Blue Lake Rancheria

Sometimes we look back and realize with satisfaction that our sacrifices, the tradeoffs we chose, and the difficult decisions we made, were all worth it. We breathe a deep sigh of relief, and redouble our efforts going forward.

Events in 2019 brought the Blue Lake Rancheria into exactly that space.

Small But Mighty
The Blue Lake Rancheria, located in Humboldt County in northern California, is an exceptionally small tribe: less than 50 enrolled members, with about 100 acres of trust land. And yet, they are having an outsized impact and leading the way when it comes to resilience, adaptation, and mitigation in response to the climate crisis. It just might be that their small size has generated their outward-looking mindset: the Tribal Council has long been committed to progressive ideals such as climate, environmental, and energy initiatives; commitment to excellence in education; and serving their larger community, both tribal and non-tribal, local and global.

Front Lines Of The Climate Crisis
Climate change is on everyone's doorstep, but some communities are feeling the impacts more acutely than others. The Blue Lake Rancheria inhabits one of the most unique locations in the United States, with ocean to one side, redwoods to another, a river running through it, and wildfire-prone landscapes to the north, east, and south. Each of these culturally, environmentally, and economically important features are at risk from the climate crisis.

The coastline nearest to the Blue Lake Rancheria is where sea level is rising faster than any other location along the Pacific coast. With municipal wastewater treatment centers, a highway, a natural gas power plant, and a nuclear waste repository all along the coastline and within a 15-mile radius of the Blue Lake Rancheria community, the hazards of a rising ocean are undeniably frightening. Both 2014 and 2019 saw historically high ocean temperatures, which led to "the Blob," (an unusually warm expanse of water in the Pacific Ocean) and affected ocean species such as oysters, crabs, and salmon, which in turn affected the local economy and communities that depend on those species. Furthermore, recent studies have shown Humboldt Bay (*Wigi*, in Wiyot) is experiencing sea level rise at a higher rate than the rest of the West Coast.

Forest health on the North Coast has a high potential to be impacted by climate change, particularly due to increased wildfire, changes in drought and fog regimes, and pests and diseases. Distribution and densities of tree species may change dependent on their resiliency to climate impacts, favoring some species over others (Grantham 2018).

The Blue Lake Rancheria spans the Mad River (*Baduwat,* in Wiyot), which traditionally has supported Indigenous people and their subsistence practices in the area with salmon, Pacific lamprey, sturgeon, Pacific eulachon, and other species. Changing snowpack and rainfall patterns are impacting fish migration, traditional foods, and overall ecosystem health. Elders have noticed dramatic changes in the amount and health of fish in the river. With rains coming more irregularly every year, the fish remain in pools in the lower river, waiting for the right conditions to migrate upstream. The longer the wait, the more subject they are to predation and disease; if they move up too early they can be stranded as flows drop between storms.

Additionally, the river (and the Pacific coastline) has experienced increased erosion and flooding, leading to drastic and unpredicted changes.

While the Blue Lake Rancheria typically does not experience large wildfires due to their proximity to the ocean, the last ten years have brought unprecedented changes. Five wildfire events have occurred in the last several years less than 10 miles away from the Tribe. Severe levels of unsafe air quality from wildfire smoke inundation, as well as increasing threats of wildfires in nearby areas where they traditionally had not burned, create a new intensive focus on wildfire and its impacts to the Tribe.

Shifting and more volatile weather patterns culminated in a “rain bomb” event in September 2019, unleashing 2” of rain over nearby Arcata in just 30 minutes, an amount of rain the city’s buildings and stormwater infrastructure were not designed to handle

In hindsight, that flooding downpour was just a precursor to the even more dramatic conditions that necessitated the Blue Lake Rancheria to open its doors wide to the community, and to realize that its efforts and investments over the last decades had all been worthwhile.

Microgrids To The Rescue

That moment came about a month later when the utility serving most of California - Pacific Gas and Electric, or PG&E - shut down electricity to large swaths of California in order to reduce the risk of catastrophic wildfire due to a combination of extremely high winds and aging electrical infrastructure. The Blue Lake Rancheria was able to effectively turn into an electricity island because of their foresight and investment in creating a solar- and battery-powered microgrid. Microgrids allow areas to be connected to the grid most of the time, either taking electricity from or feeding electricity into the larger grid. But when necessary, an area that has created a microgrid can disconnect from the larger grid, and continue to power itself on its established electricity sources (in this case: solar plus battery, as well as some legacy diesel generators that are currently being phased out).

One might think that a small community that has invested heavily in this technology would prioritize its citizens over the needs of the region. But the Blue Lake Rancheria did both at the same time: they cared for the tribal elders and children in their community while welcoming in the surrounding region, providing ice, fuel, electricity to charge electronics and electric vehicles, and rooms in their Blue Lake Rancheria Casino and Hotel for emergency services for the critically ill.

Their microgrid had been developing and growing since 2017, and is just one of the many initiatives and programs the Tribe has undertaken to develop resources for resiliency in emergency situations as well as serve as demonstration projects. With just the first microgrid in place, the Tribe was able to power their six-building central campus, save $200,000 in electricity costs annually, increase clean energy jobs within the Rancheria by 10%, and reduce greenhouse gas emissions by about 200 tons per year!

All images courtesy of the Blue Lake Rancheria

Un-siloed, Integrated Resiliency Across Lifeline Sectors

The Tribe and Tribal Council have always been environmental stewards, but two significant events occurred that led to the deliberate decision to thrust forward resiliency action across the lifeline sectors of energy, water, food, transportation, and communication. First, in 2008-2009, the Tribe built their Blue Lake Hotel with the goal of making it as energy efficient as possible. Through this process they realized that a little bit of investment could make a substantial reduction in energy usage, which had the two-fold benefit of mitigating climate change and bringing down the cost of operations. This left them wondering: where else might we achieve these results?

Then, in 2011, the Fukushima earthquake in Japan sent thousands of California coastal residents scrambling inland for fear of a subsequent tsunami. The Blue Lake Rancheria was overwhelmed with people looking for supplies, information, and resources. This eye-opening event was the catalyst within the tribal government to look at infrastructure as their approach to sustainability and cross-departmental resiliency

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While many governments silo the planning areas of economic vitality, environmental protection, social services, and emergency planning, preparedness, and response, the Blue Lake Rancheria is striving to merge them into an overall climate smart community development plan. They see zero-carbon resilience as both a social and economic investment.

With climate impacts becoming more amplified, the Blue Lake Rancheria is seeking to find ways to respond to urgent situations without further exacerbating the climate emergency. Large gaps exist for many communities during emergency response situations. For example, while generators are the go-to technology to provide the necessary emergency power during outages, they typically burn diesel fuel, which not only contributes further to the root cause of the climate crisis (creating yet more outages), but also can cause acute impacts from air pollution, other toxicity, and inherent risks of misuse of equipment (e.g., structure fires). With the climate crisis at the epicenter of all their plans, they hope to be able to respond to disasters both quickly and in the least carbon-intensive way possible.

All The Way To Carbon Neutrality

The Blue Lake Rancheria has set the goal of achieving carbon neutrality by 2030. To get there, they have both formal plans (including a Climate Action Plan and a Strategic Clean Energy Plan) and organic plans (such as jumping on the opportunity to create a microgrid). They have worked with the National Renewable Energy Laboratory (NREL) to define what is meant by "carbon neutral by 2030." They are working on developing an infographic to help in communicating their goals to their team and external stakeholders.

While the strategies to get to carbon neutrality are a moving target as they make progress towards the goal, they know this means they must zero out the carbon footprint of both energy and transportation, and drastically reduce that of their supply chain. They are clear that all new projects and buildings must be designed to be carbon neutral or even carbon negative, and are analyzing their current stock of homes and infrastructure.

Reducing the carbon emissions from food production translates into bringing more food production on site, as well as reducing food waste and improving composting efforts both in the community garden and within households. They are working with "trench composting" the scraps from their commercial kitchens in their community garden, which is a method of composting food waste directly into any garden. It improves soil and root health, as well as helps sequester greenhouse gas emissions from the decomposition of organic matter.

To address carbon emissions associated with the lifeline sector of water, the Blue Lake Rancheria is building a smart water grid to find and control leaks, as well as improve and streamline the efficiency of water delivery. They will be using a SCADA system (which stands for supervisory control and data acquisition, and allows for real-time analysis of data) which will also help demonstrate proof of new and better technologies for managing water systems. They have partnered with the Bureau of Reclamation on this long-term resiliency project.

The Blue Lake Rancheria is already far down the path to decarbonizing their energy system. A Tribal Ordinance led to the formation of their own utility authority, the "Blue Lake Rancheria Department of Energy and Technologies" (DET) in 2013. The DET's services include electricity, fuels, water and wastewater, recycling, sanitation, and telecommunications, all with decarbonization and resiliency as prime objectives. A partnership with Grid Alternatives led to one of the first residential renewable energy forays for the Tribe, with the installation of solar panels at tribal homes.

In addition to the microgrid that allowed the Rancheria to remain fully operational during the power outages of October 2019, a second microgrid is now online (as of February 2020) which serves its fuel station and convenience store complex.

This second microgrid is designed to be replicable for other small- to medium-sized commercial buildings, such as grocery stores, police and fire stations, health clinics, and others. Locating advanced, low-carbon energy systems on convenience stores / gas stations expands the uses of these types of facilities as emergency and critical infrastructure: in emergencies, energy hubs can supply food, water, communications, and of course transportation needs (fuel, electric vehicle charging stations).

As was demonstrated during the power outages, the hubs can be used as community resource centers, and the Tribe is also working on creating clean air shelters for wildfire smoke events using these facilities. Although the Rancheria itself does not typically experience enormous wildfires, they do get smoke inundation from fires directly east of them, and other nearby tribal communities have needed to evacuate their lands in recent years. With more uncertain weather patterns due to climate change, wildfires have also occurred in areas previously considered immune. For example, in 2017, a 20+ acre wildfire sprung up within a few miles of Blue Lake Rancheria that had high potential to spread if not for the quick and effective suppression efforts. Working closely with students from Humboldt State University, engineering students are helping the Tribe develop these clean air shelters by retrofitting existing facilities to ensure that elders and others with health issues have a truly healthy air environment available to them. The clean air shelters are yet another benefit of the Tribe's prior investments and partnerships.

The concept of "just transition" refers not only to transitioning off of fossil fuels, but to also ensuring that the transition does not harm vulnerable communities. To that end, the Rancheria is partnering with Grid Alternatives on a grant from the Department of Energy to develop solar workforce training for tribal communities. They are creating an internship and training program, and paying stipends for tribal members (and specifically veterans), to get training in solar installation and other solar job skills. They then provide job placement assistance.

Transportation is currently the largest single sector of greenhouse gas emissions nationwide (*Sources of Greenhouse Gas Emission 2019*), and is a tough nut to crack. In order to reduce emissions from transportation, a multi-angle approach is necessary, which is exactly what the Blue Lake Rancheria is doing.

The Rancheria's first foray into cleaner mobility and transportation was a student-led partnership with Humboldt State University that utilizes waste oil from restaurants and turns it into biodiesel. They operate their own public transit system, and the busses run on a minimum of 20% biodiesel from this process.

Transitioning to electric vehicles (EVs) is a critical piece of reducing emissions from the transportation sector. The Blue Lake Rancheria's development of solar-powered microgrids is integral to this effort, as the solar-based microgrids provide low-carbon electric "fuel" for EVs. The Rancheria currently provides two dual-port Level 2 chargers, and will be installing five more in 2020. They located these systems at their administrative building and in other locations, and partner with the Redwood Coast Energy Authority (a community choice aggregator) to establish

and help manage the system as a part of a regional EV charging network. EV charging is intended to be a public service, and help pave the way towards widespread EV adoption. Furthermore, since they are connected to the Tribe's two microgrids, they are able to provide vehicle charging services even during regional power outages.

The Tribe has seized upon the opportunity to reduce diesel emissions by becoming a beneficiary in the Volkswagen Diesel Emissions Environmental Mitigation Trust Settlement, and is actively working to help other tribes become beneficiaries by participating in the Institute for Tribal Environmental Professionals' Tribal Advisory Committee. For the first round of funding, the Blue Lake Rancheria chose to invest in cleaning up its older infrastructure by replacing its aging wildlands fire truck with a newer diesel version (that type of vehicle is not available as an EV), achieving an 80% reduction in emissions. For the second round of funding, they are replacing a diesel bus with an EV shuttle bus, which will be used for outreach, elder transport, student groups, day camps, and other community needs.

One other program funded by the VW Trust is a statewide effort to help provide access to incentives for cleaner mobility for lower income communities and communities of color, essentially matching EV incentives with individuals' EV purchasing needs.This funding came through a California Air Resources Board (CARB) grant to develop an online tool. CARB wanted to ensure that outreach for the tool was broad and specifically included tribal outreach, so the Blue Lake Rancheria is partnering with Grid Alternatives to help fulfill this role. Although the tool is not yet ready for use, it has already been an avenue to provide funding to do direct outreach for cleaner vehicles, and led to the Rancheria's first EV Expo and EV Parade in December of 2019.

The need for incorporating climate-smart resiliency into all the lifeline sectors led to the creation of the Tribe's dedicated training center, the Toma Resilience Campus. This initiative creates physical space for the realization of five goals: regional resilience, entrepreneurship, workforce development and training, economic opportunity, and climate action. It includes makerspaces, business and job incubators, and places to hold trainings so that the need for travel is reduced. The Tribe is very aware that they live in earthquake country, they are rural, and they are remote, all of which can bring isolation quickly by way of landslides that block highways, closure of airports, and/or limited transportation in and out of the county. It is not hard to imagine potential

isolation for weeks or months while waiting for outside resources. The Toma Resilience Campus is part of the Tribe's response to developing local resources and cultivating resiliency, so that more local people can solve more local problems through the new lens of climate-smart solutions and expanded local expertise.

Economics, Funding, and Partnerships Matter

When speaking about climate action, one of the first things some people say is, "It's too expensive." Contrastingly, the Blue Lake Rancheria has proven the cost-effectiveness of a carefully managed transition to climate-smart infrastructure and looks for the places where efforts make good economic sense. As a relatively small example within their portfolio, upgrading parking lot lights to LEDs and focusing the lights more onto the lot had a very quick payback and had the added benefits of reducing energy consumption, greenhouse gases, and minimizing impacts to the dark night sky. This forward thinking, economically sensible, climate-centered approach has also allowed the Tribe to enter into successful and meaningful public / private partnerships with a variety of stakeholders at the local, state, tribal, federal, and international levels. One of the most critical partnerships has been with Humboldt State University and the Schatz Energy Research Center. Other partners include the Bureau of Indian Affairs, Bureau of Reclamation, FEMA, U.S. Department of Energy, Grid Alternatives, NREL, LBNL, the State of California, the Institute for Tribal Environmental Professionals (ITEP), and many, many more. Through these partnerships, grants and other financial opportunities help to offset the costs and provide greater capacity to complete projects that otherwise would be far too daunting. These partnerships not only allow costs to be spread among stakeholders, but also allow the knowledge transfer of leading-edge projects to create far more impact and benefits than working alone ever could. To complete the circle, staff from the Tribe then work to help other tribal governments and other stakeholders increase their capacity and abilities through participation on advisory committees and boards, conducting tours, sharing data and lessons learned from pilot projects, and demonstrating the results and replicability of projects.

The Blue Lake Rancheria tribal government has realized stacked benefits by investing revenues from tribal enterprises into climate-smart resilience and prioritizing a managed, accelerated transition to zero carbon. While the small size and remote location of the Blue Lake Rancheria are challenges, they are turning these into strengths through partnerships and serving their citizens and broader tribal and regional communities.

Tradeoffs for a small tribe with limited land can be difficult: if they use land space for solar fields, where do they grow their food, but utilizing rooftops is more expensive. These land use decisions are just one of the many difficulties in transitioning to a climate smart, resilient, and zero carbon society, but the Blue Lake Rancheria is successfully navigating the labyrinth and simultaneously raising the bar for all humans, all governments, as we transition out of the age of fossil fuels.

References

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