



STRATEGIC PLAN UPDATE

2016-2030

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THE STRATEGIC CONTEXT

Much has changed for the island of Kauaʻi since 2002, when Kauaʻi Island Utility Cooperative (KIUC) purchased Kauaʻi Electric (KE) from Citizens Utilities. Moving from an investor-owned model to a member-owned cooperative governed by an elected Board of Directors has delivered significant benefits to the Kauaʻi community as a whole.

Prior to the sale, KE had relied for decades on imported diesel fuel for its generators. This reliance increased as sugar plantations on the island shut down and KE no longer had access to renewable power supplied by the plantations via the burning of bagasse.

After the sale to KIUC, and as the cooperative established itself, oil prices rose significantly. The KIUC board realized that member bills could increase to unacceptable levels because of continued dependency on fossil fuel. At the same time, the growing concern about carbon emissions and the resulting impact on climate change caused KIUC to begin a serious examination of feasible renewable energy technologies.

KIUC embarked on perhaps the most ambitious shift to renewable energy sources anywhere in the American electric utility industry. As this strategic plan update is written in 2016, renewables have increased from six percent of sales in 2007 to 37 percent in 2016. KIUC is rapidly closing in on reaching the 70 percent renewable level by 2030—a full decade ahead of the Hawaiʻi statewide goal.

Some of that momentum is attributable to our member-owners. At the end of 2012, more than 1,200 Kauaʻi households had rooftop solar generating systems (often called “PV,” for “photovoltaic”). By 2016, there were more than 3,500 such systems, with a capacity of 21 megawatts.

In addition to the rooftop systems, KIUC has either built or collaborated with third parties on three industrial scale solar projects, including Anahola (12 megawatts), Koloa (12 megawatts), and Port Allen (6 megawatts). Three smaller privately owned solar arrays in Waimea, ʻŌmaʻo and Kapaʻa contribute 1.6 megawatts total. Currently under construction is a 13-megawatt solar array with battery storage capability adjacent to the Kapaia Power Station. This project – a partnership with Solar City and Tesla - is the first of its size in the nation.

KIUC’s renewable portfolio also includes hydroelectric systems at Wainiha, Waiahi, Kalāheo, Olokele and Waimea/Kekaha, generating a combined total of 10 megawatts to the grid. A 6-megawatt system is under construction on Gay and Robinson land, and under consideration is an additional project that would combine solar and hydro in a pumped storage system, which could produce 25 megawatts at full capacity.

In 2016, Green Energy began operating its 7-megawatt biomass plant just outside Lihue. The plant provides 12 percent of Kauaʻi’s power, and is one of the first plants of its kind in this country:

burning wood chips from invasive species and from locally grown trees. KIUC purchases electricity from the plant under the terms of a 20-year contract.

In 2016, on some individual days, KIUC derives 97 percent of its energy from renewable sources, including 77 percent from solar. On the average clear day, with solar at or close to full potential, all but one of KIUC's diesel generators can shut down. By replacing oil with renewables, the amount of carbon dioxide (CO₂) released by KIUC's power plants in 2016 is expected to fall to 225,000 tons. This is well below the 247,000 tons released in 1990, which is the baseline year for targeted greenhouse gas emission reductions according to the Kyoto Protocol.

These accomplishments are even more impressive when you consider that Hawai'i is unique within our country's energy landscape. We have no cheap natural gas, nuclear, large hydro, and little coal-fired generation (O'ahu only). Additionally, Kaua'i is unique *within* Hawai'i: no geothermal, limitations on wind due to the Endangered Species Act, and no economy of scale for many other potentially cheap renewables like biomass. So, with today's commercially available technology, KIUC is left largely with solar and small hydro to achieve its renewable goals.

Even with these challenges, fourteen years after our formation as a co-op, KIUC is regarded as one of the nation's most progressive, forward-thinking electric utilities.

2019 Progress Report. Some of the overall context in which we operate has shifted since this report was published in early 2017. For example, while electric vehicles represent a small fraction of the total number of vehicles registered on Kauai, the number of vehicles sold per year is inching upward. The pace of EV adoption and its impact on KIUC is something we will continue to monitor, as it presents opportunities such as load growth and a further reduction of greenhouse gas emissions on Kauai.

KIUC's solar generation capacity has markedly increased, with the completion of both the Tesla and AES Lāwa'i solar plus storage facilities, adding a combined total of 33 megawatts of PV and 152 megawatt hours of storage capacity. In addition, distributed solar resources have increased from 22 megawatts in 2017 to 31.3 megawatts today.

Hydropower capacity has also increased, with an additional 6 megawatts now produced by Gay & Robinson following the completion of facility improvements. KIUC is also proceeding with development of the West Kauai Energy Project: a proposed 25-megawatt pumped storage hydro facility, which will be the first in the world to incorporate solar PV as a component of the system.

With average renewable generation topping 50 percent during the first six months of 2019, coming from a mix of biomass, hydro, direct-to-grid solar and solar battery storage, we are operating one of the most progressive and complex grids on the planet. Since 2017, KIUC has experienced several brief periods of running on 100 percent renewable power. While this is a remarkable accomplishment, and one that can be easily achieved based on total renewable generating capacity, we are proceeding cautiously so as not to risk reliability during this time of grid transition.

As this astonishingly rapid strategic transformation has occurred, KIUC has proven that a progressive and aggressive approach to meeting member needs by keeping pace with new technologies can work to our members' advantage. For example, KIUC:

- Made history in 2016 by breaking ground on the electric industry's first utility-scale solar plant, with the capability to store power with batteries during the day for release to the grid during the evening peak-usage hours.
- Worked to welcome and integrate member-generated rooftop solar power into our grid, despite the technical challenges of balancing island-wide loads. Out of necessity, this has required us to discourage installation of oversize rooftop systems that produce more power than the individual member can use.
- Reduced average bills by 26 percent over the last three years, mostly as a result of low oil prices and a comprehensive focus on cost control. More importantly, our aggressive renewable progress has positioned us to protect ourselves more effectively against high oil prices that would negatively impact our members.
- Maintained high reliability with more than 99.96 percent average service availability during the last three years.
- Continued to explore new and creative uses of hydroelectric generation; expanding what we have and contemplating a new breakthrough in pumped storage technology. The new technology could enable us to use solar-generated power to pump water uphill from a holding pond to a reservoir behind a new hydro station during the day and release the water to run downhill through hydro generators at night.
- Began to explore ways to shift some legacy oil-fired generation to propane or renewable-based fuels, in order to take advantage of potential cost savings in the always volatile oil market.
- Returned \$25 million in patronage capital (i.e. excess earnings) to member-owners. This is significant in that this money stays on Kaua'i in the pockets of our members, versus being returned to off-island investors, as was the case under previous ownership.
- Rebuilt our customer service infrastructure so paying bills and interacting with us is easier.
- Continued to enhance approaches to avoid death or injury to endangered birds that collide with power lines. At the same time, we are seeking a new long-range permit intended to mitigate the impacts of our facilities.
- Began to consider moving out from under the authority of the PUC to a deregulated or minimally regulated status, which would allow us greater flexibility in responding to member concerns and unexpected changes in fuel prices and market conditions.

- Assisted efforts on other islands to create member-owned electric cooperatives. Starting with Hawai'i Island, KIUC has offered its experience and expertise to other communities.

2019 Progress Report. *Several of these items call for updates:*

- ❖ *The addition of utility-scale battery storage at the Tesla and AES facilities have had a marked impact on reliability. In 2018, KIUC led the state in reliability at 1.83 average outage hours per customer, or a 99.979 percent reliability factor. This was 11 percent better than Oahu, 52 percent better than Hawai'i Island, and 76 percent better than Maui.*
- ❖ *The West Kaua'i Energy Project (i.e., pumped storage hydro) has moved significantly forward in development, with consultants currently working on engineering design and various studies required for project approval from the Hawaii Public Utilities Commission.*
- ❖ *By the end of 2019, KIUC will have retired a total of \$32 million in patronage capital to members since its inception in 2002.*
- ❖ *Since 2017, KIUC has invested millions of dollars into information technology and cybersecurity infrastructure, significantly bolstering network security, enhancing grid operations and outage response, and improving customer service levels via on-line applications such as Smart Hub and an outage management system.*
- ❖ *KIUC's prudent fiscal management and status as a not-for-profit cooperative continues to deliver financial benefits to its members. Since becoming a cooperative in 2002, KIUC's rates have significantly stabilized compared to the investor-owned utilities on the other Hawaiian islands. For example, in 2004, KIUC's rates were 89 percent higher than those on O'ahu. In 2018, that gap had shrunk to 21 percent. This is particularly significant when you consider that Oahu has access to extremely affordable fuel (e.g., coal) and massive economies of scale not present on Kaua'i.*
- ❖ *Member engagement has increased markedly since early 2017. The number of members using our Smart Hub service more than doubled from 3,211 to 7,352 during that period. We have also increased our use of social media for member education and a resource for outage information. The number of followers on KIUC's Facebook page has increased by 67 percent since 2017, achieving a reach of nearly 500,000 views in 2018 alone. In addition, an outage map installed on KIUC's website in late 2018 has now become a primary source of information for members when the power goes out.*

What does the future hold? Our initiatives moving forward include:

- We will expand our search for alternatives to oil for legacy generating systems that must remain available to ensure adequate stability and capacity in order to meet the needs of all members.
- After concluding that liquefied natural gas is not a fuel alternative that will be embraced in Hawai'i in the near term, we have shifted to considering expanded use of propane or renewable based fuels. Prices of these products could be locked in with more future certainty than oil.

- We will continue to focus on cost control while balancing customer service and reliability. Since 2007, our staffing level has declined from 174 to 149 employees. This is evidence of how KIUC has kept pace with technology without sacrificing customer service. It also underscores the competence and flexibility of our work force.
- Because we strive to balance service levels and member costs, we are considering filing for a rate revision with the PUC. A revised rate plan would allow us to more fairly balance costs among different member types, and incentivize use during non-peak hours.
- An adequate supply of energy would have no usefulness without the ability to reliably deliver that energy through KIUC's transmission and distribution infrastructure. This network must be maintained and upgraded to ensure that KIUC's high standards for safety and reliability continue to be met.

2019 Progress Report. *Several of these items call for updates:*

- ❖ *KIUC is no longer looking to propane or renewable-based fuels as a substitute for legacy oil-fired generation.*
- ❖ *We continue to look for cost savings wherever possible, being mindful to insure that customer service levels and reliability remain high. Our staffing level now stands at 139 full-time employees, while reliability statistics for KIUC were highest in the state for 2018. Our annual survey of member satisfaction consistently reveals that our customers give KIUC its highest rankings for having courteous, professional and knowledgeable employees.*
- ❖ *KIUC currently has no plans to file for a rate revision with the Hawai'i Public Utilities Commission. A Time of Use pilot project, completed over a twelve-month period with roughly 350 member-volunteers, revealed that even a significant rate discount during daytime hours had negligible impact on energy usage during various periods of the day.*
- ❖ *Grid resiliency has become an emerging focus over the past two years, particularly in light of severe weather events that have impacted Kaua'i and communities around the globe. Fortunately, Kauai's grid was significantly hardened during the rebuild following Hurricane 'Iniki in 1992. We have also added new generating facilities throughout the island (e.g., Kapaia Power Station, Green Energy Team biomass plant, Anahola and Kōloa solar facilities, Tesla and AES Lāwa'i solar plus storage facilities), which will allow us to restore power more quickly in Lihue and remote parts of the island.*
- ❖ *In addition to the initiatives originally listed in 2017, KIUC has, since its formation, placed considerable energies toward community support. The KIUC Charitable Foundation issues grants annually to assist low-income individuals pay their utility bills and to support non-profits with charitable activities. KIUC also maintains a "Sharing of Aloha" grant program, which assists various local non-profit organizations that contribute to Kaua'i's quality of living. Each year, employee groups select a community "cause" to support: in 2017 employees participated in a work day for Habitat for Humanity, and in 2018 various park improvement projects were completed throughout the island. KIUC contributes tens of thousands of dollars annually to support various non-profit groups for their fundraising events, and employees are encouraged to participate as volunteers on non-profit community boards and commissions.*

STRATEGIC GOALS AND ACTIONS

- A. Generate at least 70 percent of electricity by using cost effective renewable resources by 2030. This achievement level will place KIUC ten years ahead of state mandates as we progress toward 100% renewable electric production by 2045.
- B. Manage technology and price risk by adding new renewable generation sources at no more than 20 percent of Kaua'i's electric usage in any single year.
- C. Hold controllable cost increases at or below the actual level of inflation, and maintain system reliability at 99.96% or better availability.
- D. Establish a rate structure that is fair between classes of members, encourages usage during lowest cost periods, and increases financial stability through greater recovery of cost through fixed charges rather than reliance on volume of electricity consumed.
- E. Maintain a safe, diverse, well trained, competitively compensated and motivated work force, aligned with organizational strategies and able to respond quickly to business opportunities and threats.
- F. Maintain a prudent financial structure and access to capital.
- G. Consider and potentially seek increased exemption from regulation by the PUC through changes in state law or PUC order. Current state law, enacted in 2013, states "the public utilities commission and the consumer advocate shall at all times consider the ownership structure and interests of an electric cooperative in determining the scope and need for any regulatory oversight or requirements over such electric cooperative."
- H. Continue to address the strategic implications of climate change, including reducing the utility's contribution to greenhouse gas emissions, adapting to the direct and indirect impacts locally and developing mitigation measures to protect the cooperative's assets.
- I. Obtain long-term incidental federal and state permits that set requirements for conservation of endangered bird species. The permitting process places limits on the number of birds that can be injured or killed in collisions with power lines or other electricity-related incidents. These incidents are called "takes." We will seek government grants, where available, to help mitigate some of the expenses associated with the application process.
- J. Obtain fixed pricing, three years in advance, for at least 25 percent of our fossil fuel requirements. Recent renewable projects have also used fixed pricing to help stabilize electric rates.
- K. Continue investing in technology to cost-effectively maintain or improve our member service offerings and utility operations, including our smart-grid, in order to continue our transformation towards a 100% renewable future and lower operating costs.

2019 Report. *While the Strategic Plan will likely not be officially updated until 2020 or later, at this juncture, there is an opportunity to clarify and expand the strategic focus of the current Board of Directors:*

- ❖ *The 2017 strategic goal for renewable generation was 70 percent by 2030. It is clear that, if all projects currently being pursued are completed as anticipated, we will far exceed this goal more than five years early.*
- ❖ *A reliability factor of 99.96 is highly desirable, and translates to roughly 3.5 average outage hours per customer. However, we believe that with the additional battery infrastructure installed since 2017, reliability of 99.97 percent (i.e., 2.6 average outage hours per customer) is a reasonable expectation for KIUC.*
- ❖ *As previously discussed, a Time of Use pilot project, completed over a twelve-month period with roughly 350 member-volunteers, revealed that even a significant rate discount during daytime hours had negligible impact on energy usage during various periods of the day. We will continue to examine our rate structure as it relates to our overall financial picture and other non-financial strategic goals, and will propose adjustments as necessary.*
- ❖ *KIUC has taken a large step over the last twelve months in improving its financial stability by completing an indenture agreement, which replaces its former restrictive loan agreement with a single lender. The indenture is a multi-lender loan agreement that is more favorable to KIUC because it allows the cooperative to borrow from any financial institution. This ensures KIUC has better access to capital in the future.*
- ❖ *KIUC continues to be fully regulated by the PUC, but in recent years has successfully received exemptions from new state legislation that applies to investor-owned utilities. We continue to study the merits of full or partial deregulation.*
- ❖ *Climate change is a growing concern and one KIUC is addressing on several fronts. Since 2010, KIUC has reduced its use of fossil fuels by 15 million gallons per year. Efforts to harden the grid and prepare for restoration following a major natural disaster are ongoing. We are also addressing the impact of sea-level rise by moving its east side service center from Kapa‘a to higher ground in Anahola.*
- ❖ *As previously discussed, we have invested millions into our technology infrastructure in recent years and will continue to do so in order to reduce cost, provide additional services and value to members, and address cybersecurity needs. For example, more and more members are using Smart Hub to pay bills, manage and track usage and report outages. Our outage map and Facebook page provide immediate information and status updates on current outages. The integration of an outage management system with our smart meter infrastructure enables KIUC’s operations, power plant and field crews to better pinpoint the location and cause of outages, leading to faster restoration. We will continue to monitor new developments in technology (e.g., electric vehicles, battery storage) to identify opportunities and challenges moving forward.*

The Strategic Plan sets the overall direction of KIUC and intends to benefit members, directors and employees.

This Strategic Plan updates and expands the Strategic Plan 2008-2023. The goal remains the same: to faithfully serve KIUC’s members with reliable, reasonably priced electricity and to improve the quality of their lives.

VISION, MISSION AND CULTURE

Vision Improve the quality of life for KIUC's members and on Kaua'i

Mission Be an energy solutions leader by:

- Safely providing reliable power that is fairly and competitively priced
- Encourage conservation and efficient use of energy resources
- Increasing sustainable power supply and environmental stewardship

Culture The culture is shaped by several elements, all critical to KIUC's success. KIUC embraces the seven cooperative principles and a Hawaiian-based values system, derived from an employee-adopted set of shared values called Ho'oka'ana Waiwai.

7 cooperative principles

- Voluntary and Open membership
- Democratic Member Control
- Members' Economic Participation
- Autonomy and Independence
- Education, Training and Information
- Cooperation Among Cooperatives
- Concern for Community

Values

- **Respect (Kupono):** treating everyone with fairness, integrity and honesty
- **Teamwork (Laulima):** looking out for each other and working together as one team toward common goals
- **Excellence (Ho'okela):** striving to provide the best professional service to our members by producing high quality work and excelling in everything one does
- **Responsibility (Kuleana):** practicing stewardship and the privilege of doing the right thing for our members in a responsive manner

KIUC BOARD OF DIRECTORS

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Calvin Murashige (Vice Chairman)
Teofilio Phil Tacbian (Secretary)
Peter Yukimura (Treasurer)
Dee Crowell
David Iha
Patrick Gegen
Allan Smith

The KIUC Board of Directors would like to acknowledge former Director Dennis Esaki, who made valuable contributions as Chair of the Strategic Planning Committee throughout most of the update process.

The 2019 Review was conducted by the KIUC Board of Directors:

Allan Smith (Chair)

Jan TenBruggencate (Vice Chair)

Calvin Murashige (Secretary)

Peter Yukimura (Treasurer)

Dee Crowell

David Iha

Janet Kass

James Mayfield

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