



A MEMBER'S GUIDE TO THE



Kaua'i Smart Grid Initiative

MEMBER'S GUIDE TO KAUA'I'S SMART GRID INITIATIVE

The Kaua'i Smart Grid Initiative (KSGI) is an investment in KIUC. We are investing in new equipment including new meters that will help us operate more efficiently, improve reliability and serve our members better.

Thanks to different partnerships between the federal government and electric cooperatives, public power districts, and the National Rural Electric Cooperative Association's (NRECA) Cooperative Research Network, more than \$600 million will be invested to deploy digital smart grid technologies and improve service for co-op members in 28 states. The total cost of KIUC's project is \$11 million of which \$5.5 million is being provided by the Department of Energy (DOE) under the American Reinvestment and Recovery Act (ARRA), to replace about 33,000 meters with smart meters along with communications infrastructure that will allow two-way communication between the meter and the utility.

The meter upgrade provides KIUC members with numerous benefits:

- Faster outage restoration
- Potential energy savings
- Improved power quality
- Ability to monitor energy consumption
- Bill date flexibility

SMART GRID TERMS

Smart Meter: A device that measures the amount and the timing of electricity usage.

Smart meters are equipped with 2-way communications modules and have the ability to communicate with KIUC's central office computer system. They are outfitted to send measurements such as kWh, demand, and the number of times the meter has experienced a loss of power for any reason.

Advanced Metering Infrastructure (AMI):

Includes technologies and software applications that combine two-way communications with smart meters.

Automated Meter Reading (AMR): A component of AMI, AMR allows meters to report electric use back to a utility's office.

Demand Response: Programs or mechanisms that reduce electricity consumption in response to market signals or other incentives. Demand response includes direct load control, time-of-use rates, interruptible contracts, utility dispatch of consumer-owned (distributed) generation, personal energy management, and other initiatives.

Home Area Network (HAN) in the context of Smart Meters: A local area network for communication between a personal computer and various electrical appliances, equipment or systems to accomplish optimized electric energy consumption at the home.

BENEFITS



EFFICIENCY

- With remote meter reading and reconnection, we can save time and money (and reduce air pollution).
- With more detailed data about demand and usage, we can distribute power more efficiently.

RELIABILITY

- New meters help us locate—and respond to—outages faster and more safely.
- New meters can help us improve power quality, reducing surges and blinking.
- New meters mean consistent billing periods.

AFFORDABILITY

- Operating more efficiently can help minimize cost increases.
- We can use the new data to help our members address high bills.

BY THE NUMBERS

Consortium effort with 27 other cooperatives
in 11 states

Total Project involves installation of:

- 131,720 smart meter modules
- 18,840 demand response switches
- 3,859 In-Home displays/Smart thermostats
- 2,825 ZigBee gateways
- 169 voltage sensors
- 247 fault detectors

KIUC specific:

- Install 33,000 smart meters
- Install Island-wide communications infrastructure
- Install associated hardware/software
- Awarded \$5.5 million DOE funds
- 5 year demonstration project
- 2 year installation + 3 years reporting

KAUA'I SMART GRID PLAN

Installation for the demonstration project will begin in the second quarter of 2012. The five-year project will include an expected two years of installation of new meters at members' homes or businesses and installing communications infrastructure to assess smart grid effectiveness, and three years for data gathering and analysis.

ON PRIVACY & SECURITY

The data from new digital meters helps us serve our members better. Our goals in installing new meters are to deliver better service, control rising operating expenses, improve system reliability through improved outage management and preventive maintenance, and provide our members with information they can use to make informed decisions about energy use.

KIUC does not sell its members' data to any third party. KIUC abides by stringent policies protecting the privacy and security of your electric usage data. These policies can be found at www.kiuc.coop.

It is extremely unlikely that someone could access information from the cooperative's metering system. Meter manufacturers are incorporating security features and encryption technology into their meters, as recommended by national security experts. New meters allow us to determine if someone tampers with your meter.

KIUC is committed to protecting the privacy and security of our members' personal information.



ON HEALTH

Research conducted by the Federal Communications Commission (FCC), the Electric Power Research Institute, the Utilities Telecom Council and others has found no negative health impacts from digital meters that send information via a wireless communications network. The radio frequencies emitted by digital meters fall well below the maximum recommended in federal guidelines.

People are continuously exposed to very low levels of natural and man-made radio frequency fields, or RF. Even the earth's surface and the human body are constant sources of RF fields. Digital meters send information about home electricity use to KIUC by RF signals. KIUC's meters emit RF similar to that of many common household devices such as baby monitors, cordless phones, and remote-controlled toys and medical monitors.

The exposure from new meters is much lower than other common sources for two reasons:

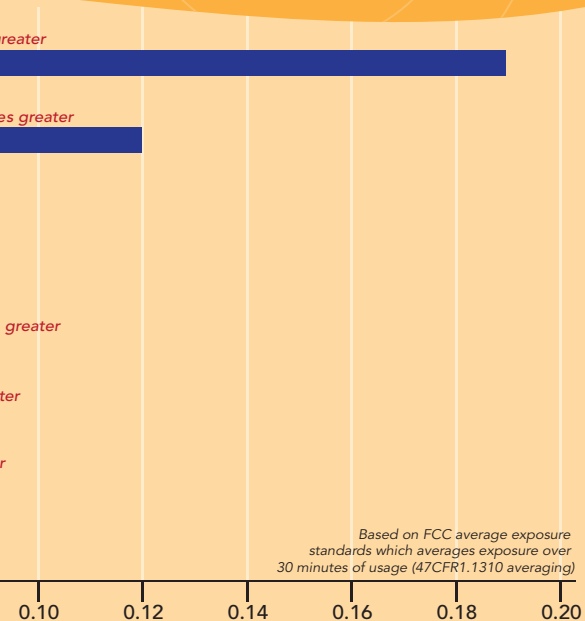
1) infrequent signal transmission, and 2) low levels.



On a daily basis, the cooperative's meters emit power for less than one minute per day. In addition, these meters are typically placed outdoors, with a wall separating the meter from the living space. This combination of placement and infrequent operation means that you would need to be within one foot of 7,000 digital meters all communicating at the same time to reach the FCC exposure limit. You can rest assured our new metering equipment is safe for you and your family. The metering products we selected underwent testing by an accredited lab to verify that they met all FCC requirements.

Your cooperative is a not-for-profit private business that is solely owned and operated by the members who receive electric service from our company. When our board of directors approves a policy or procedure for the use of new equipment and technologies, they do so knowing that it will also apply to their own homes. In using this metering system, we have not only deemed it to be a wise and safe choice for all co-op members and their families but our own families as well.

Comparison of Common Sources





FAQ's

Why are we changing to the automated meters?

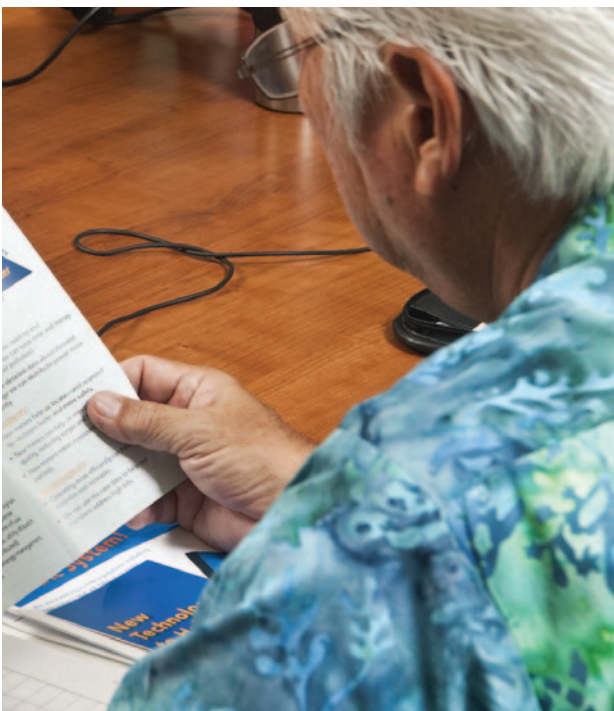
The meter upgrade provides KIUC members with numerous benefits:

- Faster outage restoration
- Potential energy savings
- Improved power quality
- Ability to monitor energy consumption
- Bill date flexibility

When will my meter be installed?

KIUC anticipates installation for the demonstration project to begin in 2012.

The five-year project will include an expected two years of installation of new meters at members' homes or businesses and installing communications infrastructure to assess smart grid effectiveness, and three years for data gathering and analysis.



Will I lose electrical service during the installation?

Yes, for a few minutes. You will need to reset electronic clocks and other devices.

How does my new automated meter work?

With these new meters, KIUC will be able to communicate with each individual meter remotely from our central office.

How much is this going to cost?

There will be no additional cost to the member to install the new system. No rate increase is anticipated in association with this project.

What other additional installation parts will I need?

No additional parts are anticipated or required. However, if something is identified as faulty or hazardous with a member's equipment, the co-op will replace it.

Who will be changing out the meters?

We anticipate employees and members from a vendor team will be changing the meters.

Do members have a choice in getting a new meter?

The plan is to install new meters on all accounts. The cooperative is embarking on a systemwide program that will change all existing residential and commercial meters to acquire more accurate information without the need to enter a member's property.

Currently, if members have a question about their energy usage, the cooperative must send operations personnel to the member/owner's property to re-read the meter. With the new system, customer service representatives can access the meter information and obtain the reading almost instantaneously.

The new system will give the cooperative frequent meter readings instead of monthly readings. The new system also will provide new data that will enable KIUC to monitor the system better and correct inefficiencies.

But what if I REALLY don't want a new meter?

While the plan is to install new meters on all accounts, KIUC management and the board are discussing an opt-out program. If the decision is made to move forward with this option, there will be a cost associated with a member's decision not to receive a new smart meter.

What is the difference between the new meters and the old meters?

The new meters are equipped with a two-way communications module and the ability to communicate with our central office computer system. The existing meters are either an electromechanical device or an older digital device.

Will I keep the same rate after the conversion?

Yes, members will continue to stay on the same rate class as they have in the past.

What if my bill reports more kWh usage than normal or I think my meter is not working correctly?

Contact the KIUC office right away at 246.4300 to discuss your billing concerns.

Electronic meters are more accurate than analog or mechanical meters. The new meters installed have been tested and meet American National Standards Institute regulations.

Will meter readers ever need to come to read the meter onsite again once the new meter is in place?

Probably not. Meter readers no longer will regularly need to spend valuable time traveling to every meter for a monthly read. All meter reads will be digitally transmitted back to co-op headquarters.

What information does the new meter record?

The new meter records an electronic kWh reading, the date and time of energy usage, the overall peak demand of the electric account, if the meter has rotated backwards, and the number of times the meter has experienced a loss of power for any reason. In fact, the meter will record the date and time of light blinks and the length of a power outage.

What day of the month will the meters be read?

All of the co-op's new meters can be read at a variety of times to obtain a history of account information. However, for billing purposes, member bills will be read on monthly schedules.

Once co-op employees no longer need to read the meter, can obstacles be constructed that may make the meter inaccessible?

No. Reasonable access to equipment still must be maintained. This allows for cooperative personnel to either read or maintain the meter, if necessary, at reasonable times.

How will the co-op read the meters?

The cooperative's computer will communicate with the substation-installed equipment which sends a request for one or more meter readings. The meter reading is sent back to the co-op via a secure network.

Will someone other than the co-op be able to read the new meter electronically?

It is unlikely. Meter manufacturers are incorporating security features and encryption technology into their meters, as recommended by national security experts. KIUC's goal is to upgrade the electric distribution system to make it safer, more secure and more reliable. Your new digital meter is part of this effort. Once your new digital meter is installed, your cooperative will be able to tell if someone "tampers" with your meter because the meter will report any tampering attempts to the cooperative.

Will the co-op continue to do service inspections?

Routine inspections of all meters and services will continue to look for safety hazards, theft or other problems.

How secure will the new meters be?

The meter display is visible for members to check their consumption. All other information and data stored in the meter is secure and the meter is sealed.

Can the cooperative disconnect electric service using the new meters?

Yes, meters have remote disconnect capabilities.

What percentage of a day is the smart meter transmitting?

Residential meters typically send data packets once every three to four hours or six to eight times per day. These low-power devices are transmitting approximately 0.01 percent of the day, at short bursts of less than one second. When they are not sending data packets they do not emit RF frequencies.

Will the new meter notify the co-op when the power goes out?

Yes. The meters will be able to record outages, allowing the cooperative to identify outages to individual households immediately.

Are there potential health impacts from a meter that can receive and send data?

The simple answer is “no,” but like any new technology, smart grid technology is triggering concerns among a small segment of consumers. KIUC is vigorously committed to the safety of its members, and will make it a priority to address any concerns in the months to come.

Research conducted by the Electric Power Research Institute, the Utilities Telecom Council and others has revealed no health impacts from digital meters. The radio frequencies emitted by digital meters fall well below the maximum recommended in federal guidelines.

Compare this activity to a laptop with a wireless connection, which is constantly sending and retrieving data.

A digital meter equipped to send and receive data has an RF density hundreds of times less than the RF density of a cell phone—and the meters are installed on the outside of your house, not next to your ear.

Will the co-op notify me prior to installation?

Yes. KIUC will send out installation schedules.

How will I know if my meter has been changed?

The co-op employee or contractor will leave a door hanger on your front door to let you know they have changed the meter. KIUC will work with businesses to minimize any inconvenience. You do not have to be present during the meter change.

Source: NRECA

LEARN THE FACTS ABOUT THIS NEW TECHNOLOGY

Informational meetings will be held on
February 9, 2012, and April 12, 2012,
from 6 p.m. to 7 p.m. in

KIUC's Main Conference Room
4463 Pahe'e Street, Suite 1
Līhu'e, Hawai'i 96766-2000



www.kiucrenewablesolutions.coop



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