



New Hampshire Electric Cooperative's Smart Grid Project Frequently Asked Questions (FAQ)

What is the project overview?

Between now and March 2013, NHEC will be replacing all of its existing electric meters with "smart meters" that are capable of sending and receiving usage data.

NHEC's Smart Grid project is actually two projects in one – the creation of a Communications Systems Infrastructure (CSI) and an Advanced Metering Infrastructure (AMI). When complete, the two projects will work together to allow your electric meter to report its readings, receive signals from NHEC and provide a wealth of usage data that you can use to control costs and manage your energy use.

Why is NHEC installing a Smart Grid system?

There are a number of benefits to both the membership and the Co-op, but first, some background...

For much of the past century, the relationship between an electric utility and its customers has been a one-way street. The utility sells electricity at a set price, sends out a meter reader once a month to record monthly usage, then sends the customer a bill. With a Smart Grid system in place, meters report their readings wirelessly several times per day. With a free web portal or in-home display that communicates with the meter, members are able to see their electric usage in daily, hourly, or even five-minute increments. Having the ability to review energy usage patterns can help members determine ways to save on energy costs and identify problems that increase energy use, such as a failing well pump. And because smart meters can send and receive data, the utility is able to provide innovative new rate structures and programs that can help consumers better understand when and how to use electricity.

Smart Grid means a number of operational efficiencies for the Co-op, including the elimination of manual meter reading and big improvements in outage reporting and management. For the first time, NHEC will not have to rely upon the member calling in to report an outage. Each smart meter is equipped with a capacitor that issues a "last gasp" signal when it loses power.

This means that NHEC will know down to the individual meter where outages are occurring and will be able to respond more efficiently.

What is the Communications Systems Infrastructure (CSI) part of the project ?

NHEC's CSI project is the communications backbone of the Smart Grid project. It is a microwave and fiber optic network connecting 20 tower sites that provide seamless communications to and from all 83,000 NHEC electric meters, from Derry in the south to Pittsburg in the far northern part of the state. The CSI is designed to work in concert with the wireless "mesh network" of meters that form the Advanced Metering Infrastructure (AMI), which will be reporting electric usage data several times a day via brief Radio Frequency (RF) transmissions.

What is a mesh network?

Think of your smart meter as one link in a big chain. Your meter will be automatically reporting readings and interval data seven times per day. Each transmission, approximately 1.5 seconds in duration, can travel up to 1,600 feet. In most cases, your meter will be reporting readings to the next closest meter, which gathers that data, adds its own readings and moves it along to the next meter in the chain. Eventually, that bundle of data reaches a gatekeeper. (Repeaters will be installed on existing poles to relay the readings of those meters that are located more than 1,600 feet away from the closest meter). Each night, the gatekeepers will transmit their bundles of readings via a mid-tier radio system to the nearest "takeout point," where the data will be sent back to Co-op headquarters in Plymouth for processing via one or more of the 20 microwave tower sites that form the Communications System Infrastructure (CSI). To assure the robustness and security of the system that carries all this data, NHEC has also installed a 30-mile stretch of fiber optic cable that connects our Plymouth headquarters to our facility in Meredith, which will provide a back-up operations center in the event that Plymouth is unavailable.

When will smart meters be installed?

The first smart meters will be installed as early as summer 2011. Installations will occur first in the Lakes Region and Plymouth areas, as the Communications System Infrastructure (CSI) is up and running in these locations. All meter installations are scheduled to be complete by March 2013. Members that are scheduled for meter replacement will be notified approximately one month ahead of the scheduled installation.

What will happen to the old meters?

Meters coming out of the field will be disassembled and recycled. NHEC investigated the possibility of donating functioning meters to developing countries through the National Rural Electric Cooperative Association's International Program, but found little demand for the meters. With electric utilities across the country installing millions of smart meters, there is more than enough supply to meet demand overseas.

Will I be paying a different rate for electricity once my smart meter is installed?

No. NHEC members will continue to be billed under their current rate structure once smart meters are installed. If NHEC decides to implement new “dynamic pricing” rate structures or programs, information will be made available and enrollment will be purely voluntary. Members will continue to receive a monthly bill after receiving a smart meter. After 30 days with a new smart meter, members will be able to access a free web portal (located on your Account homepage at www.nhec.coop) that will display detailed usage and cost information associated with your meter.

Will my smart meter affect the operation of my generator?

No. Your generator will continue to function as it always has. Regardless of the electric meter or generator, NHEC’s terms of service require that any generator operating in NHEC service territory be equipped with a transfer switch. NHEC reserves the right to inspect generators for the safety of members and NHEC line crews that may be working nearby. NHEC offers a free generator safety inspection. To schedule an inspection, please contact Member Solutions at 1-800-698-2007.

I don’t want a smart meter. Can I opt out?

All NHEC members – residential and commercial – will receive smart meters. This is a mandatory meter upgrade. All electric meters in NHEC service territory are owned by NHEC and our terms and conditions allow us to remove or replace any and all meters. For practical purposes, there will be no more meter readers to read traditional meters once the Smart Grid conversion is complete. Also, the effectiveness of the mesh network is degraded with the removal of each meter from the network.

Will NHEC be making new rates or programs available to take advantage of Smart Grid technology?

As part of its initial rollout of Smart Grid technology, NHEC will be providing up to 2,000 in-home displays to members who volunteer to be part of a pilot program starting in 2012. Members eligible to receive an in-home display will be chosen from among the first 30,000 members to receive smart meters. These in-home displays can be used to show, among other things, your current electric use, the cost of the power you are using and historical usage data. NHEC will be assessing the impact of in-home displays on members’ usage before deciding whether or not to make them available to the entire membership. Similarly, NHEC will be conducting other pilot programs beginning in 2012 that may include new time-of-use rates and the installation of load control switches in the home. Ultimately, the goal of NHEC’s Smart Grid project is to make available those tools and resources that will help its members better understand their electric usage and take steps to reduce their costs. Participation in any programs offered by NHEC will be strictly voluntary.

Will Smart Grid allow NHEC to control my electric usage?

No. Simply installing a smart meter at your home or business does not give NHEC the ability to remotely adjust your energy usage. This feature can only work with the installation of load control devices that will not be installed unless 1) NHEC makes them available, 2) you want them, and 3) you expressly allow NHEC to install them. Members will be receiving information at a later date if and when NHEC decides to make this feature available to all members.

How much will the NHEC Smart Grid project cost and what will be the impact on my electric rates?

The total cost of the Smart Grid project is approximately \$36 million. NHEC was able to qualify for \$15.8 million in federal grants to help pay for the conversion. The funding for the remainder of the project costs is already included in your monthly bill as represented by the Delivery Charge component.

In order to fund the project without raising members' rates (for these specific projects), NHEC has re-purposed current funding toward this project. Those funds were used to pay for other projects such as the installation of equipment in our substations throughout our system to improve reliability. In addition, as NHEC continues to pay down its debt, the funds from this debt repayment will also be repurposed to pay for the Smart Grid conversion.

Over the course of the next several years, NHEC will utilize short-term borrowing through an existing line of credit to fund these projects; be reimbursed from the Federal government under the grants and pay the remainder off with funds already collected from the membership. We are also actively seeking partnerships to use and pay for the system, which will further reduce the cost to our membership.

What is NHEC doing to ensure the security of the data coming to and from my smart meter?

Transmissions sent and received by Smart meters will not contain members' personal information, such as bank/debit/credit account numbers, name, phone number or address. It is physically impossible for personal financial information to be acquired through hacking of or tampering with data being sent and received by Smart meters. The only information transmitted by a smart meter will be voltage and wattage data, and an identifying number that associates that data with a particular meter.

In the interest of safeguarding members' information, NHEC employs a full-time Information Systems Security Executive with the responsibility of overseeing the organization's Information Systems Security Program. This program is audited annually by an independent information technology security auditing organization. NHEC has developed a Cyber Security Plan specifically for this Smart Grid project which, has been reviewed and approved by the Department of Energy (DOE). Additionally, NHEC will be working diligently with the selected

Smart Grid vendor to ensure that the system incorporates the highest possible levels of security to prevent unauthorized access.

What about the health effects of Radio Frequency transmissions?

NHEC understands that our members want to be well informed about new technologies. Electric Smart meters are digital meters that have been widely used since the 1980s, including several dozen currently in use in NHEC service territory. The generation of smart meters being installed across Co-op service territory is equipped with a small 1/4-watt radio that allows two-way communication between the member and NHEC, which enables the member to review their daily energy use.

In everyday use, your Smart meter will be transmitting usage data approximately seven to 10 times a day. Each transmission is approximately 1.5 seconds in duration and broadcasts in the 900 MHz spectrum at a power output of 250 milliwatts. Smart meters transmit relatively weak radio signals, resembling those of many other products most people use every day, like cell phones, baby monitors and microwave ovens. However, given the Smart meter's location outside the home or business, the infrequency of transmissions and the relative weakness of the signal, its radio waves are much less powerful than even the devices listed above. In fact, radio waves from a Smart meter, at a distance of 10 feet, are only about one one-thousandth as much as a typical cell phone.

Based on years of studying whether radio waves cause health effects, the Federal Communications Commission (FCC) has adopted [Maximum Permissible Exposure \(MPE\)](#) limits for radio transmitters of all types, including Smart meters. It includes a margin of safety just in case some health effects are too subtle to have been detected. Even so, Smart meters operate far below the limit—typically only about one-seventieth as much.

Learn more...

In January, 2011, the California Council on Science and Technology (CCST) released a preliminary study entitled ["Health Impacts of Radio Frequency from Smart meters"](#).

Quoting from the study, there are two primary conclusions:

1. The Federal Communications Commission (FCC) standard for Maximum Exposure provides a currently accepted factor of safety against known thermally induced health impacts of smart meters and other electronic devices in the same range of RF emissions. Exposure levels from Smart meters are well below the thresholds for such effects.
2. There is no evidence that additional standards are needed to protect the public from smart meters.