

How can Mono County fight climate change? and prepare for it?

Lynn Boulton & Don Condon
Ready for 100%--Mammoth Team



California's Climate Change Goals

- to reduce 1990 carbon emissions by 15% by 2020 (AB 32, 2006)
--met in 2016, 4 years early
- to reduce 1990 carbon emissions by 40% by 2030 (SB 32, 2016)
--not on track to meet it
- to be carbon neutral by 2045 (in 25 years) (Executive Order B-55-18-2018)

California Air Resources Board (CARB) is mandated to meet these goals. They implemented Cap and Trade and now are focused on transportation.





CARBON NEGATIVE

Then remove Carbon Dioxide from Atmosphere

Mono County Resource Efficiency Plan (8/1/2014)

Mono County's 2020 Resource Efficiency Targets:

- 10% reduction in GHGs from 2005 emissions levels
- 20% reduction in GHGs from 2010 emission levels
- 38 MW of additional renewable energy in the unincorporated county (30MW would come from Casa Diablo IV)
- Revise the REP and inventory emissions every 5 yrs. The County will be doing this in 2021.



Mono County's Accomplishments Towards REP Goals

Mono County has been pro-active in meeting its goals and helping the state meet its goals.

- **Improve energy efficiency in existing buildings:**
Biomass heater in the Bridgeport maintenance building, HVAC upgrades in several county buildings, wood stove replacement program
- **Reduce energy use in new construction and major renovations**
savings with new Civic Center compared to old buildings the County rented
- **Encourage appropriately scaled renewable energy generation for use within the county:**
Hess Park, expedited solar permits, PACE loans, waived fees for alternative energy projects, solar panels at community centers
- **Improve connectivity and efficiency of transportation:**
Updated transportation plan for alternative fuel vehicles, free EVCS at Hess Park, fleet chargers planned for Civic Center
- **Reduce generation of waste within the county**

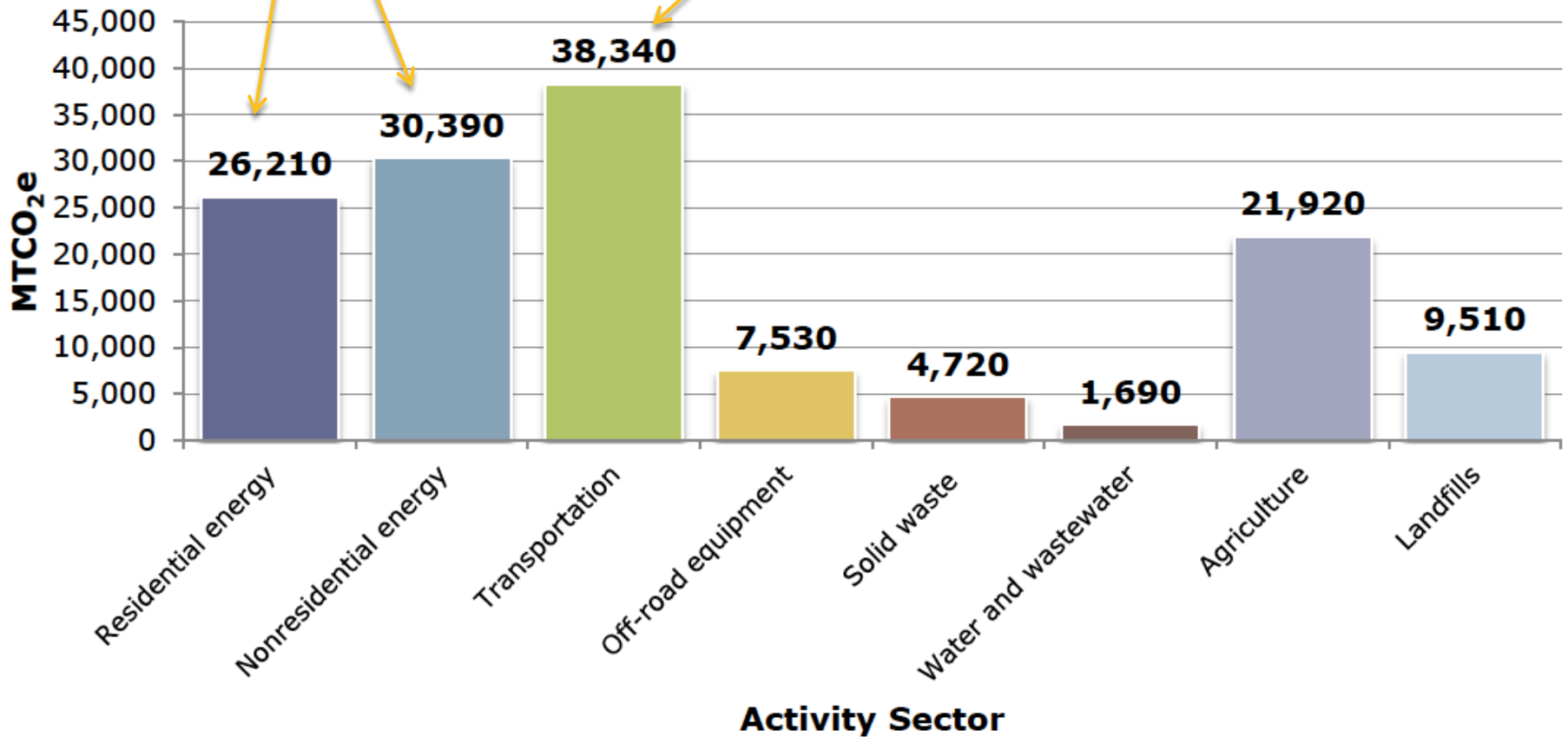
Microgrids can help Mono County reach their goals but more importantly, they can provide power when the grid is down.



Microgrids can help here

CARB is working on this

Figure 3: 2010 Community Emissions by Sector



Solar Panels at the Civic Center

- Would provide renewable energy to the grid.
- Can be financed and owned by the county
- Can be financed through grants and owned by the county
- Can be financed by an outside company through a Power Purchase Agreement (PPA) and owned by the financier



Net Metering

- Net metering rate plans are the plans that go with solar panels.
- Net metering rate plans are based on time-of-use. Off-peak rates are lower than general service plan rates.
- Smart controllers would allow the county to pull from the grid during the lower peak times and pull from the batteries during high peak times to avoid expensive demand charges.



Microgrids

- Microgrids are mini grids with an independent power source
- Microgrids usually get power off the grid, but can island-off it and run independently.
- They consist of solar panels, battery storage, and smart controller.
- A smart controller can shed non-essential loads, determine when to feed the battery, when to feed the grid, and when to draw on battery storage
- Can be used in response to offset higher time-of-use rates



PERCs: Powered Emergency Response Centers

- PERCs provide backup power in the event of a power outage.
- Backup power could be provided in the event of a PSPS event.
- The Civic Center Building is the county's emergency response center. It houses public health, environmental health and social services.
- PERCs are eligible for grants and other financing arrangements.

See <https://ecomotion.us/powering-emergency-response-centers-percs-at-santa-rita-union-school-district/>



FEMA BRIC Grant Program

A pre-disaster mitigation/preparedness grant focused on community lifeline services: Security, Food/Water/Shelter, Medical, Energy, Communications, Transportation

- \$446.4 million nationally, \$20 million tribal set-aside
- \$50 million cap per national applicant, \$600,000 cap per tribal applicant
- 25% cost share

Grants will be accepted from Sept 30-Jan 29, 2021

https://www.fema.gov/sites/default/files/2020-07/fema_bric_session-4_community-lifelines.pdf

https://www.fema.gov/sites/default/files/2020-08/fema_bric_fy-2020_nofa_fact-sheet.pdf

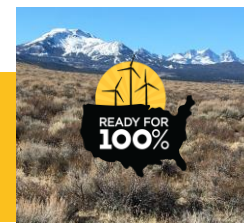


Self-Generation Incentive Program (SGIP)

Provides tax incentives and rebates to support existing, new, and innovative distributed energy resources e.g. advanced storage systems. It applies to emergency preparedness services:

- Police stations; or
- Fire stations; or
- Emergency operations centers; or
- 911 call centers (also referred to as Public Safety Answering Points); or
- Medical facilities including hospitals, skilled nursing facilities, nursing homes, blood banks, health care facilities, dialysis centers and hospice facilities; or
- Public and private gas, electric, water, wastewater or flood control facilities; or
- Jails and prisons; or
- Locations designated by the IOUs to provide assistance during PSPS events (CRCs); or
- Cooling centers designated by state, local or tribal governments

SGIP equity resiliency incentive is \$1,000 per kWh of the a battery storage system's capacity. PG&E is already oversubscribed, but the **SCE incentive is still available!**



Our Ask

Install a microgrid at the new Civic Center building and consider incorporating other essential facilities i.e. the hospital, the schools, the jail, the water district.

- apply for a FEMA BRIC grant or
- hire a consultant to prepare an RFP for the project
- get in the queue for SGIP equity resiliency rebate-*ASAP*
- Add EV chargers to the Civic Center if not applying for a FEMA BRIC grant

California Government Code Chpt 3.2 Energy Conservation Contracts 4217.10-12 allows you to authorize an energy contract if in the County's best interest. A BRIC microgrid project could qualify.



Now I'd like to introduce you to Leslie Wielenga from Charge Bliss.

She is here to tell you about the FEMA BRIC grant and how Charge Bliss can help with that.



FEMA Grant Opportunity

Charge Bliss, Inc.



Charge Bliss
Intelligent Power.  Delivered.

What is BRIC.....

Building Resilient Infrastructure & Communities

Community. Safety. Peace of Mind.

We are all experiencing the devastating effects of hurricanes, floods, wildfires, earthquakes, and other events. The increasing duration, intensity, and severity of these disasters are just highlighting emergency management challenges facing the United States. As a result, building resilience has shifted from post-disaster discussions to improved pre-disaster actions.

Purpose: Creating Community Lifelines with Pre-Disaster Hazard Mitigation Projects

Focus: Promoting partnerships for Large projects with multiple Lifeline components to reduce impacts of natural Hazards on communities, families & individuals.



Wildfires

From 1980 to 2018, 16 billion-dollar wildfires were responsible for more than ~\$79 billion in damages and 344 deaths.



Earthquakes

More than half of the notable earthquakes in the U.S. have occurred in California and Alaska. The damages caused by large earthquakes can range from \$2 million to more than \$232 billion.



Drought

From 1980 to 2018, 26 billion-dollar droughts were responsible for more than \$244 billion in damages and the second highest number of deaths of all hazards with 2,993 deaths.



Inland Flooding

From 1980 to 2018, there were 29 billion-dollar flood events that were responsible for over \$123.5 billion in damages and 543 deaths.



Tornadoes

U.S. tornadoes cause \$400 million in damages and kill about 70 people every year.



Hurricanes

From 1980 to 2018, hurricanes caused the most damage (\$920 billion) and caused the most deaths (6,487). Each event averages \$22 billion in damages.



Coastal Flooding

Coastal floods are caused by events such as high tides, storm surges, strong waves, and heavy precipitation. The average frequency of high-tide flooding is already 50% greater than in year 2000.



Tsunamis

Since 1800, tsunamis have caused more than 700 deaths and ~\$2 billion in damages to U.S. coastal states and territories.



Winter Storms

From 1980 to 2018, 16 billion-dollar winter storm events were responsible for more than \$47 billion in damages and 1,044 deaths.



Landslides

U.S. landslides cause over \$1 billion in damages and kill 25 to 50 people every year. They affect all 50 states and U.S. territories.



BRIC Hazards...

Landslides From 1980 to 2018, \$16 billion-dollars.

Wildfires were responsible for more than \$79 billion in damages and 344 deaths.

More than half of the notable earthquakes in the U.S. have occurred in California and Alaska. The damages caused by large earthquakes can range from \$2 million to more than \$232 billion.

Avalanche Damages \$47 Billion



BRIC Lifelines

To help communities better monitor disruptions to critical services and systems following a disaster and reduce cascading impacts across government and business functions, FEMA launched the community lifelines framework. This framework has served as a driving force behind two of the agency's strategic goals: building a culture of preparedness and readying the nation for catastrophic disasters. "A lifeline enables the continuous operation of critical business and government functions and is essential to human health and safety or economic security."



Safety & Security



Food, Water, Shelter



Health & Medical



Energy (Power & Fuel)



Communications



Transportation



Hazardous Material



Law Enforcement/
Security



Food



Medical Care



Power (Grid)



Infrastructure



Highway/Roadway



Facilities



Fire Services



Water



Patient Movement



Fuel



Alerts, Warnings,
& Messages



Mass Transit



HAZMAT, Pollutants,
Contaminants



Search & Rescue



Shelter



Public Health



911 and Dispatch



Railway



Government Services



Agriculture



Fatality Management



Responder
Communications



Aviation



Community Safety



Medical Supply Chain



Finance



Maritime

How can Charge Bliss Help?

Our specialty within the BRIC program is to develop microgrids. A Microgrid consists of renewable energy and energy storage that can be utilized even when the utility is unavailable during any grid outage. This is an example of a proposed project in southern california to take all the government facilities, city hall, fire department, police department and library and creating a shared microgrid. The vision for Mono County & Mammoth Lakes is to work with the city and key stakeholders to determine which facilities are essential and need to maintain services during an outage. Charge Bliss has investors available for the 25% funding needed. BRIC application fees are reimbursed through the grant funding, our need is participation with the county.

Charge Bliss Microgrid Example Proposal



Microgrid Possibilities for Mono County

Mono County Civic Center

Court House

Water Treatment Facilities

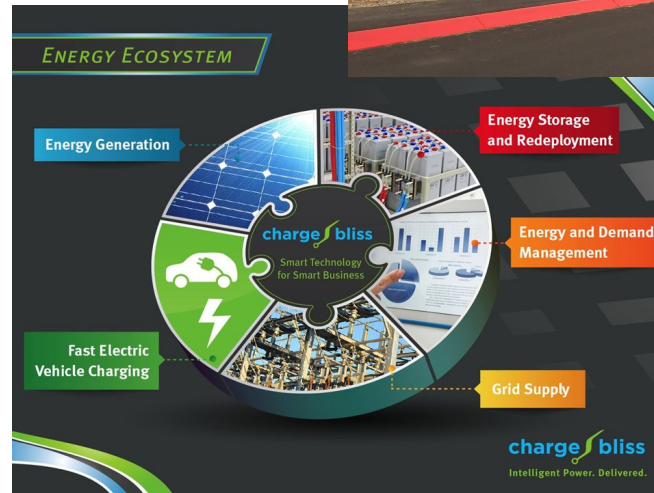
Town of Mammoth Lakes Operations

Hospital

Schools

Police Station

Fire Station





How to apply.....

Development Process:

Charge Bliss is experienced with grant writing and successfully securing funds. To date we have secured over \$17.5 MM in funding.

Determine Key Stakeholders and Decision Makers

Conduct Vulnerability and Risk Assessments, Determine Key Hazard Mitigation needs, Identify a Potential Project and address needs

Leverage & create partnerships, Assess funding options

Select Project Appropriate for BRIC funding opportunity

Develop Application, Submit Application for BRIC funding

Project Implementation & Closeout

Monitoring & Evaluation of Project

Who is Charge Bliss?

Company Background: Charge Bliss, Inc. (CBI) is a multi-faceted energy technology company providing renewable and alternative energy solutions to the commercial, industrial, private, and public sectors. CBI is technology agnostic and integrates solar power systems, advanced battery storage, energy demand management, and fast electric vehicle charging. The company was founded in 2011 by David W. Bliss, MD, and partners. In addition to being an entrepreneur and advocate for clean energy solutions, Dr. Bliss is a renowned pediatric surgeon at Children's Hospital, Los Angeles (CHLA) & Cedars-Sinai.

Offerings

- General Contracting Services & Turn-key Installations
- Solar Battery Storage
- Microgrid Solutions (Solar + Energy Storage + Advanced Controls)
- Energy Consulting Services for Energy Solutions
- Energy Demand Management



Charge Bliss
Intelligent Power. Delivered.

Blue Lake Rancheria Tribe Microgrid



Humboldt
Bay, CA
FEMA Region IX

The Blue Lake Rancheria (BLR) is a Native American reservation located in an area subject to heavy rainstorms, forest fires, and frequent power outages. The reservation constructed a low-carbon community microgrid in 2017 to bolster its resilience to these outages. It helps power government offices, economic enterprises, and several Red Cross safety shelter-in-place facilities. The BLR microgrid integrates a solar array, battery storage, and control systems to allow the Rancheria campus to operate in tandem with, or islanded from, the main utility grid. This provides resiliency to the community because if the main grid experiences a power outage, the microgrid will automatically disconnect and go into island mode.

The system prioritizes clean generation, but if needed it will bring a 1-megawatt isochronous backup generator online to support the photovoltaic (PV) array and battery. The solar array also generates renewable energy regardless of whether or not it is in island mode, providing both carbon emission and electricity cost savings. The microgrid is projected to save \$150,000 a year and reduce 150 tons of carbon dioxide emissions annually.

Addressed Hazards



PRIMARY HAZARD
All Hazards



Inland Flooding



Wildfires

Innovative Energy Solution Tested and Proven in 2019

When a nearby wildfire caused a power outage in October 2019, the microgrid successfully islanded and kept the facilities from experiencing a blackout. During the outage, the microgrid served 10,000 people, about 10 percent of the county's population, and is credited with saving four lives.

Leveraging Partnerships for Tribal Lifeline Resilience

By leveraging public and private partnerships, this project utilizes the latest in microgrid technology to mitigate cascading impacts to an entire tribal community.



Workers installing the racking for the Blue Lake Rancheria's 500-kilowatt solar system in June 2016. The solar system is a cornerstone of the tribe's low-carbon community microgrid project.

Source: U.S. Department of Energy Flickr <https://www.flickr.com/photos/37916456@N02/27365396111>

Community Lifelines



Hover over the Primary Lifeline to learn more.



Safety & Security



Food, Water, Sheltering

PRIMARY LIFELINE



Energy (Power & Fuel)

Charge Bliss
Intelligent Power. Delivered.

Buffalo, WY Flood Control

Details

Project Owner

City of Buffalo, WY

Type of Project

Flood Mitigation Infrastructure

Area of Impact

52 acres; Buffalo, WY population (Total Pop: 4,584 in 2017)

Cost

Total Project Cost

\$648,291

Funding Sources

Federal Funding

FEMA Pre-Disaster Mitigation Funding: \$486,219

Non-Federal Funding

Local Share: \$162,072

Benefits

Primary

- Reduced physical damage to structures and their contents and associated residential displacement and short-term shelter needs
- Reduced damage to stormwater and flood infrastructure, including road culverts

Secondary

- Reduced loss of function for transportation systems
- Reduced loss of function to non-residential structures and their associated businesses or organizations impacted by road closures
- Decreased need for emergency response during flood events

Partnerships

FEMA

City of Buffalo

Project Timeline

Status

Received FEMA HMGP funds in 2016; project put out for construction bid in January 2019

Resources & References

FEMA Region VIII. 2017. "Environmental Assessment Buffalo Hazard Mitigation Project." Booz Allen Hamilton. August 2017. https://www.fema.gov/media-library-data/1503587227654-d1c60a034904707b3182137105e32283/01_BuffaloEA_08232017.pdf.

Mayor Shane Schrader. 2019. "Public Notice." Buffalo Bulletin, January 14, 2019. http://www.buffalobulletin.com/news/public-notices/article_e105bfa0-19b9-11e9-a9ba-3fa0791ef253.html.

Redwood Coast Airport microgrid

The Redwood Coast Airport (RCA) Renewable Energy Microgrid will provide clean electricity to Humboldt County and be a lifeline in the event of a natural disaster or other emergency. The county airport serves 50,000 flights per year, including commercial, private, and emergency medical flights, while the adjacent Coast Guard air station provides search and rescue for 250 miles of rural coastline — from the Mendocino-Sonoma county line to the California-Oregon border. Since roads into Humboldt County are frequently closed by fires and slides, energy security at the regional airport is crucial. In the event of a grid outage, the airport microgrid will allow flight service and rescue operations to continue without interruption.

The microgrid is being funded by a \$5 million grant from the California Energy Commission's [EPIC program](#), with \$6 million in match funding from the [Redwood Coast Energy Authority](#) (RCEA). The RCA microgrid will support 20 electric accounts including the airport and Coast Guard station. As the first multi-customer microgrid in the Pacific Gas & Electric service territory, this project will provide a test bed for the policies, tariff structures, and operating procedures necessary to integrate microgrids into California's electric grid. Lessons learned will help create a road map for microgrid interconnection across the state.

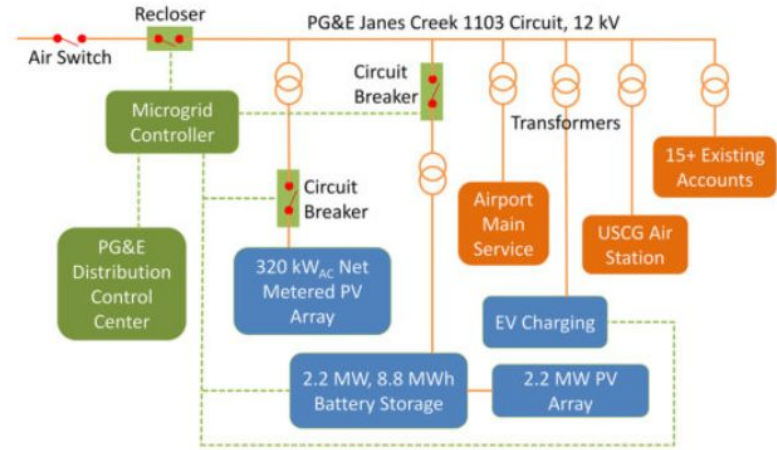
Major project elements

- 2.2 MW photovoltaic array DC-coupled with a 2.2 MW, 8.8 MWh battery storage system
- 320 kW net-metered photovoltaic system
- microgrid control system that will interface with the utility power distribution control center
- powerline reclosers with advanced control
- electric vehicle charging stations capable of demand response



An important rationale for this project is to demonstrate a business case for microgrids. As the community choice aggregator for the Humboldt Bay area, RCEA will own the two photovoltaic (PV) arrays and battery storage. The larger PV array will be DC-coupled to the battery system, and will allow RCEA to generate renewable power to sell on the [CAISO wholesale market](#). The smaller array will directly offset utility costs for the airport, in return for land leased to the project. The battery system will allow solar energy to be discharged during the evening peak of energy use — while simultaneously fulfilling a storage requirement mandated by the State of California.

Our contract with the California Energy Commission was signed in August of 2018. Project development in collaboration with our partners formally kicked off in January 2019. Construction and installation of equipment is currently slated to begin in April of 2021, with commissioning and full operation scheduled for November 2021.



Partners

The Schatz Center is the prime contractor and lead technology integrator for this project. Partners include the Redwood Coast Energy Authority (RCEA), the County of Humboldt, Pacific Gas & Electric (PG&E), Schweitzer Engineering Labs, Tesla, Inc., TRC, and The Energy Authority.