BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA
COLUMBIA, SOUTH CAROLINA

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ALLOWABLE EX PARTE BRIEFING – 2011-114-E
REQUESTED BY DUKE ENERGY CAROLINAS – PROPOSED PLUG-IN ELECTRIC VEHICLE CHARGING STATION PILOT PROGRAM

TRANSCRIPT OF PROCEEDINGS

COMMISSIONERS PRESENT: John E. 'Butch' HOWARD, *CHAIRMAN,* David A. WRIGHT, *VICE CHAIRMAN*; and COMMISSIONERS Elizabeth B. 'Lib' FLEMING, G. O'Neal HAMILTON, Randy MITCHELL, Swain E. WHITFIELD, and Nikiya 'Nikki' HALL
ADVISOR TO COMMISSION: JOSEPH MELCHERS, ESQ.

STAFF: F. David Butler, Jr., Esq., Senior Counsel; James Spearman, Ph.D., Executive Assistant to Commissioners; Randall Dong, Esq., Josh Minges, Esq., and Rebecca Dulin, Esq., Legal Staff; Tom Ellison and William O. Richardson, Advisory Staff; Jo Elizabeth M. Wheat, CVR-CM-GNSC, Court Reporter; and Dale Davis, Deborah Easterling, and Patty Sands, Hearing Room Assistants.

APPEARANCES:

BONNIE D. SHEALY, ESQUIRE, *along with* ***JESSICA BISHOP*** *[Director, Electric Vehicle Program],* ***RON BELVIN*** *[Director, Distribution Planning],* ***TIM DUFF*** *[General Manager, Retail Customer & Regulatory Strategy], and* ***ROBERT RADY-PENTEK*** *[Carolinas Pilot Project Manager], PRESENTERS,* representing **DUKE ENERGY CAROLINAS**

NANETTE S. EDWARDS, ESQUIRE, representing **THE OFFICE OF REGULATORY STAFF**

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

2 **CHAIRMAN HOWARD**: Please be seated. Good
3 afternoon and welcome to this ex parte briefing
4 requested by Duke Energy Carolinas. I'll ask
5 Attorney Melchers to read the docket.
6 **MR. MELCHERS**: Thank you, Mr. Chairman,
7 Commissioners. This notice for an allowable ex
8 parte briefing filed by Duke Energy Carolinas, LLC,
9 is set for Tuesday, May 24, 2011, at 2:30, here in
10 the Commission's hearing room. The subject matter
11 to be discussed at the briefing is Duke Energy
12 Carolinas' proposed plug-in electric vehicle
13 charging station pilot program. Thank you, Mr.
14 Chairman.
15 **CHAIRMAN HOWARD**: Ms. Shealy, you look like
16 you're ready to speak.
17 **MS. SHEALY**: Good afternoon, Mr. Chairman and
18 Commissioners.
19 [Reference: PowerPoint Slide 1]
20 I'm Bonnie Shealy, here representing Duke
21 Energy Carolinas this afternoon. We want to take
22 this opportunity to thank you for allowing us to
23 come and discuss this plug-in electric vehicle
24 charging station pilot with y'all this afternoon.
25 I'm just simply here to introduce our panel.

[Reference: PowerPoint Slide 2]

Tim Duff is the general manager of Retail Customer & Regulatory Strategy for Duke Energy Carolinas. Jessica Bishop is the director of the Electric Vehicle Program. Ron Belvin is the director of Distribution Planning. Robert Rady-Pentek -- I hope I got that right -- is the Carolinas Pilot Project manager.

And we'd also like to welcome two guests that are here this afternoon, even though they won't be presenting. We've got Mr. Jim Poch of Plug In Carolina, with us this afternoon. He actually informed me that he's driving a Chevy Volt here this afternoon, so if anyone would like to take a look after the hearing, I'm sure he'd be glad to show it to you. And then we have Mr. Harry Lightsey. I'm sure you all remember Mr. Lightsey. He's with McAngus Goudelock, and he represents General Motors regarding electric vehicles.

Thank you, and I'd like to turn it over to our panel.

MS. BISHOP: Hi. As Bonnie said, my name is Jessica Bishop, and I too want to thank you all for your time. This is quite a privilege to be speaking to y'all.

1 [Reference: PowerPoint Slide 3]
2 I want to first kind of tee up what we're
3 going to be talking about today. I hope we've put
4 together what you're interested in hearing. Please
5 jump in if what we're covering is not what you were
6 hoping to hear or if there are questions that we're
7 not touching on. Please just jump on in, and we'll
8 answer them as best we can.
9 So, initially what we're going to talk about
10 is really the objectives of the PEV study that we
11 have filed for, and what the general timeline looks
12 like, and how that aligns with the electric
13 vehicles coming to the service territories in North
14 and South Carolina. We're going to talk about some
15 of the basics of electric vehicles and charging
16 them, just so we're all level-set on the different
17 types of vehicles you're probably hearing about,
18 the different options customers will have to charge
19 those vehicles, and what the adoption forecasts
20 look like, at least at the moment in the Carolinas.
21 Robert, sitting over here to my left, he'll
22 touch on some of the potential grid impact that we
23 are expecting as the electric vehicles become more
24 prevalent in our service territory, some of the
25 financial benefits that we may be able to realize

with effectively managing when these customers -- when our customers charge electric vehicles, how difficult it might be, and also talk a little bit about the pilot and study cost breakdowns so that you can get some good background there, as well.

[Reference: PowerPoint Slide 4]

So from a research study standpoint, really there's three primary objectives that we're trying to accomplish: One, we want to assess the distribution impact and potential ways to mitigate those impacts as electric vehicles come into our service territory. Part of -- once we assess that, we also want to understand what are the technical capabilities that the charging stations can offer us to help mitigate those potential impacts. Lastly, understanding when a customer charges, how often they charge, where they charge, and how long they charge will be valuable information for us to feed our strategy in the future for mitigating any potential grid impact.

I do want to mention -- because I've seen a couple of people looking over here -- this is a charging station in front of us. Certainly maybe at the end we can -- y'all can come down and look at it a little bit more closely. We'll talk about

it in more detail further, but just so you know what this is, because I've seen a couple of people looking at it.

[Reference: PowerPoint Slide 5]

If we go to the next slide here, this is the project timeline. We do expect the Nissan Leafs and the GM Volts to be available to customers fourth-quarter of this year. Because of that timeline, we're requesting approval at this time so we have the right amount of time to be adequately prepared for the arrival of those vehicles.

As you can see, we've really aligned the project timeline to hit right about the fourth quarter of this year. I do want to mention that over the past couple of months, we have had 10 to 11 customers reach out to us who bought electric vehicles in some of the early-launch markets -- mainly Washington, DC -- drove them down or had them shipped down, and have started dialogue with us about charging their electric vehicle. So even though we want to be prepared by fourth-quarter, there are already electric vehicles in our service territory today.

[Reference: PowerPoint Slide 6]

So, a little bit of level-setting. Bonnie

1 mentioned that Jim is driving his Chevy Volt right
2 now. There's also Nissan Leafs that will be
3 coming. The Nissan Leaf, just so you're aware,
4 that is an all-electric vehicle. It's got about a
5 100-mile range. The Chevy Volt is a little bit
6 different. It's what is referred to as an
7 extended-range electric vehicle. That vehicle can
8 go 40 miles on all-electric, but it also has an
9 onboard gasoline generator that can power the
10 vehicle and provides that extended range. The
11 intention there is to really help bridge consumers
12 over to the electric vehicle and address some of
13 the range anxiety that you're probably reading
14 about where customers are concerned about driving
15 their vehicle and not having somewhere to charge it
16 and becoming stranded. That extended range with
17 the gasoline really helps bridge that.
18 As far as charging the electric vehicles,
19 there's really two primary options. One, a
20 customer can absolutely charge from a 120-volt
21 regular outlet plug in their home. The issue there
22 obviously is that it's going to take longer to
23 charge the vehicle. With a Chevy Volt, with a 40-
24 mile range and a 120, you're looking at -- I don't
25 know -- 10 to 12 hours, probably, to charge your

1 vehicle. For a Nissan Leaf, it's probably more
2 around 18 hours at a 120.
3 So we do think a lot of customers are going to
4 be more interested in what's called a Level 2
5 charging station, and that's really the focus of
6 this conversation. That's what's in front of me
7 right now. That is a 240-volt charging station,
8 and it does require kind of a special charging
9 station -- which, again, is what is in front of me.
10 Now, when we talk about Level 2, there's also
11 sort of a step down there. There's two types. One
12 is an intelligent charging station, and one is a
13 non-intelligent. So from a non-intelligent
14 standpoint, literally what it is is kind of a
15 glorified extension cord. It gives you that 240-
16 volt charge, but it does not have any data-
17 capturing capabilities, does not have any control
18 or management capabilities. It's just -- think of
19 it as sort of a high-powered extension cord. The
20 intelligent charging stations, which is what we've
21 requested approval to install into consumers'
22 homes, or customers' homes, can capture data. It
23 gives us session data, tells us when a customer is
24 charging. It also has the ability to preprogram
25 charging times that can offer some nice options for

1 customers, where they come home, they plug in their
2 car but power doesn't actually flow until off-peak
3 hours. It gives the ability to offer some demand-
4 response capabilities. And there's also some other
5 potential that works with these intelligent
6 charging stations.
7 Now there's obviously a premium that you pay,
8 from an intelligence standpoint, to add that extra
9 capability to it, so the price ranges are
10 significantly higher right now. The non-
11 intelligent charging stations are about 500 bucks,
12 if you buy a Chevy Volt and just buy their default
13 charging station. An intelligent charging station,
14 that's more around $1,500 -- between $1,500 and
15 $2,000.
16 So are there any questions with at least the
17 difference between these charging stations and the
18 vehicles? Because I think that's really important
19 that folks understand that, as we move further into
20 the presentation and discussion today.
21 [No response]
22 Okay, good.
23 [Reference: PowerPoint Slide 7]
24 So, I know there's always a lot of interest on
25 where these customers are going to live, especially

in the Carolinas, in regard to this conversation. What we've tried to do is put together a heat map that shows where GM Volt hand-raisers are going to reside. One of the things about electric vehicles, or one of the things that we saw with the Priuses, is that customers tend to cluster, meaning customers who are interested in these vehicles tend to live in the same area. And we're starting to see similar type clusters that we did with the Prius with the electric vehicles.

From South Carolina's perspective, in Duke's service territory we're seeing most of the adoption happening in Rock Hill, Fort Mill, and the Greenville area. Outside of our service territory, there's also Columbia and Charleston. About 40 percent of the GM hand-raisers in South Carolina are in our service territory.

We did not put anything as far as the Nissan Leaf hand-raisers. We haven't been able to heat-map those yet, but did want to share with you in South Carolina that -- now this data's a little bit old -- about six months ago there were over 2,200 hand-raisers. When I say "hand-raisers," that means these are customers that have logged onto GM or Nissan's website and said, "When these are in my

1 area, I would be interested in buying one. Please
2 contact me." So about six months ago, about 2,200
3 customers.
4 [Reference: PowerPoint Slide 8]
5 So, from an adoption-rate standpoint in the
6 Carolinas, we've put together a forecast, and this
7 forecast is really based -- up to 2020, at least --
8 is really based on estimates announced by
9 manufacturing capabilities of the automakers. What
10 we really wanted to show here, and one thing I want
11 to hit on absolutely is, pretty much after 2020 all
12 bets are off, from an electric vehicle standpoint.
13 As you can see, it's going to be a slow ramp-up of
14 buying these vehicles. The question is how quickly
15 are they going to take off or are they going to
16 stay a niche market. So what we tried to represent
17 is, at 2020, it kind of seems like things could
18 really go up, or it could just kind of stay -- kind
19 of plateau. For the purposes of this analysis,
20 we've stuck to the blue forecast, which is more of
21 a conservative forecast. But as you can see, at
22 least what we are thinking is that by 2012, about
23 4,000 vehicles in the Carolinas -- and these are
24 cumulative numbers here. By 2015, 17,000; and by
25 2020, 127,000.

1 **VICE CHAIRMAN WRIGHT**: Ms. Bishop.
2 **MS. BISHOP**: Yes, sir.
3 **VICE CHAIRMAN WRIGHT**: A quick question as it
4 relates to that, if I might. Sorry about moving
5 the microphones around. You said it was a
6 conservative figure, or --
7 **MS. BISHOP**: Yes, sir.
8 **VICE CHAIRMAN WRIGHT**: -- conservative ramp-
9 up. Do you see right now, because of the range of
10 the vehicle, this maybe being more a fleet type
11 vehicle right now, a majority of it, rather than --
12 I mean, like for example, I couldn't get one and
13 drive to Little Rock, Arkansas.
14 **MS. BISHOP**: Right, right -- well, you could.
15 You could get a Volt, right, and do the extended
16 range.
17 [Laughter]
18 But, yes, sir, I guess to answer your
19 question, number one, we are seeing interest from a
20 fleet perspective. General Electric announced that
21 they're going to buy 25,000 electric vehicles. I
22 believe about half of them are going to be Volts,
23 the other half Nissan Leafs. So, yeah, there is
24 interest, from a fleet perspective.
25 What we're focusing on here and what this is,

it's all around residential, because, again, what we very much think is that most of the charging is going to happen at home; it's not going to happen -- there will be some public charging, there will be some work-place, but for the most part the beauty of the electric vehicle is you no longer have to go to the gas station; when you get home, you plug it in and you kind of forget about it till the next day.

VICE CHAIRMAN WRIGHT: So these numbers are residential numbers.

MS. BISHOP: Yes, sir.

VICE CHAIRMAN WRIGHT: Okay.

MS. BISHOP: Are there any other questions at that?

[No response]

[Reference: PowerPoint Slide 9]

So, I think now, probably the best thing to do is I'll turn it over to Robert. Let's talk a little bit about the grid impact and some of the other things, and then hopefully we can open it up to some good dialogue, and if we want to talk through this charging station, or whatever makes sense for you all, we can absolutely do that.

MR. RADY-PENTEK: Thanks, Jessica. Am I on

1 [indicating]?
2 So, this increased adoption in PEVs, it has
3 the potential to impact our grid in a number of
4 ways. Firstly, each PEV is expected to use about
5 2,500 -- 2,500 kilowatt-hours per year in energy
6 usage. As a point of comparison, an average home
7 in the Carolinas uses about 12,000 to 14,000
8 kilowatt-hours per year, depending on whether or
9 not there's electric heat.
10 One of the reasons that Duke considers PEV
11 charging to be significant is that we anticipate
12 that a significant or very large portion of
13 charging is going to occur during peak times. So
14 if you think about a typical user, they'll get home
15 from work, sometimes between 5 and 7. They'll turn
16 on their AC unit, they'll turn on their range and
17 TV and everything else. And as soon as they get in
18 the garage, they'll plug in their electric vehicle,
19 as well, and that will draw additional demand right
20 at the point when it's most costly to the grid.
21 Based on that, we anticipate that by about
22 2020, Duke will be required to have about an
23 additional 89 megawatts of generating capacity to
24 meet this peak requirement just for PEVs -- by
25 about 2020 -- and then by about 2030 that would

1 increase to about 300 megawatts, just to meet the
2 needs for PEVs. Duke may be able to, or we suspect
3 that we will be able to, to some degree and
4 largely, mitigate the impacts of on-peak charging
5 by helping customers manage their charging, by
6 using charging station similar to this or other
7 types of technologies that either incent or
8 encourage customers to move their charging to off-
9 peak times or times when it's less costly.
10 In addition to impacting peak, we also believe
11 that electric vehicles will impact local
12 infrastructure, meaning the transformers and the
13 cables that are attached to the front of the
14 customers' homes. That's on the next page.
15 [Reference: PowerPoint Slide 10]
16 So currently the transformers and the cabling
17 between the transformer and the customer home,
18 that's size-based on Duke's expected demand that we
19 expect to see from the homes on that transformer,
20 as well as from, you know, all the other homes.
21 That's based on the size of the HVAC unit and all
22 the other appliances and total demand that we
23 expect to see from that home. When PEVs start to
24 hit the grid and we start to see an additional 3.3
25 or 6.6 or, you know, potentially, even more than 10

1 kilowatts added per PEV, we expect that many of
2 these transformers will begin to exceed their
3 design guidelines, which may cause them to either
4 fail early or have fuses fail. It will not happen
5 in all cases, but it certainly will happen in some
6 cases.
7 Another issue that we expect is --
8 **COMMISSIONER HAMILTON**: Mr. Chairman, could I
9 ask a couple of questions --
10 **CHAIRMAN HOWARD**: Please.
11 **COMMISSIONER HAMILTON**: -- before he leaves
12 this phase?
13 **CHAIRMAN HOWARD**: Please.
14 **COMMISSIONER HAMILTON**: Robert, you mentioned
15 the fact that it could put a strain on the system.
16 I've heard that if as many as five in one
17 neighborhood that was on one transformer, it would
18 blow the transformer. Is this -- any basis to
19 this?
20 **MR. RADY-PENTEK**: It depends significantly on
21 the type of transformer, the number of homes on
22 that transformer. Different transformers will fail
23 at different times. You know, in some cases you'll
24 be able to put several PEVs; in some cases, the
25 first PEV may cause the transformer to exceed

1 design guidelines.
2 **COMMISSIONER HAMILTON**: If they were to come
3 home, as you mentioned they probably would do, what
4 would it do to the normal utility bill if they
5 charge the vehicle during peak times?
6 **MR. RADY-PENTEK**: If they charge during peak
7 times. So if they're on a flat-rate charge and
8 they, you know, 2,500 kilowatt-hours per year, that
9 comes out to around $230 per year --
10 **COMMISSIONER HAMILTON**: It's going to be a
11 flat rate fee. Is this subsidized by the other
12 ratepayers on the system?
13 **MR. DUFF**: I think what Robert is referring to
14 is, rather than a flat rate, that they would be on
15 their existing residential tariff. With respect to
16 subsidization, obviously, if there were grid
17 impacts associated, the system costs we incur,
18 those would be spread and subsidized across all
19 customers. But with respect to the actual rate
20 that the customer would be on, they would be on
21 their existing tariff, so the only subsidization
22 that would exist would be that that was already
23 inherent in the existing tariff.
24 **COMMISSIONER HAMILTON**: Okay, thank you.
25 Thank you, Mr. Chairman.

1 **CHAIRMAN HOWARD**: I'm going to break in and
2 ask a couple of questions, too. I was amazed
3 yesterday when I was looking at the PowerPoint, on
4 going from -- let me get the right page -- going
5 from 2015 to 2020, increasing from 17,000 to
6 127,000. Well, my first thing, there was a typo
7 and it was 27; that was corrected this morning. I
8 was amazed at 27, the increase between 10,000
9 vehicles in five years when we only get 4,000
10 vehicles, you know, to start off with. How
11 accurate is your forecast on this? I mean, to me
12 that is amazing that we're showing a growth pattern
13 almost like that. Do you -- how do you arrive at
14 that particular --
15 **MR. RADY-PENTEK**: So, currently these
16 forecasts are built largely from announced
17 manufacturing capacity that the automakers have
18 announced. So, GM, for example, has just announced
19 that they've increased their capacity to 60,000
20 vehicles per year in one of the plants in Detroit.
21 Nissan has announced and started construction on a
22 plant in Smyrna, Tennessee, which has the ability
23 to produce 150,000 Nissan Leafs per year. In
24 addition, there's other auto manufacturers and
25 there's, you know, both Nissan -- there's Nissan

that also has capacity in Japan, as well. So largely, these forecasts have been drawn from announced automaker plans for electric vehicle production.

MS. BISHOP: And I think one other thing that Robert -- yeah, Robert -- will touch on a little bit further, there's, you know, definitely the thought that the price of these vehicles is going to come down as the battery technology evolves. If you look at the price of an electric vehicle right now, the Chevy Volt's $41,000 and the Nissan Leaf is $33-$34,000, I believe.

MR. RADY-PENTEK: $35,000

MS. BISHOP: There's a $7,500 tax credit that brings that cost down, but that's still not a -- that's not a real cheap car. And so there's a lot of effort being put behind bringing the cost -- and about half of that price is the battery. So bringing the battery cost down, making these cars more affordable to the average consumer would also be reflected in what GM and Nissan and other car manufacturers are planning to be able to manufacture by 2020. And we'll hit some more on that further in the slide deck.

CHAIRMAN HOWARD: Are the, I guess like cell

phone usage, but are the adapters the same on the Leaf or the Volt? I mean, is there a different transformer for the -- if I get a Leaf and my wife has a Volt, will we get two trans- -- two chargers?

MS. BISHOP: So, that's an excellent question. For Level 2 charging, there's a standard plug now. That standard happened, I believe, last year. It's referred to as J-1772. And we can show it to you on there; it's a standard plug that your Leaf would have or your Volt would have, for Level 2 charging. Level 3 is where you may hear that there's not standardization yet, and that's absolutely true.

CHAIRMAN HOWARD: Going back to follow up on Commissioner Hamilton's question about who pays for this, and I think you answered the question as more it's paid in base rates.

MS. BISHOP: For -- are you asking for the pilot, sir?

CHAIRMAN HOWARD: Yeah.

MS. BISHOP: Yes, sir.

CHAIRMAN HOWARD: So, if Commissioner Mitchell gets in his little car, little electric car, and goes to a Clemson football game --

COMMISSIONER MITCHELL: The Chairman's going to pay for it.

CHAIRMAN HOWARD: -- I'm going to have to subsidize his -- through my rates, if I'm a Duke ratepayer?

MR. DUFF: The cost that would be reflected in the base rates would be the cost of the charging station, and that's so that we can get the learnings to help mitigate the total system impact. With respect to the actual consumption of energy associated with the charging, that would be reflected in Commissioner Mitchell's bill, not yours.

CHAIRMAN HOWARD: So I would be paying for his charging station, partially.

MR. DUFF: You would be paying for the cost of the pilot to get the system impact learnings, yes.

CHAIRMAN HOWARD: I think I saw a figure somewhere and -- well, I guess you wouldn't -- $1,200,000? Is that what the total program's costing?

MR. DUFF: That's for the --

CHAIRMAN HOWARD: That may be --

MR. DUFF: That's for --

CHAIRMAN HOWARD: -- in the exhibits. Okay.

While we're here, let's go back to a page on your interesting purchases, the map of South

1 Carolina and North Carolina with your territorial
2 lines on it.
3 [Reference: PowerPoint Slide 7]
4 Number seven. This study with the hand-
5 raisers, did you all do a demographic study of the
6 hand-raisers as to age, income, other variables?
7 **MS. BISHOP**: We have -- GM actually did one,
8 yes, sir, and it's -- I don't have it in front of
9 me, but I think it's -- the average consumer of
10 these is age 45, household income is over $125,000
11 a year, mainly males, I believe. But yes, sir, GM
12 has done some demographic studies with this. That
13 data did come from GM.
14 **CHAIRMAN HOWARD**: Okay. That's all for right
15 now. Thank you.
16 **COMMISSIONER MITCHELL**: I have a question --
17 **CHAIRMAN HOWARD**: Commissioner Mitchell.
18 **COMMISSIONER MITCHELL**: -- Mr. Chairman. And
19 you were talking about price and that certainly
20 interests -- arouses my interest. And you might --
21 probably are going to cover this. And you
22 mentioned the battery.
23 **MS. BISHOP**: Right.
24 **COMMISSIONER MITCHELL**: Tell me the actual
25 cost of the battery, the percentage of what that

1 would do to the price, and any kind of warranties
2 that are on the battery. What's the life
3 expectancy of the battery, since that seems to be a
4 key ingredient to the cost.
5 **MS. BISHOP**: Right, that's a good question.
6 Robert had more detailed further in the deck on
7 that, but I will tell you, from a warranty
8 standpoint, the batteries are being warranted for
9 eight years on these vehicles. One thing to note,
10 that when we talk about the life of a battery in
11 electric vehicles -- and you probably know this,
12 but it's not going to just stop, right? It's that
13 it won't retain its charge as long, just like what
14 happens on your cell phone. So it's warranted up
15 to eight years, which is 80 percent capacity on
16 that battery.
17 So they are -- they are quite expensive right
18 now. I'm not sure exactly where the figure sits.
19 But they're basically half the price of the
20 vehicle, so somewhere around $15-$20,000, yes, sir.
21 **COMMISSIONER MITCHELL**: Okay, so 50 percent of
22 your $41,000 just is battery alone.
23 **MS. BISHOP**: Is just the battery. And that's
24 why when we look at --
25 **MR. RADY-PENTEK**: Approximately.

1 **MS. BISHOP**: Approximately, yeah.
2 **MR. RADY-PENTEK**: So, to put it in perspective
3 a little bit, about ten years ago, the cost of a
4 battery that had a 100-mile range, for example, was
5 somewhere in the neighborhood of about $70,000. It
6 was extraordinarily expensive. In the Nissan Leaf
7 today, you know, they've been keeping this
8 information very close to the vest but, you know,
9 we suspect the price is in the neighborhood of
10 around $16,000 in that battery today for the 100-
11 mile range. Given the current pace of battery
12 technology and costs per kilowatt-hour, which is
13 the unit of measure, by 2015, by 2020, you may
14 expect that cost to be down in the range of about
15 $7,500, which would significantly reduce the
16 overall cost of these vehicles and make it, you
17 know, a definite economically viable alternative to
18 internal combustion engines.
19 **COMMISSIONER MITCHELL**: So are you saying, by
20 2020, maybe the price of this vehicle might be
21 $20,000 instead of 41,000? You see that? I know
22 it's hard to forecast, but --
23 **MR. RADY-PENTEK**: Yeah.
24 **COMMISSIONER MITCHELL**: -- if the production
25 increases like you think it will?

1 **MR. RADY-PENTEK**: Definitely the price will
2 come down. You know, I don't want to predict
3 anything about --
4 **MS. BISHOP**: We'd be nervous about speculating
5 on --
6 **COMMISSIONER MITCHELL**: I understand.
7 **MS. BISHOP**: -- the price.
8 **MR. RADY-PENTEK**: But for the price to come
9 down $10,000 --
10 **COMMISSIONER MITCHELL**: Right.
11 **MR. RADY-PENTEK**: -- it seems in the realm of
12 possibility, for sure.
13 **COMMISSIONER MITCHELL**: Thank you. Thank you,
14 that's all I have.
15 **CHAIRMAN HOWARD**: Any other questions?
16 [No response]
17 Please continue. Wait a minute. Attorney
18 Melchers.
19 **MR. MELCHERS**: Robert, one question for you.
20 You mentioned that conceivably even one vehicle
21 placed on a neighborhood systems might be too much
22 for a transformer, and I'm curious what's so
23 unusual about the profile of a PEV. You've got
24 dryers at 240, you've got any number of things that
25 are a draw in a neighborhood. Why are these

unusual?

MR. RADY-PENTEK: I'm going to let Ron Belvin, director of our delivery answer that.

MR. MELCHERS: Okay.

MR. BELVIN: Okay. So, I've been involved in doing some preliminary studies on the impact of PEV to distribution system, and one of the studies that we're doing is looking at a couple of circuits. We've identified one as a medium adoption rate and one as a high adoption rate. And so, and then we've done a similar study to try to identify likely purchasers of the vehicles in these two circuits, and we're down to a transformer-and-service level at looking at these customers.

So one vehicle -- what could happen is -- I will say that it's probably very unlikely that one vehicle with a charging rate that's in the 3 kW range is going to impact anything, but it could if the transformer or the service is right on the edge of the design. If you have enough customers or the load is enough on that existing transformer, it could kick it right over the edge, but so could a customer adding another appliance. But for the most part, it's either the larger-charging-rate vehicles, if you have a faster charger or a larger

1 vehicle that charges at a heavier rate, or multiple
2 vehicles that cause the transformer to become
3 overloaded or the service cables to become
4 overloaded or load voltage, so those are the kinds
5 of things that get us.
6 **MS. BISHOP**: And one thing we might should
7 mention there is, with the Chevy Volts and Nissan
8 Leafs that are on the road today, those are 3.3 kW
9 chargers. The -- Nissan has announced that in 2012
10 they will be 6.6. So they're folding that into
11 their study to make sure that we are accounting for
12 the increased kW with these new vehicles that will
13 be coming out next year.
14 **MR. RADY-PENTEK**: And that 6.6 is the highest
15 that we're seeing in residential chargers today.
16 Out five or ten years, we may even exceed 10
17 kilowatts. We're unsure where the mark is going to
18 go, but we're trying to look into those effects, as
19 well.
20 **MR. MELCHERS**: But that's no different in
21 magnitude from somebody having two of their HVAC
22 systems kicking in at the same time, right?
23 **MR. BELVIN**: And that's very correct. It's
24 just that we've designed for -- normally, we have
25 designed for those two air conditioners or heat

pumps in the initial design, and this is new load that we did not include in our original design. So we have to take a fresh look at it and see whether it can handle it or not.

MR. MELCHERS: Thank you.

COMMISSIONER FLEMING: Mr. Chairman.

CHAIRMAN HOWARD: Commissioner Fleming.

COMMISSIONER FLEMING: So it sounds to me the reason you are wanting this study is to find out all of exactly what you need to put into place to make this successful --

PANEL MEMBERS: [Nodding head.]

MR. BELVIN: Correct.

COMMISSIONER FLEMING: -- since this seems to be a wave of the future in technology in transportation.

MS. BISHOP: That's right. And really, and what's the tipping point. When do we have to do anything. Again, we look at that adoption rate, and as oil prices fluctuate and battery technology may evolve quicker or slower, we've got to understand when do we really need to care and be able to react.

MR. BELVIN: Our study is looking at the worst case, and we are assuming that these vehicles are

all charging on peak, that they come home -- the missing element in our study is we don't know the customers' behavior.

COMMISSIONER FLEMING: Which is why you need the study --

MR. BELVIN: Which is why we need the study.

COMMISSIONER FLEMING: -- before you go --

MR. BELVIN: Exactly.

COMMISSIONER FLEMING: -- out and do a full-scale --

MR. BELVIN: Yes.

COMMISSIONER FLEMING: -- deployment. Thank you.

[Reference: PowerPoint Slide 10]

MR. RADY-PENTEK: So are we on -- okay. So, in addition to the standard diversified loads of transformers, we expect we may also have issues with regard to cold-load pickup. You know, as we just discussed, in a typical home, you've got appliances that cycle on and off. In an outage situation, especially when it's a long outage, we find that the ambient temperature or the house temperature cools down or warms up, depending on the season, the water heater cools down, the refrigerator warms up. When the power is restored,

all of a sudden all these loads turn on at the exact same time, and they also turn on at your neighbor's house and all the houses on the transformer. That's kind of a worst-case scenario; that's called cold-load pickup situation, and we've identified that, in those situations, the addition of a PEV load, as well, would cause additional strain to transformers, which would further cause, you know, complications to the grid, and potentially, you know, blow fuses, which might extend the outage for certain folks or, you know, at the very least it will use capacity, it will use demand at sort of the most pressing time.

Because of all these effects on transformers at peak, you know, we've tried to start this pilot project so we can understand exactly what all these impacts are, so we can learn from them and, you know, go forward with potentially some sort of programs or offers to customers that help manage this charging to reduce the overall costs to the system.

[Reference: PowerPoint Slide 11]

In terms of the overall costs to the system, we anticipate that, you know, given the information we have to date, through 2030, there will be two

1 main sources of costs that will be required to
2 maintain our system, given the impact of PEVs. One
3 is obviously the addition of generating capacity
4 during peak times, and the other is, as we
5 discussed, the impacts on transformers, which would
6 require us to upgrade transformers all the time.
7 We expect that these costs, or these
8 investments, would be in the neighborhood of about
9 $400 million through 2030. In addition to that,
10 obviously with additional peak capacity, there will
11 be operating costs. In the event that PEVs may
12 cause outages or other sort of issues with
13 infrastructure, we may see decreased customer
14 satisfaction, as well.
15 Working through the numbers, we believe that
16 if we could manage charging and if we could manage
17 charging fairly effectively, that, you know, we can
18 reduce these investment costs by about $300
19 million. So fairly sizable. And most of that
20 comes from moving charging from peak to off-peak
21 times, which we'd reduce our peak capacity and then
22 diversify the load so that our transformers don't
23 get hit so hard during the peak.
24 [Reference: PowerPoint Slide 12]
25 So we've -- we've all heard about electric

vehicles in the news for a very long time now. I know they've been -- you know, they've been around probably 10 years, 20 years. I've seen pictures of electric vehicles in the '70s. Back at the turn of the century, the nineteenth century, the year 1900, approximately 30 percent of the vehicles on American streets were electric vehicles. But since then, obviously, internal combustion engines, you know, proved to be more successful, the more economic choice. Lately though, you know, we believe that the market has begun to change to make electric vehicles more favorable than they were in the past, and we've touched on a couple of these in the past -- or, a couple of these earlier. Clearly, battery prices have already declined significantly and, you know, we anticipate will continue to decline. Battery capacity will improve, so you don't need to fill up your trunk with a battery anymore; it's a much smaller footprint that the battery can fit in. We're all aware of gas prices being high and being exceptionally volatile. And, you know, that has led to a growing movement for energy independence in this country, as well as other countries.

Given this information, many of the major auto

1 manufacturers have begun investing significantly in
2 electric vehicle production. Just an example -- we
3 mentioned this earlier -- but, you know, Nissan is
4 expanding their Smyrna plant to create annual
5 battery pack production of about 200,000 vehicle
6 batteries per year. We expect that they will be
7 able to increase their capacity to about 150,000
8 vehicles by the end of 2012, which is fairly
9 significant. GM just announced about a week ago
10 that they're expanding their existing Volt plant
11 from 16,000 vehicles per year to 60,000 vehicles
12 per year, based on the early demand they're seeing
13 from consumers in the market. It's also estimated
14 by about 2015, US markets will be able to produce
15 batteries and components to support about 500,000
16 electric vehicles annually.
17 So we're seeing that, you know, there's
18 definitely a lot more demand or a lot more activity
19 on the part of companies these days in electric
20 vehicle space than historically there has been, and
21 there's some sound economic reasons for that.
22 [Reference: PowerPoint Slide 13]
23 So just to wrap up, Commissioner Howard, you
24 mentioned the $1.2 million cost for the pilot.
25 This is the pilot, you know, cost at a high level,

just broken down. Again, this pilot is to help us understand how our customers charge and how they will use electric vehicles and help us understand some of the technologies involved in this space so that, you know, eventually we can help mitigate the cost impacts, going forward.

MS. BISHOP: So, with that, that really concludes what we had planned to present to you all, and we'd really like to open it up for more questions or feedback on if there's outstanding things we did not cover that you hoped we would.

CHAIRMAN HOWARD: Commissioners?

[No response]

I've got -- Lib, you got a question?

COMMISSIONER FLEMING: Go ahead.

CHAIRMAN HOWARD: No, you go ahead.

COMMISSIONER FLEMING: I just wanted to ask -- I wanted to hear a little bit more. I know the Department of Energy is really making a major push on this. I was up in Washington at a meeting there, and the next morning when I left, all of the electric cars were lined up along the boulevard there, and a lot of the station. Could you talk a little bit about why the Department of Energy is really making such a push for these electric

vehicles and the need for doing more research and study and having these projects out there, just the benefits that you expect to have as a result of this.

MR. DUFF: I think it would be a little bit speculative on my side to say why they're doing it, but I think a lot of it goes to the energy independence side of things, with respect to our dependence on international petroleum. I think that a lot of it has to do with potential job creation and infusion of capital into the economy. You're talking about, as Robert mentioned, a number of plants that are being built that will help create jobs. Along with the actual vehicles, there will be need for infrastructure to support those vehicles, so again more creation and more stimulation of the economy. So, those would be the large reasons. I think also you have to look from an environmental standpoint. Obviously, an electric vehicle is going to have less emissions than a traditional combustion engine.

CHAIRMAN HOWARD: Commissioner Wright.

VICE CHAIRMAN WRIGHT: You may have addressed some of this, partially. I think I'm just trying to dig down into the weeds a little bit deeper.

1 You had the map and you showed the different hand-
2 raisers and things you had identified.
3 [Reference: PowerPoint Slide 7]
4 How much of the cost that we're talking about,
5 the total cost, how much of it is applicable to
6 South Carolina jurisdiction, do you know?
7 **MS. BISHOP**: Of the -- the cost of the pilot?
8 I believe the breakdown is 25 percent South
9 Carolina and 75 percent North Carolina, and I think
10 the cost of service comes into there, as well,
11 right?
12 **MR. DUFF**: Yeah. It would be based off of
13 whatever the cost-of-service allocation was at the
14 time of the next rate case.
15 **VICE CHAIRMAN WRIGHT**: And the charging
16 stations, I guess, is it to make it part of the
17 company's rate base? Is that --
18 **MR. DUFF**: Yeah. We would plan on picking up
19 the pilot costs as part of general rates. Not
20 necessarily as rate base, not viewed as a rate base
21 asset, but as part of the -- just basically part of
22 the rate base cost.
23 **VICE CHAIRMAN WRIGHT**: Thank you.
24 **CHAIRMAN HOWARD**: Any other questions?
25 **COMMISSIONER MITCHELL**: I do.

CHAIRMAN HOWARD: Commissioner Mitchell.

COMMISSIONER MITCHELL: Yes, I'm still a little concerned about the mechanism of the car that exists today. I think you all said someone drove a car down today? Questions that I'm always asked -- one charge on the battery would normally get you, what? And the actual speed of the vehicle? You know, I was told -- I sat in one at the Clemson football game, and I got in and out -- 6'5" -- I didn't think I would be able to, but I had plenty of room, believe it or not. Not a lot of room in back, but a lot of legroom.

MS. BISHOP: Yes, sir.

COMMISSIONER MITCHELL: But just tell me. One charge on the -- one charge for the car, you can expect how many miles? Or what could you expect?

MS. BISHOP: So all of that is a function of the size of the battery that's in the vehicle.

COMMISSIONER MITCHELL: Right, and the normal size of the battery is what?

MS. BISHOP: Well, in the Chevy Volt, which provides you about a 40-mile range --

COMMISSIONER MITCHELL: 40-mile range.

MS. BISHOP: That's right. So I think on average you get 3.3 miles per kilowatt-hour. Is

that right?

MR. RADY-PENTEK: Yeah.

MS. BISHOP: Yeah. So, depending on whatever -- how big that battery is --

COMMISSIONER MITCHELL: That's a little cheaper than gasoline.

MS. BISHOP: Yes, sir, it is. It's about -- you're going to save about 75 percent right now over gasoline, with our rate. Where our rates sit. But so, with a Nissan Leaf, though, it's about a 100-miles range, but remember that your range can fluctuate depending on how efficiently you drive or whether you're running your heat. All of those things can impact your range.

COMMISSIONER MITCHELL: And the average speed? Or what can you reach?

MR. RADY-PENTEK: They're highway capable.

MS. BISHOP: It's highway capable.

COMMISSIONER MITCHELL: Highway capable?

MS. BISHOP: Oh, yeah.

COMMISSIONER MITCHELL: Okay.

MR. RADY-PENTEK: It's actually surprising, once you drive one of these. They're not, you know, the toy cars that you'd expect them to be. They're actually, you know, very robust. The

pickup is exceptionally good, because they're direct drive.

MS. BISHOP: GM went to great lengths to try to make the experience of driving that car very, very similar to driving an internal combustion engine car. They even backed off on the regenerative braking effects of electric vehicles, to make it very, very similar for customers. But your question's on point; a lot of people, when they think about electric vehicles --

COMMISSIONER MITCHELL: Right.

MS. BISHOP: -- they think of small, dinky cars and that kind of thing. They've really evolved from that.

COMMISSIONER MITCHELL: Yeah, I was actually told by the individual that had the car to expect about 40 miles -- 40 miles an hour.

MS. BISHOP: Oh.

COMMISSIONER MITCHELL: Yeah, I was surprised.

MS. BISHOP: Yeah. No.

COMMISSIONER MITCHELL: That's why I was surprised you were saying this.

MS. BISHOP: Yeah, no. The Chevy Volt and the Nissan Leaf, they'll drive -- you know, they're highway capable, just like any other sedan you

1 would buy, you know, any other vehicle. There's
2 lots of room in them, as well.
3 **MR. RADY-PENTEK**: There are people who make
4 conversions of regular cars into electric vehicles,
5 and smaller manufacturers. I don't know what the
6 specs on those cars are; those might be different.
7 The Nissan Leaf and the Chevy Volt, you wouldn't
8 recognize them on the street as not being electric.
9 **COMMISSIONER MITCHELL**: Okay.
10 **MR. DUFF**: I think in order to qualify for the
11 $7,500 tax credit, it has to be highway qualified.
12 **MS. BISHOP**: That's true.
13 **COMMISSIONER MITCHELL**: Oh, okay.
14 **COMMISSIONER FLEMING**: Mr. Chairman, could
15 I --
16 **CHAIRMAN HOWARD**: Commissioner Fleming.
17 **COMMISSIONER FLEMING**: How does this compare
18 to a Prius, the Volt or the Leaf?
19 **MS. BISHOP**: So, do you want to explain to her
20 the difference between them?
21 **MR. RADY-PENTEK**: So, the Prius is a -- the
22 current Prius, let me put it that way -- is a
23 hybrid, and what that is, it's a gas engine and it
24 has a battery. And the battery is there to help
25 optimize the efficiency of the vehicle. So it has

1 something called regenerative braking, so as you
2 brake, you actually put energy back into the
3 battery, and then the battery is used to assist the
4 vehicle, and it manages a formula and a balance
5 that gets maximum efficiency out of the vehicle.
6 There is actually no plug on the Prius currently,
7 so you cannot plug your Prius in; all the energy
8 that flows into the battery comes from gas, but it
9 just manages it in a much more efficient way.
10 Plug-in vehicles, as well as I believe there
11 is a plug-in Prius coming out in a year or so,
12 these vehicles actually get energy from the grid,
13 so you can actually drive using energy from the
14 grid and you don't necessarily have to have
15 gasoline power to drive the car. So, for example,
16 the GM Volt has a 40-mile range, but it also has a
17 gas tank in it and a gas engine that you can run if
18 you have to go past 40 miles, so if you're running
19 less than 40 miles a day to go to work, you can go
20 home, you can run your 40 miles, you go home and
21 plug in, and you do that again, and you're on
22 electric all the time. And you can be on electric
23 all year long without using a drop of gas, until
24 such time that you might want to take a longer
25 trip, in which case your gas engine just

automatically kicks in.

COMMISSIONER FLEMING: And how does it drive, comparable to a Prius?

MS. BISHOP: Yeah. It's very, very comparable. I think the most noticeable thing for an electric vehicle, at least for me, is the torque. They kind of take off. So that's very noticeable. The GM Volt, I think I mentioned this before, you don't feel that regenerative brake effect -- at least I don't -- as powerfully as you do in a Prius. But in general they drive about the same.

COMMISSIONER FLEMING: I drove a Prius in California --

MS. BISHOP: Okay.

COMMISSIONER FLEMING: -- on the Interstates, and I was shocked at how the -- the speeds you could get, and how well it handled.

MS. BISHOP: Yeah, the torque is pretty awesome.

COMMISSIONER FLEMING: And no fuel. It was wonderful.

CHAIRMAN HOWARD: Commissioner Whitfield.

COMMISSIONER WHITFIELD: Thank you, Mr. Chairman. You all had a dialogue with Commissioner

Wright, and you may have answered this question -- and if so, I'm sorry if I missed it -- but how many of these charging stations did you say you expect to install in South Carolina, in your South Carolina jurisdiction?

MS. BISHOP: Total for the pilot, we're requesting approval to install 150, but the majority of those would be in North Carolina. So we'd take 25 percent --

COMMISSIONER WHITFIELD: Of -- okay.

MS. BISHOP: Yes, sir.

COMMISSIONER WHITFIELD: Okay.

MS. BISHOP: About 30.

MR. RADY-PENTEK: 37.

MS. BISHOP: 37.

COMMISSIONER WHITFIELD: Okay. All right. Thank you, Mr. Chairman.

CHAIRMAN HOWARD: I've got a couple more questions. Your Save-A-Watt program is designed to cut back on generation -- capacity, generation. And this one is designed to increase generation. What is the net, by megawatts saved in EE programs, versus this? You're ready to answer. Go, Tim.

MR. DUFF: I guess, Chairman, I would answer that question that this pilot is not designed to

increase customer consumption. We feel that these vehicles are coming, as Jessica said. Customers can go out and buy the vehicles whether or not Duke is prepared or we run this pilot, or not. This pilot is designed to get us the best understanding of, A, the impact, and B, the customer behavior that would be necessary for us to truly design an effective way to try and mitigate the impact on the system.

CHAIRMAN HOWARD: And you follow -- you give me a lead-in into my next question. Looking at your demographics again, I think there were 30 hand-raisers in Mount Pleasant, and so you answered my question about demographics and that was consistent with what the Mount Pleasant demographics were. My question is, since this thing is the same all over the State, why isn't there a collaborative effort between you, SCE&G, and Progress to come up with the same answer? I mean, you're saving -- if I'm SCE&G or Progress, I'm going to take your information and use it. And if you'd have collaborated with them, it would be less expense to your ratepayers. I realize the expense is not that great, but it would be less expense to your ratepayers, and maybe you'd have

some different opinions and different studies.

MS. BISHOP: Tim, you can jump in here.

MR. DUFF: Yeah.

MS. BISHOP: We absolutely do collaborate quite a bit with Progress from an electric vehicle standpoint. They are planning to do some type of pilot, as far as I know. But really, we wanted to get this kick-started because we knew the vehicles were coming, and wanted to get that early baseline data, so we can start learning what we need to know to prepare for the future. We absolutely would plan to collaborate with Progress in the future.

MR. DUFF: Yeah, I mean, the goal would be that we would be very open with respect to talking about the impacts we've seen on the grid, as well as charging behavior. I think that's one of the questions is you look at different demographics and different make-ups of -- I mean, are you talking about an urban setting, a rural situation? All of those things are going to impact, obviously, the charging behavior of customers. And so I think that -- you know, we're looking at this, to Jessica's point, to get those early adopters and get their behavior and be able to understand the impact on the grid, and we feel it would be

1 beneficial not only for us and our ratepayers, but
2 for all customers in Duke's service territory.
3 **CHAIRMAN HOWARD**: But Duke ratepayers are
4 paying the cost of it, right?
5 **MR. DUFF**: Well, with respect to this pilot,
6 they would be.
7 **CHAIRMAN HOWARD**: Right. Talk to me about
8 highway use tax. I mean, I use the highway. I pay
9 gas. I get a percentage to pay for the highway use
10 tax. I drive an electric vehicle, I don't use any
11 gas. Do I not have a highway use tax? I'm just
12 driving free on the highways?
13 **MR. DUFF**: I think it would depend if you have
14 a Leaf or a Volt where you have some gasoline. But
15 I think your question is a valid one, but I don't
16 necessarily think it's the utility's place to
17 speculate on how the State would want to handle its
18 highway taxes.
19 [Laughter]
20 **CHAIRMAN HOWARD**: Commissioner Wright.
21 **VICE CHAIRMAN WRIGHT**: Talk to me a little bit
22 about the charging stations. And this kind of
23 follows up on Commissioner Howard's question a
24 little bit. If you're in the Duke territory and
25 you have a charging station, but you move to Mount

Pleasant, are these universal charging stations? Are they going to be the same, no matter where? I mean, I know they've got to plug into the same kind of car, but I guess, are they going to be more universally available and acceptable?

MS. BISHOP: There's two folds to that question. Let me answer one, and then from a pilot perspective it's sort of a different answer. One thing to be aware of with these charging stations, most of them at this point are being hardwired into the home. There's a lot of work being done to bring clarity from a code perspective on whether you can basically install a 240-volt plug like you do for your dryer and then just plug these -- have a pigtail on these and plug them in. That way, when you do move, you can take them with you. That is being done in some states right now. We have talked to a couple of -- at the county level -- folks to see if there's an issue from a permitting standpoint, and it doesn't sound like there is, but still, the code is a little bit unclear. So right now what we would be doing is likely hardwiring these.

From a pilot perspective, the way we wrote up the contracts -- do you want to talk a little bit

about that?

MR. RADY-PENTEK: Yeah. So if the customer moves -- so, when they sign up to the pilot, we're going to roll them into a customer contract which basically puts them into the program for two years, for which time we'll monitor their usage data so we can understand how they charge. If the customer wanted to terminate the pilot and not participate anymore, there would be a fee for them to leave the pilot. However, if they passed away or if they moved or, you know, they got into a car accident and the car -- you know, we want to be fair to our customers. In cases like that, all they need to do is give us notice and we'll remove the charging station for the cost in 30 days.

CHAIRMAN HOWARD: I thought it was $600 if it was less than two years.

MR. RADY-PENTEK: That's correct.

CHAIRMAN HOWARD: $600.

MS. BISHOP: Yeah.

VICE CHAIRMAN WRIGHT: So what do they do if they're in the Duke pilot and they want to move to Mount Pleasant? How do they -- do they deal with their local utility down there?

MR. RADY-PENTEK: Is that still in Duke

territory?

MS. BISHOP: No.

VICE CHAIRMAN WRIGHT: No. Say it was in SCANA's territory.

MS. BISHOP: From a pilot perspective, we could go -- we would go uninstall it for them and seek another customer in Duke Energy's service territory to collect that data, for the purpose of the pilot. But again, if they weren't in the pilot or if they wanted to purchase that charging station, yeah, they would go -- wherever they moved, they would need to work with an installer to get it installed, that's correct. Did I answer your question?

VICE CHAIRMAN WRIGHT: Yeah.

MS. BISHOP: Okay.

CHAIRMAN HOWARD: Any other questions?

[No response]

Well, I really want to thank all four of you. The four of you did a great job. I think we know a little bit more about electric vehicles now and the challenge we face and the utilities face in dealing with them. Thank you again, and good to see you, and have a safe trip home.

MS. BISHOP: Thank you for your time. We

appreciate it.

CHAIRMAN HOWARD: Meeting adjourned.

[WHEREUPON, at 3:25 p.m., the proceedings in the above-entitled matter were adjourned.]

CERTIFICATE

I, Jo Elizabeth M. Wheat, CVR-CM-GNSC, do hereby certify that the foregoing is, to the best of my skill and ability, a true and correct transcript of all the proceedings had in an Allowable Ex Parte Briefing held in the above-captioned matter before the Public Service Commission of South Carolina.

Given under my hand, this the 25th day of May, 2011.

Jo Elizabeth M. Wheat, CVR-CM-GNSC

ATTEST:

Jocelyn G. Boyd,

CHIEF CLERK/ADMINISTRATOR