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4 DOCKET NO: E-100, Sub 147
5 BEFORE: Chairman Edward S. Finley, Jr., Presiding
6 Commissioner Bryan E. Beatty
7 Commissioner ToNola D. Brown-Bland
8 Commissioner Jerry C. Dockham
9 Commissioner James G. Patterson
10 Commissioner Lyons Gray
11 Commissioner Daniel G. Clodfelter
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13
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15 **IN THE MATTER OF:**

16 DUKE ENERGY CAROLINAS, LLC
17 2016 Biennial Integrated Resource Plans and Related
18 2016 REPS Compliance Plans -
19 Smart Meter Plan Presentation
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NORTH CAROLINA UTILITIES COMMISSION

T A B L E O F C O N T E N T S

SMART METER PLAN PRESENTATION PRESENTED BY:

MR. DON SCHNEIDER and MR. JUSTIN BROWN..... 5

ANDREW MCAFEE

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P R O C E E D I N G S :

CHAIRMAN FINLEY: Let's come to order, please. We are here this morning in Docket Number E-100, Sub 147, which is In the Matter of 2016 Biennial Integrated Resource Plans and Related 2016 REPS Compliance Plans. We're going to hear a report with respect to smart meters from the Duke entrants. So we'll turn it over to you, Mr. Somers.

MR. SOMERS: Thank you, Mr. Chairman. If I could, first of all, Bo Somers on behalf of Duke Energy Carolinas. I first want to thank the Commission for rescheduling this presentation. When it was originally scheduled Mr. Brown and I were in Charlotte for a few days working on Hurricane Irma response. Mr. Schneider had the pleasure of spending about a week down in Florida helping our colleagues down there. So we appreciate the Commission rescheduling that.

On Friday, last Friday, we filed answers with detailed information to the Commission's questions that were in the Order. Mr. Schneider and Mr. Brown, who I'll introduce in just a minute, are going to give a general overview presentation but they are prepared to answer any questions about the

1 detailed information that was filed last week or any
2 other questions the Commission may have.

3 First, I'd like to introduce Mr. Don
4 Schneider who's the General Manager of Grid Solutions
5 for Duke Energy. To his right is Mr. Justin Brown who
6 is the Director of Grid Solutions Planning and
7 Regulatory Support. And they'll be leading the
8 Commission through the presentation today and they've
9 brought some examples of some meters that they'll
10 probably get into at some point. So, with that, I'll
11 turn it over to the panel.

12 MR. BROWN: Thank you, Bo. I thank the
13 Commission for having us today. We'll be walking
14 through the PowerPoint slide deck. And just an
15 overview, we plan to touch on kind of our AMR
16 technology and our AMI technology which is the smart
17 meters. We'll talk about the difference between
18 those. We'll also touch on a little bit of radio
19 frequency. We'll talk about the current status of the
20 project for DEC as well as touch on the governance
21 process. And we have couple of pictures of theft that
22 we've uncovered as we have gone through the
23 implementation in DEC -- in DEC, just to give you an
24 example of the types of tampering that we do see on

1 the meters.

2 I'll turn it over as to Don to start walking
3 through the deck.

4 MR. SCHNEIDER: Thank you. Good morning,
5 Commissioners. We thought we would start off by a
6 brief description of what is AMR, which stands for
7 Automated Meter Reading, and what is AMI, which stands
8 for Advanced Metering Infrastructure. So today we
9 have an AMR system which really is a one-way
10 communication from the meter sending its information
11 back to a collector which is basically a device in a
12 van, and I'll show you more details in a minute, and
13 collecting that read once a month as we drive through
14 neighborhoods in that van collecting that read. It is
15 a remote read but it is a drive-by technology. It
16 does contain a 900 MHz meter or, excuse me, 900 MHz
17 radio inside the meter to communicate back to the van
18 as it drives through the neighborhood. So we do have
19 some meters here.

20 So when we installed AMR in Duke Energy
21 Carolinas back in the early 2000's, we have a
22 combination of AMR meters out there, ones that we
23 purchased new from the vendor which is a digital meter
24 that has the RF radio inside it and then we also did

1 some retrofit of some existing analog meters which is
2 the one that you'll see there where we installed the
3 900 MHz radio inside the analog meter. So two types
4 of meters basically functioning as the same. We just
5 saw some savings in retrofitting some of the older
6 meters and then purchasing some of the newer digital
7 AMR meters so we have a combination of both of those.

8 Then moving onto the AMI, or the Advanced
9 Metering Infrastructure meter, the real difference
10 there is a couple of things, two-way communications is
11 the key. So not only is the -- can the meter
12 communicate back to our head-end office systems,
13 back-office systems but it can also -- we can also
14 communicate to the meter. So we can send commands to
15 the meter, we can send firmware updates to the meter
16 which we cannot do with the AMR meter which is a
17 one-way communication. The AMI meter has the same
18 type of radio, it has a 900 MHz RF radio in it that we
19 communicate. The solution we provided -- we decided
20 on is a mesh solution so, whereas, the AMR meter is
21 basically a point-to-point communication. The AMI
22 meter is a RF mesh so the meters are talking to each
23 other with their goal of getting back to a data
24 collector. And, again, I'll show you some slides that

1 kind of show that. The other key difference is the
2 AMI meters can send alerts, alarms, that sort of
3 thing. It collects interval data so rather than just
4 collecting data once a month as we drive by the AMR,
5 we can get data in 15-minute intervals, 20-minute
6 intervals, 30-minute intervals, and so that's the
7 benefit of an AMR as -- or AMI as well. And then the
8 third real benefit is it has a built-in disconnect in
9 it so we can again, by two-way communications, we can
10 send commands to operate, close or open that
11 disconnect switch in that meter which means reduced
12 truck rolls in terms of customers wanting the meter
13 disconnected or reconnected.

14 So this is just a basic illustration of the
15 AMR technology. So you see you've got the meter out
16 there, the mobile system that sits inside a van or
17 some sort of vehicle and, again, that vehicle just has
18 to drive through the neighborhood, collect that data,
19 and then we bring it back to the office, basically
20 dock it back in and send the data back to our head-end
21 systems. Really -- and this is the most common system
22 that you see out there that gas and water companies
23 are using is this AMR technology where they drive by.
24 So --

1 COMMISSIONER CLODFELTER: The vendors you
2 use for your meter, do they also produce AMR for
3 water?

4 MR. SCHNEIDER: Yes. Itron is the --

5 COMMISSIONER CLODFELTER: Itron is who use?

6 MR. SCHNEIDER: Yes.

7 COMMISSIONER CLODFELTER: Do you have any
8 other vendors or are they your sole source?

9 MR. SCHNEIDER: That is our standard, yes.

10 CHAIRMAN FINLEY: Let me ask you, the radio
11 waves for the AMR meters -- you know we have a lot of
12 complaint about if we go to the AMI meters that people
13 are going to be -- will have a health effect with
14 that. Don't you have the radio signals with AMR
15 meters already in them?

16 MR. SCHNEIDER: Yes, you do.

17 CHAIRMAN FINLEY: Some of those people would
18 already have the radio waves if you're reading their
19 meters remotely?

20 MR. SCHNEIDER: That's correct, yes.
21 They're constantly chirping, if you will, sending
22 their data as our van then comes by and drives by and
23 picks it up just like the AMI meter does.

24 MR. BROWN: I think, Commissioner, one of

1 the confusion areas that some customers may have if
2 you -- we've looked at it -- is when you saw this
3 retrofitted analog meter. And if you notice the
4 antenna coming from the bottom to the top, that is an
5 example of a retrofitted analog meter that has been
6 placed in DEC for quite some time. And so when
7 customers sometimes have those concerns they don't, to
8 be honest, they didn't realize that they already had a
9 communicating meter for many years.

10 MR. SCHNEIDER: Any other questions?

11 CHAIRMAN FINLEY: We'll have some more but
12 keep on.

13 MR. SCHNEIDER: Okay. So this illustration
14 is, again, showing the meters communicating in a mesh
15 and their goal again is to get to the far right
16 component, the grid router or the access point which
17 is -- then has cellular built into it to send the data
18 back to us, back to our head-end systems via that
19 cellular backhaul.

20 There is another device that we have which
21 is a range extender which, if you have a situation
22 kind of depicted in the illustration you may have a
23 couple of meters that can't quite -- they're far
24 enough away they can't quite read into the mesh, then

1 'a relay helps jump that signal or the data back into
2 the mesh itself.

3 We do have another type of meter so in any
4 solution, or any situations where we have a customer
5 that may be rural to the point that it's not
6 economical to install range extenders to get out there
7 to that RF mesh meter, we have what we call a cellular
8 direct connect meter which basically is, instead of a
9 RF radio in it, it has a cell modem in it and it can
10 send its data directly back to our back-office systems
11 via cellular. And I think we've got --

12 CHAIRMAN FINLEY: How far off the road --

13 MR. SCHNEIDER: -- one of those, too.

14 CHAIRMAN FINLEY: How far off the road does
15 a meter have to be before you need an extender?

16 MR. SCHNEIDER: The meters pretty much can
17 talk around 750 feet to 1000 feet to each other. So
18 as long as you've got another meter in that area,
19 general area, it will be able to talk. And it depends
20 on the topology, too, so if it's flat, no trees, or
21 any buildings or anything like that, it can go even
22 further.

23 COMMISSIONER BROWN-BLAND: Mr. Schneider,
24 what -- the cellular direct connect, what network is

1 that cellular, or what kind of tower is that cellular
2 instrument communicating with?

3 MR. SCHNEIDER: So we use Verizon, a public
4 cellular network, and Verizon being our number one
5 supplier.

6 COMMISSIONER BROWN-BLAND: So do you find
7 you have places where you can't use that? It seems to
8 me, I'm familiar with rural territories of signals
9 dropping and if not dropping being very weak. What
10 do --

11 MR. SCHNEIDER: Yes, and there will be some
12 situations where the cell signal is so weak that we
13 can't put one of these direct connect meters in as
14 well. So in those cases we will not have a solution.
15 We'll -- either that or we'll put an AMR meter back in
16 or leave an AMR meter in and drive by and get that
17 read.

18 COMMISSIONER BROWN-BLAND: And so just along
19 the lines of all that cellular technology,
20 digitalization that I've seen with phone and
21 television as well, their -- I mean, when digital is
22 not working, it's just not working, it's out or
23 there's an interruption, something flies over and
24 there's interruption; do you have those kinds of

1 issues that you can see with the meters?

2 MR. SCHNEIDER: Yes. So from time to time,
3 you could have issues with the RF signal. An example
4 we always use is a moving van pulls up in the driveway
5 next to the meter and it's such a blockage that the
6 signal cannot get out, but typically we don't see
7 anything like that that is sustained. It's a
8 temporary situation. So we may not get a read for a
9 day or two but as soon as the van is gone we're
10 getting that read again. And we collect those reads
11 daily, so the grid router calls upon all meters to
12 send their data in daily and so overnight is when we
13 send that information via cellular back to the
14 back-office systems. Do you have questions on that
15 illustration?

16 COMMISSIONER CLODFELTER: I'm sure you have
17 a way to manage it so you don't get corruption of data
18 from one meter to another meter, or mingling of data,
19 or data -- how's that's done just sort of in layman's
20 terms? How do you make sure the data stays -- the
21 integrity of the data stays as it moves from one meter
22 to next meter to the next meter?

23 MR. SCHNEIDER: So I'm not a data specialist
24 by no means, but it is encrypted data and it's sent in

1 packets. And so in that data is really the customer's
2 usage data and then there's a unique identifier that
3 ties it back to that meter. It's not that -- the
4 unique identifier number is not displayed on the meter
5 in any way; the customers' name or account or address
6 or nothing else is in that data; it's all in a packet
7 of data unique to that meter.

8 COMMISSIONER CLODFELTER: I ask the question
9 because your vendor has problems with contamination of
10 readings on water meters from other meters nearby.

11 MR. SCHNEIDER: I wasn't aware of that.

12 COMMISSIONER CLODFELTER: And especially
13 fire hydrants nearby. You don't have the same problem
14 with that contamination of data?

15 MR. SCHNEIDER: We've not seen any problems.
16 No, not at all.

17 I'll move on to the next slide. This is
18 really just some information from the Edison
19 Foundation around how many smart meters are installed
20 today across the United States, and there's -- and
21 this study was back in October of '16, but there's
22 approximately 70 million smart meters throughout the
23 United States out there today, and they're projecting
24 90 million by the year 2020. And you can see the

1 states where -- the orange states where it's 50 to
2 100 percent penetration and the blue states where it's
3 15 to 50 percent, which is where North Carolina shows
4 in this information. And the point -- the thing that
5 they point out in this study is that really a smart
6 meter is the new business as usual for utilities going
7 forward in terms of meter usage collection equipment.

8 COMMISSIONER CLODFELTER: The data for North
9 Carolina, is that of all regulated and unregulated
10 systems so you've got the co-ops and the munis in
11 there as well as your system?

12 MR. SCHNEIDER: That's right.

13 COMMISSIONER CLODFELTER: If we looked at
14 just your systems, Progress and Carolinas and
15 Dominion, what would the percentage be?

16 MR. SCHNEIDER: I'm not sure about Dominion,
17 but --

18 COMMISSIONER CLODFELTER: Just the two
19 Duke's systems, what would your percentage be?

20 MR. SCHNEIDER: Yeah, so Duke Progress, we
21 don't have any installed.

22 COMMISSIONER CLODFELTER: None in Duke
23 Progress.

24 MR. SCHNEIDER: Very small, I think 60,000.

1 But in Duke Carolinas, North Carolina, we have 900,000
2 installed.

3 COMMISSIONER CLODFELTER: I didn't ask a
4 clear question. I was really asking you about the
5 existing AMR technology?

6 MR. SCHNEIDER: Oh, I'm sorry. The AMR?

7 COMMISSIONER CLODFELTER: I wasn't clear on
8 the question.

9 MR. SCHNEIDER: Okay. Yeah. Again, I'm not
10 sure about Dominion but Duke Carolinas and Duke
11 Progress is all AMR today.

12 COMMISSIONER CLODFELTER: Is 100 percent
13 now?

14 MR. SCHNEIDER: Yes.

15 COMMISSIONER CLODFELTER: And so with the
16 numbers you gave me earlier were for AMI --

17 MR. SCHNEIDER: That's right.

18 COMMISSIONER CLODFELTER: -- installation?

19 MR. SCHNEIDER: Yeah. I think I'll move
20 onto the next slide.

21 COMMISSIONER CLODFELTER: Do we know
22 anything about the use of AMR and AMI by the
23 unregulated co-ops and munis? Do we know anything
24 about that?

1 MR. GREEN: I do not, Mr. Commissioner.

2 COMMISSIONER CLODFELTER: Just curious.

3 MR. SCHNEIDER: I think most all of them are
4 either AMR or AMI. There's a lot of co-ops that have
5 already switched to AMI.

6 MR. BROWN: Correct.

7 MR. SCHNEIDER: The next slide just shows
8 some of the AMI installations that we have throughout
9 our service territories within Duke in our six
10 jurisdictions that we serve. In Indiana at the far
11 left, we have an active deployment that's happening
12 right now as we speak. In Kentucky, same thing, we
13 have an active deployment going on there. Florida, we
14 are planning a full scale deployment starting in 2018.
15 And then, if you can look on to the right we'll start
16 at the bottom right, so DEC, we just started our
17 active full deployment late last year, first part of
18 this year. And then in DEP we have a full deployment
19 plan starting in 2018. And in Ohio -- we have a mix
20 of solutions, Itron and a prior AMI solution, that we
21 have in Ohio.

22 COMMISSIONER CLODFELTER: What do the grayed
23 out counties stand for in your Carolinas territory?

24 MR. SCHNEIDER: Oh, that's service

1 territories that overlap between Duke Energy Carolinas
2 and Duke Energy Progress --

3 COMMISSIONER CLODFELTER: Okay.

4 MR. SCHNEIDER: -- yeah, our operations.

5 COMMISSIONER CLODFELTER: But your
6 deployment plans cover those grayed out counties as
7 well?

8 MR. SCHNEIDER: Oh, yes. Yes.

9 MR. BROWN: So, Commissioner Finley, you
10 asked about RF and customer concerns. I mean, that is
11 primarily the one that pops up and bubbles up the most
12 when customers call in and have questions about smart
13 meters. That info-graphic that you see on the slide
14 there, that is from the Smart Grid Consumer
15 Collaborative. Many of you may have seen that before.
16 And it really takes in and looks at common devices
17 like cellphones, microwave ovens that also emit RF and
18 talks about really their level of exposure through
19 density levels. And really the bullets on the
20 right-hand side, I know that pretty much all of us
21 know that the RF is managed or regulated by the
22 Federal Communications Commission so anything you have
23 is RF - your garage door opener, you maybe have a
24 remote thermometer at your house, a baby monitor - are

1 all going to have a sticker or some engraving talking
2 about FCC guidelines. And you can see from a smart
3 meter perspective is much, much lower than a
4 cellphone, especially when you hold a cellphone up to
5 your ear when you're talking. And when you think
6 about RF, as we've been doing our research, you really
7 look at signal strength of how strong it is, related
8 to that as well as its duration of transmission as
9 well as your distance from the source, and AMI meters
10 or meters in general are typically outside the
11 customer homes. And if you look at how strong a
12 cellphone signal is, certainly that's up at your ear.
13 And as Don had mentioned earlier and we had alluded
14 to, RF or 900 MHz-type signals from meters have been
15 around for a long, long time and tens of millions of
16 that technology has been deployed and we've had it
17 deployed for a number of years as well with AMR
18 technology.

19 CHAIRMAN FINLEY: Ms. Jones has a question.

20 MS. JONES: On this slide, where would the
21 existing AMR meter fit into the graphic; do you know?

22 MR. BROWN: I don't know. I don't know if
23 that was in the study that was produced from this.
24 But an AMR meter, because you never know when you're

1 going to be driving by, is constantly chirping out.
2 On average, a smart meter, Itron Smart Meter that we
3 have communicates about three minutes a day total, as
4 far as its communications.

5 MS. JONES: So just intuitively you're
6 thinking it would be a higher number?

7 MR. BROWN: I think intuitively it would be
8 at least very similar or possibly higher.

9 MR. SCHNEIDER: I will add that the RF radio
10 though, it is the same so it is the same power and the
11 same frequency as the AMR meter.

12 COMMISSIONER BROWN-BLAND: Mr. Brown, on
13 that three-minute number that you gave --

14 MR. BROWN: Uh-huh (yes).

15 COMMISSIONER BROWN-BLAND: -- can you shed
16 any light around -- it's not constant, it's very
17 intermittent I guess.

18 MR. BROWN: Correct me if I misspeak here
19 (Speaking to Mr. Schneider).

20 But, on average, it's not constant, it is --
21 it goes off and on. And as Don alluded to, from a
22 mesh perspective when it builds the mesh, he mentioned
23 that usage -- it creates a mesh that one meter can
24 talk through another meter, and various numbers of

1 meters can talk through various other meters to
2 really -- to get back home to a Cis- -- to the CGR
3 access point, which I don't know if we mentioned it
4 but there is a CGR that we have open if after the
5 meeting you'd want to take and look at it. It's a
6 little bit too heavy to bring up from there.

7 COMMISSIONER BROWN-BLAND: So -- but -- so
8 is that at certain times, defined times a day or --

9 MR. BROWN: It's not -- it's going to be
10 constantly, regularly communicating to keep the mesh
11 up because if it all of a sudden stops communicating
12 potentially it would be deemed as a
13 I-can't-get-back-home-type thing, or other meters have
14 to to be able to communicate back through it to get
15 back to the router to get back to our systems.

16 COMMISSIONER BROWN-BLAND: So there's some
17 communication always. And the three minutes is --
18 what distinguish --

19 MR. BROWN: The three minutes was a report
20 by Itron that they looked into it on average. If you
21 looked out throughout the 24-hour period, it would be
22 communicating approximately three minutes a day.

23 CHAIRMAN FINLEY: Well, I'm having trouble.
24 I mean, there's a campaign across the country, it's

1 not just in North Carolina, about wanting to opt-out
2 of the AMI meters and not having to pay anything to
3 opt-out. But what I'm hearing you say that, for the
4 most part, these people probably have AMR meters that
5 have the same or similar radio frequency power of a
6 AMI meter. Can you help me understand what the --
7 where we are here?

8 MR. BROWN: I think -- I would also like to
9 understand that a little bit better, to be honest with
10 you. I think it's mostly individuals reading
11 information on the internet that possibly is not
12 accurate.

13 UNKNOWN SPEAKER: That's bulls*&t! If you
14 want to know how --

15 CHAIRMAN FINLEY: Hey, sir, be quiet. If
16 you want to talk we'll call on you but don't -- no
17 cursing in this -- you hear me? I'll take you out the
18 hearing room.

19 UNKNOWN SPEAKER: But don't reference false
20 representation here.

21 CHAIRMAN FINLEY: I'm asking questions. And
22 if you want to be heard we'll let you be heard, but
23 you're not going to curse from the audience. You hear
24 me?

1 UNKNOWN SPEAKER: I apologize.

2 CHAIRMAN FINLEY: All right. Proceed
3 please.

4 MR. BROWN: So I think it's not knowing that
5 they already had an RF meter in place for a number of
6 years. If you go out and look at your side of the
7 house, folks saw a moving dial and they think that
8 that was just an analog meter and it never
9 communicated. And now, obviously with the smart
10 meters, it's very evident that it's a two-way
11 communication using a RF signal.

12 MR. SCHNEIDER: Yeah. And, if I can add, so
13 there's more -- there's more concerns obviously than
14 just the RF health with the AMI meter. There's
15 concerns of data privacy. There's concerns of data
16 security. And so I think with those heightened
17 concerns there seems like there's a lot more focus on
18 the RF health concerns than there was back when the
19 AMR meters came out.

20 COMMISSIONER BROWN-BLAND: So just to follow
21 up on this idea. So one thought was -- there are
22 witnesses who testified in front of us and have given
23 us examples of adverse effects that they have
24 experienced and they speak convincingly on those. But

1 regardless of that, if these AMIs are rolled out and
2 is the predominant meter from hence forth, it's
3 beneficial to have as many people as possible not
4 opt-out, choose to participate if it's going to -- if
5 we're going to get that full value from it. And to
6 that end, I think there has been some -- that there
7 would be benefits from education about how the meter
8 actually works, when it works, what it's doing, as
9 well as a comparison to what's been there before, then
10 there will be others that will still choose or feel
11 that they need to opt-out but I think there's --
12 within that, that's a subset of the larger opposing
13 set and there may be a number in the opposing set that
14 could if they're able to understand and have their
15 fears, their particular fears and issues addressed,
16 and I believe that some of those are around what this
17 meter is actually doing.

18 MR. SCHNEIDER: And I will mention that in
19 the meters that we have deployed today, obviously, we
20 do have some customers that have had concerns. That's
21 why we have proposed an opt-out for those customers.
22 And so what we're doing today is we're setting those
23 customers aside until the ruling on the opt-out case
24 occurs because, I mean, we do want to give our

1 customers a choice. So, if they have RF concerns or
2 data privacy concerns, then they -- our thought is
3 they should have the option to opt-out. What we're
4 seeing is that is less than .25 percent of our
5 customers in other jurisdictions and North Carolina
6 has been about that same number as well. So we don't
7 feel like all our customers should have to pay for
8 that. So, if you're familiar with our opt-out
9 proposal, we're proposing that customers that choose
10 to opt out should then pay the cost of doing so.

11 COMMISSIONER CLODFELTER: Back to data
12 security for a minute. So you're in the mesh and the
13 data from my meter jumps to my neighbor's meter which
14 is part of the mesh before it gets to the router. Is
15 there data storage? Is my data stored?

16 MR. SCHNEIDER: No, no the data is only
17 stored within its own meter and then sends packets of
18 information that just --

19 COMMISSIONER CLODFELTER: So that's a
20 pure --

21 MR. SCHNEIDER: -- passed through --

22 COMMISSIONER CLODFELTER: That's a pure
23 routing mechanism? There's no data storage within the
24 mesh of packets of data from different meters?

1 MR. SCHNEIDER: It's just passed through;
2 that's right.

3 COMMISSIONER CLODFELTER: Pure pass through.

4 MR. SCHNEIDER: Any other questions?

5 COMMISSIONER GRAY: Yes, sir. I'm sorry.
6 Make sure I heard correctly, DEC has close to -- has
7 100 percent AMR at this point?

8 MR. SCHNEIDER: Well, we were 100 percent
9 AMR before we started deploying AMI meters.

10 COMMISSIONER GRAY: So the frequent, the
11 reading of the meter at my house is already being done
12 by a van driving by receiving the data in all of DEC?

13 MR. SCHNEIDER: That's right. If we've not
14 switched it to an AMI meter yet --

15 COMMISSIONER GRAY: If you haven't switched
16 it?

17 MR. SCHNEIDER: Right. And it's been that
18 case since I think we finished our AMR deployment
19 somewhere around 2000, 2002.

20 MR. BROWN: In the early 2000's.

21 COMMISSIONER GRAY: So AMR has been in
22 effect in this state for 15 years?

23 MR. SCHNEIDER: That's correct.

24 COMMISSIONER GRAY: Thank you.

1 MR. SCHNEIDER: If there are no other
2 questions, we'll move on to the, kind of a status
3 update. So, as I mentioned, we started our AMI
4 deployment in kind a small, in a small fashion to
5 begin with and so as of the end of September we have
6 about 900,000 AMI meters in North Carolina, DEC's
7 territory. And so with our full deployment we will
8 install an additional, a little over a million for the
9 total 1.9 million North Carolina customers that we
10 have in DEC. So the areas we're currently deploying
11 in is, as you can see there, Charlotte, Winston-Salem,
12 Durham, Hendersonville, Shelby, and Concord. And you
13 can see our project plan there that finishes out in
14 the mid-2019 timeframe when we'll be 100 percent
15 complete for DEC - North Carolina.

16 The next page we kind of wanted to point out
17 around what our project governance structure looks
18 like at Duke Energy. And so all of our major projects
19 go through what we call a Project Management Center of
20 Excellence guidance or governance. And so we use what
21 we call a project stage gate authorization frame work
22 which is pretty typical for any large projects in the
23 project management world. And so you can see the
24 different gates there that we go through and make sure

1 we have gate approvals from the appropriate levels
2 within the Company throughout the life cycle of any
3 large project. And we just kind of wanted to point
4 out here that we don't commit to a project until we
5 get approval from the appropriate levels of management
6 in the Company, until we get to that commit phase, so
7 we get approval at the commit phase but then we also
8 have to get the appropriate funding approvals, again,
9 depending on the size of the project and the level of
10 management in the Company. So a project this size
11 obviously had to go to the board and we got that board
12 approval in November of last year to move forward on
13 the full-scale deployment of AMI.

14 And then our final slide for our
15 presentation is just some pictures of theft. These
16 are theft situations that we ran across as we went out
17 and changed out the AMR meter to an AMI meter.

18 (WHEREUPON, Confidential portion
19 of the presentation begins and the
20 following pages shall be filed
21 under seal.)
22
23
24

1 MR. SCHNEIDER: [REDACTED]
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4 COMMISSIONER BROWN-BLAND: [REDACTED]
5 COMMISSIONER CLODFELTER: [REDACTED]
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7 COMMISSIONER BROWN-BLAND: [REDACTED]
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9 MR. SCHNEIDER: [REDACTED]
10 COMMISSIONER BROWN-BLAND: [REDACTED]
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COMMISSIONER BROWN-BLAND: [REDACTED]

MR. SCHNEIDER: [REDACTED]

COMMISSIONER BROWN-BLAND: [REDACTED]

MR. SCHNEIDER: [REDACTED]

COMMISSIONER BROWN-BLAND: [REDACTED]

MR. SCHNEIDER: [REDACTED]

1 (WHEREUPON, the Confidential
2 portion of the presentation has
3 concluded.)

4 COMMISSIONER PATTERSON: I have a quick
5 question. Do those meters cause any additional cyber
6 security issues?

7 MR. SCHNEIDER: So we have a -- we have an
8 IT security group within the Company that looks at all
9 devices from a physical perspective within cyber
10 security so any devices we buy that we put out on our
11 system, they bring them into labs, they hire
12 third-party hackers to try to hack in to make sure
13 that cyber security is addressed for the device
14 itself, and then likewise the transmission of data and
15 even in the back-end systems and head-end systems back
16 in our offices making sure that the data is secure in
17 those locations as well through data encryption and
18 those sort of things.

19 COMMISSIONER CLODFELTER: The remote
20 disconnect function, how does that work?

21 MR. SCHNEIDER: Yeah, so --

22 COMMISSIONER CLODFELTER: You don't have to
23 put the boot on it anymore?

24 MR. SCHNEIDER: You don't have to put the

1 boot on it.

2 COMMISSIONER CLODFELTER: So what do you do?
3 What's the difference?

4 MR. SCHNEIDER: Say you're renovating your
5 house and you need your power cut while you're
6 changing out your panel or something, so instead of
7 having to call us and schedule an appointment and wait
8 for us to show up, we can put an order in for that day
9 to remotely disconnect your meter so that you could go
10 about and do the work that you need to. And then when
11 you're done you can call us back up and the same
12 thing, we can remotely reconnect the meter as well.

13 COMMISSIONER CLODFELTER: Is there an on/off
14 switch in the meter that doesn't exist now?

15 MR. SCHNEIDER: That's right, uh-huh (yes).
16 Any other questions? I think we're going to move
17 forward to the questions.

18 MR. BROWN: Right. So, as Bo mentioned, we
19 had prefiled our responses to the various questions
20 that were asked on Friday and we can take any
21 questions that may come about from those prefiled
22 responses.

23 CHAIRMAN FINLEY: I believe the Staff has
24 some questions for you.

1 MR. GREEN: Good morning, Mr. Schneider and
2 Mr. Brown.

3 MR. SCHNEIDER: Good morning.

4 MR. BROWN: Good morning.

5 MR. GREEN: We met earlier. I'm Len Green,
6 I'm the Senior Staff Attorney for the Utilities
7 Commission, and I would like to follow up with a few
8 questions from your presentation and from the
9 information that you filed on October 6th.

10 In the Cost Benefit Study that was filed,
11 the majority of the financial benefits related to the
12 AMI roll out, more than \$600 million over 20 years,
13 are from a category that is labeled *Non-technical line*
14 *loss reductions*, or increased revenue achieved by
15 affording power theft and earlier detection of
16 metering failures and installation errors. What
17 systems has Duke put in place to make sure that this
18 \$600 million in benefits is actually achieved?

19 MR. SCHNEIDER: Yeah. So, if I can give you
20 a little background, so when the AMI meters first came
21 out, and I talked about alerts and alarms that can be
22 sent, a lot of the utilities, you know, the thought
23 was you would run a truck on everyone of those and you
24 would find theft. What other utilities found out is

1 that there's -- the large majority, over greater than
2 50 percent, of the time you go out there and you can't
3 catch it or it was a false positive type report. So
4 what we found and other utilities have found over time
5 is it's really more a sequence of events so you see
6 power go off, you see usage drop to zero, and then you
7 see power come on, back on, and you see it at half the
8 usage as it was before and that -- so by the -- having
9 the interval data that we get from the AMI meters, we
10 can use all that data and utilize data analytics
11 models that can look for certain sequences of events
12 that about guarantee that it's theft and that if you
13 roll a truck you're going to find theft. And so we've
14 got some data analytics models that we've developed
15 that help us to determine theft from the AMI meters so
16 that when we roll a truck we're 95 percent of the time
17 finding theft on those situations.

18 MR. GREEN: Is it the situation that in
19 order to catch someone in theft with the AMR meters
20 you have to send a truck out and that same situation
21 with the AMI meters once you detect it?

22 MR. SCHNEIDER: That's right, yes.

23 MR. GREEN: So both of those require some
24 physical presence by the Company to catch the person

1 in the act of stealing electricity?

2 MR. SCHNEIDER: That's correct, yes.

3 MR. GREEN: The Cost Benefit Analysis cites
4 a 2008 EPRI report concerning AMI installations and on
5 page 2-19 of the EPRI report it says that distribution
6 utilities have reported an increase in energy theft
7 after AMI installations. Apparently, according to
8 EPRI, and this is a quote, *there is a wealth of data*
9 *available on the internet on how to interfere with*
10 *meters*, end of quote. And since utilities installing
11 AMI meters are going to have fewer people out in the
12 field, fewer trucks rolling, it may be that energy --
13 energy thieves will become bolder. What can you tell
14 us about the Company's response to that situation?

15 MR. SCHNEIDER: Yeah. So we had the same
16 concern when we went to AMR meters because we were no
17 longer going to be walking by every month and having a
18 visual on the meter, which sometimes you can catch
19 theft just by walking by, you know, if the meter is
20 pulled out and there's bypass wires in there. So
21 there was concerns with AMR about that as well. I
22 think the benefit then that we get from AMI over AMR
23 is that we -- the meters themselves can send us data
24 alerting us and alarming us of the situations that it

1 finds. And then along with the analytics
2 capabilities, we feel a lot more confident that we're
3 going to find theft more accurately and more quickly
4 than we would with an AMR meter, because with an AMR
5 meter the only way you really can send out a theft
6 investigation is just by our billing systems looking
7 at usage patterns. So did the usage drop a lot? Why?
8 Those sort of things. But there is no other
9 information that the AMR meter today can give us to
10 kind of signal that there's theft going on.

11 MR. GREEN: With the AMR meters presently,
12 it sounds like there's basically one monitoring of the
13 usage and that's when the truck drives by each month;
14 is that accurate?

15 MR. SCHNEIDER: That's correct, yes.

16 MR. GREEN: And with the AMI, since you'll
17 have much more data and it will be delivered to a
18 central office, are you going to have additional staff
19 who will be monitoring those readings on a daily or
20 hourly, what sort of schedule?

21 MR. SCHNEIDER: Yeah. So in our analysis we
22 include the cost of some additional resources to run
23 those analytic models to detect a theft and issue
24 orders out to the field.

1 MR. GREEN: Is that something that you might
2 have one person doing on a daily basis?

3 MR. SCHNEIDER: I think in this analysis we
4 considered adding three additional FTEs to do that and
5 the cost of those FTEs.

6 MR. GREEN: And that would be their job?

7 MR. SCHNEIDER: Yes, that's correct.

8 MR. GREEN: Forty hours a week, five, I
9 guess five days a week?

10 MR. SCHNEIDER: That's right.

11 MR. GREEN: Okay.

12 MR. SCHNEIDER: And, like I said, by using
13 the data analytics we will be able to detect more
14 theft. But, again, we'll have a lot larger hit rate
15 when we do roll a truck, we're going to find it.
16 Whereas, with AMR the hit rate is not that great, you
17 go out and so you're wasting truck rolls. So, while
18 we might detect additional theft with AMI, the truck
19 rolls we feel are going to be about the same, AMR
20 versus AMI. It's just we'll have a lot greater hit
21 rate on those truck rolls.

22 COMMISSIONER CLODFELTER: Mr. Green, may I
23 follow up on your question?

24 MR. GREEN: Yes.

1 COMMISSIONER CLODFELTER: I didn't think the
2 question was so much about individual theft of service
3 by the customer as it was about system hack-ability?

4 MR. GREEN: That was a part of the question.

5 COMMISSIONER CLODFELTER: And I think that
6 was Commissioner Patterson's question, too, is you
7 can't hack a system that you've got now or with a guy
8 reading the meter that you can't hack that system.
9 You can hack this system.

10 MR. SCHNEIDER: That's correct.

11 COMMISSIONER CLODFELTER: And that's the
12 issue I think he was asking about.

13 MR. SCHNEIDER: Yeah. So, again, all of the
14 cyber security and data security components that we
15 have put into and developed into the solution, we feel
16 confident that we're not going to have hacking
17 situations that we need to deal with.

18 MR. GREEN: Do you have any information from
19 other utilities that have a more full deployment of
20 AMI as to the hacking experience they've had?

21 MR. SCHNEIDER: So, yeah, in working with
22 Itron I'm not aware of any of other utilities that
23 have had any hacking concerns or issues with the Itron
24 solution.

1 MR. GREEN: On page 5 of Duke's October 6th
2 submittal that again discusses the 2008 EPRI report,
3 quoting from page 5, *According to a 2008 EPRI report,*
4 *industry experts project that a reasonable percentage*
5 *for non-technical losses is 2% of gross revenue. This*
6 *assumption was utilized in contacting the DEC AMI*
7 *benefits,* end of quote. Did EPRI or any other entity
8 do a physical real world study to verify the 2 percent
9 figure?

10 MR. SCHNEIDER: Not to my knowledge. I
11 think they went on data. Again, this was a report,
12 not necessarily a study but it was a report, and they
13 were going off of other reports and studies going back
14 years and years that came up with this on average
15 2 percent of gross revenues so they did not.

16 MR. GREEN: DEC has not done a study on that
17 2 percent?

18 MR. SCHNEIDER: No, we have not.

19 MR. GREEN: It's probably in the document
20 somewhere but just off the top of your head do you
21 know what 2 percent of DEC's annual revenue is?

22 MR. SCHNEIDER: I think it's on Exhibit G.
23 Was it G? (Speaking to Mr. Brown)

24 MR. BROWN: Yes.

1 MR. SCHNEIDER: Page -- I think it's --

2 MR. BROWN: It's Exhibit G and I think it's
3 the final page of Exhibit G.

4 (Mr. Somers confers with Mr. Brown and Mr. Schneider)

5 MR. GREEN: Yes, if it's marked
6 confidential, then don't answer the question right
7 now.

8 MR. SCHNEIDER: I believe it is.

9 MR. BROWN: Can you see if it's marked?
10 (Speaking to Mr. Schneider)

11 MR. SCHNEIDER: Oh, if it's marked -- I
12 don't know for sure but I believe it is. Do you have
13 the exhibits in front of you by chance?

14 MR. GREEN: I do not. We can find it.
15 That's okay, we'll move on. Your 2 percent of DEC's
16 revenue is included in the Cost Benefit Study as the
17 loss that would be saved by the AMI meter; is that
18 correct?

19 MR. BROWN: It is Exhibit G, page 10 of
20 Exhibit G on the left-hand side.

21 MR. GREEN: Okay. Thank you. The
22 Commission's Smart Grid Rules require that DEC
23 describe, quote, *Any adjustment made by the utility*
24 *due to its capital accounting due to AMI including the*

1 dollar amount of write downs of its meter inventories,
2 end of quote. At the bottom of page 3 of DEC's
3 October 6th Response, you refer to the Company's
4 request for creation of a Deferred Debit Account,
5 which request is pending in Duke's general rate case
6 Docket Number E-7, Sub 1146, what is the dollar amount
7 of the write down of Duke's meter inventories
8 associated with its AMI roll out, if it's not
9 confidential?

10 MR. BROWN: I'm not sure we have the
11 current, what the current actual number was or is for
12 that in the materials that we filed.

13 MR. GREEN: Is it possibly the -- well, I'm
14 not going to ask that, that might be confidential.

15 MR. BROWN: I believe on Exhibit A, page 1,
16 there was an estimate at the time that this project
17 was considered and the net book value for DEC was
18 \$135 million.

19 MR. GREEN: That would be what would be
20 written off as AMR meters taken out and replaced by
21 AMI meters?

22 MR. BROWN: That would be the -- yes.
23 That's the book value at the time of the meters. And
24 I'm not an accountant, but it's my understanding that

1 that would have to be -- have to take some type of
2 impairment.

3 MR. SCHNEIDER: It's also -- again, I'm not
4 an accountant either, but it's our understanding that
5 there are some tax benefits when you write that asset
6 off, taking it off the books. So I think we've
7 estimated the actual loss of that being only
8 \$85 million. So we are writing off one thirty-five,
9 but minus the tax benefits the impact is \$85 million.

10 MR. GREEN: Exhibit A of Duke's October 6th
11 submittal shows a \$1.3 million benefit associated with
12 a salvage value of the existing AMR meters. How was
13 that amount calculated?

14 MR. SCHNEIDER: So that's based on the scrap
15 value that we get from the old meters as we scrap them
16 out.

17 MR. GREEN: The Cost Benefit Analysis shown
18 in Exhibit A shows the benefits of AMI roll out going
19 out 20 years, but it does not show the capital cost of
20 replacing those meters as they reach 15 years of age,
21 their useful life. In other words, the out years do
22 not should the cost of replacing meters that were
23 installed in the early years. Please explain why this
24 is an appropriate way to do the analysis? Why not

1 have the analysis end after 50 years?

2 MR. SCHNEIDER: Yeah, so we chose 20 years
3 because it is basically a five-year deployment
4 benefits starting in the sixth year and then 15 years
5 of benefits, so that's why we chose a 20-year model.
6 We did show in the ongoing cost the replacement of the
7 communications devices but to your point we did not
8 include the replacement of the meters themselves. To
9 offset that we ramped down the benefits in those final
10 outer years instead of keeping the benefit at the
11 sustained level and adding in the cost of meter
12 replacements.

13 MR. GREEN: Based on Duke's Cost Benefit
14 Analysis, in what year will the AMI project
15 break-even?

16 MR. SCHNEIDER: I don't think it's clearly
17 displayed in any of these, but I believe it's around
18 2025 is the year that it would be a break-even.

19 MR. GREEN: Does that mean that prior to
20 2025 the costs of the project outweigh the benefits?

21 MR. SCHNEIDER: That's correct; yes, sir.
22 Again, the benefits -- in this analysis the benefits
23 lag the deployment schedule by six months. So that's
24 why you see the benefits ramp up throughout the

1 deployment years and then level off at a sustained
2 value for the remaining years and then, like I said,
3 we ramp them back down on the back end.

4 MR. GREEN: On page 4 of DEC's October 6th
5 submittal, Duke states, quote, *The Company is*
6 *investigating the need to enable some meters' Zigbee*
7 *radio to facilitate the Smart Meter Usage App pilot as*
8 *outlined in the 2016 DEC Smart Grid Technology Plan,*
9 end of quote. I think you've explained earlier the
10 Zigbee radio that's included in both the AMR and AMI
11 meters?

12 MR. SCHNEIDER: Yeah. Let me clarify, we
13 have not talked about Zigbee. That is a separate
14 radio --

15 MR. GREEN: Okay.

16 MR. SCHNEIDER: -- that is in the meter and
17 the sole function of that is if you do have a product
18 or you would want to communicate that usage data out
19 of that meter to an energy management system or
20 something like that. So we do have a product that we
21 are piloting currently that is a usage app that on
22 your cell phone or tablet device you could get near
23 realtime usage data from your meter by utilizing that
24 Zigbee radio in the meter.

1 MR. GREEN: And every AMI meter would
2 contain one of those Zigbee radios?

3 MR. SCHNEIDER: That's right. And the AMR
4 meters do not.

5 MR. GREEN: What are the implications of
6 needing to enable it for the pilot? Is that something
7 that the AMI meters will already have enabled or will
8 they just be enabled for the pilot?

9 MR. SCHNEIDER: Yeah. So we chose to have
10 the radios turned upon delivery from the manufacturer.

11 MR. GREEN: So every AMI that's deployed
12 will have the Zigbee radio communicating?

13 MR. SCHNEIDER: That's correct.

14 MR. BROWN: I'd also highlight that it -- I
15 kind of refer to it as similar to maybe Bluetooth in a
16 way that you have to pair the meter with some type of
17 device that the customer may have or we may offer the
18 customer for the Smart Meter Usage App. So it's not
19 as simple as just plugging it in. But there is a
20 pairing back and forth that is required to be able to
21 talk to the meter.

22 MR. GREEN: And until that pairing occurs,
23 are there any signals being sent by the Zigbee radio?

24 MR. BROWN: I think, as Don mentioned, the

1 radio is on but you require the pairing to be able to
2 actually get the data.

3 MR. GREEN: We'd like to ask you to please
4 confirm the Commission Staff's understanding on this
5 point. With the current AMI roll out, the only
6 service change that most customers will notice is that
7 if they choose to go online and look at their usage
8 data, hourly data will now be available?

9 MR. SCHNEIDER: So that's one of the, if you
10 will, day one benefits. The other day one benefits
11 are the remote disconnect that we described so
12 customers are not being inconvenienced by having to
13 schedule appointments. So that along with the usage
14 information that the customers can see. And then
15 we're beginning to develop more and more products and
16 services so if you think of AMI as a system enabler
17 that can enable other programs and services that we
18 can provide customers, one of which I mentioned like
19 the usage app that we're currently working on. So
20 another enhanced customer service that we have already
21 developed which is available day one is customers can
22 choose their due date which they cannot do with an AMR
23 meter, but with an AMI meter you can. Day one you can
24 have the option of adjusting whatever date you want to

1 pay your bill.

2 MR. BROWN: There are a couple more that the
3 customer team has, as Don mentioned, AMI being a kind
4 of a foundational investment. Usage alerts are now
5 available to where a customer, when they have an AMI
6 meter, you get sent like a mid-cycle bill alert and
7 you can see where your actual usage is falling for
8 that particular bill. And one of the things you can
9 do is go in and set thresholds, additional thresholds
10 to say I want a budget of "X" dollars a month, maybe
11 \$100 a month and at the 75 and 100 percent threshold
12 the Company would send another text and says -- if you
13 chose text and email -- a text and email whenever you
14 hit that threshold. So the customer is better
15 informed of how much energy they're using along the
16 month. Don had also mentioned pick your due date.
17 Usage app is being -- going to be piloted as well and
18 we're hoping to bring at some point a prepaid-type
19 solution, and we're also looking to pilot more
20 enhanced communications from an outage perspective as
21 well.

22 MR. SCHNEIDER: And so the other area that
23 we would be working on as well as any other additional
24 rate structures that would be available now that we

1 have interval data from the meters, so
2 time-of-use-type rates.

3 MR. GREEN: Thank you. Mr. Brown, you
4 mentioned the enhanced outage notification, mid-cycle
5 usage alerts. Are these benefits going to be
6 available immediately or is there other work that the
7 AMI meters would require to make those available as
8 part of this project?

9 MR. BROWN: Yeah. So for DEC those customer
10 programs are available now, the mid-cycle usage as
11 well as threshold, as well as pick your own due --
12 pick your due date were customer programs that were
13 built off the functionality of AMI.

14 MR. GREEN: And the cost of programming the
15 meter to provide those to the customer is in the Cost
16 Benefit Analysis?

17 MR. BROWN: Yeah. So for those particular
18 examples, as Don kind of walked through before, since
19 we're pulling back information, usage information on a
20 nightly basis that's put kind of into the computer
21 system. And those customer -- those new kinds of
22 customer programs, if you will, kind of go pull that
23 data from those systems to be able to build features
24 for customers off that information.

1 MR. GREEN: As the Company looks to, quote,
2 *pave the way for programs that will allow customers to*
3 *better understand and take control of their energy*
4 *usage and ultimately their bills,* end of quote. That
5 was from page 1 of your October 6th submittal. Will
6 working through issues related to data access be
7 important and by that I mean data access by third
8 parties?

9 MR. BROWN: Can you provide a little bit
10 more detail around that question? I'm not sure I
11 understand exactly what you're asking about.

12 MR. GREEN: Well, the Commission has looked
13 at briefly anyway in response to comments in the Smart
14 Grid Technology Plan reports the question of sharing
15 customer information with third parties. So, if an
16 energy management company wanted to ask for DEC to
17 provide them with some non-identified customer
18 information that they would be able to do so. Thus
19 far, the Commission has not addressed that question in
20 any sort of rulemaking. Is it the Company's position
21 that the Commission needs to as this AMI roll out
22 occurs and that data becomes more useful and available
23 to address a rulemaking about third-party access?

24 MR. BROWN: Right. I do think with

1 third-party access it does get complicated very
2 quickly around privacy and how the information could
3 potentially shared out. As Don alluded to today, on
4 the customer portal a customer can log into their
5 account, see their hourly usage information, and be
6 able to download that into a spreadsheet that he or
7 she may want, and give it to whoever they please
8 today. If you're referring to the Company perhaps
9 building processes and systems that says I want to
10 allow certain access, I think that's a very -- that's
11 a complicated topic but certainly with more
12 information that the Company has I could see
13 interested parties wanting that information.

14 MR. GREEN: My last question which is a
15 little bit of a follow up to a discussion you had with
16 Commissioner Brown-Bland, the communications of the
17 AMI meters, will rely on cellular communications, cell
18 towers, that sort of system, correct?

19 MR. SCHNEIDER: Yes, that's correct.

20 MR. GREEN: And you mentioned the situation
21 where there would be areas of the State, perhaps rural
22 areas, that that communication is not available or
23 momentary interruptions in those communications if you
24 had a moving truck sitting in the driveway of one of

1 your customers. What about the situation where there
2 was an extended outage of cellular communications, say
3 three or four days. How would the company address
4 that?

5 MR. SCHNEIDER: Yeah. So, again, we're
6 reading the meters daily but obviously each individual
7 meter has a bill window so there's really two or three
8 days where you really have to get the read to send the
9 bill out on the normal bill cycle. So, if the meter
10 happened to be down during that time and we could not
11 get a read, we could either send someone out to
12 capture the read off the meter itself or we can
13 estimate the bill, and by estimating we've got a lot
14 more accurate information because we'll have usage
15 data all the way up to the point where it stopped
16 communication to kind of base on what that usage would
17 be.

18 MR. GREEN: Thank you. I appreciate it.
19 That's all of my questions, Mr. Chairman.

20 CHAIRMAN FINLEY: Are there questions by
21 Commissioners? Commissioner Patterson.

22 COMMISSIONER PATTERSON: On the theft, which
23 ratepayer groups do you find most of that theft
24 occurring in? Is it residential, commercial,

1 industrial? Or where is it?

2 MR. SCHNEIDER: From a volume perspective
3 it's residential.

4 COMMISSIONER PATTERSON: From a dollar
5 perspective?

6 MR. SCHNEIDER: But from a dollar
7 perspective it could be either one. We've seen some
8 examples. So when you get into the larger customers
9 and you have what we call non self-contained metering,
10 say we have potential transformers and current
11 transformers that basically they transform down the
12 voltage and the current to a smaller level that you
13 can manage by a meter. And so there's a lot of
14 wiring, control wiring and things in there, and if one
15 of those wires -- we've seen some situations where a
16 wire has burnt off and usually when you're losing part
17 of that you could be billing just a third or
18 two-thirds of the usage on a three-phase customer, or
19 it could be -- it could have been wired incorrectly to
20 begin with. And we've found a couple of those that
21 have had pretty large amounts that we have discovered
22 that weren't being billed in terms of usage.

23 COMMISSIONER CLODFELTER: I'm afraid I
24 didn't really follow fully your an to Mr. Green's

1 question about how these meters would better help you
2 respond to outage situations. Can you go back through
3 that? You've got an outage, lines down or damaged,
4 and so how does this help you?

5 MR. SCHNEIDER: So there's a few ways that
6 the AMI meter benefits. So on a storm or an outage
7 situation, we have the capabilities of interrogating
8 the meters directly out of our outage management
9 system. So show those in our control rooms that are
10 managing the distribution system, immediately when
11 they start getting alerts that there's outages, they
12 can interrogate a group of meters, they can do it by
13 an area, a large mass of meters, and immediately get
14 some feedback in terms of where the outages are. So
15 it helps on that front end assessment during a storm
16 so that we know where we send the crews right away; so
17 we anticipate duration of the storm can be reduced
18 because of that.

19 Some other things that we've found in areas
20 that we've already deployed, namely Ohio, is that on
21 the back end of a storm you get a lot of single outage
22 customers that are still hanging in the outage
23 management system. And what we've found over the
24 years, a lot of times you may be out there and you

1 picked them up but the ticket didn't get closed out or
2 there wasn't a ticket on that one, and a customer
3 flags you down and a lineman stops and fixes the
4 problem. And so the ticket is still out there and we
5 would roll a truck and it'd be what we would call an
6 "OK on arrival", so we basically just wasted a truck
7 roll. So with the capability of interrogating the
8 meters, we can ping those meters and if we see voltage
9 at the meter then we can call the customer and say,
10 hey, it appears service is back at your house from our
11 end, are you still experiencing problems? They may --
12 a breaker may have tripped in their house or something
13 like that and we can help walk them through it. So it
14 does -- on the back end of the storm it does reduce a
15 lot of truck rolls that are normally OK arrivals.

16 CHAIRMAN FINLEY: Anyone else? Mr. Somers.

17 MR. SOMERS: Can I ask maybe one follow up.
18 I think, Mr. Brown, you were maybe answering this
19 question from Mr. Green about certain costs that were
20 included in the Cost Benefit Analysis including
21 programming for things such as the pick your own due
22 date or things like that. And I understand that
23 customers greatly value, in particular, the ability to
24 decide if I -- because of my -- when I get paid or

1 whatever I want my power bill to be due on the 12th of
2 the month I can now do that but that benefit is not
3 something that's really quantifiable. How were those
4 benefits reflected in the Cost Benefit Analysis?

5 MR. BROWN: So to that question, those
6 additional customer products, or services, or programs
7 that are built off the foundational investments, those
8 benefits don't really carry a financial piece in AMI.
9 So, Bo, to your point those benefits are not really
10 there. Those are additional customer services that
11 are enabled or can be enabled by AMI and, as I
12 mentioned, the pick your due date in DEC is available
13 now. And, as mentioned from -- Bo, they can better
14 align perhaps when their bill is due to when they get
15 paid, for instance, something that better aligns for
16 them and we see it as a strong customer-type solution.
17 When someone calls in and maybe has had trouble with
18 paying a bill because it's due on a certain date,
19 well, they have the ability now to switch it to
20 something that's more convenient for them.

21 MS. JONES: So going back to the
22 conversation about energy theft and the three people
23 that the plan is to hire to do the analytics that
24 would inform investigations then people would go --

1 okay. Have the three folks actually been hired and is
2 that in -- I mean, are they doing that?

3 MR. SCHNEIDER: We do have resources doing
4 it today. I can't tell you whether they've hired
5 those additional three or not, but we do have a staff
6 of those folks that -- data -- basically data
7 scientists that do run those models today.

8 MS. JONES: And then -- so in order to make
9 the six hundred million dollar-ish benefit true, how
10 many gotchas do you have to have in terms of catching
11 people? I mean -- and do have a way of tracking that
12 you're getting what you have to get for that number to
13 be true?

14 MR. SCHNEIDER: So we did not calculate the
15 number of gotchas. (Laughing)

16 MS. JONES: Okay.

17 MR. SCHNEIDER: But, yes, we do track the
18 ones that we do find through the data analytics and
19 roll a truck. We do track those and the recoverables,
20 dollar amounts from those.

21 MS. JONES: Thank you. Then one more real
22 quick one. Circling back to the Zigbee radio, and I'm
23 not a technical wiz by any stretch, but I do know like
24 on my smart phone if I have the Bluetooth turned on so

1 that I'm capable of pairing but I haven't, it's just
2 on, that my battery degrades if I'm in that kind of a
3 mode. Can you talk me through what's going on with
4 the smart meter where you've got Zigbee turned on but
5 not working? Is it -- well is it sending out some RF
6 or any other signal and is it pulling juice off the
7 grid? What is it doing?

8 MR. SCHNEIDER: So by being powered up it is
9 transmitting just like your WiFi router would be but,
10 as Justin mentioned, until you pair it nobody is going
11 to be able to capture that data. And in terms of your
12 relation to the drainage of the battery, so there is a
13 battery in the meters but, if you think about the
14 meters, they're always energized on the side of the
15 house so that battery is continually charged, and so
16 there's not any issue with battery drainage by having
17 the radio on, if that was part of your question.

18 MS. JONES: Okay. And then the other thing
19 is the RF emissions, would they be already part and
20 parcel of the estimates you gave us? Are they
21 included in the smart meter numbers already or is --

22 MR. SCHNEIDER: No --

23 MS. JONES: -- the Zigbee something else?

24 MR. SCHNEIDER: -- since it's a separate

1 meter it is I believe 2.4 GHz so it's a lot higher
2 frequency and a lot less power. I think the RF meter
3 is under a one-watt meter whereas the Zigbee meter is
4 I believe probably half that so it's a lot less power.
5 So, as Justin mentioned, when you look at the effects
6 of RF, it's the power of the transmitter is a part of
7 that and the frequency of it. So by higher frequency
8 and lower power it actually emits less than the RF,
9 the 900 MHz RF radio.

10 MS. JONES: And I'm sorry, so could the
11 Zigbee functionality be a path forward in terms of
12 those customers who want to opt-out from a
13 full-fledged smart meter or not? Is it part and
14 parcel of in order for Zigbee to work all the other
15 smart meter stuff has to be working, too?

16 MR. BROWN: So our proposal for the opt-out
17 proposes to disable all the radios, the main radio as
18 well as the Zigbee radio.

19 MS. JONES: Okay.

20 COMMISSIONER CLODFELTER: And the customer
21 who wants to not disable the basic functionality of
22 the AMI disabled the Zigbee radio? Can I turn off one
23 but not both?

24 MR. BROWN: I don't know if you -- go ahead.

1 (Speaking to Mr. Schneider)

2 MR. SCHNEIDER: Technically you can but it
3 gets to the point where we have to track -- I mean we
4 have to track it like a whole nother meter type.

5 COMMISSIONER CLODFELTER: But I don't have
6 anything I want to pair it to so I say I love your
7 smart meter, I want it, but I don't want to have this
8 going on. I don't want to have this emission going
9 on. I don't have anything to use it for. Can I turn
10 it off or do you have to turn it off?

11 MR. SCHNEIDER: No, we would have to turn it
12 off.

13 COMMISSIONER CLODFELTER: I don't -- that's
14 not an option I can exercise?

15 MR. SCHNEIDER: No.

16 COMMISSIONER CLODFELTER: Your chart on RF
17 exposure, does that include meters that have the
18 Zigbee radio functionality enabled?

19 MR. SCHNEIDER: No. Like I said, it does
20 not show the Zigbee radio itself. So where it's
21 talking about smart meters, it's just talking about
22 the 900 MHz mesh.

23 COMMISSIONER CLODFELTER: Got it. Thank
24 you.

1 CHAIRMAN FINLEY: Steve.

2 MR. McDOWELL: Hi. Steve McDowell. When
3 you prepare your package to get it through your senior
4 management to get funding to get approval of the
5 project to get through these gates, obviously you
6 prepare an economic analysis as you've presented here.
7 Part of that economic analysis is the benefit cost
8 ratio and you probably have some triggers there. It
9 needs to be at least one in most cases, I guess, with
10 projects. Playing off Mr. Green's question on
11 breakeven, I think you indicated the breakeven for
12 this project for DEC is probably around 2025, which
13 breakeven is an indicator of risk and in this case
14 it's pretty far out in a project of this length. Can
15 you speak to that risk profile where that breakeven
16 occurs and how that might compare to other projects
17 that people try to get through your senior management
18 and get funding?

19 MR. SCHNEIDER: Yeah. So, I mean, I
20 mentioned that breakeven, but we typically don't
21 really look at the breakeven when we analyze projects
22 and come up with a Cost Benefit Analysis. It's really
23 more around what is that net present value. Is it
24 positive? What amount is it positive? And what may

1 be positive for one project and it could be the same
2 positive amount for another project, but there may be
3 other risks involved that you say, no, we're not going
4 to move forward to it. So, to your point, yeah, you
5 look at the risks involved in addition to that net
6 present value in making the overall decision on
7 whether you want to move forward with that project.

8 MR. BROWN: And I would like to add to that.
9 I mean, we've talked about and we've put in our
10 response, we do see the AMI as a foundational
11 investment really. To be able to be built upon and
12 enable customer services and products that, quite
13 frankly, customers today expect from a lot of their
14 utilities or companies they do business with. Without
15 the remote two-way capability and pulling information
16 back, these additional products and services couldn't
17 be enhanced or billed, so I guess I'd say there's more
18 to looking at a project. Just from a pure financial
19 perspective, it looks at the long-term benefits that
20 we see for customers.

21 MR. McDOWELL: Thank you.

22 CHAIRMAN FINLEY: Does that complete your
23 presentation, Mr. Somers?

24 MR. SOMERS: Yes, Mr. Chairman. Thank you.

1 CHAIRMAN FINLEY: Thank you, Duke.
2 Obviously, we have a gentleman in the audience who has
3 the some issues with what has heard today. I'm going
4 to let him come over to this microphone right here and
5 take -- you take two minutes and tell us what your
6 concerns are, please. Tell us what your name is,
7 please.

8 MR. McAFEE: My name is Andrew McAfee. And
9 thank you, Commissioner Finley. I duly apologize for
10 my outburst. It's part of my condition being RF
11 sensitive. All these cellphones in here I have no
12 filter on my brain. My apologies. It's still not an
13 excuse for my public disrespect to you.

14 CHAIRMAN FINLEY: That's all right. Tell us
15 what your views are.

16 MR. McAFEE: I recently have submitted a
17 copy to the Commission. I have prints here that can
18 be submitted. A number of the issues are related to,
19 of course, the RF exposures. There's ways to get
20 around that. Let's say we go with a digital opt-out,
21 not one word has been mentioned today about the effect
22 of a digital meters affect upon the wiring in the
23 home. The switch mode power supply inside the motor
24 create its own issues as well as the other electrical

1 problems of fires and other issues. The overbilling
2 has been substantiated considerably by inspectors as
3 well as electrical engineers. The meters are
4 extremely inaccurate. They pick up a lot of dirty
5 electricity from solar energy on that's riding on the
6 wires so the meters are not accurate. There's
7 overbilling and analog meters are really the only way
8 to go back to accurate billing and also remove the
9 health affects on the wiring. And I have 50 other
10 points that I've put in here and I'm happy to answer
11 questions.

12 CHAIRMAN FINLEY: Well, we've heard a lot
13 about that and we -- we're concerned about it. I
14 think you can tell that by the questions that we've
15 asked them and we've heard these presentations before.
16 But I wanted to let you give us your information, you
17 made that available to us and we appreciate --

18 MR. McAFEE: And I hope that the Commission
19 will continue with fiber optic phone line and other
20 ways of communicating so there's no truck rolls,
21 there's no meter readers on their feet -- because
22 that's the major way that they're going to make money
23 is by firing people, and the way to recoup their costs
24 is to have everything communicate through hard wire,

1 through fiber optic, through the cable, through
2 internet, if they will not give us analog. So there
3 are a lot of options to accomplish the goal that they
4 want and give customers real choice.

5 CHAIRMAN FINLEY: Okay.

6 MR. McAFEE: Thank you very much, sir.

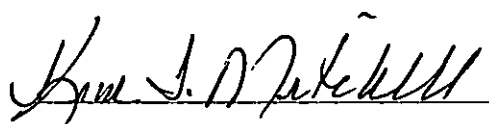
7 CHAIRMAN FINLEY: Thank you, sir.

8 It's been an informational morning. Thank
9 you for your presentation and for the information that
10 we've gained. We'll adjourn.

11 (WHEREUPON, the proceedings were adjourned.)
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C E R T I F I C A T E

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