Good afternoon and thanks for joining us I am Judy Simpson. In December of 2011 came the announcement that the state of Vermont is partnering with the national research lab to study the future of energy use. The effort will establish the center for energy transformation and innovation at the University of Vermont. The center will focus on new Energy Technologies and one of the keys to smart grid. Renowned power is in the beginning process of converting power meters to digital so called smart meters. The goal is to create a smart group which will give consumers more control of the energy they use and help conserve power and better pinpoint outages. This neighborhood and Colchester is a test site for green mountain power. You're the first to get the smart meters and it's hoped the infrastructure will be in place by April 2013. But that's just one small part of the smart-grid and Monday the state took a big step towards becoming a national leader in smartcard technology thanks to a new $15,000,000 research center planned for the University of Vermont.

Bernie Sanders.: We're announcing today the center for energy transformation and innovation right here in Vermont and what we're looking at is the commitment of up to $15,000,000 in the next three years which I hope and expect will be the beginning of a long-term presence of Sandia and the University of Vermont and the and businesses in the state of Vermont. In the Sandia National laboratory is located in New Mexico and began talks with the state two years ago about collaboration. The new center will focus on new Energy Technologies and how to connect to renewable energy projects to the national electrical grid. Making Vermont the example for the country.

Peter Schumlin.: In this partnership with Sandia with UVM with our utilities green mountain power and others we have an extraordinary opportunity to show the rest of the nation how to use smart grid. How to use energy efficiency to save money for businesses and for consumers.

Sandia was attracted to the project in part because of Vermont small size. Sandia vice President Rick Stulen and said it's a chance to actually accomplish some important goals.

Rick Stulen.: It also means and this is an interesting area that we have to be sure to anticipate any cyber challenges that may be opened up or opportunities vulnerabilities that may be opened up as we move to this new future. Sandia is very much in the forefront of cyber research so we will be
bringing to this partnership our understanding and be sharing best practices with utilities and various stakeholders.

Senator Sanders believes is the center for energy transformation and innovation will attract new green businesses to the state.

Bernie Sanders.: If Vermont can become a leader in the nation in moving forward to energy efficiency and sustainable energy it attracts a lot of business people who will be working with us in developing that new technology.

The center will be located at the University of Vermont but there are plans for homes and communities throughout the state.

Sandia Labs is committing three million dollars for the new center for each of the next three years. The department of energy is giving one million dollars in one of the three years and the state of Vermont will also give $1,000,000 for the project in each year. To learn more I am joined by two guests Lori Burnham is the principal member of the technical staff of Sandia National Laboratories and Jeffrey Marshall is a professor at the university in the University of Vermont’s college of engineering. Welcome to both of you. Lori what can you tell us about the the new center for energy transformation and innovation and its goals and mission?

Laurie.: The center is a newly formed institution but one that really gives formal structure to a partnership that has been developing over the past couple of years between the Sandia National Laboratories my organization and abroad collection of Vermont stakeholders that includes the state of Vermont hour academic institutions not just the University of Vermont but there the player of the Vermont State college system Norwich university Vermont law school Electric Utilities private sector Energy Technology companies and nonprofit organizations. We're big tent.

Judy.: As going to say with all these different players how did it all gets started?

Laurie.: Like many good ideas there's a little bit of serendipity involved so the partnership goes back to 2008. I want to step back and just to reiterate what might be obvious from the footage we just saw but we owe a lot to senator Bernie Sanders for making this possible there you have the commitment to the partnership and passion for it and political influence to help fund the partnership so we wouldn't be here today without Senator Sanders vision. Going back to 2008 Senator Jeff Bingaman of New Mexico is chair of the U.S. senate committee on energy and National Resources. Senator Sanders is a member of the committee. Senator Bingaman offered to have a field hearing in Mexico that included a tour of Sandia National laboratories. Bernie toured our facility so we're doing in terms of cutting and renewables researching and again begin to think like he likes to do that here is a great opportunity for Vermont. Vermont has commitment to environmental sustainability it has expertise on move center and policy side it has the political will on how to change our use and consumption of energy and electricity in particular. What we lack in Vermont and what New England marks is the presence of a national institution of national laboratory like Sandia with a great deal and great depth of expertise in Energy Systems.

Judy.: Jeffrey which does the University of Vermont bring to the partnership?
Jeffrey.: You may have heard about the Spires of excellence that the university identifies with. There's three Spires of excellence two of those are relevant to this. One is in complex systems and one is in human behavior. Both of those ways and in trickle part in this market system. I think it warns that together with expertise in the school of engineering and our policy areas that really helped this merger not this merger but this conglomeration.

Judy.: Lori maybe you can talk a little bit about sandy as interest in Vermont because I cover the press conference and that was actually one of the things is very attractive to Sandia is the Vermont is so small.

Laurie.: Yes that's the question why would the national laboratory of the stature Sandia shoes Vermont among all the options where might develop such a partnership. The answer is first of all Vermont has a long-term and commitment to environment to energy sustainability that makes the state attractive to us. There is extraordinary political will to think about. Transforming the energy infrastructure of the state at all levels. Vermont is a leader in several key areas so thanks to efficiency Vermont for instance we lead the nation and electricity efficiency. Thanks to the funding from the department of energy which has been referred to we have funding to deploy statewide smart-grid. Vermont is the only state were the first state in the nation to deploy a statewide grid and that effort is possible because of a collaboration that exists among utilities. The department of public services are the collaboration. That degree of information sharing and collaboration is unprecedented in the United States. The possible I think by our small size he and the state also has some remarkable expertise in certain areas. He alluded to the Vermont law school which is the number one environment school in the United States and the complex systems expertise that exists in the University of Vermont. We're a strong state college system all of this has created a very attractive platform for Sandia. I think the lab would say this is an opportunity to really make a difference. We're facing a lot of energy challenges not just Vermont put the nation. This is an opportunity to combine the extraordinary expertise at Sandia and across Vermont broadly to think about how we can transform our future.

Judy.: Underlying this is the smartcard Jeffrey can you talk a little bit about what smartcard is and what it does because I think a lot of people might have heard of it but don't really understand what it is?

Jeffrey.: It's sort of the synthesis of a public utility with the modern digital communication system. Most people don't realize what many of the public utilities in the U.S. Are based on equipment which is 40 to 60 years old and that is based on designs back to Edison. It's truly amazing to think about that the smart grid is the idea of taking a public utility and redesigning it with modern equipment particularly communication equipment. The power company will know when the power goes out in a certain neighborhood. You don't have to call the nowhere goes out and so forth.

Laurie.: I will jump in with anecdote about that. I was at a town fortunately and came back to hear a voice message on my answer machine from a neighbor. Lori I am sorry to be calling it's between 3:30 AM and 4 in the morning but I've lost power and they said that call my neighbors and see if they have lost power too. They obviously being the utility company. Surely there's got to be a better way.
Judy.: That's what a power company is left with is trying to track down where the outages by calling around and see who has power and who does not. With smart grid they have the right in front of them.

Laurie.: Yes in fact although the statewide smartcard the appointment of the statewide smartcard involves all the utilities. When utility in the state is ahead of the curve and that's the Vermont Electric co op they have deployed smart meters to 97% of their members and actually hour last updated now that shows outages are being reduced by 50% in terms of duration.

Judy.: Let us tie this all together. What specifically with the new center help advance smartcard appointment in Vermont.

Jeffrey.: About the Electric System is we all want more renewable energy we all want more solar we all want more wind but these are intermittent energy sources. We can't control when the wind blows 1 minute and will stop the next minute at the same time you have a demand which is independent of the sources so there's a big problem with trying to meet the electric demand with intermittent sources. The smartcard one of the objectives of it is to design in such a way that we can overcome this problem. Putting storage in putting smart electronics in. One thing we hope from the smart grid is that we'll have much more sustainable energy much more wind and much more solar.

Judy.: So alternative energies can actually play a bigger role.

Jeffrey.: Exactly.

Laurie.: So the governor has issued a comprehensive energy plan for the state of Vermont. You may know this but it has very aggressive renewables goals in that plan calling for 90% renewables by mid century 2050.

Judy.: The center's going to be located at UVM. This is the way students are going to get a chance to participate.

Jeffrey.: We certainly hope so we have nine students at Sandia this summer. We had eight faculty at Sandia including myself. Students throughout the development of this in the last year students have been very much involved in every step.

Judy.: That's quite a unique opportunity I would think.

Jeffrey.: Definitely.

Laurie.: Yes to be able to come to a national laboratory and do original research I think has been transformative for some of those students.

Jeffrey.: Almost all of them have applied to grad schools across the country now.

Judy.: That's exciting. Lori what other ways do you see the center is going to benefit from Vermont?
Laurie.: I think it will benefit from Vermont very much in the near term in terms of smart grid deployment making sure the deployed as reliable and safe and secure but there's the longer term component which is making sure Vermont is on a path to long-term energy sustainability and coupled with that is setting Vermont up with the model for the rest of the country. We hope the center will be a resource of best practices for information sharing that we will be able to share what we've learned here in the state with the rest of the country.

Judy.: There are some people who don't like the idea of smart grid because of some of the vulnerabilities for cyber attacks. However that's something that Sandia as we heard in the news clip is very much on top of.

Laurie.: Absolutely our mission is to make sure that we have a safe and reliable secure grid. Our grid is essential to everything we do in our modern society and really is our most critical infrastructure. What Sandia has is a lot of expertise on the cyber front and making sure that the system is hard and against cyber intrusion and that it performs as it should.

Judy.: For more information on the center for sustainable energy transformation and innovation at UVM can check out the website on your screen that this is UVM.edu/~vtsandia. A one thank you both for being here and talking about this program it's going to be interesting to see how it develops over the years. I hope you'll come back.

Laurie.: Yes thank you very promising.

Jeffrey.: Thank you.

Judy.: 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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