UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

PUBLIC ROUNDTABLE

DATA ACCESS AND PRIVACY ISSUES RELATED TO SMART GRID TECHNOLOGIES

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I N D E X

P R O C E E D I N G S

9:30 a.m.

MR. HARRIS: So, welcome everyone. Not too long ago, the National Academy of Engineering set out to identify the single most important engineering achievement of the 20th century. It compiled a list of 13 major accomplishments that affected virtually all Americans. For my friends in the telecom community who are here, the internet came in 13th place. Highways came in 11th. Electrification, through the grid, was found to be, and I quote, "The single most significant engineering achievement of the 20th century."

Nevertheless, as a nation, we have underinvested in our grid for decades. That has to change, and in fact, I believe it has begun to change.

Secretary of Energy, Steve Chu has a long-standing commitment to American leadership in the clean energy revolution that may well define globally, the economic winners and losers of the 21st century. And the modernization of our electrical transmission system is going to be a critical component of that revolution.

And an important part of this modernization is likely to be the development and the deployment of

smart grid technologies. The gathering and communication of data to enable utilities to operate the grid more effectively and efficiently and also to allow consumers greater control over their own energy usage.

But the gathering and communication of data, consumer data in particular, raises many questions. Who owns the data? Who can use the data? And under what circumstances? And these questions raise the additional question of, who makes these decisions, or should?

We are here today to discuss these questions, and perhaps even to question some of the underlying assumptions behind the questions. Thus, I'd like to welcome you all to the Department of Energy Public Roundtable on the Data Access and Privacy Issues Related to Smart Grid Technologies. It is part of a public proceeding that we began in May with the issuance of two Requests for Information addressing these and other questions, in an effort to facilitate the deportment of smart grid technology.

The Department of Energy does not regulate the development or the deployment of these technologies. We do believe, however, the Department can play an important assessment and coordinating role

that could speed up its deployment. Our goal is to use these RFIs and public sessions such as this one to inform both federal and state policy makers by collecting and analyzing the information we gather from the public.

Fortunately, the issues of data access and privacy in a networked environment are not entirely new. We've learned from the internet world that more people will make use of new technology if they feel they can trust the system to manage data appropriately.

Fortunately, our efforts to address these questions will be assisted today by a set of extraordinary panelists with diverse perspectives and expertise. On behalf of the Department of Energy, I'd like to welcome them and I'd like to take a moment to introduce each of them.

Directly to my right is Phil Weiser, the Senior Advisor for Technology and Innovation to the Director of the National Economic Council. Phil is going to be a co-moderator of today's discussion.

To his right is David Szczupak, Executive Vice President of the Global Product Organization at the Whirlpool Corporation, where he provides overall leadership for the company's product businesses and

strategic sourcing.

To my left is Robert Rowe, President and CEO of Northwestern Energy, an investor-owned utility, and one of the largest providers of electricity and natural gas in the northwest. Bob was also Chairman of the Montana Public Service Commission, and President of the National Association of Regulatory Utility Commissioners, or NARUC.

Off to the right, we have Michael Goodroe, President and CEO of Sawnee Electric Membership Corporation, a member-owned electric cooperative. Sawnee has a diverse seven-county service territory northeast of Atlanta, and they provide electricity to over 130,000 members.

To my left we have Ray Ramsey, the President and CEO of TechNet, a bipartisan network of CEOs and senior executives that promotes the growth of technology and innovation in the economy. He is also Chairman of the Board of One Economy, a group that focuses on the use of technology to empower those lower on the economic ladder.

Off to the right we have Adrian Tuck, the CEO of Tendril Networks, a provider of energy management software, hardware, and services for both consumers and utility companies. You can't have a discussion about smart grid these days without running into a discussion

of Tendril.

To my left further down the table we have Arlen Orchard, the General Counsel of the Sacramento Municipal Utility District. For some reason, they like to call themselves SMUD, which is a publicly-owned electric utility that serves 592,000 customers. It is the sixth largest public utility in the country.

At the end, on the right, we have William Levis, the Director of the Office of Consumer Counsel for the State of Colorado, where he advocates on behalf of residential, small business and agricultural interests before the public utilities commission.

Finally, on the end at the left, we have Jeff Campbell, Senior Director of Technology and Trade Policy at Cisco Systems, where he develops Cisco's public policy agenda on telecommunications, trade, security and technology issues.

Gentlemen, I'd like to thank all of you for joining us today, and Phil, I'd like to ask if you'd like to make some introductory comments.

INTRODUCTORY COMMENTS

MR. WEISER: Let me make a few comments. First, Maureen is here, and Scott deserve enormous credit for the leadership they have shown on these issues. The forum ten days ago and this forum is a tribute to their hard work, bringing such great people literally to the table in what is, to my mind, the right kind of context. And this is part of a broader

administration focus on smart grid technology. Scott is the co-chair of a committee, engineering committee, that's looking to broadband plan recommendations. I see Nick Sionye (ph) is here who worked very hard on that, and those recommendations are helping to inform how we're thinking about smart grid.

In addition there's a broader smart grid effort with Ted Hoffman from DOE, who's leading up, which is going to develop some comprehensive policy analyses to help us in the path forward. This issue is very important to the administration, to the President, and I think to the future of our country and energy security.

To that end, there'll be another forum not unlike this one at Brookings Institute in mid-July. Keep an eye out for that one. And I'm really eager to learn and appreciate from the dialogue that Scott's gotten together here.

PLAN OF ROUNDTABLE DISCUSSION

MR. HARRIS: Okay. So here's I propose to proceed. I'm going to ask questions to panelists. Phil will do the same. What we're hoping to do is provoke an actual discussion among the panelists. Phil and I, hopefully, will fade into the background before too long, so that different perspectives on these privacy and data access issues among the people who are going to make it happen will take place.

At the end we will hope to open the floor to

questions and comments from members of the audience.

MUCH ADO ABOUT NOTHING?

MR. HARRIS: Is this all much ado about nothing? Am I wasting your time today and wasting the time of the members in the audience? I get it, that if someone knew what I was doing on the internet last night, they would actually know a lot about me. I do consider that private. I cut my energy use, so they know if I'm not home, if I'm on vacation. So does the Washington Post when I tell them to interrupt my service. If you can watch my energy uses during the day you may know when I'm home and not, so nine to five. Big shock. Is this really that important, or am I literally wasting your all time today?

Anyone want to do that? Maybe someone from the consumer community?

MR. LEVIS: Well, I can tell you, Scott, from the consumer standpoint, it's extremely important. We just rolled out tiered rates in Colorado, which means that you pay more after the first 500 kilowatts of usage for electricity, and consumers, even though they were advised of what was going to happen, reacted very negatively to that. When you're talking about doing something that the National Institute of Standards and Technology shows in their report in February, where they can tell when your tea kettle is on, when your toaster is on --

MR. HARRIS: But can they really? Isn't that

just -- isn't that a lot of hooey?

MR. LEVIS: Not really.

MR. HARRIS: I mean you can look at my -- you can stand outside my electric meter and you cannot tell when my tea kettle is on.

MR. LEVIS: Well, maybe you can't, but the report from the National Institute says you can, and people look at their home differently than they look at about anything else. Your home is your castle. There are issues with fourth amendment issues. I mean Colorado is one of the states, as California is, where medical marijuana is legal and the concern is that people may be growing that in their basement -- you want to move there, Ray?

MR. RAMSEY: It's called economic development.

MR. HARRIS: Did we just move from smart grid to marijuana?

MR. LEVIS: But the point is, consumers look at this as an effort by government or by industry to control their energy use and to know what's going on. Whether it is as bad as people think is another story, but remember who you're rolling this out for, and information is king. If people don't understand what is happening, and you do this too quickly, people are going to react very negatively. Just look at The Turn, which is a consumer advocacy website in California and what has happened in response to the ten million Smart

Meters that PG&E, Pacific Gas and Electric, has rolled out. You just have to look at reality. I could go on, but I'll let other people talk.

MR. ROWE: A couple points. First, I do want to go back and highlight something you said that I think is very helpful. You emphasized that you don't have direct authority, but you do have the ability to provide and facilitate a role, something that Phil, in several of his past lives, did extremely well.

So I think for a variety of reasons, including the consumer response that Bill mentioned, for doing the right thing, bottoms up, standards driven, communicative approach. To this specific issue of do customers care, I've got a couple of data points.

First, to some extent, consumer preferences are reflected in the law. Coming from an industrial, state-regulated, federally-regulated utility, there's an awful lot of legal accountability that we have, state statute, in the case of one of our jurisdictions, state constitution, internal policies, all driven heavily towards data security, protecting the privacy of our customers. It's the first point.

Second point. EEI really, in anticipation of working through these issues, commissioned a 1000-response survey. A couple of key take-aways. Customers do place a very high priority on privacy. Good news for the utilities sector is 72 percent found that the utility of the electric companies do an

extremely good or a good job, much higher than telecommunications. The only sector that came nearly as close was banks, at 70 percent. But that's something that I would not want to jeopardize.

Third data point, and you also did a nice job of highlighting the need for infrastructure investment. Smart Grid is just one component of an overall infrastructure plan. In our Montana operation, both gas and electric side, we've convened quite a diversive and lively stakeholder group to help us with distribution infrastructure planning. As part of that, we've talked about Smart Grid.

Interestingly, the house was very much divided in their views of Smart Grid generally, how quickly we should deploy, and it very quickly turned into a discussion around the table amongst very smart people about their privacy expectations. So what that told me was survey data, legal requirements, but supported by direct customer response -- thoughtful customer response. This is an issue we've got to work through, and we really can't afford to get terribly far ahead of our customers if we're ultimately going to succeed.

MR. HARRIS: Arlen I saw you --

MR. ORCHARD: Yeah, you know, I think customers do care, I think, at the end of the day, whether it's much ado about nothing, customer -- consumers' perception is everything. It may not be

real, but at the end of the day, that will drive it. We did a -- we're in the middle of a complete roll-out of Smart Grid in our service territory, and we did a lot of focus groups with our customers before we implemented it. They cared a great deal about privacy. They do expect us to maintain the information in a very secure manner. And there's a great deal of concern about who's going to control and what kind of decisions we're going to make.

So I think consumers care. They're excited about it, generally, but they want the control and they want to be able to say how their information is used. We even got feedback from customers that they'd like to tell us how we can use their information, so I think they do care.

MR. HARRIS: Others? Ray? Jeff.

MR. CAMPBELL: I think we need to recognize that consumer views on privacy in this space are no different than anywhere else, which is, they vary enormously, depending on who you talk to. If you look at the internet as an example, you have people who are afraid to get on the internet because they want to maintain their privacy; and on the other end, we have a lot of people, mostly teenagers, but frequently quite a few adults, much to their chagrin later on in life, who put their entire life out for the public to see there.

And I think, you know, we have to recognize that those varying levels are all valid. Different

people have different levels of comfort here, which is why you have to look at this issue from a consumer control point of view. And I think one of the benefits that we have in this space with Smart Grid is that the technology is still relatively new, we're still deploying, a lot of things are being developed, and we have the opportunity to deploy it in a way that bakes in security in a very significant and meaningful way, to provide that kind of protection for consumer privacy.

So you may say, you know, your initial question was does it really matter or not, and my point is, it doesn't really matter whether it matters or not, it's something that we can deal with appropriately if we deploy systems intelligently.

MR. RAMSEY: Jeff touches on something that I wanted to highlight, and take in a slightly different direction, and really highlight for purposes of me being on this panel, which I think is really important. And that is, the learning by the analogies of the internet itself, and making sure we learn the right lessons. And if you look at sort of the growth of the internet and the things to learn from that and what we can learn in terms of the growth of the Smart Grid, is that as this -- as the internet is rolled out we've been able to get fairly decent adoption rates, but we still don't have adoption rates where we would like to have them. And there are reasons for that. And I

think there are some good analogies of what may happen with the Smart Grid.

If you look at the primary causes of a lack of adoption in terms of broadband, it is there's a literacy gap, so there are a number of people that just sort of like, I'm not going to touch this because I don't understand it. So we've got to take a look at that and say how does that apply to the Smart Grid situation? You have the issue of relevancy, because people will be like, this is not relevant to my life, so I'm not going to opt in. You'll have the same type of thing here, and I think we need to prepare for that. And then you have the issue of cost, and what it all comes to is, is there a value proposition for me as an individual?

Later I'll talk about sort of the broader ecosystem that I think needs to be involved in the Smart Grid, but all of the players in this ecosystem are looking for a value proposition and we've got to disaggregate what that means by the different actors who are in that space, otherwise, we will repeat some of the problems of broadband and the internet itself.

MR. HARRIS: So let me push on that analogy a little bit. So, since I came to the Department of Energy, every time I get on the internet an advertisement pops up for jobs at NNSA, which is a unit of the Department of Energy. I'd never heard of NNSA, and I assure you it never popped up on my computer

screen before I came to work here. Someone, somewhere, can tell when I'm now searching on the internet and suddenly I'm offered jobs at the Department of Energy.

So it's very data intensive. You actually can know a lot. How much data do you really need to do what we want to do with the Smart Grid? Do you really need that much data? Do you need to check my energy usage every hour, every 15 minutes, every five minutes, every one minute, in real time? What are you going to do with that data? Is it enough that my refrigerator knows to defrost in the middle of the night if it's cheaper to do so, rather than during the day? Do you really need more data than that? Again, it goes to the question, is this all much ado about nothing? Do you really need that much data for Smart Grid purposes?

MR. SZCZUPAK: I think there really are a two elements. One is we talk about privacy, but also having that real time data to be able to make decisions for yourself. We see more and more of our consumers want to know how much energy their appliances are using, even without the Smart Grid, just to understand, am I buying and using an efficient appliance.

But then if we connect that to the grid, the ability to be able to do demand leveling, really has to be real time. It can't be, if I only had to switch it off and used it last night, it would have been okay. So I think it has to be real time.

The question is, then, how much and how do we

manage that? But I think in terms of consumer, the value proposition, we see more and more interest, and I think we need everyone to be more interested.

MR. HARRIS: Well, let me ask you this. Can't you just sell me a smart refrigerator that I can program to do whatever it needs to do in an intelligent way without it being connected to the utilities or to the grid, or anything -- or to the internet? Or do I -- do I actually need --

MR. SZCZUPAK: Well, clearly the whole intention is to make more and more efficient appliances, if you call that smart, or more efficient in terms of when you defrost. But then it's also things in terms of if you really do have a choice on drying your clothes now or tonight, or your dishwasher on now or tonight, then someone has to make a decision, otherwise you just switch it on and it will just work.

REAL TIME VERSUS OTHER TECHNOLOGIES?

MR. WEISER: Well, let me, because if we know enough based on say we don't want it at four in the afternoon, we want it at ten p.m. at night. Can't we use those rough proxies to help drive when those devices go on and is there a sense, from a cost benefit analysis perspective, of how do we make the judgments about what type of technology we want? So, for example, let's just assume that to do real time, you would take a more sophisticated level of technology, would cost more, and to do some of these other types of

solutions, you might have less of an investment. How do we evaluate those two different case studies.

MR. SZCZUPAK: I think we've got some data coming together that will look at that, at the benefits, because for the appliance business, different appliances have different needs. If you heat your water at night rather than during the day, well -- but air conditioning, you want real time. So some things -- I think it's very appliance-dependent on how real time things could be.

MR. HARRIS: Adrian, so your company's actually collecting all this data.

MR. TUCK: Yeah.

MR. HARRIS: To what end, and is it really necessary?

MR. TUCK: So we have -- we really have two people, two groups of people who have use for this data. The first is the utilities, so let me talk about them and we're engaged with about 30 different utilities, so this doesn't talk to any specific one, but is a sort of what we've generally observed.

Utilities need amounts of data for really a couple of reasons. The first is, that they need to make decisions about how much power they're going to generate, and those decisions have to get made in relatively short order. So as the temperature heats up on a hot summer afternoon, the decision about whether to turn on a new power plant or turn down people's air

conditioning, where people have opted into a program to allow that to happen, is a decision that has to get made in minutes. So 15-minute interval data, whole house consumption information, doesn't need to know it was your fridge or any of those kinds of things, what was consuming power, but just whole consumption information allied with weather, is sort of the set of requirements the utility needs to make the decision about whether to turn things on or turn things off.

And when we provide that information to utilities, typically, the utility asks us to hold them harmless from this specificity that we can get to. In other words, they don't want to know that Mrs. Smith's frig was the thing that was consuming power. They just need to know at a given substation or given transformer, how much power is there and how much are they going to need. So --

MR. HARRIS: Let me stop you for a second. So it sounds to me like what you're saying is the information utilities need for their operations to run efficiently, bringing generation on or taking it off, really isn't that detailed or that granular?

MR. TUCK: That's correct, with one change that's coming, which is the electric vehicle. So that specific device that EMV, when it's plugged in, will consume more than your whole house while it's charging, and so knowing about that device in the home and what it needs and what it doesn't need, and when you need

have the battery full and when you don't, and so on, allows a utility to optimize how much power they send to your neighborhood in order to meet those requirements. So there is a specificity required related to EMVs.

MR. ROWE: Basically, what you're doing is dividing data into customer-specific usage data, load data, and then the unknown that we're working through on EMVs.

MR. TUCK: Right. So on the customer side, we give the user very specific information. We can spot the user that their air conditioning is inefficient. We can send them an e-mail that says, we've looked at your house, provided they've opted into this idea, we've looked at your house and here are the things where we think you can save money. At a very high degree of specificity. But we keep all of that separate from the utilities. So only the consumer gets to see that piece.

MR. HARRIS: So are there any privacy issues, then, from what Adrian's just described? I mean -- the granular information he's just giving to the home owner, and the aggregate data, neighborhood data, he's giving to the utilities. Sounds to me like no problem. Everyone agreed?

MR. LEVIS: Well, the issue is whether it stays with the home owner, and the question is, what information does the utility and potentially a third

party need.

Getting back to your earlier question, Scott, in the past energy has been viewed as being fairly inexpensive, and people paid a flat usage fee. If we're going to go to time of day pricing, time of use pricing, critical peak pricing when we turn up the power plants, then consumers do need to know when to turn down their air conditioning, which does use a vast amount of power. If they're out of town, they should turn down their hot water heater, if it's electric. If they should turn down their heat and air conditioning. When to turn it on, turn off their TV. Whether their refrigerator is inefficient. If they're going to have to pay more at certain times of the day, they do want to know this information.

But not everybody wants to know this information. That's the other thing. Because consumers need to be, in a sense, re-taught how to think about energy. We've been re-taught with telecommunications the last 25 years, and I think there's a saying that if Thomas Edison came around today, the grid wouldn't be that different than it was 100 years ago, but if Alexander Graham Bell came around, he'd have no idea what the internet was and what kids are doing on their wireless phones, because they're not talking --

MR. HARRIS: We don't understand it.

MR. LEVIS: Yeah, we don't understand it and

part of it is generational. We're talking about certain people and the literacy issue.

MR. RAMSEY: That's what I meant by the literacy issue.

MR. LEVIS: So I can just tell you that I had a father who had a programmable thermostat. I tried to explain to him how you can change it and everything. He could never do anything. He just put it on hold all the time. So we have to think about those people.

MR. HARRIS: Sadly, that's what I do too.

MR. LEVIS: But that's a problem.

MR. TUCK: But that's why there's a really strong analogy, so the thermostat of today, the programmable thermostat of today --

MR. HARRIS: By the way, that's off the record and no one can quote it.

(Laughter.)

PARTICIPANT: That's the headline, Scott.

MR. TUCK: Even the most sophisticated programmable thermostat of today is like the VCR. Nobody knows how to program it. So let's look at what happened to VCRs. They got replaced with digital video recorders, and those things are networked, and they understand a whole set of things, and you give up a little bit of privacy associated with your interaction with that device, but -- and what you get as a result is you can set the thing really easily to record the whole season of whatever it is that you want to watch.

And so that's the kind of thing that we need to see in the energy space in order to make these things -- to make the country meet its national goals related to renewables and energy independence and so on, and that's an example of the kind of trade-offs that you're going to have to make as a consumer.

SMART METERS, VARIABLE PRICING?

MR. WEISER: Let me put one thing on the table which is worth distinguishing. Smart meters, which could be even developed AMR meters, or the more developing AMI meters, are different from what you might call sort of a home area network. And so I just wanted to play with this idea for a little bit, which is the home area network could potentially take all your devices into some master sort of controller, that would just be within your home. It could be outsourced to some service provider over broadband connection, but it could be just in the home, and it could help consumers use electricity in a smarter fashion, and in some sense you could call that architecture, one form of the Smart Grid. Does that do a lot of what you're talking about, Adrian, or do you feel you actually need to have a meter with some nexus to the electric grid itself?

MR. TUCK: No, we need -- from a meterlogy perspective, we need something --

MR. WEISER: Can you define the word meterlogy?

MR. TUCK: Yes, that's the ability to meter whole house consumption, so the thing that sits on the outside of your house, measuring how much you consume. In order for the utility industry to meet its goals for introducing renewables and gaining more efficiency, we need a system that can measure whole house consumption at around 15 minute interval data, in order to get a good picture of what's going on and manage load demand more efficiently. But that's whole house, that's just the thing that sits on the outside of your house. So that's really what the utility needs.

And you can achieve that in one of two ways, the first is by putting in new smart meters, and the second is by, where the customer has a broadband capability, using existing AMR drive-by meters, and linking those with the customer's broadband in order to get that sort of capabilities.

If the consumer wants to do more, if the consumer driver is to lower their bills or become greener, which -- or to beat the neighbors, which are the three big drivers that we've seen amongst our customer base, then you need other things. You need thermostats and appliances that can react to price and load control signals in order to turn on and off load, or to fairly autonomously because you're not always going to be there in order to manage these things.

MR. SZCZUPAK: Manage your energy while you're away.

MR. TUCK: Right, and the final thing is if you believe that in order to drive to a really efficient model, you need to use price as the driver. We'll do things relative to price. We're used to that. Then, in order to make variable price work in the consumer sense, you need devices that can autonomously react. So you don't want -- you want to create a model for consumers where they set up rules that say if the price goes above X then change my thermostat to Y, but then they don't have to do that every time, it happens automatically. Otherwise, they're just not going to interact with the system.

In order to get to price you have to track really carefully, because there are all sorts of different segments of society who are going to be vulnerable to that kind of pricing model. What we push our utility customers to do when it comes to price is to offer parallel pricing, so shadow pricing -- people are used to a flat rate, give them a variable rate alongside that flat rate, and tell them that they pay the least of the two --

MR. HARRIS: That must go over well.

MR. TUCK: -- if they get into the program. Well, it doesn't go over that well with the utility --

MR. HARRIS: Yeah, that's what I was saying.

MR. TUCK: But the idea here is to educate people in the short term, because what we found in the programs that we're in, is almost everybody can benefit

from variable price.

MR. HARRIS: The idea being consumers do, in fact, respond to price signals.

MR. TUCK: Right, but the key is to give consumers the choices to whether they do that or not. And some people will want to do it, and some people won't. But it starts with giving people that kind of a choice.

MR. HARRIS: Let me ask you, should we care if there are some people who prefer not to respond to price signals? I mean, you respond to price signals when you buy gasoline, when you order natural gas, or any -- you respond to that price signals in almost everything. Isn't -- why would we want to construct a system where people can opt of responding to price signals because they impose costs on the rest of us by burning up energy that might not be burned up?

MR. GOODROE: I think, Scott, that's just one area that we need to tread extremely cautious with. There's case after case, and I want to go back to your first question and answer it. It depend. Sixty-three days ago, I didn't care a thing about a blow-out preventer, and I'm knowledgeable in that area.

MR. HARRIS: Yeah, tell me about it.

MR. GOODROE: So I think the things that you're starting to ask questions of may have to see a paradigm shift. And from a price perspective, there's case after case after case to where people just said, I

can't do anything, so you're imposing this on me. And there is going to be a challenge to that concept. And I think we need to tread softly with it.

MR. ORCHARD: I think that, just to answer a question and kind of echo what you said, I think customers want choice, and they want to choose not to do something, just as they want to choose something. And I think that's an important thing that has to be preserved. You build your pricing so that you essentially recover the cost that you need to recover for that pricing, and at some point there'll be an environmental adder associated with any greenhouse gases or things like that. I think you've got to maintain that choice for customers not to do something.

I think the other thing that is going to be interesting is I think, really, you're also talking about a pretty significant consumer education that has to go out with this, because there's a whole lot of education -- customers are not going to understand initially what wholesale pricing means. If you send them a signal and they're going to set parameters.

MR. HARRIS: So, but is that true? I mean, look, consumers figure out the advantages of buying their wireless minutes by the bucket, rather than on the minute, pretty quickly. People are smarter than anyone gives them credit for.

MR. GOODROE: But Scott, in that kind of thing -- and I think William was the one that mentioned

it, the things that are acceptable to my 17 and 18-year old are a lot different than what's acceptable to my 82-year old mother.

MR. HARRIS: Jeff and then Bill.

MR. CAMPBELL: I mean, follow the telecom analogy. Back when the cost of telephone services was relatively high and the marginal cost of providing additional capacity was very high, we had time of day pricing, for those of us who have gray hair like I do, remember you know, you call after 11 p.m. That's when it gets cheaper, to push the stuff around. As the marginal cost of adding additional capacity declined to a very small number, which it is now, we've changed to either all-you-can-eat plans or bucket plans or something like that because consumers don't want to have to worry about these details when the price differentials are not terribly meaningful.

But I think we're looking at a situation in the energy world where the marginal cost of additional production at peak times is extremely high, and currently, when you average rates, there's no incentive to do anything about that. And so I think it's a different analogy from the cell phone world because the facts are actually the way the facts used to be in the telecom world. And so it makes sense to go more to time of day pricing in order to discourage high cost production.

MR. RAMSEY: Yeah, and again, just like Jeff

and I are sort of on similar pages here in terms of the analogies, is we need an awareness effort. There are a lot of people that don't understand this at all, so it's not the same as sort of deep education. It needs to be first, a level of awareness. Then when you think about education, it's not only a pricing issue in terms of moving consumers, it's one of comfort and convenience as well. And so, people want to be able to have a menu of options. So when you asked the question about well do they really want to do all this manipulation of data or not, give people choice. Make it comfortable. Make sure they're aware.

And I think, you know, with this whole Smart Grid effort, one of my concerns is to make sure we are being inclusive in that. I've had discussions with the FCC, I've spoken with folks over at HUD, because if you look at their housing inventory and the things that can be done, we don't want to again repeat the same mistakes in terms of broadband roll-out, where we leave behind big sectors of the population, that if you were to go in and do surveys about this now, the awareness level would be nano, and then forget about an education program or handing out a leaflet on the people.

And then we still have a lot of homes that don't -- aren't on broadband. So if we're only talking about being able to have equipment that communicates by broadband, we're leaving out big rural areas, and some big inner city areas. So we've got to think more about

the whole ecosystem as a country, and say what is it going to take to go in. But we still need to learn the lessons from the other kinds of roll outs. Even phones, you know, going way back. It took the federal government thinking about how it was going to play its role. It subsidized, it incentivized, it did different things.

So there is a role for Department of Energy, HUD, FCC and other actors.

MR. LEVIS: I can tell you from a consumer standpoint, education is the key, because you have urban legends about the fact that where smart meters, smart grid has been rolled out that the pricing has gone -- the cost has gone up. The meters have been reading the same minutes, and it's costing more. See, I come back to the telecom, it's kilowatt hours. But anyway, you've got that to be concerned about.

But I think what Adrian is talking about, giving consumers a choice, is critical so the consumers feel comfortable about it.

Going back to the telecom analogy, that's 25 years ago, if you go back to when MCI first petitioned the FCC, that was 1963, for those of us who have real gray hair. Those of us from the Teledyne industry. So you've got to bring consumers along.

MR. HARRIS: There are a lot of people looking around in an uncomfortable --

CONSUMER POINTS/INCENTIVES

MR. WEISER: Let me actually follow up with a consumer point. One thing that's been talked about has been -- and I think Adrian mentioned it -- comparing consumers to their neighbors.

MR. LEVIS: Yeah.

MR. WEISER: So, social pressure, social norms, peer pressure. Let's talk a little bit more about that, and that obviously gets to the data. I believe there's a roll out in Florida, someone sent it to me, where you can actually go on line and see how much energy your neighbors are using.

MR. RAMSEY: You can do that without a smart meter. There are very low-tech solutions to that information.

MR. TUCK: So let me talk to my experience of this. So the first thing that we've learned in our process is that we shouldn't presubscribe what it is that the consumer wants to be measured against. So we found three things that consumers like to choose to be measured against.

The first is their own consumption. How am I doing this Tuesday versus last Tuesday, this December versus last December?

The second is to be measured against their own set of targets. So I'd like to save $50. this month compared with last month. How am I doing against that target that I've set myself?

And the third is to be measured against a

normalized version of themselves. And that doesn't mean that they get to see what their neighbor -- how much their neighbors are consuming. It means that they put in some information voluntarily about themselves: I live in a 3000 square foot home, I've got two kids, here's my zip code. And that information is then used to show how they're doing against other people in 3000 square foot homes with two kids in the same zip code.

The benefit of that is, and the way that we display this information for consumers, is you see your house on a sliding scale, and it shows how efficient it is. And you can click on the more efficient house and say what are they doing that's different than me? And we're able to say, well these guys have their thermostats set at the following settings, and it's saving them about $75 a month on their consumption. You don't know who they are, it's just a normalized, sort of this is -- we've detected this pattern, this cluster of people that look like this, and you look like this. Would you like to change the settings and try it? And you can click yes or no, change -- and the system changes your settings. You can try it and if you don't like it, you return to your old settings. And so, you don't ever know what somebody else's energy consumption is, you just know how you're doing against a benchmark of other people who look like you.

MR. GOODROE: But you know that concept makes a lot of people uncomfortable.

MR. TUCK: Well, you don't have to do it if you don't want to.

MR. GOODROE: You don't know -- but they're uncomfortable --

MR. ORCHARD: We actually had a program that we rolled out with O-Power a couple of years ago, which was smiley faces and frowning faces, and we had some customers that loved it. We also had a small subset of customers that hated it. However --

MR. HARRIS: Some Microsoft paperclip --

MR. ORCHARD: But what was interesting was that we did see as significant reduction in energy use among those customers and interestingly, some of the customers who hated it the most, saved the most energy.

MR. ROWE: Did customers stay with the program? Did you see a falloff?

MR. ORCHARD: We saw initially a falloff, but most customers, I think we had a stay rate of about -- almost 90 percent.

MR. RAMSEY: That's extraordinary!

MR. ORCHARD: And so most customers liked it, and that was not using -- that was just using --

PARTICIPANT: Low tech.

MR. ORCHARD: -- customer option, low tech.

MR. WEISER: There is a broadband connection for this, right?

MR. ORCHARD: No, initially it was a paper. Initially it was a paper --

PARTICIPANT: A bill insert.

MR. ORCHARD: A bill insert. We're moving towards the --

MR. HARRIS: The click idea, that is, I click on something, isn't that going to a server to get that --

MR. TUCK: Yeah, so there's varying degrees of levels of interaction. The lowest type version is that you get this data a month in arrears, as part of your bill. The more technology you have, while you're in the grid or in your home, the more this can happen in real time. You can -- in our system, you can choose to have it sent to your smart phone, to the web.

But again, I want to stress this, we don't work in any program across our entire 30 utility customer base where anything is mandated for our customers. So if you don't want to be measured that way, you don't get measured that way and you keep your data -- it's purely an opt-in process, where consumers can make choices to do these things and choose where this data gets displayed.

MR. ROWE: To me, the point of this conversation is that there are multiple ways to achieve a series of different outcomes. The outcomes tend to get a little bit confused. Is it reliability? Is it customer choice? Is it efficiency? Is it support of renewables? And with any particular strategy, on the customer side, you've got to understand what the

customer response will be. We don't know that yet.

That's the advantage of having multiple models. The Pacific Northwest model, I think, is a really neat way to figure out the customer side of it. You've got to have alignment, at some point, with basic state reg making. You can achieve some of these signals simply by the blunt instrument of rate design. You've got to know that bills can let you have cost recovery and a reasonable rate of return on this at some point, and maybe you won't. And then again, you've got to look at the avoided cost of one strategy versus another.

So we, at Northwestern, are actively participating in the Pacific Northwest pilot. Tendril's a vendor there. I think we're going to get a lot of information out of that.

At the same time, in our distribution infrastructure project, we're putting tens of millions of dollars into communication, down to the substation, and below, and that, again, is to achieve many of the utility-side goals that Smart Meter is also intending to do.

SMART GRID PROBLEMS: PRIVACY AND DATA ACCESS?

MR. HARRIS: So let me pick up on that. Is it useful not to talk about the Smart Grid, but to think about basically two flavors of the Smart Grid? One, you have from the meter back to the utility, where you want a certain amount of data so that you know when

to bring additional generation capacity on line, so that if a cloud passes over a solar voltaic cell, you can power up a gas turbine to keep the grid operating.

And then to think of a separate Smart Grid, basically from the meter into the house, where GE has appliances, where Bill is concerned about consumer data. And it's basically a whole separate problem, where you, the utilities, don't care quite as much, but maybe the consumer with their smiley faces or the green orbs that I've also heard about -- is it useful to analyze the grid as two separate problems in terms of privacy and data access? Bill.

MR. LEVIS: I think you can look at it that way, because the question is, who owns the data? How much does the utility need? I think that's very important. How much goes to third parties, or does anything go to third parties? And then also, what can you do to insure that you have cyber protection and you don't have hacking going on by somebody's 13-year old. So it is a way of looking at it. The big thing --

MR. HARRIS: Nobody can stop hacking from 13-year olds, at the end of the day.

MR. LEVIS: What Bob's talking about is critical. I mean, you've got to get consumers involved in whatever you do, every situation will be slightly different. What Adrian is talking about, though, is key though. You've got to get the confidence of the consumer. What you're talking about is another way to

do this. If you do it in a vacuum, it's not going to work.

MR. ORCHARD: I also want to kind of address one issue you said that may be a little issue with you, about where the utility cares, about where the dividing point is. Because I will say yes, we care on our side of the meter because I think there's a lot of benefits that will be associated with Smart Grid from integration distribution to generation, storage, electric vehicle, infrastructure.

But on the customer side we care a lot too, because we drive a lot of programs directed at achieving environmental benefit, and those types of things. And at least in our area, we're kind of seen as the honest broker. We have customers come to us and want to know if this is okay to work with this ESCO (ph), et cetera.

I think we're going to be in that same position when you have third party providers and I think we'll continue to want to drive a lot of programs. I would anticipate a lot of them will be driven through third-party partnerships. But I think we do care on both sides.

MR. ROWE: But you don't want to jeopardize your reputation.

MR. ORCHARD: Exactly.

MR. HARRIS: I'm sorry, that went right by me. How is your reputation at risk?

MR. ORCHARD: I think if there is -- if this connection between the meter data and the in home data that third parties need, if it's compromised or misused, even if the customer has consented to it, we're still going to have customers who are looking back at us.

MR. HARRIS: So that raises a -- so I'm assuming that I own my usage data. What do people around the table think about that?

MR. GOODROE: You do, and good luck with using it, because back what Arlen was saying, you'll normally come to your host utility and say, what does this mean? Tell me how I can interpret this so that I can bring value to me as a home owner.

MR. HARRIS: But you would agree it's my data to decide -- or do you? Does that mean that if it's my data I don't have to give it to you, the utility that's providing the electricity? If it's mine, presumably -- is it mine against all parties, including the utilities? Or just, you know, keeping it away from Cisco?

MR. ROWE: What I would say --

(Laughter.)

MR. ROWE: Cisco is fine. I would suggest is the utility needs the data to do its job, perform it, provide safe and reliable service, and to meet it's various accountabilities. For example, we went through our first critical infrastructure audit a few weeks

ago, passed with flying colors. But the more porous the data is, the more risk there is there. I mentioned the various state law requirements. We have to comply with those.

My question is, from the earlier discussion, there's some basis for agreement around the table that first of all, consumer consent should be active, not passive; and then secondly, that as the consumer agrees the data should go upstream to other vendors, that those vendors ought to effectively step into the shoes of the utility in terms of specificity of consent for whatever else may happen with the data -- back to your web example, and then secondly, step into the shoes of the utility in terms of potential liability, so there's a reciprocity of obligations all around.

MR. WEISER: Let me just actually follow this point, because everyone seemed to nod. In the telecom world, I'll use that example since a lot of us come from that world, the customer provides your network information, who do you call? It's something that belongs to the consumer, but the telephone company is allowed to use it, unless the consumer affirmatively says to the company, wait, no, no. I want to restrict how that gets used. So it gets to the very confusing terms, opt-in, and opt-out, which I always confuse in my mind. But one of them is you have to essentially take a step to have your information remain private, other is if you don't take a step, it can be used.

Do you think customers should have to affirmatively say yes, I'm willing to let the utility share my information with affiliates, or should they basically opt to say, no, don't share my information with affiliates? You seem to suggest, Bob, that customers have to give affirmative permission, otherwise it shouldn't be shared.

PARTICIPANT: I agree.

MR. RAMSEY: I think everyone --

MR. ROWE: The qualification would be if you have a vendor, whether it's Tendril, World Power, or whatever it happens to be, on your side, they're effectively acting as your agent. They're generating the data that you're providing back to the customer. You're not selling that disaggregated data for your own purpose.

MR. ORCHARD: But I think even in that case, utilities need to make sure that they're being very careful to fully disclose what they're using the data for.

MR. TUCK: And also to make sure that they audit heavily the third party that they use. We go through three week, 20-person security audits with utilities, to make sure that the bits of data that we use in the right way are stored correctly and meet the same set of requirements that the utility has to meet for customer data.

MR. RAMSEY: And do you know -- have happen -

- I'm just curious, have you --

MR. TUCK: Not yet, but it will. I'm not naïve enough to believe -- it's almost certainly going -- we'll be in a million homes probably by the end of next year, so there's an inevitability that bad things will happen, and our process will work hard to avoid it, but yes, that'll be --

MR. RAMSEY: And all of yours are opt-in?

MR. TUCK: Yes. So we work -- every program that we're in -- well, I need to be careful about that. There are pieces of this -- so what we do touches a lot of what goes on, and so everything that we do where we're taking disaggregated customer data, in other words, data about what's going on inside the home, is opt-in. But we also touch the pieces where the utility is seeing the whole home bill, consumption piece, that allows them to bill you for your consumption.

MR. RAMSEY: And the reason I was asking is because it all gets to what the expectation of the consumer is, and is it transparent. Do they know, for example, you're sending that over to the utility, as well as sending to them? And so that level of transparency will breed confidence, and then it will relate back over to the kinds of appliances people buy, because they'll say, oh, this appliance enables me to do X, Y, and Z. These are the standards of transparency, and I think that's what we have to get to.

MR. TUCK: I agree. I agree. I mean, we are very -- we're trying to be very, very careful about making sure that consumers don't feel their information is disappearing into a cloud, and somehow so other people are getting access to it. So in the next release of the software, there's a specific page when consumers go to the utility website, where they can see what data is being captured by them and who has access to it, and they can tick -- and proffer ticks and crosses to say, no, I don't want that to happen, or I do want that to happen.

MR. WEISER: But back to that broadband side again, back to the analogy, I've been in focus groups where people would say to me, there's no way I'm going to do that because so-and-so has got my information. They know what I'm looking at, you know, et cetera, and I don't want to opt in. And these are all the barriers that are still there, and again, I keep saying, let's not repeat those same things on this side.

MR. TUCK: To echo something that Jeff said earlier, going in philosophy on this is that different people will have different thresholds, so for example, as a traveler, a frequent traveler, too frequent traveler, I would give up biometric data associated with me in order to jump a line, because I travel three times a week, and that would be something that I would do. There are other people who wouldn't do that. Because there's a risk-benefit trade off that I'm going

to make associated with that, which is going to be different from other people.

And we need to offer people the same sets of choices. We need to say, look, here's a set of benefits associated with this. If you -- a great example is our -- the algorithms in our system can help people save money. But in order to do that, we need to know a reasonable amount of behavioral information about a customer. When are they home? When are they not home? What are the settings on their thermostat? And so on. And if a customer shares that information with us, we're able to tailor a program that says, here's a way to save $50, here's a way to save $100.

But we don't mandate that to anyone. A customer can choose to click on going into that program or not. There's a little box that tells them that if you do this, you're giving this information to us and it's not going anywhere else, and so on. But it's a choice that the customer has to make.

MR. ROWE: Three elements that seem to come to view. First, transparency to the customer and it's great to hear support for an opt-in approach as part of that. Second, is real accountability, so the vendor comes to the utility that has a pretty significant set of legal obligations, and knowingly, specifically, takes on its own set of responsibilities, risks, rather than shifting risks. And then third, I think the idea that we really don't know, ultimately on the consumer

side, how things play out. We talk about the telecoms model. Well, telecoms didn't turn out the way we thought it would when we were going through unbundled network elements and other things like that.

MR. HARRIS: We'll have a long discussion about that some time.

MR. ROWE: But the closer to home analogy is electric deregulation and there are parts of kind of the milinary (ph) field around Smart Grid that feels an awful lot like electric deregulation, and that hasn't worked out quite as well as some might expect.

So that again suggests that your approach of being more bottoms up, standards-based, and really looking out to see what the consumer response to all kinds of different products and strategies is, makes a lot more sense than top down.

PARTICIPANT: Let me follow --

MR. HARRIS: Dave has been trying to --

MR. SZCZUPAK: Scott, you asked the question, is this really two systems, one that faces back to the utilities, one in the home? And we've spent a lot of time talking about that, but there's one issue that I believe is where the two do come together, and that is about demand response and load leveling, and particularly with the need to drive a renewable energy environment for the USA. We really have to join these two together, and it's only if the utility companies can communicate with the home owner in a real time way,

to actually level demand, and actually turn off a dryer, or delay a dishwasher until evening, that will allow the benefit of using much more less reliable renewable energy, because of the weather patterns. So I think that's when you say is it two, that's when they become one, and it really is one Smart Grid in that sense.

I think the privacy part of it can be very divided. But the need for the utility company to be able to communicate, with the right level of education of literacy, I think is a critical part of Smart Grid development.

MR. GOODROE: But I think, Scott, you can't lose sight of the fact that that's a long-term objective. It's going to take an extreme amount of time to achieve. The people are not going to give up quick control -- if we learned anything in the 70s with the oil embargo, people said, I'm going to drive my car, it doesn't matter. They're going to eventually have to see that it's for their own benefit to change their pattern and experience that.

MR. SZCZUPAK: I agree, Michael, but even with the recession, the impact on people's buying choices for appliances -- people had very little interest in Energy Star three years ago.

MR. GOODROE: I agree.

MR. SZCZUPAK: Today, there's a huge amount of interest in people -- not only interest, but people

actually buying Energy Star appliances because it really does impact people's pocket, and energy efficiency, and the environment.

MR. GOODROE: I agree, we ought to have a culture and an environment that supports that, and allow people to move along that continuum at their own pace.

MR. ROWE: Currently, for some utilities, the system you're describing already meets any kind of an avoided cost test. Going forward, that will be true for more and more utilities. So, absolutely, you're right, at some point there is a continuum, but the answer is going to depend tremendously on what the demands are for the particular utility, the vintage of its existing equipment, particularly, but not only metering, on and on. But we'll all get there over time.

MR. ORCHARD: I think one of the other things, especially demand response, is you've got to show customers that there has to be a value proposition. It can't look like I've giving something up, because consumers don't want to have a diminution of their quality of life. So you've got to create a value proposition, that this is good for them and they actually benefit from it, as opposed to being punitive.

MR. TUCK: So we looked at recycling when we looked at -- recycling's a really interesting thing, because consumers don't really derive any benefit from

recycling. I mean you don't -- you typically, in a recycling program, it's -- there's some level of onerousness on the consumer to separate their stuff and so on, and you don't see any -- necessarily any tangible benefit. And yet people still do it. And that's driven by sort of a societal benefit driver -- and pestering from your kids if you're a lousy recycler.

So we looked at a program that's being rolled out in the US by a company called Recycle Bank, which incentivizes consumers to recycle by putting a RFID chip into your -- what I would call a dustbin, but trash can, I guess --

MR. HARRIS: We like dustbin, it sounds good.

MR. TUCK: And it weighs your recycling and gives you points. And so we're doing exactly the same thing in efficiency -- in energy efficiency, and we've created a point system, using the same platform actually that the recycling guys use. And the idea behind it is that the more that you do these things that have benefit to society and to the utility, the more points you can earn as a part of this process. And the -- we're just starting to roll it out, but what the recycling guys have learned in the process is that whilst these points, which are redeemable in Targets and Starbucks and so on, may be worth a few hundred dollars a year, what a lot of consumers have done is they've pointed their points at something like their

kids' school, and so the school accumulates points and people -- and behavioral patterns have changed significantly in recycling related to the fact that you can see in real time that you're --

MR. HARRIS: Isn't that just another way of saying consumers respond to price signals? Now in this case you're using the return for having filled up the bin --

MR. TUCK: It is, it is price signals.

MR. HARRIS: -- to your kids' school, when everyone wants their kids' school to get more money and do better for their kids.

MR. TUCK: That's true, but it's a carrot, not a stick.

MR. CAMPBELL: But there are important cultural pieces to this too, Scott, and I was commenting on this on the walk up because the Department of Energy keeps its air conditioning set high, at least compared to my office. But I notice we're all sitting -- and Scott, you're the only sensible person here -- because you're not wearing your culturally defined uniform, which was set for cold, damp, northern Europe, in suits and ties and things like that. When we're living here in the subtropical swamp, and if we were more appropriately dressed for the location that we were, we probably -- if our culture changed on that, you would change the amount of air conditioning we might use, for instance. And those

things matter enormously to what people do.

And so some of this, like with recycling, is cultural. Once you start doing it, it becomes the way things occur. But the other thing is that money can be a huge incentive to change the culture on that front.

One thing to look at is some of the experience that we have in areas where this kind of technology is used more intensively and more maturely than it is today in the consumer space, like in the industrial space, or in the business space. You know, recently Google deployed the Cisco mediator product into its campus out in California, the GooglePlex, which is a multi-protocol router that interfaces with all the different energy control systems to work to identify whether things are running efficiently hand how to turn things on and off, and sort of -- it's doing what we want to have in the house with the level of control across systems going forward.

And they found that they were saving up to 40 percent on their energy usage because of that. Taking all the data and acting on it, and doing what can be done. And so the potential savings is enormous, and so both culture and economics have got to drive towards this, and it's going to take both moving forward in parallel.

MR. LEVIS: I think this is true, especially if you're talking about the elderly and the low income, people on fixed incomes, people in rental units who

don't have control over their appliances or weatherization. The elderly, who don't want to spend money on smart appliances, because they don't think they're going to be around that long. So you have to look at that as well.

MR. ORCHARD: I think it kind of shows that there's not going to be one right answer for any consumer. There's going to be different motivators.

We have a -- we're about 20 percent renewable at this point. We also have a program -- and that's rate-based, everybody pays for that part of it. We also have a program where consumers can agree to pay more to have 100 percent renewable. And we have about three percent of our customers who choose to pay more, and so it's not just money. They're motivated by different things. We also have consumers who choose to -- solar's a great example. It's probably not cost-effective in most areas, but you still have a significant number of consumers who choose to install solar. So I think there's a variety of motivators, and you're going to have to use multiple opportunities and multiple channels in order to make that work.

MR. ROWE: At broad level -- I'd like to hear from a number of you, including Bill and Ray and Arlen, as we roll out the consumer side of our program, we're much more interested in incentives, positive incentives rather than negative, and how do you react to, for example, payment to the schools or a check back to the

customer, as opposed to using the more traditional inverted or purely economic cost-based rates? So carrots versus sticks? What's the reaction?

MR. LEVIS: Well, clearly I think the … cuff consumers react more positively do that, because when you do the stick, like the inverted block rates, you get a number of people who don't understand what it is, they don't understand why it's better. You get the reaction from some people who say, I should be able to us as much energy as I want at the same price, all year round, and the other end is that we have people on medical devices and you're not taking them into consideration, so you're totally callous.

MR. ROWE: And as the consumer advocate for Colorado, how do you sort through that?

MR. LEVIS: Right now I'm being pillared, I think, because --

(Laughter.)

MR. LEVIS: -- with the medical devices, we're going to have to revisit that, because some people can afford the medical devices. Other people only come -- some people on fixed incomes can't, so there has to be a program for them. I think we're hearing more and more is that you need input. There are a lot of different programs, some work, some don't, and in different communities, they're going to be different as well.

MR. RAMSEY: I think the guiding philosophy

is, you meet people where they are, and you meet people where they are from an economic standpoint, from a cultural perspective, and just from a know-how perspective. And if we always keep that in mind, that's going to dictate the kind of choices, carrot, stick, or people who say, oh, I'll pay more for solar. That's not going to work in a number of communities. They may care about solar, but they don't have the money, it's not going to work. So it's sort of the notion of let's meet people where they are and have flexibility built in to the systems. I think we'll do well.

MR. ORCHARD: And I think there's a significant tie-in to the type of data you're going to get from Smart Grid because it really is going to allow you to segment your customers. I mean, we used to lump residential customers -- they're all the same.

PARTICIPANT: Right.

MR. ORCHARD: And I think the data will allow you to really segment your customers to tailor programs to them, to meet some of these objectives.

MR. GOODROE: I think Ray's comments, though, go to the data side as well, not just the incentives, the rate structure or penalties, if you want to view it. I think it's analogous all across that spectrum from data to how you structure the program.

SMART METERS: OPT-IN? OPT-OUT? MANDATORY?

MR. WEISER: Let me put one question on the

table. For the meter technology themselves, I think what Adrian says is we talk about some of these opportunities like to manage renewables or electric vehicles, you're going to need to have some advanced metering infrastructure, maybe AMR can do that, maybe not even AMR for that purpose.

But if we have to make that sort of investment, do you need to make that for all consumers? What if the consumer says, you know what, I don't care so much. I don't --

MR. HARRIS: That's great, because that was exactly where I was going to go next. I was on a panel earlier this week, and the question was whether or not people could choose -- because you've all been talking a lot about consumer choice. I've already got an iPad. You don't have to have an iPad. You don't need to invest in that. Some people like to, right. And when I suggested that kind of consumer choice for smart meter technology, everybody in the room told me I had lost my mind, essentially, that this is not possible, that it makes no sense. A, is that right? And B, if it is right, what do you mean by consumer choice if everyone has to have the same smart meter at the same cost.

MR. ORCHARD: I'll agree, it makes no sense. You're going to have data holes that I think utilities need the information.

MR. HARRIS: Exactly what I was told.

MR. ORCHARD: They need to understand what the load on a transformer's going to be in order to do things like preventative maintenance, to know whether it can handle electric vehicle infrastructure, those types of things. I think the choice comes to -- to what use are you going to use that information? Can I designate how it's going to be used? How long can I designate for its use? And my right to terminate that use.

MR. WEISER: But they've already had to pay for the meter, though, right?

MR. ORCHARD: Right, but --

MR. GOODROE: I think what Arlen's getting to is there's a secondary benefit that comes as a -- from a utility's perspective --

MR. SZCZUPAK: System benefit.

MR. GOODROE: Yes. We're using this to accomplish core business objectives and you then said we can -- and we can take this data and use it for other purposes.

MR. ORCHARD: Yeah, I mean, for us, just the real practical part of it is, for our meters, we've got a three-year pay-back, largely because we don't need meter readers any more.

MR. GOODROE: And in our --

MR. ORCHARD: That's ultimately a benefit to the -- all of our consumers.

MR. GOODROE: In our cases, we've seen a lot

of distribution issues that have manifested themselves through the smart reader process that we didn't know existed, or one is attuned to early-on in the process.

MR. RAMSEY: And you've got to bake in the adoption curve. So you make the investment in putting in the meters, the equipment, the grid itself, and over time, the adoption will catch up with that. You don't want to sort of say, well, we don't want to do that, it's like, oh, well let's not build the roads there because it's working okay because we've got trails. Well, yeah, but at some point you've got to go ahead and build the roads and then the cars will come. So you make the investment, there is an adoption curve that's going to take time, and people will get more and more comfortable with it.

But I think we have to think about what we will intentionally do. How do we build some intentionality into this, because there are societal benefits to this. There is a financial saving to the individual over time. So who's going to build in that intentionality? Who's in that mix? So, we've got the utilities, who else wants to play in that space? And I think it's important to think about that.

MR. ROWE: I'm told that your road is not used and useful.

(Laughter.)

MR. RAMSEY: That's true too.

MR. SZCZUPAK: For Whirlpool, as an appliance

maker, you said it's a long -- it's going to be a long journey, it is going to be a long journey, but if we don't start making appliance that are Smart Grid careful, we're never going to get critical mass.

MR. LEVIS: We have to understand though, between smart meters and smart grid. If you look at Adrian's home town, they're putting in both smart meters that cost $50 to $95 dollars. They're putting Smart Grid which, for the rate payers, is costing $2200 per household for a trial. Yet, at the same time, the Chairman of the Commission -- excuse me for picking on you, Adrian.

MR. TUCK: By the way, they don't --

MR. LEVIS: At the same time Adrian sold to the Chairman of the Colorado PUC, a display device for $250 dollars, so the total price the Chairman is paying is $345 dollars. Now it isn't exactly equivalent, I realize … is a trial and they built fiber and all of that, but still, you don't have to expend all the money right away. It's a journey.

MR. TUCK: I want to build on -- go back to your question about does everybody need it, or do we need to do it in a wholesale fashion or on a point basis. I think the utilities have got to give cases to why -- up to the edge of the house, to the meter, the grid needs to be upgraded in order to provide this on a wholesale basis. But here's the trap that everybody's falling into. I'm going to go to another analogy.

If AT&T came to you and said, we're going to build out this fantastic 4G network. It's going to be cheaper, faster, sexier, you name it.

MR. HARRIS: Oh, I'm there.

MR. TUCK: Yeah. We're going to start charging you three to five dollars a month now, and you'll get your handset in five years.

MR. HARRIS: That's a little tough.

MR. TUCK: You wouldn't do it. Right? And that's essentially what the trade-off here is. It's not as coarse as that, but in the large scale utilities, even if they operate rolling out 10,000 meters a week or a day, it takes a long time to get department and residential customers, and so inevitably there are going to be some people who are in years two, three, four and five before they get the technology. But yet, the tariffs apply to everybody from day one. That's the first thing.

And the second thing is that in order for the utility to justify a smart meter roll out, there's typically two components to it. There's one set of benefits which get fled through to the utility, less meter readers and so on; and there's another set of benefits which are meant to flow through to the consumer which are related to the access to real time information, allows you to consume less, and moderate your consumption, and so on.

And what's happening is that the utilities'

benefits start on day one, and the consumer's benefits start on some point after day one, and that gap between when the consumer starts paying for the smart meter as a tariff on their bill and when they derive benefit, because the capabilities in the system switched on and they're able to access technology and appliances and things like that, then are able to react to it.

The nub of the problem in most of these deployments has been that gap, the gap -- you pay on day one and you don't get benefit until downstream.

MR. WEISER: What can you do about that?

MR. TUCK: Well, I think the key is start to deploy solutions and services that can be light-touch paper based, or web-based type solutions that give consumers access to the information as quickly as possible. So there's no reason why you couldn't do it on the day that you get the smart meter that you should be able to subscribe to some sort of information streams that are there. That's the first thing.

And the second thing is, the consumer -- the targeted, low-income family's are making sure that they specifically have some program which is underwritten by the utility that gives them early access to the technology that allows them to advantage of the smart meter, goes a long way to sort of helping -- low income and high use customers are the two groups that are going to benefit most.

MR. HARRIS: How does it help low income

customers if they're living in apartments where they don't have control, necessarily, over the electric usage. They might not even pay the bill as a separate thing, may be included in rent or what have you.

MR. TUCK: It doesn't solve all low income customer problems, but to the extent that you are a customer who is paying their own electricity bill, and your electricity bill has just been hit with a surcharge of -- we've seen one to five dollars, right, in the one to five dollar range -- to cover the cost of a new meter that you don't see any benefit from. Then at a minimum, I think that the utility has a responsibility to give the low income customer products and services that at least allow them to recover the cost associated with the increased tariff, and hopefully.

MR. RAMSEY: I was going to say in terms of the low-income folks, you know, one of the low hanging fruits is you've got roughly two million households that live in housing controlled by either HUD or a non-profit, and they are very price sensitive. And the individual is impacted by the operating cost of those units. And so if we can reduce that operating cost, that will matter to the rent of the individual and also the fiscal health of the entity supplying that housing. So it does matter in that ecosystem, and that's where -- that's something where I think, again, there is a chance for collaboration, coordination, a bunch of

number of players who traditionally don't sit together, I'd like to see sit together.

MR. HARRIS: Yeah, Rob.

MR. ROWE: One of the challenges is to explain to customers how, in fact, the utility side benefits, whether it's reliability, power quality, long-term least cost, actually do flow through to the customers. One of the opportunities of Smart Grid is this is kind of the distribution system's moment in the sun. So people are excited, interested in Smart Grid, but that's also been an opportunity to talk about all the things you need to do upstream in terms of the distribution system, substations. A lot of it is technology driven, some of it is really pretty prosaic. But all those benefits ought to flow through.

One of the questions, then, is at what point it's sensible to change out a generation of technology? So, for example, when you -- it sounds like you have AMI?

MR. GOODROE: Yes.

MR. ROWE: Did you have AMR before, or did you -- so, for you --

MR. HARRIS: Could you just explain so that everyone knows AMI, AMR?

MR. ROWE: Hopefully. You were there. You were at AMR.

MR. GOODROE: Well, I would think AMI is more of a near-real time information.

MR. HARRIS: First what is AMI stand for?

MR. GOODROE: Automated metering infrastructure. AMR stands for automated meter reading. So I view AMI as more near-real time information flow from the meter -- from the location where the meter is located, back to the host utility.

MR. ROWE: And you were able to make -- to determine the value proposition was there to go all the way to AMI?

MR. GOODROE: Yes. And specifically, back to one of Arlen's comments, was labor cost. That was a big driving factor. But there are a ton of secondary benefits.

MR. HARRIS: Just to be clear, the big advantage of all this is we're putting people out of work?

MR. GOODROE: No.

MR. HARRIS: Look, you've got to call it what it is, right?

MR. GOODROE: But no, you're optimizing your assets.

MR. ROWE: On the other hand, we are, in our Montana Electric operation, we're at AMR. It's pretty tough to justify a new generation of meters, but it does raise questions about depreciation lives. And the interesting thing was the creativity with the technology that lets you basically bridge from AMR to something that looks like Smart Grid, and that

technology really didn't exist in a meaningful way.

MR. TUCK: Shows how fast-growing the market is.

MR. ROWE: Yes, and that really was not a commercial product 12 months ago.

MR. HARRIS: So let me tease out what I thought I heard one of you saying before, maybe it was you, Arlen. I wonder if there's a tension there that is sort of gotten papered over.

Use of the data. I thought I heard you say something like, you know, if the consumer takes his data and gives it to a third party and it goes awry, I, the utility, am going to be held responsible. Implicit in that, I wondered whether there was a suggestion that while the data may be mine, maybe I'm sharing it with you or the utility, and therefore you get some say in what I do with it, and that third parties sort of have to come to you for approval or like have their aps approved before they go on the phone, or something like that. And if you're indeed saying that, I wonder what other people think about that.

MR. ORCHARD: Yeah, I think it's interesting, and I think a lot of it will come down, ultimately, to the standards that are adopted. Because -- and I think Adrian --

MR. HARRIS: The technical standards.

MR. ORCHARD: The technical standards on security, because that's where some of the risk is,

going forward, and I think Adrian said that third party providers should have to meet the exact same kind of security standards that utilities do, and we certainly support that.

MR. HARRIS: Who gets to decide that, though? The utility or the regulators or --

MR. GOODROE: William gets to decide.

MR. HARRIS: State commissions --

MR. ORCHARD: Well, I mean, that is one of the issues, because typically these kind of concerns have been state concerns, and they've been dealt with on a state-by-state basis, some more draconian than others. And I think that raises one of the big concerns moving forward, how do you kind of standardize this across the country? Because, in my mind, that's pretty necessary, and I rarely argue for something that is generated out of Washington. But there may be a need for kind of these standards that get spread throughout.

Your question as to holding us responsible, and I don't mean it in a legal standpoint -- from a legal standpoint, because I think you can deal with that from a contractual standpoint. In fact, there's a piece of legislation moving forward in California, that makes clear on Smart Grid that once there's a transfer from the utility to the third party, that liability shifts to the third party, and they're holding the third party to the same standards that they're going to

hold the utility to. Whether that goes through or not this year, I don't know. But I think it's the reputational part of it, it's the trust that your customers have in you over a long period of time, because you've been there, you've been their only provider.

I think that if you have standards applied to all, then I think third parties don't necessarily need the utility's permission to play in the game, but I also think, at least in the early days, the most effective programs are going to be utility-third party partnerships. Because, again, you do have that element of trust, and you have direct access to your customers in order to promote these programs.

MR. WEISER: Let me push back -- when Bob mentioned telecom analogy he said, on bundling maybe that didn't work out so well. Another analogy people talk about is the carter phone analogy, which I think you would say did work out pretty well, which is not to give the utility, there AT&T, control over the devices that fit on the network --

MR. HARRIS: Can I stop you for a second? Just for those non-telecom people in the audience, carter phone was the decision of the FCC which said that people were allowed to go buy their own phones and attach it to the network, as long as you didn't do damage to the network. That's why you no longer have black, rotary dial phones.

MR. WEISER: So one could say --

MR. HARRIS: I love to do this to the utility people.

(Laughter.)

MR. ROWE: But it makes them very glad they do what they do.

MR. WEISER: Is there, you know, a scenario where allowing different kinds of access to third parties to electric information could stimulate new applications that would benefit consumers, and what other requirements or conditions that would need to be met before those sorts of entities could get into the network?

MR. ORCHARD: Are you talking about the type of data that they would get that would be customer-specific data, or are you talking about data that would be aggregated and essentially made anonymous? Do you think there's a difference in those two things? One, I think requires explicit consumer consent, the other I think you have a lot more flexibility on, provided that it's truly not capable of being coupled with other data to draw into the … pictures.

MR. GOODROE: I think the other thing Arlen's suggesting is that you take us off the hook from a legal perspective, and the customer is okay with it, then it's a whole different ball game that we're talking about. As long as you want us --

MR. RAMSEY: I also think you're talking

about how to create a robust marketplace for applications and those sort of things, which is an interesting tension because, again, on the one hand you could do that, but then how do you protect consumers because you could get a lot of unscrupulous folks coming forth. There is a level of trust, even if people are angry with their utility, there's a sense of like, they're there, they're stable. I can trust them. I can sue them.

(Laughter.)

MR. RAMSEY: But you may not have that, so it's an interesting thing, trying to tease out how you can create a robust marketplace and the carter phone example is a good example.

MR. CAMPBELL: I think we have to look at this as a bit of a continuum too, because when you talk about standards, well, what standards and where? And I think it matters enormously what you're talking about. Because if you're talking about moving the information around inside the home, there are a variety of … network technologies that are out there. All of them have security, all of them have different security, though. Is it only one that's going to be acceptable, or are there going to be multiple ones that are going to be acceptable? And I'm not sure that we're at a point in this technology yet where we want to say, yes, this is the answer. Everyone is going to use this. We're going to go forward on this basis. I think

there's a lot of technology to be developed yet in this area, and a lot of improvements, and different things that may work better in different situations for different purposes.

And so I think we need to be careful here not to go too far down this path. Now, having the data in a standardized format and having standardized ways of exchanging information, making sure that the consumer consent has occurred and things like that, make a whole lot of sense to me. But when it comes to what happens beyond that, I think there is a lot of benefit, and we've seen this in the internet space, to allowing choice in innovation and consumers to vote with their feet.

I think, as Arlen mentioned, in the early deployments, no doubt, this is going to be driven by third parties working with utilities. That's going to be a huge part of this. But at some point this may become a consumer driven market with consumers doing this independently. And it will probably wind up being a hybrid of both, or even other models, and we have to allow the possibility for those things to develop and for the technology and innovation to occur going forward.

So we have to be careful about what we mean by standards. If we mean by having a secured transition of the information from one device to another, that's a great thing, but to define exactly

the only way to do that is problematic at this point.

MR. LEVIS: It also makes a difference what kind of devices you're talking about. When you go back to carter phone, that was a dumb telephone. I mean, it didn't really project any information. It didn't store any information. It's my understanding that Tendril's going to be selling their device at Home Depot and Lowe's, not necessarily only through a utility. That makes a difference too.

So I think you're right. It depends what devices are developed and for what purposes they're used, and how the consumer is going to use them.

MR. ROWE: Carter phone is a good analogy, but I don't think it proves the point you intended for precisely that reason. It's all customer-side, and we could agree that Ma Bell was in a monopoly mindset, somewhat over-reaching, and the erosion of that over time was -- it took a long time. I think the analogy to Carter phone is really what lots of commercially very successful ESCOs do already, managing data on the customer side --

MR. HARRIS: Which are?

MR. ROWE: Energy Services Companies. The challenge in most markets has been to go from commercial industrial down to mass market, and that is certainly changing. But you could think of it as the devices that are sold now as the smart meter without the smart grid. And for the most part, again, if

you're not crossing over to the utility side, it's not an issue. ESCOs are, in many ways, a robust market, and often they partner with utilities, but not necessarily.

MR. TUCK: So maybe we can use sort of a use case, which is rapidly becoming a real one to show where the line's set. So I'm a consumer, I want to go and buy a new washing machine or dryer --

MR. SZCZUPAK: From Whirlpool.

MR. TUCK: From Whirlpool, I'm going to get the best buy to buy this thing.

MR. HARRIS: Just for the record, by inviting people here, we don't mean to endorse everything -- we are looking for a diverse group of perspectives who --

MR. TUCK: So I want to buy a new dryer from Whirlpool at Best Buy. And what I'm being offered is one that has the ability to talk to the grid as a new feature that allows it to react to price and so on, and save me money. So that seems like an attractive proposition, so that's what I want to buy.

Now let's look at the three or four players -- Whirlpool, Best Buy, and the utility here. So the utility has a network that's going to be very, very secure because we don't want people to hack in and bring it down. This new washing machine from Whirlpool is about to become an end point in that network. And so if someone can hack that thing, they could, theoretically, go all the way back up to the grid --

through the grid, and turn things up and down, just because this washing machine is now able to receive pricing things from the smart meter.

And as a consumer, and I'll put Best Buy into this same category, nobody's ever networked a washing machine before, so to the extent that I'm going to buy this thing, I've now got to think through how am I going to join it to the grid and make it all work. That's a fairly complicated challenge.

And so the systems that are being built by Tendril, but not just Tendril, are being built in order to allow the guy in Whirlpool to, at his point of sale, commission the washing machine or the dryer in order to be ready so that it's secure on the utility network by the time the consumer gets it home. And there's a whole set of standards-based processes that are needed that are akin to the kind of thing that happens when a cell phone gets commissioned onto a cell phone network in order for that to happen.

And those kinds of things do need to get mandated by standards bodies. I agree that we shouldn't pick specific technologies, but you can't sell a different washing machine in California than he sells in Texas that he sells in New England, because that just won't work. So that has to be a national process.

MR. HARRIS: Okay, so I get the national process on technology standards. I get that.

MR. SZCZUPAK: Framework.

STANDARDS - FEDERAL OR STATE?

MR. HARRIS: But let's address the federal issue, if we could for just a second on the privacy data access issue. Can we do that on a 50-state basis, if each state having its own rules for data privacy, or is that a problem? Do we need federal legislation to deal with these issues? Should Congress put FERC in charge of this, rather than 50 states. I know state regulators think about this as a general rule, and there's a great deal to be learned by having states experiment while others don't. What do you all think about this? If we're concerned about data access and privacy in the context of Smart Grid technologies, do we leave it to 50 states, legislatures and utility commissions, or do we put for something different? Or do we not care?

MR. WEISER: Bob, you're the kind of pro in this world, can cooperative federalism -- you talk to the feds playing a facilitating role?

MR. ROWE: You're selling books, aren't you?

MR. WEISER: … help to try to get this to cross the finish line? Because at Whirlpool, their view is, if we don't have this kind of harmonious standard base architecture, it's not going to work for us.

MR. ROWE: No, I very much support the standards process, and I think of standards as being,

first of all, technically driven, consumer driven, bottoms up, and based on what works. The discussion of standards -- of privacy in this process is particularly thoughtful for a standards document. I would be concerned with any standard, and you can pick lots of standard dead ends, of simply getting it wrong because the technology isn't mature enough, because there hasn't been enough opportunity for experimentation, and because the consumer response really isn't known yet. So I would push back against freezing in time a template prematurely.

On the other hand, you're talking about -- and very much consistent, Scott, with what you're doing here -- talking about convening, collaborating, developing models. Phil, in his youth was a huge facilitator of that kind of work in telecommunications with absolutely no authority to do it, and it arguably worked better --

MR. HARRIS: Try to keep it that way.

MR. ROWE: -- so I think that's where you can really provide a great role. But I would -- we have a tremendous amount of work on the standard side, actually Bill Cloutier from Edison Missouri, he's deep into the standards process, so hopefully he'll jump up during the discussion. I think that's the place that this really has to get worked out.

MR. HARRIS: Yes, Adrian.

MR. TUCK: Where I was going with that is

there is a role to define those specific transactions that happen that needs to happen, whether it happens state by state, or nationally. I'm not schooled enough in the politics to understand which is the better way.

MR. HARRIS: Nobody is.

MR. TUCK: But after that, once that washing machine is joined to the network and it's getting pricing signals, there are all sorts of things that can happen. Whirlpool could sell you a predictive preventive maintenance program, if you signed up, that said if you allow us to take a look at the maintenance on the washing machine, we'll provide you with a service schedule for your washing machine. We'll know when it goes wrong without having to send a truck out.

MR. SZCZUPAK: I'll manage the efficiency of your appliance better because of it, to actually help the whole energy usage as well.

MR. TUCK: We may see models where that washing machine can get new software drivers that work with new soap powders, for example. I don't know all the models that exist, but there are all sorts of things that we can't legislate for because we don't know what they're going to be. It could be that my washing machine starts buying electricity from my neighbor's solar panel on a peer-to-peer basis. We don't know what the models that are going to come are.

But the clear thing is that once you've legislated for the ways the security of the system

works and who sends what data to who, it seems to me that the telecom industry is get out of the way. Let the market emerge and, you know, this country got 30 years of leadership out of the telecom space and great big multinationals were born, because essentially, the government created a set of rules and the market stepped back. And it seems to me that the opportunity exists to do the same again.

MR. SZCZUPAK: But we do need a standardized framework.

MR. TUCK: Right, yes.

MR. SZCZUPAK: To enable us to move forward rather than go down dead ends.

MR. HARRIS: Okay, Bill.

MR. LEVIS: Were saying, there's a difference between what is going to be offered for the Smart Grid and the smart appliances versus the fact that at least now, in most places, you still have only one utility. I mean, we have to move from there as well at some point.

MR. HARRIS: Okay, this sounds like a good place, maybe, to open up the floor to questions, comments from the audience. We have a little less than 45 minutes left, and I'm going to want to come back to each of you, perhaps, for one final -- some closing remarks on what you took, if anything, from this panel, so I want to make sure -- and that will take a while with so many of us around the table. So I wanted to

open it up. Does anyone -- yes.

AUDIENCE QUESTIONS AND COMMENTS

MR. OLDAK: We --

MR. HARRIS: Could you stand up, introduce yourself, because we are keeping a record of all of this. Mike, could I ask you to use the microphone, if that's doable, and if not, if you can't get to the microphone, just shout.

MR. OLDAK: We talked a lot about giving customer the data so that they can optimize their own use. But I think the question is, if we've got the utility being able to use that same data and work with appliances through critical pricing or dynamic pricing, or peak time rebate, and really put the major appliances, your air conditioning, your water heater, your electric vehicle charger, your hot tub, whatever it is, responding automatically to peak time rebates, then what you have left in the home are a lot of toasters and hair dryers.

Has anybody taken a look at the value -- and also, there's a difference between optimizing a home for that own customer's self-interest against rates, which is important, and really right now there's no, in many cases, no penalty to consumers from turning on the air conditioner, the electric vehicle, the hot water heater, everything at the same time for residential customers, there's no rate structure.

But when we have, from the utility's standpoint, the ability to be in the customer's home and help them help us optimize the grid so that if you've got two people that come home and both plug in their electric vehicles at the same time, and they're both 80-amp chargers, you can alternated them, like utilities have done for hundred years with air conditioners and other devices, and water heaters.

I mean this is where the value to consumers is. It's not necessarily optimizing the customers value, and I think this is where the appliance industry -- I looked at Consumer Reports and they had a little sticker on a washing machine, the cost of operating this for a year with a gas hot water heater was $15 dollars a year. I mean, where's the -- we can't lose sight of the value of taking all this information and having the utility optimize the grid for the benefit of everyone and being able to avoid the billions and billions of dollars on new infrastructure and generation and transmission.

I think as you said, to be able to avoid the peakers -- I mean these are the kinds of issues. But has anybody really done that kind of analysis, just looking at the home area network, and where, for consumers, the value is? I mean, is it in optimizing the home, or is it in, really, optimizing the grid?

MR. HARRIS: Adrian, do you want to take this one?

MR. TUCK: Yeah. A couple of things you said made me a little nervous, but I may have misunderstood them. So there are things in the home that consume a lot of electricity. Your air conditioning, in typical homes is about 40 percent; your appliances are 30 percent; and then the rest is made of lighting and various and sundry things. The -- and undoubtedly, the utility can gain benefit from the ability to moderate the consumption of those things in order to drive to a more efficient grid. But it should be the consumer's choice as to whether the utility is allowed to extend themselves in, and there should be a clear and tangible consumer benefit associated with that.

So a good example. We're involved in a number of the roll outs of the Nissan Leaf project in a number of cities. So if you think about an electric vehicle, if it was your only electric vehicle, and you're right, it's a huge load. It's bigger than a house, typically, and you plug this thing in, you're probably going to have a minimum state of charge that you want for that electric vehicle, regardless of price, regardless of what's going on in the grid. You need to know as quickly as possible after you've plugged that car in, it's going to get you to the emergency room and back, for example, some barrier that's defined or some threshold that's defined by you. And after that, you know that once it's got to that point, you want it to be charged either as cheaply as

possible, or as greenly as possible, depending on your drivers.

So that set of things, and your car's relationship with your thermostat, for example, which has primacy? I'd rather be cooler, and I'd rather accept less charge at the end of the -- in the morning, but stay cool, or actually, I really, really need the car to be full and I'm willing to give up on charge in a constrained environment -- give up on coolness. Should be your decision. And so the ability for you to interact with the system to set those preferences for yourself is very, very important.

Now, there are huge benefits that are derived by the utility associated with facilitating your ability to do that. But we need to be very careful that it is your ability to do that that we need to facilitate, not the utility's ability.

MR. OLDAK: I agree it has to be the customer's choice.

MR. TUCK: Right.

MR. OLDAK: But right now, if I go home and plug in my electric vehicle, and turn on my air conditioning, rather than managing it from one end to the other, there's no difference in my electric bill.

MR. TUCK: Right. So we need to create structures that incent behavior that is utility-centric, or benefits the utility from a grid reliability perspective, absolutely.

MR. WEISER: All right. Other questions? Or comments people have? Russ, come on up.

RUSS: Thanks, Phil. I wanted to follow up on the telecommunications analogy. I think that Adrian, you raised, and Bob raised. One of the things that worked in telecom, and even though telecom and energy are different, is the notion that if you somehow remove the barriers, you create access, but at the same time you set up a system where there are some regulatory accountabilities, such as consumer protection, cost recovery, then that's really the way to stimulate the market.

And so I was just wondering whether that, you think, would work here in energy?

MR. WEISER: Bob, this -- from a regulator? And it's worth noting, not all utility commissions have been wild about giving utilities cost recovery for some of this technology. Maryland just recently.

MR. GOODROE: Just Tuesday, right?

MR. ROWE: In fact, I think that's a -- hopefully, that all works out, but some of the experience, whether it's that or the PG&E situation, I think is a good cautionary note that not everything works out as we might like it to work out, especially in the near term. And that's another argument for some contingency, just again, paying attention to what customers are actually telling us.

There is a tremendous amount of

responsibility, and actually I have a lot of respect for, being a regulated provider of an essential service. That's a good thing. In the utilities sector, where we're having more and more responsibilities added, not just on the customer facing side, which is where our focus is, but upstream again, in terms of reliability, network operation, renewable integration, a lot of activity at the DOE, the FERC, the FCC elsewhere, Securities and Exchange Commission. And ultimately, it's the utility's responsibility to harmonize all that. And one of the things that's caused a lot of us some heartburn is that discussion about importing parts of the federal criminal code into reliability. I think maybe that would be backed off a little bit, but there is a lot of responsibility. Again, largely a good thing, but we have to think through, and Scott, what you're doing here is a good opportunity to think through how all of those pieces ultimately have to fit together.

And again, my lesson from telecom is my lesson from supply deregulation on the energy side, is to be very, very modest and do no harm.

MR. HARRIS: Other comments on this? Yes.

MR. LEVIS: The other thing, if you talk about land line competition, you still have the FCC regulating some of these things, and just last week they found that Quest still was not going to be basically deregulated in Phoenix. So it isn't -- we're

not totally unregulated in the telecom area at all. And I think we have to be really sensitive to what the utilities are providing, as Bob talked about.

When we talk about third party products, obviously that's a whole different area, and I think that's where you're going to see most of the competition.

MR. HARRIS: I understand that Bill Cloutier from DTE is in the audience, and has requested to ask a question. Is he here? Ah, there.

MR. CLOUTIER: I don't really have a question, although I'll respond to Bob Rowe's earlier comments on standards. First of all, I want to say I applaud the effort by NIST and by the groups involved in that to establish standards for the Smart Grid moving forward. Through the NIST effort, they've identified 16 areas called priority action plans. I would encourage anyone in the room that is interested in that effort in furthering the development of those standards for the future Smart Grid to get involved in that.

We're actively involved in that. We're involved in it for a lot of reasons. One of the reasons is we have equipment already in the field. The electric industry maintains the grid, provides reliable service on a day-to-day basis, and we have technology equipment in substations, in our control systems, and so forth, that could become obsolete if, in fact, we

move forward with decisions on standards that would make that equipment obsolete.

Furthermore, investments in Smart Grid technologies, especially when you talk about investments down to the customer level, where we're investing anywhere from $100 to $200 dollars per customer. You want to make sure that those investments are prudent. You want to make sure, because you're talking about hundreds, literally, or a couple billions of dollars for a large utility like us, with 2.7 million customers, we want to make sure that our investments will lead us into the future, and our business case proves out.

Our business case for AMI was primarily founded on operational benefits. I've heard a lot of talk today about the operational benefits, and that's primarily where we were able to sell that to the local PUCs, benefits from not only meter reading, but reduced truck rolls, efficiency in their field operation from remote disconnect and reconnect, providing customers with prepay options, you know, using the meter through that. There are a lot of features that we can offer the customer.

But trying to upsell future services, future engagement with the consumer and so forth, is a tough sell at the PUC, and at the consumer advocate level also, because they want to see that tangible benefit, something that they can get immediately when we start

to make that investment.

We try to keep our rate case neutral, where there wasn't an additional charge to the consumer, and we would reduce the cost over time, based on the operational efficiencies. Anyway, that's kind of just a follow up on the standards.

MR. HARRIS: Bill, I think you just said consumer advocates don't have much vision of the future.

MR. CLOUTIER: I wouldn't say that. I'm just saying the consumers really want to see a benefit, and real time.

MR. HARRIS: Bill, you want --

MR. LEVIS: Consumers want to see both short-term as well as long-term, and when it's all said and done, it's consumers who end up paying for it, and they want to see that they're getting something that's worthwhile. And based on situations in the past, it hasn't always been that way. And the other thing is, electric rates are going up faster now than they have for a long time, and again, they have to feel more comfortable about this. And that's really what it is. I mean, we've been talking about it all the time in the profiles of consumers. You have to sell this.

I was on the other side, working for a telecom company for a number of years. I understand that.

MR. HARRIS: Bill, I didn't mean to interrupt

you. I apologize.

MR. CLOUTIER: No, that's all right.

MR. HARRIS: I thought you were finished.

MR. CLOUTIER: No, that's fine. I also -- I applaud the discussion this morning with regard to access to consumer information. So we take access to consumer information very seriously. Along with many other utilities, we're looking at our privacy policies, doing internal assessments, looking at benchmarking. You know, as we move into the future of Smart Grid, how do our data privacy, confidentiality policies need to change for this information? Obviously, we need to comply with billing rules and sharing information with customers, and we try to do that. But today there aren't any hard and fast rules on privacy, and I think a lot of utilities like ourselves are looking at that, and we take it very seriously.

And in terms of sharing with third parties, we strongly feel that needs to be with the consent of the consumer, and I think everyone echoed that. I was pleased to hear the opt-in. It seemed like most of the panel agreed to the opt-in, which is something that we would agree with also.

The other -- in terms of -- I had some other points. Also, we're working really closely with the Edison Electric Institute and they've drafted some guidelines on customer data access and policy, and so many utilities and others are involved in that process.

And again, we're working to look towards the consumer and how we can protect that information. Thank you.

MR. HARRIS: Bill, thank you. Question on the corner?

MS. SANFORD: Is this one on?

MR. HARRIS: It is. But you have to stand on your tip-toes for that.

MS. SANFORD: I do. I'm Jennifer Sanford with Cisco. I had a question about -- and I think the gentleman who just spoke raised this in part. What about future proofing these technologies? We're making investments today in different types of technologies, in the meter, in the appliances, and how can we make sure that those investments are not going to be stranded over time and can be interoperable with future technologies?

MR. WEISER: Sure you don't want to go to Cisco to ask that question?

(Laughter)

MR. CAMPBELL: I see the softball coming up. I hope I can hit it better than I usually do. I think this is a good point, and I was thinking that as Bill was talking about the investments and the concerns about whether that will still be a useful situation. And one of the things I think we have to think about in this space is how is the technology going to develop? Are we going to base it upon extensible protocols, like IP, where we can run multi-protocol systems, where we

can look at creating newer systems that are backward compatible with existing systems so that we don't strand investment, either in the utility networks, but also in the consumer home? Because yeah, I mean if Whirlpool's going to make that refrigerator that's going to know exactly when I'm ready for my drink at the end of the day, it's got to be able to work for 15 or 20 years for me, because --

MR. SZCZUPAK: At least 12 years.

MR. CAMPBELL: And we have to make sure that we're going to have backward compatibility in these systems. So one of the things you have to think about is what is the best platform to do that, and in our experience, we find that when you use an agnostic layer like IP, you can ride all kinds of protocols across it, you can make them backward compatible, and you can make the data interoperable.

MR. SZCZUPAK: Has to be.

MR. HARRIS: Question?

MR. CAMP: Hi, Ward Camp at Landis and Gyr. I think Adrian brought up a couple of points that we're really seeing, that I'd really like to hear what the group thinks may be a solution, and then also what the role of the DOE.

Number one, the length of a roll out. We know that the sale cycle is three to seven years. We had Sherman Elliott last week talked just the rate approval process often takes 11 months. So a lot of

these are very far along, but even if they are very far along, it may be seven, eight years before they're finished rolling out. And there's a timing element that people want immediate feedback. I buy my Prius. I may spend an extra $10,000, but at least I'll get that little feedback. Now I didn't pay $10,000 for just that feedback loop, but that's a very valuable thing.

And one of the things that I think Adrian points out is that if you have a feedback loop, or some kind of information, it may not be the total cost of the system, but it's that valuable thing that the customer sees right off. However, it's not on the utility's side, historically, and rate recovery has been tough.

Texas legislature has -- and Texas has seen the value of this, and they're going to put up, what, 400,000, if the money holds, 400,000 in-home displays for the low-income and fixed income, but how do we pay for that? The consumer advocates are already concerned about the cost of the Smart Grid, but that information device, or something that they're receiving, how do we get that quicker into their hands and what role could DOE or other groups play?

So I'd really like to hear your thoughts because I think this time lag is causing push-back against the Smart Grid because the benefits will eventually get to the consumer, but if they're not

immediately or contemporaneously there, there's consumer discontent.

MR. WEISER: So we've raised this theme before. Adrian, I think you tried to give us your best answer before. How do you avoid this time lag and consumer back-lash issue that we've really been hearing about?

MR. TUCK: So as I look at the gamut of the deployments that we're either part of, or that I've observed, I've seen a number of things. The first is, the initial reason for the gap was predominantly that the utility didn't spot that it was going to be there. And so PG&E is the best example of how not to do it from that perspective, in terms of they just didn't figure out that they needed to educate and manage and talk to the customers and provide immediate benefits. So that's the first thing.

The second reason for a gap is that the technological infrastructure that's required in order to fill the gap has only just been built. And some of it is still being built. So the first wave of smart thermostats and in-home displays and so on are now available. The first wave of appliances is imminent, but is not yet fully available. And so that's the technological component, which is being exacerbated by standards. So -- and I'm not complaining about a standards process, it's a necessary process, but there are meters being deployed in the field today in tens of

thousands a day, and the standards process is still not complete. And so some of the meters that are being deployed are not yet ready to talk to in-home devices because they need to be upgraded at some point in order for them to be able to do that.

But the predominant, the easy fix is to provide information as quickly as possible. And that can be done through existing products. There's no reason why you shouldn't be able to, on your iPad, look at your bill. The systems exist today to do that. It might not be a dedicated piece of technology that goes inside the home. But the first step of providing consumers with information, the Prius screen that Ward talked about, is perfectly doable today. It just needs focus from the utility. There's a real focus on getting the meters rolled out efficiently, and the sort of hold for the consumer pieces play a poor relation to that first, and now it needs focus.

MR. HARRIS: I think we have time for one last quick question.

MS. STEINER: I hope it's a good one then, since you're going to end on it. Hi. I'm Tracy Steiner with the National Rural Electric Coop Association, and I had a question for the panel. We sort of skirted around the issue a little bit in terms of state versus federal role in terms of setting privacy standards, or principles. We got talking about the data security piece, which is obviously a very

important component to be able to maintain privacy, but is that even a fair question? Is it an all or nothing, state or federal? Is it a combined role? Is there a self-regulatory model that makes sense that we've seen through another analogy works pretty darn well? If there is --

MR. HARRIS: Which is the self-regulatory model that works well?

MS. STEINER: Pardon me?

MR. HARRIS: Which was the self-regulatory model that works well?

MS. STEINER: Well, we could probably debate that for another --

MR. HARRIS: No, I actually don't know what you're talking about.

MS. STEINER: Well, up to this point at least, we've seen a kind of self-regulatory model around internet practices and marketing, direct marketing, and behavioral marketing, to a point. Now the technology is getting to a point, and practices are getting to a point that maybe people think we've gone a bit too far.

Last part of a multipart question, then, assuming there is a federal piece to this, whether it be solely a federal piece, or in combination with something else, where is the Federal Trade Commission in this debate? Is that an agency that we should be talking to that I haven't heard much in this debate so

far? Thanks.

MR. WEISER: Several components, and I take it the Federal Trade Commission you raise because of their historic role in privacy, and I'll -- I think I can answer factually. To the extent utilities say, here's what our privacy policies are, and there's a convergence on that, or the states require them to have a privacy policy and they then announce it, any party that deviates from their announced privacy policy, the FTC is the enforcement body. So I think that gives you a --

MR. HARRIS: And I had thought that I had heard general consensus around the table, though that could be wrong, that states were perfectly capable of handling the data access and privacy issues as they were doing. But I may not have heard that consensus correctly. So can I go around the table quickly?

MR. TUCK: For me it's less about capability, and more about efficiency. Yes, states can do it, but it's tough for people who would, like me and Rob, who are in the process of trying to sell across multiple state boundaries, to deal with 50 different sets of requirements, which is why we're converging or where we're heading. So a role where the least best practices are defined and listed, so people could then decide to deviate on a state by state basis if they wanted to. But we seem to be inventing things over and over again.

MR. SZCZUPAK: There has to be some framework.

MR. HARRIS: One of the things I think that the FCC broadband plan asked us, meaning the Department of Energy, to do in fact in this proceeding, was to sort of lay out best practices to the degree that they exist.

MR. LEVIS: And the question is also, do you have minimal federal standards, as you do with CPNI, Customer Proprietary Network Information, and then allow the states to do more, at the same time, not having the states get into the standards for the appliances? I don't know the answers, but that's a model that's been used in the past. And I know the states are interested in that.

MR. ROWE: You need a standard.

MR. SZCZUPAK: Oh, absolutely.

MR. ROWE: We need standards. You probably don't want a standard developed by an agency through an APR kind of process. I think you want something that is industry-driven and responds to customer experience. I think that's where we're going. As Bill said, but the lift on the standards process is just enormous. I think states ought to be aware of that. I don't know what's going on. It's our responsibility -- all our responsibility to communicate back to a number of state agencies what's going on.

In response to the question, I think the

answer is yes, yes, and yes. There is a role for states. We've talked about that. Is a role for the federal government. Your analogy is actually kind of interesting. There are other federal law analogies too. We've talked about federal floor/state ceiling, talked about … acts and practices.

My message again would be harmonization, but really technology and commercially driven. Clearly there's a role within companies, and Bill mentioned the -- I think most companies internally have a pretty sharp focus on protecting customer data, have internal practices, they're continually reviewed. It's an important part of what we all do. It's the right thing to do. It's part of the culture. So I think there are roles all around the table. It would be a huge mistake again, I think, to freeze the model prematurely. It would be a huge mistake to get into a jurisdictional fight for all kinds of reasons, but chances are you're not going to get the right result at the end.

MR. GOODROE: I think it was Jeff who said we're on this continuum. And I think that's -- we can't lose sight of that. Developing hard, rigid standard might not provide the outcome that you're seeking. We should give some more thought to that. A good best practice is a good guideline that sets along a roadmap that people can move along, is probably more useful, given where we are today.

MR. HARRIS: So we have about 16 minutes

left, there are eight of you, if I can do my math properly, you each have up to two minutes, if you would like to sum up your thoughts about what you've heard today. Jeff.

PANEL SUMMARY

MR. CAMPBELL: Great.

MR. HARRIS: The rest of you can make notes while Jeff is talking.

MR. CAMPBELL: Here's your thinking time, and my thinking time we'll start with, because I do want to thank Scott and Phil for gathering this group of eminent people together today to discuss this. I think it is very useful to have this type of format to discuss the issues, where we have rational conversation, rather than lobbing things back and forth on paper and what not, and I think it's very helpful.

I think the big take-away from this is to understand there's an enormous amount of potential in Smart Grid going forward, both in terms of energy efficiency and consumer benefits and cost savings. And we need to be open to the technology. We need to protect consumer privacy as reasonably as possible, and allow the consumer to have as much control over the process as possible, while not limiting the technology going forward.

MR. HARRIS: Thank you, Jeff. Next.

MR. ORCHARD: You didn't give me much time for my notes, but I'll go anyway.

MR. HARRIS: He could have talked longer, you know.

MR. ORCHARD: Thanks Jeff, could you have stretched it out a little bit?

MR. CAMPBELL: I cede the remainder of my time.

MR. HARRIS: The clock is ticking.

MR. ORCHARD: I think one of the things, first of all, I think the diversity of the panel was really interesting. It was really beneficial for me to hear. And I also think the thing that struck me is how much agreement there really was, which I think bodes well for the future of the Smart Grid, given the level of agreement on issues around some level of standardization, leaving the flexibility so that you don't stifle innovation, and the idea that customers, that really the default option for customers is privacy, and that they need some level of control.

And I think that'll -- the biggest thing in the immediate future, I think, is to really begin educating customers about potential benefits. I think the initial benefits are largely going to accrue to utilities. Those ultimately accrue to customers and I think you need to educate them on why that is a good deal for them.

But I do think Adrian hit it right on the head when he said you have to provide some initial, immediate benefits, and that can be as simple as

providing them information on their bill, or access to the utility's web portal on their utility usage, and tips on how to cut energy. But you need to give them something immediate.

I think the information's going to provide a lot of granularity for utilities, for third parties. I think we're going to end up segmenting our customers much more than we ever have in the past. We're going to have to have a much bigger variety of programs to offer customers, whether you're a third party provider or a utility, in order to meet the needs of all customers.

And I think the final thought after listening to you all, is this is probably going to move a lot faster than we think it is, given the level of innovation. You have folks like Adrian and Cisco folks who are continually pushing the envelope, and I think it's going to move a lot faster than we think it is.

MR. HARRIS: Ray.

MR. RAMSEY: Thanks for putting this together, it was a pleasure to be a part of this today. My reflection is on a couple things. And what sticks out to me is that this is, again, I use a lot of analogies, but this is about providing oxygen to innovation. And innovation, at its best, produces value. And if we step back and we say, we want innovation and we want to produce value. How do we break that down?

The way I look at it is that there is an ecosystem here, an innovation ecosystem, and the first set of questions is, who's in that ecosystem? We've got to understand who exists in this ecosystem. And then we have to say to ourselves, how do we enhance it? And we're going to enhance it through innovation, so there are some fundamentals about innovation that we've got to keep very forward in our mind.

1. We've got to continue to drive investment. There's a lot of private investment. There's a lot of opportunity. You were talking about jobs before. This will, ultimately, produce a whole new set of jobs. So driving investment.
2. Making sure we continue to drive innovation itself, creativity.
3. Since this is an ecosystem, we have to be inclusive. And again, remember that there are a lot of players in this ecosystem.
4. Is really important, the consumer focus. And when I think of the consumer, I think of -- I always call it the three C's. One, build capacity, two, make sure there's choice, and three, make sure it's convenient. And when you build capacity, that will solve some of this timing sequence. There's no awareness out there, if you polled on the question of Smart Grid, people don't have any idea what you're talking about, so we'd better do a lot to overcome that,

because it's going to move the cycle.

5. And then lastly, is the federal role, which is important. Forums like this, standards, consumer protection. Somebody's got to make sure there's the firewall for consumer protection in the sense of safety in terms of the use of information, and the government itself, as with the stimulus and other things, helping to seed through investment, I think, is important.

Last point, technology has to marry up with people. So we did something really smart years ago with the FCC, where we had E-Rate, and we put technology in schools. The mistake with E-Rate, though, was there was no twin investment on the people's side. So you have schools with computers and connectivity, and teachers who don't know how to use it.

MR. HARRIS: Thank you, Ray. Bob.

MR. ROWE: This was a great morning. I think we all learned a tremendous amount, and I think this is a good model going forward.

A couple of points. A lot of agreement, more so than I expected coming in, that's very encouraging. The idea -- and again, confirmed by the EEI research, that those of us, certainly on the utility side are in positions of trust, positions of responsibility, that's very important, that's not something to jeopardize.

I brought some copies of a quick profile of

our company. It's very unique characteristics for an investor-owned utility, also a couple pages summarizing the Pacific Northwest project. As I said, one of our priorities is focusing on distribution infrastructure. Infrastructure enables applications, and lots of the infrastructure effort we have underway is basic stuff, but it's important. And you have to get that right, really, for the metering applications at the top end, to be meaningful.

The way I think about our investment plans is, first of all, no barriers. Secondly, no regrets. I want to be able to build an infrastructure that, in fact, removes the barriers at the application level, and I want to focus investment in areas that will be sensible, that won't be ultimately stranded investment. What I like about our infrastructure plan is it marries up with smart metering, customer-facing applications, is over the period of the investment, we're going to be learning an awful lot from one another. We're going to be learning from one another's successes and failures alike. And I think that's probably a good metaphor for this process as well.

No regrets about decisions you've committed to, and no barriers, obviously unintended barriers, either in what you do or what you don't do.

MR. HARRIS: Bob, thank you. Bill, can I go down to you?

MR. LEVIS: Sure. I really appreciate

everything, being able to be here today and again, there's more agreement than I thought there was.

Getting back to what Ray was talking about, the three C's. From a consumer's standpoint, there's a fourth C and that is cost, and especially in this economy. You've got some consumers who are going to be really interested. We heard about them with the Prius. But you have other consumers who are going to be suspicious. And from my standpoint, discussions like these are critical and what I have to go and do from here is have more discussions with my board that gives me oversight and figure out a way to get out in the public and all the states, to let them know that Smart Grid is coming. Because it seems that people hear about this after the fact. It is with everything. And that's the big thing I've got to figure out how to do. And I think we all do, how to get consumers to get on board. Because you know you're going to have some who are going to be really excited about this, but then what do you do about those who are going to be concerned and distrustful?

I think what I'm hearing today are certain ways to do it. I know that I'll be bugging Adrian because he's right down the street.

MR. HARRIS: Thank you, Adrian.

MR. TUCK: Thank you for putting this on. I think this whole area of data access and privacy is probably the single most important theme related to the

Smart Grid. The technology and those pieces will all sort themselves out, but we won't ever realize the full benefit if we don't get the right data models in place, and the right access processes in place.

I think I was also pleased to see how much consensus there was in the room. My parting comments are, I think we do need to be humble about our ability to predict what the … applications are going to be here. So that's very important in the way that we think about giving people access. I think that we rightly expect from our utilities, a higher level of service than we get from our cell phone companies, in terms of reliability and so on.

But we need to be careful that we don't let that high bar become an inhibitor to progress. In other words, there are things that we can do with data on the top of a very, very reliable electricity supply network that may fail, and we should be fine about that. Can people remember web-van and those kinds of things? Billions of dollars of private money went to try different models on the internet, and some of them failed, and that's fine. Because out of that process, --

MR. HARRIS: Unless you invested, of course.

MR. TUCK: Right. Out of that process came the creativity that was needed in order to find the business model that worked. And if we stifle entrepreneurship because we care too much about

reliability and we legislate too much in that frame, we won't get the benefits that we think we need out of the grid, and so that's the key. Draw a dividing line very reliable electric supply, allow all sorts of innovation, and sit on top of it.

MR. HARRIS: Adrian, that's great. Thank you. Michael.

MR. GOODROE: I too want to thank the Department for putting this on today. I think it was a great forum and a good way to exchange information. It's a daunting task, when you think about the challenges that are before you when considering data and data acquisition.

I think a lot of the discussion today hasn't centered around the fact that at the end of the day we've got to keep the lights on at the end of the line. And to provide that value proposition that William mentioned, that utility regulators are so concerned about, in delivering that energy to our customers at a very cost-competitive perspective.

At the same time, we can't have ways to inhibit the ability for creativity to occur, and provide that innovation that people will see a value proposition where they can extend it out to other individuals.

I think Ray has been very forceful in his comments about not forgetting there's other people that could be impacted by this. And so it's a broad-based

decision that's got to be entered with a lot of thought and a lot of consideration.

Now, I'm one of those that believe a good framework is a better approach than a hard standard. Because it will allow that innovation, and it will allow that regional diversity that we've heard about to be supported and flourish. So I'm hopeful today, and very encouraged by what I've heard.

MR. HARRIS: thank you. David.

MR. SZCZUPAK: Again, great discussion, thanks for arranging it. I think we've really talked about the balance between privacy and the ability to get data, communicate that data to be able to add value with that data, and that fine line. I think, as Michael said, the importance for national standard framework, not necessarily legislation, I think is critical for us. We've got diverse needs, whether it's with the data and what we want to do with that data, depending where we are in that delivery process.

But I think certainly from Whirlpool's side, and from I think I speak also for all the appliance manufacturers, we really can help home efficiency, and drive people's energy efficiency. In the longer term, we can really help and demand responsive load leveling. I'd also, like the agent brought up, we can really help consumers make sure their products work more efficiently over the whole life cycle, ten 15 years, as long as we've got the ability to kept hat communication

alive.

But I think in the end we're all here to talk really about how we deliver energy independence, energy security as a nation. And how we drive energy efficiency as part of that. But in doing so, we have to deliver value to the individual. Come see, we're back to Ray's point. So, to do that, we need data, we need to make sure we handle that data with care and trust and the right privacy, but having access to that data is really an important part of what we're trying to do here.

MR. HARRIS: Thank you, Phil.

MR. WEISER: So this is a really wonderful part of our effort to get our arms around this challenge and opportunity, and again, let me thank Maureen and Scott, their leadership here has been tremendous. You all made an effort to be a part of this. We're going to have other forums like this. If there are people who hear about this, or hear and have further ideas, let us know. I think we can build some of this consensus, I think the role that … talked abut was federal government as a convener is something we're taking very seriously here. We want to make sure to hear from you. So I just want to thank everyone here. This was incredibly useful and helpful, so Scott, thank you so much.

MR. HARRIS: So I was disappointed. I was hoping I was going to get you all to yell at one

another.

(Laugher)

MR. HARRIS: And that has totally failed. Actually, I cheated. I've been talking to people individually, and I actually sensed that there was much more consensus than was commonly supposed. Everyone here agreed, privacy really counts. I tried to push you and say that it's nonsense, but you all disagreed with me. Right. Consensus.

I tried to say you didn't need much data, the data didn't tell you very much. And you all disagreed with me. You all agreed about the importance of consumer choice. You all agreed about the importance of consumer education. You all agreed about the need for reliability, despite the use of this data. You all agreed in the end, a lot of this is going to be driven by consumer perception.

I'm sure there are areas where you all disagree. I haven't found them yet. I'm not arguing that you all agree about everything, right. We're talking about access to data to enable the Smart Grid, when we're talking about privacy protections to make sure consumers and others feel comfortable. There actually is, I believe, a surprising degree of consensus, and my goal for the Department of Energy is to write this up sometime in the early fall, feed it into the White House process, but also to make it available for everybody, because I believe we can say

some common sense things that will help drive this process forward.

I've said to others, we have no regulatory authority. We have nothing but the power of persuasion. We have the power of words. But I think we can make effective use of that power, given all of the input we've gotten from you all.

So I would like to thank each of you for taking the time out of your schedules to participate today. I'd like to thank those of you in the audience for taking your time. And thank everybody who came here to help us out today. Thank you so much.

(Applause.)

(Whereupon, at 12:01 p.m., the meeting in the above captioned matter was adjourned.)

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This is to certify that the attached proceedings before:

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In the Matter of:

PUBLIC ROUNDTABLE

DATA ACCESS AND PRIVACY ISSUES RELATED TO

SMART GRID TECHNOLOGIES

Were held as herein appears and that this is the original transcript thereof for the file of the Department, Commission, Board, Administrative Law Judge or the Agency.

Further, I am neither counsel for or related to any party to the above proceedings.

Debbie Derr
Official Reporter

Dated: July 6, 2010