**BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA**

**COLUMBIA, SOUTH CAROLINA**

**HEARING #10-11156 NOVEMBER 9, 2010 10:30 A.M.**

**ALLOWABLE EX PARTE BRIEFING**

*DOCKET NO. 2010-10-E: REQUESTED BY DUKE ENERGY CAROLINAS, LLC* - Integrated Resource Plan (IRP)

# 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: Randall Dong, Esq.

**STAFF:** F. David Butler, Jr., Senior Counsel; James Spearman, Ph.D., Executive Assistant to the Commissioners; Phil Riley, Tom Ellison, and Lynn Ballentine, Advisory Staff; Jo Elizabeth M. Wheat, CVR-CM-GNSC, Court Reporter; and Deborah Easterling, Dale Davis, and Patty Sands, Hearing Room Assistants

**APPEARANCES:**

*FRANK R. ELLERBE III, ESQUIRE, and ALEX CASTLE, ESQUIRE,* along with *BOBBY McMURRY, DR. RICHARD STEVIE, TIM DUFF, and CHRIS FALLON,* presenters, representing **DUKE ENERGY CAROLINAS**

*SHANNON BOWYER HUDSON, ESQUIRE,* representing the **OFFICE OF REGULATORY STAFF**

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Please note the following inclusions and attachments to the record:
PowerPoint presentation (PDF)
"The Duke Energy Carolinas Integrated Resource Plan (Annual Report)" of September 1, 2010 - [Public and Confidential Versions]

1 P R O C E E D I N G S
2 **CHAIRMAN HOWARD**: Y'all be seated. This
3 hearing is now called to order, and I'll ask Mr.
4 Dong to read the docket.
5 **MR. DONG**: Mr. Chairman, other members of the
6 Commission, this matter comes before the Commission
7 by way of Docket No. 2010-10-E, Duke Energy
8 Carolinas, LLC's Integrated Resource Plan.
9 The hearing has been scheduled to begin at
10 10:30 a.m., Tuesday, November 9, 2010.
11 This docket is in order.
12 **CHAIRMAN HOWARD**: Who is representing Duke
13 Energy Carolinas?
14 **MR. ELLERBE**: Mr. Chairman, Frank Ellerbe and
15 Alex Castle are here for Duke Energy Carolinas.
16 **CHAIRMAN HOWARD**: And ORS?
17 **MS. HAMMONDS**: Good morning, Mr. Chairman,
18 Vice Chairman. My name is Shannon Bowyer Hudson.
19 I'm here on behalf of the South Carolina Office of
20 Regulatory Staff. Thank you.
21 **CHAIRMAN HOWARD**: Well, Mr. Ellerbe, you want
22 to give an introduction or go straight into the
23 presentations?
24 **MR. ELLERBE**: Mr. Castle will give the
25 preliminary.

1 **CHAIRMAN HOWARD**: Okay, thank you.
2 **MR. CASTLE**: Good morning, Mr. Chairman,
3 members of the Commission. I know I've met some of
4 you informally. I think this is the first time I'm
5 appearing formally before you all, so it's a
6 pleasure to see you this morning.
7 We thank you for the opportunity to appear and
8 give our presentation today about our 2010
9 Integrated Resource Plan. I know what you're going
10 to hear from our presenters today is that the
11 planning environment that we face is one that is
12 extremely dynamic and, in fact, one that could
13 probably not be more dynamic, when you consider all
14 the different economic, environmental, and
15 operational circumstances that we find ourselves
16 in.
17 Our IRP process is intended to result in a
18 resource plan that is in the best interests of Duke
19 Energy and its customers under a variety of future
20 scenarios, and I think our 2010 IRP has
21 successfully resulted in a resource plan that
22 allows the company to meet our customers' needs
23 over the long term in an affordable, reliable, and
24 clean fashion.
25 To explain the company's IRP process and the

1 results of this year's analysis, starting on your
2 right is Bobby McMurry, who is the director of
3 Integrated Resource Planning for Duke Energy
4 Corporation. To his right as Dr. Richard Stevie,
5 chief economist at Duke Energy. To his right, is
6 Tim Duff, the general manager of Retail Customer
7 and Regulatory Strategy. And over on the end is
8 Chris Fallon, who is vice president over the office
9 of Nuclear Development.
10 We think we have an informative presentation
11 for you all today, and I hope we can answer any
12 questions you may have about our IRP process this
13 year.
14 And now as a final housekeeping matter, one
15 thing we wanted to raise with the Commission is the
16 fact that both our confidential and the public
17 version of our IRP will become a part of the record
18 as a part of this allowable ex parte proceeding.
19 We would ask for confidential treatment -- that has
20 already been ordered by this Commission with
21 respect to our filed IRP -- to extend to the
22 confidential IRP as part of this allowable ex parte
23 proceeding.
24 **CHAIRMAN HOWARD**: Your confidential
25 information will be entered under seal into the

1 record.
2 **MR. CASTLE**: Thank you, Mr. Chairman. And
3 with that, I'll turn it over to Bobby, so we can
4 get things going. Thank you, very much.
5 [Reference: PowerPoint Slide 1]
6 **MR. McMURRY**: It's a pleasure to be here
7 today, and we look forward to hopefully giving you
8 all insight into our resource plan and what was
9 filed September 1st.
10 [Reference: PowerPoint Slide 2]
11 The objective of resource planning: I was
12 looking at what we prepared last year, and the
13 objective really hasn't changed. I mean, the
14 objective of resource planning is to ensure that
15 the company reliably and economically meets the
16 energy needs of our customers for the foreseeable
17 future. Our foreseeable future of what we plan to
18 is for 20 years.
19 I find it fascinating in developing a resource
20 plan, with what Alex alluded to was so much
21 uncertainty today. In the past year, we've had
22 unprecedented changes in our fundamental fuel price
23 forecast.
24 I ask myself questions and Tim questions
25 often, you know, are we going to meet our energy

1 efficiency goals? And what are we going to see
2 during the energy efficiency goals? It all has a
3 major impact on our future planning. What role
4 will renewable energy have in our planning for
5 future resources?
6 And last but not least is, what does a carbon-
7 constrained future look like? Are we going to be
8 regulated by the EPA? Are we going to have a cap-
9 and-trade system like many bills that have been
10 proposed today? Are we going to have a clean
11 energy bill like Senator Graham and Senator Lugar
12 have proposed? Or will it be different than any of
13 those that I've just mentioned?
14 You know, I think we've incorporated and we
15 tried to evaluate as many sensitivities as we could
16 during this past year, and I think we've developed
17 a flexible resource plan that will meet the
18 customers' needs.
19 [Reference: PowerPoint Slide 3]
20 With that, just to provide an overview of our
21 resource planning process, I broken it up into five
22 steps. And it really goes throughout the calendar
23 year, if you want to try to think of it in blocks.
24 But we start at the first of the year with updating
25 our inputs.

We update our load forecast, our fundamental fuels. We look at our existing generation and new generation, any changes to what we planned for in the past. And last but not least, we also plan for energy efficiency, any changes to that. We get updates of what we're planning to.

From there, we look at technology screening. We look at emerging technologies, and we also look to see if they've become commercially available during the past year. We also screen for sizes of technology, so that when we're looking at a combustion turbine, we don't look at ten different sizes; we use an optimal size for the Duke system.

From that, we move over to portfolio development. And I like to refer to that as our screening phase. We have a screening model that you input your load forecast, your fuel forecast, your existing generation, and then you look at the capital costs of all future generations. And this screening model will give you the optimum portfolio, but -- it's not a detailed model, but it does give you direction. Should you be planning for more combined-cycles or more combustion turbines? It gives you insight as to picking nuclear early or picking nuclear late; it provides

1 you that. And we run that over a variety of
2 sensitivities of fuel price, environmental risk,
3 carbon policies, forecasted load, and capital-cost
4 variations. So we've run a bunch of sensitivities,
5 and we come up with several portfolios to be
6 evaluated in more detail.
7 We then move to a detailed analysis phase, and
8 we have an hourly model that goes out for 20 years
9 and is a production-cost model, and we run the same
10 sensitivities on the portfolios that we've selected
11 during our screening phase.
12 I'd like to make the point that we say, "Plan
13 quantitatively and qualitatively"; we meet with our
14 senior management, you know, from July, August, and
15 certainly before we file in September, and it's
16 kind of a -- I think it's a good process in which
17 we look at -- they provide us insight, you know,
18 "What does your environmental footprint look like?
19 Do you have enough fuel diversity among the..."
20 You know, you start narrowing in on a recommended
21 portfolio, and I think the process of including
22 management early on, as we're developing the IRP,
23 has worked well.
24 And at the end of this process, which
25 completes September 1st of each year, is what we

1 consider an optimal resource mix that performs well
2 over a wide variety of sensitivities.
3 [Reference: PowerPoint Slide 4]
4 From a reserve margin perspective: A reserve
5 margin is basically a safety margin, to assure that
6 we can meet our customers' needs during periods of
7 extreme weather and/or if we have a forced outage
8 during that time period.
9 For Duke Energy Carolinas, our planning
10 reserve margin is 17 percent. When we look at our
11 load forecast, it's a normalized load forecast, so
12 it's not based on extreme heat, much like we had
13 this summer for June, July, and August. We had
14 extreme heat during that period, and so that
15 reserve margin is really protecting you from
16 periods of extreme heat versus our planned load
17 forecast.
18 We also have some very large units on the Duke
19 system. We have Oconee, McGuire, Catawba, and even
20 several coal stations at Belews Creek and Marshall
21 that are all -- each unit is about 1,000 megawatts.
22 And if you were to have a forced outage during a
23 period of peak demand, that could reduce your
24 reserve margin by 5 percent.
25 We always like to look back historically, and

1 actual reserves in the past five years have dropped
2 to 2 percent. That was during a period of extreme
3 weather and several forced outages. So that's kind
4 of a worst case of -- that's really kind of a gut
5 check that our 17 percent reserve margin is
6 inadequate.
7 Commissioner Mitchell, I think you had a
8 question last year about reserve margins, so I
9 wanted to give a description and kind of show you
10 how it's actually developed.
11 **COMMISSIONER MITCHELL**: Very good memory.
12 [Laughter]
13 **MR. McMURRY**: The generating capacity
14 basically is your generating resources that you
15 have and that you're planning with, plus any demand
16 response that you're planning on adding to your
17 system. That's what we consider generating
18 capacity. Your load is your projected load
19 forecast minus the energy-efficiency/conservation
20 measures. And that's what we consider our load.
21 The generating reserve is just very simply your
22 generating capacity minus your generating load.
23 And there's two metrics which you look at.
24 You can look at a reserve margin or a capacity
25 margin. They both are measures of system reserves.

1 But the reserve margin is nothing more than the
2 generating reserves divided by the load, while the
3 capacity margins are your generating reserves
4 divided by generating capacity.
5 We use, at Duke, as our reference point,
6 reserve margin. I personally relate a little
7 better to it, that you're comparing your capacity
8 to the load that you're serving. But both of them
9 are metrics of which you can see what your reserves
10 are; it's just important that you're consistent in
11 how you use them.
12 [Reference: PowerPoint Slide 5]
13 Some major changes from 2009 to the 2010 IRP,
14 and I think most of you are pretty much aware of
15 it, but it's from natural gas. The fundamental
16 price of our natural gas forecast from 2009 to 2010
17 has decreased 35 percent by 2025. And this was due
18 primarily to what we consider an increase in our
19 domestic supply of natural gas, from shale gas.
20 There've been huge reserves that have been
21 identified through, basically, Ohio, Pennsylvania,
22 and Virginia, and in Texas, and in the Oklahoma
23 area: big deposits of shale rocks, of which
24 natural gas is a part. And we've always known
25 we've had these reserves, but we didn't know you

1 could cost-effectively extract them, and with
2 advancement in drilling techniques, that has really
3 shifted our long-term view of natural gas.
4 In 2009, what set the margin for natural gas
5 was what's called liquefied natural gas, and that's
6 basically compressed gas that's brought from
7 overseas to the United States. And the volatility
8 of that would be much greater than having a
9 domestic supply.
10 Is that the right price of natural gas?
11 That's certainly a question that we'll be tracking
12 very closely long-term. But, fundamentally, there
13 should be less volatility and the prices should be
14 lower.
15 From an environmental perspective, we continue
16 to be challenged with a multitude of environmental
17 regulations: We had the mercury regulations on our
18 coal plants; the EPA Transport Rule, which is
19 additional control of NOx and SOx; the Ozone
20 Standard, which is your summertime urban smog and
21 ozone alert days that you might hear during the
22 summer, and our contribution to that is the
23 pollutant NOx; coal combustion byproducts, that
24 would be the fly ash, bottom ash, or scrubber
25 gypsum; water quality requirements for the fish

1 impingement/entrainment that would really limit our
2 intake structures that we have at all of our
3 generating sites. And we really expect that we'll
4 have final regulation on most or all of these regs
5 in 2011, and if you look out at the calendar of how
6 -- the regulatory calendar, we think controls will
7 have to be in place between 2014 and 2017.
8 Given all these measures that are coming from
9 the environmental perspective, we looked at all of
10 our units that did not have state-of-the-art
11 pollution controls installed, and when you add up
12 all the costs to comply with all of these
13 standards, we found it would be better to retire
14 these units than to control them. These units are
15 often small and older units.
16 And so, for this year, our planning assumption
17 is to retire all unscrubbed coal by 2015. It can
18 shift a little bit, when we get final regs, if they
19 give you more latitude to move it out a year. But
20 this is really -- the reason we included 2015 is
21 it's impacting our Short Term Action Plan. We feel
22 like we need to plan for that today.
23 Certainly, another major change from 2009 to
24 2010 is, in 2009, we thought we would have a carbon
25 policy today. The Waxman-Markey legislation passed

1 the House of Representatives in 2009, and we
2 thought if that didn't pass, something like that
3 would pass. But as the recession has gone on and
4 as the healthcare debate has raged through 2009, it
5 just did not happen. And with the election we had
6 last Tuesday, it's probably more uncertain than
7 ever as to exactly what a carbon policy will look
8 like.
9 Our planning assumption for $CO^2$ prices is also
10 lower. The impact of lower natural gas prices, the
11 projection nationwide of increased coal
12 retirements, and how the interpretation of how
13 international and domestic offsets would be
14 interpreted with a cap-and-trade legislation, all
15 of those had a decreased -- a lowering of the price
16 of natural gas from what we forecasted long-term.
17 Also, given all this uncertainty, we looked at
18 one other type of legislation that's been proposed
19 in Congress, and that was -- like I said, it was
20 proposed by Senator Graham and Senator Lugar, and
21 it's a clean energy bill; it's not a cap-and-trade
22 program. But basically how the Clean Energy Bill
23 works is 15 percent of your generation would have
24 to come from renewables, energy efficiency, or
25 nuclear by 2015, increasing to 30 percent of your

1 energy would have to come from those three sources
2 by 2030. We thought it was prudent to look at that
3 in this year's IRP, given the increased
4 uncertainty.
5 [Reference: PowerPoint Slide 6]
6 With that, I'm going to let Dr. Stevie explain
7 the next several slides on our load forecast.
8 **DR. STEVIE:** Thank you, Bobby. I'd like to
9 just take a moment to talk a little bit about how
10 the forecast is put together and some of the data
11 sources associated with that.
12 If you look at the, kind of, box that's in the
13 center in the top, one of the key inputs to the
14 forecast is the projection of what's going on with
15 the national and regional economy; in this case,
16 the economy for South Carolina. And we obtain that
17 from Moody's Economy.com, and we get information
18 from that in terms of population, income,
19 employment, and industrial production.
20 We also have some other factors that affect
21 the shape of our forecast, and that's the weather
22 -- and we assume normal weather -- and also what is
23 the projection for energy price increases through
24 time. So the combination of economic factors with
25 the weather and projection of energy prices all

1 flow into a set of statistical models that we use
2 to help us forecast the sales.
3 And in addition to that, this forecast
4 incorporates some other things that are going on,
5 such as changes in compliance efficiency standards,
6 any potential technology change -- and in this case
7 we think of what appears to be coming in terms of
8 electric vehicles -- and also the company's own
9 energy efficiency programs.
10 I better hit the right button here
11 [indicating]. All right.
12 [Reference: PowerPoint Slide 7]
13 This chart -- basically I wanted to review
14 some of the economic factors and look at how South
15 Carolina has fared in this business cycle. Let me
16 set up the chart a little bit. The column to the
17 left, it says "Trough to Peak, 2001 to 2007," is
18 the change in employment, the cumulative percent
19 change in employment from the peak of the last
20 business cycle to -- I'm sorry -- from the bottom
21 of the last business cycle in 2001 to the peak in
22 2007. So you can see what the cumulative percent
23 change -- for South Carolina, it was 8.7 percent,
24 versus the US at 6.3.
25 The next column just gives a view of, all

1 right, what happened during the recession, this
2 current recession? And you can see that South
3 Carolina fared a little bit worse, 7.5 percent
4 versus 6.1 for the nation.
5 And now you look at the recovery and what's
6 happening with employment since then. And South
7 Carolina is now recovering at a bit faster rate
8 than the nation, .9 percent in employment versus .5
9 percent for the nation.
10 This is just to give an idea of how the growth
11 has changed, and we'll mention -- I'm sure you've
12 heard -- that the National Bureau of Economic
13 Research declared the recession ended June of '09,
14 which is more than a year ago, but it doesn't feel
15 like a recovery because we're still waiting for
16 those jobs to reappear.
17 I'll mention also that, with South Carolina,
18 some of the areas that we've seen a faster growth
19 have been in the health, financial services, and
20 wholesale trade areas. Manufacturing was certainly
21 challenged during this business cycle, but some of
22 the bright spots have been steel, transportation
23 equipment -- for example autos -- paper, food, and
24 electrical equipment. Those have been doing
25 relatively better than other parts of the economy.

1 [Reference: PowerPoint Slide 8]
2 This is a chart I happen to like. It gives a
3 comparison since 1980 of what has happened with
4 employment in South Carolina, relative to the
5 nation. We can see how much faster it's grown.
6 You can see the recent decline and then the
7 beginning of a turn up since we hit the bottom of
8 this business cycle.
9 [Reference: PowerPoint Slide 9]
10 And to put a little more perspective on this,
11 this is some information on Moody's Economy.com's
12 projection of the economy. And the top part of
13 this chart shows some annual rates of growth for
14 the forecast that's behind this plan, and this
15 actually came from our spring load forecast, and
16 you can see there that it shows a projection of
17 growth; you see that manufacturing employment is
18 under pressure there, with a -1.3 percent, and this
19 is really due to expected improvements in
20 productivity, because as you see further on down,
21 the gross domestic product for manufacturing has a
22 positive growth of 2.1 percent. So we're producing
23 more, but not taking advantage of productivity that
24 offsets the need for as much labor.
25 But when you look at a more recent projection

1 now that we have from our fall forecast, the
2 decline in manufacturing employment is now
3 projected to be quite a bit lower, in terms of the
4 rate of growth, and the output manufacturing would
5 be even stronger. And a part of this is, as I'm
6 sure you've heard, has to do with the inventory
7 rebuilding that's been occurring and we've seen a
8 lot of increase in manufacturing activity, as well.
9 Obviously, there's some risk to this forecast,
10 to the economy. We all know about what's been
11 going on in the housing industry, what's going to
12 happen in terms of financing and the Federal
13 deficit, and long-term competitiveness, especially
14 in terms of what will be needed down the road in
15 terms of increasing skills for employees; at the
16 same time, we've got some strengths in terms of
17 business investment, especially in the autos and
18 paper industry.
19 [Reference: PowerPoint Slide 10]
20 This chart just summarizes the growth rates in
21 energy sales expected for the major classes. And
22 this is after the impacts of the company's energy
23 efficiency programs. And these are growth rates
24 out to the year 2030. So overall we are projecting
25 an increase in the economy that leads, then, to

1 projected increases in sales over this planning
2 period.
3 [Reference: PowerPoint Slide 11]
4 And as far as peak demand for the total
5 system, this gives you a comparison of what was in
6 the 2009 IRP and in the 2010 IRP. Really, not a
7 lot of change. Maybe a little bit lower in the
8 near term, but -- and in the long term, but really
9 not a whole lot of difference between these two
10 forecasts. These things tend to move around a
11 little bit from year to year, and this is not a
12 significant change.
13 [Reference: PowerPoint Slide 12]
14 And I'm going to say a couple of words about
15 economic development. And I'll mention that Duke
16 Energy plays a significant role in the economic
17 development area and works with a lot of economic
18 development officials. There've been a number of
19 projects that, to me, signifies -- and I'm very
20 encouraged about this, with regard to our look at
21 what's going on in the economy -- that there's a
22 lot of business investment underway. To me, that's
23 very encouraging, and encouraging in terms of
24 potential for future job increases. And it's
25 occurring in the auto and electric vehicles area,

1 the paper industry. There's engineering materials
2 that are being produced, safety equipment,
3 chemicals, pharmaceuticals. There's a wide range
4 of areas where we're seeing positive movement in
5 this economy and really being driven by business
6 investment. And that has really encouraged me, in
7 terms of the state of the economy, more so than
8 we've seen in some time.
9 And I think with that, I'll give it back to
10 Bobby.
11 **MR. McMURRY:** The next couple of slides are
12 going to be on our Short Term Action Plan. And I
13 like to think of the Short Term Action Plan as
14 something that's going to happen over the next five
15 or six years, activities that we're going to need
16 to pursue. And we'll start with -- well, I guess I
17 need to turn the slide.
18 [Reference: PowerPoint Slide 13]
19 We'll start with the planned additions. We
20 have planned additions of over 2,200 megawatts to
21 be installed over the next several years. At our
22 Buck combined-cycle station is a 620 megawatt
23 facility, natural gas, and it's to be on-line next
24 October. At our Dan River combined-cycle station,
25 620 megawatts will be on-line by October 2012. Our

1 Cliffside Unit 6, coal-fired generation, will be
2 on-line by June of 2012. And we have nuclear
3 uprates also at Catawba, McGuire, and Oconee, that
4 we're planning on doing over the time period of
5 2011 through 2020.
6 From a retirement basis, it looks like a lot
7 of generation we are adding, but we're also
8 planning to retire over 2,000 megawatts of
9 generation over the next several years. As I said
10 earlier, we're planning to retire all unscrubbed
11 coal by January 1, 2015. That is 1,680 megawatts
12 of coal. We're also planning on retiring a whole
13 fleet of combustion turbines. These are late '60
14 vintage combustion turbines, very old, and we're
15 planning on retiring those by June of 2012, and
16 that's approximately 370 megawatts. Really, that
17 is 500 megawatts, but we've had to derate those 500
18 megawatts by about 130 megawatts over the past
19 several years, just due to the reliability of this
20 generation being available.
21 Another activity in our Short Term Action
22 Plan, Lee steam station in Anderson County was
23 originally designed to burn natural gas. We
24 actually burned natural gas at that station in the
25 late '60s, early '70s. Much of the infrastructure

1 is still in place at Lee steam station. So while
2 we're going to be retiring that station from coal-
3 fired generation, we're going to be converting Lee
4 1 through 3 to natural gas by 2015.
5 To put perspective on why it's such a good
6 deal, this will be more of a peaking capacity, but
7 a combustion turbine costs around $700 a kW -- that
8 is what we use for meeting our peaking needs -- as
9 compared to the gas conversion cost at Lee will be
10 less than $100 a kW. So it is very cost-effective
11 capacity for our customers.
12 Taking all of this into account, our first
13 capacity need is in 2017. Our selective plan
14 currently shows this as being combustion turbines.
15 However, depending on the price of natural gas,
16 this could easily switch to be another combined-
17 cycle facility in that timeframe.
18 [Reference: PowerPoint Slide 14]
19 Lee nuclear station, even though it's
20 projected to be operational in 2021, there's many
21 activities that have to happen between now and
22 before we can start building. And the most
23 important is the estimated Combined Construction
24 and Operating License that we're expecting in 2013.
25 From an energy efficiency and demand-response

1 perspective, by 2015, over 2 percent of our total
2 sales will be reduced by energy efficiency and over
3 8 percent of reduction in our peak capacity will be
4 reduced by 2015 through demand response and energy
5 efficiency. Approximately 6 percent of the 8
6 percent comes from demand response.
7 From a renewables perspective, we're planning
8 for over 400 megawatts' nameplate capacity of
9 renewables by 2015. And what makes up the 400
10 megawatts is basically 60 megawatts of solar and
11 340 megawatts of biomass.
12 From an environmental perspective, I'm pretty
13 proud of our accomplishments within Duke Energy
14 Carolinas, in that we're completing our advanced
15 scrubber and NOx control programs, and we just
16 completed in October of 2010, just last month. We
17 invested over $2 billion between 2005 and 2010 in
18 that program, significantly reducing our $SO^2$ and NOx
19 profile.
20 However, there are additional risks. Risk of
21 additional NOx controls, potential for mercury
22 controls, coal-combustion byproducts disposal, and
23 water quality standards, intake standards from fish
24 entrainment and impingement.
25 [Reference: PowerPoint Slide 15]

I think I presented this at a previous meeting with the Commission, but I like the map because it'll highlight that we have 1,680 megawatts of retirements and this is where they are: Dan River, Buck -- starting from the top and going down -- Riverbend, Cliffside 1 through 4, Lee 1 through 3, and Buzzards Roost.

The new combined-cycle facilities are located at the blue circles, at Dan River station and the Buck station. The Cliffside 6 unit is located in the orange circle right at Rutherfordton and Cleveland County, on the South Carolina line. And Lee nuclear station is right where the 99 Islands hydro station is, is where I like to show where that would be located. Just thought it would give a good perspective of where all of our facilities are located.

[Reference: PowerPoint Slide 16]

The next few slides are several pictures. I like to show pictures so that you can get a visualization of what we're actually building. This is a picture of our Buck combined-cycle facility. That's about -- over 30 percent complete. Employment of Buck and Dan River combined-cycles during peak construction will be

1 over 1,100 employees, and after operation we'll
2 employ permanently over 50 employees.
3 To kind of point out a couple of things on the
4 picture, that [indicating] is where the turbine is.
5 That [indicating] is where your steam generator is,
6 and this is where your steam turbine will be
7 located. But it looks a lot more than 30 percent
8 complete to me when I look at this photograph.
9 [Reference: PowerPoint Slide 17]
10 This is a picture of our Cliffside Unit 6
11 station that's over 70 percent complete. That will
12 be on-line in June 2012. During peak construction
13 we've employed over 2,000 people, and during long-
14 term operation we'll employ more than 180 people.
15 This is really very close to the South Carolina
16 line, and in talking to station manager, Rick
17 Roper, some of this employment will be coming from
18 the State of South Carolina, as well as North
19 Carolina.
20 Just to point out a couple of features here:
21 The stack, this combined stack for the Cliffside 5
22 scrubber and the new Cliffside 6 unit [indicating].
23 The actual boiler building is located there, at
24 Cliffside 6 [indicating]. There's the cooling
25 towers [indicating]. And as you can see, all this

1 [indicating] is laydown area. It takes a massive
2 amount of room for laydown area to build a site, a
3 unit of this size.
4 [Reference: PowerPoint Slide 18]
5 I'm going to ask Chris Fallon to present the
6 Lee nuclear update.
7 **MR. FALLON:** Thank you, Bobby. You know, Lee
8 is an important part of our future resource
9 portfolio. We continue our development activities
10 towards making the 2021 commercial operation date,
11 and some of those activities include continued
12 pursuit of our COL, the Combined Construction and
13 Operating License, at the NRC. Our current plan,
14 or current expectation, is that we expect to
15 receive that in the mid-2013 timeframe.
16 We continue to have discussions with the EPC
17 contractor, with the goal of coming to some
18 finalizing of an EPC agreement after receipt of, or
19 close to receipt of the COL. And we're also
20 continuing talks with potential partners. We've
21 had numerous talks with entities around the
22 Southeast and there's a great deal of interest in
23 the plant, and we expect, closer to COL, that we
24 would have a greater insight on potential partners.
25 So, in addition to the system benefits

1 provided by Lee and the generation of emission-free
2 energy, there are also significant economic
3 development benefits. You know, we expect that
4 we'll employ between 1,400 and 1,800 folks during
5 construction, with a peak of approximately 2,400.
6 Also, once the plant is in operation, we expect
7 employment on the order of 400 to 700 with very
8 good-paying jobs -- approximately 36 percent higher
9 than the average salaries. And then also we create
10 significant economic development in the sense of
11 support activities. So, you know, for the number
12 of people we have working on the operations of a
13 plant, you have approximately the same number of
14 support personnel that are necessary for these
15 plants also. So we see it as a -- you know, it
16 provides a lot of system benefits, but then it also
17 provides a great deal of economic benefit to the
18 area.
19 At this point, I'd like to turn it over to Tim
20 Duff to talk about energy efficiency.
21 [Reference: PowerPoint Slide 19]
22 **MR. DUFF:** Thanks, Chris. Well, I had the
23 pleasure of talking to the Commission in August to
24 give an update on our energy efficiency programs,
25 so I'm not going to focus too much on the current

1 programs just because I feel like I've recently
2 gone through that.
3 But I did want to point out, when I last
4 talked to the Commission, I had reported kind of
5 year-to-date results through June, and we were
6 right on track to hit our targets. And through the
7 third quarter, as you'll see, we've actually, on a
8 Carolinas system level, have exceeded both our
9 demand response and our energy-
10 efficiency/conservation targets.
11 And the message is consistent with what we
12 talked about in that August briefing, with respect
13 to the fact that those real successful numbers on
14 the conservation side have been primarily driven by
15 the very effective compact fluorescent lighting
16 campaign that we've had, and it's just been a
17 wonderful program in terms of giving a lot of
18 benefits in 2010. So, we're real pleased with
19 where we are in 2010.
20 Just kind of wanted to talk about going
21 forward. As you can see the impacts, and as Bobby
22 mentioned, by 2015 we're anticipating 2 percent of
23 our load coming from energy efficiency. So I
24 wanted to kind of focus on the new pilot programs
25 that were approved by the Commission in March, as

1 well as things that we're looking at on the horizon
2 that will help us achieve the base plan and
3 hopefully get to the high energy efficiency goal
4 level that you see in this chart.
5 One of the things that I talked about earlier,
6 there are really two ways to kind of tackle energy
7 efficiency. There's kind of from a hardware or
8 mechanical standpoint, so actually putting in a
9 more efficient device, which would be like a CFL.
10 And then there's also the behavioral piece, which
11 is kind of where we think the next horizon really
12 is, in terms of getting the energy efficiency. And
13 the first pilot program that the Commission
14 approved in the March timeframe was the Home Energy
15 Comparison Report, which really is something that
16 capitalizes on kind of the human motivation to
17 compete against one's neighbor. And the report
18 basically points out how a customer's energy
19 consumption compares to their neighbors, and tries
20 to motivate them to consume in a manner that's
21 either better or at a level of their neighbor. So
22 the natural thing for me, hopefully, would be to
23 take a look at Chris Fallon's household and say,
24 "He consumes 10 percent less than I do. And you
25 know what, I'm going to go work with my family to

1 identify ways to try and get my consumption down to
2 his level."
3 And the reason I wanted to talk about that is,
4 when we start looking at potential new programs,
5 one of the things that we're looking at on the
6 behavioral side is taking that same concept of
7 motivating behavior through comparison, is
8 something that we're piloting in Charlotte right
9 now and have it pending in front of the North
10 Carolina Commission for approval, is our Smart
11 Energy Now Program, which is a community behavioral
12 program that's targeted at kind of the business and
13 commercial customer and office space, and it's
14 basically got 60 buildings within the Greater
15 Charlotte belt -- the beltloop of -- 277 beltloop
16 of Charlotte, who will be participating and will
17 have displays saying how the Greater Charlotte Area
18 is doing from an energy consumption standpoint
19 versus other cities, to try and motivate that
20 behavior. And we're hopeful that that pilot will
21 get approved and we'll be able to start in early
22 2011, but we think that it's a model that, if it
23 proves as successful as we're hoping in Charlotte,
24 that we can roll out to other metropolitan areas
25 and other communities -- Greenville and other areas

in our service territory -- where we could take advantage of that same community behavioral advantage.

One of the other things I wanted to mention is that, you know, we heard other utilities, including Progress, at the briefing, talk about their Low Income Neighborhood Program. And we found that that was different than what we've got on a low-income basis, and think that there is some attractiveness to it, so we are actively investigating looking at a Low Income Neighborhood Program similar to the one that Progress has put forward. And then another thing that we're looking at, because we're always trying to find new areas of the market that aren't being served, is a Manufactured Housing Program, so really looking at kind of that entry-level manufactured housing to try and develop a program to get that level of housing to be built at a higher energy efficiency level, similar to kind of the Energy Star that we have on current traditional housing, but targeted at the manufactured housing level.

And then a final area that we're looking at, because we've been made aware that a number of the other -- a number of other utilities who are going

1 through grid modernization and smart grid
2 deployments, is looking at voltage control and
3 gaining efficiency and kind of demand response
4 through grid optimization and voltage control.
5 Essentially, being able to use voltage control to
6 get a resource when necessary, to kind of cut down
7 your peak. And, you know, a lot of that is going
8 to be one of those -- kind of the hardware and
9 technology-enabled initiatives, and our team is
10 currently addressing that. But we think that
11 there's definitely some potential there in the
12 future to get some benefit from an energy
13 efficiency and demand response standpoint.
14 So with that, I'll turn it back over to Bobby.
15 [Reference: PowerPoint Slide 20]
16 **MR. McMURRY:** Some more examples of our
17 renewables that I spoke about earlier: solar and
18 biomass. On the left is a SunEd facility. a PPA
19 that we purchased from Sun Edison. It's 16
20 megawatts over 360 acres. It's over 100 acres of
21 panels, just panels by itself. It's a large site.
22 We also have an initiative of a 10 megawatt Rooftop
23 Solar Project throughout the Carolinas. And by
24 2021, approximately, we anticipate about 70
25 megawatts of solar energy installed.

1 Right now, our long-term strategy for
2 renewables is about biomass. It seems to be, at
3 least in the Southeast and in the Carolinas, that's
4 our most abundant resource if you wanted to look at
5 renewables. We're testing some biomass co-firing
6 at our Buck and Lee steam stations through 2014.
7 These are very low capital-cost projects and,
8 basically, if you just look at the picture, we have
9 a -- we call it a woodpile, but it's like sawdust,
10 basically, about quarter-inch-diameter chips. And
11 it is located directly onto the coal belts
12 [indicating] right there, and that's about it.
13 It's fed in with the coal. And it will feed about
14 3 percent of your heat input to the unit with wood.
15 It's a very cost-effective way, while you have
16 these older units, to spend minimal capital to get
17 some renewable energy credits.
18 We've also had multiple proposals for
19 purchased power, for us to consider, for biomass,
20 that are very competitive compared to other
21 renewable resources. And we also have the
22 potential to maybe convert a couple of our retired
23 coal units to biomass units. Long-term, that is
24 our strategy, for the backbone of our renewable
25 strategy.

However, just like in the environmental world on coal plants, the EPA has announced what's called an EPA Tailoring Rule. And to make a long story short -- it's very complex -- basically they're saying that biomass would not be treated as carbon-neutral. So in other words, if you had a cap-and-trade program with carbon, you wouldn't be able -- you would have to include the carbon emissions from any biomass emissions. And that includes wood chips, all sorts of biomass that you may consider.

So, hopefully calmer heads prevail and we'll get a positive ruling on how biomass is treated, but I just wanted to point that out, that there is a risk of having biomass as the backbone of your renewable strategy.

[Reference: PowerPoint Slide 21]

And the next slide is basically to say wind is the only other major option if biomass is eliminated through the Tailoring Rule. In the Carolinas, onshore wind, the mountains or right on the coast, is limited. We have a lot of development along the coast that -- and we have -- looks like there's plenty of resources offshore, but it's significantly more expensive. From a transmission perspective, I know that we're looking

at bringing western wind or wind from Oklahoma to the East Coast through the Planning -- Eastern Interconnect Planning Collaborative, but -- and in North Carolina, we also use a North Carolina Transmission Planning Collaborative, and they recently looked at a study of what it would take to bring offshore wind into our grid. There's much uncertainty from a transmission perspective, but we, at Duke, think we need to be connected to all of these studies, in case we have a negative ruling on our biomass.

[Reference: PowerPoint Slide 22]

From an environmental -- even though it's sounded doom and gloom up to this point -- I personally think that Duke Energy Carolinas is positioned well. On the remaining coal units, we have advanced $SO^2$ and NOx controls, and we handle our coal-combustion byproducts in a dry manner, which is the first step toward any regulations of the fly ash, bottom ash, or scrubbers' byproducts.

Also, additional costs will depend on the stringency of regulations. It's like anything else. I worked a long time in the environmental controls area, and you can get the first 90 percent at, say, 20 percent of the cost, but to get that

1 last 10 percent, it really might cost you 80
2 percent more. I mean, it's just the scale of --
3 you always hit a cost break, if you look at
4 reductions and pollution controls.
5 On the left, bottom left, is Cliffside Unit 5.
6 It just came on-line in October 2010. And when you
7 ride around the Carolinas, if you ever see a white
8 plume coming up from a stack, that's a good thing.
9 That means that unit has been scrubbed and that
10 flue gas is clean.
11 On the right is the National Gypsum wallboard
12 facility that was completed in Mount Holly, North
13 Carolina. Back in 2005 when we started our
14 scrubber program, we signed an agreement with
15 National Gypsum to sell all of our scrubber gypsum,
16 which is a very high quality gypsum, from Cliffside
17 5, Marshall, and Allen would be sold to National
18 Gypsum. Well, they built a facility in Mount
19 Holly, North Carolina, and now it can use 600,000
20 to a million tons a year of gypsum produced at
21 those three facilities. I think that's pretty
22 impressive. And you might say, "Well, that doesn't
23 look like a roof to me"; that is also a part of our
24 Rooftop Solar Program that we put our solar panels
25 on top of the National Gypsum facility. So

1 basically, with National Gypsum, we're getting two-
2 for-one; they're using our scrubber waste and
3 they're also part of our Rooftop Solar Program.
4 By the way, if we weren't producing drywall
5 with that gypsum, that is gypsum that would be put
6 in a landfill. So that, I think from an
7 environmental perspective, is very progressive.
8 [Reference: PowerPoint Slide 23]
9 I think I mentioned earlier about our
10 emissions. I just wanted to graphically show you
11 how well we've done at Duke Energy Carolinas. In
12 2005, we emitted over 300,000 tons of $SO^2$, and by
13 2010 we're projected to emit less than 50,000 tons
14 of $SO^2$. And by 2015, we'll emit between 15- and
15 20,000 tons. That's 300,000 tons to 15,000 tons.
16 I think that's pretty impressive.
17 Also on the same page, from NOx, we're
18 currently emitting around -- in 2005, we emitted
19 around 60,000 tons, and by 2015 we'll be in that
20 same 15-20,000 ton range. Significant reductions
21 of NOx and SOx emissions.
22 [Reference: PowerPoint Slide 24]
23 Our long-term analysis is, really, how will
24 carbon be treated long-term. And, basically, when
25 you look at it from -- it's basically, are you

1 going to meet your long-term base-load needs with
2 combined-cycle natural gas operation, or are you
3 going to meet your long-term base-load needs with a
4 combination of nuclear and combined-cycle
5 generation?
6 I wanted to emphasize that we also, in our
7 reference plant, we not only have these nuclear
8 units; we have some combined-cycle generation in
9 there also. So do you put all your eggs in the
10 natural gas basket or do you diversify with nuclear
11 and natural gas long-term?
12 The results of our analysis show that two
13 nuclear units and in the '21-to'23 timeframe was
14 best for our customers, as compared to a natural-
15 gas-only portfolio. I think it's also important to
16 point out that both of these plans have renewable
17 energy; both of these plans had allowances for
18 energy efficiency. But when we evaluated these two
19 plans in a cap-and-trade scenario, 12 out of 14
20 sensitivities showed that nuclear was the better
21 option.
22 In the Clean Energy Bill, I spoke about a
23 little bit earlier about 15 percent clean energy by
24 2015, increasing to 30 percent by 2030. I really
25 wanted to stress if a nuclear unit could be

1 avoided. So we used our high energy efficiency
2 plan and we used an increased very, I think,
3 aggressive approach on renewables of about 10
4 percent renewables. And what we found is you can't
5 get there with energy efficiency and renewables
6 alone; it takes additional nuclear capacity to meet
7 the needs of the Clean Energy Bill. And using
8 those assumptions, we needed one nuclear unit in,
9 really, the '15-to'25 timeframe. You really
10 actually need it in the '15-to-'20 timeframe, and
11 you need more in the '20-to-'25 timeframe. And
12 with those aggressive assumptions, you would need
13 another nuclear unit by 2030.
14 That really lends well to a regional nuclear
15 approach where we might would purchase somebody
16 else's nuclear station in the '15-to-'20 timeframe.
17 Someone, another company or several companies,
18 would buy part of our stations at '21 to '23, and
19 we could purchase somebody else's in the '25-to-
20 2030 timeframe. But I want to make certain that if
21 regional nuclear is not an option, additional
22 nuclear capacity is the better answer for our
23 customers in the Carolinas.
24 Several signposts to look for. Nuclear
25 capital cost: The decreased natural gas price and

1 the uncertainty of how carbon is going to be
2 implemented long-term really puts pressure on
3 making sure you keep tabs on where your nuclear
4 capital costs can increase. That is one of the two
5 sensitivities; when you increase nuclear capital
6 cost by 30 percent, it became slightly negative as
7 compared to a natural gas portfolio.
8 Natural gas prices: If they were to go lower
9 or higher makes big differences on the projected
10 costs for your customers.
11 Also, we still have our application for
12 Federal loan guarantees. We haven't been selected
13 for that, but we've -- doing the analysis of that,
14 we've got the leverage of our debt and equity, that
15 this would be beneficial to our customers if we
16 were to receive the Federal loan guarantees.
17 And last but not least, this is something
18 that's kind of new on the horizon, is Oconee
19 nuclear station is over 2,500 megawatts of nuclear
20 capacity. And it's licensed -- we've had a 20-year
21 license extension but it extends to 2033. Unless
22 we can extend that further, that is 2,500 megawatts
23 of additional nuclear that we're going to have to
24 start thinking about replacing in the '25-to-2030
25 timeframe. And when you look at it with that

1 regards, in a ten-year timeframe of planning, that
2 really puts your planning process of what we're
3 going to do at Oconee -- either get another 20-year
4 extension or start looking at replacing that
5 capacity -- in the 2015 timeframe. So just -- it
6 sounds -- 2030 sounds a long ways off, and it is,
7 but decisions -- we'll have to start planning to
8 make decisions on that capacity much sooner than
9 that.
10 [Reference: PowerPoint Slide 25]
11 Balancing the portfolio: So, this is in our
12 IRP, several interesting points. As we look at the
13 nuclear, in 2011 we're projected that about 51
14 percent of our energy will be met with nuclear.
15 Even adding two nuclear units at Lee 1 and 2, our
16 nuclear capacity is about the same in 2030. So if
17 you're not adding additional nuclear capacity,
18 you're going to -- your percentage for energy will
19 be decreasing substantially.
20 Also, from a natural gas perspective, we're at
21 essentially, between CTs and combined-cycles, we
22 are at 1 percent in 2011, and that's projected to
23 be approximately 10 percent of our generation by
24 2030.
25 As you look at coal, it decreases from 42

1 percent to 29 percent, even with the addition of
2 Cliffside Unit 6.
3 And you can see where we essentially have very
4 little energy impacts from renewables and energy
5 efficiency today. By 2030, we'll have -- over 7
6 percent of our energy will be met with those
7 resources.
8 When you look at the previous chart, you might
9 say, "My goodness, you have 50 percent nuclear.
10 That doesn't seem very diverse to me." But you've
11 got to look at some of the qualitative perspectives
12 of it, such as your carbon footprint. When you
13 look at it long-term --
14 [Reference: PowerPoint Slide 26]
15 -- if you follow the green line and then to
16 the blue line, that is the carbon emissions
17 projected from a combined-cycle portfolio. And as
18 you can tell, in 2010 we're going to emit
19 approximately 42 million tons. And if we follow
20 the -- using natural gas as meeting our base-load
21 needs, we will be over 50 million tons by 2030.
22 However -- and it's also important to note that
23 both of these plans have energy efficiency and
24 renewables included. However, with adding two
25 nuclear units in addition to combined-cycle units,

you can follow the green line to the end, and it actually shows that it's a slight reduction by 2030.

If we're able to achieve more energy efficiency or more renewables, that would actually lower your carbon footprint if you have additional nuclear. But in the top line, even with an aggressive energy efficiency and renewable strategy, you're always gaining on the carbon footprint.

I guess the bottom line to all of this is, I think a balanced portfolio includes new additional energy efficiency, additional renewables, additional natural gas usage, completion of Cliffside 6, and additional nuclear. And I think it's shown with our carbon footprint that that is a balance that's best for our customers.

[Reference: PowerPoint Slide 27]

And that's the end of our presentation today, and we welcome any questions to any of our panel here today.

**CHAIRMAN HOWARD**: Thank you, Mr. McMurry. Does ORS have any questions?

**MS. HAMMONDS**: No.

**CHAIRMAN HOWARD**: Commissioners.

1 **COMMISSIONER HAMILTON**: Mr. Chairman.
2 **CHAIRMAN HOWARD**: Commissioner Hamilton.
3 **COMMISSIONER HAMILTON**: Bobby and each of you,
4 I'd like to thank you for a very informative
5 presentation. You did a good job, and I appreciate
6 that. You talked a good bit about natural gas, and
7 I had a couple of questions that I thought about as
8 you went through it. And with the discussion of
9 the natural gas, do you see any significant forces
10 that would affect the supply or price -- I know
11 some forces are always present -- as far as shale
12 gas, in the future?
13 **MR. McMURRY**: I've seen several presentations
14 on shale gas. And I might have presented myself as
15 overly optimistic with it. Certainly, they will be
16 regulated in the future, from an environmental
17 perspective. The water quality issue is not going
18 to go away. I've heard presentation from gas
19 producers saying that they don't want EPA to
20 intrude in their business, and after working in the
21 utility business for 30 years, I say good luck with
22 that.
23 [Laughter]
24 So, I really believe that there will be an
25 increased cost of producing the gas from an

1 environmental perspective. And it's like anything
2 else; I really believe, today, the production,
3 they're hitting the sweet spots from a shale gas
4 production. They're going to their very best --
5 you know, the widest seams and they're really
6 getting the very best. And what will that look
7 like in ten years? You know, we'll -- I know
8 there's huge reserves, but will it be harder to
9 extract than it is today? I mean, I compare that
10 to the coal industry, working with the Fuel
11 Department within Duke Energy. As the seams get
12 more narrow, it gets harder to get the coal out, it
13 becomes more expensive. I wonder if a similar
14 analogy will be with natural gas.
15 What I was trying to make a point to earlier,
16 though, is it does look like we do have an
17 increased supply of domestic-supply natural gas,
18 and that's always better than depending on the
19 Middle East as your incremental supply of natural
20 gas.
21 **COMMISSIONER HAMILTON**: I agree. You talked
22 about taking off the non-scrubbed coal plants and
23 coming in with using natural gas for that. And, of
24 course, we've been told at this Commission that the
25 end use of natural gas was the most efficient way

to use it and to generate electricity removed the amount. Do you think doing this adds to the inefficient use of natural gas?

**MR. McMURRY**: I think you're referring to the Lee steam station gas conversion? What we find is that unit will not operate very -- very little. I mean, it's not a -- it won't be our best combustion- -- it's not a combustion turbine, but it won't even be our best peaking unit that we have. And when we're talking about end use for natural gas, this will be used for peaking purposes only, probably less than 3 percent of the year that it will be operated. It is just very cost-effective from a capacity standpoint versus an energy perspective.

So I really don't think converting Lee 1 through 3 to natural gas will have any real sustainable impact on natural gas, you know, end users.

**COMMISSIONER HAMILTON**: Okay. So let's look at it from an overall, not just a Duke standpoint but national. We know that natural gas is used in many instances, probably more than any other source, for direct winter heating, fuel heating. Do you think that as more utilities go to using

natural gas for generating electricity, that it's going to cause a price increase for the residential homeowner?

**MR. McMURRY**: I mean, this is -- from a supply-and-demand perspective, if you increase your demand, that generally means an increase in price. And just like anything else, will you reach the tipping point to where it will have a significant impact on residential customers in the winter? It will depend on how much is available from these new shale gas reserves, it will depend on how strongly utilities go to natural gas as their long-term base-load needs.

I know I've kind of given you a roundabout question [sic] to that, but --

**COMMISSIONER HAMILTON**: Well, it's kind of a roundabout question.

[Laughter]

I thank you for your answer on those things. I guess technology is the thing that we need to depend on to make sure that shale gas is around for a long time, because without it we're going to be back to LNG, and that would be a difficult thing for us to have to face.

Again, I thank each of you for your

1 presentations.
2 **CHAIRMAN HOWARD**: Commissioner Mitchell.
3 **COMMISSIONER MITCHELL**: Thank you. I want to
4 go back to -- Commissioner Hamilton asked you
5 several questions about the Lee conversion.
6 **MR. McMURRY**: Yes.
7 **COMMISSIONER MITCHELL**: Let me make sure I
8 have that. How many megawatts are you reducing
9 now? And I believe your statement to him was it
10 was going to be eventually about 3 percent for
11 peaking purposes, is that right, that conversion?
12 How many -- tell me about the megawatts now and how
13 that will change.
14 **MR. McMURRY**: Yeah, Lee consists of three
15 units, two 100 megawatt units and one 170 megawatt
16 unit. Given it was originally designed to burn
17 natural gas, it will have the same capacity when
18 it's converted to natural gas. So that's what made
19 it so attractive is, you know, we've looked at this
20 at other parts within our company of conversion to
21 natural gas and they're saying that "This was
22 designed as a coal boiler; it's not designed as a
23 gas boiler," but when Lee was originally designed,
24 it was designed as a gas boiler, so you don't have
25 any reduction in megawatts.

When I said 3 percent capacity factor, that just means that it will only run a couple hundred hours a year. It's a very low -- it will be used for extreme peaking periods, probably during the middle of the summer or if you have a lot of forced outages during a very cold spell in the winter.

**COMMISSIONER MITCHELL**: Now, and in relation to that, Buzzards Roost, I believe, is closed completely, in the very near future, right?

**MR. McMURRY**: By June of 2012.

**COMMISSIONER MITCHELL**: Right, and is that taking any place of that production in that immediate area? Is that affecting anything as far as what Lee has been converted over to? Is that picking up any megawatts, I guess? What you're telling me, it's the same megawatt production --

**MR. McMURRY**: That's correct.

**COMMISSIONER MITCHELL**: -- from Lee. So that's just being phased out, right?

**MR. McMURRY**: Right.

**COMMISSIONER MITCHELL**: Okay. The other question, and talking about Oconee -- and I know we're looking at 2030. You said, I believe, the extension is until 2030; is that correct?

**MR. McMURRY**: 2033.

1 **COMMISSIONER MITCHELL**: 2033. How many years
2 before that would you start looking at possible
3 licensing extension? Is there a cut-and-dry period
4 of time? You mentioned that it could he extended.
5 **MR. McMURRY**: We don't know if it could.
6 **COMMISSIONER MITCHELL**: Yeah, I understand
7 that. I understand that. But is it a period of
8 time? Is it like five years, ten years, that you
9 would begin looking at that, or how does that
10 process work?
11 **MR. McMURRY**: I just know when we relicensed
12 Catawba and McGuire and Oconee for the 20-year
13 extension, we started that process approximately
14 ten years before, you know, the -- not the license
15 expires -- I guess we started 20 years before. But
16 it was -- we started about ten years, and it was
17 about a ten-year process to receive that.
18 So that's what I'm getting to is, by the 2015
19 timeframe we're going to be working hard on either
20 extending the life of Oconee nuclear station or
21 we're going to start hopefully having -- we'll have
22 to consider replacement generation for that.
23 **COMMISSIONER MITCHELL**: Right. And you've
24 talked quite extensively I think about your coal --
25 dependence on coal and where you're going from

there, and how that might affect Central Appalachian coal. What's taking that place? What's the future there? Is that going to be natural gas stepping in to take the -- or what are your actions to minimize the Appalachian -- Central Appalachian coal?

**MR. McMURRY**: Um --

**COMMISSIONER MITCHELL**: What's taking that place?

**MR. McMURRY**: Right.

**COMMISSIONER MITCHELL**: Is there anything -- I mean --

**MR. McMURRY**: Right. I mean, generally, what's taking its place is natural gas, energy efficiency, and renewables, is what's taking the place of reduced coal usage long-term. Now, we're still planning on getting a lot of our coal from Central App for the foreseeable future. I mean, it might be more expensive due to potential requirements on mountaintop removal of the coal, but there's still coal in the Central Appalachians, and many of our scrubbers were designed to burn a higher sulfur coal that could come from Illinois Basin or Northern App coal, but certainly the transportation expense would be higher.

1 **COMMISSIONER MITCHELL**: As some of your
2 different plants are closed, what steps are being
3 taken for those residents in that area, as far as
4 those impacts on the closing of those plants? Is
5 there anything designated for that, or could you
6 just speak briefly on that?
7 **MR. McMURRY**: When you're looking at the sites
8 that we are closing, Dan River is going to have a
9 combined-cycle station located there that really
10 increases its tax value much better than it was
11 before, and we'll be employing people within the
12 area. Buck steam station will not be retired; you
13 know, we're going to have a combined-cycle there.
14 Lee steam station is going to be a gas facility, so
15 that will still be an active site. The only
16 station that really, with the exception of Buzzards
17 Roost, which is -- quite frankly, it doesn't employ
18 too many people.
19 [Laughter]
20 **COMMISSIONER MITCHELL**: Right, right.
21 **MR. McMURRY**: -- is Riverbend steam station.
22 Riverbend, right now, we don't have a selected
23 generation to take the place of those megawatts.
24 It's located right outside of Charlotte. We've had
25 a lot of pressure at Riverbend steam station

because it's located on Mountain Island Lake, which is the drinking water supply of Charlotte. So, I don't know if we will put new generation there, or not. That's something to certainly consider in our evaluation for the 2017 capacity.

**COMMISSIONER MITCHELL**: Thank you, Mr. Chairman. That's all I have.

**CHAIRMAN HOWARD**: Commissioner Whitfield.

**COMMISSIONER WHITFIELD**: Thank you, Mr. Chairman. My question is for Mr. McMurry, although Mr. Duff talked a little bit about human behavior and my question deals with that. Many of the planned reductions in energy and demand are based on voluntary actions by consumers. Are the projected reserve margins adequate to meet demand if demand-side savings do not materialize as you might expect? And I think you had a targeted reserve margin of 17 percent in your slide there.

**MR. McMURRY**: Right. From a demand-response perspective where you have customers sign up for the program, I feel like you can use that for part of your reserves. We actually planned a reserve margin of the demand-response programs when we were looking at it, because we treat it as a resource. Long term, energy efficiency contribution to peak

is much, much smaller. That's certainly something we're looking at.

I saw an interesting presentation at the Southeastern Electrical Exchange, but it was on practical limitations of demand response. And basically, you can't have just ever-increasing amounts of demand response, because once you meet your peak demand, you start having to implement them for longer periods of time. And what was shown is you can't just ask people to -- especially residential customers -- to continue to use these, day after day, for multiple times in one day. So there's practical limitations and we've looked at that in where we've set our demand-response targets, and we think we're about there now and we're cautious to go much further until we see how it works on our system.

**COMMISSIONER WHITFIELD**: Thank you. I've also got a question or two for Mr. Fallon. In respect to the new Lee nuclear unit, did you say you would be seeking a COL by 2015? Or 2013?

**MR. FALLON**: 2013.

**COMMISSIONER WHITFIELD**: That's what I thought you said. And you're already actively working with potential contractors and vendors, or at least

1 having discussions with them, I believe you said?
2 Could you talk about that just a second?
3 **MR. FALLON**: Yes. We've been talking with the
4 EPC contractor and continuing those efforts to
5 attempt to have a contract in place by the time we
6 receive the COL, and we're expecting right now in
7 the mid-2013 timeframe.
8 **COMMISSIONER WHITFIELD**: Not far away.
9 **MR. FALLON**: No, it's not.
10 **COMMISSIONER WHITFIELD**: Not far away. And I
11 guess my last question is more of a number question
12 for Dr. Stevie. In your load forecast, you had the
13 1.1 percent for industrial non-textile, and -4.6
14 for industrial. Do you have an overall number for
15 the industrial sector combined, not separating out
16 the textile part? Do you have any -- I think it
17 was your page ten, or slide ten, whatever you want
18 to --
19 **DR. STEVIE**: We'll have to get that number for
20 you. I don't have the total industrial load growth
21 rate. One of the folks here in the audience might
22 have it.
23 **MS. SHAFEEK-HORTON**: Give us a moment.
24 **DR. STEVIE**: We might have that. .3 percent.
25 **COMMISSIONER WHITFIELD**: .3 percent. I

1 figured the other number, the textile, offset the
2 other one pretty bad. So it's .3 percent.
3 **DR. STEVIE**: 0.3 percent.
4 **COMMISSIONER WHITFIELD**: Thank you, that's all
5 I have, Mr. Chairman.
6 **CHAIRMAN HOWARD**: Commissioner Hall.
7 **COMMISSIONER HALL**: Thank you, Chairman
8 Howard. Okay. I think this is for Mr. McMurry.
9 You indicated that the regional nuclear development
10 is a potentially attractive means of securing new
11 nuclear generation and that the company continues
12 to explore such opportunities? No one
13 specifically, but are the other utilities using
14 that same approach? Perhaps Mr. Fallon?
15 **MR. FALLON**: Yeah. I mean, I can't speak for
16 the other utilities, but I will say that we have
17 been in discussions with a number of entities in
18 the Southeast about their interest in the Lee
19 project, and we have seen, you know, a good deal of
20 interest in the project. We're not at a point
21 where we have any commitments; we're still working
22 through a lot of the uncertainties. But we do have
23 -- we feel very good long-term that there are
24 people who are also interested in taking smaller
25 parts of nuclear plants, as we move forward.

**COMMISSIONER HALL**: Okay. And I have another one for you. Is there a tipping point in nuclear fuel costs, beyond which it would no longer be cost-competitive with other sources?

**MR. FALLON**: I think you can answer that question rather generally. I think on all technologies there's a tipping point for fuel cost. One of the big advantages of nuclear versus other resource types is the fact that you do have very low ongoing fuel costs. So as -- you know, as -- and as far as -- and it's not as volatile a commodity as, say, natural gas or coal, which have a number of other uses besides just to power nuclear power plants.

So I think the short answer is, I don't know what that number is, but naturally there will be a tipping point. But I would imagine that, given its market, I think that, you know, the volatility of nuclear fuel is much lower than the other resource types and it's not as much of an issue.

**COMMISSIONER HALL**: Okay. And that leads me into my last question. We saw that your nuclear is about 50 percent of your mix, so tell me this: What would happen if, for some reason -- I don't know why -- if nuclear ceased to be an option?

1 What would be the next plan?
2 **MR. McMURRY**: Well, I mean, the next plan
3 basically was our comparison plan of right now we'd
4 have to plan for meeting our base-load needs with
5 natural gas. And we've shown multiple times that
6 that's not in the best interest of our customers,
7 especially when you look at a carbon-constrained
8 future.
9 With either the nuclear plan or the natural
10 gas plan, you can always -- if we're very
11 successful in our energy efficiency programs and
12 it's cost-effective, then we should plan for that.
13 And I think we've covered that in our high energy
14 efficiency case. It's been evaluated.
15 **COMMISSIONER HALL**: Thank you.
16 **CHAIRMAN HOWARD**: Commissioner Fleming.
17 **COMMISSIONER FLEMING**: Thank you, Mr.
18 Chairman.
19 I also would like to thank you for your
20 reports today. They were very interesting and
21 informative. Thank you. And I appreciate what
22 you're doing with the energy efficiency programs
23 and that it really is making quite a difference. I
24 think that's amazing, how much, how soon it's doing
25 that.

What I'd like to ask you, if you could just -- the table 3.2, the load forecast without energy efficiency programs, and the 3.3 with the energy efficiency programs, if you could just talk a little bit about those tables and how they relate to the table 4.1, the conservation and demand-side management tables.

**DR. STEVIE**: I will start, and maybe Tim can chime in.

**COMMISSIONER FLEMING**: Okay, great.

**DR. STEVIE**: And let's start with the table 3.2, and you were also talking about table 4 -- ah, 4.1 and 4.2?

**COMMISSIONER FLEMING**: The demand-side table.

**DR. STEVIE**: And the difference between the -- let's see. The difference -- well, first off, on table 3.2 is a projection of the summer and winter peak and the total energy, before reductions for the projected impacts from the energy efficiency programs. So if you go to table 4.1, which is basically kind of a base case for energy efficiency, that gets subtracted off of what's on table 3.2 to get you to table 3.3.

**COMMISSIONER FLEMING**: Okay.

**DR. STEVIE**: That's how these things kind of

fit together.

**COMMISSIONER FLEMING**: Okay, great. And then you talked about wind, offshore wind not being very viable.

**MR. McMURRY**: I didn't say viable as much as cost-effective.

**COMMISSIONER FLEMING**: Well, okay. Well, that's what I was going to say, is, if you -- you know the reports from Oceana --

**MR. McMURRY**: Right.

**COMMISSIONER FLEMING**: -- talking about how it's an untapped wealth, and that it could supply a significant portion of South Carolina and the East Coast's energy needs in the future.

**MR. McMURRY**: Yes.

**COMMISSIONER FLEMING**: What will have to happen to make it cost-effective? I mean, there is -- we have to look at the cost-effectiveness of energy supplies, or if it could ever be cost-effective.

**MR. McMURRY**: Well, certainly, as you have a more stringent carbon policy long-term, it will make energy efficiency programs and renewable programs and nuclear look much more cost-effective out into the future as compared to other generation

1 options.
2 I think from what I've seen from figures of
3 offshore wind is it costing, at minimum, two to
4 three times more than what an onshore wind facility
5 would cost. So in a dollars-per-megawatt-hour, you
6 know, including all capital and whatnot. So I'm
7 talking generally because you'll get some vendors
8 that will come in and say you can do it much more
9 cost-effectively, and you really need to be careful
10 when you read some of these studies of what the
11 costs of putting in offshore wind is: Did it
12 include the transmission upgrades for when you
13 bring it onshore?
14 In the North Carolina Transmission Planning
15 Collaborative, they just looked at that at three
16 separate points along the North Carolina coast.
17 And it's like any -- it's like pollution controls
18 and everything else, you could add about 1,500 to
19 2,000 megawatts for $500 million in transmission
20 upgrades if you brought that much offshore winds
21 in; however, if you went from 2,000 to 2,500, the
22 price tripled at what it would take for
23 transmission upgrades. So at every juncture, the
24 first megawatts might be very cost-effective,
25 because it hasn't reached a tipping point in your

1 transmission system. But it's like anything; as
2 you increase, you will hit a tipping point that
3 will increase the cost significantly.
4 **COMMISSIONER FLEMING**: And so you said it's
5 about two to two and a half times higher than
6 onshore wind?
7 **MR. McMURRY**: That's correct.
8 **COMMISSIONER FLEMING**: Are you talking about
9 wind that's generated from different parts of the
10 country being brought in?
11 **MR. McMURRY**: Yes. And so that would exclude
12 -- the price of that wind would be more expensive,
13 given charges to get that wind to the East Coast,
14 but that's -- I was using a reference of Midwestern
15 wind, like in Oklahoma or Texas or whatnot.
16 **COMMISSIONER FLEMING**: And I'm sure that's
17 going to be studied on one of several of the
18 models --
19 **MR. McMURRY**: That's correct.
20 **COMMISSIONER FLEMING**: -- by the Eastern
21 Interconnection Planning Group. How do you all --
22 I know all of our utilities are involved in that.
23 How do you foresee that work product having an
24 impact on transmission and resource planning in the
25 future?

1 **MR. McMURRY:** I mean, I'm on the Model Review
2 Committee of the EIPC, and so I've listened to
3 multiple conversations. And the schedule is,
4 they're just now developing which scenarios should
5 they look at in more detail, and certainly, one of
6 the scenarios, I can assure you, will be a variable
7 energy resource from west to east, and looking at
8 the impacts of that. You know, it's my
9 understanding in 2012 is when we should start
10 seeing the results and recommendations from that
11 study.
12 Ed Ernst is Duke Energy's representative on,
13 you know, at the higher level committees for Duke
14 Energy, and -- I'm pausing because I really don't
15 know what that would be used at. I've heard
16 positive things that this might provide direction
17 for the whole transmission system, and I've heard,
18 you know, I guess, not-so-positive things that
19 we'll never get agreement among all of these
20 utilities that this is the right plan to pursue.
21 So I don't really have -- I'm just new to the
22 process, so I really don't have a big opinion one
23 way or another, but it certainly could be very
24 important to the Southeast if there's a way to
25 bring large amounts of wind either from offshore or

1 from the West, if we have to reach a substantial
2 renewable requirement long-term.
3 **COMMISSIONER FLEMING**: And can you talk a
4 little bit about FERC's revisions to -- I mean,
5 NERC's -- revisions to NERC's transmission planning
6 standards and how that can impact Duke with the
7 transmission plan?
8 **MR. McMURRY**: I would have to -- you know, if
9 you have specific questions, I would probably have
10 to get back with you a written response from our
11 Transmission Group, with any regards to how our
12 plan would be to respond to FERC or NERC
13 requirements.
14 **COMMISSIONER FLEMING**: Okay. Well, I was just
15 thinking in general terms.
16 **MR. McMURRY**: Right. I know that, certainly,
17 the Transmission Group is working a lot on proposed
18 rulemakings and impact to our company, but I really
19 don't know the specifics of what our plans are at
20 this point.
21 **COMMISSIONER FLEMING**: Okay, thank you.
22 **VICE CHAIRMAN WRIGHT**: Mr. Chairman.
23 **CHAIRMAN HOWARD**: Commissioner Wright.
24 **VICE CHAIRMAN WRIGHT**: Thank you, Mr.
25 Chairman. Mr. McMurry, keep you on the hot seat.

**MR. McMURRY**: All right, that's fine.

**VICE CHAIRMAN WRIGHT**: Typically I go and kind of focus on nuclear, but I'm not doing that today. I'm going to go in a different direction. You had a couple of slides that dealt with, I think, short-term renewables, things that you were looking at, where you had like 60 megawatts, I believe it was, of solar, and 340 megawatts of biomass?

**MR. McMURRY**: That's correct.

**VICE CHAIRMAN WRIGHT**: And then you went further and you said that if biomass is challenged somehow --

**MR. McMURRY**: Right.

**VICE CHAIRMAN WRIGHT**: -- or limited somehow, that wind is your next biggest option out there?

**MR. McMURRY**: Yeah, for significant amounts.

**VICE CHAIRMAN WRIGHT**: Right. I guess, when you're looking at wind and solar, what kind of planning assumptions does Duke currently use for conventional generation sources to backstand wind and solar?

**MR. McMURRY**: From a solar perspective, contribution to peak is about 50 percent of solar generation, is projected to meet when we have our peak capacity needs. So for every megawatt of --

1 for every ten megawatts of solar, we would
2 backstand five megawatts with probably like a Lee
3 steam station or a combustion turbine would be the
4 type of backstand.
5 From a wind perspective, given the variability
6 of wind, it's not nearly as optimistic. Right now
7 our planning assumption is for 15 percent of its
8 nameplate, would be -- would happen at its peak, so
9 you would have to backstand 85 percent of any wind
10 generation installed.
11 I've heard Janice Hager give this example
12 several times. In MISO, in a three-year period,
13 the contribution to peak of wind generation has
14 been -- has varied from 65 percent to 2 percent.
15 And in MISO jurisdiction, they've asked utilities
16 to really plan for only an 8 percent contribution
17 to peak for wind generation. It's just very
18 variable. One year, wind could be blowing hard
19 when you're having your peak day, and another year
20 you might not have those winds for that
21 electricity.
22 **VICE CHAIRMAN WRIGHT**: Just a sidelight on
23 this. This came to me, thinking here, because I
24 kind of followed it a little bit. But battery or
25 storage options down the road, I mean, are you all

1 looking at that? Are you just following it, or are
2 you investing in it, or anything like that? Doing
3 R&D or anything?
4 **MR. McMURRY**: I know that in our group we've
5 been asked, just over the past several months, and
6 we've got a big initiative looking at storage
7 options. Everything from additional pumped
8 storage, which is not a battery, but to battery
9 technologies to be used and maybe even power
10 delivery for substations and whatnot.
11 We -- I think we have a meeting next week on
12 that, of starting to see what the phases are. I
13 would really consider us more in the study phase,
14 evaluation of what do we want to pursue next. And
15 next year when I come back, ask me again that
16 question, and we should have some updates on that
17 analysis.
18 **VICE CHAIRMAN WRIGHT**: If my memory is as good
19 as Commissioner Mitchell's, I'll try to remember to
20 do that.
21 **MR. McMURRY**: Okay.
22 [Laughter]
23 **VICE CHAIRMAN WRIGHT**: I've heard the term --
24 I guess it's called the Duke Energy Balancing
25 Authority Area. Is there a geographic area that

1 defines that, or -- does anybody know?
2 **MR. McMURRY**: I really -- I would have to get
3 back to define what the Balancing Authority Area
4 is. I know that, you know, on the map that I
5 showed, that showed our service territory, but --
6 do you know --
7 **VICE CHAIRMAN WRIGHT**: Would that be the
8 service territory?
9 **MR. FALLON**: I think you can put a proxy that
10 it'll be the service territory, where the old
11 transmission system was. It used to be called a
12 control area, and now they've separated that into
13 different functions. But the balancing area is
14 approximately equal to the old control area.
15 **VICE CHAIRMAN WRIGHT**: Okay, thank you for
16 that. That helps clarify that. And the last
17 thing, and it's on page 32 if you want it, in the
18 IRP. But you talk about the Carbon Offset Program.
19 It's referenced there. Can you tell me a little
20 bit more about it? It's right at the bottom of
21 page 32, where you're talking about the North
22 Carolina GreenPower Program, and that they've
23 created a carbon offset program for North Carolina?
24 **MR. McMURRY**: Yes. Part of our renewable
25 energy strategy of what we're looking at is used

1 through our existing customers that can go to North
2 Carolina GreenPower. And basically, if you wanted
3 to put a solar panel -- and what we find is you
4 really need to have -- a very small scale is not
5 really applicable to North Carolina GreenPower.
6 But you have a separate meter on that solar
7 facility and, basically, North Carolina GreenPower
8 will pay a renewable energy credit, in addition to
9 the power that they pay that customer, that's
10 essentially a carbon offset program. So that's
11 part of the North Carolina GreenPower.
12 **VICE CHAIRMAN WRIGHT**: Okay, thank you.
13 **CHAIRMAN HOWARD**: Commissioners?
14 [No response]
15 I've got a couple of questions. And I think
16 it's on page 11, which is your load forecast
17 comparison, 2009 and 2010. On your 2009 -- that's
18 the chart at 11. On your 2009, you show an
19 increase, and then it went down, and then it
20 leveled off on your graph. What would -- and if
21 you said, I apologize. What was the purpose of
22 that increase from 10 to 11 in that forecast and
23 then it fell off? Are you with me?
24 **DR. STEVIE**: Yes. You're talking for the 2010
25 IRP load forecast.

**CHAIRMAN HOWARD**: Correct.

**DR. STEVIE**: And what we're seeing is --

**CHAIRMAN HOWARD**: And I'm sorry, 2009 forecast. 2009 forecast. You've got a little bump there.

**DR. STEVIE**: Oh, the prior year of the forecast.

**CHAIRMAN HOWARD**: Right, and why -- what caused that to level off in this forecast, I guess is my question.

**DR. STEVIE**: One of the things that's been going on in this business cycle that we've been seeing is a tremendous increase in manufacturing activity. Now, this -- the new forecast is actually lower.

**CHAIRMAN HOWARD**: Correct.

**DR. STEVIE**: But we had been kind of looking at this business cycle being something like -- pardon me for this kind of anecdote -- but it's like a square root sign, where we went down, came up, and then it's kind of leveling off some.

**CHAIRMAN HOWARD**: You'll have to explain to the Clemson graduates what a square root is.

[Laughter]

But go ahead, I understand. It's my --

1 **VICE CHAIRMAN WRIGHT**: I know what --
2 **CHAIRMAN HOWARD**: -- question and I
3 understand.
4 **VICE CHAIRMAN WRIGHT**: -- a root is.
5 **DR. STEVIE**: So I think that's what's going
6 on, but then it came down because in the current
7 business cycle we also saw a pause in the economy
8 in kind of the middle of 2010, when things kind of
9 slowed down some. I think that's why the overall
10 level of the forecast is a bit lower than in the
11 prior year's projection.
12 **CHAIRMAN HOWARD**: Another question I had is
13 you mentioned that to purchase biomass that was
14 competitive with -- it was a competitive price, and
15 I assume you meant competitive with traditional
16 generation resources?
17 **MR. McMURRY**: It was competitive with other
18 renewable generation options. It was still a
19 higher price than coal or natural gas is projected.
20 **CHAIRMAN HOWARD**: About how much higher?
21 **MR. McMURRY**: Well, let's use a year, 2015,
22 and I would say it would be -- by 2015 -- it would
23 be 30 percent higher. But as you go, depending on
24 what your carbon future looks like, if it's a cap-
25 and-trade system with increasing projections in

carbon prices, then that gap narrows as you get closer to 2030, to where it might start competing with your gas and coal resources. But it all depends -- the cost-effectiveness of renewables all depends on your view of how carbon will be regulated long-term. Will there be a price on it or not? If it's not a price on it, then the renewable, even the biomass option, is not competitive with coal or natural gas.

**CHAIRMAN HOWARD**: Being from the coast, one of the concerns and also one of the promises has had to do with the future of offshore wind, as Commissioner Fleming and others have discussed. How far offshore must the wind farms be, to be acceptable to residents along the coast -- and I guess I'm talking mostly cosmetic -- to not be visible from, and is that a viable option?

**MR. McMURRY**: I really don't know the answer to that. I mean, I know that, working real close to a renewables group, they have all of these photographs of a wind turbine five miles offshore and it's barely visible, so -- and I've heard other references to five miles being like an offshore type reference of where wind turbines may start to be located. It's still relatively shallow water.

1 I mean, it's not -- you haven't reached the
2 continental shelf where it goes thousands of feet
3 deep. It's still less than 100 feet deep at five
4 miles out.
5 **CHAIRMAN HOWARD**: Well, I too -- I want to
6 take this opportunity to say I think you did a
7 terrific job and I enjoyed it. It was very
8 informative, and we look forward to hearing you
9 next year. And one correction, Commissioner
10 Mitchell did not remember the question; you
11 reminded him. With that --
12 **COMMISSIONER MITCHELL**: Just let him speak for
13 himself. I remember everything two years ago.
14 [Laughter]
15 **CHAIRMAN HOWARD**: With that, this hearing is
16 adjourned. Thank you, very much.
17 [WHEREUPON, at 12:10 p.m., the hearing in
18 the above-entitled matter was adjourned.]
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C E R T I F I C A T E

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 11th day of November, 2010.

Jo Elizabeth M. Wheat, CVR-CM-GNSC

ATTEST:

Jocelyn G. Boyd,

CHIEF CLERK/ADMINISTRATOR