



Hawaiian Electric
Maui Electric
Hawai'i Electric Light

2017-2018

Sustainability Report

SMART,
SUSTAINABLE,
RESILIENT
COMMUNITIES





The Smart, Sustainable, Resilient Communities Vision

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brings together data, technology and ingenuity to help our communities be cleaner, more efficient, more sustainable and less vulnerable. Working with our community partners, the ultimate objective is to improve everyone's quality of life.

Smart

Using data and technology to improve the efficient, equitable distribution of public services and connectivity

Sustainable

Being responsible stewards of our natural resources and using them to reduce our reliance on imported goods, especially food and fuel, and diversifying our economy through clean technology job creation

Resilient

Acknowledging the vulnerability of islands to natural disasters, geopolitical turmoil and effects of climate change and taking steps to adapt or reinforce infrastructure to minimize disruption and to accelerate recovery

Communities

Our renewable energy future can be made possible by working closely with our communities and other partners. Through volunteerism, financial support and innovation, we will protect our 'āina, build community capacity and become a world leader in sustainability

Letter from the President



Aloha,

For the people of Hawai'i, sustainability isn't a new movement. The concepts of using natural resources responsibly, protecting the land and the water, and minimizing waste come naturally to those of us who live on islands.

This understanding drives our work to keep Hawai'i on the path to energy independence. In 2017, the Hawaiian Electric Companies achieved a consolidated renewable portfolio standard of 27 percent, up from just 9 percent a decade ago.

Some days, when conditions are right, 70 to 80 percent of electricity demand is being met with local renewable resources including solar, wind, water, geothermal and biofuel. This is just one accomplishment noted in this report.

Our Power Supply Improvement Plan is a roadmap for how we will reach our next renewable energy milestones. We've undertaken the largest renewable energy procurement effort in state history. And our comprehensive grid modernization program will enable us to bring online more renewables, including grid-scale and private rooftop solar, and enhance the resilience of our energy delivery network.

We're also using technology to make it easier to connect with us. We created a new online tool, the first of its kind, to enable customers to file rooftop solar interconnection applications online and follow the progress of their application from start to finish.

And we now have an app for mobile devices that includes an outage map for O'ahu and that will soon provide handy customer service options.

With electric vehicle ownership continuing to expand dramatically in Hawai'i, we're installing fast chargers to fill in coverage gaps around the islands and are looking for new ways we can bring charging to workplaces and apartment buildings. We're also working with local government and businesses to convert buses to clean, quiet electric power.

We want the conversation to move beyond electricity. Our efforts aren't just about getting off fossil fuels. We want to use technology and ingenuity to build strong, sustainable communities. If we do this right, the move to renewable energy can also be about economic growth, new jobs and environmental stewardship.

I'm very proud of our companies' progress and I look forward to our continued work with our communities to make Hawai'i stronger and more sustainable.

Mahalo for allowing us to serve you,

A stylized, handwritten signature in black ink, appearing to read 'Alan'.

Alan Oshima

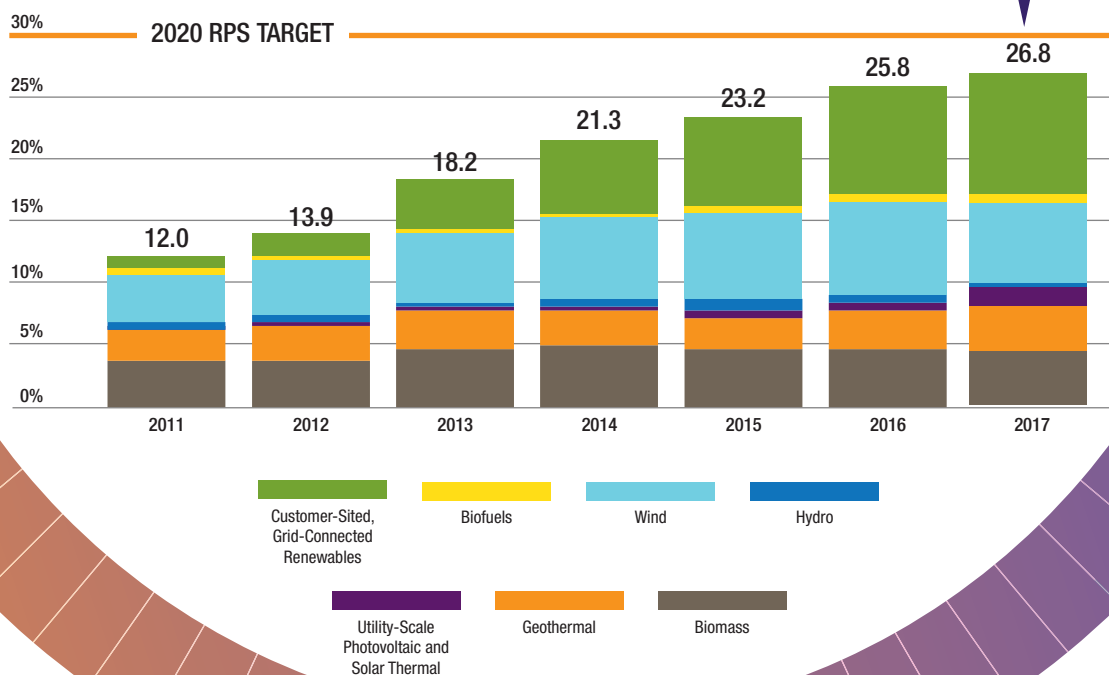
President and Chief Executive Officer
HAWAIIAN ELECTRIC COMPANY

Progress on the Path to Clean Energy

The Hawaiian Electric Companies are committed to a 100 percent renewable future for Hawai'i and are on track to hit the 2020 target of 30 percent renewables. We've also lowered greenhouse gas emissions from our generators and have significantly reduced the amount of oil we use.

WE ARE ON TRACK TO REACH OUR 2020 GOAL

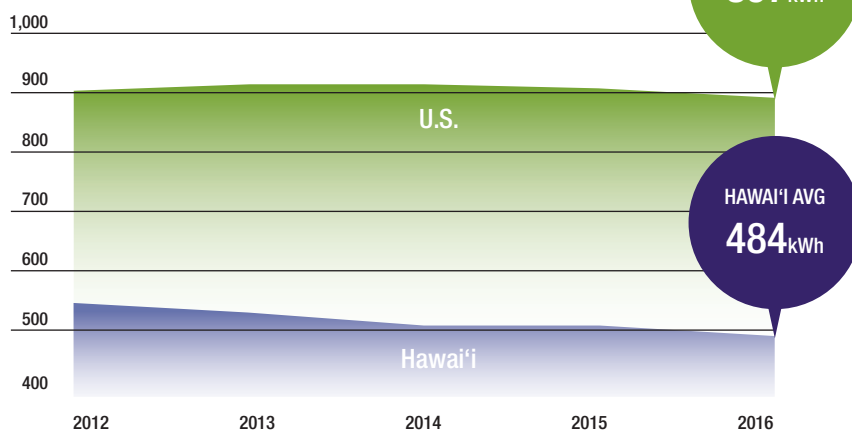
Renewable Portfolio Standard Progress



Average Residential kWh Usage

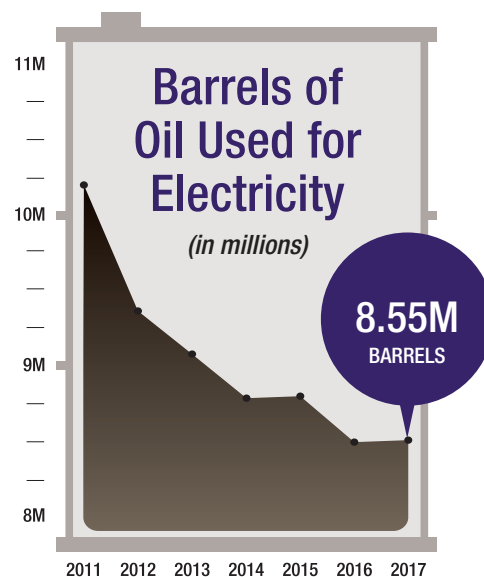
(Monthly usage per household)

SOURCE: Edison Electric Institute



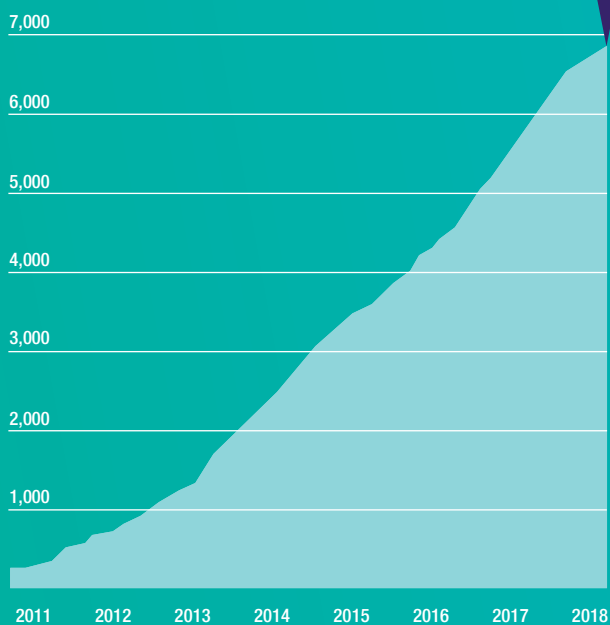
Barrels of Oil Used for Electricity

(in millions)



Passenger EV Registrations

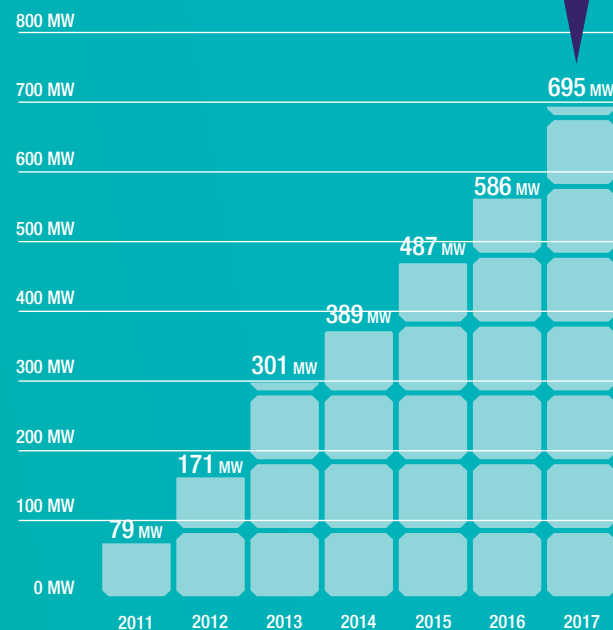
(as of Feb. 28, 2018)



6,890
REGISTERED EVs

Cumulative PV Installations

(as of Dec. 31, 2017)

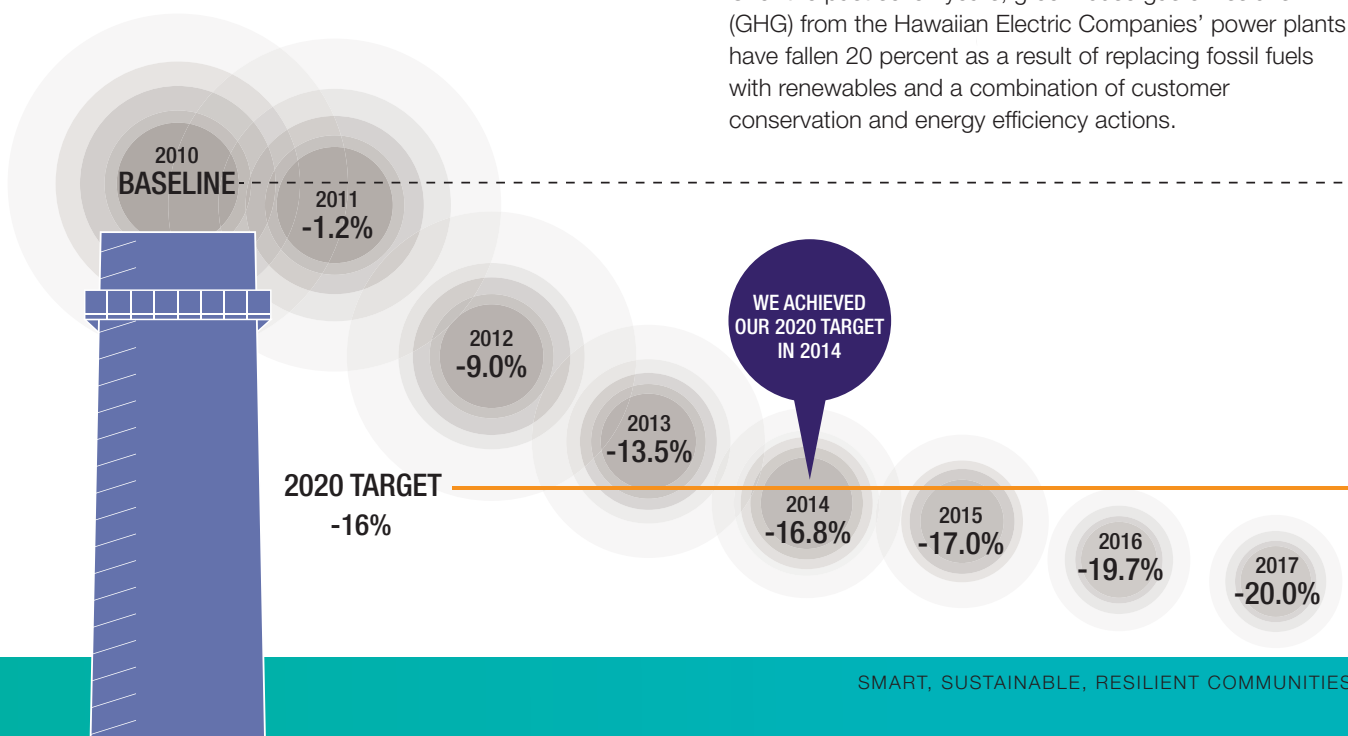


74,184
PV SYSTEMS

Greenhouse Gas Emission Percentage Reductions

(Percentage based on 2010 emission levels)

Over the past seven years, greenhouse gas emissions (GHG) from the Hawaiian Electric Companies' power plants have fallen 20 percent as a result of replacing fossil fuels with renewables and a combination of customer conservation and energy efficiency actions.



A Growing Portfolio of Renewable Generation

While traditional power plants are the foundation of our islands' electricity generation, more is coming from distributed renewable resources.

Generating Facilities

These maps show existing and planned generating facilities in our service area and the maximum potential power in megawatts (MW) they can produce.

F FIRM GENERATION: Energy available on demand, which can be adjusted as needed.

V VARIABLE GENERATION: Energy that may not always be available or controllable.

BESS: Battery Energy Storage System

	BIOFUELS		STORAGE
	BIOMASS		WASTE TO ENERGY
	GEOTHERMAL		WIND
	HYDRO		COAL
	CUSTOMER-SITED SOLAR		OIL
	GRID-SCALE SOLAR		OIL (DEACTIVATED)

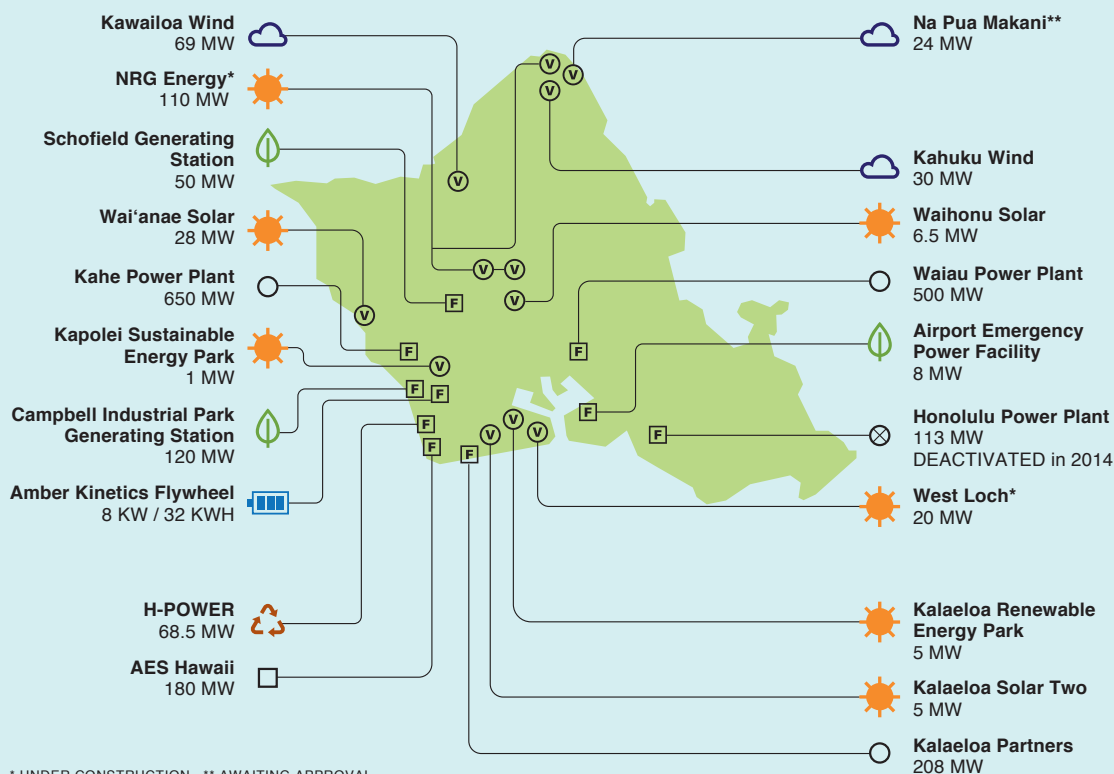
O'AHU

21%
RENEWABLE ENERGY

RENEWABLE MIX

- 9%  Customer-Sited Solar
- 6%  Waste to Energy
- 3%  Wind
- 2%  Grid-Scale Solar
- 1%  Biofuels

53% RENEWABLE PEAK
(August 17, 2017)



HAWAI'I ISLAND

 **Customer-Sited Solar**
90 MW

57%

RENEWABLE ENERGY

RENEWABLE MIX

31%  Geothermal

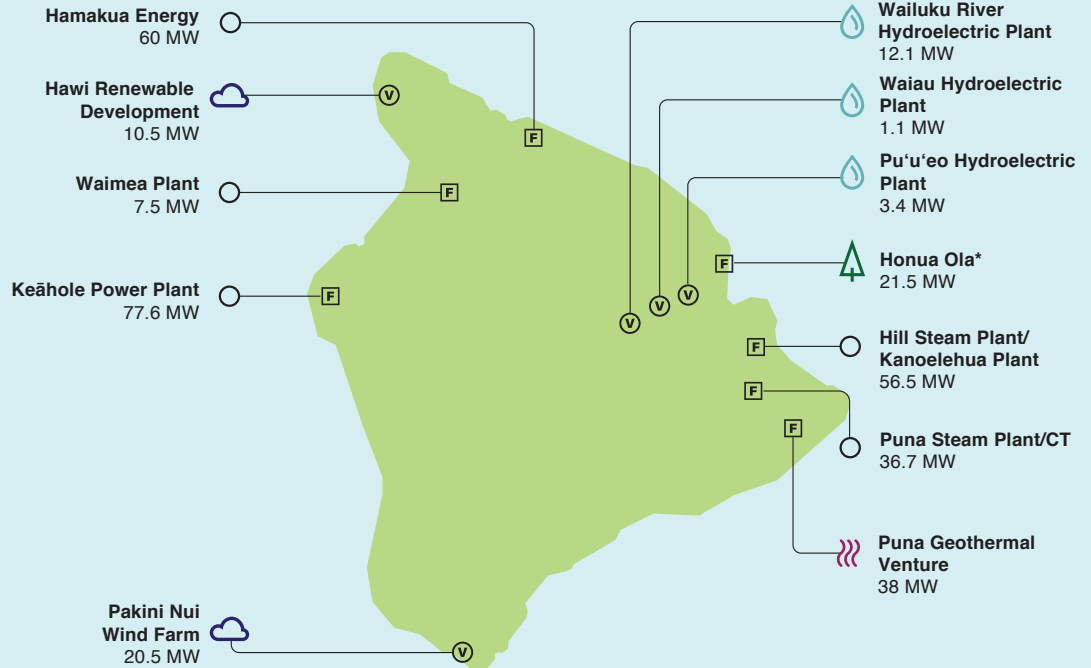
12%  Customer-Sited Solar

10.5%  Wind

3%  Hydro

.4%  Grid-Scale Solar

83% **RENEWABLE PEAK**
(December 3, 2017)



* UNDER CONSTRUCTION

MAUI COUNTY

 **Customer-Sited Solar**
103 MW

34%

RENEWABLE ENERGY

RENEWABLE MIX

21%  Wind

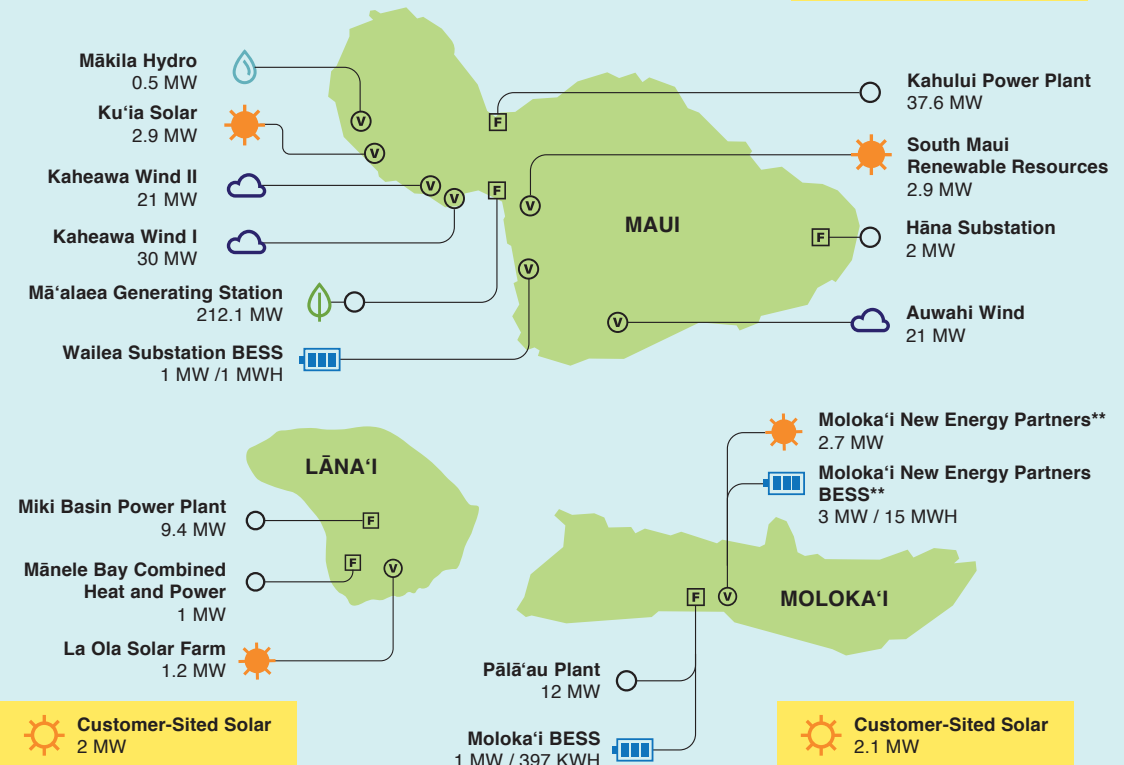
12%  Customer-Sited Solar

1%  Grid-Scale Solar

.1%  Hydro

.1%  Biofuels

77% **RENEWABLE PEAK**
(June 4, 2017)



** AWAITING APPROVAL

Smart

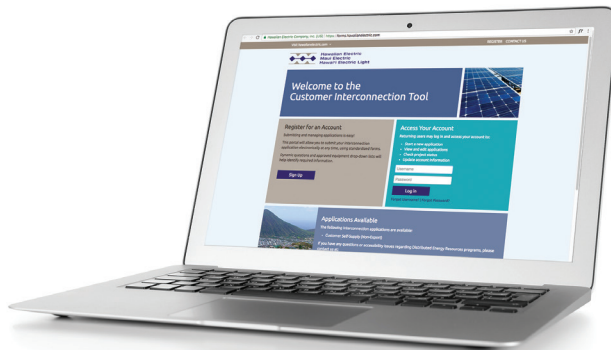
Using data and technology to improve the efficient, equitable distribution of public services and connectivity.

Customer Choice

Our companies strive to make it easier for customers to connect with us and provide options that allow them to make informed decisions about their energy consumption.

Time-of-Use Rates

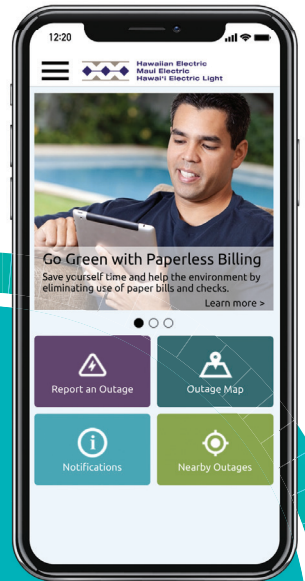
Customers across our service area are taking advantage of our **Residential Interim Time-of-Use (TOU) Rates** to lower their bills. The optional two-year program, launched in September 2016, lowers rates for residential customers for power used during the day when solar production is highest. Rates increase during peak evening hours.



The Customer Interconnection Tool

A new online tool for customers applying to install private rooftop solar is making the process simpler and easier. The Customer Interconnection Tool is the first of its kind to provide a seamless, start-to-finish online solar application that allows our customers to check the progress of their applications from submittal to finalizing the agreement.

Hawaiian Electric Mobile App



Features

- Outage information
- Report outages
- Paperless billing
- Time-of-Use rates
- Instant alerts on utility work and weather-related events

Coming soon

- Bill payment options
- Usage monitoring
- Customized account notifications
- Service starts, stops



“To provide customers more energy choices, we are constantly testing innovative technologies – from advanced inverter functions to secondary var controllers – so that we can integrate more rooftop solar while maintaining grid reliability.”

Marc Asano,

Principal Distribution Planning Engineer

Marc has spearheaded long-range plans and strategies for the integration of distributed energy resources and played an instrumental role in developing the Hawaiian Electric Companies' Grid Modernization Strategy.

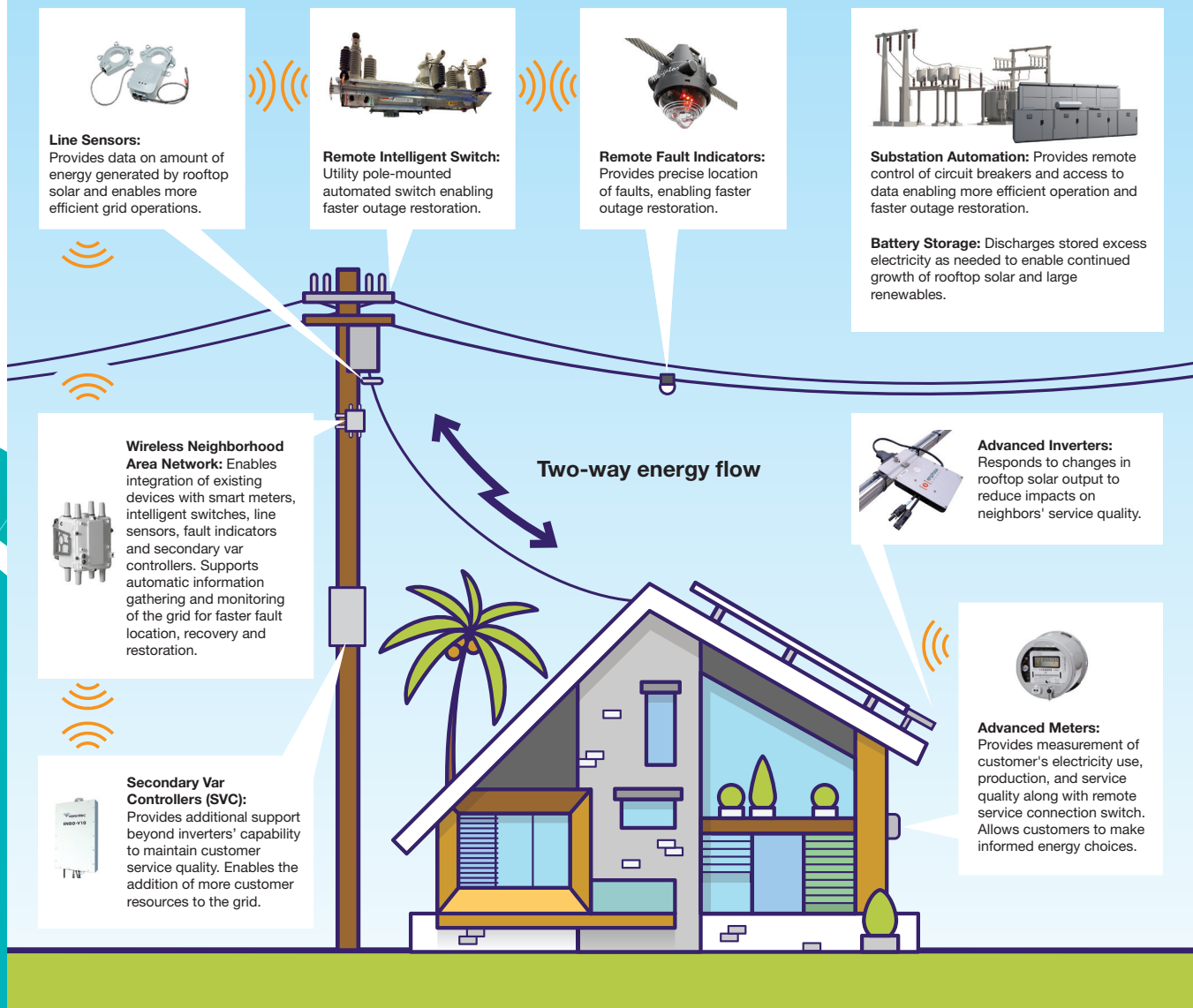
Grid Modernization

Modernization of our electric grids is taking shape in multiple ways and the approval of our Grid Modernization Strategy, “Modernizing Hawai‘i’s Grid for Our Customers,” was a major step.

The plan, which incorporated stakeholder and customer input, provides the scope, purpose and estimated cost of the work required to build a more resilient grid that is able to take on more renewables. Below is the proposed setup that enables two-way energy flow to lay the foundation for a smart, resilient grid of the future.

Two-Way Energy Flow

Customers’ resources are an important part of the grid.
Reliability is critical as more and more customers provide resources to the grid.



Grid Modernization Initiatives Underway

The Hawaiian Electric Companies can now activate Volt-VAR, Volt-Watt and Frequency-Watt functions of advanced inverters. Activating these inverter functions in rooftop solar systems can help regulate voltage and avoid interconnection studies and distribution upgrades, which saves customers time and money. A pilot project testing these advanced inverters launched on O'ahu.

O'AHU

Hawaiian Electric completed a pilot project with Varentec using its Edge of Network Grid Optimization (ENGO™) devices to add more capacity for private rooftop solar in a Kailua neighborhood. The second phase of the project, co-funded by Elemental Excelsior, will expand to Kahuku, Waimānalo and Mānoa.

MAUI

Maui Electric is developing two new integrated substations, Kuihelani and Ka'ono'ulu, which will provide the capability to integrate more renewable energy resources to the grid through improved monitoring and the latest communications equipment. The substations will support increased energy demands in the growing Central and South Maui areas.

MOLOKA'I

On Moloka'i, Maui Electric installed five TripSavers to help isolate and protect the system during outages and 25 Smart Fault Current Indicators that provide quicker outage detection capabilities.

HAWAI'I ISLAND

Hawai'i Electric Light installed about 100 GridAdvisor II units, or intelligent fault indicators, that report back through cellular communications and provide outage detection and load information. TripSavers have helped prevent several outages.

Innovation

We continue to uphold our companies' mission of "Innovative energy leadership for Hawai'i." From energy storage to demand response programs, we are expanding customer options and hitting key renewable benchmarks – all through innovation.



Demand Response

The companies are moving forward with demand response programs that will provide financial incentives for customers who use their own equipment to participate in the management of the electric grid. Demand response will initially be available on O'ahu and Maui with the other islands to follow. The program allows the utility and its demand response partners to control customers' equipment in a way that impacts their energy demand if there is a sudden shortfall of electricity available on the grid. Demand response could potentially shift hundreds of megawatts of electricity from thousands of participating homes and businesses to enhance grid stability.



Unmanned Aerial Vehicles

Hawaiian Electric used unmanned aerial vehicles, or drones, in a variety of projects such as an environmental study at Joint Base Pearl Harbor-Hickam's West Loch Annex where the company will build a 20-megawatt (MW) solar energy facility. Using drone-mounted sensing equipment instead of cutting away vegetation across the rugged terrain was less expensive and avoided disruption of soil and plant life.

A New "Green Tariff" Initiative

between the Hawaiian Electric Companies and the University of Hawai'i is designed to bring more renewable energy resources online. The two organizations signed an agreement to develop a "green tariff," subject to PUC approval, for projects that increase renewable energy generation, improve grid capacity for renewables and lower energy costs. The green tariff could be available to other institutions if the university's projects can provide renewable electricity at lower rates.

ENERGY STORAGE

Innovative 4-hour Flywheel Energy Storage System

Amber Kinetics, Inc. and Hawaiian Electric have installed the world's first commercially available, 4-hour flywheel energy storage system at our Campbell Industrial Park generating station on O'ahu. Amber Kinetics' innovative 8-kilowatt, 32-kilowatt-hour flywheel is capable of charging and discharging electricity for multiple cycles per day with no loss of capacity over a 20-year-plus service life. The pilot project is jointly funded by Hawaiian Electric and Elemental Excelsator.

Advanced Vanadium Energy Storage System

Hawai'i Electric Light is installing a 100-kilowatt/500-kilowatt-hour advanced vanadium energy storage system at the Hawaii Ocean Science and Technology Park, in partnership with Ulupono Initiative, UniEnergy Technologies and the Natural Energy Laboratory of Hawaii Authority, which administers the HOST Park. Sandia National Laboratories is providing technical assistance and research on how this type of chemical battery performs in a semi-tropical climate and on an island grid.



Moloka'i Battery Energy Storage System

Moloka'i Battery Energy Storage System

The Moloka'i Battery Energy Storage System came online and is designed to support the island's grid during times of instability caused by uncontrolled photovoltaic ramping and other generation issues.

Grid-Responsive Energy Storage and Management

Hawaiian Electric and Stem, Inc. successfully tested nearly one megawatt of intelligent energy storage deployed at 29 commercial customer sites on O'ahu. As a fleet, these systems operate as a "virtual power plant." The controlled operation of this aggregated energy storage was a first-of-its-kind collaborative pilot supported by the Elemental Excelsator and U.S. Department of Energy's Sustainable and Holistic Integration of Energy Storage and Solar PV (SHINES) initiative and was honored with a Transformational Award from the Hawai'i Energy Policy Forum.

Sustainable

Being responsible stewards of our natural resources and using them to reduce our reliance on imported fossil fuel will keep billions of dollars from leaving the state economy.

Power Supply Improvement Plan Guides Action

The Hawaiian Electric Companies ended 2017 with 27 percent of electricity used by customers coming from renewable resources, up from 26 percent a year before.

We also made steady progress adding more renewables, reducing dependence on fossil fuels, and cutting greenhouse gas and other emissions.

The companies' Power Supply Improvement Plan charts near-term actions and a long-term vision to ensure that 100 percent of Hawai'i's electricity generation comes from renewable resources by 2045, or earlier. It's the most ambitious clean energy goal in the nation.

To maintain reliability of electric service, the plan also calls for adding energy storage, incentives for customers to better manage their electricity use and other technologies to accompany new renewable resources.

Rooftop Solar Integration

17% vs **1%**
HAWAI'I NATIONAL AVG.

We have integrated the highest percentage of customers using rooftop solar.

The PSIP anticipates
MORE THAN DOUBLING
the integration of private
systems by 2030

ESTIMATED
165,000
PRIVATE SYSTEMS
BY **2030**

Community-Based Renewable Energy

The companies are gearing up for community-based renewable energy so that the benefits of clean energy can be shared with customers such as apartment dwellers and renters who have not been able to take advantage of private rooftop solar – including low- and middle-income customers. Customers who wish to participate will purchase an interest in the energy from a community solar facility. Their monthly electric bills will be credited for the amount of solar energy output from their portion of the project.

By 2022,
We are
Seeking
to Add:

220

MEGAWATTS

RENEWABLE ENERGY
GENERATION FOR
O'AHU

100

MEGAWATTS

RENEWABLE ENERGY
GENERATION FOR MAUI
(INCLUDES 40 MW OF FIRM
RENEWABLE GENERATION)

70

MEGAWATTS

RENEWABLE ENERGY
GENERATION FOR
HAWAI'I ISLAND

Grid-Scale Projects

West Loch Solar

Hawaiian Electric is building a 20-megawatt solar energy facility at Joint Base Pearl Harbor-Hickam, West Loch Annex. The solar array will produce the lowest-cost solar energy in the state to date – 8 cents or less per kilowatt-hour – and is expected to be in service by December 2018, serving all O‘ahu customers, including those on base. The low-cost energy from West Loch is expected to save customers at least \$109 million over its expected 25-year lifespan.

Wai‘anae Solar

The 28-megawatt Wai‘anae Solar project is the largest solar facility in operation in Hawai‘i to date and generates electricity equivalent to that used by about 11,000 homes for a year.

Hū Honua Bioenergy

The company building a biomass power plant at Pepe‘ekeeo, Hawai‘i Island, has renamed itself Honua Ola, which means “living earth.” Construction continues at the site of the power plant which, when completed, will produce up to 21.5 megawatts of firm, renewable power fueled by locally grown eucalyptus trees. An in-service date has not been set.

NRG Energy, Inc.

NRG Energy, Inc. broke ground for three large solar facilities, one of which will become the state’s largest, in Central O‘ahu and the North Shore totaling 110 megawatts. The facilities are expected to be in service in late 2018 or early 2019.

Moloka‘i New Energy Partners

Maui Electric has agreed to buy electricity from a grid-scale solar and battery energy storage facility to be built by Moloka‘i New Energy Partners. The 2.7-megawatt project is expected to be in service by the end of 2019. If approved by regulators, it would be the island’s first large-scale solar facility and would include a 3-megawatt battery energy storage system (BESS).



Honua Ola power plant rendering



Wai‘anae Solar



Wind Energy in Kahuku

Based on the Power Supply Improvement Plan, the companies have launched the largest renewable energy procurement effort in the state’s history, seeking nearly 400 megawatts of new generation by 2022.

Advancing the Electrification of Transportation in Hawai'i

We are focused on initiatives to advance the switch from gasoline to electric vehicles, helping to reduce Hawai'i's dependence on imported oil, eliminating tailpipe emissions and putting our abundant solar resources to work.

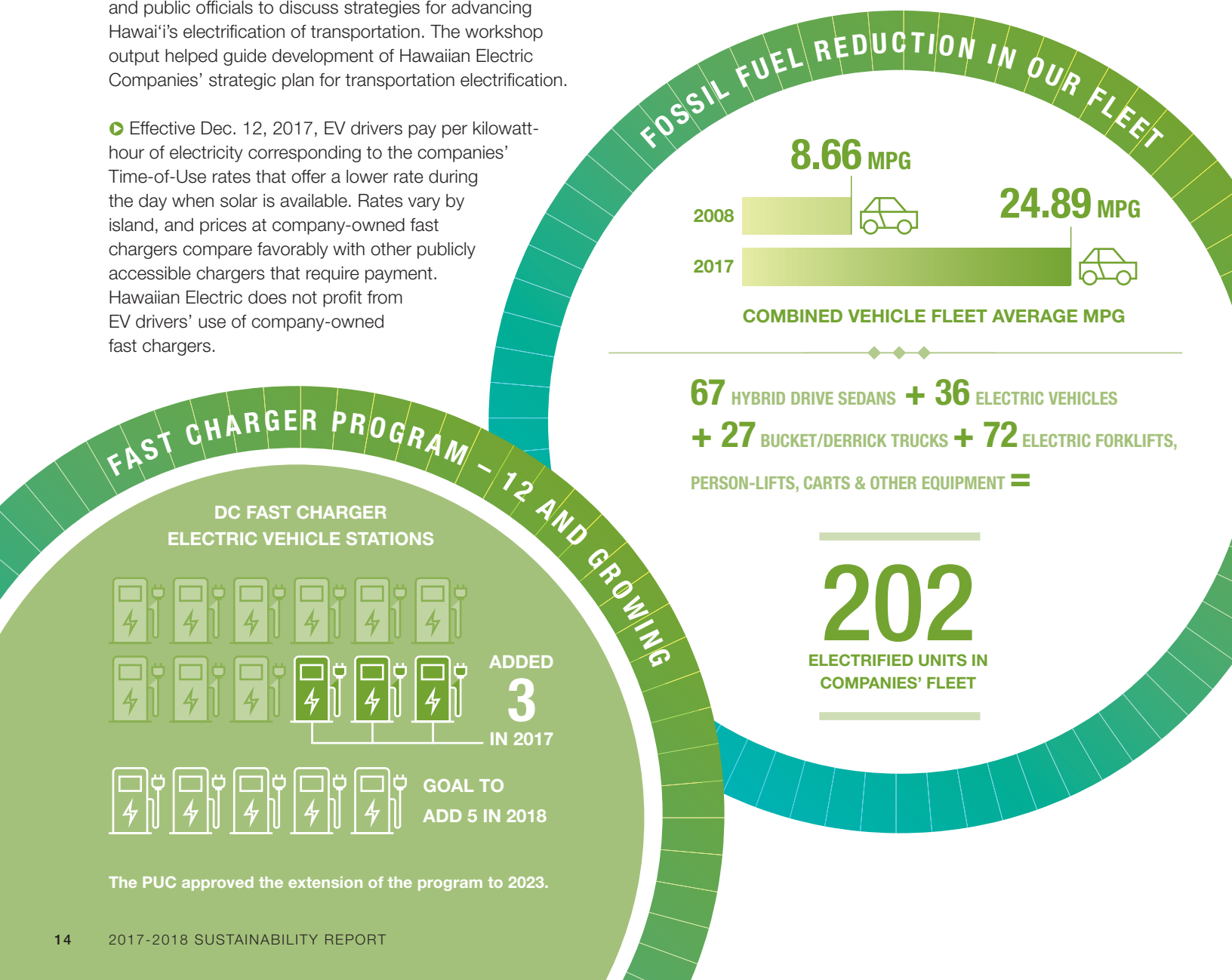
► We're collaborating with Drive Electric Hawai'i, a coalition of eight key organizations, on electrification of ground transportation. The companies provided support for the launch of the organization's website and its Electric Island Drive and EV Fair in Honolulu.

► The companies hosted a first-in-Hawai'i conference of energy and transportation experts, dealers, manufacturers and public officials to discuss strategies for advancing Hawai'i's electrification of transportation. The workshop output helped guide development of Hawaiian Electric Companies' strategic plan for transportation electrification.

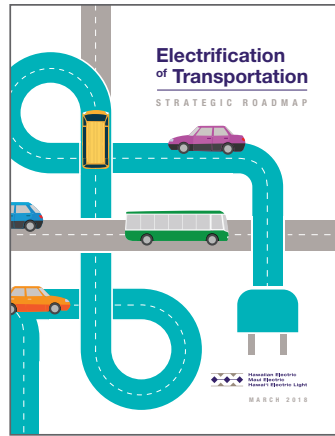
► Effective Dec. 12, 2017, EV drivers pay per kilowatt-hour of electricity corresponding to the companies' Time-of-Use rates that offer a lower rate during the day when solar is available. Rates vary by island, and prices at company-owned fast chargers compare favorably with other publicly accessible chargers that require payment. Hawaiian Electric does not profit from EV drivers' use of company-owned fast chargers.



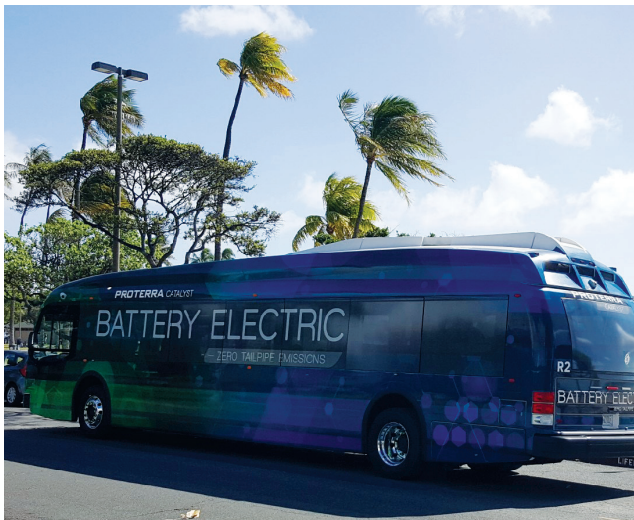
We hope to have 17 company-owned fast chargers available by the end of 2018 to serve the growing numbers of EVs in Hawai'i.



Our Electrification of Transportation Strategic Roadmap describes near- and long-term actions to create a clean energy future and reduce dependence on imported fossil fuel for transportation as well as electricity. The plan foresees Hawai'i in 2045 with most vehicles powered by electricity generated by solar, wind, biofuels, geothermal and other renewable resources. Using the electric grid to charge vehicles and equipment can lower the cost of electricity to all customers, provide economic benefit to the state and facilitate the integration of more renewable energy resources. See the roadmap at www.hawaiianelectric.com/GoEV



Hawai'i has the second highest rate of EV adoption per capita in the U.S.



Electric Buses

The companies facilitated a pilot project between the counties and Proterra Inc., which manufactures zero-emission electric buses. Honolulu unveiled its first fully electric bus during a six-week pilot that put the 70-passenger electric bus on several O'ahu routes. The Proterra bus gets the equivalent of 26 miles per gallon compared to regular diesel buses, which get 4. The city hopes to transition its ground fleet to entirely renewable energy sources by 2035; Maui and Hawai'i counties plan to transition their fleets by 2045.

Race to Renewables: Reaching 100% on Moloka'i Ahead of 2045

Mau Electric is working with the Moloka'i community to reach a goal of using 100 percent renewable energy years ahead of the state's 2045 target. This ambitious initiative involves grassroots community outreach, innovative utility solutions, creative customer options and alternative financing possibilities.

Through this initiative, as a small island grid with one of the highest amounts of solar penetration in the state, Moloka'i is demonstrating the potential of a number of technological solutions that may be applied on other islands.

Working to accelerate clean energy plans for Moloka'i includes continuous dialogue with the community of about 3,200 customers. In 2017, we hosted 13 roundtable discussions with more than 150 Moloka'i residents, business owners and students.

More meetings are being held in 2018 to enable the community to consider a number of paths that could be used to not only increase the use of renewable resources but provide economic development opportunities as part of our Smart, Sustainable, Resilient Communities effort.

“...Moloka‘i is demonstrating the potential of a number of technological solutions that may be applied on other islands.”

A promising new project is a grid-scale solar and battery energy storage facility to be built by Moloka'i New Energy Partners. The 2.7-megawatt project is expected to be in service by the end of 2019. It would be the island's first large-scale solar facility and would include a 3-megawatt battery energy storage system (BESS).

Realizing that Moloka'i residents cannot bear the full cost of a 100 percent renewable future alone, much less on an accelerated schedule, alternative means of funding the needed investments are being explored via third-party funding sources, grants and tax credits.



Hawaiian Electric Companies Renewable Energy Planning Principles

1

Renewable energy is the first option.

We are pursuing cost-effective renewable resource opportunities that work toward lowering generation costs. Additional renewable resources can be added cost-effectively, ahead of Renewable Portfolio Standard requirements, as the technology of energy storage matures and costs decline. Removing Hawai'i from the volatility of world energy markets gives future generations a tremendous advantage, and creates a clean energy research and development industry for our state.

2

The energy transformation must include everyone.

Electricity is essential. Our plans, as well as public policy, should ensure that ratemaking is fair and equitable and that affordable electricity is available to everyone, especially those least able to buy self-generation and energy storage.

3

Today's decisions must be open to tomorrow's breakthroughs.

Our plans keep the door open to developments in the rapidly evolving renewable generation market. We must be able to easily accept new, emerging, and breakthrough technologies that are most cost-effective and more efficient when they become commercially viable.

4

The power grid needs to be modernized.

Energy distribution is rapidly moving to the digital age. We must reinvent our grid to facilitate a 100 percent renewable energy generation portfolio and enable technologies such as demand response, dynamic pricing, grid-edge devices, and electrification of transportation. Flexible generation is also needed to better integrate renewables.

5

The lights have to stay on.

Reliability and resilience of service and quality of power is vital for our economy, for our national security, and for critical societal infrastructure. Our customers expect it, deserve it and pay for it. All of our plans must maintain or enhance the resilience of the network — the grid — that delivers energy to the military, businesses and homes.

6

Our plans must address climate change.

Power plants are significant producers of greenhouse gas emissions. We have reduced those emissions almost 20 percent over the past seven years. Still, our plans must go further to reduce the warming of our planet and to minimize the impacts of climate change on the energy-delivery network — rising sea levels, coastal erosion, increased temperatures and erratic storm activity.

7

There's no perfect choice.

No single energy source or technology can achieve our clean energy goals and every choice has an impact, whether it's physical or financial. While we can mitigate those impacts, attaining our 100 percent renewable energy goal has major implications for our land and natural resources, and the state economy. We seek to make the best choices by engaging with our customers and communities.

“Growing up, I played a variety of sports that taught me about the strength of teamwork. As a project manager, I get to experience the same collaborative spirit that goes into completing a customer project.”



Stewart Chong,
Engineering Project Manager

From leading the Stanford University men's volleyball team to a national championship to managing high-profile utility-scale renewable projects at Hawaiian Electric, Stewart Chong's ability to lead with candor, respect and inclusion are among the reasons he earned the 2017 Project Manager of the Year award from the Project Management Institute Honolulu Chapter.

Paperless Billing

By the end of 2017, nearly 19 percent of the companies' customers had switched to paperless billing. Offering utility bill e-statements is just one way to help reduce our carbon footprint and provide more convenience. Thank you to our customers across Hawai'i Island, Maui County and O'ahu who have chosen to go paperless!



“We always want to provide our customers with options and solutions. That is the driver behind the work we do.”

Ka'iulani “Lani” Shinsato,
Manager, Distributed Energy Resources Strategy and Policy



“We want to make the process for applying for our rooftop solar programs as easy as possible for our customers. And we want to provide end-to-end transparency. The Customer Interconnection Tool accomplishes those goals.”

Earlynne Maile,
Manager, Distributed Energy Resources Operations

Earlynne Maile, an engineer, and Lani Shinsato, an attorney, lead the Distributed Energy Resources department that oversees rooftop solar programs, running both operations and strategy in parallel. Public Utilities Fortnightly, which has covered the utility industry for 85 years, named Earlynne and Lani among its 2017 Fortnightly Top 40 Innovators. The magazine cited their launch of the Customer Interconnection Tool that accepts online applications for rooftop solar and their role in shaping new solar programs.

Resilient

Taking action to address the vulnerability of our islands to natural disasters, geopolitical turmoil and to the effects of climate change.

Safeguarding Our Energy

Resilience is the strengthening of physical infrastructure to withstand or limit damage caused by a physical or man-made disaster and to hasten recovery.

After a season of destructive hurricanes on the U.S. mainland and in Puerto Rico, resilience planning is taking on new urgency in Hawai'i.

Our work to strengthen our electric grids and our storm recovery planning goes on year-round, not just during hurricane season. Our companies work closely with government agencies in developing disaster plans and rehearsing responses. We have strong relationships with other local utilities, companies and contractors crucial to speeding recovery.

“Our work to strengthen our electric grids and our storm recovery planning goes on year-round, not just during hurricane season.”

We also are working to modernize and strengthen our energy grids by investing in new technology that can reduce the number and duration of outages and make the grid more resilient.

We know the choices we make now will better protect our communities in the future, and our work on resilience has put us in a strong position because of our efforts.



Hawaiian Electric Companies' Vegetation Management in 2017

381,000+

TREES TRIMMED OR CUT DOWN

\$16.9 million

SPENT ACROSS ALL THREE COMPANIES



Clearing of trees from power lines on Maui to avoid outages.



Our resilience efforts put us in a better position than many other places for these key reasons:

Hardening the Grid

We've spent more than \$1.5 billion over the past seven years to upgrade and reinforce poles, lines and equipment. Since 2011, we have replaced more than 150 transmission poles with steel poles in Central O'ahu. In 2017, we completed work replacing wooden transmission poles with steel poles anchored in concrete on Kamehame Ridge in East O'ahu.

Tree Trimming in Remote Areas

Because most outages during storms are caused by trees falling on power lines, we have expanded tree-trimming operations around transmission line corridors, especially in remote areas, resulting in fewer and briefer outages during storms.

Mainland Partnerships

We have strong mutual assistance pacts with mainland utilities. Crews and equipment can be brought to Hawai'i within days.

FEMA Training

More than 200 employees received FEMA training certification in 2017 and participated in a two-day emergency drill that simulated a direct hit from a hurricane.

Schofield Generating Station

At Schofield Barracks, the U.S. Army and Hawaiian Electric are partners in a unique project that makes O'ahu's electric grid more resilient while improving the integration of renewable energy resources, such as solar and wind power.

Operational in 2018, this power plant runs on a mixture of biofuels and conventional fuels.

The energy generated by the plant will feed into the island's electric grid and serve all customers on O'ahu. In the event of an emergency, the facility will be able to isolate itself as a critical operations center to assist with the recovery of the entire island.

"Schofield is the only power plant on the island located inland, away from any coastal impacts from storms or tsunami, and is well protected on a secure Army base."

The plant features modern, flexible and efficient generators that will complement increasing levels of solar and wind power on the O'ahu grid. The generators will be capable of quickly starting up, shutting down or changing their output in response to sudden changes in solar and wind energy resources.

"When (Tropical Storm) Iselle came through, that just drove home that it's very important to stay ahead of vegetation. It's important from a public safety aspect because trees, vegetation and utility lines – they don't get along."

Rich Wlosinski, System Forester



Rich Wlosinski, who holds a degree in urban tree management, began working full time for Hawai'i Electric Light in 1996. More recently, damage from Tropical Storm Iselle focused more attention on vegetation clearing and Wlosinski now has more resources to get the job done.

Communities

Our renewable energy future can be made possible by working closely with our communities. Through volunteerism, financial support and pursuing innovative initiatives, we will protect our 'āina, build community capacity and become a world leader in sustainability.

Environmental Partnerships and Stewardship

For the Hawaiian Electric Companies, investing in natural solutions to mitigate climate change is a fundamental part of our efforts to protect the environment while enhancing the safety and quality of life for all Hawai'i residents.

Greening the 'Āina

Healthy forests absorb CO₂, reduce soil erosion and runoff into streams and oceans, and serve as a thriving habitat for protected and endangered native wildlife. We supported these greening efforts:

▶ Ola Nā Kini, a verse from a Hawaiian pule (prayer) that translates to “life for the multitudes,” is a new, ambitious, long-term program by the nonprofit Mālama Learning Center to regenerate native and edible forests in the South Wai‘anae mountain watershed through community engagement and education.

▶ Hui o Ko‘olaupoko, a windward O‘ahu nonprofit, is working to protect ocean health through community-based, hands-on watershed restoration and invasive species management at project sites restored and maintained by volunteers.





Hawaiian Electric employees join with Hui o Ko'olaupoko and community volunteers to revitalize Kaha Native Garden in urban Kailua.



The HEI Charitable Foundation's donation to Hui o Ko'olaupoko helps the nonprofit's work within the He'eia Estuary.



Maui Electric partners with the Maui Nui Botanical Gardens annually as one of the co-sponsors of the Arbor Day 1,000 Hawaiian Trees Giveaway.

TOP LEFT: As part of the Ola Nā Kini program, Hawaiian Electric's Environmental Department spearheads a workday at Camp Pālehua to clear the land and plant wiliwili and 'a'ali'i trees in partnership with Mālama Learning Center, The Outdoor Circle and Dr. Camilo Mora of the University of Hawai'i.

BOTTOM LEFT: Scott Seu, Hawaiian Electric senior vice president-public affairs, presents a check to Pauline Sato, Mālama Learning Center executive director, for its Ola Nā Kini reforestation initiative.



"As a scientist, I enjoy the process ... of gathering data, collaborating with stakeholders, creating programs and building awareness about Hawai'i wildlife. Mostly, I love seeing the shift toward wildlife stewardship."

Sean Moura,
Environmental Scientist
and Wildlife Biologist

A Kaua'i native, Sean's curious nature and love of the great outdoors easily transpired into his career. At Hawaiian Electric, Sean is responsible for managing the company's protected species program to ensure company operations minimize impact to protected and endangered species across our service areas.



Hawai'i Electric Light is one of the co-sponsors of the Ho'oulu Lāhui Arbor Day Tree Giveaway and hosts the giveaway at its Hilo office location.



Hawaiian Electric's 25th annual Arbor Day Tree Giveaway – a partnership with the O'ahu Urban Garden Center and the Kaulunani Urban & Community Forestry Program.

Protecting Wildlife in Hawai'i

We've incorporated protected species concerns in our operations through employee awareness and training, facility lighting programs, construction design standards, site protocols and public partnerships like these:

▶ Since 2007, Maui Electric has partnered with the Department of Land and Natural Resources, Division of Forestry and Wildlife, Maui County and National Park Service on the "Save our Seabirds" public awareness campaign. The program fosters public cooperation in rehabilitating downed seabirds during the fledgling season in Maui County.



Maui Electric environmentalist Brittani Capps (far left) with Save our Seabirds partners.

▶ Hawaiian Electric joined other agencies and companies in supporting the new O'ahu Seabird Aid Program launched in November by the Hawai'i Wildlife Center. The collaboration helps streamline a downed seabird response program and builds response capacity on O'ahu.

▶ The Pacific Rim Conservation, a Hawai'i-based organization, is working to translocate seabird chicks from low-lying atolls in the Northwestern Hawaiian Islands threatened by sea level rise to new breeding colonies at the James Campbell National Wildlife Refuge in Kahuku, O'ahu.

Mālama 'Āina – to Care for the Land

As a company doing business in Hawai'i for 126 years, we have a keen understanding of the need to preserve and protect our natural resources.

Every day, we strive to maintain and enhance the environment in these islands we call home, while ensuring reliable service to our customers. Employees contribute their time, labor and talent to many causes, all to ensure that we leave the next generation a better place than we inherited.

Conservation of Environmental and Cultural Resources

Honolulu is the only city in the United States where manu-o-Kū, a native Hawaiian seabird also known as the white tern, can be found nesting amidst the urban sprawl and laying their eggs directly onto tree branches. To help conserve the species, employees from our Environmental and Legal departments join other citizen science volunteers with the nonprofit Hui Manu-o-Kū to observe and document the seabirds' nesting sites, development, behaviors and more throughout the year. Since 2007, manu-o-Kū has been designated the official bird of the City & County of Honolulu.



"I've been fortunate to interact with biologists from Haleakalā National Park, DLNR and Maui Nui Seabird Recovery Project. I've also learned a lot about our protected species and I feel a deeper connection to the islands as a result."

Brittani Capps, Environmental Compliance Engineer

A former Kentucky resident now living on Maui for more than a decade, Brittani is responsible for managing Maui Electric's protected species program that has grown from a focus on seabirds to a variety of species that can be found only in Maui County.

Cleaning Up Opala (Trash)

RIGHT: Employees at Hawai'i Electric Light and Maui Electric volunteer to help beautify their communities through the Adopt-A-Highway program. In addition to a cleaner roadside, the effort prevents pollutants from entering storm drains, streams and the ocean.



LEFT: Hawaiian Electric employees participate in the City & County of Honolulu's annual Pearl Harbor Bike Path cleanup in April, working along a section of the path behind the Waiiau Power Plant. These cleanup efforts improve the safety of the path used by bikers and pedestrians, and helps keep streams and storm drains clean.



Helping Out Our Community in 2017



4,485
VOLUNTEERS /
FRIENDS / FAMILY



14,461
HOURS OF SERVICE



\$1.01 Million
TOTAL DONATIONS



3,589
POUNDS OF FOOD



1,081
PINTS OF BLOOD



In partnership with The Trust for Public Land and other local companies, about two dozen Hawaiian Electric employees participate in a community workday at Waimea Valley to maintain this cultural oasis and botanical garden featuring rare and endangered plants and important archeological sites. Volunteers enjoy a day of learning and mālama 'āina as they remove invasive species.

Environmental Benefits

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