OFFICIAL COPY

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450

601 WEST ROSEMARY STREET, SUITE 220
CHAPEL HILL, NC 27516-2356

Facsimile 919-929-9421

January 13, 2012

FILED
JAN 13 2012
Clerk's Office
N.C. Utilities Commission

VIA HAND DELIVERY

Ms. Renné Vance
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Dobbs Building
Raleigh, NC 27603-5918

RE: Investigation of Integrated Resource Planning in North Carolina - 2011
Docket No. E-100, Sub 128

Dear Ms. Vance:

Enclosed for filing in the referenced docket are an original and thirty (30) copies of the Initial Comments of Southern Alliance for Clean Energy Regarding 2011 Annual Updates to Integrated Resource Plans. By copy of this letter, I am serving all parties of record on the service list

Sincerely,

Robin G. Dunn

GT/rgd
Enclosures
cc: Parties of Record

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-100, SUB 128

In the Matter of: Investigation of Integrated Resource Planning in North Carolina – 2010-2011	) **INITIAL COMMENTS OF SOUTHERN**) **ALLIANCE FOR CLEAN ENERGY**) **REGARDING 2011 ANNUAL UPDATES**) **TO INTEGRATED RESOURCE PLANS**)

PURSUANT TO North Carolina Utilities Commission Rule R8-60(j) and the Commission's October 25, 2011 Order Granting Extension of Time, intervenor Southern Alliance for Clean Energy ("SACE"), through counsel, files these initial comments on the 2011 annual updates to the Integrated Resource Plans ("IRPs") of Duke Energy Carolinas, LLC ("DEC") and Progress Energy Carolinas, Inc. ("PEC").

I. INTRODUCTION

As the Commission has explained, "[i]ntegrated resource planning is an overall planning strategy which examines conservation, energy efficiency, load management, and other demand-side measures in addition to utility-owned generating plants, non-utility generation, renewable energy, and other supply-side resources in order to determine the least cost way of providing electric service." Annual Report Regarding Long Range Needs for Expansion of Electric Generation Facilities for Service in North Carolina (November 30, 2011).

N.C. Gen. Stat. § 62-110.1(c) requires the Commission to "develop, publicize, and keep current" an analysis of the State's long-range needs for electricity. To meet these needs, North Carolina law requires the "use of the entire spectrum of demand-side options, including but not limited to conservation, load management and efficiency programs," and energy planning must result in "the least cost mix of generation and demand-reduction measures which is achievable." N.C. Gen. Stat. § 62-2(3a). In furtherance of these requirements, the Commission conducts an annual investigation into the electric utilities' IRPs. Commission Rule R8-60 requires each electric utility to file, in even-numbered years, a biennial report of its integrated resource planning process and results, and in odd-numbered years, an annual report updating its most recent biennial report. On September 1, 2011, DEC filed its annual update, entitled The Duke Energy Carolinas Integrated Resource Plan (Annual Report) ("DEC 2011 IRP"). PEC filed its annual update, entitled Progress Energy Carolinas Integrated Resource Plan ("PEC 2011 IRP") on the same date.

For the reasons detailed below, as with the 2010 IRPs, the 2011 IRPs again fail to reflect a long-term plan to meet customer energy needs in a least-cost and reliable manner.[1] Neither DEC nor PEC adequately integrated energy efficiency, the least-cost system resource, into its long-term resource plan, and PEC failed even to analyze higher levels of efficiency. Neither IRP reflects an evaluation of the economic impact of continuing to operate scrubbed coal units in

[1] On February 1, 2011, SACE filed comments with this Commission on the biennial 2010 IRPs of DEC and PEC, detailing several deficiencies in the plans. Although most of those deficiencies persist in the 2011 IRPs, these comments focus on the updates.

light of pending and imminent environmental regulations and significant environmental compliance costs. Moreover, neither IRP relies on realistic assumptions with respect to new nuclear generation, which could impact the cost and reliability of electricity.

II. DEC'S "HIGH DSM" PORTFOLIOS WOULD RESULT IN A LOWER REVENUE REQUIREMENT, LOWER RISK AND LOWER RATES AS COMPARED TO THE PREFERRED PLAN.

In developing its IRP, DEC conducts a quantitative analysis of resource options to meet forecasted energy and capacity needs. DEC 2011 IRP at 95. After DEC assesses its resource needs and identifies and screens resource options, the company develops and analyzes resource portfolios and selects a preferred portfolio. Id. at 95-107. In its 2011 analysis, DEC modeled several resource portfolios in both base case and sensitivity analyses. Id. at 100. Some of these portfolios used a "High Energy Efficiency" or "High DSM" case sensitivity, which "includes the full target impacts of the Company's save-a-watt bundle of programs for the first five years and then increases the load impacts at 1% of retail sales every year after that."[2] Id.

DEC evaluated a "High DSM" scenario almost identical to that analyzed in the 2011 IRP in its sensitivity analyses for the 2010 IRP. 2010 IRP at 88. As discussed in SACE's February 10, 2010 comments, an analysis of the portfolios presented in DEC's 2010 IRP shows that portfolios incorporating DEC's High DSM case cost less, have lower risk, and appear to result in lower average electricity rates than does any portfolio using base case DSM assumptions.[3] Despite these benefits, however, DEC did not select a portfolio with the "High DSM" case, and as a result, DEC's IRP does not yield the lowest-cost resource mix.

In its response to SACE's comments in the 2010 IRP, DEC critiqued SACE's analysis as a "misleading" comparison of "apples to oranges." Yet Duke presented no substantive basis for its critique. In fact, SACE's analysis is patterned after DEC's own comparisons of sensitivities to the base case portfolio. In its Order on the 2010 IRPs, the Commission summarized Duke's critique as follows:

> When sensitivities are applied to a certain aspect of the model portfolios, such as to EE and DSM impacts, fuel costs or load variations, it must be applied to each model portfolio so that the selected aspect of each portfolio will be impacted similarly and the production simulation model will run each portfolio under the same constraints.

Order Approving 2010 Biennial Integrated Resource Plans and 2010 REPS Compliance Plans, NCUC E-100, Sub 128 (October 26, 2011) at 14 ("2010 IRP Order").

---

[2] It is unclear whether DEC has capped the energy efficiency resource by estimates included in the 2007 market potential study. This topic is discussed further in Attachment 1, "Review of Utility Evaluation of Energy Efficiency Resources in the Carolinas (October 2011)."

[3] SACE does not have the 2011 IRP data to conduct an analysis similar to the 2010 IRP analysis, but DEC does not describe any substantial changes in its IRP assumptions that would likely result in a different conclusion.

This is precisely what DEC's sensitivity analyses have done. As illustrated in Attachment 2, DEC has run its production simulation model for each portfolio (Attachment 2 presents six portfolios for illustrative purposes) with and without the High DSM sensitivity. The High DSM sensitivity was also run under conditions of high and low fuel costs, high and low carbon dioxide ("CO_2") costs, and high and low nuclear capital costs. The only sensitivities that DEC did not choose to apply to the High DSM sensitivity is the high and low load forecast. If DEC is arguing that the results are inconclusive without the high and low load forecast sensitivities, DEC could have remedied this problem by performing additional production simulation model runs and presenting the results in the 2011 IRP.

DEC's critique does not rebut the conclusion that its 2010 IRP analysis indicates that the High DSM case will result in a lower revenue requirement, lower risk of cost increases, and lower customer rates than the Base DSM case included in DEC's so-called "optimal plan."

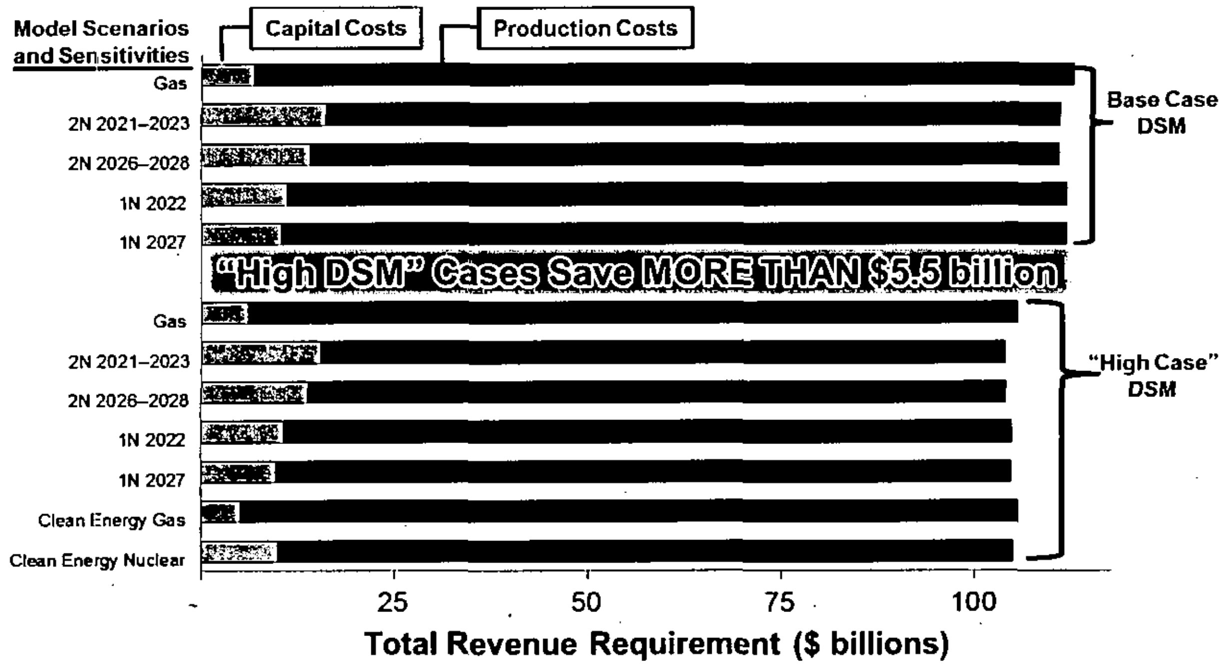
A. DEC's High DSM case results in lower cost to customers.

A primary criterion in DEC's quantitative analysis of resource portfolios is "minimizing the long-run revenue requirements to customers." Id. at 85. This criterion is consistent with DEC's least-cost planning obligation under N.C.G.S. § 62-2(3a). Duke defines "long-run" as a "50-year analysis time frame," and costs to customers are represented by the present value revenue requirement ("PVRR"), or the "costs to customers for the Company to recover system production costs and new capital incurred." Id. at 91.

DEC selected a 2 Nuclear Unit portfolio as its "optimal plan." Id. at 104. DEC does not include the High DSM case in its "optimal plan" even though the portfolios with the High DSM case are lower cost than the base DSM portfolios. As illustrated in Figure 1, based on DEC's quantitative analysis for its 2010 IRP, ***all portfolios with High DSM cost at least \$5.5 billion less than the "optimal plan" over the 50-year analysis time frame.***[4] This means that a truly "least cost" resource portfolio would include the High DSM case, and therefore, DEC should have included the High DSM case in its preferred plan.

[4] Attachment 2 presents a detailed cost comparison of DEC's "High DSM" and "Base DSM" portfolios. DEC has withdrawn its claim that these PVRR data are confidential and has authorized SACE to disclose them in the public version of these comments.

Figure 1: Lower Costs: Energy Efficiency Reduces DEC System Revenue Requirement



Source: See Attachment 2.

B. Portfolios with the High DSM case would expose customers to a lower risk of cost increases.

A second criterion used by Duke in its quantitative analysis is the "impact of various risk factors on the costs to serve customers." Id. at 98. DEC analyzed the risk associated with the various portfolios by comparing them across a range of sensitivities.

DEC's quantitative analysis shows that portfolios with the High DSM case would expose customers to lower risk of fuel and CO_2 price variability when compared to base case DSM portfolios. Selecting the High DSM strategy mitigates the impact of high fuel and high CO_2 prices by $1-2 billion, regardless of the type or level of supply-side investment under consideration.[5]

Another source of risk is construction (or capital) cost increases. Both nuclear and DSM have relatively low annual expenses (fuel and operating costs) as compared to fossil fuel generation, and the capital cost risk constitutes the bulk of the cost risk for these resources. DEC did not perform capital cost sensitivity analysis for the High DSM resource, but it is likely that capital cost risk associated with DSM is significantly lower than that associated with nuclear power. Using a paired-comparison analysis, the replacement of one nuclear unit with the High

---

[5]This price spike mitigation is in addition to the cost advantage demonstrated for High DSM resources in the base case.

DSM strategy can save an estimated $4 billion in capital costs.[6] Since the capacity provided by both the nuclear unit and the High DSM case are similar, the base case assumption for DSM costs is about 80 percent less than the equivalent in nuclear capacity.[7]

Based on the 80 percent discount and the capacity cost comparison, it appears that the High DSM resource has a present value cost on the order of $1 billion. Even if this cost were to double or triple (a capital cost sensitivity of 200-300 percent), the "High DSM" resource investment would still cost less and be more effective than nuclear plants at mitigating the impact of fuel price variability, higher CO_2 prices, and other variable cost risks.

Another reason that DSM has less risk than nuclear power is that the investment occurs in smaller increments. It is relatively straightforward—and inexpensive—for an energy efficiency program to be cancelled or modified as compared to a large nuclear power plant.

The major risk factor of the "High DSM" case is the impact of market or regulatory barriers to development of the efficiency resource. For example, the ability of industrial customers to "opt-out" of utility energy efficiency and demand response programs, combined with a lack of external accountability for self-directed industrial energy efficiency programs, may impede DEC's achievement of efficiency savings. On the other hand, the numerous obstacles to the timely, safe and cost-effective development of nuclear power units are also well documented, as discussed later in these comments. DEC does not explain why obstacles to developing aggressive demand-side resources are greater than obstacles to the development of supply-side resources, such as nuclear power, and the available evidence indicates that the obstacles to demand-side resources are in fact smaller.

C. The High DSM alternative would likely result in lower electric rates.

In addition to offering lower overall system costs, the High DSM alternative would likely reduce electric rates by as much as 0.08 ¢/kWh in present value terms as compared to the "optimal plan," as illustrated by Table 1.

---

[6] The PVRR of the capital cost is also affected by the slight decrease in natural gas (CT) units and the different construction schedule for natural gas units. The direction of the PVRR impact could not be inferred from available data due to the significantly different construction schedules. However, because the capital cost of nuclear plants is at least 4 times greater than that of gas units, it likely would be a relatively small adjustment.

[7] See Attachment 2, Cost Comparison of Duke's "High DSM" and "Base DSM" Portfolios.

Table 1: Rate Impact of "Optimal" v. "High DSM" Plans[8]

	"Optimal Plan"	"High DSM"	Customer Savings
Cost	$ 111 billion	$ 105 billion	$ 6 billion
Cost per year (50 years)	$ 2.2 billion	$ 2.1 billion	$131 million
Average Retail Sales (2015-2025)	81,785 GWh	79,476 GWh	-
Rate*	2.72 ¢/kWh	2.64 ¢/kWh	0.08 ¢/kWh

Source: 2010 IRP Tables 4.1 and 4.2, DEC responses to data requests.

* Rate does not include cost recovery for existing rate base or for future rate base outside the resource plan time horizon. As such it is useful only for comparative purposes.

This rate reduction means that a decrease in DEC's revenue requirement due to lost sales is outweighed by the capital and production cost savings associated with selecting the High DSM strategy over the "optimal plan."

D. PEC should have evaluated a "High DSM" Case in developing its resource plan.

In its 2010 IRP, PEC identified three alternative resource plans that it considered for scenario analysis. PEC 2010 IRP, Figure A-3 at page A-5. PEC did not update this analysis for its 2011 IRP. The three alternative resource plans differ in terms of the amount of gas-fired and nuclear capacity contained in each and in the timing of additional units with these technologies. PEC did not identify any portfolio that included a scenario with additional investments in energy efficiency (or renewable resources). SACE strongly recommends that PEC model a resource portfolio with higher levels of energy efficiency.

Because PEC did not even model a higher efficiency case in its resource planning process, PEC's IRP may result in more cost and risk than is necessary. To help meet its forecasted energy and capacity needs in an economic and reliable manner, PEC should evaluate a "High DSM" case.

III. DEC AND PEC FAILED TO PROPERLY CONSIDER ENERGY EFFICIENCY IN THEIR LONG-TERM RESOURCE PLANNING.

Energy efficiency is the least-cost system resource. In addition to reducing customer utility bills and moderating rate increases, energy efficiency reduces environmental impacts and compliance costs, conserves water, reduces energy market prices, lowers portfolio risk, promotes local economic development and job growth, and assists low-income populations.[9]

---

[8] Table 1 uses the High DSM/Gas model results. Note that rate savings would be slightly higher with the High DSM/2N model results using 2010 IRP data.

[9] See, e.g., Marilyn A. Brown et al., Energy Efficiency in the South, Southeast Energy Efficiency Alliance (April, 12, 2010), http://www.seealliance.org/se_efficiency_study/full_report_efficiency_in_the_south.pdf; Analyzing and Managing Bill Impacts of Energy Efficiency Programs: Principles and

DEC and PEC should be commended for a successful first year of EE program implementation. However, these planning efforts and their programmatic success have not translated to adequate integration of the energy efficiency resource in the utilities' long-term resource plans. Both DEC and PEC continue to underestimate the potential energy efficiency savings in their 2011 IRPs. A brief discussion follows regarding DEC's and PEC's efficiency program results and the role of efficiency in their long-term resource planning. A detailed analysis is provided in Attachment 1, "Review of Utility Evaluation of Energy Efficiency Resources in the Carolinas (October 2011)."

A. DEC's energy efficiency programs are off to an impressive start, but DEC's resource plan undervalues energy efficiency and projects a troubling decrease in efficiency in the long term.

DEC is delivering good energy efficiency programs at low cost. In 2010, DEC exceeded its 2010 energy savings goals at a very low cost—the Company spent $57 million, only about two-thirds of its forecasted cost on a per-kWh basis, to achieve about 577 GWh of energy savings, or 0.7 percent of retail sales.

As discussed in Attachment 1, DEC achieved most of the energy and cost savings by investing heavily in residential lighting programs. DEC's success in delivering residential lighting savings demonstrates good program management: DEC used several different marketing and outreach techniques, which drove cost down and customer participation up, and resulted in impressive energy savings for a first-year effort. DEC should be applauded for its program performance and urged to continue its efforts and build on its successes.

Despite the system-wide benefits of efficiency and impressive first-year performance, DEC's resource plan undervalues energy efficiency and forecasts a significant decrease in efficiency savings over the planning period. There is a stark and troubling contrast between the energy savings DEC could achieve by building upon its successful first year of efficiency programs, and what it has projected in its 2011 resource plan. DEC's resource plan reflects a cumulative energy savings rate of only 5.6 percent over 15 years. In contrast, if DEC maintained its 2010 savings rate of 0.7 percent of retail sales, cumulative savings would reach 11 percent by 2025, slightly more than the 10.6 percent savings that DEC estimated in its High DSM portfolio and nearly twice the 5.6 percent savings estimate in the Base DSM portfolio that DEC selected as its preferred plan.

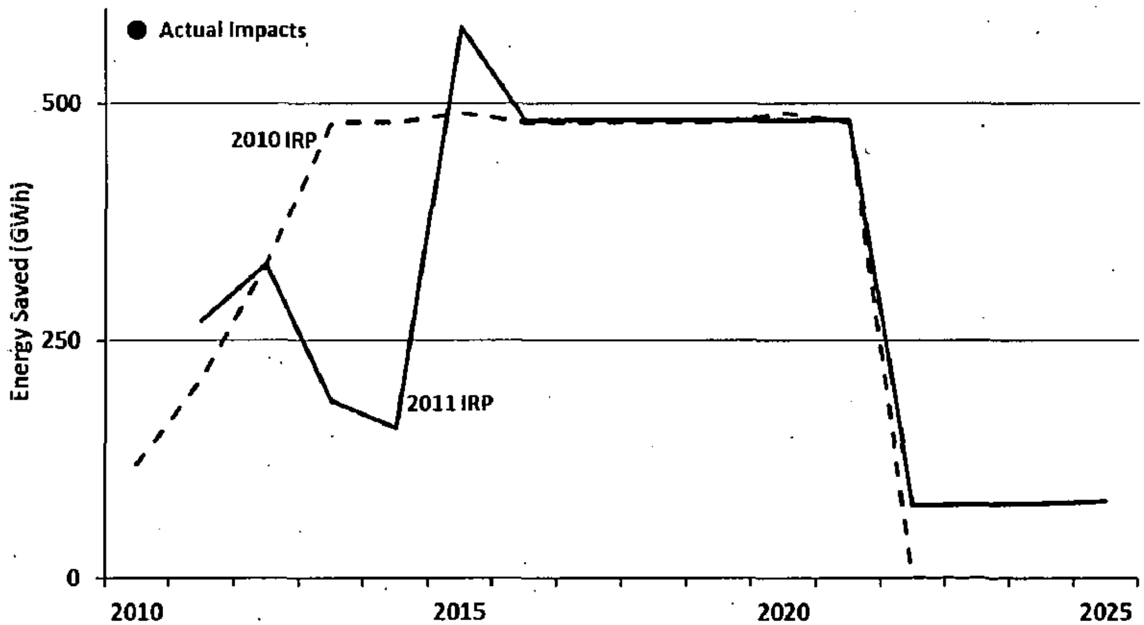
Moreover, DEC's 2011 IRP reduces and delays the impact of energy efficiency resources as compared to the Company's 2010 IRP. As Figure 2 illustrates, DEC reduced its projected energy efficiency savings for the 2013-14 timeframe, even though actual program impacts in 2010 far exceeded the 2010 IRP estimates.[10] Compared to the 2010 IRP Base Case, the 2011

Recommendations, Utility Motivation and Energy Efficiency Working Group, State and Local Energy Efficiency Action Network (July 2011) at 6, note 4.

[10] DEC made several additional adjustments to its Base and High DSM forecasts. For example, DEC aligned its High Case with the Base Case forecast in the near term. This is an appropriate

IRP Base Case (plus the actual impacts for 2010) reflect an 11 percent reduction in cumulative savings for the 2010-25 period.

Figure 2: Energy Savings as Estimated in DEC's 2010 and 2011 IRPs



Source: DEC 2010 IRP at 69-70; Duke 2011 IRP at 21, 23; and Direct Testimony of Timothy Duff, Exh. 2, *DEC's Application for Approval of DSM and EE Cost Recovery Rider, NCUC Docket No. E-7, Sub 979.*

In its 2011 IRP, DEC does not adequately explain these changes. DEC did, however, provide some explanation in response to a SACE data request. While DEC's response suggests that the projected changes in energy savings do not reflect an actual change in DEC's plans for energy efficiency over the next five years, DEC's explanation that projected changes are based on "field experience with programs" lacks adequate support. DEC cites "expected roll out of new products as well as drop off in participation of existing products (e.g., CFLs)."[11] As illustrated in Table 2, projected changes for several programs are highly irregular and not related to any specified or known changes in market technologies.

- DEC indicates that savings from its non-residential programs are forecast to increase from 39 GWh in 2011 to 130 GWh in 2012, then plummet to 79 GWh in 2013, and then rise again to 104 GWh in 2014. DEC did not provide any information explaining why the performance of its non-residential programs is forecast in this manner.
- DEC's current residential lighting program emphasized CFLs, and it is reasonable to forecast a reduction in opportunity for CFL bulbs over the next five years. However,

---

planning practice, but the High DSM forecast is well below the medium- and long-term potential for energy savings.

[11] DEC refers to "specific projections for impacts from existing and identified programs in the initial 5-year horizon," but those specific projections were not included in DEC's response to SACE's data request.

the complete phase-out of residential lighting programs by the end of 2013 does not make sense because although new federal lighting standards take full effect in January, 2014, there will be opportunities to promote lighting that is more efficient than the federal standard. Currently available CFL and LED lights exceed the federal standard, and to the extent that these bulbs are more efficient than other bulbs that meet federal standards and are available in the market, they should continue to play a significant role in residential energy efficiency programs at DEC and across the country.

- Similar to the non-residential programs, DEC did not provide any explanation as to why it expects Residential Energy Assessments and EE Education for Schools programs to fall after 2012, and the Residential Other program to fall after 2011. This is particularly a concern since, according to DEC's response to the data request, the "Residential Other" bucket includes several products that are currently in the pilot or final development stage pending approval.
- One forthcoming product that should be included in the Residential Other category is the Home Energy Comparison Report ("HECR") program. Even if one assumes that 25 percent of the "Residential Other" program category reflects implementation of the HECR program, that equates to no more than 60,000 households participating, or less than three percent of DEC residential customers.[12] Evaluation of DEC's pilot in South Carolina does not suggest that the program should be targeted or limited to such a small proportion of DEC's customers. While it may be advisable to ramp this program up over four years, it seems reasonable to forecast that the HECR program *alone* could achieve impacts in excess of 30,000 MWh by 2015. Considering these factors, DEC is not relying on its own best information when characterizing the potential future impact of its products in the pilot or final development stage.

DEC's emphasis that the cumulative forecast savings for 2014 are approximately the same as in its 2010 IRP appears to be at odds with the use of "field experience with programs" to inform the 2011 IRP forecast.

Table 2: DEC IRP Forecast by Program Type

Incremental Impacts - Base								
MWh								
	Residential Energy Assessments	Low Income EE and Weatherization	EE Education for Schools	Residential Smart $aver - CFL	Residential - Other	Non-Residential Smart $aver	Future Programs	Total Incremental MWh
2011	4,283	461	3,399	142,263	81,141	39,479	-	271,026
2012	15,243	8,608	10,996	131,143	35,423	129,533	-	330,946
2013	7,850	5,010	6,175	64,774	23,879	79,172	-	186,860
2014	8,944	6,041	7,447	-	32,281	103,943	-	158,657
2015	7,632	5,155	6,354	-	31,099	96,582	432,514	579,336

Source: DEC Supplemental Response to SACE Data Request No. 3.

12 Assuming 147 kWh/year per residential customer. Process and Energy Impact Evaluation of the Home Energy Comparison Report Program in South Carolina, prepared for Duke Energy by TecMarket Works (November 8, 2011). Calculated based on 2.1 million customers. DEC 2011 IRP at 119.

Figure 2 suggests that DEC's plans for energy efficiency include a two-year decrease in load impact (reduced energy savings from 2013-2014) followed by a more-than-doubling of impacts in 2015. It seems unlikely that DEC's field experience suggests that customers will respond to marketing and implementation with slowdowns and ramp-ups in close succession. While there are fundamental differences in the delivery of supply-side and demand-side resources, Duke has used substantially different forecasting practices in its 2009, 2010 and 2011 resource plans, and has defended these practices in each case without acknowledging any flaw or need for improvement.

In sum, DEC's resource plan underestimates the opportunity for DEC to work with its customers to achieve energy efficiency savings. By discounting and constraining the role of the lowest-cost resource available to DEC and its customers, DEC's IRP could lead to unnecessarily high capacity investments, with adverse impacts on customer costs, risks, and rates.

B. Initial results suggest that PEC's energy efficiency programs are performing well, but PEC's resource plan undervalues energy efficiency and underestimates its potential.

Like DEC, PEC appears to be delivering solid energy efficiency programs at low cost. In 2010, PEC exceeded its 2010 energy savings goals. PEC spent about $29 million to achieve about 136 GWh of energy savings, which amounts to roughly 0.3 percent of retail sales.

PEC is moving forward with several good energy efficiency programs. PEC's Neighborhood Energy Saver Program, for example, uses diligent outreach and direct-installation methods to achieve more than 85% participation rates within target neighborhoods, helping households reduce annual energy bills by about $150 on average.[13] PEC is offering programs with a broader range of options than many other regional utilities and is developing new programs that have the potential to maintain this positive momentum. See PEC 2011 IRP at E-7. PEC's first-year efforts are encouraging, and PEC should increase its efficiency results.

As detailed in Attachment 1, however, PEC does not consider the efficiency resource on an equivalent basis with supply-side resources. Instead, PEC treats energy efficiency as a fixed model input that adjusts the load forecast. As a result, the resource planning model works around the limited efficiency input, selecting resources to meet the utility's adjusted load. This analytic limitation results in the underutilization of efficiency as an economic and reliable demand-side resource. While this treatment is appropriate for demand response, industry best practice is to treat energy efficiency as equal or even preferred to supply-side resources for planning purposes.[14] Accordingly, PEC's ten-year forecast of cumulative energy savings—3.7

[13]PEC, DSM/EE Filing Requirements, SCPSC Docket No. 2011-181-E (May 2, 2011) at 24; "Neighborhood Energy Saver," presentation by PEC (June 2009).

[14] See, e.g.. Aspen Environmental Group and Energy and Environmental Economics, Inc. (Aspen/E3), Survey of Utility Resource Planning and Procurement Practices for Application to Long-Term Procurement Planning in California: Final Report and Appendices, prepared for

percent of retail sales in 2020—is less than what leading utilities estimate to achieve in just five years.

The limited investment in energy efficiency described in PEC's resource plan could result in PEC customers paying more for conventional supply-side energy resources than is necessary. Moreover, if PEC continues to administer successful efficiency programs but does not properly account for them in its resource plans by reducing the need for the more costly and risky supply-side capacity, customers will bear the burden of paying for excess capacity. Proper consideration of energy efficiency as a resource equivalent of traditional supply-side resources can protect against these outcomes and result in increased use of this low-cost, reliable resource.

IV. DEC OVERSTATES ITS NEED FOR NEW CAPACITY.

A. The DEC 17 percent reserve margin appears high.

DEC's 17 percent target reserve margin appears excessive when compared to reserve margins used by comparable utilities, such as PEC's 14-15 target percent reserve margin.[15] On the other hand, DEC staff have indicated that the unexpected early arrival of very hot weather in June 2011 triggered a situation in which the DEC system reserve margin dropped to as low as 3 percent.[16]

DEC will conduct a comprehensive reserve margin requirement study for its 2012 IRP, as required by the Commission's 2010 IRP Order.[17] DEC indicates that the study will be conducted for both DEC alone, and in combination with PEC, based on the expectation that the proposed merger of Duke Energy and Progress Energy and the proposed joint dispatch agreement between DEC and PEC will be approved.

If the study determines that a lower reserve margin is appropriate, DEC could significantly reduce the need for new capacity while maintaining reliability. The use of a 15 percent reserve margin, for example, could reduce DEC's need for capacity by approximately 400 to 450 MW each year during the planning period. DEC planners have indicated that they

---

California Public Utilities Commission, April 2009, http://docs.cpuc.ca.gov/published/Graphics/103213.PDF.

[15] See, e.g. Duke Energy Ohio's Revised 2010 Electric Long-Term Forecast Report and Resource Plan (October 7, 2010) at 144 and 145 (DEC's affiliates in Indiana and Ohio use 13.8 percent and 15.3 percent reserve margin, respectively); Dominion North Carolina and Dominion Virginia Power's Report of Its Integrated Resource Plan (September 1, 2010) at 4-3 and 4-4 (Dominion North Carolina Power uses the 15.3 percent reserve margin recommended by PJM to develop "an effective 11 percent" reserve margin); SCE&G's Integrated Resource Plan, (February 28, 2011) at 23 (SCE&G has determined that the appropriate level of reserves for its system is in the range of 12 percent to 18 percent).

[16] Transcript of DEC Ex Parte Briefing at 11, DEC 2011 IRP, Docket No. 2011-10-E (South Carolina Public Service Commission December 20, 2011).

[17] Order Approving 2010 Biennial Integrated Resource Plans and 2010 REPS Compliance Plans, NCUC E-100, Sub 128 (October 26, 2011) at 7.

allow the reserve margin to "float" as low as 15 percent in any given year.[18] Considering the June 2011 episode, DEC should ensure that the reserve margin study examine the need for changes in scheduled outages (e.g., for maintenance) to adapt to long-term climate trends towards longer and hotter summers.

B. DEC treats demand response as a resource with its own reserve requirement, rather than as a load adjustment.

In calculating its system resource needs, DEC applies its 17 percent reserve margin to all of its loads, including those that will be curtailed under its demand response programs. After determining its required resources, which amounts to 1.17 times the load, DEC applies the demand response programs as a supply-side resource. This methodology of applying the reserve margin to demand response programs ignores the fact that these programs reduce load, and therefore, results in overestimation of required reserves.

Instead of applying the reserve margin to demand response programs, DEC should calculate its reserves, capacity margins and reserve margins on the basis of its firm loads, after accounting for demand response. In other words, demand response programs should reduce the load side of the calculation, which is the methodology employed by PEC. See PEC 2011 IRP at 26. Using this approach, DEC would reduce its required reserves and need for new capacity by about 160 MW beginning in 2015.[19] This issue was not addressed by the Commission in its 2010 IRP Order, but would be an appropriate issue to address in the reserve margin studies.

V. DEC AND PEC SHOULD EVALUATE THE PRUDENCY OF CONTINUED OPERATION OF THEIR SCRUBBED COAL UNITS.

DEC currently owns eight coal-fired stations with a combined capacity of 7,535 MW in North and South Carolina. DEC 2011 IRP at 13. DEC plans to retire all of its remaining coal units without SO_2 scrubbers by 2015. Id. at 48-50. PEC currently owns approximately 5,200 MW of coal-fired generation in North and South Carolina. PEC 2011 IRP at B-1. PEC currently plans to retire approximately 1500 MW of unscrubbed coal units by the end of 2013. Id. at 3, B-6. These retirements consist of all remaining unscrubbed coal units in North Carolina. In addition, PEC is evaluating South Carolina Robinson Unit 1, the one remaining unscrubbed coal plant in its fleet. Id. PEC's IRP does not discuss or provide a timeline for its evaluation of Robinson Unit 1, however.

While the retirement of old, unscrubbed coal units makes clear economic sense, the continued operation of certain scrubbed coal-fired units may also be uneconomical in light of several new and imminent EPA regulations that will require capital investments and increase operating expenses at coal-fired units. In response to a data request, DEC recognized that "[c]urrent and pending EPA regulations affecting aging utility coal plants, and the associated costs for compliance with these regulations, threaten the remaining economic life of these

[18] Transcript of DEC Ex Parte Briefing at 71, DEC 2011 IRP, Docket No. 2011-10-E (South Carolina Public Service Commission December 20, 2011).

[19] DEC assumes that its demand response programs will total over 980 MW each summer beginning in 2015. DEC 2011 IRP at 87.

plants." In their 2011 IRPs, both DEC and PEC discuss the legislative and regulatory risks facing each company's coal-fired units. DEC 2011 IRP at 7-8; PEC 2011 IRP at 3, B-6. EPA regulations impacting existing coal units include the recently issued Maximum Achievable Control Technology ("MACT") rule for power plants, greenhouse gas regulations, regulations under Section 316(b) of the Clean Water Act, new steam electric effluent guideline, the Cross State Air Pollution Rule, National Ambient Air Quality standards for ozone and SO_2, and new coal combustion waste regulations.

These regulations will not only impact unscrubbed existing coal units, but will impact scrubbed units as well. Scrubbed units face many of the same risks as do the unscrubbed units that DEC and PEC are planning to retire, including but not limited to the need to further reduce their emissions of mercury and other hazardous air pollutants, the need to convert from once-through to closed-cycle cooling, and the need to update liquid and solid waste handling techniques. Neither the DEC 2011 IRP or the PEC 2011 IRP contains an analysis (beyond a simple recitation) of the risks faced by its existing scrubbed coal plants or assessment of what additional pollution controls, such as baghouses and activated carbon injection, will be needed at each of these units. This is a serious flaw. The IRPs should reflect an evaluation of whether it will be more economical to retire certain scrubbed coal units or repower them, rather than investing significant capital in pollution control equipment and other infrastructure necessary to comply with impending regulations.

VI. DEC AND PEC HAVE UNREALISTIC ASSUMPTIONS ABOUT NUCLEAR GENERATION.

A. DEC's and PEC's assumptions about the timing of new nuclear units are unrealistic.

According to the DEC 2011 IRP, DEC plans to begin operations at its proposed Lee Nuclear Station Units 1 and 2 in 2021 and 2023, respectively.[20] PEC plans to rely on 25 percent shares of nuclear units from either self-build partnerships or partnerships in another utility's regional nuclear project. PEC 2011 IRP at 3-4. In light of this relatively small percentage share, PEC's partial ownership of another utility's regional nuclear project seems more likely than a self-build option. The PEC 2011 IRP includes the addition of new nuclear capacity in 2020 and 2021, but PEC acknowledges that the timing and volume of new nuclear generation in a regional partnership depends upon the specific project. Id. at 4, 24. This 2020-2021 timeframe was also used in PEC's 2010 IRP, in which PEC did not analyze any alternative timing for the 25% share of new nuclear generation. See PEC 2010 IRP at A-5.

The timing of these planned nuclear capacity additions is highly uncertain for several reasons, as discussed in detail in SACE's February 10, 2010 comments on the 2010 IRPs. These reasons include the untested nature of the Advanced Light Water Reactor designs such as the AP1000 design being considered by DEC, uncertainty regarding the timing of the NRC licensing and major construction, and supply chain and/or transportation delays. In light of these factors,

[20] In at least one of its sensitivity analyses, DEC also assumes that it could add substantial amounts of new nuclear capacity as early as 2016 and 2017. This is highly unlikely because the Company does not even plan to begin site preparations at the Lee Nuclear Station until around 2014.

DEC's ambitious schedule for Lee and PEC's timeline for relying on shares of nuclear units are far from certain, and that uncertainty should be acknowledged by the utilities as a matter of sound planning practice.

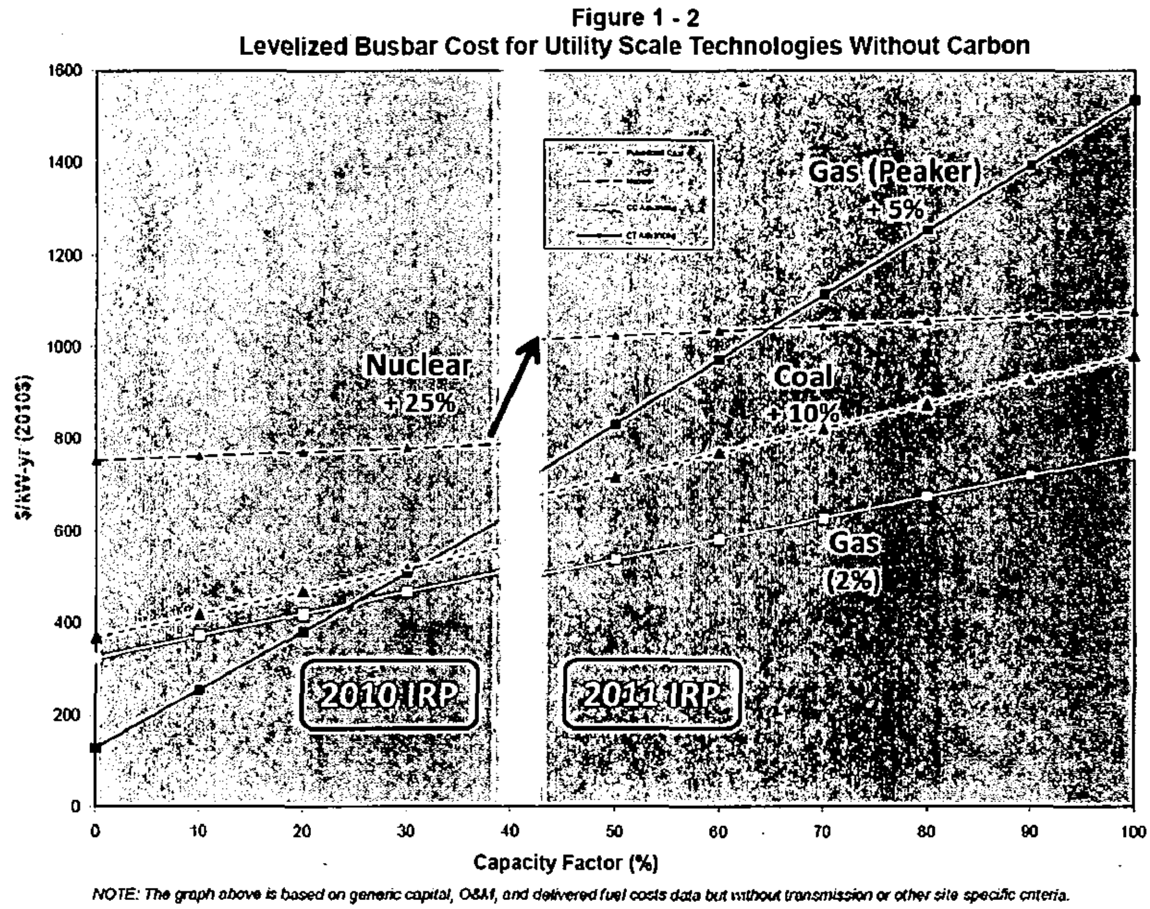
B. The cost of new nuclear units will likely be significantly higher than the costs DEC and PEC assume in their IRPs.

Nuclear cost estimates are highly uncertain. The nuclear industry has a poor track record in predicting plant construction costs and avoiding cost overruns over the past forty years. Actual costs of new plants have often been two to three times higher than the cost estimates provided during licensing or at the start of construction. Indeed, a U.S. Department of Energy study shows that the cost to construct 75 nuclear power plants was more than 200 percent above initial cost estimates. Given the history of cost overruns at new nuclear facilities, sound resource planning would acknowledge these significant uncertainties and the likelihood of cost escalations.

DEC assumes that the cost of building twin AP1000 nuclear units at the proposed Lee Nuclear Station site in South Carolina will cost $11 billion in 2010 dollars. Even if DEC has correctly estimated the "overnight" cost of new nuclear units, when financing costs and the impacts of inflation are added, the total cost of a two-unit nuclear plant far exceeds this amount. DEC has a +20 /-10 percent sensitivity range for the cost of the Lee Nuclear Station. DEC 2011 IRP at 100. However, based on the history of significant cost overruns at nuclear plants, this range appears to be insufficient. Indeed, former Duke Energy Chief Operating Officer and Group Executive Vice President James Turner noted that it is not unreasonable for DEC to assume and plan for significant cost overruns, in the 40-50% range, for its proposed Lee units. See DEC Reply Comments, NCUC Docket No. E-100, Sub 128 (March 1, 2011) at 32.

PEC's estimated busbar cost for nuclear power increased by about 25% from last year's projections, as illustrated in Figure 3, below. This cost increase is approximately the same as the high nuclear cost sensitivity (+ 30%) analyzed in PEC's 2010 IRP, and reflects the increase in nuclear construction costs that has occurred during the past forty years. Although PEC conducted a resource optimization for its base case, PEC did not update its sensitivity analysis to consider a further 30% cost increase. PEC 2010 IRP at A-4 and response to SACE Data Request No. 3, Item 3-2.

Figure 3: Comparison of PEC Cost Estimates in 2010 and 2011 IRPs



Source: PEC 2010 IRP at 13; PEC 2011 IRP at 14.

Like DEC's sensitivity range, PEC's +/- 30 percent range for nuclear costs is insufficient. Both DEC and PEC should widen their ranges, and PEC should update its range to reflect the midrange cost provided in its 2011 IRP.

VII. MODELING OF ECONOMIC IMPACTS WOULD INFORM THE EVALUATION OF RESOURCE PORTFOLIOS.

As discussed in SACE's February 10, 2010 comments on the 2010 IRPs, major electric utilities across the country perform modeling and analyses to estimate the economic impacts of their resource planning decisions, and DEC and its ratepayers would be well served if that approach were adopted in DEC's IRP. Information about economic impacts would assist North Carolina's electric utilities, the Commission and interested parties in understanding the broader implications of resource planning decisions.

VIII. CONCLUSION

In summary, like the 2010 IRPs, the DEC and PEC 2011 IRPs do not present "the least cost mix of generation and demand-reduction measures which is achievable," as required by N.C.G.S. § 62-2(3a). Among other flaws, each company's IRP fails to integrate energy efficiency adequately into its long-term resource plan, ignores the economic consequences of continuing to operate scrubbed coal units, and relies on unrealistic assumptions about the cost and timing of new nuclear generation. A proper analysis of alternative resource mixes would result in a preferred resource portfolio that reflects, among other things, increased energy efficiency in the long term, a reduced need for additional generation, and retirement of uneconomical existing coal units.

Respectfully submitted this 13th day of January, 2012.

Gudrun

Gudrun Thompson, N.C. Bar No. 28829
Southern Environmental Law Center
601 West Rosemary Street, Suite 220
Chapel Hill, NC 27516-2356
Telephone: (919) 967-1450
Fax: (919) 929-9421
gthompson@selcnc.org
Attorney for Southern Alliance for Clean Energy

Attachment 1

Review of Utility Evaluation of Energy Efficiency Resources in the Carolinas (October 2011)[1]

Energy efficiency is the least-cost electric system resource. Unlike supply-side resources, energy efficiency, even at aggressive levels, reduces customer utility bills.[2] Energy efficiency also moderates rate increases by reducing or delaying the need for new generating capacity.[3] In fact, states with leading energy efficiency programs often have electricity rates that are comparable to, or even lower than, rates in North and South Carolina.[4] In addition to lower customer bills and rate moderation, the numerous benefits of energy efficiency include environmental quality improvements, water conservation, energy market price reductions, lower portfolio risk, economic development and job growth, and assistance for low-income populations.[5]

Despite these well-recognized benefits, electric utilities in North and South Carolina ("Carolinas utilities")[6] significantly underestimate and underutilize the energy efficiency resource in their integrated resource plans ("IRPs"). Best IRP practices evaluate the efficiency resource on an equivalent basis with supply-side resources.[7] Carolinas utilities do not implement these best practices in a systematic way, however, and therefore fail to give due consideration to available and emerging energy efficiency resource opportunities. As a result, Carolinas utilities continue to develop IRPs that favor more expensive, risky supply-side resources and do not result in the "least-cost mix" of resource options. Leading utilities in many states expect to achieve more energy efficiency savings in the next five years than Carolinas utilities anticipate achieving in the next ten or even fifteen years. Carolinas utilities can and should do better.

What follows is a review of the manner in which Carolinas utilities consider energy efficiency as a resource. The following conclusions and recommendations are presented:

- Long-term efficiency savings projections of DEC and PEC lag behind those of leading utilities, even though DEC and PEC achieved impressive first-year savings impacts. DEC and PEC must build upon their first-year results to realize

---

[1]This review was conducted by the Southern Alliance for Clean Energy.
[2] *See, e.g.,* Marilyn A. Brown et al., Energy Efficiency in the South, Southeast Energy Efficiency Alliance (April, 12, 2010), http://www.seealliance.org/se_efficiency_study/full_report_efficiency_in_the_south.pdf.
[3] *Id.*
[4]John D. Wilson, Energy Efficiency Program Impacts and Policies in the Southeast (May 2009) at 4, http://www.cleanenergy.org/images/files/SACE_Energy_Efficiency_Southeast_May_20091.pdf.
[5]*Supra* note 2.
[6]Unless otherwise noted, the current version of this review covers Duke Energy Carolinas, LLC ("DEC") and Progress Energy Carolinas, Inc. ("PEC") only. Future versions will cover additional electric utilities.
[7]*See* National Action Plan for Energy Efficiency Leadership Group, *National Action Plan for Energy Efficiency* (July 2006), Chapter 3.

the cumulative savings potential of energy efficiency, and the long-term system-wide benefits it offers customers and utilities.

- Industrial opt-out provisions create a lost energy savings opportunity. DEC and PEC should improve the quality of their programs directed to large commercial and industrial customers to realize the significant savings potential of this energy-intensive customer sector. Additionally, industrial customers who opt-out must implement their own efficiency measures, and the program impacts should be accounted for in the utilities' resource plans.

- DEC and PEC have not used a complete energy efficiency resource analysis in developing their IRPs. Utilities must rely on both existing and new energy efficiency technologies throughout their resource planning horizons. They should conduct comprehensive, independent energy efficiency potential studies and/or set energy savings goals based on available evidence regarding the amount of cost-effective energy efficiency that is achievable.

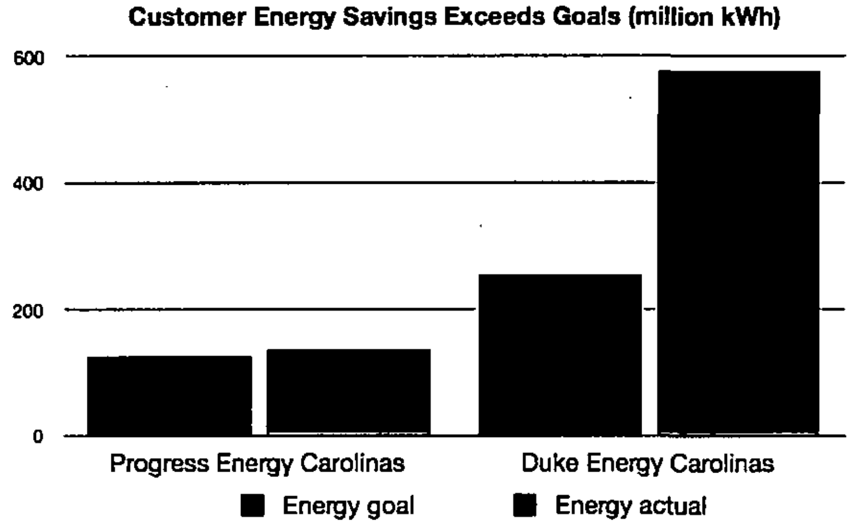
- Utility resource planning models do not optimize cost-effective energy efficiency in portfolio outputs. Rather than treating efficiency as a fixed load modifier, DEC and PEC should use an approach that models energy efficiency as a resource, just as generating plants are modeled on the supply side, such as the two-supply curve approach used by the Northwest Power and Conservation Council.

1. DEC and PEC have achieved substantial first-year efficiency savings but their long-term savings projections lag behind those of leading utilities.

The cumulative impact of DEC's and PEC's energy efficiency programs could reach the levels achieved by leading utilities over the next ten to fifteen years if DEC and PEC adequately analyze and forecast demand-side resources. While DEC and PEC have improved their consideration of energy efficiency in selecting near-term resource options, they still do not adequately consider energy efficiency in the long-term.

DEC and PEC have begun to invest in energy efficiency at meaningful levels. For their first full program year, DEC and PEC exceeded their energy savings targets, as illustrated in Figure 1.

Figure 1: Energy Efficiency Program Impacts, First Full Program Year



Source: SACE analysis of PEC and DEC compliance filings in North and South Carolina. PEC data cover April 2010-March 2011; DEC data cover calendar year 2010.

Typically, ambitious new programs save 0.2 – 0.5% of retail electricity sales in their first full program year. As Table 1 shows, DEC and PEC's first year program impact are within or exceed this range. DEC is outperforming PEC in terms of energy efficiency savings, mostly due to DEC's aggressive residential lighting efforts.

Table 1: Energy Efficiency Program Impacts, First Full Program Year

Program impact (relative to electricity sales)	PEC	DEC
Efficiency from residential lighting programs	0.20%	0.52%
Efficiency from all other programs	0.13%	0.13%
Total efficiency savings	**0.33%**	**0.65%**

Source: SACE analysis of PEC and DEC compliance filings in North and South Carolina. PEC data cover April 2010-March 2011; DEC data cover calendar year 2010.

Both utilities have made residential lighting incentives, which focus on CFL bulbs, their largest and lowest-cost efficiency program. Over the next decade, federal lighting standards will increase the efficiency of many bulbs, which will benefit consumers, but also raise the bar for utilities to capture lighting savings because the utility will get credit only for energy savings that go beyond existing standards.

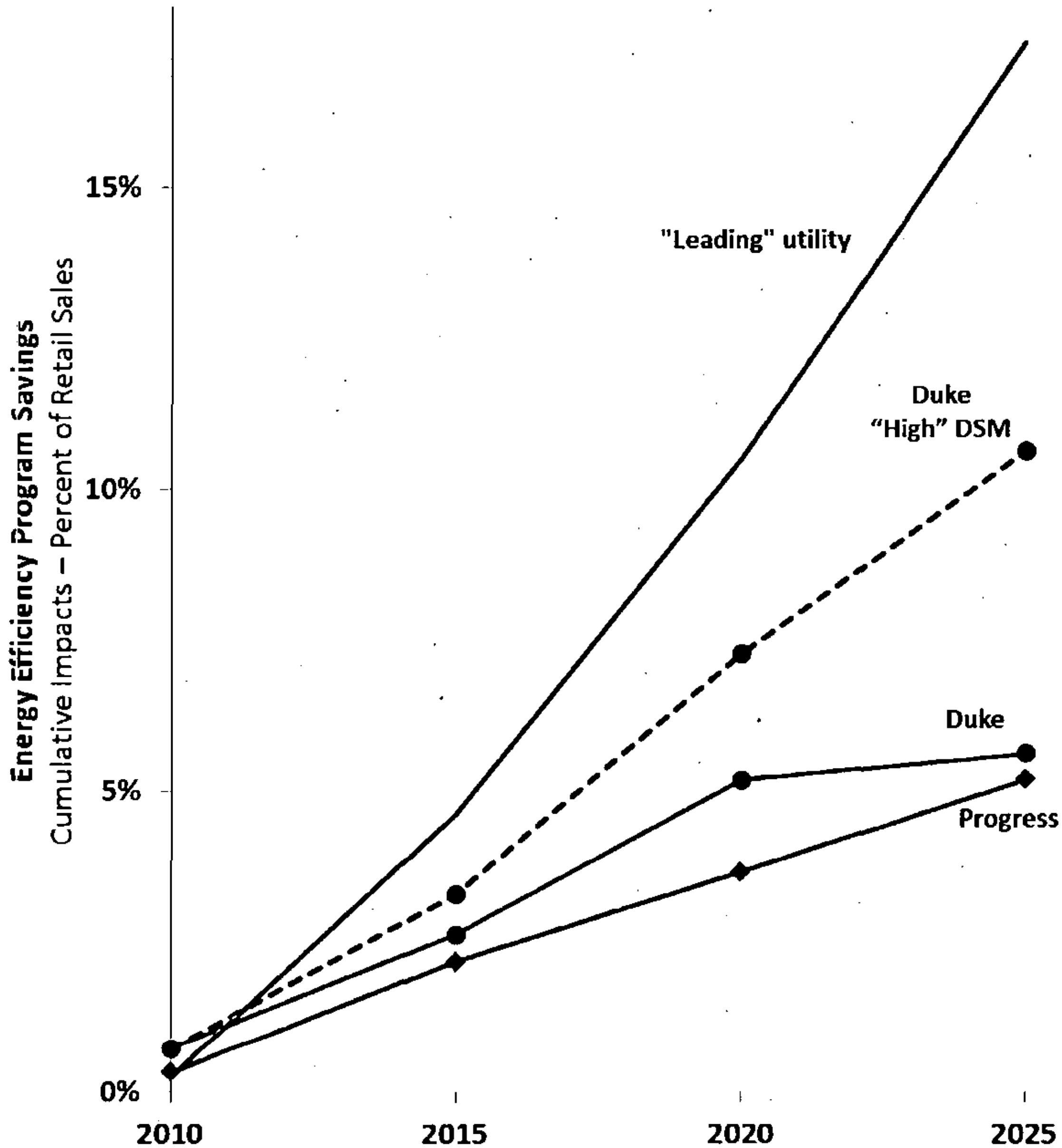
Despite the initial success of the DEC and PEC programs, the Carolinas remain in the bottom quarter compared to states with energy efficiency standards. PEC and DEC expect to achieve about 3.7% and 5.2%, respectively, in cumulative energy savings from energy efficiency programs by 2020. These forecasts are equivalent to annual energy savings of 0.37% and 0.52%—significantly below the levels achieved by national leaders. Figure 2 compares projected energy efficiency savings of DEC and PEC to that of a "leading" utility from the average "top ten" state, which is anticipated to achieve at least 1% annual energy savings per year.[8] A 1% annual savings goal is consistent with the findings of recent studies, including a 2010 Georgia Tech meta-analysis of several potential studies in the South, which found that the achievable electric efficiency potential ranges from 7.2 to 13.6% after 10 years.[9]

---

[8]The "leading" utility is represented as the average of the top ten states as reported in Sciortino, M. *et al.*, *Energy Efficiency Resource Standards: A Progress Report on State Experience*, American Council for an Energy-Efficient Economy, Research Report U112 (June 2011).

[9]Chandler, S. and M.A. Brown, "Meta-Review of Efficiency Potential Studies and Their Implications for the South," Working Paper # 51 (August 2009). *See also* American Council for an Energy-Efficient Economy, "North Carolina's Energy Future: Electricity, Water, and Transportation Efficiency," Report Number E102, March 2010, at 15 (finding that the "medium case" energy savings potential for utility-led energy efficiency programs is approximately 17% by 2025).

Figure 2: Energy Efficiency Savings Impacts of DEC and PEC Compared to "Leading" Utility



Source: DEC 2011 IRP at 23, 119-121; PEC 2011 IRP at 8, E-9; and Sciortino, M. *et al*, *Energy Efficiency Resource Standards: A Progress Report on State Experience*, American Council for an Energy-Efficient Economy, Research Report U112 (June 2011).

Figure 2 shows that Carolinas utilities lag significantly behind the typical leading utility, regardless of which baseline is used. DEC's energy efficiency program impacts appear to grow during the first decade of the planning horizon, but level off in the second decade. PEC projects increased energy savings in the second decade of its planning horizon, but only enough to account for slow growth in its efficiency program impacts in the first decade. As a result, while aggressive levels of energy efficiency may be sufficient to eliminate a large amount of load growth through about 2020, the efficiency projections in DEC's and PEC's IRPs favor supply-side additions in the second decade of the planning period, despite available, additional savings opportunities from energy efficiency. Energy efficiency, if properly integrated into a long-term resource plan, can result in steady, significant energy savings growth over the planning horizons. DEC and PEC should build upon their successful first-year energy savings results to realize the long-term system-wide benefits of efficiency, which will lower cost and risk to both customers and the utilities.

2. Industrial opt-out provisions create a lost energy savings opportunity.

In both North and South Carolina, industrial customers can choose to opt out of utility-sponsored energy efficiency programs, and not bear the costs of new programs, if they implement their own energy efficiency programs. Opt-out provisions do not exempt industrial customers from engaging in energy efficiency efforts altogether. Instead, they allow industrial customers to opt out of utility programs only if they implement their own energy efficiency programs.

It does not appear that the load impact from industrial energy efficiency efforts is reflected in the utilities' IRPs. While DEC accounts for the impact of federal lighting standards on its load forecasts,[10] it does not make a similar adjustment for the impact of energy efficiency programs adopted by industrial customers that have opted out of its programs. (PEC does not make this adjustment either). Moreover, PEC appears to have no expectation that customers eligible to opt-out will implement all cost-effective energy efficiency: its energy efficiency study excludes the participation of ***all customers*** eligible to opt-out of DSM programs.[11]

Industrial and large commercial sectors represent a large resource opportunity: more than half of the cost-effective energy efficiency potential. Failure to utilize this resource opportunity increases system costs for all classes of customers.

DEC's discussion of the cost difference between its "base" and "high" energy efficiency cases illustrates the significance of this lost opportunity. DEC acknowledges that "[t]he high energy efficiency sensitivity is cost effective if there is an equal participation between residential and non-residential customers" but that "[i]f a significant number of non-residential customers opt out, then the high EE case may no longer be cost effective."[12] Indeed, DEC's supporting data suggests that if more industrial customers were to participate in DEC's efficiency programs, DEC could increase energy efficiency savings from about 5% to about 11%, and reduce or delay costly new supply-side resources.[13]

---

[10]Duke 2011 IRP at 110.
[11]ICF International, *Progress Energy Carolinas DSM Potential Study* (March 16, 2009) at 2-13.
[12]Duke 2010 IRP at 95.

[13]Initial Comments of Southern Alliance for Clean Energy, *In re: Investigation of Integrated Resource Planning in North Carolina–2010*, North Carolina Utilities Commission Docket No. E-100, Sub 128 (February 10, 2011) at 11.

Several steps could be taken to address the impact of industrial opt-outs. First, the electric utilities could, at their own initiative or at the direction of state commissions, improve the quality of their programs directed to large commercial and industrial customers. The increasing number of "opt-ins" indicates that the utilities have made some efforts in this regard, and we encourage DEC and PEC to continue this effort. Second, the commissions or the utilities could initiate a process to ensure that industrial customers who opt-out actually implement their own efficiency measures, as required. Third, industrial customers or their customer associations could work to provide to the electric utilities firmer estimates of their energy efficiency plans and projected impacts on energy use and demand. Fourth, utilities, industrial customers and others could work together to develop more attractive programs that meet the needs of industrial customers.

3. DEC and PEC do not conduct complete energy efficiency resource analyses in developing their IRPs.

DEC and PEC are not using a comprehensive energy efficiency potential study, or a consistent standard in determining the amount of energy savings that can be achieved, in their resource planning processes.

For its 2010 IRP, DEC limited the program potential of its "high energy efficiency" forecast to the "economic potential identified by the 2007 market potential study."[14] In a recent hearing before the North Carolina Utilities Commission, DEC Witness Richard Stevie testified that this study is "out of date" and that DEC is "continuing to look at additional programs" that were not analyzed in the potential study.[15] While the "high energy efficiency" forecast in the DEC 2011 IRP has a similar level of cumulative savings, it is unclear whether DEC continues to limits its program potential by the amount identified in the 2007 market potential study.[16]

For its 2010 and 2011 IRPs, PEC limits its program potential to the "cost-effective, realistically achievable potential" in its "updated potential study."[17] While the scope of PEC's updated study appears to be broader than that of the earlier version, the study appears to suffer from the same fundamental shortcomings as the earlier study, which include:

- The potential study indicates that the findings were benchmarked against other utilities but no benchmarking is disclosed.
- Energy savings practices, measures and entire sectors remain excluded from the scope of study.

---

[14] Duke 2010 IRP at 68.

[15] North Carolina 2008 and 2009 IRP hearing, Transcript Vol. 4, pp. 31 and 39.

[16] *Compare* Duke 2011 IRP at 34 (describing the high EE load impact scenario as using the full target impacts of the Save-A-Watt programs for the first five years and then increasing the load impacts at 1% of retail sales *every year after that until 2030*) *with* Duke 2011 IRP at 101 (defining the High DSM case as the full target impacts of Save-A-Watt for the first five years and then increasing load impacts at 1% of retail sales every year after that *until the load impacts reach the economic potential identified by the 2007 market potential study*).

[17] Progress 2010 IRP at E-7.

- It is not evident from the resource plan that PEC has made effective use of the insights offered by its consultant in the potential study. It does not appear that PEC has adopted some highly cost-effective programs and strategies included in PEC's market potential study, such as an ENERGY STAR Appliance program and certain non-residential incentive programs.

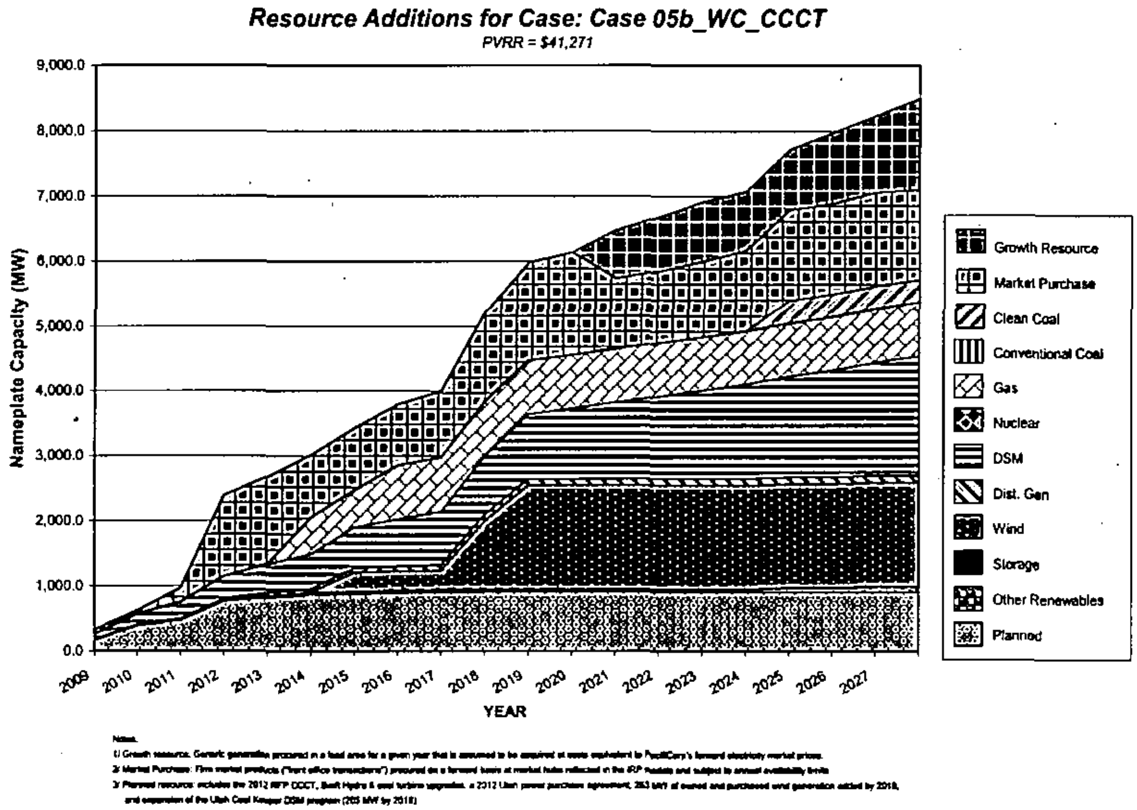
In its IRP, PEC effectively assumes no further technological progress or development of new energy-saving practices. DEC is more confident about advances in efficiency, although this is not fully reflected in its long-term resource plan.

Utilities across the country that have a serious commitment[18] to efficiency, rely on both existing and new energy efficiency technologies throughout their resource planning horizons to achieve energy savings in both the near- and long-term. The Northwest Power and Conservation Council, for example, has concluded that at least 85% of the projected 20-year energy savings estimates in its first regional plan were realized.[19] One of the utilities affected by those regional plans, PacifiCorp, anticipates continued growth of the contribution of DSM resources in its IRP, as illustrated in Figure 3.

[18] The term "serious commitment" is used to reflect a plan to achieve more than 3% energy savings over 10 years – a relatively low threshold.

[19] Northwest Power and Conservation Council, *Achievable Savings: A Retrospective Look at the Northwest Power and Conservation Council's Conservation Planning Assumptions*, Council document 2007-13, August 2007.

Figure 3: PacifiCorp Preferred Resource Portfolio, 2008 IRP



PacifiCorp, *2008 Integrated Resource* Plan, May 2009, Volume I, at 239 and Appendix A, at 31.

DEC and PEC can and should do the same. Indeed, "[m]ost utilities have an established approach to forecast long-term market prices, and the same forecasting technique and assumptions should be used for energy efficiency as are used to evaluate supply-side resource options."[20]

There are several steps that could be taken to help utilities in the Carolinas move toward a more complete energy efficiency analysis. One option is to rely upon a comprehensive, independent energy efficiency potential study. Such a study should be conducted without incorporating utility biases that could constrain the findings; should recognize the limitations inherent in such studies, particularly with respect to quantifying what is "achievable"; and should make reasonable assumptions about long-term technological and program development prospects.

Second, the utilities could conduct more limited studies to address specific shortcomings, such as the failure to study different business sectors for energy savings opportunities. This would partially address the gaps in the existing studies and could lead more directly into program development.

---

[20]National Action Plan for Energy Efficiency Leadership Group, *National Action Plan for Energy Efficiency* (July 2006), at 3-4.

A third option is to set an energy savings goal. Such a goal may be set by the state legislature or by a regulatory commission, for example, and would be based on available evidence regarding what level of cost-effective energy efficiency is achievable, and would be subject to future revision. Although there may be imprecision and a potential for bias or error, a goal can be implemented in a constructive and positive manner, with flexibility and accountability for results that are truly in the public interest.

4. Utility resource planning models do not optimize cost-effective energy efficiency in portfolio outputs.

In their resource planning modeling, DEC and PEC integrate energy efficiency as a fixed model input, best characterized as a load adjustment. As a result, the resource planning model works around the limited efficiency input, selecting resources to meet the utility's adjusted load. While this treatment is appropriate for demand response, industry best practice is to treat energy efficiency as equal or even preferred to supply-side resources for planning purposes.[21]

Utilities in the Carolinas should use an approach that models energy efficiency as a resource, just as generating plants are modeled on the supply side. For example, the Northwest Power and Conservation Council has pioneered an approach that uses two supply curves for energy efficiency in the model that develops least-cost portfolios.[22] The use of two supply curves allows for different treatment of discretionary and lost-opportunity energy efficiency resources.[23] Just as utilities use short-term market power purchases for different purposes than investments in new power plants, a sophisticated energy efficiency planning process distinguishes between discretionary and lost-opportunity resources. The load-adjustment approach does not allow this distinction to be made.

Unless an aggressive energy savings target is set by a legislature or commission, we recommend that utilities in the Carolinas adopt a two-supply-curve approach to evaluate the energy efficiency resource in their IRP processes. At a minimum, the utilities should model energy efficiency on an equivalent basis to supply-side resources. This would be preferable to the "adjusted load" method that does not account for all cost-effective energy efficiency and therefore leads to resource portfolios with unnecessarily high levels of both cost and risk.

---

[21] *See, e.g.*, Aspen Environmental Group and Energy and Environmental Economics, Inc. (Aspen/E3), *Survey of Utility Resource Planning and Procurement Practices for Application to Long-Term Procurement Planning in California: Final Report and Appendices*, prepared for California Public Utilities Commission, April 2009, http://docs.cpuc.ca.gov/published/Graphics/103213.PDF.
[22] *Id.* at 71.

[23] Discretionary energy efficiency resources are investments that can be advanced or deferred based on near-term market decisions, such as a CFL market promotion. Lost-opportunity energy efficiency resources are programs that take advantage of opportunities due to market or customer circumstances, such as new construction and replace-on-burnout programs.

Attachment 2
Cost Comparison of Duke's "High DSM" and "Base DSM" Portfolios

Year	Selected "BaseDSM" Portfolios				Selected"HighDSM"Portfolios					
	CT/CC	2N 2021-2023, "Optimal Plan"	2N 2026-2028	1N 2027	HDSM Gas	HDSM 2N 2021-2023	HDSM 2N 2026-2028	HDSM 1N 2027	Clean Energy Gas	Clean Energy 1N
2011-16										
2017	CC	CT	CT	CT						
2018					CC	CT	CT	CC		
2019	CT	CT	CT	CT					CC	CC
2020					CT	CT (PPA)	CT	CT	CT	CT
2021	CC	N	CC	CC		N				
2022										N
2023	CC	N	CC	CC	CC	N		CT	CC	
2024										
2025	CC		CT(PPA)	CC	CT					
2026	CC		N				N	CT(PPA)		
2027		CC		N				N		
2028	CT		N		CC		N		CT	CT
2029		CC		CT		CT				
2030	CT	CT	CT	CT	CT	CT		CT	CT	CT
CT	2,050 MW	1,780 MW	1,780 MW	2,240 MW	1,890 MW	1,600 MW	2,200 MW	2,070 MW	1,690 MW	1,880 MW
CC	3,250 MW	1,300 MW	1,300 MW	1,950 MW	1,950 MW	0 MW	0 MW	650 MW	1,950 MW	650 MW
Nuclear	-	2,234 MW	2,234 MW	1,117 MW	0 MW	2,234 MW	2,234 MW	1,117 MW	-	1,117 MW
N. Uprate	204 MW	204 MW	204 MW	204 MW	204 MW	204 MW	204 MW	204 MW	204 MW	204 MW
Retire	2,017 MW	2,017 MW	2,017 MW	2,017 MW	2,017 MW	2,017 MW	2,017 MW	2,017 MW	2,017 MW	2,017 MW
DSM	1,900 MW	1,900 MW	1,900 MW	1,900 MW	3,188 MW	3,188 MW	3,188 MW	3,188 MW	1,900 MW	3,188 MW
PortfolioNPVCosts($million)										
Capital	6,799	16,132	14,184	10,371	6,130	15,554	13,855	9,737	5,160	9,929
Production	106,256	95,165	96,969	101,822	99,537	88,486	90,303	95,033	100,568	95,135
Total	$ 113,055	$ 111,297	$ 111,153	$ 112,192	$ 105,667	$ 104,040	$ 104,158	$ 104,770	$ 105,728	$ 105,064
NPV Cost Difference ($billion) (higher values in parentheses represent greater cost savings relative to the "Optimal Plan")										
Capital	(9.3)	0.0	(1.9)	(5.8)	(10.0)	(0.6)	(2.3)	(6.4)	(11.0)	(6.2)
Production	11.1	0.0	1.8	6.7	4.4	(6.7)	(4.9)	(0.1)	5.4	(0.0)
Total	**$ 1.8**	**$ 0.0**	**$ (0.1)**	**$ 0.9**	**($ 5.6)**	**($ 7.3)**	**($ 7.1)**	**($ 6.5)**	**($ 5.6)**	**($ 6.2)**

CERTIFICATE OF SERVICE

I certify that the persons on the service list have been served with the Initial Comments of Southern Alliance for Clean Energy Regarding 2011 Annual Updates to Integrated Resource Plans either by electronic mail or by deposit in the U.S. Mail, postage prepaid.

This the 13th day of January, 2012.

Robin Dunn

Robin Dunn