Good afternoon and thanks for joining us I am Judy Simpson. Over the past few months we have brought you several shows about the smart grid upgrades to Vermont's electric grid. Today we're going to focus on one specific aspect of the smart grid upgrades. The actual meter that connects your home or business to the grid. We have several things to show but first let me introduce our three guests. Brian Otley Director of Operations at Green Mountain Power. Rick Hackett is the chief meter engineer at Central Vermont Public Service and next to me is Bill Irwin the radiological health chief with the Vermont Department of Health. Thanks so much for being with us. I said we're going to find out all about these electric meters, what they are and how they work, their safety and installation but to start I'm going to ask Brian to give us a quick reminder of what the smart grid project is all about.

Brian.: Thanks Judy. The smart grid is really an overdue upgrade to the electrical system to add more intelligence to the platform. Today the system operates at a high level of reliability but as people who have experienced power outages know you have to call the electric company to let us know when power is out we do not have the level of intelligence as to what is operating on the grid. So smart grid is about adding that level of intelligence so we will know when power is out before customers do and we will have a lot more control over the grid making it more reliable making it more efficient and making it more environmentally friendly so we can incorporate more renewable sources of generation that benefit all of us from the carbon standpoint.

Judy.: How is it going to be more efficient?

Brian.: Today one of the things we do to ensure reliability is because we do not have a real time information about exactly what's going on in the grid for safety purposes we tend to oversize certain elements of our system just to make sure we have enough equipment and enough capacity in case there's a sudden spike in usage or consumption requirement so in the future we will have more intelligence about exactly what's going on in the grid and be able to right-size our equipment to be more efficient in the operation of the grid.

Judy.: It sounds like this is going to give a lot more information to the utilities about where the power is needed or where it's going.

Brian.: Exactly and to consumers as well. The information we get we will share with our
customers and as we've seen in other industries when there's more information in a system or a technology that allows people to participate more actively there are benefits and efficiencies that are gained from it.

Judy.: As we focus on the new electric meters let's bring Rick into the discussion. Rick what can you tell us about the replacement process?

Rick.: Judy you can see these are the 2 meters. This is the traditional meter on the side of the residential home and this is the new smart meter. They're both the same size. The traditional meter stores information in it but we communicate with this new meter that's going in. So far we've installed collectively between Green Mountain Power and Central Vermont about 5000 meters to date and by the end of the year we expect to have all of the meters in our whole systems installed with new the new meters in those locations.

Judy.: How does it work or how does it do things differently. The traditional older meters have dials and the disk that spins around?

Rick.: The traditional meter holds the information inside in other words you have to have somebody go to the site periodically and read the meter. The new meter can communicate to the utility a few times a day so we're bringing back information. If you think about the benefits the benefits are that number one with the new meter with communication if there's an outage in the home we will know that and we can dispatch crews all that much faster as opposed to having to wait for a customer to call in in today's world. Secondly the meter communicates to the utility so we don't have to dispatch meter readers to the locations to read the meter. If you think of all the miles we travel on a monthly or bi-monthly basis that's a significant savings. Lastly the meter provides information so the customer has much better information so they can look at their energy usage.

Judy.: Brian can you give us an example or help us understand how we as consumers can be able to use this information that the meters will provide?

Brian.: As Rick said today when I get my bill I have an idea of what amount of power I used over the last 30 days the 30 days before that and the 30 days before that. We're basically on a monthly level of insight. The new meters will actually capture information in 15 minute increments. There's a little computer chip in here that every 15 minutes we will take a snapshot of how much power has passed through the last 15 minutes. Stores that and transmits that data a couple times a day to us. So for myself I know it will be much more insightful to me to know over the course over the weekend or a weekday whether it's the springtime or whether it's the winter what my energy usage patterns are and that allows me to be more informed about opportunities to save money by managing my usage in a more efficient manner.

Judy.: So you can actually make the decision to say this is how much energy are using during peak times if I'm doing laundry now you can't do laundry at a different time of the day or at night that's going to save me money.

Brian.: Absolutely but even at a lower level there's a lot of examples of customers having devices in their home that draw energy that they don't even know about. One of the things I've had the experience with an existing meter is a couple years ago there was a program that allowed you to clip a sensor to an existing meter to get a sense of what's going on in real time. I played games
with my kids where we tried to get a load as low as you could possibly get it. You can never get it to zero because there's always something going on. We found an old piece of equipment that was plugged into an outlet in the attic and it was drawing power. We went and did a little scavenger hunt found it unplugged that and that lowered that load even more as that would've gone on forever if we hadn't had the insight to find it. Finding phantom load is very helpful but then in a more sophisticated application getting into rate structures that provide incentives for people to use power at off peak times and less power at on peak times is another way to save money.

Judy.: I think the first step is to get people to think about how they use the power that's coming into their homes. And how much it's costing them.

Brian.: Right the awareness factor is a big element of this. By giving customers tools to become more engaged and more aware of how their lifestyle and how their behaviors impact their usage of energy. That gives them control to make choices to lower their bills that's part of the whole engagement process.

Judy.: As with any new technology questions have arisen and in this case the questions centered on privacy and safety. Bill Irwin is the Radiological Health Chief with the Vermont Department of Health. What is it in the smart grid meters that people are concerned about health-wise?

Bill.: The means by which the meter communicates back to the utility is essentially using cell phone radio signals. That radio signal is a form of what is called radio frequency radiation. It's a form of radiation that is quite common in life. It is used in microwave ovens to heat things it's used in radar television and radio broadcasting. Cell phones are the most common way we are exposed to it. These devices will communicate by sending a signal a couple of times a day to what is called a gatekeeper. That gatekeeper will collect information from all of the smart meters that are in that range and that will be connected to the telephone service in the local area there and then to the utility. There are concerns about cell phone and the radio frequency radiation people would receive from that. As another source of that kind of exposure we wanted to evaluate: one- what does the literature say about this kind of exposure and two- what are the actual exposures from these meters. The Department of Health conducted literature review and review by a special expert panel of opinion as to what the scientific literature said. The World Health Organization estimates that there's more than 25,000 studies on radio frequency radiation so it's useful for us to look at what panels of experts have done already given that they do a lot of hard work for science. It's quite clear that while there are concerns about the effects that are unproven at this point in time for example there are concerns about cancer and radio frequency radiation. There is no consensus that that is a real threat but only a hypothetical threat. We need to continue to do research to prove that. What is known is that there are thermal effects from radio frequency radiation and the exposure limits that are established for this kind of radiation we believe are sufficient to protect everyone. The really important thing about these too is unlike a phone that would be used close to the head, the eyes, or the brain these are fastened to the wall of the building on the outside. It's very unlikely that people will see exposure there. We've taken measurements right up against the meter a foot from the meter 3 feet from the meter and inside the building an actual residential home and other places in Colchester and found that the levels near the meter itself are much less than a cell phone at 3 feet away their almost none measurable and much less than what we would expect from someone that might be using a phone. If cell phones are not likely to be a risk and so far that appears to be the evidence, we don't believe that there's any risk associated with these.
Judy.: OK very good. People can actually look at this information too?

Bill.: Yes we've published a 15 page document on our web site healthvermont.gov and you can see there our literature review. It takes people to a lot of other sites were they can get more information for example the main center for disease control did a very good study recently and also it shows our measurement results.

Judy.: Brian another concern has been safety and consumer privacy can you tell me a little bit about that?

Brian.: Privacy is an issue that utilities have been managing for years and years. We hold on behalf of our customers certain information that they trust us to maintain in a high quality and confidential way. There have been issues raised about will any of our policies change now that we will have what is perceived to be more information as a result of these devices. The reality is we're governed by a state statute. We control information strictly for our own business purposes to do things such as billing and we would only share that information under court order as warranted by a law enforcement agency. We would never share customer information with third parties without consent or without the presence of some sort of law enforcement order to do that. On the security standpoint a very good issue as you digitize certain systems you provide opportunities for those systems to be accessed without authorization. So I would be naïve if I said these systems are absolutely perfect. There's no such thing as a bulletproof a system as we've seen since the advent of the Internet age systems have vulnerabilities and people who are determined to find those vulnerabilities will find them over time. Our planning we are required as part of our department of energy grant put together what is called a cyber-security plan which is basically an outline of how we're going to lock down the system to the best of our ability. The department of energy has done an audit of the plan and approved it; we've also had the good fortune to collaborate with an organization called the Sandia National Labs. Sandia is one of the nine national research centers in the country they do a lot of department of defense cyber security planning and consulting and we've had a wonderful experience with their experts who have also come in and done a cradle to grave audit of our system literally from the manufacturing process through implementation and operation. We will have an ongoing relationship with them from an vulnerability testing standpoint so we feel like we're doing a pretty good job to lock down the system so the best of our ability.

Judy.: Can people opt to not get a smart meter?

Brian.: They can. We're giving customers choice in the implementation of technology is very important to us. We worked with a number of organizations in the state to develop our policy and on a national level we think Vermont has one of the most progressive what we call opt out policies both from a flexibility standpoint and a cost standpoint. So yes customers who for some reason feel like they do not want to participate in smart grid and do not want to have an intelligent meter installed they have the option to not receive one.

Judy.: Can they change their mind?

Brian.: They certainly can. We expect that some folks as they see their neighbors receive the benefits of these meters they will actually change their mind and we will be more than happy to come and replace their meters at that point at no cost.
Judy.: What else should our viewers know about these new meters.

Brian.: It's an exciting time in the utility business. The utility business for many many years has staid and conservative business but the last few years it is changing rapidly. The advent of this technology is going to change some of the capabilities we have in our ability to offer progress of programs to our customers. We hope our customers fully engage and embrace the opportunities we want to provide to them and it's really about the more we have customers knowledgeable about their energy use through the information that can be provided by the systems and actively participating with us the better result we will have from an energy efficiency standpoint.

Judy.: If you'd like more information about the new smart grid meters you can contact your utility. For more information on the safety report issued by the Vermont Department of Health you can find a report on the health department's web site. Go to healthvermont.gov once again that's www.healthvermont.gov for a full safety report by the department. Thanks so much for joining us today. That's our program for today I'm Judy Simpson we will see you again next time on Across the Fence.

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