15,000 per year.
- Upcoming:
 - Parking lot lighting replacement
 - Ozone commercial laundry system
 - Slot machine retrofits (LED / cold cathode)



Current Actions



- ❖ Biodiesel Transit
- ❖ Regional Electric Vehicles & Infrastructure
- ❖ 2 EV Charging Stations



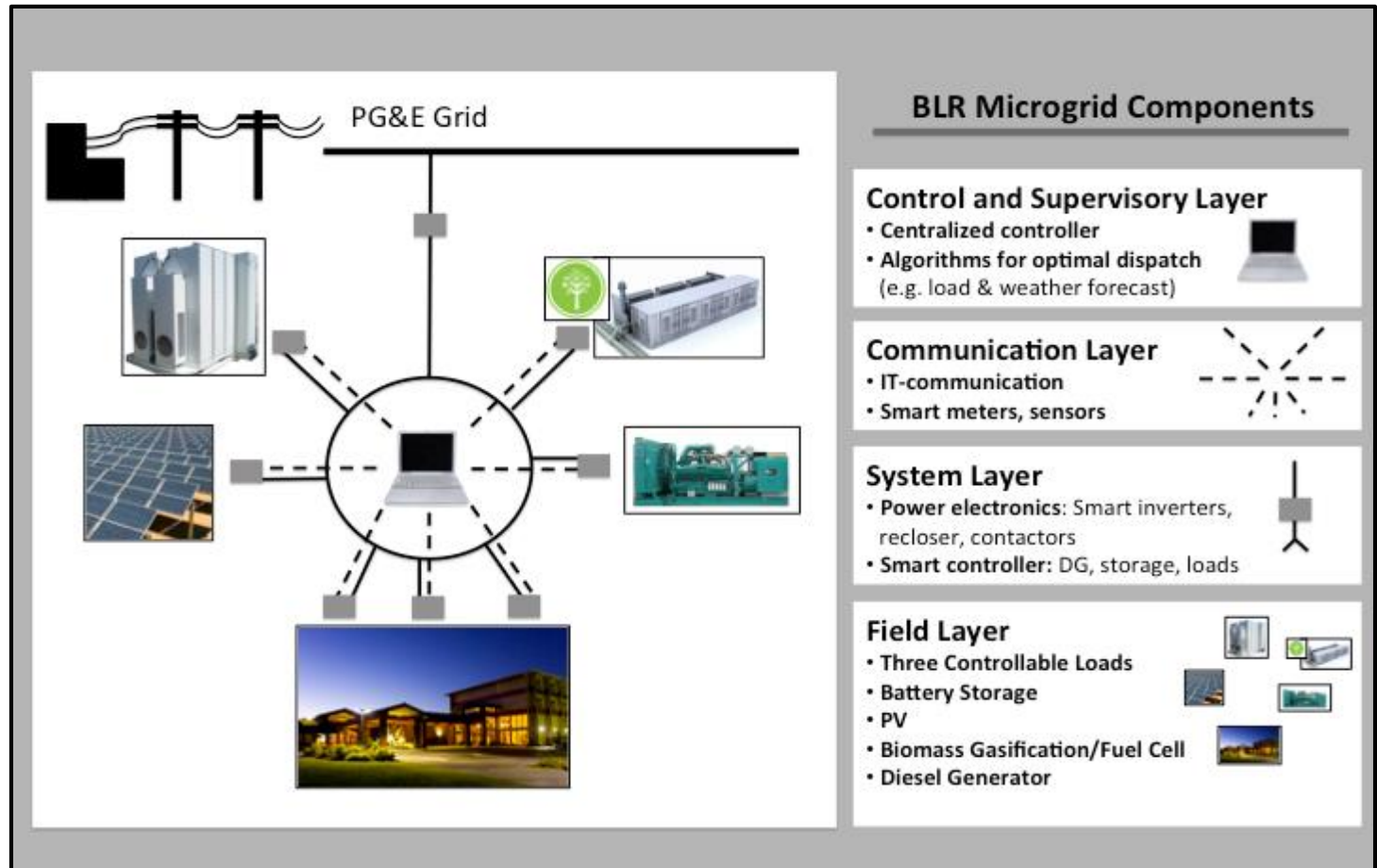
Current Actions

- ❖ Onsite Renewable Energy
- ❖ Solar Arrays for Tribal Residences
- ❖ 175kW Biomass-to-Fuel Cell Supported by California Energy Commission “Public Interest Energy Research (PIER) Program”
 - Improves community resilience
 - Reduces GHGs
 - Tribal, regional, and state partnership
 - Replaces ~1/3 baseload power with renewable source.



Current Actions

- ❖ Microgrid + Solar Array .5 MW + Battery Storage 800kWh



North



(Future/New) Grid Battery Storage and microgrid control room

Small Groundwater Well; Currently unfiltered water; ? GPM capacity

Solar Array ~500 kW (Future/New)

175kW Renewable Energy (biomass to fuel cell) Distributed Generation Power System (in operation 3/15); 10 days islanded operation (via biomass fuel storage)

1MW Generator Diesel powered; 3,000 gallon tank; 50 gallons per hour consumption rate = ~120 hours of islanded operation, depending upon energy use.

Blue Lake Hotel - 2,000A / 480V / 3 phase service; powers hotel + renewable energy system. 102 hotel rooms for shelter in place

Blue Lake Casino - 2,000A / 480V / 3 phase service; powers casino and sapphire palace + receives energy from renewable energy system. 44,000 square feet; 3 restaurants; 4 sets of restrooms

UPS - 2 Liebert (150 kVa and 50 kVa) and 1 MGC (36 kVa) battery banks; 15 minutes of islanded operation (slot machines servers, e lighting)

Sapphire Palace - receives energy from casino service. 800-person capacity; 1 set of restrooms; available shelter-in-place and/or medical facility.

Tribal Office - Separate meter. Kitchen facilities, 1 set of restrooms (septic system)

80kW Generator for Tribal Office; ~24 hours of islanded operation

Wastewater Treatment Plant (City of Blue Lake)

Blue Lake Casino and Hotel



Current Actions

- ❖ Tribal Office of Emergency Services
- ❖ Tribal Wildland Fire Department
- ❖ Emergency/Flood/Water Resource Planning
 - Partnership with Humboldt Bay Municipal Water District; City of Blue Lake; Regional Stakeholders
 - Dam Breach; Levee Breach; Other Flooding
- ❖ Working with local partners on joint climate efforts



Future Actions

❖ GHG Reductions

- Updated Strategic Plans
- Food Waste Diversion / Anaerobic Digestion (feasibility)
- Expand Microgrid
- Expand Solar Energy
- New Data Sets
- Achieve Zero Net Emissions

❖ Community Resiliency

- Consolidate and update plans
- Trainings
- Food Security
- Water Security
- Achieve Islanded Operation



Climate Action Collaboration

Tribal

- ❖ Tribal Government
- ❖ Tribal Members
- ❖ Environmental Programs
- ❖ Office of Emergency Services
- ❖ Wildland Fire Department
- ❖ Department of Energy and Technologies

Local, Regional, State, National

- ❖ Humboldt State University
- ❖ Schatz Energy Research Center
- ❖ Redwood Coast Energy Authority
- ❖ **U.S. Department of Energy**
- ❖ U.S. Department of Interior
- ❖ NOAA
- ❖ Pacific Gas & Electric
- ❖ California Energy Commission
- ❖ U.S. Department of Agriculture
- ❖ Humboldt Bay Municipal Water District
- ❖ Humboldt County Office of Emergency Services
- ❖ American Red Cross



REDWOOD COAST
Energy Authority



❖ Thank you.
❖ Questions?

❖ Solar Wish List.....
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