BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. UNDOCKETED

SMART METER WORKSHOP.
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PROCEEDINGS:	WORKSHOP
TAKEN AT THE INSTANCE OF:	The Staff of the Florida Public Service Commission
DATE:	Thursday, September 20, 2012
TIME:	Commenced at 9:30 a.m. Concluded at 5:36 p.m.
PLACE:	Betty Easley Conference Center Room 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	LINDA BOLES, RPR, CRR JANE FAUROT, RPR Official FPSC Reporters (850)413-6734/(850)413-6732

P R O C E E D I N G S

MR. CLEMENCE: Good morning, and welcome to the Florida Public Service Commission staff workshop on Smart Meters. I am Walter Clemence from the Office of Industry Development and Market Analysis.

First off, I'd like to take care of a couple of housekeeping matters. Mr. Lawson, would you please read the notice.

MR. LAWSON: Certainly. Pursuant to a notice published in the *Florida Administrative Weekly* on September 20th, 2012 -- I'm sorry, not, not, not today's date -- but published in the *Florida Administrative Weekly* and in other forums, an undocketed smart meters workshop has been called.

The purpose of this workshop is to provide a forum for Florida electric utilities and other interested parties to provide the Commission and Commission staff information concerning the technical and policy issues surrounding the design, installation, and the use of smart meters in the state of Florida.

MR. CLEMENCE: Thank you. Just a quick reminder to everybody that the, the workshop today is being webcast on our website. It is also being broadcast on the Florida Channel. So as you're either presenting or providing public comment in the afternoon,

please state your name and speak directly into the microphone so that those individuals who are not here today can hear you.

The purpose of the workshop this morning is to gather information on smart meters to address many of the concerns that have been raised by customers here in Florida. We will discuss the Commission's jurisdiction over smart meters, including that, including that of the Commission and other agencies.

In the morning we will have formal presentations from both our utilities and from some smart meter manufacturers and some transmitter manufacturers. Following the formal presentations in the morning, in the afternoon we will have a roundtable to discuss many of the major issues that we have heard.

If you are listening online or if you are unable to stay until the afternoon, we will take post-workshop comments that can be filed with me here at the Commission up until October 12th. They can be e-mailed to me at Walterclemence, W-A-L-T-E-R, dot Clemence, C-L-E-M-E-N-C-E, @PSC.state.fl.us, or you can mail them in to us at the Florida Public Service Commission, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399.

The workshop is planned to go until 5:00. We

will break at noon for lunch. If anyone needs facilities, they are directly outside the hearing room, and water fountains are right out front as well.

Now we will go ahead and move right into the first item of the agenda.

All right. The Florida Public Service Commission has heard concerns from many citizens and local governments here in Florida with their concerns about smart meters. Specifically we've heard about health. Customers and local governments have expressed concerns about the RF from smart meters and the number of pulses from the meters and the transmitters themselves.

Issues of privacy. That their energy usage is being tracked at an appliance level, that they have concerns that their uses will be tracked in order to tell them how to use their power into the future, and that criminals may be able to identify when they are or are not at home.

Data security has also been a concern that has been expressed to us, the concern that the meters themselves or the transmission network can be hacked to gain access to customer information.

We have also heard a lot about customers who wish to have an opt out or other alternatives to the

smart meters that have been expressed. So at our May 9th Internal Affairs our Commissioners asked us to come up with a process and have a workshop that we're here for today.

Further, staff would -- is hoping to get information today about the other regulatory bodies that have jurisdiction over smart meters. For example, it is our understanding that the FCC does handle the health effects from smart meters. We did invite the FCC to join us today; however, they did decline our invitation.

We'll kick it off here. Here's the basic agenda for today. We'll have our formal presentations this morning. We'll break at about 12:00 for lunch, return in the afternoon for a roundtable that we will pose many of the questions that were given to us by members of the public to ask of both our utilities and the manufacturers.

In the afternoon after the formal presentations we will have public comment. Once again, if you'd like to make public comment, we ask that you please take a moment and walk outside and sign up with one of our staff members out there.

And finally, once again, post-workshop comments may be filed with us until October 12th. Once again, the e-mail address is Walter, W-A-L-T-E-R, dot

Clemence, C-L-E-M-E-N-C-E, @PSC.state.fl.us.

And just one more reminder, not only are the, can workshop comments be filed by those who are here today, if you're listening online or watching us on the Florida Channel, feel free to file your comments as well.

SPEAKER: Could you speak up?

MR. CLEMENCE: I'm sorry.

SPEAKER: Could you turn the volume up a little bit?

MR. CLEMENCE: Is that a little better?

SPEAKER: Much.

MR. CLEMENCE: Fantastic.

Okay. Now we will start off with our presentations from our utilities.

First to kick it off will be Mr. Paul Talley from Gulf Power, who's going to give an overall presentation for all the utilities to go over some of the similarities.

MR. TALLEY: Good morning. Paul Talley with Gulf Power Company.

The purpose of this presentation this morning is to kind of lay a groundwork for the rest of the day some common themes so that the utilities don't really have to repeat themselves over and over and they can

spend time on their project and all. I'll talk about the evolution of metering, benefits, smart grid, and some of the public concerns.

Metering has changed greatly over the last few years, even back to the start to --

MR. CLEMENCE: Mr. Talley, can you speak a little more into the mic? They're having trouble hearing you in the room.

MR. TALLEY: Do you mind if I adjust it? It's a little low.

Metering has changed greatly over the years. What we've done is added a line at the bottom to kind of track telephone technologies, something that everybody can relate to, copper plates back in the 1880s, the 1880s. Also reversing the fields, turn and armature, that's actually some technology we still use today. One of the biggest ones was in the '30s with the introduction of smart socket meters that allowed meters to be plugged into a socket very similar to what we do plugging a light into an outlet in your home. The 1940s, magnetic levitating bearings greatly improved the accuracy of meters in the mechanical word. And, of course, in the '70s we started seeing solid state circuitry and digital displays starting to be used on the meters.

Meter reading didn't change much through the '70s. A lot of that was done with manual reading, paper and picking up books and all. A lot of the terms we still use today refer back to those. When guys read routes and books and stuff, that's still those terms. But one of the big issues was it was kilowatt hour only readings. We could do nothing more than that.

Of course in the '80s we started seeing a little bit of offsite meter reading. We had the cell phones coming around. They were big and ugly and expensive, and so there wasn't really any technology to read meters during those days, but there was some beginning to start reading with one-way systems during the '80s. Again, kilowatt hour only readings is all we could get from those meters.

Things really started to change within the 1990s and this is when most utilities really started looking at the different technologies for AMR, automatic meter reading. And a lot of utilities did implement systems during those days. Most of us did a lot of testing, pilots, and other to try to look at the technology and see where it was going to be. A lot of drive-by systems were implemented in the 1990s. Again, it was kilowatt hour only readings. If it was a demand meter or something like that, the guys still had to get

out of their truck, read the demand, reset the demand manually, get back in the truck and finish reading his route. So there was some benefits but, but not a lot.

Things really changed in the 2000s. Of course, in the last five or six years we know what's happened with telecommunications and phones. And we changed the term to what industry uses as AMI. We don't really refer to it as smart meter. It's advance metering infrastructure is really what we're implementing.

And so what came with that was, excuse me, two-way 900 megahertz communication; the ability to have the meter send in data and to communicate with them if we were needed to check voltage or reread a meter.

Fixed networks. No longer a mobile network tied to a truck or somebody walking around. You had a network that was available 100% of the time. So with that came features like being able to read the meters on more of an interval, a daily interval or an hourly interval or some other type of interval besides once a month.

And, of course, other great benefits like outage notification and restoration. It is said that our economy loses over 150 billion a year in power outages. If we can shorten that, we can affect the

economy by keeping lights on and making it more reliable and more efficient.

And then we were able to get power quality. Still information about the total consumption at the home, but information that helps us build a better grid and tell us if there's an anomaly going on at that residence. Today, unless a customer calls, we don't know if we have a problem in most cases. And so that allows -- AMI will allow us to do that. And, again, the big thing for us was that it wasn't kilowatt hour only. If it was a demand meter or a time of use meter, we could now read all of our rates remotely as opposed to just kilowatt hour only.

Benefits to the customer. The first one will be insight to their usage. Again, this is general. All utilities may not do this, but, you know, possibly a mobile app that alerts customers when they've used more than a certain amount during the day, a web portal to see how and when they're using energy, detailed billing now is really no different than my credit card bill. I would hate to get my credit card bill and have one number at the end of the month. I like to see the detailed billing. How and when did I use my credit card? Do I need to change something next month to better use my credit card? I think AMI will allow us to

do that for our customers.

Once you have insight, then customers have choices. AMI will allow customers to have choices over different rates possibly. For Gulf Power we have a time of use rate for our residential customers that some customers choose. Prepaid, a lot of talk about prepaid. It's very popular in Europe. I don't know if it'll ever happen, but AMI would allow things like that.

So once customers have insight, they can have choices and then they have control over their energy usage and their cost savings.

Other benefits to our customers, it's a convenience of meter reading, not having somebody come on their property every month, reduce of electrical theft, which we all pay for, reduced estimated bills, distributed energy, renewable energy, things like that, and possibly possible other rate offerings.

I know there was a workshop recently on electric vehicles. You know, maybe we'd have a rate one day for a customer that has an electric vehicle or something. All those things are made possible with AMI.

We're trying to listen to our customers, and customers in focus groups say they want simple solutions, they want more information about their energy use and conservation. One size doesn't fit all. You

know, in the future our lives are much different than they used to be, and what may be convenient for other customers may not. So I think we, we need to offer customers options and choices again about their energy usage.

From the utility side there are a lot of benefits too. First, improved ability on preventing outages, allowing the utility to be proactive and knowing what's happening on the grid and respond to those without the customer having to call. Knowing ahead of time what's going on.

I think it'll greatly improve our engineering. We do a good job of engineering today, but a lot of that is based on models that we have built over time on things we think we'll actually have data that will change the way we engineer our system, the way we do our maintenance, and hopefully drive down cost.

Of course we've already talked about outage notification and restoration. Greater operational efficiencies, being able to distribute energy as efficiently as we can.

And, of course, we also will be able to reduce our transportation costs, take trucks off the road, and reduce our environmental footprint through transportation.

The main point here is that AMI is really the foundation for which we can one day build a smart grid to more efficiently and effectively manage and run the electric grid. It is that foundation that's required to do these things that, that we think we will want to do in the future.

Now we realize there are some public concerns. The two major ones seem to be privacy and RF emissions. First, really nothing has changed on the metering side. To me, smart meter is really kind of a misnomer. AMI is the term because the meters are really not much smarter. Okay? We're still measuring the same energy that we measured before. As a matter of fact, we're using the same meters we have used for eight to ten years. All we've done is add a radio monitor to them. The manufacturer of the meters and all that are exactly the same. Still measuring the same information. And so really all we have changed is the way we get those readings. The readings are being returned to the same billing systems we've used before, and that's where our customer data is. There's no customer information stored at or transmitted by a meter, only kilowatt hour only readings and other voltage and other things associated with that outage information.

So what has changed is not the meters or the

back office. It's just the way we read the meters is what's changing with AMI. Again, it's that advanced metering infrastructure and network to do it.

This is just a quick example of what a customer portal may look like one day where a customer can log on. I like this because it shows daily usage, and the dots represent the average temperature for the day so customers can see how their usage compared to today's temperatures, which greatly affects our energy usage. And this one, the customer was able to set a, a spending limit. I only want to spend $10 a day. If I go over that limit, flag it. That allowed the customer to maybe on their smart phone get an e-mail that, hey, you've just gone over $10 today. But that would be set by the customer.

And if they want to look why did we go over today, then they could look at that day and possibly see the hourly usage. How during the day did they use their energy? Again, we don't know what's going on in the house.

In this slide we've offered some suggestions. You had some energy usage up here. Did you entertain that night? Did you change the settings on your air conditioner? We can offer some suggestions on why you would have an increased energy usage over a time period

but we have no idea what's going on in the house. You know, with this most customers would log in and say why was our bill high this month? Well, it was really high on this day. Oh, yeah, we had Johnny's birthday and the whole family was over that day. That's why I remember we used a little more energy that day.

So this is the type of information that is collected from the meters. It's total kilowatt hour only at the meter, which reports and talks to nothing in the house associated with that.

The other issue is the RF exposure. All meters have been tested and certified to the FCC standards. Smart meters are low power. The duty cycle is how often they talk. Most talk less than 1%; some down to a second a day. Very little transmission time, very low power.

Some measurements. One foot in front of the meter even at peak power is still well below the FCC limits. Inside the house is way even less than that. You figure the meter is inside a metal box. Construction of the house, it's very low in the house.

Napa Valley Smart Grid Initiative recently did a very in-depth study and they kind of boiled their findings down to something we could understand. And that if you sat in front of a meter ten feet away

outside, you would have to sit there for 100 years to equal one three-minute cell phone call when it comes to RF exposure. If you were inside the house on the other side of the wall just three feet from the meter, you would have to sit there for 200 years to equal one three-minute cell phone call. So meters are very safe and have been tested.

This is kind of a busy slide, but this is the RF spectrum for the United States. This is the radio spectrum. It's not up in the radiation or x-ray. This is radio waves. The big blue boxes that you see kind of jump out at us, that's broadcast: AM, FM, TV, those types of radio signals that we see every day. The big red boxes are aeronautical, airplanes, VOR type communications.

But what we want to kind of look at is this one little green box right here in the middle. Just for instance, the purple and pink boxes right here, that's 1.8 gigahertz. That's where 3G, 4G phones operate in that spectrum. So if we zoom in real quickly on that one box, from 902 to 928, that is the unlicensed spectrum. That is the spectrum where the majority of the AMI systems operate. It's also the same spectrum were your iPad and your notebook, your Wi-Fi router that's at your home and every hotel and business, the

baby monitor you sit beside the crib, the cordless phone, all of those things operate in that same spectrum and are applied by the same FCC rules.

Some of the systems do use a license frequency, yellow arrows. Same similar frequency, similar result. FCC regulations actually have a few stricter regulations because they're on a licensed frequency and can't drift or anything.

Just a quick general comparison of the smart meter compared to other household items, microwave, computers, cell phones. Because they're such low power and because they transmit so seldom, they fall way down on the spectrum of any type of RF emissions and all.

So with that, in conclusion, smart meters, the technology has been advancing over the last 20 years, and utilities and manufacturers have been working together for over 20 years on these types of technology. It will bring future benefits to our customers, it will bring great efficiencies and reliability to the electric grid. And we understand the concerns and issues that our customers have and we want to make sure that everything we do is safe and reliable for our customers and our employees. Thank you.

MR. CLEMENCE: Thank you very much. And one more housekeeping matter I should have mentioned

earlier. If you're watching online or if you're here and want to look at them later on, all the presentations are currently loaded on the Commission website, FloridaPSC.com.

Next up is Ted Spangenberg, and hopefully I didn't butcher your name too much, who will give a presentation on the implementation from Gulf Power.

MR. SPANGENBERG: Thank you. As noted, I am Ted Spangenberg, and I'm presenting today in my role with respect to special projects at Gulf Power Company. Gulf Power is part of the Southern Company, and we've been studying and piloting various AMI technologies since the mid 1990s with the objective of lowering the cost and enhancing the services to our customers.

We ultimately selected the tower-based FlexNet system for a variety of reasons and deployed our meters without the availability of smart grid investment grants from the federal government. While an AMI system could and should be integrated into many other systems as depicted on the slide and other processes, the principal purpose and the greatest benefit for us is to efficiently provide meter readings so that we can accurately bill our customers at the lowest practical cost.

An AMI system also reduces the challenges and

confusions that accompanies non-read or misread meters that are an inherent part of any manually reading process.

We've been asked to speak today to privacy. Protecting the privacy and security of customer-linked data is one of the most fundamentally and deeply held tenets within our business. Such data is only used for our regulated business purposes and is not sold or bartered to third parties. The security of that data and all of our business proprietary data is accomplished through a broad, deep, and rigorous set of policies and business practices.

The AMI meter, as Mr. Talley has mentioned, measures energy consumption and monitors the condition of the meter in the electric system. The only energy information transmitted is the total premise energy consumed, not any individual appliance data. No personal identifying information such as name or address or any of that, none of that is either stored at or transmitted by the meter, simply the energy consumed and a meter identifier. Alerts related to any abnormal status of the meter or the utility's electrical system serving the customer are transmitted at the time they occur and, again, as noted earlier, help us to operate and run a very efficient system.

Certainly there are benefits beyond meter readings, and while some of these have already been mentioned by Mr. Talley, they are worthy of a brief repeat so we include them on the slide here. And, again, this is just a sample listing of those benefits. And these benefits accrue to all of our customers and all of our customers enjoy the aspects of being able to operate a more efficient system, a more reliable system, all built upon the foundation of having that smart meter data or the AMI data.

There's an additional benefit that often we don't think about, so I present to you this slide. You'll notice the red dots on the slide, and it's a great illustration of the benefits that might not readily come to mind. This is a mapping plot of the AMI meter outage alerts received by our sister company, Alabama Power Company, when the infamous tornadoes struck the Tuscaloosa area in April of last year. And I'm sorry I wasn't able to provide you the time-lapse version, which is an incredible depiction.

Not only does this mapping clearly show the path of one of the tornadoes, but it allowed Alabama Power to both readily know the extent of the outages and to immediately begin planning where to stage its own and out-of-state restoration crews in order to return power

back to these 400,000 customers as quickly as practical.

When Hurricane Isaac came close by last month, our AMI system clearly let us more quickly and efficiently respond to the 20,000 customer outages that we experienced on our system.

Again, Mr. Talley has already referenced radio transmissions, but one fact is worthy of repeating, and that is that particularly Gulf's type of meter are well below the background levels that the public already experiences. And I do want to point out that this is a logarithmic scale on this chart. While a point here might look like it's only one-third of a point here, it is actually one one-hundredth of that point because of the logarithmic scale down here.

Further, the radio frequency emissions from smart meters in a tower-based network are much less frequent than those in other types of networks, thereby making the average emission levels much less.

As I've just alluded, there are different types of AMI systems. Not every AMI system is the same. They all accomplish the same purpose, but there are some slight differences. Typically each meter in a tower-based network is transmitting only its own meter data to a receiver that is always available. That's in slight contrast to some systems, utilities who have mesh

networks that are regularly transmitting for both itself and sometimes some adjacent meters, though at levels still well within the FCC's regulated limits.

Also in contrast to drive-by systems, the AMR systems, that are transmitting frequently in order to reach a receiver that is not regularly available, but again at levels well within FCC regulated limits. So not all systems are the same, and therefore you need to look at any aspects that are unique to your particular system.

Specifically to Gulf Power's network, this is just a map showing principal cities. For those of you who are not familiar with northwest Florida, the western gate to the Sunshine State where thousands live like millions wish they could, but there are three different types of tower networks that we use. I won't go specifically into those differences, but the red dots are here what we call our Tower Gateway Base Stations, and then we also have some metro stations for some very dense areas called a metro unit, and then there's also called an FRP, remote portal, but there you see approximately 20 locations where we actually receive data. And, again, those are fixed sites that bring our data in.

Gulf Power's deployment began in 2009 with a

pilot program of 7,000 meters, and then in 2010 we moved across the sparse I-10 corridor which had our highest meter reading cost. Then moved on to the metro areas, first in our western district in 2011, and then continuing east to essentially conclude our main deployment this month. Gulf Power's deployment included AMI metering on all classes of customers, residential, commercial, and also those smaller industrial customers which we didn't already have remotely read metering. I say we're essentially complete. As of this month, we are 99% complete with our planned deployment.

We were asked to talk briefly to deployment logistics. The majority of our installations were done by a contractor, Metadigm Services. They did a great job of going out and scheduling and planning what to deploy and when to deploy. We did communicate to our customers by placing information on our website, and also the week before a meter was to be set, performed an automated outbound telephone call to each customer the week before that we anticipated setting their meter.

There were some, some logistical issues that accompany any time you go out and change a lot of meters, and this would happen regardless of the type meter you were setting, but issues with access to meter sockets, getting access due to perhaps bad dogs or

locked gates or other obstructions in the way of the meter, these were resolved by leaving door hangers asking the customer to call back to our contractor and actually schedule an appointment for their installation.

Continuing with some other deployment logistics. The integrity of the customer's meter socket was an issue at a few locations. And, again, this is going to be true whenever you're changing out a large number of meters. It shows the deterioration largely due to the age of the socket or salt air deterioration particularly in our coastal areas, but these were resolved by making repairs. And, again, these conditions existed prior to our deployment. It's just that our deployment helped discover these, and in many cases get these resolved in advance of problems occurring in the future.

At the time of installation we did gather information such as the exact location of the meter socket, linking that to the transformer serving that particular premise. We took a picture of the old meter with its reading, a picture of the socket, empty socket to establish the condition of the socket, picture of the new meter, et cetera. There were some customer concerns, very few, less than one-tenth of 1%. Most of it, my assessment, is due to the misinformation that

they have received particularly from Internet sites. Unfortunately there's no accountability for what somebody might want to put on the Internet. But these continue to be resolved through additional communication and information to those customers. The number is approximately 140. It's been as, maybe as high as a couple of hundred. We continue, that number continues to come down as we provide customers accurate information about exactly what our meters do and do not do.

In conclusion, let me just point out again that Gulf Power's AMI deployment is essentially complete, and it is safely and reliably providing benefits to all our customers, while also fully protecting the confidentiality of all customer-linked data. Thank you.

MR. CLEMENCE: Next up we'll have Mr. Dan Woodall from Progress Energy.

MR. WOODALL: Good morning, and thank you for the opportunity to talk a little bit about Progress Energy Florida's metering infrastructure. Today we're going to provide an overview of that infrastructure, talk about what we've deployed to date, but also what's next in the near term.

We want to try and provide some background and

a high level overview of the technologies that we're using, as well as those that are soon to be deployed.

Progress Energy, like the rest of the utility industry, has been on a long trend towards automation. This table sort of represents that for us. And as you can see, it began with our largest customers where we began to use cellular to automate meter reads back in the '80s. You can see it's few in number, but these customers have very complex metering packages and they're geographically dispersed across the state. It was costly to travel the specialized personnel around the state to do those reads, so that's where we moved into automation first. And that work was completed in the '90s.

For us, the next big step came with drive-by meter reading or MMR, mobile meter reading, is the term that we use. It is a type of automated meter reading using a vehicle. For us, this was 1.6 million of our residential customers. And our change out here occurred in the 2005, 2006 time frame.

We've seen significant benefits from that. First in the area of safety, personal injuries for those doing meter reads dropped 90%, vehicle accidents came down 70%, our read errors dropped by 86%, estimates dropped by 66%, and our bill related call volume dropped

by 40%. So performance improved significantly.

Our last area is our pending AMI project. Our remaining manually read meters are our small business and midsize commercial accounts. This project is aimed at converting those to an AMI infrastructure. Our deployment for this is to begin in very late October and will continue for about one year and be completed in October of 2013.

Let's get a little bit more background on the drive-by infrastructure that was deployed in 2005 and 2006. It leverages the Itron infrastructure. These meter reads are captured using a vehicle equipped with a mobile collector that retrieves meter reads that are broadcast by the meter in the 902 to 928 megahertz RF band, and it gathers those reads while driving through the area. And this represents one-way communication from the meter to that collector in the vehicle.

These reads are then uploaded through an IP network by the data collection software. Itron's brand name is the Field Collection System, and this software is used to perform basic validation of those meter reads, some QA/QC checks. And if they pass that screen, it's passed over to the customer information system where the bill is rendered and then mailed out to the customer.

This slide represents the AMI infrastructure that is being stood up to support the initiation of AMI meter deployment to small business and commercial customers for Progress Energy Florida. Now, there are five major components to this infrastructure. It starts with the AMI, which is made up of the meters themselves and the low power communication cards that are embedded within them. They are forming a multipath network, known as a mesh, that provides redundancy and improved reliability.

The next component is the NAN infrastructure, which is basically access points and repeaters. This is the connection between this mesh that's formed by the meters and connects and plugs in and ties into the wide area network, essentially commercially available wireless public cellular for backhaul of this information. In some cases there is wired fiber that's available as well, but will be used to make those connections.

But essentially then the meter reads are backhauled using the software systems in the AMI head-end and the utility back office. The AMI head-end is a software package that manages the network, essentially calls for the reads, pulls that information back, and there the validation in the back office system

known as the operational data store, the QA/QC checks that we discussed earlier in the drive-by, it happens there before being pushed over to the customer information system, where again then the bills are rendered and mailed out.

Here we're providing some detail around our rollout. There are eight distinct geographic areas known as sectors that we will progress through in sequence. Our overall schedule for meter deployment begins in late October for Sector 1 and concludes in October of 2013 for Sector 8. The graphic represents Sector 6, the Apopka, DeLand area, and the dots, the red dots represent the meters, and the other dots are repeaters and the access points themselves.

Deployment of access points and the NAN infrastructure is already underway in many sectors. The work begins with that access point connection to the cellular networks and with the deployment of relays, and it is then followed by meters.

The key part of any successful deployment are the effective communication plans. We know this from our own successful AMR drive-by rollout in 2005, 2006. We also know it from the many lessons learned from observing more recent deployments across the country. Many do not have questions. But for those that do,

there is value in a structured communication process that supports multiple touches while customers process the information they're being provided.

As well, because of our targeted AMI deployment being focused on small business and commercial accounts, it's more sensitive to a momentary interruption for a meter change out. Now, many have infrastructure that accommodates a change out without interruption, but for those that don't, we will leverage our account rep infrastructure and organization and schedule as appropriate.

In closing, it's important to note that alternatives to standard AMI smart meter infrastructure will have operational impacts both to provide the alternative, but also resulting in a negative impact on the cost and benefit of the AMI infrastructure itself. We believe all these related impacts should be recovered from the customers who choose the nonstandard approach.

I want to thank you for the opportunity to share some background on PEF's infrastructure and approach.

MR. CLEMENCE: Thank you very much. Next up will be Mr. Wes Caldwell from Tampa Electric.

MR. CALDWELL: Good morning. I am Wesley Caldwell. I'm the Meter Operations Engineer for Tampa

Electric Company, and I'll provide some information concerning Tampa Electric's deployment of automated meter reading meters.

Let me see. To the right. All right. Tampa Electric has more than 682,000 automated meter reading meters in service today. The installation of these meters began in September 2003 and was completed in January 2012. The 2003 AMR initiative has provided Tampa Electric, I'm getting behind a little bit, with significant cost reading, meter cost reading savings, and Tampa Electric does not have any AMI meters in service but is evaluating AMI meters for future use in an upgraded system.

Tampa Electric uses Itron's automated meter reading AMR residential meter, it's commonly called a drive-by meter. The AMR -- whoops, I blanked it. There we go. The AMR meter contains a frequency hopping spread spectrum radio transmitter.

It transmits -- is a transmit-only device and collects only the customer kWh use and transmits that data over the 902 to 928 megahertz industrial, scientific, and medical radio frequency band. The duration of an AMR meter's transmission is approximately 10 milliseconds. In comparison, a blink of your eye is about 40 milliseconds.

The AMR transmission occur every four to six seconds or on regular intervals every 30 seconds, and that depends on the meter type used. We use both types of meters.

All of Tampa Electric's meters comply with the workmanship, safety, and accuracy standards of the American National Standard for Electric Metering, that's ANSI C12. They also comply with all of the Federal Communication Commission's code of regulations, specifically Part 15, subpart C, for intentional radiators.

A third party, Advanced Compliance Solutions, tested and demonstrated that Itron's AMR meters, which are used by Tampa Electric, comply with Part 15, subpart C, of the FCC's Code of Federal Regulations.

Tampa Electric has completed our own testing and has shown that the RF emissions from these meters are within the FCC limits for maximum permissible exposure for the general population in uncontrolled exposures, and this is expressed in the FCC Office of Engineering Technology Bulletin Number 56, the requirements for that.

AMR transmissions include the total kWh consumption, the peak billing demand for commercial customers only, the meter serial number, the meter type,

the tampering indicators, and any -- and error checking information.

An AMR meter's transmission does not include instantaneous kW, it does not include interval or time of use data, voltage or current data, or reactive data called kVAR. It also does not include any personal information such as name, address, Social Security number, billing account numbers, or credit card numbers.

Tampa Electric follows the Fair Information Practice Principles established by the Federal Trade Commission in Title 16, Chapter 1, of the Code of Federal Regulations. We also have our own internal Code of Ethics and Business Conduct which provides standards to protect sensitive information.

Tampa Electric has provided information to its customers about new AMR installations through a variety of avenues. We've used bill inserts which included frequently asked questions about the new technology. We've had web pages on our website to provide quite a bit of information about the AMR meters. Meter mechanics and meter workers have attempted to knock on doors prior to installation of meters. A newspaper article was published about the installation of meters. Tampa Electric has visited the USF campus for at least the last eight years talking about AMR installation and

engaging students and visitors to the campus. We've also used the white space of bills to inform customers about meter installations.

A very limited number of customers have contacted Tampa Electric to express their concerns through letters, e-mails, and phone calls. And after about -- after education about the AMR technology, only 12 customers have requested a meter change.

These customers have concerns with RF emissions and privacy. And as a temporary measure, Tampa Electric has replaced 12 meters, 12 AMR meters with digital meters without the RF transmitter or delayed the installation of an RF AMR meter.

In review, Tampa Electric -- in review of the information I've provided, Tampa Electric has -- all right. What did I do? Oh, I'm seeing a different screen in front of me.

(Technical difficulties with slide presentation.)

All right. Tampa Electric, Tampa Electric's letter -- electric metering is safe, accurate, and complies with national standards and federal regulations. Tampa Electric continues to communicate with its customers about new metering technology and services offered, and Tampa Electric continues to look

for and evaluate new metering technologies to ensure it delivers electricity using the best practices in the industry.

MR. CLEMENCE: Next up will be Bryan Olnick from Florida Power & Light.

And while he's working his way up here, to those of you who have joined us since the beginning of the workshop, I'd like to welcome you. And if you would like to provide public comment, I would ask that you sometime this morning, early in the afternoon please stop by outside and sign up to, to speak.

MR. OLNICK: Good morning, everyone. My name is Bryan Olnick, and I'm the Vice President of Smart Grid Solutions and Meter Operations for Florida Power & Light. And thank you for the opportunity to discuss smart meters, FPL's smart meter program today.

Let me begin by saying smart meters are essential to modernizing the electric grid which will bring a number of long-term benefits to all customers. By upgrading the meters on the electric system, we're already improving our ability to prevent outages. And when power does go out, we can work quickly and accurately identify the problems so we can restore power faster. We're already achieving operational efficiencies that will help our customers keep their

bills low. And customers with activated smart meters can use the Energy Dashboard to take more control over their energy usage and their monthly bills, if they choose to. It's their choice.

At FPL we pride ourselves on being low cost while delivering high value. It's part of our culture. And we have a history of operating in that fashion. Smart meters support that approach. Opt out does not.

We understand that change can be difficult for some people, and some of our customers have expressed concerns based on misconceptions and false statements that are being circulated on the Internet. The number of people that have refused smart meters, primarily based on concerns over radio frequency, privacy, and safety, equates to only three-tenths of 1% of our customer base.

At FPL we're strongly committed to customer satisfaction. When customers have contacted us to refuse installation of smart meters, we have postponed installation while we provide them with the facts and try to help them understand the benefits of the technology. However, some customers remain adamant about not wanting a smart meter, and we recognize a long-term solution is needed.

If the Florida Public Service Commission

determines that they want us to divert from the course of providing the most cost-effective service, the Commission needs to make that clear and implement a program in which FPL would be authorized to recover all the costs associated with maintaining an alternative. The customers who refuse a smart meter should bear those costs. It would be unfair to ask all customers to subsidize those costs incurred as a result of other customers' decisions.

I'd like to give you a little background of our smart meter selection and our deployment. Long before we finalized our design of our system, we researched, tested, and piloted various technologies extensively and methodically. Then as part of our 2009 rate case, the PSC approved our plan and directed us to proceed with our smart meter deployment. The two-way meter, the two-way meter technology that we selected passed all of FPL's due diligence tests. As required by the FPSC, our smart meters meet all commercially required standards and all other requirements with regard to health and safety. We have established and maintained the highest standards for the meters' performance. We require our vendor to quality test every single meter. FPL and a third party also do independent meter sample testing.

More and more, because of the tremendous benefits they bring, smart meters are becoming the standard of service across the country. As of May this year, almost a third of all homes in the U.S. had a smart meter.

The technology that we ultimately selected was the Silver Springs Networks radio frequency mesh embedded in meters manufactured by General Electric. RF mesh technology facilitates two-way communications through a secure network over a 900 megahertz radio frequency band. The entire network and communication that moves through it are heavily protected by multiple layers of security and encryption. GE and Silver Spring Networks will cover more about their technology in their presentations.

I know that the PSC is interested in matters of jurisdiction, and this seems like an appropriate place to have the discussion to note that the Florida -- or, I'm sorry, the Federal Communications Commission has jurisdiction over frequency, radio frequency standards.

Here are some excerpts from a recent letter that the FCC's Chief of Engineering Technology sent in response to a query from Florida Senator Bill Nelson. As you can see, the FCC stated, and I quote, the FCC has set limits on the maximum permissible exposure for

emissions at RF emitting devices. The smart meters being installed by FPL operate at levels that are hundreds of times lower than the FCC limit, end quote.

If there are specific questions about radio frequency, Dr. Peter Valberg, a nationally recognized expert in the area of radio frequency and human health, is available to help address those questions during our roundtable discussion today.

Moving on to a status report of FPL's deployment. We're on schedule and expect to be essentially complete by May of 2013. We're about 85% complete today with deployment and have installed approximately 3.8 million meters. I touched briefly on some of the benefits earlier, and I'd like to expand upon why smart meters are a prudent investment for our customers.

As soon as the smart meters are activated, customers start to realize the benefits immediately. They can access information about their energy usage down to the hour, and many are already using this information to take more control over their energy usage and save money. We're able to deliver service more conveniently too. We no longer need to go to the customer's property every month to read the meter. And instead of estimating bills for hard-to-read access

meters, we can now provide an accurate meter reading every month. And our care center representatives too can help our customers more effectively if they call about a question. Smart meters offer many lasting benefits to our customers.

Smart meters are also the foundation for a smart grid and are helping us to modernize our electric system to make it more reliable and resilient, a benefit we know all of our customers care deeply about. The smart grid technologies that we're installing from the power plant all the way down to the meter are helping us prevent outages, and when an outage does occur, identify them more quickly and accurately so we can restore them faster. Smart meters also help to notify us if a customer's power does go out.

Let me give you an example of how smart meters are helping empower restoration. If a customer calls with a smart meter to report a power outage, we can now send a signal to that meter from our care center to see if it is receiving electricity.

Let me give you a brief example how we used that featured just recently during Tropical Storm Isaac to help about 35 customers at a special needs shelter in Collier County. Before the county transported the residents back to their homes, we were able to send a

signal to the meters and confirm that their power, that their homes had power. The county emergency operations team was very pleased with the practical and effective use of smart meters and the technology in facilitating the safe return to their, to their residences.

Now we understand that smart meter deployment represents a change for our customers, and we're committed to supporting them through it with robust communication. Before we come out to install the meter, we send notification through the mail. Although we know we're not perfect and sometimes notices do get missed in the mail, so we reach out in many other ways. Customers can also get information through our interactive voice response unit as well as FPL.com.

And then after we install the meter, we send customers additional notification through their bill and more information about the benefits and instructions on how to access and use their personal Energy Dashboard If customers are on e-mail with us, we send additional communication periodically through their e-mail address.

In addition to communicating with customers before installation and after activation, we're working to educate our customers through a variety of methods, including media, bill inserts, e-mail, e-newsletter, and a special website with videos, fact sheets, and

information from other sources. We've also partnered with Miami-Dade College to offer Energy Essentials, a free one-hour class open to all customers that shows them how to use the dashboard and create their own personal energy savings plan. So far we've had more than 900 participants, and we're expanding those free classes to Broward and Palm Beach Counties and other communities in the future.

These classes have been very enthusiastically received and so has the dashboard. Here you can see the view that any customer with an activated smart meter gets when they log on to our secure website to see their dashboard. Customers who don't have Internet access can call our care center or interactive voice response unit to access some of this same information. The dashboard provides useful information by the hour, by the day, by the month. And similar to others, there's a line that shows the average temperature, which is also very useful to our customers to determine how much energy they use. They can also get a projection of what their next bill might be based on current usage trends. This is something that our customers on fixed budgets really like. They can go online or call our voice response unit every day if they'd like and get a good estimate of what their bill is going to be. On our website you can

see several examples of how customers are actually using this Energy Dashboard.

Now as time goes by and more customers become familiar with smart meters and smart grid technology, we're confident they'll be as enthusiastic about the benefits as we are. In the interim, we understand that change can be unsettling for some people. To date, out of about 3.8 million meters installed, about 14,000 customers have been adamant in refusing a smart meter. When customers call with a concern, we're here to help them. We listen carefully and try to understand their concerns and offer information to help educate them.

Assuming the current trends, assuming the current trend continues at this rate, our best estimate is about 20 to 25,000 customers out of about 4.6 million will have requested postponement by the end of our deployment. Utilities in other states that have implemented opt out charges have found that about half of the customers who initially request postponement are unwilling to pay a fee for a nonstandard meter and choose to have a smart meter installed.

As I mentioned earlier, when customers have concerns, those concerns typically fall in three areas: Radio frequency, privacy, and safety. I will briefly address each one of those, and we can talk more about

those in this afternoon's roundtable discussion.

With regard to privacy, we've seen flyers circulated that claim that smart meters are surveillance devices that allow FPL and other government agencies to spy on customers and that we'll be able to tell their daily energy habits and energy usage. This couldn't be farther from the truth. FPL's smart meters only, only measure energy usage data. They don't record, store, or transmit any personal information. The meters tell us how much total energy our customers use so that we can bill them accurately, but they can't tell us what specific devices are being used within the customer's home.

With regard to radio frequency, our smart meters operate at levels that are hundreds of times lower than the limits set by the FCC. Smart meters communicate over the same radio frequency band that we've been comfortable for years in using for other common devices mentioned today such as baby monitors, garage door openers, and others. In fact, when you walk into the neighborhood Starbucks for a cup of coffee, it's the same frequency band that people are using to connect to the Internet. No credible study has ever showed that an RF emitting device within the limits set by the FCC has caused adverse health effects.

With regard to safety and fires, smart meters themselves cannot combust or ignite. What many customers don't recognize is that the meter enclosure, meter can is the property of the customer and their responsibility to maintain. If it's in poor condition, problems can arise that could affect the immediate surrounding property, including any meter type, not just a smart meter.

We've heard reports just recently that our installers wear equipment to protect them from radiation. This is blatantly untrue and an example of the rumors that are being spread irresponsibly. Our installers wear safety equipment to protect them whenever they're working around electricity. There's no need for them to wear equipment that protects them against radiation.

We have extensive videos, facts, and third party information on our website that address all of these issues, and we do have experts here today who can help us answer those questions during the roundtable discussion.

In summary, please allow me to restate the importance of smart meters to a modern electric system. They're a vital foundational technology essential to our commitment to build a modern, reliable, and efficient

electric grid for the benefit of all customers. They're providing tangible benefits now and will make it possible for us to introduce many more in the future. So we feel very strongly that the smart meter upgrade is beneficial for all customers and is an essential part of our commitment to maintaining -- to be a low cost provider.

If the Commission determines that an alternative meter should be offered, FPL will require a mechanism for cost recovery from customers choosing it.

Thank you again for this opportunity to make FPL's position clear, and I look forward to answering any questions in today's roundtable workshop discussion.

MR. CLEMENCE: Now with a perspective from our state's municipal electric utilities, Mr. Joe Noel from Ocala Utility Services.

MR. NOEL: Thank you. It's my honor to be here today. My name is Joe Noel. I work for the City of Ocala, but I'm here today representing FMEA, the Florida Municipal Electric Association.

FMEA is made up of 34 municipal electric utilities from all over the state, we're from Tallahassee to Jacksonville, Orlando to Key West, and all points in between. Combined we're responsible for more than 1.3 million metering points. We, in fact,

serve 14% of all Floridians' energy needs. Though we vary in size, each of our member utilities is dedicated to providing the highest level of customer service and reliability.

We are a group of organizations with like problems and like needs that come together to share ideas and aid, when necessary, to make all of us better, and we operate on a not-for-profit basis.

Here we are, all 34 cities. I know there are 34 because I counted the dots. And Ocala is just north of center there.

All FMEA members are migrating to solid state metering. A few of us have completed deployment. Quincy has completed, and Leesburg and Lakeland are nearing the completion of their implementations.

And just as a note, Lakeland has recently released that they're discussing smart meter alternatives like opt out with their Commission.

The City of Tallahassee, 114,000 electric meters deployed, and then they have water, gas also, and they're already offering alternative rate structures.

Then there's Ocala. The City of Ocala was established in 1846. The electric utility originally called the Ocala Light & Power Company was created in 1898. Ocala has been known as the horse capital of the

world, among other things, but one of the ideals that we take pride in is our commitment to customer service through innovation and technology. The results of this commitment are what bring me here today.

I'd like to talk for just a minute about our smart meter deployment project. In 2005, we formed a committee to study the benefit of AMI technology and which one would be most beneficial for the City of Ocala, and the committee choose RF mesh as our AMI technology based on what we understood at the time about how mesh works and how it would work in our service territory.

In 2006, we executed a pilot project, 400 electric meters and 100 water meters to see how it would actually work, the benefits to make sure that we could get the information back that we needed, and it was a successful pilot project. So we chose Elster's EnergyAxis AMI Solution. We also decided to utilize a third party to complete the system implementation or installation and meter exchanges.

In 2008, our city council approved and signed the contract. This initiated an aggressive 18-month systemwide deployment of 54,000 electric meters and 21,000 water meters.

And in 2010, we successfully completed the

implementation on time and under budget, and I served as the project manager for this implementation.

Are customers concerned? A few are, yes. It's important to say that during the implementation we had no customer concerns that came up that were at least voiced about the concerns that we're all facing today. I believe that was due to the fact that we were early adopters of the technology and we had an extensive customer education project that we also used.

Since implementation we've only had four customers voice their concerns and want to opt out of the program that were escalated to, to my level, and those concerns were either centered around government intrusion, RF health anxieties, or system security.

And our first, in my first experience with a person who demanded that we exchange their meter, I met with them face to face, we had lunch together, and we talked about, we talked about the program, I listened to his concerns and, and we were able to, you know, explain the technology in a way that was understandable. And I found out that day that he was also the vice chairman for the Ocala Tea Party branch that had about 200 members, and he asked me to come speak to their group and so I did. And, you know, I went in there with the information on a piece of paper, it took me a few

minutes to read it, but then we spent about 45 minutes in a question and answer discussion, and they had great questions. And so what I realized from that is maybe we hadn't done everything we could have done to educate, educate our customers on the new system. But the results of that meeting were great. We haven't had any further concerns from that group.

And then we've had a few other concerned citizens who again we met face to face with and were able to resolve their issues. So it's been pretty successful for us. However, we do feel that we have taken the right approach in communicating with our customers. We listen to what they say, we relate to the concerns so that we understand what they're saying to us, and then we explain the technology and the reasons behind our implementation, the benefits that we can all take advantage of thanks to the AMI system.

All right. So the Sunshine Law, this, this is not something that affects the investor-owned utilities, only the municipals. Through the Sunshine Law all customer data, with a few exceptions, is public record and can be requested at any time and we have to provide it under this law. The pertinent data that is available -- or that was available for advanced metering was limited to monthly consumption and payments. Now

there is significantly more data generated, including 15-minute interval data. The concern is that this data could be used to define customer usage patterns and then be used against the customer. As of right now we are considering seeking a delay in releasing this interval data by up to three months. We would still provide the current level of availability for monthly requested data. The objective here will help to provide our customers with a piece of mind knowing their data is safe.

Moving forward, at the end of our smart meter implementation we had a very strong foundation of technology that we could start to utilize for great mutually beneficial projects centered on customer service and efficient, efficient operations. In September of 2011 we implemented a prepaid municipal services program. One year ago yesterday was the day we went live. And we've had 3,000 customers voluntarily enroll in the program, and that 3,000 represents 8% of our eligible customer base.

And I like to say that the prepaid municipal services is a win, win, win scenario. First off, the customers enrolled in the program, they get to pay for their energy on their, as they're, as they need it. They pay for as much as they want or as much as they

need when they need it. They can avoid deposits, they do avoid deposits. They avoid the accumulation of late fees, disconnect fees, and reconnect fees based on this technology.

The second win is for the utility, and that the customers enrolled will never accumulate unpaid debt. They're no longer a financial risk, and customers can choose to pay off any pre-existing debt over time in a debt recovery module of the program.

The third win is for the rest of our ratepayers or all of our ratepayers. Because we're eliminating the, a lot of the financial risk and collecting on receivables, the potential for future rate increases based on these factors can either be nullified or lessened. So I've never before come across a program that represents such a benefit for everyone involved, and it is because of this, this technology.

2012, this year we're currently working on implementing a meter data management system and exploring what that data can do not only for the utility but also for the customer. We want to provide our customers with a web portal so that they may run some reports, study their usage, and use this information for their advantage.

Next year, 2013, we plan on revisiting our

residential time of use rates and improving them. And take -- taking advantage of these smart benefits available lead us even further into future with -- into the future with distribution automation, and this is to increase our reliability and decrease outage durations.

One last comment I want to make sure that I get this right because I believe that it's important, I believe it is vital that we understand the importance of this technology. Our industry traditionally evolved slowly. We are hesitant to accept changes to our way of doing business and providing energy sometimes, but this advanced metering and smart grid technology represents a paradigm shift that will not only change the face of our industry but also has the power to affect positive change for the world. And if we pollute the data by allowing smart meter alternatives like opt out, it will dilute our ability to realize the global benefits of smart grid, namely the avoidance of building additional generation. We all know how much fun building a new plant can be. With the data available, only from systemwide deployments of smart meters can we make decisions and steps towards real conservation and system operational efficiencies.

Thank you very much.

MR. CLEMENCE: Now we'll move into some

presentations from some manufacturers. First up will be Mr. Chris Held from General Electric.

MR. HELD: Hi, everyone. Thank you for allowing me to be here today. I'm the Engineering Manager for GE smart meter business based in Atlanta, Georgia.

So GE's smart meter business is actually part of a larger business in GE called digital energy. The digital energy business, they do a lot of different things for the transmission and distribution space from power transformers, distribution transformers, capacitors, a lot of different equipment that goes in substations for grid automation, and then obviously the meters piece as well.

You look at GE and the history of GE and metering, GE first started getting going in metering back with Thomas Edison over 100 years ago. So we've been building meters for a very long time. In 1996 is when GE first shipped its first solid state electric meter for the commercial market, the kV meter, and that meter has kind of evolved over time since its 1996 release. In 2000 we came out with the kV2, and in 2002 the kV2c, which we're still shipping today.

On the single phase residential meters, we shipped our first meter, the I-210, in 2004. That ended

a great run GE had with the I70 meter that we had first released in 1967. And then follow up to the I-210, in 2007 we released the I-210+ and the I-210+c meters, which is our second generation of residential meters that we're deploying today at Florida Power & Light and other locations.

And if you look at it, you know, GE is distributing smart meters all around the U.S. We've shipped over 9 million smart meters around the U.S. to date in Florida, California, you know, up in the northeast, all over the place, so a pretty broad distribution base of these smart meters.

And so what is a smart meter? People ask me, you know, what really comes into a smart meter? So if you look at it, there's four key elements to a smart meter. The first is you've got a base down there and the base is what plugs into the electric socket that's sitting on the side of your house. Inside that base you're going to have some sensors to be able to measure the current. You know, how much current is going through the meter, how much energy is being consumed by the household. And there's also a service switch in there now. That service switch allows the utility to turn service on or off to a residence for various reasons.

You go up from the base and then you've got a communication module there. And you've heard from the different utilities today about some of the different communication technologies that, being used today in Florida. It could be an RF mesh, it could be a cellular, it could be a one-way communication, it could be PLC, it could be anything really. And that's going to plug into the main metering board, and that metering board is really the thing that is measuring the energy and gathering that data that gets transmitted out through the communication radio.

And then lastly, covering the whole thing up you've got a meter cover. It used to be glass in general for a long period of time, and over the last ten years we've really switched to using Lexan plastic, and that cover is there to really protect, protect the inside of the meter from the weather and tampering.

I'm going to walk you through a little bit. There's some technical information, so I'll try not to go too deep here, but this is the I-210+c, kind of what that architecture looks like inside the meter. So as I described before, you know, you've got this voltage and current sensing going to the AC line. And current is really a measure of how much energy you're using, and that's going to go to our metrology chip. And that

metrology chip, it's got a direct connection to the LCD so you can see, hey, here's how much energy I've been using, similar to the old spinning disks on old electromechanical meters.

It also has a realtime clock built in there so that, you know, if there's an outage, you know, you can keep time throughout that outage. And understand when the power comes back up, you know, here's what time of day it is for storing any of that type of information.

There's also a service switch connected to the AC line, as I talked about earlier, and on the other side of that service switch would be the load of your house.

That data from metrology, it's going to talk to our microcontroller, which is an application processor. On the next slide I'll talk a little bit more about what actual data is available and how often it's stored. And that application processor, it's really the thing that is talking to the communication board so that data can get transmitted back to the utility, and is also what's talking directly to the optical port on the front of the meter if you want to communicate directly with the meter.

So if we look at the data flow, that metrology chip I talked about, you know, every second it's

collecting data. That's true. And so it's collecting, you know, voltage and current and those types of measurements. That data, while collected every second, isn't stored. And even at one-second intervals that's not precise enough to be able to tell what type of appliance is using that current or voltage. You need to have much higher resolution data to be able to see anything like that.

So that one-second data is then, you know, sent to the application processor where it can be stored. And the types of things that are stored is load profile. So, you know, over the 15-minute interval usage how much energy did you use? All right?

And that's customer -- that's utility configurable. Most utilities do 15-minute interval data. It could be as, as short as one-minute interval data, it could be as long as 60-minute interval data. It has to be an even, evenly divisible into that 60 minutes.

The AMI board then is going to read from the application processor that data that, that is stored, and most AMI's that we work with get that data about every 60 seconds. It could change. It could be as little as one day. And then they transmit that back through the backhaul typically once a day, although

again that could be different.

Another thing is that the interface between the meter card and the communication board is primarily driven by the communication card. All right. The communication card says, hey, go give me some data. The meter doesn't push that data out to the communication board.

The exception to that is there is a trouble line and a power fail line. So if the meter detects anything, unusual operation or tamper or anything like that, it'll actually send a trouble signal to the AMI to say, hey, something is going on. You know, you need to either read an event log and see what's happened here, or there's an outage going on and you need to notify the utility before you lose power that there's an outage going on and alert the utility in advance.

If you look at security, we really have a three-layered approach to security. The first thing is we feel very strongly that security needs to be based on industry standards. The communications for the meter is all through the ANSI C12.18 protocol.

The nice thing about that protocol, it's actually designed where it's not allowed to access the AMI network. So any type of attack would be very localized to that specific meter and couldn't get

transferred out to the broader AMI network.

The other thing is you've got to test and kind of validate the security that's in there. So GE has had independent security assessments done by world recognized experts, and we've taken their analysis and their results and we've included that in our roadmap as we improve security on, with each of our releases that we do.

And the last thing is monitoring and response. So, you know, as I mentioned on the previous slide, the meter has various ways to detect that the meter has been tampered with if there's abnormal operation. And as those things are alerted, it sends signals back through the AMI system so the utility is aware of that abnormal operation.

There's been a lot of safety concerns about meters. I kind of break them out into two different categories, some kind of the physical and then the environmental.

So if you look at the physical concerns that people have had about meter safety, you know, there's been this issue about hot sockets and different thermal events on houses. The, the meters in every case that I'm aware of, the source of the fire has been external to the meter. The meter has not been the cause. And

the meters are actually tested to the ANSI C12 temperature rise and installation tests.

They're also -- our meters, while not regulatorily required, we test them to IEC 60695-2, which are the heat and flammability tests, to make sure that they're not a hazard. And we also use material in the base and the cover that we make sure is UL 94 rated, which is the flammability standard for safety.

You also look at over-voltage events. And, you know, meters are designed to meet the industry standard for overvoltage. So they're actually designed to be able to continuously withstand 20% over voltage. So normally you have 240 voltage service going into your house. That means the meter can take over 300 volts, you know, constant. I don't think your TV will like that very much, but the meter is designed to take that.

It also withstands, based on the ANSI standards, temporary overloads of 12,000 amp surges as well as 6 kV surges, which would happen from like a lightning strike going on in the area.

If you look at the environmental, there's obviously been a lot of concerns about RF emissions. I think the previous speakers have done a very good job explaining the research and data around that. I thought that was a very interesting quote from the smart grid

consumer collaborative. The, the average RF emissions from a 15-minute daily cell phone call is equal to 375 years of RF emissions from a smart meter. Kind of enlightening when you read that type of information.

The other thing that I haven't heard talked about today is switching mode power supplies. And I know there's been some concerns, different articles about, you know, using switching mode power supplies is dirty energy and emits a lot of RF emissions as well. What I will tell you is most of those articles don't mention is that pretty much everything that plugs into the wall in your house besides like a lamp uses a switching mode power supply, and the amount of emissions is regulated. And so, you know, a smart meter, while it does use a switching mode power supply, so does your TV, so does your cell phone charger, so does your laptop charger. As a matter of fact, you know, a smart meter is about 1 watt. Your laptop charger, a lot of them are 60 watts or 100-watt power supplies. So, you know, they're using a lot more energy, as is your TV, than the smart meter. So the switching mode power supply, I really don't understand how that one has been brought up as a concern. But we've definitely read it and are eager to talk about that and any other follow-up questions people may have during the roundtable

discussion. So thank you very much.

MR. CLEMENCE: Next up we'll have Mr. Don Reeves from Silver Spring Networks.

MR. REEVES: Good morning. My name is Don Reeves. I am Senior Vice President of Services and Operations with Silver Spring Networks, and I appreciate the opportunity to speak with you today to give you some insight into what our technology does and how it's leveraged by some of the utilities here in this room.

So first of all, let's talk a little bit about the company. So, first off, we don't make smart meters. We actually make the networking technology that is integrated inside of smart meters, and that technology can also be used to connect other assets that are deployed in the field by utilities such as distribution automation equipment, as well as enabling connections into the home for, say, a smart programmable thermostat.

Our highly scalable secure technology is entirely built on top of what's called Internet protocol Version 6, otherwise known as IPv6. And one of the main reasons for doing this is so that we can take advantage of modern security technologies, and that translates then to highly secure solutions to our customers and to the end consumers.

Our technology is being deployed by three of

the utilities represented here today. So you've heard from Florida Power & Light, you've heard from Progress Florida, and then the City of Leesburg is our third deployment that's currently underway. And we have about several dozen customers in the U.S. and around the world, so our technology is very widely deployed.

Let's talk a little bit about some of the, the benefits. So in terms of open, extensible, and scalable, we think one of the main benefits that we enable is providing utilities with choice. So that gives them a rich partner ecosystem, the ability to deploy ubiquitously. And the main benefits derived here are that they can fully leverage their investment in a network to deliver maximum benefits to their end consumers.

We deliver very high performance and reliability for the dollar, and that's proven in scale. So, again, translates to a, a lower investment to generate maximum benefits.

And then finally our technology is architected from the ground up to be highly secure at all layers. And I think you've heard a lot of conversation today so far about security. There will be more this afternoon. But we've really focused on all the layers: So the hardware; the firmware, firmware is software that runs

on hardware; the network, you know, the transport; and then the back office. All those elements matter, and it's important that all those, all those aspects be secure.

Benefits. So I could talk about utility benefits, you know, the cost-effectiveness of delivering a single network solution that can be used across their entire service territory. I could also talk about the environment, and I think some of the previous speakers have touched on this, how enabling utilities and their customers to use less energy translates to less pollution. I could talk about the economy, how enabling a tighter correlation between energy costs and consumer consumption will result in greater efficiency. I believe one of the previous speakers talked about, you know, trying to eliminate the need to build additional peaker power plants, where those are very expensive assets that only operate for hours or days per year. That's not a good use of, of the public's money.

But I think the most important thing to talk about are really the customers' benefits, which is the access to information and better service. And you've heard a number of data points today. It's all about getting accurate billing, it's about sharing that information with the consumers so they can make

decisions on their own as to what energy they want to consume, how much they want to spend, and better service. Right? Being able to provide better restoration, faster restoration. Be able to improve the quality of the power that's actually delivered to the consumer. That, we think, are the primary reasons for supporting smart meter and AMI and smart grid in general.

So now let's talk a little bit about our technology. So first off, as others have said, our technology is a, is a mesh network. So you may not understand what that means, so let me try to explain that. So really what that, what that entails is that every single device in the network can not only provide its own information, but it can also relay messages to other devices within the network. So essentially every device can act as a repeater and just pass along a message. It doesn't do anything with that information, and I'll explain later about how security and such are applied to insure the integrity of all the messages that are passed.

There's a few different elements within the network. The first is called an access point. It's typically located on the top of a distribution pole. It's about yea big. You have to look around really,

really hard to see it. It's a white box. If you happen to be in one of our utility service territories, you might be able to see it. And what's, what that is doing is it's providing the ingress and egress into the mesh network and in the back office.

So typically our access points are equipped with a cellular radio. It's leveraging that existing network for, for transmitting that information. But as was mentioned, if the utility has already fiber or other connections, you know, to that pole where the access point is mounted, then we can ride on top of that network as well.

The next type of device is called a relay. I want to see if I can point that out here. Here's our relay, here's the access point. So relay is actually the exact same form factor. The only difference is it will only have one antenna rather than two antennas. And that's just a repeater. We deploy these again typically on pole tops and they're used to just be put in areas where there's sparse coverage of the network and you need some better range.

The next aspect is what is embedded in the meter. So we call that a NIC, a network interface card, or otherwise just known as a network card or communications module are common industry terms. So

that is built into every meter that is deployed at Florida Power and Light, and, indeed, at the other utilities. So these NICs both enable the utilities to securely and reliably communicate to the meter as well as to, again, pass messages to other meters and other devices within the network.

Now let's talk about the mesh. So it in and of itself is dynamic. It is periodically assessing the connectedness between every set of neighbors looking to optimize the network for both reliability and latency. So latency is the amount of time it takes for a message to transfer through the network and back out. So, for example, if you have, you know, a meter inside your house, let's say it's next to your driveway and you park your RV next to the meter. That RV or truck may block that signal to that meter. So the meter will automatically figure that out and will find another path back out of the network to the access point so that communication can continue. So this all happens automatically throughout the whole network. And really one of the main objectives is to have instantaneous reliable communication so that when events such as power outages occur, the utility can get that realtime information back and act on that.

And then the rest of our solution, over here

on the left-hand side is really the software. So that software manages the network and the data coming in over the network, and then our software is securely integrated with the utility's back office applications. And then I believe, Brian cited an example of a customer service representative can now, when a customer calls in and has a concern that they are not getting power, they can actually talk to that meter in realtime, determine do they have power at the premise. And, for example, this can spell the difference between having to go roll a truck out to that customer, or actually tell the customer it's just your breaker, you know, flip the breaker; walk out the panel, flip it back on and your power is record. So now that's the sort of benefits that are now enabled that were previously not available.

Here is another picture of what this all looks like. And Chris just explained in much more detail kind of all the components of a smart meter. And, again, this is our network card that's built into that. Again, the focus here is really around security. A one-watt transmitter, and I have got a next slide on that. And, again, this is all integrated by the meter manufacturers, so this gets tested and delivered as a unit to the utility to go ahead and deploy into the field.

So all preintegrated, pretested, and then I think Brian honed in on that. The amount of effort that goes into testing at both our level, the meter manufacturer level, the utility, as well as independent third parties that are brought in to validate compliance with all the ANSI and FCC regulations.

Speaking of FCC, so what do we comply with? So here is a bunch of technical detail. I'll try to translate this into words. So, again, we operate in the 902 to 928 ISM band. So what sort of products are there? Well, it's garage door openers, it's baby monitors, it's walkie-talkies, it's WiFi. And our product has to live within that spectrum and not interfere with any of those devices. So there is very, very tight regulations around exactly what channels can we transmit on; what's the duration of a transmission; how must we hop around to ensure that we don't conflict with anything? And we have done extensive year's worth of testing to validate that we comply with all those regulations. And, indeed, we have got over 12 million devices in the field that prove that we are not seeing any of those sort of interference issues.

They are actually, technically, two radios. So I want to make sure that everyone is clear on that. So there is the 902 to 928, and this is our mesh

network, and then there is -- we offer an option for a home area network radio which follows the ZigBee standard. And so, you know, most of the meters that are deployed today actually have the ZigBee option on the NIC, and this facilitates, again, communication into, say, a smart programmable thermostat or other devices in the home.

Now, we ship by default -- all the ZigBee radios are off when they come out of our manufacturing floor. And, indeed, the best practice within the industry is to only turn those on to activate those when the customer has deployed a device inside the home and wants to connect to it. The antennas are actually built in, and there is information here about the antenna gain. And, again, this all falls under FCC compliance. All of our compliance information is available on the FCC's website. You'll see all the details about our products. You will see which third-party testing house independently verified compliance, and you see all their information and how they are certified by the FCC for conducting and performing that sort of testing.

And then finally a common question that we get is, you know, how often do our devices transmit; how often do the meters transmit? So the answer is about a minute on average and it does vary with device. Again,

since it is acting as a mesh device, sometimes it will be a little less and sometimes a little more. The vast, vast majority are two minutes or less, and so that translates to 1/10 of one percent transmit duty cycle. So a very small amount of time.

And you'll see all these other numbers measured about what is the duty cycle that is used for comparison purposes. Typically, the number that is used is either 100 percent or 10 percent, again, we at 1/10th of one percent. So a very small amount of time on air.

Comparisons. I think you've probably been beaten over the head this morning with these numbers. I'll give you the anecdote of a microwave oven. So I've got WiFi in my house, I like to stream video from NetFlix for my kids; and I notice that when I turn on my microwave oven that is a great way to go interrupt their NetFlix experience. So a good example of, you know, real world interference that does happen.

I also have a smart meter on the outside of my house, as do all of my neighbors, and have never experienced at all any sort of interference with WiFi due to that. So a good example. Probably enough said there.

So let's talk a little bit about security. First off is your data protected? And the short answer

is yes, and everyone will say yes, but let's talk a little bit more about what that really means. We look at a layered security approach to ensure that the overall system is secure. So, first off, we look at the back office, right, because that's kind of where all the smarts reside for managing this network. So you worry about the external threat, right? Can someone hack in? Can the so-called Chinese hacker or someone else get in? The answer is no, that there is authentication, authorization, access controls, and such to protect those systems.

Well, then you worry about the internal threat, right? What if there is a disgruntled employee who wants to go turn off the power at someone's house. Can they do that? Well, no. Again, there is layered security. There is physical protection around all the software, and then we have some nice two-party control systems that prevent individuals from performing wayward actions.

What about the network? We talked about transmitting data over the cellular network. Well, how secure is that? Well, the answer is we assume that it is not secure, even though the cellular companies spend a lot of money securing all that. But we actually open a secure -- it's called IPsec Tunnel (phonetic) between

the back office, between these applications and each access point to protect all the data going across the cellular network. So there is an additional layer of security built in there.

Well, then, what about on the mesh network, right? Why can't I get a great RF engineer and go listen to the signals that are on the air? Well, they could go do that, right, and if they looked at all of our specifications, all of our filings, they might be able to go figure out the protocol, the base protocol. But then they would discover that all the network traffic is encrypted. It's all encrypted with 256 bit EES encryption technologies; really state-of-the-art stuff. So they would be sadly disappointed that they can't read even the most basic information which is being transmitted, which is, you know, the consumption information.

And then finally we worry about the physical device, right? So that is in some ways the very most vulnerable device, because it's out there on the side of someone's house, right? There is not a video camera or anything that we put on that to go assess at any point in time that no one is actually touching that device. But what we can do is we can make sure that all the security credentials are in a hardened hardware,

piece of silicon hardware to protect all those credentials and that we have got information available in terms of events coming from both the meter as well as coming from our network card to know if that device has been tampered with.

And then as Chris from GE mentioned, that even if the meter itself is tampered, if someone does anything there, there is actually no way at all for that tamper to translate into getting onto the network and sending any sort of wayward signals. And this has been proven independently through -- I think we are now up to several dozen independent penetration tests conducted by security experts around the world. And this is something that we do annually. We actually pay for an annual, we call it the annual pen (phonetic) test. Bring in a third party, have them to look at all of our technology, and they look at the whole technology stack, and then our customers typically each conduct a penetration test at least once, if not multiple times, during the deployment to, again, independently verify that everything that I have put up here is true.

So I think there is obviously a conversation here about, well, what happens if folks opt out? What is the impact? So there is an impact here to the benefits in terms of billing accuracy, and that's first

and foremost. There is the access to data. And, again, I can't stress how important this is. You know, enabling consumers to see that information so they can make good decisions, right? That is a benefit for all of us. There is the improved customer service. There is the power restoration. And then many, many benefits come in the months and years ahead of us, and this all translates to better service and value for the end consumer.

We have got links here to information available on our website that go through all the technical details, should you want to delve in further. Thank you very much.

MR. CLEMENCE: Before we get to the next speaker, I would like to take a moment and recognize some students we have in the back of the room from the FAMU/FSU School of Engineering. If they'd like to stand for a moment. (Applause.)

Thank you guys for joining us here today. I would also like to remind everybody again that all the presentations are available on the Florida Public Service Commission website, FloridaPSC.com.

Next up we will have Arlin Rummel from Sensus.

MR. RUMMEL: Hello. My name is Arlin Rummel, and it's an honor to be here with you today. I am with

Sensus, and we are an end-to-end solution provider, so today I'll be talking a little bit both about the meter and the communication technology.

Sensus is an industry leader, and we have global presence, and our headquarters are located in Raleigh, North Carolina, not far from here. We provide a broad range of energy and water solutions for the market, including the FlexNet end-to-end system. The FlexNet infrastructure comprises a network, a robust network that is secure, it's standard spaced, and is provided for the -- is an excellent utility communications platform. It is designed to interface with water, gas, and electric intelligent endpoint devices and other such devices that are connected to the network.

When interfaced with utility back office applications, the utility can realize the benefits that have been discussed previously for operational efficiency and improved customer service. And when interfaced with other customer-facing applications, can provide customers with information to increase their knowledge about how they are using consumption and to participate in energy management and energy conservation programs.

The iCon electric meter is an integral

component of the FlexNet system. The iCon meter is an exact replacement for an electromechanical meter in both form -- mechanical form and fit. As an electronic meter, it provides increased accuracy for measurements with an accuracy class of 0.2. And as discussed previously, it provides similar measurements for consumption with accumulated energy and time-based measurements.

The added features, advanced features of the iCon meter as seen here enable utilities to better monitor the meter installation and ensure the integrity of the installation and the consumption information that is delivered and then is used, too, for customer billing. There are over 10 million of these type meters that have been deployed in the field to date.

The iCon meter is a smart meter device, but it is important to note that is it not a surveillance device. In no way does the meter have neither the hardware or the firmware in the meter to be able to track and monitor individual appliance consumption or to be able to control those appliances within the customer premise. In addition, the meter does not retain any customer or personal information.

The iCon meter is compliant with all industry standard and regulatory requirements, including ANSI,

NEMA and FCC. In addition, it is compliant with individual utility expanded performance requirements for their specific local area.

Let's look at the communication module. The FlexNet module is integrated into the iCon meter and other third-party devices. For our discussion today we will talk about the iCon integration. The FlexNet module is a two-way module that operates on a point-to-multipoint network. What that means is that the module typically communicates directly to a collector point -- collection point in the network. The network operates on primary use license frequency in the frequency spectrum indicated there, excluding the ISM band, which was discussed previously. The spectrum that -- and the advantages that are offered with licensed frequency assures that the utility that has deployed this network has exclusive use of that frequency spectrum and there will be no interference from any outside devices. And the requirements of FCC tightly control how that radio operates to ensure that it operates at the frequencies that have been allocated and does not create external interference outside those bands.

The transmit power of the antenna is 1.26 watts at the antenna, and it is important to note that

that transmit power is only occurring during the brief periods of time when messages are transmitted on the network. When the transmitter is not transmitting, it is turned off and is not sending messages and is not emitting any emissions.

The multichannel capability that is provided with the network provides and supports multiple simultaneous applications at one time. And the efficient design of the radio enables a last gasp messaging to report when lost of power conditions occur, in this case multiple messages are possible to ensure that the utility is aware when an outage occurs.

The information that is transmitted by the FlexNet module is retrieved from meter registers, and there is error checking that is performed to ensure the integrity of the information that is transmitted over the network.

In addition, data privacy is absolutely essential. All the transmitted messages include the ID of the radio module and the consumption information and status alarm information. No customer-specific information is transmitted. This is matched to the information that is collected by the network at the utility system and their applications typically within customer service.

The advanced capabilities of the meter provide status and alarm information that enables utilities to monitor the performance of the meter in -- at its installed location. Some of the advanced features that are possible with these status alarms enable the utility to identify and be alerted if there is a possible tamper condition where the meter has actually been removed from service. If that meter has been then relocated to another unauthorized location, the capabilities of the network enable the utility to actually locate where that meter is and initiate appropriate investigation.

It is important to ensure compliance with all relevant FCC requirements, and Sensus uses approved third-party testing facilities to test every endpoint design that we deploy for compliance. And you'll see here that the requirements for FCC compliance extend beyond the Part 15 that is typically related to the mesh technology. We have to comply with Parts 24, 90, and 101.

In addition to the inherent design, we design for long-term stability to ensure that the radio stays and operates within the tolerance that FCC specifies and use self-correction error correction to make sure that the frequency stays on track.

Let's talk a little bit about the FCC limits.

There has been previous discussion, and in the past the FCC has conducted extensive research and analysis to determine the permissible limits for radio emissions. Their studies have been backed by the World Health Organization and many other organizations that have conducted studies over many years. You can see here that the limit of 610 microwatts is high compared to the iCon meter which operates as seen. It is much, much less. We can further compare that as has been done previously. The meter -- the emissions of the meter and the exposure is significantly less than the common household appliances that you find in your home, including cell phones.

Utilities oftentimes conduct their own independent studies. And one of our customers, NV Energy, has done that, and listed Exponent as a third-party source to conduct extensive analysis and investigation. And you can see the results here, but the conclusions that they have drawn from this is that the FlexNet network results in negligible RF exposure and in all cases operates within the FCC limits.

Another approach to look at the network and the emissions is based on the amount of exposure during a period of time. In a typical installation, such as Gulf Power, there are six transmissions typically in a

day, and if you look at a typical transmission, which is less than point two tenths of a second, you could equate that over a year's period of time as equal to one six-minute phone call.

The physics of RF emissions is such that the further you move from the source, you significantly reduce the level of emissions. And it is acknowledged that meters do not operate at close range like you would with a cell phone which is pressed up to your ear. So based on the evidence, the data, and the analysis that has been conducted, again, it is concluded that there is no reasonable expectation of adverse health effects to utility personnel, homeowners, or the public.

There is also consideration for multiple meter installations. Again, the analysis that has been conducted at multiple meter installations such as apartment buildings and neighborhoods where homes are close to each other, again, due to practical separation distances of the meters and the need to control the communication with each meter assures that there is no -- the exposure is very negligible for RF emissions.

Communications is also an option within the iCon meter. And as discussed previously, that operates at 2.4 gigahertz. Each radio that is integrated with the FlexNet network is certified by a third party,

Certicom, for ZigBee compliance for interoperability and for compliance with its standards. The ZigBee then provides the options to communicate with devices in the home and enable customer interaction and work with third party applications for demand-side management and realtime pricing applications.

Lastly, security is essential and we design for that in the network. And not only do we design for it, but we verify it through testing. We monitor NERC CIP standards, and Sensus was the first company to undergo certification and successfully be certified by WorldTech for compliance with cyber security.

We continue to monitor NIST and DOE progress and standards and compliance, but with the multilayer security implementation we go beyond just the encryption and the cyber security protection. The features of the system, we monitor every transmission, and you can look at those results and identify if there are areas of suspicious activity. Alarms alert of potential malicious behavior, as well.

And, again, to reiterate, data privacy is critical and assured that there is no customer information stored in the meter or transmitted by the network itself. I thank you for this opportunity.

MR. CLEMENCE: And our final technical

presentation this morning will be from Lou Santilli from Itron.

MR. SANTILLI: Good morning. I'm Lou Santilli with Itron. I'm the Director of Smartgrid Solutions with Itron globally. I'd like to also thank everyone for their time this morning to discuss this with you as well as the utilities and the Commission. Thank you again.

I'd like to start off this morning talking a little bit about Itron. We have been in this industry a long time. We have over 105 million endpoints that are out today, RF endpoints in service today and safely in service. We have thousands of utility customers in over 130 countries today, as well as 80 percent of all metering data in the United States today or North America touches an Itron system in some manner.

We have over 35 years of experience as Itron, but we also are the complete end-to-end solution. We manufacture the meters right here in the United States in Oconee, South Carolina, from the component of the board all the way up as well as our gas endpoints in Waseca, Minnesota. So all products in North America are manufactured right here in the United States with American labor.

In 2004, we actually acquired the Slumber J

Electric Metering Division, which it then acquired more than 104 years of metering experience in the systems alone. So this is our only business. We have done it for many, many years.

As you can hear from today's presentations, as well as my colleagues and their utilities, security and safety are foremost in the industry's mind as well as in the manufacturers and the utilities. So these devices are safe. They have been out for a number of years. They have many benefits. You have heard them. I'm in the unfortunate position to be last, so what you will hear from me is a lot of what you have already heard. We'll save it for conversation this afternoon, but we will go through it.

So how does an AMR system work? An AMR system works -- and it's a one-way communication, very eloquently covered by Mr. Woodall. It basically has a transmitter in the meter that bubbles up data and it actually gets received either in a hand-held device or in a drive-by device. You have heard the drive-by solution.

One thing to remember is with this device you can go back to the old legacy meter reading system. If you had a book, you could walk up to it and see the same data that is being transmitted AMR as being transmitted

over the air or being read on the front of the meter. So the things that happen there, you heard Mr. Woodall talk about it for a minute, employee safety. One of the big keys here is getting people out of the backyards. That is safety for both the meter reader as well as for the customer.

You don't want to be 9:00 o'clock in the morning and all of a sudden see someone strange in your backyard. So these devices actually have helped the employee safety as well as the customer safety. Customer privacy and accuracy of the bill, ultimately very important. The customer you heard -- again, Mr. Woodall or Mr. Caldwell talk about how many calls have gone down. The accuracy of the bills being much higher as well as the privacy concerns.

Accurate billing. Fuel savings. One of the things you will talk about in the fuel savings is not only the fuel, but I think most of the panel discussed today the environmental footprint that we are avoiding. When you talk about the environmental footprint and you talk about eight pounds of carbon for every gallon of gas that is being used, if you just do the math, look at how much carbon is being reduced -- removed from the environment based on these technologies.

We also are the end-to-end solution, so we do

have an AMI smartgrid offering. It actually has the benefits of the consumer engagement. One of the keys of consumer engagement is to change the way we look at the grid. The electric grid hasn't changed much since Thomas Edison first energized a grid in Lower Manhattan more than 140 years ago today. The grid hasn't changed much, and this begins a transformational information that you can actually have the consumers engage on how they use energy smartly and where they use it.

We talk about our smart phone app. Our smart phones have more technology and computing power in it than existed in all the world before 1960. So the smart phone you have today, when you think about it, a thousand times more computing power than went to the moon. And now we talk about using that same technology in the grid to be smarter. How do we do electric vehicle charging? How do we control those things that we can? We don't want to, at the end of the month, have this huge bill surprise. We want to give the customer the ability to have the engagement with the grid and with the affected utility so that it can actually be beneficial and positive.

So RF data and radio transmissions. You have heard this multiple times. We have cut it up and sliced it a million different ways. Basically, I will tell you

the same thing. Less than 2/10ths of a second is what they transmit. Whether it's a ERT meter bubbling that data up, or whether it's an AMI meter that is being polled for data, 2/10ths of a second. The amount of time a day, that adds up to less than a minute per day. So as you add up all these 10ths of a second, it is still less than a minute. Anyway you look at it, it is much, much lower than you would get with a cell phone call, as we have illustrated multiple times by multiple panel members.

So, again, everything complies with the FCC requirements. As you can see in this particular graph, it's 70 times less. So here is an AMR smart meter transmission. I think as Don mentioned when he talked about 100 percent duty cycle, or 10 percent duty cycle, this is the actual duty cycle that is being prepared. Here is the FCC limit versus what is actually being prepared.

We also talk about the HAN, the home area network, which operates at 2.4 gigahertz, so across the bottom axis you have frequency. This is the HAN device that you would use to communicate in your home, should you have a device that you want to control, a thermostat or an in-home display.

We talk about comparisons. Again, you have

seen this chart many, many different ways. This one is from the Electric Power Research Institute, and it talks about power in microwatts of power per centimeter squared, which is the energy unit measure used to measure energy. Cellphone at your ear coming up here at 5,000. Here is our smart meters at three feet and at ten feet.

We have covered adequately this morning the fact that the further away you get from the smart meter the power drops off considerably. It's a function of distance. So at three feet and at ten feet you can see the differences. Illustrated here, rather than at the logarithmic scale, I broke this scale into a division where I actually left parts out. So you can see a cellphone again; a microwave oven, as Don described; and here you will see the AMI meter, and you will see the conventional ERT meter, that's the MMR or AMR technology. And you will see it at three and at 25 feet. And you can see the difference between three feet and 25 feet and the division between those. It's a function of time -- excuse me, a function of distance affects the power.

Data and privacy, two very, very big issues. Again, foremost in our minds and the industry; foremost in the utility's mind. An AMR meter, you heard Wes talk

about what is transmitted. It's everything you could see on the front of the meter. The meter number, the value that is being read at that current time, as well as some information about the meter itself. So there's nothing that's personally identifiable. It doesn't have your Social Security Number, it doesn't have your address, it doesn't have your account number. It only has data in it.

And the AMI system, it also provides an in-depth security encryption of data. Most of the security systems today, and ours included, are much more secure than you would find in your typical banking transaction. The ATM you visited this morning or the gas pump you visited to get fuel this morning, much less data security than in the AMI systems and MMR systems today. Encoded, encrypted, as well as signed and authorized. So when the meters get a command, they know who it came from, they validate where it came from, and validate the communications back.

No personally identifiable information. You have heard this multiple times also. The things that are in there are strictly data: The meter number, the value of the read, all those items. We also talked earlier this morning about not being able to discern whether you used a thousand watts for a pool pump, or a

thousand watts for a water heater, or a thousand watts for some other device. It only tells you that you used a thousand watts of energy. It doesn't have the intelligence to say that is Lou's spa or that is Lou's pool pump. It just knows that there is a thousand watts of energy there being used.

It does have event data such as meter and tamper alarms. Voltage alarms. Those are primarily in place so that you can actually increase the ability to see what the grid has and what has been occurring. Has the voltage gone low; has the voltage gone high; did you experience an outage; did someone tamper with that meter?

The threat profile we talked about. Extremely low. I think Don summed it up best. No matter how you get to one meter, that meter in the individual network can't transmit malicious data or take down a network or the overall process. It's a single event. It's the same as somebody walking up to a meter today and smacking it with a baseball bat and knocking it off the wall. You lose that meter, but you don't compromise the network.

We meet all NIST and NERC CIP requirements. Those are very stringent security requirements. For those of you that know that, NIST, National Institute of

Standards Technology, that's a department of the U.S. Government Commerce Division which actually provides standards for the entire industry.

You heard me talk about not measuring usage by individual devices, and in my mind data privacy is more about technology -- or more about policy, excuse me, than technology. The technology is there. For instance, in our meter we are using elliptical curve cryptography. A word I can't even hardly pronounce. It's the same technology that is used by the military for their radio transmissions in Iraq and Afghanistan, and we're using it in the meters today to transmit some fairly benign data. So when you can talk about it's more about the policy, how do we apply it; who has it; where does it go? In the end of the day, it very much is about the technology and the grid awareness.

Data privacy and security foremost in everybody's mind. The benefits of smart metering. You have heard these many times. Consumer empowerment, grid awareness, and clean energy. I won't go over them again. You have heard them for the last hour and a half, almost two hours.

With that, I'd like to conclude this. I look forward to our afternoon conversation with an open round table, and if you have any questions, please feel free

to grab me in the hallway at lunch. Thank you.

MR. CLEMENCE: I'd like to thank all our presenters for presenting here this morning. Before we break for lunch, a couple of quick housekeeping matters.

Once again, if you'd like to submit post-workshop comments, you can please do so by October 12th to me at walter.clemence@psc.state.fl.us, or if you wish to mail them in, Florida Public Service Commission and either reference the Smart Meter Workshop or my name, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399.

For those of you who are hungry, if you walk out the building and straight across the breezeway there is a cafeteria right next door. In order to get to public comment a little earlier, we will return promptly at 12:45. Thank you very much.

(Lunch recess.)

MR. CLEMENCE: Good afternoon and welcome back. Before we get with the roundtable discussion, a little more housekeeping. If you're listening to the workshop, or, again, if you are unable to present comments here today, feel free to e-mail them to me, walter.clemence@psc.state.fl.us. Please do so by October 12th.

Second, if you are in the room and you plan on

presenting this afternoon and speaking during the public comment, please take a moment and see one of our staff members outside to sign up.

Now we will move into the round table discussion between staff and the presenters from this morning. We will be posing many of the questions that we have received from members of the public over the last several months. And we will kick it off with questions of jurisdiction.

I will direct this to the utilities originally. And for the benefit or our court reporter, the first time you step to the mike and occasionally thereafter if you would just state your name to help make it a little easier for her.

So I will start down here on the left end of the table and we'll scroll down. What jurisdiction does the Florida Public Service Commission have over smart meters and smart meter installation?

MR. RUBIN: Good afternoon. Ken Rubin for Florida Power and Light Company. I think, first of all, that, you know, the first place to look is the fact that the Commission's authority derives from the enabling statute, Chapter 366. And specifically, 366.03 requires each of the utilities to furnish to each person applying therefore reasonably sufficient, adequate, and efficient

service, and I quote, "Upon terms as required by the Commission."

366.04(1) also speaks to that issue, indicating that the Commission has jurisdiction to regulate and supervise each public utility with respect to rates and service. And I think the smart meters -- clearly the rates and service aspect are involved there.

366.045, Florida Statutes says that the Commission shall further have jurisdiction over the planning, development, and maintenance of a coordinated electric power grid throughout Florida. And 366.051, Florida Statutes, talks about the fact that in the exercise of that jurisdiction the Commission has the power to prescribe fair and reasonable rates and charges, classification standards of quality and measurements. And in addition to the statutes, the Florida Administrative Code, particularly Rule 25-6.049, indicates that the utilities should use commercially acceptable measuring devices owned and maintained by the utility to measure customers energy usage. And I know we heard this morning from the manufacturers of these, meters they are clearly commercially acceptable measuring devices.

And in terms of Florida Power and Light in particular, and then I'll pass it off to the other

utilities, the Commission has, in fact, exercised that jurisdiction in FPL's case in a number of situations. First of all, in the rate case that was filed back in '09 and the order that was entered in March of 2010, the Commission specifically exercised that jurisdiction when it found that the smart meter program for FPL was prudent and directed the company to proceed with the installation of the smart meters.

In that same order, the Commission directed FPL to provide an annual progress report in the ECCR docket, which FPL has done in both March of 2011 and 2012 so that the Commission could understand how we were proceeding with our deployment and what benefits customers would receive from that.

And I would mention two other dockets that the Commission has opened and entered orders on that further indicate their jurisdiction. One is the meter enclosure repair docket. I have the docket numbers if anybody needs those. There was a petition that was filed, Docket Number 110033-EI, and the Commission actually ruled relative to our repair and replacement of certain meter enclosures in conjunction with the installation of smart meters.

The other docket I would mention is the Dynamic Price Response Pilot that FPL has undertaken,

and that is Docket 110031-EG. So I think just generally those are the statutes and the rules that outline the Commission's jurisdiction over smart meters. I have some other information from a federal perspective, but I think perhaps if I allow the others to go that would probably be best.

MR. FUTRELL: This is Mark Futrell with staff. Mr. Rubin, I just wanted to followup something you mentioned, and Mr. Olnick mentioned during his presentation was that the Commission directed FPL to install the smart meters. And I just wanted to clarify your understanding of what the decision was in the last rate case. Did the Commission direct the company to install the meters, or did the Commission approve the costs of the meters for inclusion in customer rates?

MR. RUBIN: The Commission approved the smart meters, and I'm looking for the excerpt, because in the order itself they specifically found the program to be prudent and directed FPL to deploy the meters, to install the meters. I can find that while we are talking, and I will give you the specific cite on that.

MR. FUTRELL: Okay. And another question is isn't it in the Florida Statutes that gives the Commission authority to make sure the National Electric Safety Code is established as far as providing and

ensuring that utilities meet the standards in the National Electric Safety Code?

MR. RUBIN: Absolutely, yes.

MR. FUTRELL: And does that safety code address meters and meter operation or meter standards?

MR. RUBIN: The code, as I understand it, generally addresses meters. I can't give a specific cite to it, but I know the issue that has been raised here today does not address radio frequency issues. It really is more -- the National Electric Safety Code talks about distances, as you know, clearances, that sort of thing, but does not address the kind of issues that I know have been raised here this morning.

MR. FUTRELL: Okay. And so, again, to follow up, your understanding is as far as radio frequency emission standards, that is not contemplated by the safety code?

MR. RUBIN: That's correct. That's something, and, again, we can talk about this a little bit more later, but the FCC has specific jurisdiction over that.

MR. FUTRELL: Okay. Thank you.

MS. TRIPLETT: Hi. Thank you. Diane Triplett on behalf of Progress Energy Florida. And I would just say that I generally agree with Mr. Rubin's comments, and I was actually going to reference also the National

Electric Safety Code, which Mr. Futrell has already pointed out. So probably the only other subsection that I would point to is Section 366.04, Subsection 6, and that specifically sets forth that the NESC standard by which we must adhere to for our distribution and transmission facilities. And I, too, understand that meters are covered in that, but I don't have a specific section to point to, but my understanding is similar to Mr. Rubin that it covers safety all except for the RF emissions. Thank you.

MR. BADDERS: Good afternoon. Russell Badders on behalf of Gulf Power. I don't have any other regulations or statutes or other cites to add to the list that has already been given. I will point out that as far as Gulf Power, smart meters were included in our rates in our last rate case.

MR. BEASLEY: Thank you. Jim Beasley for Tampa Electric Company. I concur that the statutes and rules that have been referred to provide the Commission with authority over all metering as part of the service that is provided by the utility to the customer. I think your focus in your rules has been on the accuracy of metering, to make certain that they are properly operating, and that is an additional point that I just thought I would mention.

MR. CLEMENCE: If we could hop back to Gulf for a second. Within the order you referenced for your last rate case, was it -- similar to Mr. Futrell's question, was it approval of cost-recovery or was it approval of a meter installation?

MR. BADDERS: Well, we presented the program and all the costs associated with that, and the costs were actually approved. I don't believe -- I don't recall having seen anything in the order specifically addressing smart meters or their deployment. There is no notice. There are no periodic report that we are having to give. So we may have been in a little different position than FPL.

MR. RUBIN: Ken Rubin for FPL. I found the reference to the order. It is Order Number PSC-10-0153. And at Page 140, when ruling on the smart meter aspect of FPL's rate case, the language that I quote from the Commission's order is as follows, "The AMI project is prudent and should not be delayed." And there is some other language in there, but that's, I think, directly answering the question that you asked.

MR. CLEMENCE: Is this something any of the manufacturers would like to weigh in on?

All right. Then we will move on to what other state, federal, or trade organizations have jurisdiction

over smart meters?

MR. RUBIN: Again, Ken Rubin for FPL. I think if we look at this in two different parts, the issues that we have heard about this morning or that we will hear about probably later this afternoon in the public comment, the radio frequency issue, which has been an issue that FPL has addressed and dealt with. The research is, at least to me, pretty clear that the FCC has exclusive jurisdiction over that area.

And that really goes back all the way to the Federal Communications Act of 1934, continuing on with the Telecommunications Act of '96, and then in the Federal Reporters there is some fairly extensive entries from '96 and '97 where the Federal Communications Commission studied all of the available literature, looked at really everything that was out there, and established permissible limits or levels of RF emissions.

And I know that, again, the presenters this morning, I think, all probably addressed this, but that the standards are uniformly adhered to by the presenters here by the companies they represent. In addition to that, there is federal case law from a few different circuit courts of appeal that make it clear that under federal conflict preemption principles that the FCC has

jurisdiction over those issues. I would point out also that I know Mr. Olnick mentioned this morning, but as result of an inquiry made by I believe one of FPL's customers, the FCC directly corresponded with Senator Bill Nelson, and in a letter in June of this year specifically reaffirmed that this is something clearly within the FCC's jurisdiction, that they have exercised that jurisdiction, they continue to exercise that jurisdiction, and that it is, in fact, a federal FCC matter.

MR. CLEMENCE: Do you know the last time the FCC addressed that, addressed or looked at perhaps changing some of the limits for RF?

MR. RUBIN: I believe it was 1997. As I understand it, this summer the GOA issued a report suggesting that a reevaluation be done. That has not yet been done, as I understand it. That is a publicly available document. But as I understand that, as I have looked at that, it seems to have been prompted by a concern over the use of cell phones directly on the person's ear. That seems to have been what has generated that issue, and so the inquiry, if it is going to be done, it seems will probably focus on that. As I read it, it had nothing to do with smart meters. It had to do with the proximity of the cell phone being held

close to the body.

I'm not sure there is any timetable on when the FCC needs to undertake or, in fact, if they need to undertake that analysis. And perhaps some of the manufacturers who directly deal with the FCC, they might have some more information on that.

MS. TRIPLETT: Diane Triplett for Progress Energy Florida. I would agree with Mr. Rubin's statements as far as the FCC's jurisdiction.

MR. BADDERS: Russell Badders for Gulf. The same. His understanding and his presentation of the FCC's jurisdiction, I believe, is correct. I also want to point out, earlier this morning many of the manufacturers went through a lot of the ANSI standards and things like that which they may be able to better address.

MR. BEASLEY: Jim Beasley for Tampa Electric. I concur as well on the FCC jurisdiction issue.

MR. FUTRELL: I've got a question, Walter, if I may interject. Mark Futrell again with the staff.

So we have heard about what our understanding is on jurisdiction over the RF, the primary health concern, but we have also heard a lot of customers express concerns about data security and the transmission of that data from the device, the meter, or

the transmitter to the utility, and the potential that that may be hacked or accessed somehow by, you know, some nefarious means.

Is there a government agency that addresses that to ensure that that transmission of data is secure?

MR. RUBIN: I'm not aware of any specific statute or any specific federal or state law for that matter that directly addresses smart meter data security. You know, from FPL's perspective, I think it is two different issues. The technical issue is the cyber security issue, and I know that there are folks here that can address that.

From the legal perspective, you know, I think it is important to take a step back. FPL, like the other utilities here at the table, you know, we have always treated our customer's personal data, confidential data as just that, as confidential. We have protected that data when we were using electromechanical meters. We continue to protect it as we move into the smart meter era.

There are, you know, FTC rules and regulations, red flags, rules, Florida Statutes, federal statutes. Our privacy policies are consistent with those, with all of those, but I don't think that there is a specific federal or state law that tells us exactly

what we need to do here.

MR. FUTRELL: And we have heard that there are some discussions in Congress about a cyber security bill. If some of the manufacturers would like to address this, would that address some of these concerns that customers seem to have that there be some sort of governmental intervention to ensure that their data is secure and won't be hacked?

MR. SANTILLI: Lou Santilli with Itron. We understand it is being discussed in many forms, but nothing has officially been put out. The National Institute of Standard Technology is the leading board that is promoting the security standards, and there are several working groups that they have out.

MR. FUTRELL: And that's the NIST process, if you will?

MR. SANTILLI: That is the NIST process.

MR. FUTRELL: Okay. And that is an industry process where the members of the industry who are manufacturers and vendors and those who utilize technology, they come together through a collaborative process to establish these standards, is that correct?

MR. SANTILLI: That is correct, sir. It is collaborative among private industry, public industry, as well as individuals.

MR. FUTRELL: And there is no oversight by a governmental federal agency that you are aware of?

MR. SANTILLI: Well, NIST is part of the Department of Commerce, the United States Department of Commence, so it naturally has some oversight in that manner.

MR. FUTRELL: Okay. Thank you.

MR. HELD: Chris Held from General Electric. I'd also just like to add, my understanding is the discussion, that legislation has been focused on critical infrastructure and not on, you know, smart metering data. So I don't believe that's part of the discussion at this point in time. It is focused on critical infrastructure.

MR. CLEMENCE: All right. I'm seeing stares, so I'm guessing no one else has anything they'd like to -- okay. For the next section I'm going to turn it over to my colleague.

MS. CURRY: I'm Kiwanis Curry with Commission staff. I have a few questions regarding the health issues in regards to the radio frequency emissions.

The first question is a two-part question. Are transmitters utilized by smart meters licensed by the FCC, and how does the utility or transmitter manufacturer comply with FCC radio frequency emissions

requirements? I guess my questions would be primarily directed toward the manufacturers.

MR. RUMMEL: Arlin Rummel with Sensus. Each transmitter that is manufactured by Sensus is compliant with FCC requirements. It is tested by a third-party agency for compliance and filed with the Federal FCC. There is a type acceptance and an actual FCC ID number assigned to each transmitter that is approved. That is available on the FCC website. You can reference that. And that ID number appears on each radio. In the event that there is in change in the design of the radio, testing is repeated, and another filing is made, and another number is assigned, ID is assigned by the FCC.

MR. FUTRELL: I have a follow up, if I may. So does the FCC have an approval process that they go through where they review a technology and look at the test data to determine whether it meets the standard and then issues some sort of an approval?

MR. RUMMEL: Arlin Rummel with Sensus. The FCC has requirements in its rules that specify limits and tolerances and requirements, and each radio is tested to those requirements and the results are reported and reviewed by the FCC before that approval, type acceptance approval is provided and a number is assigned.

MR. FUTRELL: Okay. Is there any opportunity that you are aware of for the public to, you know, express their concerns or comments to the FCC regarding, you know, their standard, their overall standard, you know, regarding a particular device that may be going through an approval process?

MR. RUMMEL: I am not aware.

MR. CLEMENCE: One more quick follow up. You had mentioned the testing and reviewing. Is the FCC doing any of the testing, or are they only reviewing third-party testing?

MR. RUMMEL: They are reviewing the third-party testing.

MR. CLEMENCE: Upon request of a customer, are you aware if the FCC will individually test meters or test products?

MR. RUMMEL: I'm not aware that that has been done.

MS. CURRY: Do any of the other manufacturers have anything they would like to add?

MR. SANTILLI: Lou Santilli with Itron. What my colleague said is true, basically, for our meters also. They all meet the FCC requirements. They receive an FCC grant, which is public record, and can be found on their website.

MR. REEVES: Don Reeves, Silver Spring Networks. The same situation. So all of our products are fully verified to be compliant with all the FCC regulations. All the information is publicly available.

MS. CURRY: The next question that I have is have the potential health effects of RF frequency emissions -- I'm sorry, have the potential health effects of RF emissions from wireless smart meters been studied? Or do you know of any studies that have taken place either within your companies or by the FCC regarding the RF emissions?

MR. REEVES: Don Reeves, Silver Spring Networks. I believe there have been multiple industry studies conducted. Certainly EPRI has run such a study, and the CPUC authorized -- I'm trying to remember the exact institution. It was one of the learning institutions in California to go through and do a study, as well. So I know of at least those two, but I believe that is two of many.

MR. CLEMENCE: I would turn to the utilities and ask them the same question.

MR. OLNICK: Bryan Olnick with Florida Power and Light. If the Commission staff would like, we have and expert here today, Doctor Peter Valberg, who has studied this area and is really considered to be a

national expert in the area of RF, and he might be able to comment on this. If you'd like I could invite him to make a comment.

MR. CLEMENCE: Please.

DR. VALBERG: My name is Peter Valberg, V-A-L-B-E-R-G. I am a public health person. I was for many years at the Harvard School of Public Health. I am currently with a company called Gradient in Massachusetts that does what's called human health risk assessment. And one of the things that I do and the company does is keep up on how health effects data are assembled and analyzed on a whole variety of environmental influences ranging from chemical to ionizing radiation to radio waves.

And in terms of your question having to do with the smart meters, I think what's most important to remember is that, as I think several of the speakers showed, the radio frequency spectrum has been used by society for a long period of time. And, in fact, the health effects of radio frequencies have be studies I would say probably for five decades at least. Because we started using microwaves and radar very significantly during the second world war. So there has been a lot of study of radio frequency and how it interacts with biological systems. And I think that the smart meter is

really just a new application of these radio waves.

Probably the area that has most recently gotten the most actual human epidemiology and laboratory research having to do with RF, as you might well appreciate, is cell phones. So the cell phones also operate using radio frequency links, sometimes of a frequency that is this range of 900 megahertz, sometimes in the higher frequency range of 2,000 megahertz, and all of those studies are the studies that people, like the FCC and other agencies, look at in order to determine the standards.

So the more general answer to your question is, yes, there's a lot of research that has gone on on these radio frequency effects, and there is a lot of research that is published and that has been synthesized by the various agencies in charge of setting these standards and determining if they are health protective.

MR. FUTRELL: I have a follow-up question. Mark Futrell with the staff. There was a report, I'm not sure if you are familiar with it, sir, that came out in January of 2011 from the California Council on Science and Technology. And in that they addressed some of the effects of RF. They differentiate between thermal effects and nonthermal effects. Are you familiar with those concepts?

DR. VALBERG: Yes.

MR. FUTRELL: Can you explain maybe briefly the difference -- what those are and the difference between those two, and whether there are standards established to deal with those different effects?

DR. VALBERG: Yes, I'd be glad to. I think the effects of RF are put into those two categories because the amount -- the kind of effect depends upon the intensity of the RF. You can have very weak levels of RF which pass right through you and have no effect, or no really discernible effect, but then indeed it is true, as you increase the levels of RF you begin to accumulate energy in the body. And the way that energy most often expresses itself is a rise in temperature. And the most simple example, of course, is the microwave oven which uses radio frequency to heat things up. So that if you have, like, a microwave oven typically has 1700 watts or thereabouts of RF energy that is heating the food, so you do have these thermal effects.

I think what the research has shown is that if you are looking at energy levels below those which can change the temperature of the biological tissue, there is really no established effect that is lasting enough to really determine that it's real. I mean, there is a lot of research out there. Some of them report these

effects at very low levels, but what you find is that the difficulty with that research is it's often very hard to replicate, it's hard to duplicate in other biological systems. And most importantly, even if some of those effects were real, it's hard to know that they would have any adverse health effects.

I mean, there is a big difference between saying something has an affect on a biological system versus going on to the next step to say, well, it's the first step in some sort of disease process. So I think that in terms of your question, yes, it turns out that now the standards are primarily based on thermal effects; that is to say, is there a rise in temperature? And the rise in temperature that they are looking at is very minute.

But that is not to say that these agencies fail to look at this other data. I mean, not only does the FCC look at it, there is an international agency called the International Commission on Nonionizing Radiation Protection that periodically reviews the science. Health Canada periodically reviews the science. And then there are sort of more private agencies like IEEE, the Institute of Electrical and Electronic Engineers, ICES, the International Commission of Electromagnetic Safety, and COMAR, the Commission on

Man and Radiation, who also look at this data. And I think that we can say pretty confidently that most of these agencies are in very good agreement with each other that in terms of real effects, it does make sense to focus on these thermal effects as a guiding principle in setting the standards.

MR. FUTRELL: So you'd say the standards are really primarily directed at the thermal effects, but there do appear to be nonthermal effects. We have heard a lot of customers send us information about that when smart meters are installed they feel more fatigued, they have headaches, they have a lot of other noticeable impacts on themselves. Is there a process or is there any conclusive information to address these nonthermal effects at this time?

DR. VALBERG: I would say yes. No, I think that those effects have been brought forward. Probably not only in front of you folks here, but there are lots of people who bring those up as potential questions. And if you look in the research literature you will find that there are researchers who look at them. Some people find them, some people do not. But I think what my impression has been -- if you look at the times when they really do a double blind controlled study and say, you know, tell me whether you are in the presence of RF

or not on the basis of symptoms that you might feel, that those studies show no effect.

So I think that there is a concern about new technology which could, in fact, manifest itself in some symptoms, but whether or not that is truly caused by the RF exposure is really the issue at hand here. And it continues to be studied, it continues to be debated. But I would say at the present time the weight of evidence is that those complaints don't have a basis in the actual RF exposure itself.

I mean, there may be other things that go along with the RF exposure which are affecting, you know, peoples psyche, ability to sleep, and so on. But the studies that are out there don't seem to substantiate that. But people haven't dismissed it. I mean, if it comes up that there is a reproducible real effect, then I think the standards will take them into account.

MR. FUTRELL: And just to kind of maybe button this one down, are you aware -- is the FCC looking at these issues? Are they conducting any studies to address the non-thermal effects of these meters to include that in their potential -- any potential revisions to the standard? Are you aware if the FCC is looking at this?

DR. VALBERG: At the present time I haven't heard anything directly from the FCC that they are looking at it, but I just know that agencies around the world -- I mean, even here in the United States the American Cancer Society and so forth, and there are a lot of agencies looking at this issue. And I think that the FCC is probably keeping their eye on what these other folks are finding and concluding.

MS. CURRY: Thank you. My next question is have the effects of RF from a multi-meter installation been studied, do you know?

DR. VALBERG: Well, they have, but maybe Matt should --

MR. OLNICK: If the Commission staff would allow me, Florida Power and Light did undertake a third-party testing of a similar situation, and I think one of the other speakers today, one of the meter manufacturers also referenced a study, and I will let them speak on that. But if you would allow me, I have the person that conducted that third-party study for us that could comment on that.

MR. BUTCHER: Good afternoon. My name is Matt Butcher. I am a licensed engineer.

We did a study for Florida Power and Light where we looked at individual meters and measured the RF

from them. And to understand what the levels would be from a multiple meter installation, we extrapolated that data. And, again, our conclusions were that if the meters were transmitting at all in their normal mode and you could some way to get within one foot of 100 of the meters, you would still be around 15 percent of the exposure limit. So you would be less, much less than the exposure limit if you could get within one foot of 100 meters, which would be very difficult to do.

I have done subsequent tests with other meters in large installations, one with 84 meters in one space, and found that the amount of time that the meters are transmitting was about two percent of the time. And, again, two percent of the time of all 80-some meters transmitting during their peak communications period. So it all leads to the fact that exposure from multiple meters is going to be below the exposure standard. And, again, as long as you are tens of feet away from banks of multiple meters, or behind them, I mean, not directly in front of them, the levels will be much, much less.

MR. CLEMENCE: Within the banks of multiple meters, I'm looking for some more information on are they all transmitting simultaneously? Does one meter go off one second and the next meter follows, so there is more of a continuous exposure?

MR. BUTCHER: Yes, the meters transmit in the same frequency band, so they tend to transmit sequentially. So one will transmit, then the next will transmit, and then the next will transmit. So it's not like all of them are transmitting at the same time amplifying that signal all at the same time.

But, again, even with on the order of 80-some meters transmitting and communicating their periodic assessment of power, the levels I measured, again, in one instance was still less than two percent of the time.

MR. CLEMENCE: Now, these transmissions, is this is synonymous with the pulses that we read about?

MR. BUTCHER: Correct. The transmissions are very short duration, a few milliseconds or less. So, yes, they are a pulse of transmission.

MR. CLEMENCE: So if a customer did have a multi-meter installation on the exterior of their home, they would receive more of these pulses throughout the day than they would if they had just one meter.

DR. VALBERG: Yes.

MR. FUTRELL: And to just follow that up. I have heard from the utilities and from the manufacturers a little different information about -- to better understand about how many pulses. It's looks like there

were some options that the different meters had on settings for the number of pulses, if you will, per hour. Is there any consistency amongst the utilities or maybe the manufacturers on how often do the meters pulse?

And also maybe you could tag along with that this idea we have heard and read with a buddy meter where one meter may be used as a receptacle for other meters to send that information, collect it, send it back out to the collection grid, or the net, if you will. If you could address that to the extent the utilities have installed that type of technology, because we have heard customers express concerns about that while their meter itself may only pulse, for example, once every 15 minutes or so, it may be used as a buddy meter, if you will, therefore, increasing the number of pulses potentially.

MR. OLNICK: Bryan Olnick, Florida Power and Light. I'll start the discussion, and I'm sure the other utilities, and then I would like also to defer to our technology vendor to also help us with that.

If I can give you some general parameters. The structure that our meter-reading timeline is on is such that we read every meter essentially every four hours. So six times a day it will get read to

understand what energy has been used over the previous four hours. So oftentimes you will hear a reference to we have a reading for every hour, but we don't necessarily read it every hour. We read it every four hours, and every four hours we are collecting four different hourly increments from the previous four hours. So essentially six times a day we are reading that. That read typically lasts, again, milliseconds.

The type of technology that we use also has some additional capabilities to alert us if they are out of power, to alert us if somebody has tampered with something. So we also get additional periodic messages for something. The way the network works, and I don't want to get into too much technical details, I'll turn that over to our technology provider, but there are some time checks to keep the network in sync.

And our technology is considered a meshing technology. The word I think you used was a buddy type concept. And indeed, the benefit in the power of a meshing technology is it will use others to relay the message. And so when we analyze and look at the total time, including any of that relaying, I think as our technology provider mentioned, the average time is about roughly two minutes or less a day, including all of those types of transactions that can happen.

And then I'll turn it over to some of the others utilities, and then I would like our technology provider to also make a comment on that.

MR. WOODALL: This is Dan Woodall with Progress Energy. Our SSN deployment that is to commence in October for the small business and commercial would be very similar to what FPL just described. It's an SSN technology. Our driveby Itron technology -- I would look to Itron to confirm this, but I believe our meter type is the every 30 seconds a little bubble up is captured by the driveby vehicle as it rides through the neighborhood.

MR. FUTRELL: But is it pulsing every 30 seconds, or is it just as -- does the driveby technology, if you will, engage that and draw that out, or is there a pulse every 30 seconds from the meter?

MR. WOODALL: I would lean on --

MR. FUTRELL: Okay.

MR. SANTILLI: Lou Santilli with Itron. Yes, there is a pulse every 30 seconds from the meter that is a few milliseconds long.

MR. FUTRELL: And what is the total amount of time per day, if you will, of those pulses? Do you have an estimate of that?

MR. SANTILLI: We typically look at less than

a minute a day.

MR. SPANGENBERG: Ted Spangenberg with Gulf Power Company. And, of course, as you heard earlier today, our network operation is much different. It is a tower-based network rather than a mesh-based network. However, similar to Florida Power and Light, six times a day is our typical setting for a meter to tell us the readings, the hourly readings that it has got in each four-hour segment. If we have a meter that is getting very good connectivity with our tower, we are regularly hearing from it, we might even dial that down to only three or four times day.

Because we are talking directly to a tower, the average transmission time is less than one second per day as opposed to the minute features of the mesh network. So it is less than one second per day. I was the one that introduced the term buddy mode. Less than five percent of our meters may be in a situation or located such that they can't directly talk to a tower, so they may relay through just one other meter and get to that tower. Very rarely would you have more than one hop to get to a tower. That would be very few. So for those few meters that might operate in buddy mode, you know, they might approach a second and a half or two second average per day, but otherwise less than a second

per day average transmit time on our tower-based network.

MR. CLEMENCE: I guess I've got a quick question, I guess more towards the manufacturers. A couple of our utilities have mentioned that their meters have the ability to communicate information on outages and diagnostics on their distribution circuit. That information, is that only transmitted if a fault is detected or is that information constantly being transmitted to the utility, I'm okay, or only when a fault is detected?

MR. REEVES: Don Reeves, Silver Spring Networks. The information about a loss of power only occurs when that loss of power is detected. And likewise, the information that power has been restored only occurs after that power has been restored rather than continuously.

UNIDENTIFIED SPEAKER: Is that consistent for the --

MR. RUMMEL: That is consistent with the Sensus technology. When events occur, an alarm is transmitted. Typically that alarm message is even of shorter duration than the typical reading message because of the amount of information that is transmitted.

I'd just like to comment on the technology aspect. The radio transmissions with the technology that we use utilize frequency modulation at a constant amplitude. It does not use pulsed or pulse modulated RF signals, so it has a very predictable and measurable output and it is consistent. It's either on or it's off.

MR. OLNICK: If I could add one more comment on -- Bryan Olnick, Florida Power and Light. I did want to add other situation that I think could be relevant. We were talking about the circumstances in which a meter may be read, or send us an outage signal. There are times when actually we can initiate a request to a meter. And that happens now if a customer calls, let's say, and asks if an amount of power, can you confirm amount of power. We can also send a signal to that. Again, a millisecond kind of an operation, but that is just one other scenario I forgot to mention that we could initiate a ping, and we do that today to help customers confirm if they are in or out of power.

MR. CLEMENCE: Thank you.

MR. NOEL: This is Joe Noel with the City of Ocala. I'm representing FMEA. We have a system that -- the manufacturer is not here today, but it works a lot like -- well, it is a mesh network system. And I have

done a study internally on our system on the number of hops each meter takes, and across the board there is no more -- of any of our electric meters, no more than three hops. And the majority are one, you know, to get back to a source. We are not a tower-based system.

If I could, I would just like to offer a perspective from the EMF health concerns from the 1990s. The industry at that time did wait on the results of a Commission study before any regulations were decided on. And it sounds like, and from my experience there are studies out there that look at RF exposure risks, or lack thereof, but maybe if there are some issue like the nonthermal effects that maybe hasn't been studied enough, or the complaints are coming in on, maybe we could do the same thing we did in the 1990s as a Commission study to determine if there is truly an effect that we could all accept. Thank you.

MR. CLEMENCE: Has your commission, or the commission of any of your fellow entity members studied the health effects of smart meters? Did that come up either before the installation of your program or since?

MR. NOEL: So we didn't have any questions from our customers from previous, you know, before the implementation, during the implementation. They just started coming up after. We did look at all the

studies, and we have, I have kept up with everything that is coming out of California, you know, around the nation, and looking at the studies, like, that were brought up earlier. And we are comfortable, you know, saying that little if any risk is brought on by this exposure, because it is well below the FCC maximum exposure level.

MS. CURRY: I have one last question. What steps are taken to ensure that the RFs from smart meters continue to stay within the limits set by the FCC?

MR. REEVES: Don Reeves, Silver Springs. So as part of the testing that we do of our product, we do something called accelerated life testing, which is a standard industry practice to attempt to simulate the effects of time and environmental conditions on the products we produce. And so temperature cycling, environmental condition changes occur in order to produce that simulation of time, because obviously the only true way to know what will happen over time is to allow time to elapse. But the practice we use are generally accepted across the industry. And as part of that, we measure all performance attributes, including emissions of the product once it has gone through that cycling to verify compliance. That's part of standard test practices.

MR. CLEMENCE: Have you gone out into the field after installation to verify?

MR. REEVES: We have both gone out in the field as well as gathered data remotely on behalf of our customers to look at the performance of the network and performance of the (inaudible) devices. So, yes, we have absolutely done that. We have not found any deviations.

MS. CURRY: How often do you verify?

MR. REEVES: It depends upon what you are looking for. So we on a daily basis are monitoring -- you know, actually on an hourly and by-minute basis are monitoring each of our networks for which we have operational responsibility. And as part of that we certainly look at, you know, the reliability of the network and the transmission frequency. In terms of analyzing emissions, that happens on a case-by-case basis when specific customers have requested us to perform those actions.

MS. CURRY: That concludes the questions that I have regarding health. Now we'll have questions regarding privacy issues.

MR. FUTRELL: I have just got one final one. I'm sorry, Kiwanis.

It's a bit in the RF, but it's more of how the

utilities react to customers who express some of these concerns. We have seen a lot of information in the slides this morning comparing the emissions of these meters to other devices, common devices that customers use; cell phones, microwave ovens, devices like that, computers, WiFi.

However, we have heard a lot of customers say that, yes, there may be differences in the emission rates from these meters compared to these other devices, but they have a choice on whether or not they want to use a cell phone, or use a microwave oven, or use some of these other devices. And they can choose not to take advantage of what cell phones provide, if they are concerned about RF. Whereas with the meters, they are not -- really don't have a choice. As part of their service, that is provided to them.

How do you react and respond to customers who express those kinds of concerns, where they really don't have a choice when it comes to this device as compared to these other devices? While they are common and beneficial, customer do have a choice. Do any of the utilities care to respond to that?

MR. OLNICK: Bryan Olnick, Florida Power and Light. I'll take the first shot at it. I think, as mentioned earlier by Mr. Rubin, in the matter of the

technology and the advanced meter infrastructure project that we had submitted and was approved by the Public Service Commission back in 2009/2010. With respect to that, no matter what the customer's concern has been, we have been trying to be very open, whether the concern is with RF transmission data privacy and from a customer service standpoint have chosen to postpone it for now, until we can resolve the matter. But we have taken a position that we would rather go down that path and take the customer service approach, and postpone it until we can resolve the matter.

MR. FUTRELL: Anybody else care to respond?

MR. WOODALL: This is Dan Woodall with Progress Energy Florida. As you know from our discussion, our AMR driveby rollout was a few years ago, and maybe some of these issues that are concerning folks weren't quite as prevalent or available on the Internet and things like that. So we didn't really have any experience with pushback at that point in time, although certainly, as FPL has done their rollout, we have had contact from customers with questions sort of in the aftermath, much like Ocala was speaking, as well.

And so thinking about it more from a going-forward standpoint, and this is how I will try to respond to your question, and I think certainly we would

intend to be and plan to be patient, you know, open with communicating around the facts as we understand them. But also we have to recognize we are going to have to kind of let things play out and sort of understand what we're holding at the end of the day for our AMI rollout. You know, as FPL has characterized, you know, delaying installation, you know, obviously becomes the case. At some point in time you have to -- you have got to move on and continue the execution.

At the end of the day how you respond -- you need to be at the end of your deployment to really understand how many have that concern. It's less about -- I think, it's more about a policy decision than a technical decision. And so I think we need to be seeing what we're holding at the end, we'll need to frame and respond at that point in time.

MR. SPANGENBERG: I guess the only thing I would add to that is certainly we have heard those concerns, and we are, of course, the most deployed in terms of a two-way AMI system of the other utilities. And, you know, we understand the customer's concern that in all these other things they have a choice about whether it's actually being emanated from their home.

We do point out the technical information that indicates that even the background levels that they are

getting from their neighbor's WiFi system, or from the TV station broadcast, or radio station broadcasts of which the levels that we are seeing from the AMI meter is still well below those types of things.

We have had a couple of customers who were so ardent about their concern about having a choice about that that we have offered as we have for other reasons in times past, offered them the opportunity to establish a different meter point rather than on the side of their house, or if they are concerned about the meter socket being, you know, next to their bedroom or their home office, of establishing a meter point out at the corner of their property to further, you know, make it look more like even further below these background levels. And we have a couple of customers who are considering those options.

MR. CLEMENCE: Are the costs for that alternative going to be borne by ratepayers or by the customer who requested it?

MR. SPANGENBERG: It would be borne by the customer who requests it. There is a very small amount -- I guess as we would redrop our service wire to a new meter pole, you know, we would incur that cost. But we change meter points for other customers for other reasons in terms of replacing service drops, but the

customer would bear the cost of paying their electrician to establish that meter pole somewhere other than the side of the office and pulling that wire. So that would be a cost borne by the customer who says I want to have a way not to have that meter there.

MR. ASHBURN: This is Bill Ashburn with Tampa Electric Company. To build on what he just said, you know, we, as a utility, look to serve at the lowest prudent cost, looking at reliability for our system and for customers and so forth. And we sometimes provide choices to customers. The example he just brought up was a good example. We put the meter on the house closest to our system to reduce the cost. Sometimes customers say, you know, I really want the meter on the other side of the house. And if that costs extra money, we will do that and charge them for that differential. And so there is often choices offered to customers, but it's at their cost.

So this is an example of we're putting in a very efficient metering system that's going to provide all these benefits to us and to the customers, and to offer them a choice might incur additional cost, maybe substantial cost and that would cost them to pay. So that's kind of the point. If there is some pushback from a customer, and there is for all kinds of

circumstances; I want underground in my neighborhood, we undergrounded and they paid the differential. I don't want that pole in front of my house. Could you put it over there? Sure. It will cost you money. This is kind of in that concept. If you get to have a choice like this, then it will have to cost them for that differential in cost.

MR. SPANGENBERG: Ed Spangenberg, Gulf Power. If I might just add upon that. I would say in most of those other circumstances where we are moving a service drop, putting something underground, moving a pole, those happen frequently enough that we have established procedures and methods for calculating and doing that. With the extremely low numbers that we have looked at in this situation, it begs the question is there even enough to clearly, you know, whether or not you even go that step. Not that you don't want to be inconsiderate of those concerns, but where there is certainly no real technical issue that is involved here in terms of harm to the customer.

MR. CLEMENCE: Did any of the manufacturers want to address that, as well? I think we'll move on to some questions on privacy, and I will direct these at the utility originally. Do you consider individual customer data -- I'm sorry, is individual customer data

considered to be confidential? And if you do believe it to be confidential, what is your legal basis for it?

MR. RUBIN: Ken Rubin for Florida Power and Light Company. I know that I probably jumped ahead earlier and touched upon this issue a little bit, but FPL does consider that type of customer information confidential. We have treated it as confidential for years and years, I think consistent with the utilities to my left.

We have protected that data from disclosure absent a subpoena or an order from the Commission or another valid court order. When required to produce customer data in the context of a PSC proceeding, whether it's in response to interrogatories, data requests, or Commission request, we will file a request for confidential classification of that data under 366.093.

We have an internal code of conduct that requires us to treat that data as confidential. There are -- I don't want to say there is any particular statute that compels that treatment. Again, there is nothing that specifically talks about smart meter or AMI data, but there are numerous Florida Statutes that define nonpublic information. There are federal statutes, the red flags rule and other FTC rules, and

other federal laws that are all consistent with -- or I should say our policy is consistent with those rules.

So we take very seriously our obligation to protect the customer data. Absent the customer's request, signed authorization, or a valid subpoena or court order, we will not disclose that data absent a utility need. And in that case, for example, if we have a third-party vendor that does work for us, there are contractual obligations.

There are remedies if, in fact, there is a breach. We monitor it very closely, and we feel that our policies have been successful in protecting that customer data. Again, I think it is a two-part question. There is the cyber security part and the legal part, and I have really only answered the legal part. I would defer to others on the cyber security part.

MS. TRIPLETT: Dianne Triplett with Progress Energy Florida. Similarly, Progress Energy Florida considers certain individual customer data to be confidential and private, and we hold it as such; in particular, name, Social Security Number, date of birth, driver's license, banking account information, credit card information, addresses. And also personally identifying information. It's known as PII, and it's a

term of art from federal statutes that require that certain data be held confidential. And what PII is is a name plus any other piece of information that somebody could use to steal your identity. And so as Mr. Rubin mentioned, there are regulations from the Federal Trade Commission that are designed to prevent identity theft, and so Progress Energy's policies are designed to comply with those and to be consistent with those statutes and requirements.

Progress Energy also considers customer usage to be confidential, even though there isn't a state or federal statute that we can point to say we have to, we just do in our ordinary course. And so similarly to FPL, we require a court order, a valid government subpoena before we issue and provide any information to third parties for usage data.

MR. BADDERS: Russell Badders on behalf of Gulf Power. Like FPL and Progress, Gulf Power has a longstanding policy that we keep customer usage data as well as customer identifiable information confidential. We only release with a subpoena, or in the case with the Commission through that regular confidentiality process.

I cannot point to a federal or state law. Again, we have a very longstanding policy with regard to this, and I doesn't believe that the smart meter

infrastructure or our deployment of smart meters in any way changes that relationship.

MR. BEASLEY: Tampa Electric, as well, has a longstanding policy to treat individual customer information confidentially, and its policy enables it to comply with all applicable federal standards.

MR. CLEMENCE: And, Mr. Noel, you're in a different position here, as you mentioned within your presentation, that you guys are subject to the Sunshine Law. And you had mentioned your desire to perhaps suggest some legislative changes to allow you to maybe keep that information a little longer.

Has this confidentiality been an issue for your commission or the commissions of any of the other members?

MR. NOEL: So, again, just a few customers have talked about it, and we have talked about it locally, and I'm sure some of the other municipals are facing the same concerns. You know, we'd like to have it as an exemption. We'd like to have it as at least a waiting period. And one of the things as of right now, and we have had this data now for a couple of years since we have been live, we haven't had a single request for it. I know because that request would have to be directed to me, and I'd have to provide the data.

We don't have to provide the data in a way that is not currently formatted, either. So if a report doesn't exist, we don't have to create a report to provide it. And, again, this load interval data isn't necessarily identifiable to a local customer.

And what else is public record is that request. So anybody who makes that request or who receives any information is available to look up also. So, yes, I just wanted to reiterate that from the presentation earlier.

MR. CLEMENCE: Would you mind going into a little bit of what legislative changes you guys are hoping to enact?

MR. MOLINE: I'm Barry Moline with the Florida Municipal Electric Association. We don't have anything proposed right now, and we're in the early stages of talking about this issue. There is sort of a multi-year process for looking at public records changes. And this is, you know, if it becomes enough of a public concern to -- that 15-minute interval data is available, then we want to at least be prepared with the opportunity to come up with some creative ideas.

And as Joe said, one idea is just to delay so that somebody can't say, huh, I wonder if those folks are home. Let me get a data request and then compare

that with, you know, over the past year. You know, some kind of usage information. If it's delayed by several months, then they wouldn't be able to have that information readily available.

You know, the idea is closing the barn door before the horse gets out. So bottom line is we're just contemplating this and talking about, you know, trying to creatively think if it's a problem and develop those ideas now.

MR. CLEMENCE: Mr. Noel has suggested that he hadn't received any requests. Are you aware of any of your other members who have received public requests or perhaps requests from third-party marketers or people just looking for data?

MR. NOEL: Not specifically for smart meter data. You know, there was things in years past about marketing data being exposed on the system, not necessarily on individual customers. But I haven't had any of those either, especially on this information.

I was going to make one more point, I'm sorry. This might fall more under security, data security, but if you are a skilled thief looking to hack into a meter to get information, again, not necessarily identified to an individual customer, time spent on hacking one's computer files to obtain credit card information would

be a heck of a lot easier and more profitable than the information they could get from our meters.

So while it is possible that somebody could analyze the data, maybe trend data over time and make assumptions based on when a customer might be home or not home, the possibility is there. However, I'm just not sure how profitable that would be for a thief. I did want to point that out while I have a chance.

Thank you.

MR. RUBIN: I had one more comment, if I could. Ken Rubin for FPL. I think it was addressed in the earlier discussions, but I just wanted to reiterate, because it does impact the legal position that neither the nonpublic information or the personally identifiable information that Ms. Triplett spoke about, that confidential customer data is neither stored nor is it transmitted through the smart meter network. So that's why from a legal perspective I take the step back and, you know, the data that we are talking about is the data that we have always generated and had through the use of the electromechanical meters because none of that confidential data that we have been talking about is either stored or transmitted by the meters.

MR. FUTRELL: A follow-up question about -- we have seen some examples in the presentations about some

of the customer displays that will be available based upon the data generated by the meters, particularly these energy dashboards and other web-based resources that customers may access which does give an hourly profile of customer usage patterns.

What are the -- has the establishment of these kind of technologies, has it required the companies to modify or take a look at their internal processes to ensure that the data is secure within the company? Obviously you've stated how you deal with external releases of that information, but internally how do you -- has it necessitated any changes in your internal process to ensure their security within the company?

MR. OLNICK: I think one of the presenters earlier had a graphic that showed how the meter information was previously and post implementation going back to their CIS system, customer information system. And I think that is just a key component in this whole conversation. Again, all of that information is stored in the same customer information system that it always has been. And all of the rules and policies for data and cyber security data and customer privacy have always existed. For some of our customers, our commercial customers that have had 15-minute interval data for many years, it's, again, stored in the same kind of system,

the same kind of intervals. All we are essentially doing is now expanding some of that same capability in that same database kind of system on a residential basis. So there is no substantial change. The ongoing diligence that we do to always ensure that a customer's data privacy is maintained is really consistent with what we have always done.

MS. TRIPLETT: Diane Triplett with Progress Energy. And similarly -- well, first, I would note that right now Progress has not planned to offer that website that you saw, but that doesn't mean that we aren't considering it, and that's not something we would look at. But I kind of compare this to what our customers already have access to, which is logging in, creating a special account, and looking at their bills and doing on-line bill pay, and, you know, accessing that from their mobile phone.

And we already have a very well-established security system, and a whole department that uses terms that I don't even -- I can't even pronounce to ensure that our system is sufficiently protected. And I would imagine that if we were to introduce such a web-based tool that we would look at that and ensure that the systems that we have in place would be adequate to continue to provide that level of security.

MR. BADDERS: Russell Badders, Gulf Power.

As I had said before, the existence or the absence of a smart meter really doesn't change what we do with that information once we receive it. It's really how the information is collected. It does change somewhat. Obviously you have interval data, but as far as the back office part of the privacy, the customer relationship with regard to the confidentiality, that in no way changes.

MR. CLEMENCE: I think one question to kind of build upon that, what about sharing information with affiliates for any other purpose than for billing?

MR. RUBIN: Ken Rubin for FPL. We treat the affiliates as if we would -- as if they were any other third party. We do not share it with them unless there is a -- and I'm not -- I don't think there is any affiliate contract at this point to process the data or to, to use the data. But if, in fact, that was to happen, we would treat the affiliate just as if they were a detached, disinterested third party with whom we might contract for some service. So we would not just give them the data. They would be treated just like anybody else.

MR. CLEMENCE: But could they get it without customer approval?

MR. RUBIN: They could not, no.

MS. TRIPLETT: Dianne Triplett with Progress Energy. We do not provide customer information without consent. But there's some exceptions, and one of them is, you know, like in a storm response situation where we may have regulated affiliates who are assisting with, you know, taking outage calls and those sorts of things, they would have access to the customer database because they would have to be entering outage information and what not. But they would be bound by the same policies and procedures that currently govern Progress Energy Florida employees with respect to maintaining the confidentiality of that, of that customer information and not providing it and not using it for purposes other than business purposes.

MR. BADDERS: For Gulf Power again, the smart meter does not change that relationship. We currently utilize our affiliates for billing, for load forecasting, and other types of things. The size of Gulf Power, we do not have all of that in-house. It is much more cost-effective for us to use one of our affiliates that is set up to do the billing and all of that. But, again, the smart meter installation does not change that. That's just a continuation of the back office that we already have in place. They're bound by

the same confidentiality policy and code of ethics that Gulf Power employees are.

In the event that we utilize a third party to perform a utility function, they're bound by contract to the same thing. That information is not used for a non-Gulf Power utility purpose, nor is it disclosed publicly.

MR. ASHBURN: Same as, for Tampa Electric in that we do not provide any information to an affiliate absent the request of the customer that it be provided to them, or to a third party unless the customer has asked that that data be provided, or absent a storm issue or a warrant from a federal agency or something like that.

MR. CLEMENCE: I'm sorry. I couldn't hear the last part.

MR. ASHBURN: The police come and want something or there's some warrant, the police and federal issues that might come up occasionally, very randomly.

MR. CLEMENCE: What information is the company storing for a period of time longer than necessary to bill a customer?

MR. OLNICK: Customer type information such as name, usage, phone number, and so forth is stored and

maintained according to Florida Power & Light's record retention policies, and I believe that would be five years for items like that.

MR. CLEMENCE: Does that include usage data?

MR. OLNICK: It does.

MS. TRIPLETT: Diane Triplett with Progress Energy. The billing information and the usage information is retained in our system for, for two years, and that's consistent with our records retention policy.

After an account is closed, customer identifier information, phone numbers, Social Security number, date of birth, driver's license number is maintained indefinitely after the customer no longer has an account. And I would note that the Social Security number and the driver's license number would be masked in the general account. When, when an associate opens the system, they can't see it. It's more in the back office to, to note, to view that information.

MR. SPANGENBERG: Gulf Power's treatment would be similar. Our time periods are slightly different, because the question here is necessary to bill the customer, and I'd like to expand that and say what's necessary to provide desired customer services to the customer. And so for that reason, again, we retain the

customer identifying information indefinitely. The consumption information, monthly consumption information is saved for the current year plus the seven prior calendar years. Many times customers find that helpful in terms of researching what their consumption has been in the past and what they wish to do with it.

The daily consumption information now coming off our smart meter data, of course, we just now finished deployment, but it is our plan right now to retain that for a historical 36-month rolling period. And, again, that's retained simply to provide a service to that customer should they want to go back and look at their historical use patterns.

MR. ASHBURN: Similarly -- but instead of along the lines of what, what customer data are you talking about? For example, where a meter was, you keep until the life of the meter goes. So it could be 30 years; right? In other words, that meter was located at a location. If that's customer data, we keep that a long time. If it's a customer themselves, you know their account is there as long as they're a customer. So we have customers who are customers for 30, 40, 50 years. So that information that, you know, their name and their address and that kind of stuff we keep until they're not a customer anymore. Billing data is

comparable to what was mentioned down there. I think it's five years based on the rules.

MR. FUTRELL: I've got a follow-up from something Ted said sparked my interest about you have a retention of about 36 months is what your, your intention is. But how do you -- what's your disposal? Do you have a policy on disposal of that information and, you know, you keep it 36 months? And then the 36 months passes, then what, how do you, how do you deal with the disposal of that information? How is it handled?

MR. SPANGENBERG: Yeah. And the technology we use today, of course it's electronic storage. And so what happens is when you get to -- each month as you go by, the 37th month would be wiped clean from the drive and overwritten, you kind of overwrite with the next month's data and slide the data down so that the old data is overwritten, you've got the new stuff there.

MR. CLEMENCE: And I'll turn to our manufacturers who have joined us here today.

Several customers have expressed concerns, and even received them as recently as last night, that a smart meter is capable of identifying individual appliances within a home. Is that the case and are any of the meters that our utilities have installed capable

of doing that?

MR. SANTILLI: So currently -- this is Lou Santilli with Itron. Currently the meters that are being installed and manufactured don't have the capability to have the actual power signature of what's going on. It merely records energy over a period of time, and the granularity and resolution of that recording is not sufficient to say it's exactly this or exactly that.

MR. CLEMENCE: Is that the case with the other utilities -- or the other manufacturers? I'm sorry.

MR. RUMMEL: It is with Sensus. I discussed that earlier in my comments this morning.

MR. HELD: Yeah. The only caveat I'd say to that is, you know, there was discussion earlier about home area networking and ZigBee. And so it is possible for appliances to talk to the meter. That's not done with the GE meters at all. But that would be a consumer choice to buy an appliance that can talk to the home area networking, ZigBee, and communicate through the service.

The other thing I'd say is that the signature analysis which has been discussed raises a concern where you're looking at the, the power wave form, the, you know, the voltages in the current to identify what

device is on. That analysis is done in various labs and what not, and that requires analysis at a level much -- much smaller time threshold than the one second that our meter has. So it's not available in our meter.

MR. CLEMENCE: What about more generically, are you able to figure out a person's daily schedule, perhaps figure out maybe air conditioning load, heating load, the frequency of their refrigerators coming on and off or --

MR. HELD: I mean, you'd be able to see at the 15-minute load data, you know, when they're consuming more energy, but you would have no idea what appliances or, or, you know, device in the home was driving that increased usage.

MR. SANTILLI: The AMR meters at Progress Energy and TECO only bring back a snapshot in time of energy consumed over a period. It does not bring back that interval data.

MR. FUTRELL: I've got a question. Mr. Held, just to follow up, you mentioned that there could be a device that communicates appliance usage to the meter. Is that something that's currently offered? Is it something that could be coming down the road where a device inside the home on the customer side of the meter is communicating appliance usage to the meter?

MR. HELD: With, with respect to the, the GE meters that we offer today and that FPL has employed, no. There is discussions in the SEP2 standard, which is the ZigBee standard for home area networking, you know, different types of communication between ZigBee devices between like a refrigerator and an in-home display and different devices like that. But that technology is not in the GE meter that FPL has deployed.

MR. FUTRELL: And that raises a question of about, and this might be more appropriate for the next session but we'll go ahead and get into it now, about potential for energy management programs that may allow for the devices, the meters to be communicated with more granularity on certain appliances. Is that something that's being looked at? Is it something that could be coming in the future? We've heard a lot about that, that might be one of the benefits of the meters is, is, you know, greater control. But then what are the downsides of that as far as providing additional data and the privacy of that data on actual individual appliance usage patterns?

MR. RUBIN: Ken Rubin for FPL. I think if, if I can take the first part of that. FPL had come to the Commission -- I know I mentioned this, this docket earlier today, it's the 110031 docket. And I would note

that in that docket in May of this year, May 24th of 2012, FPL filed its annual report on that residential service dynamic price response pilot rate.

And let me just, for the benefit of those that, that probably haven't seen this, let me just read the introduction to this report. The residential service dynamic price response pilot project is part of FPL's energy smart Florida in-home technology project. The purpose of the project is to study the technical feasibility, customer acceptance, and energy impacts of emerging smart grid enabled customer -- I'm sorry -- consumer technologies and dynamic pricing. In part, the project will help FPL study how smart meter enabled dynamic pricing combined with realtime energy information and load reduction enablement impact peak load and energy use.

This report is available publicly. This is FPL's effort to study, I think, some of the things that you, that you've asked about. In terms of the, the privacy issues, again, I would separate it into the cyber security part of it and the legal part. And I know that we've all said it a number of times, but in terms of the legal protection of the data, we view that as the same type of data that we are currently protecting that we would continue to protect.

MS. TRIPLETT: Dianne Triplett with Progress Energy Florida. Currently we, Progress does not plan to implement any type of program that would allow for smart appliances to talk to the meter. But I wouldn't want to rule it out because I think it could possibly prove to be something useful to, in the future to, to reduce energy consumption. But it seems to me that our, that nothing would change much, like now nothing is changing with respect to how we treat usage data. It would be the same thing as far as information that was received. Even if we did get information about appliances, it would be kept private and secure in the same manner that it was before and is currently now. I don't see any of that changing. But, again, we don't have any current plans to implement that.

MR. SPANGENBERG: Ted Spangenberg with Gulf Power Company. And I believe the bridge to this came from the, particularly a Zigbee device into the home area network. And as you saw from the Sensus presentation, the ZigBee bridge was an option in their meters. Gulf Power did not elect that option. We do not have that device in our meters today.

We mentioned the future potential and the fact that Gulf Power has a very effective home energy management program now called Energy Select, and there's

the possibility that, in fact, we're looking at the opportunity of can we use the FlexNet network to help expand the Energy Select offering. We anticipate that that will always be an optional offering out there to customers who want to select that. Right now it would not envision one where the appliance is directly talking itself to the meter, rather it's talking to a smart thermostat or something like that. But in those cases those customers would evaluate whether or not they think that rate is beneficial for them, they look at what it's going to do in terms of devices in their homes and radio traffic within their homes, and they would then make decisions on that and on what they saw about the protection of the customer data.

I would echo what Progress Energy just said in terms of how you treat any of that data, it's still going to be treated with the same confidentiality. It's, you know, that's still sacrosanct in our minds in terms of protecting that information.

MR. ASHBURN: Bill Ashburn with Tampa Electric. We have a program very similar to the Energy Select program called the Energy Planner. They had already copyrighted the name. We couldn't use it. For a price they might have.

So our program works just like theirs. Again,

that's not a communication back -- through the meter back to us about what happens. That's the thermostat is smart. It gathers pricing information off of the meter that we have on the house, and then it controls at the customer's direction what, to control various appliances. So there's no information coming back to us about how that appliance acted. It's, it's all based on just communication to it.

MR. FUTRELL: But are these energy management programs that will give the utility more specific data on customer appliance usage, will they be mandatory or will they be voluntary on the part of the customer?

MR. OLNICK: Currently today we have a pretty robust residential load management program in our company, and I think we have close to 900,000 customers who have voluntarily selected to participate in that.

The program that Mr. Rubin was referring to was a 500 customer pilot in which we were evaluating these, these new technologies. We've just recently concluded that pilot. And, again, it was strictly a voluntary program with customers who chose that. If, in fact, some day in the future our customers like that kind of technology and, and we chose to go down that path, we see a very similar type structure and program in place, which that would be strictly voluntary. And

whether the devices that were installed in the home would -- if we could connect to them, that would all be an exchange in a voluntary type program that we would enter into with the customer.

MR. REEVES: Sorry. I'll amplify that for Bryan. So our technology does support the ability for the utility to send pricing signal information through ZigBee to devices in the home, and that is utilized by other customers. So none of the utilities represented here today, but that is something that is in place today that the current standards do support. All the programs I'm aware of are all opt in, with the consumer choosing to participate in that program and presumably benefiting through reduced energy costs.

MR. CLEMENCE: Is that a one-way communication or two-way?

MR. REEVES: It is a two-way communication. So there is a message that gets sent from the utility's back office indicating a pricing signal change, and then that is acknowledged back to the utility so they're aware that the customer did receive that notification.

MR. FUTRELL: Since we're kind of talking about pricing as part of these programs, one of the concerns we've heard from a lot of customers is that there's a notion that the meters are going to introduce

the mandatory usage of time of use rates and it will have a net effect of increasing their monthly bills. Can you address how you see time of use rates developing in the future? Will they be mandatory? Will they be voluntary? Do you have time of use rates now that you offer to customers? And how will the meters kind of impact the potential for time of use rates?

MR. OLNICK: I'll start that one. Bryan Olnick, Florida Power & Light. Today our utility does have both residential and commercial time of use rates. Those rates are, are voluntary to any customer and are an option to any customer out there today, residential and commercial. So whether there is a smart meter in place or not, those time of use rates existed years ago and have been voluntary.

In the future, if the smart meters, AMI meters can offer any more features or functions where a time of use rate may get modified for any reason, we foresee that to continue to be a voluntary program.

I would add I typically don't like to refer to other states, I won't name any in general, but I think that there has been some reference that has happened in the past where the timing of the introduction of a smart meter project with a particular utility coincided with the introduction of new time of use rates and that can

cause a lot of confusion.

I think I can tell you in our particular case we did not introduce any new time of use rates. Our time of use rates that have always been in existence were maintained.

MR. RUBIN: And if I could just add to that. Like, I think like any other rate, if FPL or the other utilities for that matter decided to implement some time of use rate relative to smart meters in the future, like any other new rate or tariff, we would have to come here to the Commission and seek the Commission's approval before implementing any such rate.

MS. TRIPLETT: Dianne Triplett with Progress Energy. Our -- we do have a residential time of use rate but it is closed. But per the Commission's request, we are required to offer that, that rate to customers. But it is voluntary and would not be required of a customer.

MR. SPANGENBERG: Ted Spangenberg, Gulf Power Company. Certainly we do not currently envision any type of mandatory time of use rate in the future, particularly since our Energy Select program we feel is much more effective in terms of putting equipment and tools in the customers' hands where they make choices about what they want to have operate in conjunction with

the Energy Select rate, which is itself a form of time of use rate. We certainly don't consider anything mandatory. And I think, as Mr. Rubin stated, certainly anything, any new rate offerings like that would certainly come before the Public Service Commission for their approval and consideration.

MR. ASHBURN: Bill Ashburn with Tampa Electric. So whether a rate becomes mandatory is in the power of the Public Service Commission, not us. I'm old enough, been around long enough to remember when we started time of use rates as a result of the Public Utilities Policy Act of 1978 and was later updated in 2005. This Commission decided way back then that it would require us to offer time of use optional rates to customers, which we all did at some point or another. And so we all have mostly time of use options and not mandatory.

The energy planner rate that I described, the Energy Select rate that he was talking about are optional rates. And I think we both have elected to make that our optional residential rate in our last rate cases and drop our otherwise applicable residential time of use rate. They're not mandatory, we haven't requested them to be mandatory, and the Commission hasn't told us to make them mandatory. And it would be

up to the Commission to make it mandatory, not us.

MR. CLEMENCE: I would also ask a similar question to Mr. Noel. Have the municipal utilities taken up any discussions on, on making time of use rates mandatory?

MR. NOEL: Absolutely not. We, we couldn't do that, especially in a political environment. That would be horrible. But we are talking about time of, residential time of use because we already do have time of use rates.

But as an option, not something I would do because I need the air conditioning. But, yeah, that's definitely something that's on the table for the next year is trying to see what the benefits are for our customers as well as the utility and, and seeing how that would work in our environment. And other utilities in our municipal sisterhood have residential time of use, Tallahassee is one of them, and so far I haven't heard any negative pushback anywhere.

MR. CLEMENCE: Have you seen since the installation of smart meters any different -- has the customer's attitude changed towards time of use rates? Have you seen more customers asking for them or asking to move from time of use rates?

MR. NOEL: I haven't, and definitely not

correlated against the smart meter implementation. We have had more solar net metering but not time of use.

MR. SAYLER: Mr. Futrell, I do have a few questions for either the utilities or the consultants under the privacy aspect if I -- before you went further along, I was just wondering if I could jump in here.

MR. FUTRELL: Certainly. And just, if you would identify yourself. This is Mr. Erik Sayler with the Office of Public Counsel, who is in a separate agency from the Public Service Commission, and he represents the consumers of the State of Florida. So, Mr. Sayler, I think we can allow for a few questions to make sure we have -- keeping in mind we'd like to get to public comment as quickly as possible.

MR. SAYLER: Absolutely. My name is Erik Sayler with the Office of Public Counsel.

Under the privacy aspect of data, who owns the smart meter consumption data? And then the other question would be, as a follow-up to that, I understand from the discussion today that there's no plans to share or sell that consumption data. But if that became profitable in the future, which in other jurisdictions there seems to be a move to either sell or share that consumption data, would the utilities or the Commission share an opt in or opt out approach for the sharing of

customer individual consumption data or aggregated data?

MR. RUBIN: Ken Rubin for FPL. Let me, let me see if I can remember the questions.

The first, the first issue was the ownership of the data --

MR. SAYLER: Yes, sir.

MR. RUBIN: -- I think, I think was the first question. From FPL's perspective, we consider ourselves to be the custodian of that data. We use the data for utility purposes. But the data, thinking ahead and, you know, for potential commercial purposes, the, the data could be accessed by the customer. The customer could ask us to provide that data to a third party if they had some business need for it. We do not have the intention of -- I don't know if ownership was the word that you used, Erik, or not, but we don't consider ourselves to be the owners of the data. We consider ourselves to be the custodians of the data. We protect the data, as we've talked about earlier, and no, no current plan or thought about using it for commercial purposes for the utility. Instead, if the customer wanted to, for some future application, have it released, then they would ask us to do that and we would do that. And I'm not sure I caught the other question that you had.

MR. SAYLER: You pretty much addressed whether

it was an opt in or opt out where a -- if there was a plan to sell it, would the customers have to voluntarily opt in to allow that data to be sold or shared or what not?

MR. RUBIN: Yeah. I think the customer would be required to give us consent to do that.

MS. TRIPLETT: This is Dianne Triplett for Progress Energy, and I agree with Mr. Rubin's statement. We view ourselves as the custodians of the data. The ownership that we have is that we own the responsibilities to protect that data, as we've, you know, stated previously.

And certainly if, if there was any sort of market or opportunity for sharing the data, we would absolutely require customer consent before releasing that data.

MR. SPANGENBERG: This is Ted Spangenberg, Gulf Power Company.

I'll offer a slightly different nuance. The consumption data is our record of our service to that customer. But, again, while we own the data, we believe we own the data, it is strictly proprietary to that customer. And as I mentioned earlier, we consider that a sacred obligation to protect that proprietariness. So any third party use would, you know, obviously would

have to take in that consideration.

MR. ASHBURN: This is Bill Ashburn of Tampa Electric. I would only add to what was mentioned that, you know, if the Commission asked for it in a public proceeding or if Public Counsel was a part of that proceeding and needed it for some purpose, we'd make it available under confidentiality rules. So it's available in that kind of regard in a regulatory proceeding as well. But otherwise, it's, like I said, it's their data and we don't release it to anybody without their consent.

MR. CLEMENCE: And continuing with the theme of security, what cyber security measures has the utility taken to insure the security of the data transmitted by the meter?

MR. OLNICK: Bryan Olnick, Florida Power & Light. I know we had spent some, some time this morning discussing the multiple layers of data encryption and data security that takes place from the meter, data security and encryption through the mesh network into the collector or access point itself, encrypted all the way back to Florida Power & Light, decrypted within our offices, and then used within our systems.

We've had a lot of those discussions with our technology providers and meter vendors today. I do have

with me also Roland Miller, who is the lead in our cyber security portion of our company. We can talk a little bit more about some deeper levels of cyber security within the company if the Commission staff's question is more focused on that level. If, if it is more on the discussions we've already had, we can review those discussions.

MR. CLEMENCE: I think I'm looking to find out information. Are, are you guys testing the network and are you receiving attacks? Do you, do you attempt your own test of the system? Do you have third parties test your network?

MR. OLNICK: If the Commission staff would allow me, I'd like to introduce Mr. Roland Miller, and he can address the tests that we do, third party tests, penetration tests, and so forth.

MR. MILLER: This is Roland Miller with Florida Power & Light. Yes, we do conduct third party testing of, of our smart grid systems. Typically we have one about every year. We track the results of those third party assessments to ensure that whatever findings were, were generated are closed at completion. We also maintain a higher level of awareness of security at enterprise levels. So besides the individual things that are tested by third parties, we're also maintaining

a, the general cyber security of the entire system itself using industry standard techniques, defense in depth, ensuring that security is baked into the smart grid system from the beginning, and validating that those controls work on an ongoing basis.

MS. TRIPLETT: Dianne Triplett with Progress Energy Florida. And similarly Progress Energy utilizes applicable industry standards with respect to cyber security and also the defense in depth architecture. There's several standards that apply. We filed a pretty detailed response to -- in your data request, so I won't read it. But, you know, essentially there are guidelines for smart grid cyber security, cyber security procurement language, IEEE standards.

But specifically to your question about do we, do we test, do we validate? Yes, we've invested in third party assessments for validation to test the security of the transmission of data coming from the meter, both the MMR meters that we have currently and then also thinking ahead to the commercial AMI meters that are scheduled for the next year. We employ network isolation encryption, device authentication, access management, and then again the testing and security monitoring.

You know, we also engage in threat monitoring

activities. To my knowledge, there hasn't been any, any sort of event that has occurred with respect to, to meters, but I know that we, we do monitor for such, for such threats and such violations of the, of the cyber policies.

MR. SPANGENBERG: Ted Spangenberg with Gulf Power Company. Similarly, in our previous data response included several things, and some of those have just been mentioned by, by Progress Energy. And we are currently working with DOE in terms of a walk-through under their cyber security standards that they have issued. Sensus, in its earlier presentation, described all the measures that they have taken as kind of the owner and architect, architect of the FlexNet system, and them also being the first entity to obtain third party certification of those cyber security standards through Wurldtech.

In terms of monitoring, we constantly monitor. And from an enterprise position, you know, there are, I'm told, literally thousands of attempts to come through our firewalls every day that are unauthorized from an enterprise perspective and those are preempted, prevented. Proof that it is working.

I'm only aware of one instance where someone tried to hack into one of our, one of our tower units,

TGB network units, that we know that that attempt originated somewhere in Taiwan. We have no indication they knew what they were trying to get into. They just saw a device out there and tried to get into it and that was preempted and blocked. And so any type of thing that's out there, you have all types of attacks all the time. And I think the constant monitoring that we do that is regularly done and the fact that, in fact, we do know that these are occurring and are preempting them is a demonstration that our cyber security techniques are at work and are working as they should.

MR. ASHBURN: Bill Ashburn with Tampa Electric. Our AMR meters are the same as Progress's MMR meters, so the same technology is being applied to us as far as the transmission of the data from the meter. Once it gets into our system it's comparable to all of us. We're constantly under cyber attack, all of us, I think. I'm not sure if we have targets on our backs or it's just whatever it is. But, so we are -- our IT department, our cyber security experts are constantly protecting stuff.

So the data comes off of these vehicles and it goes into the system, and it's just as protected there as it has been forever in all the types of customer data that's in there. So it's, it's protected there.

MR. FUTRELL: Let me follow up and maybe this will be directed to the manufacturers. But, okay, so one of the things we've heard from folks is that there could be people driving around with a laptop or some other device and intercept the data that comes off the meter before it reaches either the utility's vehicle, in the case of a mobile network, or the mesh network that a utility may have installed. So what's to prevent that to happen where a customer, someone could intercept that transmission between the meter and the utility's infrastructure, whatever it may be, and allow that, that person to see whether the customer is at home and what energy consuming appliances the customer may be using at that time?

MR. MILLER: All right. Roland Miller with FPL.

The mesh network is, is constructed with PKI, which is public key infrastructure certificates. So the meters are -- communicate with the back office and establish secure sessions. So the data itself is encrypted.

Yes, people can drive by and intercept that information, but it's going to be garbled to them, it's going to be garbage because it's encrypted.

That's -- the possibility that they can

intercept it and keep it from being transmitted back to FPL is very low. What they can certainly do is, is see it going by because it is, it's radio frequency, it's in the air. But that information is, is, is encrypted, and that trust relationship is built off of industry standard certificates.

MS. TRIPLETT: Dianne Triplett with Progress Energy Florida. Similar answer, someone may be able to get it, but because it's encrypted, they couldn't make much sense out of it.

MR. REEVES: Don Reeves, Silver Springs. I think the analogy that the Commission ought to consider would be the equivalent of walking into Starbucks using their Wi-Fi to do banking on your laptop or on your phone. So, yes, if a malevolent Starbucks employee who had access to the Wi-Fi router, they could probably see that that traffic would flow, but they wouldn't be actually able to look at your banking information because the application you're using is encrypting all that data.

So, likewise, when we're reading the meters, when we're performing any sort of operations, those are all encrypted or, or authorized and signed by applications in the back office to validate the authenticity of those messages. And there's various

mechanisms in place to protect against other types of attacks which might be considered, like replay attacks. So how can you prevent a valid message from being used over and over and over again? There are mechanisms built into our system that, that protect against that.

MR. CALDWELL: This is Wes Caldwell, Tampa Electric.

Even with this information being encrypted we've pretty much already established that there's no personal information, customer information transmitted. You have to remember that what we're really transmitting is the consumption information which is readily available on the front display of that meter.

So if you wanted to collect that information, you could do just like we've done for 100 years and walk through the neighborhood and look over the fence. So, you know, we're going way and above -- it's, it's benefiting us, we're looking to benefit the customer. So, yeah, we could collect it with a laptop if you could decrypt it. But, again, there are easier ways to get the data if you really want it.

MR. CLEMENCE: And to our municipal utility, do you have similar programs, and do our municipal utilities have security staff that are monitoring their network as well?

MR. NOEL: Yeah, absolutely. It varies from municipal to municipal because we have different systems. But for Ocala, for example, after it leaves our, the mesh network, gets back to a field data collector, it comes back transported on our fiber, on city-owned fiber. So we control it from that point also. It's encrypted at the base and it's encrypted or decrypted back at the office to provide that information on a daily basis.

And, again, great point, anybody getting that information and if they were able to, which is impossible to decrypt it, it's just consumption data. It's not identifying, you know, your specific appliances, whether you're home or not, it's not identifying that information.

So we, you know, we've taken it a step further. You know, somebody pointed out in one of their power points earlier about all of these rumors on the Internet. And, you know, we can't control the validity of the information that's out there.

And one of things that came back internally from our IT department to me was an article in *Computer World* that smart meters hacked. You know, so I researched that, and it stemmed from a Black Hat conference in Vegas. A group put out a, a tool that

they were, they said, they claimed could, you can connect it through hardware through your IR port of your meter, you could actually read the meter that way.

And so we downloaded the tool because it was free, it's on the Internet, and worked with our manufacturer to test the validity of that, and it did not succeed at any level the manual said it would succeed.

So we, we are looking at these claims. We do take cyber security very seriously across our entire municipal network, and, and it's just -- these claims are unsubstantiated when we've researched them.

MR. FUTRELL: Just a follow-up to maybe the manufacturers. Is there any -- have you heard any -- done any research or seen anything where there could be a cyber attack directed at a particular meter, or does it have to go through the utility's, you know, the back office system before it reaches the meter? Can something be directed direct at a meter to potentially shut off a customer's service or collect information directly from that meter?

MR. REEVES: Don Reeves, Silver Springs.

Yeah. That's absolutely one of the threat profiles that we are concerned about, and we do provide technology to our customers to protect against that,

again through the encryption and authentication and authorization of messages. And we go so far as to consider what's the equipment that actually is being carried by the utility personnel in their vehicles that enables them to do their day-to-day work and what would happen if that equipment were to be stolen. So we actually have safeguards built in to protect against that eventuality as well. So, yes, that's absolutely one of the threat profiles that we do consider, and it's designed into the system.

MR. RUMMEL: The same would be true for the FlexNet technology. Further, if you had a population of disconnect meters, those threat profiles also protect from a command going out and literally turning multiple meters on and off at the same time as well.

MR. HELD: And I'll just add -- Chris Held from General Electric. The tool referenced earlier just now, that was actually a tool directed at an individual attack on one meter, just like you said. But it wasn't through the network. It was through the optical communication port on the meter. And so somebody could certainly devise an attack by communicating directly with one meter. To some points made earlier, it would probably be easier to direct that attack using a baseball bat and just take the meter off. But, you

know, you could direct an attack on an individual meter, then you'd have to go house to house.

MR. CLEMENCE: We spent a little bit of time talking about the transmission, but what about the, actually the security of the meter itself? I have received numerous articles from members of the public that talk about instances of people being able to hack into meters to slow the meter, speed the meter, turn it on, turn it off, or even send false signals to utilities.

MR. OLNICK: I think I was first at the button on that one. Bryan Olnick, Florida Power & Light.

To this point in time we haven't found anyone that's been able to hack into a meter. I think we've just spent a lot of discussion on what that would take and the capabilities and the encryption.

I would say though that smart meters, although they have deterred many of the traditional kinds of ways customers could alter their meter reading, since they are electronic, they aren't susceptible to some of the traditional ways customers could break into a meter. Customers to this day still are trying to and are breaking into even smart meters. Many times it's a very serious and safety concern in ways they're trying to do it, and I think customers will continue to do that.

The most -- the ways that they are doing that though are not through penetrating from a cyber security type approach. They tend to be a little bit more creative than they have in the past. But they are truly theft type conditions; they are stealing electricity. And many times it is a matter of removing the meter and altering or breaking into it and breaking into actual components and maybe cutting something inside of it or so forth. But we haven't found any situations where, where theft is occurring and we actually have thieves that are stealing electricity to be able to do that through breaking into from a cyber standpoint.

MS. TRIPLETT: I have nothing to add for Progress. That all sounds right to me.

MR. SPANGENBERG: I would concur with what Mr. Olnick just stated. No, we've seen no attempts to do it from a cyber perspective. Obviously they've become ingenious, those who wish to steal from us, ingenious about ways to do that. They've had to get more ingenious because of the AMI and the smart meter because of the types of alerts it now gives us. And so typically those attempts now occur outside the meter itself rather than through any cyber intrusion. And I'd rather not describe the way they do that outside the meter since we're in a public setting and I don't want

to give anybody any ideas about how to do that.

MR. HELD: Yeah. I'd just add that, you know, throughout the history of metering there's been a variety of ways to tamper with a meter and try and steal electricity and energy usage. This isn't anything new, and with the advent of smart meters there's actually various mechanisms inside the meter to detect such tamper and alert the utility for, you know, traditional, I'll say mechanical types of tampering, as well as any types of cyber tampering, there's ways to detect that as well and alert the utility. And, you know, we continue to work with AMI vendors such as SSN and the utilities in efforts on how to detect and prevent those methods.

MR. CLEMENCE: All right. I guess transition into the security of people's homes. We've seen multiple news reports, both here in Florida and in some instances some other states, of, of meter fires that happened during the transition from a meter change out program.

What, what assurances can be given to, to customers to ensure that a change into a smart meter is not going to cause them any, any damage to their home?

MR. OLNICK: Bryan Olnick, Florida Power & Light.

As I mentioned earlier, we have to date

changed approximately 3.8 million smart meters. We haven't had a single occurrence where the smart meter itself has been determined to be the cause of the fire itself.

Now, with that said, we have had a, an ongoing proactive approach as part of our deployment, as Mr. Rubin referenced earlier in a previous question, as part of our project implementation and through an agreement with the Public Service Commission to take proactive steps when we are in the process of replacing the existing meter with the smart meter.

And have -- I don't have the numbers in front of me, but we have made literally thousands of repairs on behalf of the customer to what is the customer's own device, which is the meter can assembly, and we have been very successful there. Albeit there have been some situations where, whether it is a smart meter or a non-smart meter, prior to our deployment and for previous periods smart meter can incidences have happened. And we take them very seriously, we always will. But through the smart meter deployment we've had very good success and a program to try and be proactive to make repairs again on behalf of the customer to avoid those kind of situations.

MR. WOODALL: This is Dan Woodall with

Progress Energy.

And I would just point out that we've been using digital meters for decades. And the thing to remember about the smart meter, it is a digital meter no different than any of the other digital meters that we've been using, simply with a com card added to that.

We've been watching the news reports as well, and I can only speak to our experience with our AMR rollout, and it's very similar to what FP&L was just describing back in 2005, 2006. One of the key things to be monitoring is if you're going in and you're changing out legacy electromechanical meters that may have been there 30, 40, even 50 years, that meter base may not have been kept in prime condition. There's an important kind of QA/QC inspection that needs to happen there. What's the condition of the jaws, the sockets the meter is going to plug into?

We found a number of incidents during that meter change out where you had damaged meter bases, a legacy meter base, a problem with the original installation. It may have been damaged from the, from the condition of it over the age as the meter was pulled out. But there's an important inspection that needs to happen there. If you're on top of your game with the right process and your subcontractor, that can be

managed and managed in a way that's very, viewed positively by the consumer.

And so I think the experience of the industry with digital meters over decades and the experience of utilities that have had that kind of quality control at the time of meter change out, you know, I think it is, you know, a very manageable situation. Obviously we watch with interest, you know, the reports and want to hear back from the fire marshal. But I, I rely confidently on decades worth of experience with these types of meters.

MR. SPANGENBERG: Ted Spangenberg with Gulf Power Company.

And I would concur with everything that's just stated. It is indeed unfortunate, as you've stated, that the news reports characterize these as smart meter fires. Because as you look at all those, as I have looked at every one of those around the country that I've seen, there has yet to be any instance of any fire or any damage that originated from within the meter itself. Every single one of these that I'm aware of around the country that we've looked at and read into, checked up on, called people, asked, it's a socket issue. It's the customer's equipment issue, it is not the meter. It would have occurred regardless of the

type of meter you were changing out. And, in fact, in many instances, I mean, the fact that some of these have popped up more so than normal is because a lot of meters are being changed as we go to this new type technology.

In many cases, as the meter is being pulled, the old meter pulled out, as was just referenced here, and you can see from the condition of the lugs in that meter socket, in some instances customers over the years have added load and added load and added load in the home, never bothered to change out the service entrance at the meter socket, and you can see that there's conditions. And, in fact, I would suggest to you that the fact that we're going around doing a meter change out has helped us identify these and in fact prevented damage to customers' premises in many instances.

And so, as was stated, you go through an intricate inspection process, you review those. Where you find something that needs correcting before a new meter is put in, we, like Florida Power & Light, as a courtesy to those customers while we were there or while we had the capabilities to do it, made some repairs that otherwise was their equipment but we did this as a courtesy to them because we care about our customers and we're able to do it in these instances.

There are some instances where it was a

commercial establishment or a multifamily large gang socket situation where we did require the property owner to make that change themself. It was just beyond our means, and it was their equipment, it was theirs to correct anyway.

So, again, I'd just like to reemphasize, it is very unfortunate it's being characterized as smart meter fires. These are not smart meter fires. They are problems with sockets and those problems have been there forever. We are helping discover those in many instances. Because of the types of alarms that our meters now give us, we can sometimes help prevent customer damage beyond what it otherwise would have been.

MR. FUTRELL: I guess, you know, what we've heard from customers is absent the installation of the smart meter, there wouldn't be this kind of -- this wouldn't be introduced. If it was, the meter had been left the way it was, this, you know, this change out, while the problem may be on the socket, the wiring to the socket on the customer side wouldn't happen.

So as these rollouts have happened, what, particularly since Florida Power & Light is still in the midst of their rollout, what efforts are done by the utility to monitor the subcontractor who's making these

installations to ensuring that they're, you know, following protocols and that they're identifying issues with the customers' facilities and making the appropriate changes or notifying the customer of changes that need to be done? What kind of involvement does a utility have in monitoring the subcontractor's actions?

MR. CLEMENCE: And to add on to Mr. Futrell's question very quickly, are you using, while answering that, electrical contractors to do these change outs?

MR. OLNICK: Bryan Olnick, Florida Power & Light.

So, yes, for the majority of our residential deployment we have, we have been using a subcontractor. There's approximately 100 installers involved. They go through a rigorous training. In particular, they go through specialized training to identify during the replacement process to look for exactly what conditions may exist, how to handle them.

We actually have a subgroup of electrical contractors, licensed electrical contractors on standby so that when a condition is observed, they can be called to task to do the replacements. Because of the volumes that we are replacing, I don't have the exact numbers, but I would venture to say that that probably happens maybe ten to 12 times a day, which is a good sign that,

that those particular installers are doing their job and looking for and finding and reporting.

We do a significant quality check as far as our staff and my staff doing periodic reviews, unannounced field visits, site visits, and we do review all of the, all of the repairs that take place to make sure that they were warranted and done properly. And, again, as I said, as identified by one contractor and then repaired by a separate licensed electrical contractor.

MR. CLEMENCE: And the other utilities?

MR. WOODALL: Yeah. I can speak from our experience with 2005, 2006, very similar to what FP&L characterized. And we have similar plans for the much smaller in scope 83, 84,000 rollout of AMI meters to the commercial accounts.

MR. SPANGENBERG: The steps that Gulf Power took as we did our deployment was similar.

I guess I would add one other note to the aspect of, as Mr. Futrell mentioned, well, you know, if it weren't for this, my meter would have been left alone and it wouldn't have been a problem. I'll tell you that was a problem waiting to happen. The next time that meter came up for a sample meter test or for a disconnect or anything else that came up for any other

kind of reason, that was a problem waiting to happen. We simply helped find it in a controlled environment using trained people and were able to help resolve the situation.

MR. CALDWELL: Wes Caldwell, Tampa Electric.

We've done several surveys as part of the Southeastern Electric Exchange over the last few years which asked questions about hot sockets and bad sockets. And basically what the results of those survey said, reported were that between six-tenths of a percent and 1% of all the meter sockets in service today have some issue.

And just as, as my colleague from Gulf Power said, they're like a sleeping dog waiting to be woken up. And it doesn't matter if we're there to do a mandated meter test for a high bill complaint, or there on a random sample to, you know, check the accuracy of those meters, or a periodic change, we're going to have an issue, we're going to identify that issue. We're identifying more right now because of the meter change outs that are occurring, you know, throughout the industry, but the problems are still there.

And as far as contractors, Tampa Electric has finished our residential change out to AMR meters. We did it all with our own personnel; there were no

contractors involved. And that was really the reason it took us so long to do it is we did it in-house.

MR. CLEMENCE: And to our manufacturers, what, what safeguards are built into, into the meter that if the meter is starting to get hot, to provide some assurances to, to customers?

MR. RUMMEL: The Sensus technology is releasing some new capabilities that will be available soon, the Sensus temperature, and will have the ability to operate on a threshold to operate a disconnect for those disconnect type meters to disconnect service and send an alarm and allow some investigation to occur when those situations happen.

MR. CLEMENCE: And our other manufacturers?

MR. SANTILLI: Lou Santilli with Itron.

The MMR meter, the first indication is a stop in communication. And as Arlin said, for the future AMI meters, there are sensing technologies being put in for temperature to understand what's, what's going on under the glass.

However, the key here is to remember, as the utility colleagues have mentioned, it's not a meter. It's below the meter base. So that meter base can actually be well below any of the sensing, any of the things that are happening. So it is an infrastructure

problem, not a meter-generated issue. Thank you.

MR. HELD: Chris Held from General Electric.

Similar to my colleagues here, the meter does have a temperature sensor in it. That was not designed to detect hot sockets. We work with the utilities to try and use that as an advanced warning along with other methods such as, you know, power getting disconnected with the AMR device. There are no standards around, you know, hot socket detection for the meter. There are some safety standards to make sure that, you know, the insulation characteristics and the flammability characteristics are such that the meter won't create a fire hazard. And as the utilities stated, the meter hasn't been the cause of any fire hazard. It's, it's more the victim, I guess, right now of, of some bad press.

But we are working to try and take advantage of the fact that we do have a smart meter there so that it can be, the issue can be detected and mitigated in advance of property damage that you wouldn't have if you had put in another electromechanical meter where you'd still have the same condition happen.

MR. CLEMENCE: And I guess one more technology -- oh, I'm sorry.

MR. REEVES: I'll just add, again, we don't

make meters, but to the extent that our network card is inside of meters that have temperature sensors, then we pass the alarms up. That's been the capability that's existed from inception.

We've also worked with some of our customers, some of them for multiple years, to actually leverage the temperature sensing equipment in the meter to bring that, those temperatures back and allow the utility to decide which, which service points warrant further investigation. So that's, that's a mechanism already in place today.

MR. HELD: Yeah. I'd just echo that, that we are aware of certain utilities using that. And, you know, I've personally received pictures where they've gone out to the installation and saw that, you know, they were able to proactively correct, fix the socket in advance of the fire occurring because of the alerts in the meter. So that has -- we're going to get better at it and it's unfortunate when it happens, but it's, it's something we're proactively working on with, with the utilities.

MR. FUTRELL: I have a question, Walter, about, along these lines, whether or not the meter is UL approved. We've heard from some customers raising this issue about what, what the role of Underwriters

Laboratory and their review of the meters or the transmitters. Can the manufacturers kind of give me a, answer some of the customers' questions about the role of Underwriters Laboratory with the meters, if there is one?

MR. OLNICK: This is Bryan Olnick, Florida Power & Light.

I'm actually going to punt this one to GE since they are the actual meter manufacturer. But just to put a little front end onto it, UL is really in place to test consumer devices in the home: Radios, TVs, and so forth. There are certain other standards that you've heard mentioned today, ANSI standards and so forth, that really govern the overall standards that are set for testing for utility type equipment, for military and utility type equipment. And so UL really is applicable to meters, but I'd really prefer to just punt that one to GE and they can get in a little bit more detail.

MR. HELD: Chris Held, GE. You know, UL doesn't have jurisdiction in the matter of meter safety. It's outside the jurisdiction. But they did release Subject 2735 a couple of years ago, which was their attempt at a draft standard for, for meter safety.

The, the way that the industry works is, as we've been directed by NIST, is, you know, all standards

that apply to metering need to be developed through, through an open forum. It's a collaborative standard creation and, you know, Subject 2735 has not gone through that process. It was something that UL generated by themselves and it has not been accepted by NEMA or ANSI to date. So we have had many discussions with UL about Subject 2735 and are working with them to make that something that could be more pertinent. But at this point in time, UL doesn't have jurisdiction with, with regards to meter safety.

And if you look at the tests in UL 2735, I would say there's probably, without an exact number, you know, roughly 80 to 90% overlap with the existing standards in ANSI already today. And we've actually used UL to perform verification of compliance to the ANSI standard on our meters, and UL has found our meters to be in compliance with the ANSI standard.

MR. SANTILLI: Lou Santilli with Itron.

I concur with Chris, that's exactly how we do the same business. We have UL standards that are for flammability. All material on the meter is UL 94 rated so it doesn't sustain a flame, but there is no other UL standard that governs the meter.

MR. CLEMENCE: I have one more technology question that I've got. The power used to power both

the transmitter and the meter itself, is that coming from in front of or behind the meter, and is that a decision that is a manufacturing decision or is that something that could be changed by a utility?

MR. SANTILLI: Lou Santilli with Itron. That power is coming before the meter off the utility side and calculated in the utility's line, line losses.

MR. RUMMEL: That's the same for the Sensus iCon meter.

MR. HELD: It's the same for the GE meter, and the amount of power that the meter can draw is actually regulated in the ANSI C12 standard.

MR. CLEMENCE: I'm not sure about the rest of my colleagues, but I think I need a five-minute stretch break. I have 3:00. If we could all return promptly at 3:05 to make sure that we can get finished up here and get to public comment as quick as possible. See you guys at 3:05.

(Recess taken.)

All right. While everyone is finishing up getting to their seats, I'll go ahead and pose the first question and we can start going down.

Should an alternative to smart meters or an opt out be, be offered, what are the cost components of metering that, that service for that customer who is now

going to be receiving service with a, a different meter?

MR. OLNICK: Bryan Olnick, Florida Power & Light.

The significant cost components of metering services included in customer rates today are primarily the cost of the meters along with the operational costs associated with meter reading and the field services. And if you want some more detailed examples, I could give you some more.

MR. CLEMENCE: And what costs would be incurred by the utility to, to offer an alternative? And if you have a, a cost you could give us, that would be great as well.

MR. OLNICK: I don't have a cost because there are many variables. Certainly the number ultimately of customers that may choose to have an alternative, their location. There's just too many variables right now to determine what that cost could be. But I could give you an example of some of the components I think that would go into determining what that cost would be.

First of all, you would have some major modifications to the customer service information system. That way we could properly track and process accounts for those specific customers, again being able to identify them and track them appropriately. The

enrollment process, we would have to develop a process through the care center, through the Web, through all the channels we would have to allow all opportunities for all customers to take whichever method they'd like.

Certainly the, the manual field visits to the meter itself to do whatever work is needed to either remove, replace, whatever would be involved there. There would probably be some special billing processes that would have to be put in place, special collection processes that would have to also be put in place, special meter testing that would have to be put in place. We have, we have a requirement to do statistical test sampling of all of our meter types every year. This would again require even more -- an additional test, testing.

We currently have in place today capabilities to utilize pinging and sending signals to the meter to verify if it's in or out of service. We would have to alter our outage and restoration processes and put in some unique and special processes for those customers that we would not have that capability to do.

Our network itself would require some augmentation to fill in gaps and certain equipment that might be required additionally to supplement where certain meters may have been in place or should have

been in place to actually supply the capabilities of the mesh network. Do you want me to pause for a minute?

Costs for whatever the process would be for maybe a future customer that would be moving in and would require a smart meter or would want the smart meter. Field visits for connection, disconnection, reconnection. So there are a lot of processes and procedures, systems, people that would be required for an alternative. Those are just some examples.

MR. FUTRELL: Mr. Olnick, could you -- I think you offered to go through kind of currently what are some of the categories and subcategories in more detail on current, what costs are included in current rates. And could you identify kind of what does a customer currently pay in their rates for metering services, and then if you could go into those subcategories you, you offered.

MR. OLNICK: I can. So in, in the specific components of meter services today, some of the things that, that would be included in, in that part of your base rate, which is for metering services, would be for the physical meters themselves and whatever infrastructure would be required for them.

The actual meter reading operational costs, those could be -- since we are still in the middle of

the process, those could be things like meter readers' vehicles, or it could be other technologies that wouldn't require those.

The telecommunication costs, again, if you're not requiring manual meter readers, the telecommunication costs, meter can repairs, meter testing and associated technologies. Again, whether you -- depending on the meter types and the various, and the different volumes of meter types, there is meter testing that's a part of that cost. Disconnect and reconnect for nonpayment, field meter expenses for move ins and move outs, revenue protection activities used to identify theft conditions and so forth, all of that is kind of embedded in the overall cost for meter services.

MS. TRIPLETT: Dianne Triplett for Progress Energy Florida.

In the interest of time, I'm not going to reiterate because he did an excellent job of setting forth. The only thing perhaps that I would add in terms of what's currently in customer rates, he may have said it but I didn't hear it, it's just the maintenance of the meters themselves, which probably goes along to the testing and other types of activities.

And one question I think that you asked, Mr. Clemence, at the beginning, I just wanted to -- I

think you asked should an alternative be offered? And from our view, our view, this is more of a policy question, because I think you've heard a lot of, of presentation and information that states that there is no technical basis upon which a smart meter should, should, smart meters should not, AMI meters should not be used to measure electric consumption. And so it's, there are no EMF effects, there's sufficient safety measures, they're secure, they're private, and so really it would be a policy determination as to whether to offer an alternative.

And I agree as well that there are a number of factors that are just not known to us at the time, currently, so that we are unable to offer a specific as to what that alternative may cost. But we would absolutely agree that should an alternative be offered or required, that customers wanting that alternative should, should pay for that so that the rest of the customers are not subsidizing.

MR. SPANGENBERG: Ted Spangenberg with Gulf Power Company.

I guess if you want to take up the more general question first, we would agree with the statements just made by Progress Energy. Should one be offered? We know of no technical reason to offer one.

We realize the anxiety that some customers are feeling; we want to be sensitive to that. But when we look at the total numbers of those that involve, at least for Gulf Power Company, far less than one-tenth of 1%, I don't know of any other tariffed or fee-based accommodation that we make for such a small percentage, as opposed to undergrounding where you may have 20% of our customers opting for underground and some things like that. You just don't have the basis here for that, particularly when there's no, again, no technical reason we can find for that.

The types of costs that are currently included in our rates would be very similar to things just described. Those are all there.

As to the cost of an alternative, I think one key component that I'd like to throw into what they said is, is the type of alternative that is in fact prescribed. There's a whole wide gamut. And, again, we don't think any of them are necessary, all the way from, for some reason unknown to us, somebody would insist on us going back to an analog meter when we've heard here today we've been using electronic digital meters for decades, all the way from perhaps using the same meter we have today with just the radio disabled, you know, except at the time that you need to take a reading for

monthly billing.

And so when you look at that wide range of alternatives, it's impossible to say what those costs would be until you, we know what the alternative is. And as I already stated, the number that would want to ascribe to it and the geographical dispersion. And, again, there are going to be many processes, particularly when you're dealing with such a very, very small, minute fraction of our customers, of processes that are going to occur that you're going to have to change as an indirect consequence of this for which you'd never be able to really tabulate those costs and that the rest of the general body of ratepayers is going to have to bear.

MR. FUTRELL: Mr. Spangenberg, if I could follow up.

And I think we've heard about issues earlier where you talked about undergrounding and changing the location of a meter. How does -- can you help me understand how customers who request those kind of changes, you know, they may wish to have service undergrounded or relocation of a meter and, well, for example, overhead may be more cost-effective and cheaper but the customer wishes to have underground. There's a provision for them to pay that. How is that different

from these customers who don't want these, the smart meters?

MR. SPANGENBERG: Okay. I would make two distinctions. One is typically with underground there's something else that's come to play. The neighborhood has said we want to be an underground neighborhood or the developer believes that there's a cost impact, that he can make more money off of selling his lots if he offers underground. Some people, you know, ascribe a difference obviously in system reliability to having underground versus overhead. And, again, some of them might need a service pole moved because that is a lower cost alternative to them of where they want to put their driveway and now they want to put it here. And I'd suggest to you that an alternate meter service point is in fact already available to customers now because we've had enough that ascribed to that type of alternative that we have systems and processes in place to do that, and it doesn't have this trickle effect of impacting all of our billing systems. We do that one time. We charge those costs up-front and it's taken care of.

If you now -- and the other distinction I make is again the number. Again, a much higher percentage of our customers, much more instances of those types of alternatives being desired by our customers than what

we're dealing with here. And so it's much more cost efficient to take and have those alternate processes in place when you're doing it for thousands a years as opposed to, you know, a hundred or perhaps less at one time.

And so I would make both of those distinctions. In those other cases there are other typically cost identifying or service identifying reasons, technical reasons why they might want to have those other alternatives. And, in fact, I would repoint out, just at the, at the risk of being, of saying it too many times, is that changing that meter service point, which can be done without cost impact to other customers, would still in fact be an option here.

MR. FUTRELL: I guess what if you have a, what if you have a body of customers that may number 25,000 who wish to have some alternative? Is that -- is there a point at which you, like, for example, you're saying your utility has a few hundred or, you know, some small number. What if you have 25,000? Does that raise it to another level where you'd have to --

MR. SPANGENBERG: It would certainly raise that to, I believe it would certainly raise it to a level for us because now you're getting some economies of scale with numbers, with costs, with processes, with

billing processes, with meter testing, with meter warehousing, you clearly get into some different questions in terms of economies of scale and what is practical from a standpoint of trying to ensure that the rest of the general body of ratepayers who do not want that option are not having to unknowingly bear some of these other costs. There clearly is an economy of scale aspect to this, and we don't believe, from what we've seen, that Gulf Power is at that point with this concern.

MR. ASHBURN: Bill Ashburn with Tampa Electric.

So I'm the rate guy up here; right? I do rates and cost of service, you know, in my off hours. So the costs you're talking about, these, these rate billing costs are all called customer costs, and so they're classified as customer in the cost of service and they're usually recovered through the customer charge. So all of us, to the extent our rates have been cost-based, all these costs are in the customer charge. So it's a component of that customer charge that the customers pay is the metering costs. What percentage it is probably is different for each of us. It just depends.

To the extent that you're asking which ones

are in, they're all in. There's nothing that's being recovered somewhere else. They're all through the base rates and summary card.

The point he brought up is absolutely excellent, that's what I was going to bring up. It really depends what the option is. Are we going to have one option that we get to choose? Is there an option that you're going to tell us to have? What -- how much capability are we going to have to have? Is it the same as we have now or more? Is it going to change over time? For those of us who have gone down the AMI route and are going to be starting to provide 15-minute billing data for residential consumers and they've got 500 customers who don't, are you going to eventually say -- the Commission is going to say, well, I want that type of discrete data for even the customers who opt out. Now that's a huge cost to go figure out how to do that on a matter that doesn't include some sort of a communications device that has RF as part of it. So those costs could go through the roof. It just depends on what the option is on what costs to tell you it is.

Around the country, a lot of Commissions are looking at this kind of thing and the rates, the costs are flying all over the place.

And just the other part that he brought up is

very important. To the extent that you make the cost that's imposed small, that encourages more and more people to do it. It's sort of a self-fulfilling prophecy, right, and it sort of defeats the purpose. The purpose is to get this data to make it beneficial for the system. And if you make the cost to do it low and more people do it, you're going to lose the benefits of having done it, putting in AMI and so forth.

So, but if you only, if only a few people are going to be opting out and you give them a full cost basis, it's going to be a very high cost because we're going to have to do very discrete, specific things for a very small subset of customers. That always ends up being very expensive. So it really depends, the two things are what it is we have to do as an opt out and how many people are going to elect it.

But we go back to what we all have said, I think, is that to the extent you, you mandate that we have on opt out option and someone is going to elect it, they ought to pay the full cost. Otherwise, they're being subsidized and all the other ratepayers will be losing the benefits of the system that we're putting in having to subsidize the cost of the people who choose not to participate in it.

MR. CLEMENCE: All right. Thinking ahead to tomorrow, when I get asked by the third floor here what kind of costs am I looking at as a potential opt out? I understand you guys have all given me the indication that you can't really give a number. An order of magnitude, a range, any sort of idea of where the costs might be? And if you need to identify a scenario to do that, I would be okay with that, as well.

MR. ASHBURN: I've been talking to other companies around the country who are doing this. And the range is anywhere and up. You have probably heard it, as well. I think 10 to $50 a month for residential consumers. It's a wide range, and it depends on what you're being told to do and how much subsidy is being mandated.

MR. OLNICK: I'll probably try to answer that one a little bit differently and kind of give you a different number. Again, it depends on a lot of variables. It depends on what solution would ultimately be agreed upon, numbers and so forth. And it would also depend on the time period that you would set to recover the costs, how you would design the charge itself as far as how you would spread how much would be in a one-time charge, how much would be a recurring charge on a monthly basis. There are just so many options there,

and I think we have seen many options out there.

So the point, though, is it does need -- the customers that are perfectly fine with the smart meter should not be paying that additional cost. They should not be burdened with that. I'll give you an idea of a magnitude. If I was to look at all the different costs that I have mentioned associated with systems, additional people, additional processes, and sustaining that for a long period of time over some multiple years of having to recover those costs, I would say that that total cost for a customer could be in excess of a thousand dollars.

Now, that is a number that you would have to use to say, okay, how do I take that and distribute that over what period of time, over how much per month, how much per single time charge. But to look at everything that would be involved to put all of those systems and technology in place, I would use that as an order of magnitude.

MS. TRIPLETT: Dianne Triplett with Progress Energy. And I don't want to give you a number. And I apologize, I feel and empathize with the position that you are in, but I don't want to just do what essentially will be throwing a dart at a board.

But what I will say is that it may be a

combination of not just a monthly charge, but also an initial charge. Because, you know, I think some folks are willing to, yes, I want an alternative, but then when it comes to, you know, show me the money, so to speak, then there may be some reluctance. And so I think perhaps an up-front charge would really show, okay, I'm really dedicated to actually having this alternative. But as far as what that would be, I can't really even give you even a range.

I would also say -- and this just adds to the confusion, but I think because it is so dependent on how many people you have to spread out the costs, I can't remember, but one of the presentations showed that based on some research that of the initial amount of people who say I want an alternative, and I want to be put on the end of the list and defer, once you introduce a charge, you know, some number of those folks are going to say, nah, no matter what it is, I'm really not interested anymore. I will just go ahead and have the, you know, whatever, the AMI.

And so you may even have to -- I don't know if is a sliding scale or something to basically take into effect that the number of people who initially say yes, and you base that calculation on those people, there may be other -- there may be customers who say I change my

mind. So then you have costs that are now not being allocated fully. Do you have to increase the charge? It just adds to the complexity, but I just wanted to note it.

MR. SPANGENBERG: I'll have to take a similar approach, Gulf will -- this is Ted Spangenberg with Gulf -- as Progress has just taken, and that is I don't have any idea, because of not knowing the type of alternative or the range, to be able to offer a cost.

I would agree with what was just stated in terms of the structure of a cost. I do believe there ought to be some kind of up-front fee, because someone might say I want to opt out and I want to opt out forever. And lo and behold, they are on for six months, and now if you try to structure all the monthly charge, the rest of the ratepayers are stuck, and our stockholders are stuck in some sense as ratemaking occurs.

So I do believe there should be an up-front charge, and then some type of monthly charge. And I believe what is used to calculate those should be a very conservative estimate of the number of takers that you will have. I also saw the presentation early this morning that reported as many as -- that the drop rate had dropped to 50 percent of expected. What I have

seen, as I recall, and I'm sorry I can't provide a citation, was much less than 50 percent who originally were on a list, and then who ultimately said I want to sign up. It was down much less than 50 percent. So I would think we would have to be very conservative about how many are going to take it, set the costs based on that. And then there is always the opportunity -- do you have more take it than you expected, there is always the opportunity the refund something. But that's really all I can speak to as structure. As to a level, again, it is so widely dependent. I'm sorry, we just can't provide an answer.

MR. CLEMENCE: Mr. Noel, I have seen recently, and you mentioned it earlier, that Lakeland is looking at the potential of an opt-out. Are you aware of what kind of costs or how they are going to recover those costs and distribute them?

MR. NOEL: I am not. We have also been looking at what it would take to do that. And Ocala at least agrees with Progress and Gulf about there are way too many variables out there to determine or nail down a cost. A customer could have the option of moving their service point to the end of their property, or there is an option where we could change the meter with a non-RF meter that is ethernet capable, or POT line, telephone

line capable, and there would be a minimum cost, but there would still be a cost. But those are the types of variables, outside of the back office stuff, where we would have to keep track of everything.

To really summarize, you know, we do agree with Progress and Gulf on what they said. But to summarize it, the rate for whatever this is, for whatever decision is made should be based on the full cost of providing that service that is requested by the customer.

MR. CLEMENCE: And to a point that was just brought up, I'll ask a couple of the questions here to hopefully expedite things a little bit. You just brought up a wired option. Did the utilities look at the possibility of having a wired option for their customers? And also at the same time, how would an opt out affect the cost-effectiveness of the program that you guys already have on the ground?

MR. OLNICK: I'll start that one off. Bryan Olnick, Florida Power and Light. As I mentioned in my presentation earlier, Florida Power and Light strongly believes that the smart meters are the right selection and the right technology to provide operational efficiencies and customer benefits today. Clearly having an alternative would negatively affect the

cost-effectiveness.

And as far as the second question, you had asked about a wired solution. I believe we may have responded to a questions earlier, I'll have to get you the details on that, that was a request. But Florida Power and Light uses multiple technologies, depending on what systems are involved; distribution, transmission, customer service systems. We use wire solutions, ethernet solutions, wireless solutions, microwave solutions, satellite solutions, all depending on what is the best technology to be applied for that specific solution.

We evaluated at Florida Power and Light for many years multiple solutions for smart meters. We evaluated wireless, wired, and we looked at all the solutions to make the right technology choice for a communication medium for smart meters. And in addition to that, we had a third party help validate what would be the best selection for a solution for our smart meter project, and the wireless mesh technology was ultimately the best selection for that.

We have done a considerable amount of analysis anytime we look at different kinds of technologies. We have looked at wired technologies for smart meters. We have look at fiberoptics for smart meters. And, quite

frankly, the costs for those are fairly exorbitant. That would be a factor of probably ten times the cost of installing a wireless type technology. Installing wired technology to 4.6 million homes would be very lengthy, very intrusive to either hang wire, phone line, fiber, or bury phone line and fiber to every house. It would take a very long time to do, and it would be very costly.

MR. WOODALL: This is Dan Woodall with Progress Energy. Just a couple of things to think about. It really depends on what you mean by a wired option. Here is a couple of things that we have thought about, and one is it has been mentioned earlier a customer provided dedicated phone line. The consumer self-provides this to the local Bell exchange.

I mean, it has the nice benefit of directly linking a major portion of the incremental expense directly to the customer. However, there are some back-office impacts, infrastructure impacts that have already been discussed by others that need to be taken into account, as well. So there would be some incremental fee associated with that, as well.

Systems would have to be architected to provide that alternate path into the data network, data management systems. But in addition, this approach

makes the automated reading dependent on a customer maintaining, you know, a phone bill now in good standing with the local Bell exchange. And so you would lose a little bit of the integrity of that process.

Disconnected lines would mean manual estimated reads. You know, potential bill and credit collection issues and progressive escalation that might result in you disconnecting it that way and resetting going back to a wireless approach. So there are some complications with that. However, I would want to point out that Progress Energy in its Carolinas jurisdiction has a little bit of experience with this. It predates -- like most of the things we have talked about, it predates the smart meter era and the smart meter concept.

There was an accommodation for accounts that did not want a manual meter reader coming around their property, and this was previously driven by large industrial farming. If you think about hog farms and chicken farms, sometimes when you have a disease outbreak there is real concern for foot traffic. Folks, you know, going from one farm to the other potentially spreading disease. And so an option was created, a rider for the customer to provide either a wired phone line or a wireless connection to automate their meter reading. So that has preexisted for decades.

And when we did our driveby rollout in the Carolinas, we did have a small handful of residential customers that elected to exercise that option. And I had a report run. It's actually 18 customers out of the 1.4 million in the Carolinas elected to go down that path.

And, two, strangely, because you have heard the testimony about the difference between cellular and the driveby, two elected to use a cellular connection rather than the driveby connection. So that's one option that might could be considered.

And then others have spoken to the company provided wire capability using PLC, power line carrier technology. This technology is certainly an interesting option. But it has been one that has held a lot of promise, but it has struggled maybe to deliver all of its potential.

Now, it typically connects to commercial wireless bandwidth much closer to the customer premise than the meshing technology, so you've got more access points, if you will, and therefore more associated bills, you know, coming from the cellular company. And that kind of speaks to the point, you know, FPL was making in terms of relative costs. But improvements in PLC technologies continue to be made and are being

evaluated, and advancing this technology approach forward requires a bigger view than just meter reading. It really is what are all the other things we could do, you know, with those connections. And so we would acknowledge that this proposition has challenged the industry to develop that comprehensive vision and really have the consumer and the regulator ready to move forward on all of those fronts, because that's really the best way to try and cost justify some sort of wired approach.

Duke Energy has been working hard to kind of pull forward in working with the vendor community and the peers in the industry, you know, in terms of their concepts around this. I would say they have deployed a PLC approach in Ohio. We are going to continue to monitor that, but I would say what we are doing with commercial AMI deployment using a mesh technology aligns with what they are doing, because in addition to that PLC approach for the residential, they are doing an overlay of a mesh to pick up their commercial customers.

So as that matures, that will certainly be something we continue to monitor, seek to understand, you know, the value proposition to do other things, scale other things off of that kind of infrastructure as we continue to monitor the AMR driveby as it reaches end

of life and we consider the timing for replacing that infrastructure.

MR. SPANGENBERG: Ted Spangenberg for Gulf Power Company. I'll try to be brief. I mean, we are not aware of any wired option that would meet our needs that could cost-effectively be put in. As we were evaluating systems years before we made our selection, we were aware of the differences in cost and capabilities of a wired system versus the wireless. And I think Mr. Olnick sort of made reference to the huge cost difference, the much higher cost of a wired system. You'd also run into issues as noted if you tried to use any type of phone line approach, anything that is customer dependent you run into issues about keeping that active. So it would not have been cost-effective for us to deploy nor would it be now to utilize a wired option.

UNIDENTIFIED SPEAKER: I wouldn't add anything else to what they have been saying.

MR. CLEMENCE: I'd like to take one second before we continue. We are getting close to the public comment period, so if you are a member of the public and you wish to provide comments and you have not yet taken a moment to step outside and sign up, please do that. It will help expedite and ensure that everyone gets

their moment.

Mr. Lawson, would you mind taking a step outside really quick to see if we have anybody else out there?

Before we move into the public comment section, we have got currently 12 people who have signed up. I'm going to ask that when you come up to provide your comments you keep in mind we have got about an hour and 20-ish minutes left, and 12 of you who have expressed a desire to speak.

If someone has made the comments you are going to make when you come up, please just echo their comments. We don't wish to limit anybody, but, you know, keep the 5:00 o'clock close time in mind.

I've got a couple more comments, but if we can start getting a couple of people in line. The first speaker will be Deborah Rubin followed by Marilynne Martin.

I would also like to make a couple of comments while they are working their way up here on post-workshop comments. Please use the agenda as a guide to questions that have been provided -- the questions that have been provided as the guide. If you wish to provide us more information, please feel free to expand and add any other information you wish.

Please submit those comments to me either by e-mail, WALTER.CLEMENCE, C-L-E-M-E-N-C-E, @PSC.STATE.FL.US, or you can mail them here to the Commission at 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399. And I would ask just for ease to either reference the smart meter workshop or send them to my attention.

Ms. Rubin, if you'll -- also, when you come up, just for ease of everybody, if you will just identify yourself.

MR. FUTRELL: And, Walter, before Ms. Rubin begins, I would like to express, I think, all the staff's appreciation to our speakers who took time to come and join us today. It was a very helpful discussion. And, again, thank you for being here, and we look forward to our public comments. Thank you.

MS. RUBIN: Hello. Amy name is Deborah Rubin and live in Tampa, Florida. Today I will not be speaking to you about mere concerns and do not wish to have my substantive facts referred to in that way. These facts are admissible under the Dobare (phonetic) Rules of Evidence.

As a founding member of the Coalition for Health Against Smart Meters, I asked for a full investigation and legally binding hearings where all

testimony would have been given under oath and the utilities and citizens would be given equal time. In these five binders I have evidence of substantial health and safety hazard to consumers and the entire environment. The PSC is charged under Florida Statute 366 to protect the public safety. Therefore, the PSC must address the health and safety hazards of smart meters and smart grid microwave radiation. PSC staff should review with their own lawyers, rather than utilities as they did today, to determine if the PSC does indeed have jurisdiction over all microwave emitting utility meters.

I am asking the PSC to sign for and put these studies in the official public record so that the public may be informed of a cross section of the body of peer reviewed science of evidence of harm. Further, I'm asking the PSC to assign these studies to a public health officer, as Florida Statute 501.122 allows, who will review them, consult with experts on all sides of the health debate, and then submit an official report and recommendation that will be placed on the public record, as well.

These five binders contain 82 primary studies, about 15 reviews, and about 20 expert reports and positions on the smart grid and meters. Each of the 82

primary studies has from 10 to 50 reference citations, so conservatively speaking, 20 citations per study, which would make about 1600 microwave exposure studies evidenced by this compilation.

At the urging of citizens, the Sarasota Board of County Commissioners asked the regional health department office to issue a report on smart meters and health. Mr. Reed of Sarasota County Commission, or health department, I apologize, I don't know which one, wrote an e-mail on April 16th, 2012, which stated, "I need evidence based on a nonenvironmentally slanted review of the problems associated with smart meters," and I ask you is there such a thing regarding health.

It does not serve the public interest with which the health department, the county, and the PSC have been charged for a health officer to write a report that is not environmentally oriented and based on the full scope of expert positions. World renowned biophysical expert Doctor Martin Blank, who has a 22-page CV of credentials, work, research, and expert testimony on the biological effects of microwave radiation said, and I quote, "I will focus on the science. Many of the scientists who speak to you are not scientists in the area that they are supposed to be speaking about. Physicists will say there can be no

biological effects for non-thermal radiation. Well, the fact of the matter is they have not read the literature. There is evidence. You may not be able to evaluate it, but it has been published, replicated, and judged by scientists who are capable of evaluating it. And the electromagnetic fields of a variety of frequencies can cause important biological effects including damage to some fundamental molecules and we have a fair idea of what the mechanism is." So based on that statement, which resounds with many other expert opinions, there is evidence of harm.

Furthermore, how do we know that the criticized FCC guidelines will not be exceeded in the homes and workplaces. Every home and every area of a home will potentially have a different level of exposure based on reflection and other wireless devices in use, proximity to radio and cell towers, and the home area network once it is integrated into the system.

FCC guidelines are based on the absorption rate, as we have already gone over, a six foot 180-pound man, and are based on protecting his body temperature from raising one degree Celsius. These guidelines are not protective of non or athermal biological effects, and they are not protective of children. Children are disproportionately affected by microwave exposure

because they are smaller, they have different body compositions, they have more readily dividing cells, immature nervous and immune systems, thinner bones, and a longer projected time of exposure.

And like our homes, every single one of us is different and will be affected differently by microwave exposure. A 2011 study, which has been replicated several times, determined that the specific absorption rate for a ten-year-old child is up to 153 percent times higher than that for an adult male. A child's microwave absorption to the head is two times greater, and a child's absorption in the bone marrow of his skull can be ten times greater. The FCC is considering reviewing their guidelines and has been urged to do so by the American Academy of Pediatrics just recently.

TECO's Mr. Caldwell said that they have twelve customers who have requested their AMR meters be removed and stated the way TECO has informed consumers about the meter changes. But almost every single person I have spoken with, including Representative Scott Claken (phonetic) and is aide Luke Given (phonetic), and he is the head of the Energy and Utility Subcommittee, had no idea on November 2011 what a smart meter was. At least that's what he said, and the same holds true for other legislators and regulators that we have been speaking

to. They asked us what it is, and we have to give them all kinds of background information.

So I would argue that there has been very little effective notification, and there has been little to no consent regarding TECO's meter changes. Most people are completely unaware, and uninformed consent -- and that would be uninformed consent. For informed consent you would -- we would require TECO to actually inform every consumer that there is a growing body of scientific evidence demonstrating harm from low level microwave exposure, and then see if they want the meter, because then you would have, you know, informed consent where they knew what they were agreeing to.

Mr. Valberg (phonetic) has said today that it is difficult to tell if a biological effect is actually an adverse effect, and we hear that a lot these days. And I as a consumer, and a mother, and a person can tell you right now I do not agree to my children or my own being exposed to the utility's microwave radiation because it is most cost-effective or for any other reason. And I do not consent to the effects that are demonstrated in the scientific literature whether they are transient or permanent because no one even knows.

So in the studies I have brought you today I have demonstrated immunological effects and changes in

the blood parameters, endocrine effects, neurological effects, altered EEG activity, cardiac and blood pressure disruption, et cetera, et cetera, you know, culminating in cell death and cancer.

The International Agency for Research on Cancer has classified radio frequency MFS as a Class IIB carcinogen. Doctor Bonn (phonetic), the principal author of that paper, said that it applies -- and I have an e-mail which is in the binders that he wrote to Doctor Hudson, and he says that that applies to all types of microwave, radio wave, electromagnetic fields, not just from cell phones. It's not true. People try to tell you that. It's anything. The physical agent is the radiation, not the device it comes from.

How are the utilities -- who are the utilities to tell consumers that the meters are safe? Although I think we heard them say today it can be assumed or whatever. They didn't actually use a first person or any sort of subject who is telling us this is safe. They are engineers, and they are not qualified as health experts to tell us what is safe and what is not safe.

And to my knowledge and experience, Progress Energy is not allowing anyone to opt out. As a CHASM representative, I have been called many times by their customers who are sick. I have an EMF meter, and I have

measured in houses in Holiday, Florida, and several other localities that Progress serves. There is electromagnetic radiation coming out, and the radio frequency field coming out of the electrical sockets at 1 to 2 volts per meter. Sometimes up to 7. It's coming along with the cool air from the AC through the ducts. We are getting 1 to 2 volts of radiowave radiation. So I'm not sure what's going on there, but I don't measure that it any other houses. And some of these people don't even have any other wireless devices but a remote control for their TV.

So I think there is something wrong with this system. I think you can't tell what is going to go on in every house, and maybe you have some kind of system problem. I don't know. I think it is a problem in that it is making people sick.

The cell tower studies I have included in these binders are relevant, because the radiation level in these houses that Progress Energy is serving are higher than 100 feet from a cell tower. Now most people don't want to live 100 feet from a cell tower. How would you like that right inside your own house, because that is what these people are living with.

And as long as we're talking about people not consenting, the people in Holiday that I have talked to

never even knew they were getting the meter. They don't know when it was switched. They didn't know they had it. One man had no idea. He had his workbench set up underneath the meter outside, right in front of it. It was about like this, and he was working on his bench. He now has a neck tumor, and it's cancerous, and he's not expected to live. And it would be a coincidence, you know, but he worked there for months and months, maybe years, I don't even know how long, right in front of that meter never knowing it was emitting microwave radiation because no one told him.

So people need to be informed. I think you are supposed to stay 20 centimeters at least away from a smart meter. I have seen many fully, like, access even to children. Eighteen meters on an apartment, and a little like area, kind of woods behind it, it's an open area. It looks like a place like I as a kid might have liked to go play there. Kind of, like, dug out and hide. Anybody could get in there.

So there is a danger in not being informed. But I think the bigger danger is that these meters are wireless, and they could be wired. Wired meters are available. They are safer, more secure, and more reliable.

I have to believe a wired system is always

going to be more reliable than wireless. It might not be cheaper, I don't even know, but I don't think that's the main point. In the interest of the public and health and safety, the PSC should insist that the utilities wire the meters and grid no matter how many complaints they have. Because the PSC and the utilities should be legally challenged if they respectively allow or coerce consumers to accept against their will a Class IIB carcinogen on their home as a prerequisite for electrical service.

You know, this is against people's will because they are informed, and only having an opt out for those that can afford it is discriminatory. The poor people are going to have to take it, because they are not going to have a choice. They can't afford $20, or $1,000 down. I mean, that is just -- it's outrageous. And it won't protect the rest us from the infrastructure anyway, because the infrastructure is also radiating. And this is a bad idea. We shouldn't have to pay to fix it, if you guys made a mistake in your planning and didn't consider all the research. That's not our fault.

CHASM hereby calls for an immediate moratorium on the smart grid and meters, and for a full investigation and legal hearings regarding the smart

grid and smart meters. (Applause.) No savings and cost is worth the cost of a single life or livelihood. This is about doing what is legally correct, morally responsible, and safe for the environment and for people, not about the number of complaints. That shouldn't be the issue. Is it right or is it wrong; is it safe or is it not? And I'm asking you to accept these studies, to sign for them as they are valuable and a lot of hard work, and I think they are valuable information that is not being considered.

If anyone can read through those five binders of studies and think that there is no question that they are safe in their own home if they have a meter, an irradiating infrastructural grid all around them, besides what they are already exposed to, I can't imagine the logic. So I'm asking you to please sign for these. Accept them. Assign them to a health officer to do a thorough investigation as a health officer can. Someone who knows the science, can find the experts on both sides, get a fair opinion, and then write a report and recommendation. Thank you.

MR. CLEMENCE: Thank you very much. Up next is Marilynne Martin, who will be followed by Stephanie Austin.

MS. MARTIN: I'm from Venice, Florida. I have

only been in Florida two years as a full-time resident. I am not affiliated with any group. I am here today because of this. When I heard about the smart meters, I went to find the meters, and here we have a bank of ten meters. The next building over, which is 20 feet away, another bank of ten meters. So they both face each other.

Now, what is behind that meter is my bed. So inches from a bank of ten meters. I said I had to find out what was going on. So I spent the last two months, two or three months, 10 or 15 hours a day on the Internet. Not on Kevin's blog, but on very reputable sites. As she said, the American Academy of Pediatrics. You want to call them kooks? Okay. You cannot research the FCC standards and not come to the conclusion that they do not protect the public, okay, from this type of radiation. Okay. From the GAA report to many other things that I have put them in written comments because I didn't think we would have enough time to talk about it, so I'm going to submit this today.

But what I want to talk about is something that people are missing, and we can't even figure out today who approved this. Who approved this? I do not have a contract with you. If so, please FPL, give me the written contract. So how is electric utilities --

and I have a utility background. I was a corporate controller for many multi-billion dollars, and I worked 11 years with NYNEX, and two years with Coopers and Lybrand as their external auditor. I handled divestitures, so I have been -- you know, pretty complicated issues. Okay.

And when you look at this, okay, who approved it? You didn't say you approved it here. Did the Commission approve it? You approved costs. Franchise agreements, right? Electric utilities are allowed to operate under a franchise. Did we get a new franchise agreement? Okay. We didn't get that, either.

So, easements. I look at my easements. You have an easement, and this is what we currently have today prior to smart meters. What we have is a transmission line coming into the home, and we are required to have a meter box and we have a meter, and that meter measures electricity.

There has been with this grid and without any approval a fundamental significant change, because now what is being placed on my unit is not a measuring device, but network equipment. This isn't just reading my meter. If you were putting a digital meter on my home with a wire line in to take a read every hour, I would have drove 348 miles to get here today, okay. And

I would not have a problem. I have no problem with digital. But you are putting your network management system on my home, and you are fundamentally changing the existing relationship we have had as customers, and I didn't have a piece in the negotiation.

A Sarasota County Commissioner actually told me they voted not to get in between the agreement with FPL and the customer. So, FPL, will you give me the written agreement? When did you come to my home and negotiate this? Never. Okay. So you are not doing a meter read. You are managing your network off of my home, okay, and it kind of violates my Fifth Amendment rights, I think. A legal taking to put your network on my home. But that wasn't the agreement that customers have had with their utilities for a hundred years.

When you look at proof, you have provided it in this presentation. If you go back and watch these. You have said constantly you are a managing your network. These meters are talking to each other. Currently my analog doesn't talk to anybody, and if you just gave me a digital, it wouldn't talk to anybody, so you are fundamentally changing that, okay. What happened in California? Did PG&E volunteer any information? No. Did FP&L volunteer any information today? No.

I looked that their data requests, Walter, okay? I didn't print it, because I would have used a whole black ink cartridge printing that one document because everything was redacted. Everything is confidential. Well, let me tell you what California found. This, oh, it only does a few meter reads is not true. Well, it actually was true, because under a judge order when they submitted their 900 megahertz radio did six meter reads. That's the average meter. Network management, 15 transmissions. Time sync, 360. What's the problem? Mesh network message management, 9,600 transmissions per day. They were also asked to provide the maximum, six meter reads, 30 network management, 360 time syncs, 190,000 network mesh managements. Okay.

It's a whole different transaction, and the public was never involved. I think the franchise -- I have to get ahold of the franchise agreement, but they should have went to each franchise and negotiated something because this is the real truth. They are always on. If you ask them to put a sound or a light, what you would see is constant flickering all day long. Plus the fact some are the collectors, which is what this 190,000 is, and some are not. Everybody is playing a different role in this network, and at least we should be able to get in writing what our role is. How many

transmissions. Okay.

The opt out causes a problem for them because they are basically going from -- one house will send a message, the next sends a message on until they get to these collectors on poles somewhere, okay. So it messes them up. That's why they don't want to do it, okay, because we are part of their whole collection, and it's a whole different environment, and it needs public scrutiny.

So I'm asking for public hearings. If this is so safe and everything is what they said, then they shouldn't be afraid to get before the public in some forum, okay. But what has happened here is a travesty.

Ditto, I won't repeat all the health things, but I found what Ms. Rubin just said to be true. There are plenty of things out there that are saying, "Danger, Will Robinson, danger," okay, particularly for children and pregnant woman.

Go to www.antennasearch.com and you can get a free antenna search, okay. There are 41 towers within four miles of my house and some of them, two are within a half mile. There are 133 registered antenna. We are blanketing the world, okay, and our neighborhoods with this RF. So will somebody here certify to me that the human body has an unlimited capability to absorb RF

radiation? If you have got an expert, I'll shut up. But I think there is a limit, and I'm not willing to give up a portion of that limit for a meter read, okay. I'm just not willing. I will give it up for emergency fire, emergency techniques, do an X-ray on the scene, wire that sucker into the hospital, save that life. But for a meter read? Kids are playing in compounds right next to these meters, okay. They could be putting their heads up against them. I think we are crazy to allow this for a meter read, okay. And if it costs more money to wire it, I don't care.

You have been in my wallet my whole life. Come in again. But what right do they have to put pollution into my home? Opt outs don't work because, as you can see, I don't want the radiation. But I opt out of one, what do I do? I got nine of them. I didn't solve my problem. And when they say they have to charge, what do you think neighbor five units down is going to say. I'm not going to pay $100 for you. They are a safe distance, okay.

So what is going to happen to us multidwelling families that have this situation and you do an opt out? Some people have 30 of these. Picture the crib behind here and tell me that's safe. Give me in writing that's safe, because I don't think it is. And safety is a

matter of how you look at it, and Santa Cruz looked at it differently. So they may say it is much safer than a cell phone, but when you go and look at Santa Cruz Public Health Department, not Kevin's crazy blog, you will find they found when you looked at whole body exposure it's 40 times more than a cell phone.

Now, what are we to believe? Well, Walter, you're not an engineer and a doctor. I'm not either. Can we have public hearings? Because this is not the right forum. You have industry in here. This is like tobacco. Smoking is perfectly safe. There is no studies -- how many years did we listen to that? So we need to get under sworn testimony and look at all the issues, because it's 40 times higher and the public needs to know that.

And they basically said that it doesn't. The EPA says that the current FCC standards, and I have a quote from them, too, in the letter, and you can read it -- does not -- it's being used to generalize all situations and it shouldn't, okay. And I provided that letter in quotes from it.

Oh, here's the quote from the EPA. "The FCC's exposure guidelines is considered protective of effects arising from a thermal mechanism, but not from all mechanisms. Therefore, the generalization by many that

the guidelines protect human beings from harm by any and all mechanisms is not justified." So it's great that FPL said it meets FCC limits, but the literature out there says the FCC limits do not protect the public. So what and who is going to protect Florida? That's my question. I'm very disappointed that the Florida state health department and the EPA did not show up here today. That they weren't consulted, okay, by the Commission or anybody. But we need to figure out who approved this and what written contract are you going to give me to put everything in writing so I have it as a legal contract.

And regarding privacy, I looked at, like, the Colorado report. Somebody did a report to the Colorado Public Utility, okay, and there is software out there based on poles, you don't need a smart appliance, that can tell you what you are using in your home. So what I want in writing in a contract from FPL is I am only taking Marilynne Martin from 1:00 to 4:00 p.m. or whatever. I only have this information. You used two kilowatts. And I want that in writing. Not 10:00 to whatever.

If you look at the words, it's usage. Well, what is the definition of usage? To me that is the definition. That's the only thing you would have. You

have no detail wattage or voltage or anything else, just the number of kilowatts for those hours, and I'm fine. Then there are privacy issues. But there is software, and go look at that Colorado report that people have built. Why did they buy it? Why did they build all this, okay? So they may be taking more information, and the public has the right to know exactly what they are taking and then get that specifically in writing. And that's my feeling on the privacy issues, because it's not like they are just crazy. They know your refrigerator; they can tell by the usage of the voltage being pulled.

And then one final -- I have a lot of things, but final item on the opt-out cost. You know, these meters contain a ZigBee chip. And you need to spend a lot more time on the ZigBee. Because what is planned, why do these meters have it to begin with? Why am I paying -- you talk about all the costs that people are going to be associated, why did we pay it all for the ZigBee chip? What is the cost of the meter with and without it? Because I'm going to tell you, I'm not going to use those services, okay? I'm going to opt out. Now, why do I have to pay for it to begin with, and all the associated dash boards and everything else. Look at those costs that the people that are opting out

are paying for. But that ZigBee chip is dangerous, because that ZigBee chip -- what's planned is they are going to put chips in the refrigerator, the washer/dryer, the dishwasher, the hot water heater, the air conditioner, and they are planning to wirelessly talk to that meter.

Now can FPL tell me that it's programmed that with GE, maybe GE can tell me, did you program that refrigerator five units down to send that signal out the front door, go five hundred or a thousand feet and find the meter, or is it just going to go into everybody's house? And this is the problem with all this wireless because you can't opt out of that. Thank God I'm not electrosensitive. You can't not -- you know, that signal doesn't know how to bypass other units. It's going to be coming through. So it's not a matter of just the 900 megahertz sending meter reads and managing a network, but then you are going to have the 2.4 megahertz, okay, and it's going to talk to six or seven appliances.

Now, take that kid, all right, in that unit with 40 of these meters and two transmitters, so that's 80 transmitters, okay, and the meter reads and the network management, plus then all the refrigerators coming into play, and the dishwashers, and heaters, and

whatever. What is and who can tell me the total exposure that child is going to get?

And one final point. You don't know what's behind the wall. You don't know what that person worked eight hours next to a router at work and then came home and has a wireless, you know, router at home, a cordless phone, a cell phone, et cetera. So that's why this is dangerous. You don't know the total exposure of that person per day, and that person is responsible for the products they buy, but you shouldn't be able to pollute the home.

But I have much more information in here, and I would like to submit them. I don't who I give it to. The only alternative is a safe wired alternative.

MR. CLEMENCE: Thank you very much.

Next up is Ms. Stephanie Austin to be followed by Art Levy.

MS. AUSTIN: Ladies and gentlemen, I believe that you are good people at heart --

MR. CLEMENCE: Ma'am, I'm sorry, I can't hear you. Thank you.

MS. AUSTIN: I believe that you are good people, and I ask one thing of you, and that is to first do no harm. I'm going to -- I made a list as you were speaking on the things that were not brought up today,

and I'll try to be quick. This is increased radiation from the appliance chip, reflectivity, humidity, or water conductivity, hot zones around Florida. And we are getting reports -- we have had two recently of hot zones.

One recently a woman and her son and their pets just abandoned their home. This was with Progress Energy. And I'm asking you to help people like this that need their meters removed. These are people with multiple exposures, maybe from cell towers. One woman is getting a pure tone. We are getting reports like this. We have another one down in Broward County. I'm not a scientist; I'm not a doctor, but we are hearing these reports from people. What are we to think?

Ground currents. Another issue that is not being brought up. I spoke to Doctor Sam Millham (phonetic) about this, and it's difficult to measure, but this is something that needs to be addressed, as well.

Explanation of time averaging. I'm really tired of the meter is often dormant 99 percent of the time. That is not correct. In California they were forced through court documents to show what the interval was, the meter interval. We're not talking about the companies that are lined up to mine and monetize our

data. Also it was mentioned about no two homes having the same measurements. How can you ever tell that?

Emissions from the infrastructure, or routers, or home area networks, or -- not that, I'm sorry, the neighborhood area networks. I don't want to live next to those things and I don't know what they look like. We need disclosure there, too.

I'm just hoping these huge poles and these little odd looking boxes and contraptions that are up and down the street in front of our gate area, I want to know. I hope that they are exposing my neighbors that live near the road.

The lifespan of the meter. How often are we going to be charged for new meters every few years? Collector meters. I'm not able to get that information.

Collocations. That information was very vague, as well. These are not proven to be cost efficient or green, according to the Connecticut Attorney General.

The true wattage. In California they found the meter was not one watt as written on the meter, it was sometimes 2.5 watts, or I have heard up to 4 watts. You know, we have nowhere to go for the truth on these issues.

And then also we are hearing now that the

energy dashboard really is not -- it's a failure. People are really aren't using it. But of major concern is that the first generation of children born in these last few years are facing multiple levels of exposures from WiFi at home and school, wireless toys, you know, cordless phones, cell towers. It's just multiple layers of exposures. And the human genome, there is some indication to show that generational damage is possibly occurring.

Once again, I'm not a scientist, but could this be a link to autism or Alzheimers? We don't know. This item was rushed to market without testing, and the studies that we do have out there, they are being ignored. There are thousands -- I've got a couple thousand studies. Debbie worked months gathering the data that we are presenting. I did look at FPL's engineering binder that they are presenting to various commissions. Engineering reports from Sitesafe (phonetic), and EPRI, and whatever, CCST, those are not health studies. Those are engineering reports.

Doctor Carl Merit (phonetic) -- I have been reading various declarations against the CCST report. Doctor Carl Merit speaks about how the human body is not meant to be exposed to pulses day and night. At night the human body is supposed to be in repair mode. Doctor

David Carpenter approached the FCC, and they really -- it has been proven that they are not a health agency. The FCC doesn't do testing. They rely on outside industry friendly agencies to set standards for them.

We are not getting the whole facts here, and please stop relying on the FCC. These 15-year old outdated studies that they are relying on are just not relevant in today's world where we are exposed to multiple layers.

But, I, too, am calling for immediate and full legal centrally located hearings regarding the grid, as well. And also I want to say, too, that it took 40 years to prove that cigarettes cause cancer and lung disease. It also took 25 years to prove that children, unborn children were damaged by X-rays. I'm not willing to wait. I am not willing to wait.

My son is running for office in Los Angeles County, and I'm hoping that he will be one of the legislators that will help bring, you know, a stop to all this madness. But I'm asking you to do what is right. We need to have full legal hearings. We need disclosure. Thank you. (Applause.)

MR. CLEMENCE: Thank you very much. Next up is Art Levy followed by, and I'm sorry, I'm probably about to butcher your name, Roger Gangitano.

MR. LEVY: Well, good afternoon, everyone. Thank you very much for holding these hearings today.

First of all, I would like to thank FPL, my provider, for great service and reasonable rates. I've had about twelve outages from hurricanes and storms, and they have very good at restoring power. And they have also allowed me to keep my analog meter. I happened to be there. I was well aware of the analog meters being switched out, and I prevented them from doing that.

I see we have a lot of power company executives here. I wish we had invited the CEO of Pacific Gas and Electric, the largest electric company utility in the United States, Mr. Anthony Early, who said, "We need to listen to our customers. Why should we be fighting with our own customers over something like this?"

I don't hear any of that kind of attitude from any of these gentlemen over here. And incidentally, they have allowed an opt-out program where people who do have a meter, an analog meter can keep it and pay $10 a month. I believe you pay somewhere between 70 and $100. If you have already switched out, they will reinstall your analog meter.

Through no fault of my own in 1995, after the U.S. Telecommunication Act was passed and cell towers

began sprouting up all over the country like mushrooms, I suddenly developed a sensitively to radio frequency. I never bought a cell phone until last year. I can't have a satellite TV or a cable TV that's digital, or a computer, or a microwave in my home. It just annoys the hell out of me.

In fact, when I want to look at the Internet, I don't get on my smart phone like you folks do. I have to write down what question I want and wait two, three, four, five days to get to the library when it's open at night when I can go in there after work. I recently had to buy a cell phone because they have pulled all the payphones out. You can't make any emergency communication. And I made a sheet for it by cutting up a TV dinner that reflected microwaves from a microwave oven to brown the thing, and I surrounded that, and then I found carbon fiber that absorbs microwaves and converts it to heat, and I made a safety protective thing for it. But I never keep the phone on. I only use it for emergencies.

Now, I understand the benefits of the corporations of these smart meters, but individuals should be allowed to opt out, especially people like me who are sensitive to radio frequency. FPL has an outstanding phone service where I can dial even from

another phone the number of my home phone, it will tell me my name and my phone number, and then it will offer me a bunch of options of what the problem is. Is the power out, can I do this, can I do that.

They need to add option number three, where I can read my meter myself and punch it right in on the telephone, case closed. That's it. They don't need a smart meter. They can all be done by the individual. In fact, when I lived in Washington state years ago, I used to pay my electric bill that way. The bill would come from the power utility, it would just say how much are you paying. I would that down. And then you flipped it over, and there was a meter system, and you simply put pencil marks or a pen mark where the meter was, and that's how they calculated your next month's reading. It's not rocket science. It's pretty basic.

A thousand dollars to change back? That's insane. You folks sound like you are reinventing the wheel here. This is a technology you have used for 20 or 30 years. The only change is that you would have to hire back some meter readers and provide some more employment for people in this state who could certainly use the jobs. (Applause.)

And by the way, FPL maintains a separate phone and customer service system in Miami where I live for

Spanish-speaking people, and I have to pay for that. They don't make the Spanish people pay for that as a separate add-on at the end of their bill.

Now, for those not willing to read their own meters, I would be willing to follow the lead of PG&E and go for a sensible price of maybe $10 a month which would certainly be a decent wage for a minimum, you know, a basic type job. If they could get to one meter an hour that is $10 an hour and read that. But I think most people would be willing to do it for free if they could just offer that option.

Now, on the rate hearings that I saw on TV several weeks ago, they mentioned that FPL was getting a return of 30 percent on their investment per year. That's a pretty good deal. I'm getting less than one percent from my bank. I think if FPL did something like reinstate this system, they could still get a return of 29.995 on that investment, and they wouldn't be losing that much money. They are not going to have to charge me $1,000 for reinventing the wheel that they have been using for the last 30 years.

Now, with all due respect, every one of these gentlemen here has misrepresented the amount and duration of radio frequency in your home. It's not 15 minutes of a cell phone is the equivalent 1,000 years of

their meter. I'd like to bring you back to high school science, if you will. If you remember, the science teacher got up in front of the class with a tuning fork and he banged it and it started to ring. And then he brought it over to another tuning fork that wasn't ringing, and within about three seconds that other fork started to ring. That's called resonance. That's the transfer of energy from one thing to the next.

And I'd just like to read something here. When a chip vibrating at 900 million times per second impinges upon a conductor such as the main wiring going into your house, it couples to that conductor, travels along it, and induces an electric current on the surface of that conductor by exciting the electrons of the conducting material. This effect, the skin effect is used in antennas. So, in effect, when these meters are in operation, even when they are not powered on, there is a chip inside that's vibrating at 900 million times per second. Million times per second.

And that energy is going to be transferred into the electric line and now everything plugged in in your house is going to be picking up on that vibration. Your clock, your TV set, your air conditioner, which is consuming 14 amps of electricity. So all that information is going to be going in. And for most of

you it won't matter at all, but for me it will be making a big difference.

I voluntarily don't use all the conveniences and luxuries of living in this modern time, because I'm sensitive to that, and I do not want my meter to be introducing that energy into my home. It will be a constant continuous exposure from every particular appliance.

Now these gentleman that were talking about the FCC, I would like to remind you that there are billions of dollars in radio frequency products; cell phones, computers, security systems, the stock market has all that money riding on it. There is retirement funds involved. State funds involved. They are not about to say, oh, these things are dangerous. We can't allow that. It's a perpetuation of the entire cycle. They have to approve that, and that's what it's all about. They are not going to be setting safe and reasonable limits, because a lot of these devices will require shielding to make them safe and reasonable.

During the cold war the Russian scientists developed radar that went over the earth to detect incoming American missiles, but these same scientists refused to sell microwave ovens to their own people. In fact, they didn't sell them until they were made very

much safer than the microwaves that we were selling at the same time, because that was a Communist system and they didn't have profits to deal with.

Here is another government agency. The one that produces the food pyramid. You've seen it. You know it's on all things. They change it every couple of years. Right now they are saying eat more fish, less red meat. Eat more fish. But the EPA says that there is a substantial amount of lead in the fish from all the power plants in the midwest dumping mercury into the east and that gets rained down into the oceans and the fish ingest it. So they are saying substantially restrict the fish. And if you go on-line, you will see that you are only supposed to eat tuna like once a month. But yet this other government agency is telling you to eat more fish. So who's right?

The Department of Defense for years, for decades said, oh, Agent Orange is safe, don't worry about it. Now they have come around. They admit that it was a cancer-causing thing. And now they are saying depleted uranium is safe. So who are you going to believe?

The World Health Organization said that radio frequency is a cancer-causing agent. Doctor George Carlo (phonetic) was hired by the cell phone industry to

produce a report saying that cell phones were safe. He came to the exact opposite conclusion. Thirty years ago it would be laughable to think that cells and tissues communicate with each other using radio waves, but today we know that that is true. And Doctor Carlo showed that radio frequency devices interfere with these communications. And just briefly, he writes cellular energy is used for protection of the cell rather than metabolism. Cell membranes harden keeping nutrients out and waste products in.

Waste accumulating in the cells creates a higher concentration of free radicals leading to both disruption of DNA repair and cellular dysfunction. Unwanted cell death occurs releasing micronuclei from the disrupted DNA repair into the fluid between cells where they are free to replicate and proliferate. This says Doctor Carlo is the most likely mechanism that contributes to cancer. Damage occurs to proteins on the cell membrane resulting in disruption of intercellular communications. When cells can't communicate with each other the result is impaired tissue, organ, and organism function. In the blood brain barrier, for example, blood brain barrier cells can't keep dangerous chemicals from reaching the brain tissue which results in damage.

This is the Florida Public Service Commission.

It's not the Florida Corporation Service Commission, so please do the right thing and allow us to opt out of these dangerous radiation devices. And I would like to thank the Public Service Commission and Walter Clemence, who responded to my letter to Chairman Brisé, but I am extremely disappointed that none of the actual Commissioners are here. I took three days off from work, rented a car, drove up 500 miles and back down 500 miles tomorrow with $4 a gallon gas, spent two nights in a motel. I'm going to be spending $400 of my money for this five minutes of testimony.

I watched five hours of hearing on TV about the FPL rate increases to familiarize myself about how this process worked. I saw at least three Commissioners there at all times in different locations, and I believe these smart meters are far more important for many reasons, and I am very disappointed that not one of the Commissioners is present. Thank you very much and I appreciate your time. (Applause.)

MR. CLEMENCE: Next up is Roger Gangitano, and, once again, I'm sorry for I'm sure butchering your name, followed by Terri Fulton.

MR. GANGITANO: Hi. My name is Roger Gangitano, and I'd like to say thank you for hearing us today, the Public Service Commission staff, the

manufacturers, and all of the power companies that are here. And by the time I'm done, okay, there is an expression that says that a little bit of knowledge is a dangerous thing, so by the time I'm done I think I can convince you all that I'm a very dangerous man. I have very little technical information to provide.

But it comes to my attention, okay, that the power companies came here today armed to the teeth with PowerPoint presentations, they pitch their wants and their desires based on their monetary gain, and the benefit that they have been claiming that's coming to the customers that we're going to get this dashboard, okay, and we are going to eliminate the cost of a meter reader. Pretty much everything else, okay, is to the benefit of the power company.

I don't need a dashboard. I know when I turn my lights on. It has come to my attention in the little bit of investigation that I have done into smart meters that the whole purpose of this is to go to time-of-use billing. And I have listened today that these meters do not do time-of-use billing. Well, when will that occur? As soon as we get all of the meters put in? So it will just be a turn of the dial, and then we have time-of-use billing, so that is the purpose of putting it in.

It has been said that it is going to provide a

benefit to the consumer financially. There is no study that I'm aware of in the investigation that I have done into this subject. The smart meters have never produced a savings to the customer. The only thing that provides a savings to the customer is a change of usage and their pattern.

It has been said today, one of the things that I leaned on that I found very interesting was that the system, the smart grid ultimately can determine what appliances you are using in your home and provide information like that. I specifically heard either the manufacturers and/or the power companies say that that is just not possible. Well, then, I think that either the comments that were made here today at this workshop are incorrect or the Congressional Research Service report that I read is incorrect. And if that's the case, I think that all of you gentlemen with all of your wisdom on this subject should go after the Congressional Research Service who put that report out with the chart, okay, that has got all the little squiggly lines from the oscilloscope on there that says this is your refrigerator, this is your kettle, this is your toaster oven because it's right in the Congressional Research Service report. And that is given to Congress and committees of Congress and they accept it. So

apparently that comment is incorrect. The system can determine exactly what I'm using inside of my home.

The deal that I have -- that I understand with the power companies is that I pay for the amount of electricity that I use. Pretty much in my line of thinking that's all you have the right to know. I don't think that you have the right to know what appliances I'm using it on. If I'm doing something in my home that is illegal and I'm using power for something that is illegal like these drug dealers do, and they have grow houses going, then a police or a court order will allow to determine how much usage is being used and you can determine that. It's not necessary to have a meter reporting on me every minute of the day and adjust my billing so that when it's most comfortable for me to use my electric you are going to charge me more for it. I don't think that that is proper.

You're claiming that the meter transmits only one minute a day. There's reports that says that that is just not true. So you should address the reports, okay, that say that these things are transmitting 24,500 times a day. I heard today that the meter reader drives by your home and the meter transmits to the truck and that's how they are going to get that. Well, that's a pretty smart meter that knows when the truck is going

by, because I don't think that the meter transmits just when the truck goes by. I believe that meter is transmitting all the time, and when the truck goes by he gets the signal that is coming from meter.

It has also come to my attention that the meters don't transmit from the meter to the truck or to the cell tower that is getting this signal, okay, it goes from meter to meter. So the meters are cumulatively building up this information. So if you say that the meter transmits 24,500 times a day, well, then you can double that number if it is only getting a signal from other meter. But it's not; it's going from meter to meter to meter to meter and then finally to the power company.

The power company can assemble the patterns of usage. That's the thing that bothers me the most, okay, because it's the pattern of usage that you determine and the amount of data that you hold. You don't need to hold any of my data to bill me. All you need to know is how many kilowatt hours of electricity I use per month. That's it. If I use 1,000 watts, or kilowatt hours, you bill me for that, and for intents and purposes you can keep the billing history on that and that's it. You don't need to know that my refrigerator used it.

There's a subject that has not been brought up

here today. And I'm not a kook. I try to pay attention to what's going on. You have got some situations going on in the world. There is dialogue about one world government happening, Agenda 21. The smart grid locally ties to a regional grid and the regional grid to the national and the national ultimately will be tied to a global grid. And that frightens me, because I don't really want the UN making a decision about anything that happens here inside the United States. (Applause.)

One of the other concerns I have is Agenda 21 and all the associated issues that go along it. And I feel that this technology that you are shoving down our throats, okay, leads us into that type of a world. I don't need a one world government, and I don't need a meter on the side of my house being smart. I like the dumb ones -- (Applause.) -- that just know how much electricity I'm using, because that's all I'm paying for.

I went to my county and my elected officials, and I did the best I could to follow the process that I believe exists for folks like me. And I and a bunch of other people managed to get our commission, after much debate we managed to get our commission to come out with an opt out for Brevard County. I went back after that, and I spoke with each county commissioner, barring one

who would not meet with me. Surprisingly enough, that was my county commissioner in my district, okay, but the others did meet with me. And I brought some information up that apparently I didn't think that they had.

I was able to get them to amend the opt out to an opt-in resolution, that the consumer if they want this device should opt-in to the program. And I was very happy about that. So I called Florida Power and Light, and I asked them, I said, you know, they just passed this opt in thing. They amended the opt out to an opt in. I said how does that effect the installation process now that you have? And the person on the phone told me it doesn't. We don't recognize either one.

So the installation process after the people go and get opt outs and opt in resolutions from their county commissioners, Florida Power and Light, the power company could care less. We are just wasting and spinning our wheels. We're not doing anything that is going to be effective. It doesn't change the process at all.

We have listened today that the process is almost complete in -- is it Volusia County? One of the counties says that the installation process is almost complete, yet any of the questions that came up -- I believe it was you, sir. I apologize for not knowing

your name -- said maybe we should investigate and have a study on that.

Well, while all of the studies are going on, the meters continue to go in and they continue to go in. And I think I heard that the meters are 75 or 80 percent complete in some of the counties. Well, while the study is going to go on, assuming that that was approved upon, the rest of the 20 percent goes in, and then we have got 100 percent, and we're going to be billed. Anybody who doesn't want the meter, we're going to be charged because we don't want a meter.

Well, I went back before I came here, and I went to some of my county elected officials, and I have from the Board of County -- I beg your pardon, the Brevard County Board of County Commissioners -- from Chuck Nelson I have a request from him, okay, that you pay attention to all the preponderance of scientific evidence that exists and you hear the public's plea.

I have from -- I'd like to read this one. This is one that I appreciated the most, okay, from Commissioner Trudie Infantini. "As a Brevard County Commissioner, I'm writing you in support of the many citizens who have serious concerns regarding smart meters. In response to many citizen concerns and requests for a resolution, I originally brought the

smart meter opt-out resolution before the Brevard County Board of County Commissioners in May 2012. Subsequently, a citizen's request came before our county commission asking for the opt-out to be changed to an opt-in, Resolution 2012-132.

"We requested the Public Service Commission conduct public hearings. I request that the Public Service Commission place an immediate moratorium on further installation and activation of smart meters until such time that the concerns regarding health, cyber security, and privacy have been fully answered and the safety of the public is assured."

It is also imperative that a determination be made regarding the smart meters possibly violating federal law. And I believe what is being spoken about there is the EP Act of 2005 and the EISA Act of 2007. I believe that that is what is being spoken about.

I have a letter of support calling for -- this is from Representative Ritch Workman, our state representative. He is in full support of calling for an opt-out and/or an opt-in resolution, and he believes the opt-in is in concert with the intent of the Environmental Protection Act of 2005. I think that is phrased improperly. I don't know if it is the Environmental Protection Act -- Energy Policy Act.

Okay. I'm sure that's an oversight on his part, but the intent is there.

So the point is that our elected officials when people go to these elected officials and we get their support, the power companies have the authority to just ignore what is being said. So we turn to the Public Service Commission as it's your responsibility, as I understand it, to protect the people. And I call upon you to do that.

The meters are being forced upon the people. Most of the people who have smart meters have no concept as to what they are. I mean, I watch the news, and they have interviews with people that don't even know who the president or the vice-president of the United States is, let alone a smart meter. So the meters have been put in. They call the homes and they say we are going to upgrade your system. Well, what person in their right mind would turn down a free upgrade. So that's how they put the meters in, and yet all of these questions and concerns and scientific reports are ignored or sidestepped.

I challenge you, go look at the Congressional Research Service report that specifically has the chart that indicates that you fine folks can determine what my appliances are using, because each appliance, electrical

appliance has a signature. A load signature, I believe, is what it's called. Here comes that dangerous guy with the very little technical information. But I believe that that is what it's called is a load signature. And the chart that I was looking at indicates exactly what that was, just like Peak 37 (phonetic) in Medicine Man, he can identify every appliance in my home as it's being used. And specifically I heard you say today that that is just not being done at this time with these meters. So tomorrow, after the meters are all in, then you turn the dial up and that's when you get it all. And you're holding all of this information.

I'm sorry, but I don't feel that the concerns and the safety of the public is your primarily concern here. I believe it's revenue generated and the object is to become part of this larger smart grid and that's what frightens me the most.

One last thing. These smart appliances that are on the market, okay, I didn't believe what they were able to do, so I went and I looked them up. Refrigerators are the only thing I'm going to mention, okay, and these smart refrigerators are going to have a monitor on it so you can get to the web and everything. And I'm saying to myself why would my refrigerator need access to the web? All right. And apparently from LG

and Samsung, as I went into their websites, future technology for smart refrigerators will incorporate face recognition technology.

I don't have any faces that I put into my refrigerator, but that technology is going to be able to recognize what foods I'm putting into my refrigerator. And the benefit to the consumer is so that when I remove that Chinese dinner that I put in six weeks ago, my refrigerator is going to tell me that it might not be a good idea to eat it.

Now, that's where the technology is going. Do I really believe that that is why they are going to incorporate this technology? No. I believe that that technology will ultimately be incorporated into my refrigerator so that when it sees I don't have a lot of eggs left, and I use four a day, and I've only got two left, I'm going to get a notice that tells me that Publix has got them on sale and that information will ultimately be sold.

So if that's not the case, then I suggest that the power companies and the manufacturers get with Samsung because they are a manufacturer just like you guys, and ask them why they intend on putting face recognition technology into their refrigerator. It's not today's problem that the meter presents. It's where

you are putting this, and on what road. I don't need anybody knowing what food is in refrigerator. And if I want to eat bad Chinese food because it's old, that's my business, all right, and I just don't want to have any part of Agenda 21.

So it's tomorrow's problems that I'm trying to avoid. And the technology that you are introducing today is bringing us to tomorrow's problems. I respectfully request that you consider that, and I look forward to a moratorium, and hopefully we can get a moratorium on these meters and stop the installation until all of these answers are obtained. Thank you.

(Applause.)

MR. CLEMENCE: Next up is Terri Fulton followed by Hope Howland.

MS. FULTON: Can you hear me? My name is Terri Fulton, and I'm going to change what I was going to tell y'all today. I was going to tell y'all about how sick I was, and some of the things that happened and my friends said y'all don't care. But I think y'all care. So I'm going to change it.

I woke up one day, and when you get age you kind of know what you have had before and you recognize, you know, you've got the flu, you're got a headache, you've got -- whatever it is you recognize it.

Well, one morning I woke up shaking all over like this (indicating), and my insides were shaking, and my heart was quivering. And I couldn't get out of bed. When I tried to get out of bed, I was stumbling, really stumbling. And I was thinking, you know, what in the world could I have. So I just went back to bed and tried to get over it.

Well, seven days between by, and I started -- I was able to think a little bit, and I decided good gracious, girl, you have been doing all this work on smart meters, and reading, and reading, and reading, and you've got smart meter. So it took me a couple of days to get up the energy. That's how sick I was, y'all. It took me a couple of days to -- I was so scared. It took me a couple of days to get up the energy to go to my neighbor's house. I knew I didn't have it, because I did an opt out.

So one, two, three, three neighbors did not have a smart meter. So I was stumbling up my driveway, and I guess I wasn't thinking good, but as I was stumbling up my driveway I glanced over to the neighbor next door to my bedroom, and she had a smart meter. And the smart meter was probably -- it's not as far as to the end of this desk right here coming right in my bedroom. So I was sleeping with that thing. And I had

seen a public service thing on TV, one of the good public service things about health and all, about five years ago, ten years ago. And it showed what all your body did when you slept. Have y'all ever seen anything like that? It told about what your brain fed and replenished, and it was a whole hour show of absolutely positively amazing what you do when you sleep.

Well, apparently that smart meter was destroying everything that my body was supposed to be doing while I was sleeping. So, I couldn't -- I could not call the lady next door because I couldn't talk. I couldn't walk over there because I couldn't walk. So I rested a few more days and I was able to write her a little note on a piece of paper, and it took me another day or so to get that piece of paper stuck in her mailbox begging her to get that meter replaced because I was getting suicidal. I couldn't live like that any more.

I work. I work full-time. She finally got it removed and it was about -- I think it took about three weeks and I was, I'd say, 95 percent better. But one thing I didn't tell y'all just now is when I was coming back from my neighbors, and I spotted the meter, I have a gorgeous butterfly bush. It's called a pipe plant, and it grows on a lattice. And at the time I was too

sick to care, but I remembered seeing my beautiful butterfly bush that is supposed to be all green. I hope you all can see all this black on the veins. The butterfly bush -- all these beautiful green leaves had these black veins.

Now, I did magic marker these black veins in this morning so y'all could see how it did look, because when I went to get y'all some samples, I had remembered that they all dried up, which is something I had read already about smart meters. So they were all dead and shriveled up, but now my plant is back to being beautiful.

So this is really the asbestos of the 21st century on steroids. They were talking about the FCC limits, levels, levels limits, levels. Well, it's still all on the thermal, not the nonthermal. So I won't go into that. And I'm not going to repeat what some of the other people have said, so I will say I understand that it's these spikes that are so bad as well as the continuous -- the nonthermal is down here on the low end, and there is where the studies have not been done. But the FCC has all been done up here on the high level sine waves is what I call them. I do have an electronic degree, but it's old. And I was really taken back by Amy Brunges (phonetic) saying that the American Academy

of Environmental Medicine are quacks. Those people have been around for 50 years doing very good work, and I have contacted them, and told them where to see her say that, it's on video, and what minute she is saying it, because I'm fed up with what's going on.

Canada followed the money and found that the commissioners -- and I'm sure it's not this level commissioners. I feel like it was a higher up commission. I have read so much, y'all. It's hard to keep it all straight -- that these commissioners owned part of the businesses that was making all the money.

There is a lady in New Hampshire on the Public PUC, that must be Public Utility -- Nancy Brock from '98 to 2003 said that these changes are very expensive and benefits have not yet been proven enough to cover the cost. The manufacturers and the computer people and the Internet, they are seeing dollar signs. People are scrambling to make money off of this. And I'm just a little blond girl, but I can see the money out here already without even considering that.

Google, Microsoft, Motorola, Verizon, Cisco, Hewlett-Packard, IBM, they are all rushing for these peak rates, because that's one thing that hasn't been explained exactly here today. These peak rates are going to be horrible. And when I went to our Brevard

County Commission, or the public hearing, I forget which one, I got to ask a question to the Public Service Commission, and they asked the question to FPL. My question was what's going to be the peak rate prices?

And FPL had the nerve to stand up and say, oh, we're not going to do that. And I believed it, but I was lucky enough to catch the Public Service Commission doing the public hearing, or a hearing on the rate increases when -- I think her name was Santos. Somebody squirmed it out of her that they were going to replace these meters. She said we're going to replace these meters next with these peak rate meters.

So that's the thing about it, they are only telling you part of the story. You have got to know what you're doing. You have got to be a medical engineer to know what the right questions are to ask. And you know what, to be honest with you, I'm thinking really a lot of you people really don't know the truth. I really do. You are only being told what you have learned and what you have been told. But I send y'all love.

Oh, I got ahold of the Consumer Digest. It's their 50th anniversary, so they are no plunk in the pond. They were talking -- and I am going to skip some stuff here to try to make room. You know, our peak

rates are going to be horrible. Like the guy that was speaking at one of our commissions, he just came back from the UK, but he moved back to Florida, and those people were having to get up at 2:00 o'clock in the morning to wash their clothes. It's true. And that's what's going to happen here.

They are saying -- I have a lady on here, if I can find it, it came out of Consumer Digest that there is no savings that's going to go on with these meters. They are thinking you might save $100 a year. Over 23 years you might cover the cost. This is a money making thing. We need specialists. You know, these people here, they brought in specialists, let's say, and they brought in people to speak, but they are their people. You know we need the other side.

We need a moratorium. Because when people opt in or opt out that wouldn't have help me, y'all. I already opted out. I've still got my analog meter. And that lady next door, she was just a young lady. I would say she's 28 or 29 with two small children. She didn't have a clue. And her two boys were sleeping in that room where that smart meter was that's no longer there. So we have to protect the young and the ignorant from theirselves, and that is really y'all's job to help us do that. (Applause.)

We need a moratorium. We need to protect families and the children. And I have read reports, and not this Johnny Yahoo off of Yahoo. It's some really good people about the young men that are childbearing age. Their sperm counts are dropping really bad. We are being bombarded. We are just being bombarded, and we don't need this to add to it. And thank you so very much for being here. (Applause.)

MR. CLEMENCE: Up next is Hope Howland followed by Margaret Black.

MS. HOWLAND: Thank you. I'm Hope Howland, and I am a native-born Floridian. I live in Flagler Beach. And I'm here -- I have been here all day listening, and I appreciate you letting us come. But I respectfully and urgently request a docketed public hearing. This is an undocketed workshop. I think the public needs to know about smart meters and all the ramifications.

I'm going to be very quick. I was very disappointed today in listening, because there was only one question about multiple smart meters on your questionnaire. There was nothing said, that I remember, about interior multiple meters.

This is my condo. I have 30 multiple meters that have the potential of becoming smart meters seven

feet from my kitchen living space. This is on three floors of our condo. One of your industrial electrical -- I think it's Edison Electric Reports states that generally when you have multi-meters they are on an outside wall or they are in the basement of a highrise. These are neither. They are on three different floors in a nine-story condo seven feet from occupied living spaces.

I am requesting that a study be done, that a moratorium be done until a study can be done, and that due diligence is given to the citizens of Florida, of which I am one. Thank you. (Applause.)

MR. CLEMENCE: Up next is Margaret Black followed by Maredy Hanford.

MS. BLACK: Good afternoon. Today I heard a lot of utility companies talk about the people who have smart meters, and they seem to assume that the people who have the smart meters wanted the smart meters. I think sending out a postcard saying we are going to upgrade your equipment does not really constitute someone wanting a smart meter.

A lot of what I was going to say has been touched on, so I'm going to be very brief. The Energy Policy Act of 2005, which Roger alluded to, specifically added language to Public Utility Regulations Policy Act

stating utilities are required -- I'm sorry, I don't feel nervous -- utilities are required upon request by any customer it serves to interconnect on-site generation facilities to the local distribution facilities. Utilities are required to make net metering available to electric customers upon request. Upon request.

Utilities are required to offer time-based rate schedules that reflect the variance, if any, in the utility's course of generating and purchasing wholesale electricity. If utilities offer time-based rate schedules, utilities must then offer smart meters to customers who request them. Nowhere does it say you can come in and slap them on the side of a house.

The fact that this language was specifically added to the public utility should be enough to clearly indicate this is not a mandatory thing. Since that doesn't seem to be the case, it is your duty as your mission statement says to provide safe and reliable utility service at fair prices, to protect the unsuspecting public from the myriad of health issues associated with RF radiation that will occur with the amount of saturation that the smart grid will release.

The evidence is out there. It's not like Florida would be leading the charge. In July the Maine

judicial court ruled the Maine Public Utilities Commission failed to resolve health and safety issues related to Central Maine Power Company's installation of smart meters and should now do so. The court sided with smart meter opponents who argued that utility regulators ignored their legal mandate to ensure delivery of safe and reasonable utility services. Sound familiar?

California, who is the greenest state in all the land, has been under smart meters for in excess of five years. This is a state that will destroy an desire industry to protect a two-inch fish. They want their smart meters removed. Eleven counties and 45 municipalities have now banned or criminalized the installation of smart meters. They want them out because people are getting sick. They are the unfortunate guinea pigs of this experiment.

The Vermont legislature passed on May 4th a bill that would eliminate any fee utilities -- I'm sorry, any fees utilities may now charge to customers who refuse a smart meter. California, Maine, and Vermont now have an option to keep their old meters. Lawsuit filed. Connecticut and Iowa have delayed rollout pending more information on technology, mainly because Warren Buffet of Birkshire Hathaway owns a piece of the Iowa utilities and he doesn't want to get stuck

with the bill if they have to take them out.

The Michigan Attorney General says smart meters are unlikely to save ratepayers money and, in fact, will cost them more, and as such should not be deployed. The Virginia Attorney General has stated that smart meters cannot be legally forced on anyone. Illinois, Massachusetts, and Texas have ongoing lawsuits. Every state has opposition to these meters.

A moratorium is the only way to protect the public until you, the Commission -- or you tell the Commission -- can prove to Floridians that this technology will be harmless to their health and safety. An opt out will not protect the uninformed and unsuspecting populous, most of whom know the names of every contestant on American Idol and Survivor, but not the name of the Vice-President. These are the people who need your protection. Thank you. (Applause.)

MR. CLEMENCE: Up next is Maredy Hanford followed by Bryan Dukeman.

MS. HANFORD: Hello, gentlemen. My name is Maredy Hanford. I am from Daytona Beach. Originally from Mexico where smart meters are also being installed, and where the association of electricians is opposing the installation because they also know there is a lot wrong about these smart meters.

And what I'm going to do is I have been collecting evidence from people that are being harmed, or in some instances they are experiencing -- experiences with these smart meters. But before I do that, I want to tell you that you are really just the middle ground players, okay. Many of you don't really -- I don't think that you really know what is the agenda. I would like you to raise your hand and tell me if you know what Agenda 21 is. Would you please raise your if you know what Agenda 21 is?

Who knows what Agenda 21 is in this audience? Okay. So it's the citizens, you have to take responsibility to educate yourself as to what Agenda 21 is, because it is conspiracy fact, and there are two very good websites that I have highlighted in here. Agenda21today.com for those of you that happen to be either Republicans or independents, and the other one is DemocratsagainstUN -- for United Nations -- Agenda21.com for those of you that happen to be Democrats.

Because what we are facing here, ladies and gentlemen, is an enemy that is trying to take down the United States and Americans, and we all have to unite as Americans. It doesn't matter if we are independents, Democrats, or Republicans, or whatever we are. This is a fight for our freedom. Because what smart meters

are -- they are nothing but about controlling, and what said Roger Gangitano said about the eggs, I don't believe that's because we are going to go run to Publix and buy a dozen eggs because they are on sale. It might be because they are going to watch, they are going to control everything, even the food that we eat, and that's how I see it.

So I have only nine of these. Mr. Futrell, I want to make sure I give you one of these, and to the persons of the Commission here also. And when I finish I will pass it on. I only have nine. Just raise your hand and I will give it to you.

Make sure that you read these two websites, Agenda21Today.com or DemocratsAgainstUNAgenda21.com, and that will give you the answer of why this is happening, okay. Because it is much bigger than even Florida Power and Light, and you probably -- I'm pretty sure you just told me you don't know anything about Agenda 21, so start educating yourself right there.

It is very important for our freedom, to save our freedom. But here is a letter from a lady. My name is Sandra Pennypacker (phonetic) and I live in Windridge Court in Port Orange. These homes are connected in groups of four. Friday, August 31st, Florida Power and Light installed smart meters, and although I, myself, do

not have a smart meter on my home, my neighbors have them on theirs. My neighbor to the left of me has one about 20 feet from my guest bedroom or computer room. I have neighbors directly across the street from me and to the right of me who have them on their homes.

Saturday morning, September 1st, at 9:00 a.m., my heart suddenly started racing and I felt nauseous. That was 16 days ago. And this was written -- she didn't date it, but she gave it to me a couple of days ago. Every day I get a headache. Sometimes it is worse than others. Life as I know it ended Friday the August 31st. I can't keep living like this, but I don't have any other good options. I need to move, but the mortgage on my home is higher than the market value of the house. If this house were sold, I would get nothing out of it. I can't afford another house. I can't stay here, and I can't afford to move. I feel homeless, probably because I really am. I am 75 years old and have never felt so devastated in my life.

I think I have the right to grow old with dignity, not homeless. All of this is not because I have made bad financial decisions or that I did anything wrong. No, it is because Florida Power and Light's priority is to make bigger profits at the expense of the American people. It is not that they don't know these

smart meters are harmful to our health. They just keep saying there is not a problem.

I can tell you from personal experience there is a problem. I just happen to be the canary in the coal mine. All the people being exposed to these smart meters are being bombarded with EMS, electromagnetic frequencies, they just don't know it yet. I am of the opinion that they broke it, and it is their responsibility to fix it. So keep installing them, because eventually you are just going to have to disinstall them. And there is a saying in Mexico the dumb person and the ill-intentioned person, they walk the same path twice. You should really have waited for this workshop or a hearing before you continue installing them. But you are installing them. So you are going have to disinstall them.

Government should do for the people what the people cannot do for themselves. And obviously I am no match for Florida Power and Light. So I am asking whoever can stand up to the Florida Power and Light to please tell them to take their meters out of Windridge Court, and actually all of Florida. They are making me sick. And those people, the responsible ones that are to look for the welfare of people is the Public Service Commission, please you have to look out for our

well-being and it is your responsibility, it is your job to protect us.

The other letter is from a lady, Melanie A. I'm not going to disclose her name. I'm protecting her identify. Today I received this in the mail. I called Florida Power and Light and stated I want to opt out. The lady took my account number and my phone number. She stated that a customer advocate will be giving you a call, quote. When I advised her that I believed there have been a communication error, that I am not interested in Florida Power and Light propaganda, I simply will not allow a smart meter in my home, I was told, ma'am, it isn't optional. You will get the meter installed free of charge, parentheses, as if I would pay for it, end parentheses. The rumors about health issues are unfounded. Because you live in the city limits of Daytona Beach, it will be installed in the next two months.

Now, this is the fun part. While I was nicely explaining that I simply am not going to allow it, she must have thought she had me on mute, and she began giggling with another individual and said, yeah, right lady. Where do you plan to get power from? Just keep yapping. Where do you plan to get power from? Just keep yapping like you have a choice.

I was outraged, and I told her so. She was obviously embarrassed that I had heard her. She ended by saying there is no further point to this conversation. A customer advocate will be giving you a call, and disconnected the call. She did make one point. A monopoly will indeed allow them to do as they see fit. So that's the point. This is a monopoly and you are abusing that situation that you are a monopoly, that we don't have any other alternative to get electricity from.

So please educate yourself as to Agenda 21. Agenda to the 21st century signed by Bush father 20 years ago, the sign to control the world for the installment of the one world order. And, again, it's not a conspiracy theory. It's a conspiracy fact. And if we are all going to survive, because you also are going to have smart meters installed in your house, if we are all going to survive we need to come back together, be together whether you are Republican, Democrat, independent, no matter what you are, we need to band together and to stand. Because this is an attack against freedom, ladies and gentlemen. We are seeing another reverse of the nation.

Just like Jefferson and Washington had to fight for this country, now it is our turn. It is a

very serious threat, and the Communists -- they don't call themselves Communists anymore. They say that they are Progressives. They hide behind the green mask because they are environmentalists. Oh, we have good water. We have trees. Who doesn't want nice trees and water? Everybody. But that is their disguise. They feed us poison. Just like they are feeding us fluoride in the water. Fluoride, which is an industrial waste, and it is poisoning us little by little because this agenda, forty chapters that you can download from one of these sites, they are Agenda21today.com sites. Read those 40 chapters. In one of the chapters, I believe it is Chapter 40, there is their intent to depopulate the world by 95 percent. It is written. You can go on the Internet and you can read it. It is right in there.

So the Communists used to call -- you have a very funny word for people like you, that you don't know what you really are doing and you are pushing for this, even though it is in your own detriment. They called them useful idiots. And I don't mean to say that you are idiots, but if you don't educate yourself after you have heard me then you might think that maybe you are. So, please, educate yourselves.

And I will pass these out for those of you that want to read it. Thank you. (Applause.)

MR. CLEMENCE: Bryan Dukeman followed by Robert Root.

MR. DUKEMAN: Hello. Thank you for having me, PSC. I wrote a long thing that would probably take me hours to read, so I'm going to try to do it in bullet points because of time. So if I repeat things or stumble through it, I apologize. I'm just trying to get it done as quickly as possible because I know we were supposed to end at 5:00. Is that correct?

Okay. Smart meters. My 12-year-old son made a comment to me on the way up here, and I think we have talked about it before. We talked about the microwave use and the cell phone use where it's just a little bit and a little more is added. Well, we have a choice on that. We got rid of our microwave eight years ago. We don't use cell phones. You can turn them on airplane mode or turn them off. We don't go into establishments that have the wireless. We don't want it. And there has been so many reports out there not only in this state, in other states, and throughout the world that say these things are definitely giving off more radiation than what we have heard today.

So, basically, we want a choice. I know we have talked about it before, the opt in. The opt out clause is useless because we have talked to thousands of

people in our Central Florida area about smart meters, and a handful of people have known what they are. And if they know what they are and heard of them, they don't know what they do. So these things were put on through the back door and people don't even realize what they are and what they have.

We had a Port Orange meeting, and one of the FPL representatives said basically, you know, you're getting the microwaves -- and I will just call them waves to make it simple. You are getting the waves from the microwave and the cell phone and other things, so basically what's a little more on your house, because it's negligible. Well, we disagree that it is negligible. Studies have been done that it is more than that.

I know somebody has already mentioned it, but we're calling for a public meeting, that is not this undocketed -- and I'm trying to use terms that I heard. I'm not a politician or a legal person. We're calling for a full docketed meeting. And I have a note here that was from a FPL representative to the Flagler Beach commissioners, and I would like to read it. Quote, a month ago, the FPSC said that it will formalize a process through a workshop or other means to smart meter related issues, including the extent to which the PSC

has jurisdiction over such items. The PSC has advised that, in quote, the process will allow for full stakeholder participation and is scheduled for September 20th.

I believe us as citizens of Florida are not stakeholders, and to give them seven hours on the floor and to give us a couple of minutes at the end is ludicrous. (Applause.) I wish I could bring my PowerPoint presentation and show them what the real facts are, but I wasn't given that opportunity. I was given a couple of minutes at the end because of time, so we're trying to hurry it along.

So I wish I was afforded the same respect to have my PowerPoint presentation. So I think we are calling for a legal docketed official public record entry hearing, because we are stakeholders in this more than anybody. It's our health and our privacy that we're talking about.

I know that in Vermont, from my understanding and from what I have read and what I have seen, that three power companies in Vermont were told by the commission to prove in writing that these smart meters were, quote, unquote, safe. And between those three power companies they could not prove it in writing that it was safe, so they decided to ban putting them in or

put they on hold for now.

I think it has been discussed, I was out of the room, but I thought I heard somebody say there were 67 municipalities and counties in Florida. I don't know if it was mentioned that had put a ban on these. Yeah, in California. I was outside, but I thought I heard somebody mention that. So they're not -- you know, they are the green, green state that leads everything, so they are not banning these things for no reason.

We have been to six or seven county meetings in Central Florida to different counties and towns, and we have asked for an opt-in clause, okay. And I think it was mentioned earlier. An opt-out clause is ridiculous, because people don't even know what a smart meter is. So if you don't know what you don't know what you don't know. Educate them. Let them decide and then see if they really want these things.

So we are asking for an opt-in clause. And you can Google it, go to YouTube, I'm sure you've all been on it just as we have. So there were seven meetings that we have been to where they said, okay, we have heard everything from FPL and from you, we are going to do an opt-in clause. And that is how serious they have taken it. Okay.

We were at -- I was at a meeting several weeks

back, and I don't know what the technical term, but somebody had a gadget there that measures waves, these waves that we are talking about. So she had it up and she had a cell phone there and there was nothing coming out. And then she turned the cell phone on wirelessly and the thing started going up and reading it. Then we took it out to a meter, an old meter and there was nothing there. We took it out to one of these smart meters and the thing went off the grid.

And I don't know what the technical term for the machine was or exactly what it recorded. I wish I would have written it down or videotaped it. But for them to say it is negligible and it's only pulsing, you know, once a day or whatever, that is simply unsubstantiated from what I have learned. It is pulsing all day long, 24/7.

Let's see. And then somebody made a comment, Mr. Bryan from FPL over there, that they are going to charge people, for example, $1,000 if they want to keep the old thing. And then he said once we charge people, you know, most are going to come over. Well, of course they are. Some people in Florida especially are on fixed incomes, and even $10 more a month is a detriment. Of course they are going to comply if you are strong-armed. You know, we are going to charge you

$1,000. Well, wait a minute. Yeah, count me in. But that doesn't mean it's still safe, and that doesn't mean it's in our best interest.

Even the current and past CIA director has said no, no to smart meters. Look it up. He said that these things -- if I quote him right -- are really, really stupid. Okay. So even the CIA director knows the vulnerability. And I believe this gentleman here said I'm not concerned about so much what's going on -- well, I am with the radiation, but where this is heading down the road, what this is setting us up for. It will happen down the road, and that's what my fear is.

We have all heard about how safe cigarette smoke was, or it wasn't bad, and asbestos, and Agent Orange, and we can go through dozens of products, and look where we are at today and the lawsuits that have come out. This is another one waiting to happen. So I think you're charged with preventing that before it happens. And like we talk about, they can keep installing their 1,500 to 2,000 meters per day, but that doesn't mean once it goes through the legal process that there is not a recall, and at their cost they will have to take all these meters out, because they are going to find that they are unsafe.

Let's see. I would charge any one of these

member to go to the mall with me, I'll pay for it, and we will walk around the mall today or tomorrow, I'll do it on my dime, and we'll do a survey of people in the mall or wherever people are congregated and ask them if they know what a smart meter is and if they know what it does. And I would be willing to bet you it would be negligible on the people that know what a smart meter is. So you haven't done your job of educating the consumer. (Applause.)

I know we're pressed for time. That's my major points. I have other stuff, but, you know, that will come out later. Thank you. (Applause.)

MR. CLEMENCE: Up next is Robert Root followed by Neil Rice.

MR. ROOT: Okay. Good afternoon. My name Bob Root of Shady Grove, Florida. I'm sorry I wasn't here for the meeting all day, but I was in Jacksonville this morning for a meeting.

The couple of hours I was here, it was obvious these guys are going to Delphi you. So you pretty much have to discount what they are going to say. I'm here on the basis of a Fourth Amendment issue. I have a right to privacy. I wrote my Tri-County Electric Co-op a letter and got a response. It has probably been two, two and a half years ago when they put in the smart

meter for me. And so it turns out now I've got to pay a dollar a day more for this -- to get rid of this smart meter.

Anyway, I just think that is ridiculous. I probably have a little bit more gray hair than most of you, but that's going to mean an extra five thousand bucks for me probably. That's not right. I just don't think it's right.

As far as inspections, when they come out and change it, my meter box is full to the top with water. I should say full to the bottom with water, and they obviously didn't care when they come out and put this smart meter in that the line side of the conduit was full of water, so the service conductors are under water going clear up the pole.

Fortunately for me, it happens to be a good distance from my house, but that's the reason I put it out there. But I certainly understand these people when they are talking about health issues. And I believe that's all I have to say today, but I would discount virtually everything they said. This meeting should have occurred, these public comments should have occurred first not last. (Applause.)

MR. CLEMENCE: Neil Rice followed by Bob Mizelle.

MS. RICE: Thank you. My name is Neil Rice. I didn't plan on speaking here today, but after listening to these gentlemen here, the corruption in this room is beyond words. The deceit. This is about power, money, and control. The health issues are there, the danger is there, and we are a free America and we do not appreciate any of you putting mandates on us.

We have a Fourth Amendment right. You're saying how much money this is going to save? Then what do you keep asking for a rate increase for? Anyone want to answer that one?

What about the wonderful conference you just had. That was pretty elaborate, wasn't it? I would love to have seen the total on that at the expense of the consumer.

How much waste? Because you people in a big corporation could care less. And when this lady was up here speaking about Agenda 21, there is a lot of you here that are aware of more than what you would like to lead onto. Do you ever see the names of FPL on the bottom of conferences for support with the ICLEI (phonetic), the National League of Cities, the National Association of Counties?

We are not going to take this sitting down. (Applause.) We will fight this. Myself, personally, if

I have to turn the electricity off. We have had enough of this. Big money, big power, and you sit here like a bunch of bobbleheads and you won't even answer questions. You at the front table, you need to be in the back of the room. The people are the ones. This is a monopoly and we are having mandates put on us, gentlemen, and this is called Communism. (Applause.)

MR. CLEMENCE: Bob Mizelle.

MR. MIZELLE: That's going to be a tough act to follow. My name is Bob Mizelle. I'm from Hollyhill, and I had not planned to speak either. But just prior to the public comments I jotted down a few notes here. And so I apologize in advance for any imprecision and/or incoherence here.

The scientific and technical comments of the gentlemen here, the experts, are way above my pay grade. I'm just a retired guitar teacher, but they were very impressive sounding, and as far as I know they may be entirely true. However, the smart meters may be as wonderful and necessary as claimed, I don't know. I came up here to this meeting to educate myself. I just got involved in this a couple of weeks ago. And I do not have a computer, so I'm limited in how I can access information. But I figured, okay, let's go to the meetings, hear the information as it is presented, get

both sides, and then I'm hoping to get hooked up with the Internet soon.

But anyway, I'm in contact with some very knowledgable people, and I'm learning more every day. So that's why I'm here. So I kind of represent the average idiot. The people that have spoken here obviously know what they're talking about. They have come here prepared with studies, with reports, with in some cases years of study. And so my position is I just want both sides heard. I want all the information to come out where I can make an educated decision on what's going on.

I would like to hear all the opponents of the smart meters present their objections in the same detail as has been offered to the industry experts here today. This has been -- and, again, I made these notes here just before all the speakers appeared, so some of this is going to be more or less irrelevant, but there will be a point to be made, and I will mention that at the end. And I don't have very much to the say, so I won't be long here.

Anyway, I would like this also done in a public hearing, not just a workshop, as has been said, and with all the FPS (sic) Commission members present. I am only weeks into my interest in this topic, as I

mentioned, but there are several people in my area in Daytona -- I'm in Hollyhill, as I said. A small little town next to Daytona -- that have been studying this for years and are quite knowledgable. I'm sure other persons throughout the state have information that needs to be considered.

Though not up to speed on this particular issue, I am a student of history, and my studies have shown me beyond any shadow of a doubt that things in the public sphere are quite frequently not all they appear to be. In short, politicians, government agencies, industry lobbyists, et cetera, et cetera, it goes on and on, are often free and loose with the truth.

On a weekly basis one can read in the news where such entities are being either indicted or paying large fines for basically lying to the public. Some of these things have been mentioned earlier. That's all I had time to write down. But what I would like to point out here is that when I wrote this down I had not heard these people speak. Now I have, okay, to people I said that have some knowledge. They have presented some of this knowledge, but it has been in a short curtailed manner. And as was mentioned earlier, not in a PowerPoint presentation. All the documentation hasn't been viewed by the people that need to see it. This

needs to be done, folks, you know. And I agree with the position that a moratorium on these things should be put out, and let's just stop it where it is. Let's investigate it. Let's have experts that know what they're talking about. See all the evidence, not just one side of it, but significant parts that have not been brought forth, then let the public be aware of this stuff. Have it put on television, have it put on the Internet where people can, you know, find out what the facts are. And basically that's about all I've got to say. Thank you very much.

MR. CLEMENCE: I would like to wrap this up by thanking everyone who came out today. Thank you for all the time and effort that went into the presentations from our utilities and the manufacturers.

Further, I would like to thank the public for taking time away from their jobs, from their families, friends, and loved ones for enjoining us here today.

Finally, I would like to take a moment, once, again, and mention post-workshop comments. I would ask that you please use the questions that were included in the agenda as a guide to formulate your post-workshop comments. Feel free to add to them as you see fit and include any other information you wish.

One more time, if it is not ingrained in

everyone's head, my e-mail address is WALTER.CLEMENCE@PSC.STATE.FL.US. If you wish to mail your comments in, feel free to do so to the Commission, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399. I would ask for ease of convenience, please send them to either my attention or to the attention of the smart meter workshop.

Thank you, again. If you guys are traveling, have a safe trip home.

(The workshop concluded at 5:36 p.m.)

STATE OF FLORIDA)

: CERTIFICATE OF REPORTERS

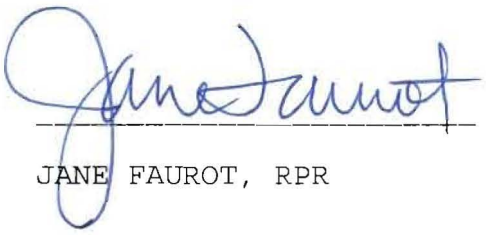
COUNTY OF LEON)

WE, JANE FAUROT, RPR, and LINDA BOLES, RPR, CRR, Official Commission Reporters, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that we stenographically reported the said proceedings; that the same has been transcribed under our direct supervision; and that this transcript constitutes a true transcription of our notes of said proceedings.

WE FURTHER CERTIFY that we are not a relative, employee, attorney or counsel of any of the parties, nor are we a relative or employee of any of the parties' attorneys or counsel connected with the action, nor are we financially interested in the action.

DATED THIS 2nd day of October, 2012.



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