The Price of Business-as-Usual: Two Energy Futures for the Carolinas

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ABSTRACT

North and South Carolina are two of the fastest growing states in the US, and projected energy demand will grow in tandem with population. The Carolinas face stark choices in how to meet this growing demand. The traditional response simply is to build more power plants. Based on currently filed Integrated Resource Plans, we estimate that NC and SC utilities will need to spend $74 billion on new plant construction over the next 15 to 20 years to meet demand. By comparison, these same utilities spent only about $8 billion on plant construction in the past 15 years. Fuel switching could reduce this overall price tag, but entails a number of other risks. Growth in numbers of ratepayers alone will not be enough to cover these new costs, and we thus conclude that utilities will have no choice but to seek significant rate increases. An alternative is to meet the growing demand with an alternate future involving more rigorous building energy codes, more aggressive utility demand-side management programs, expanded weatherization investment policies and other programs that target existing buildings. This alternate future would require that utility and policy planners in the Carolinas test programs and policies that are dramatically different from current practice in the region.

Introduction

As far as energy efficiency is concerned, the American Southeast has been considered laggard as a region. Energy provisions of the state building codes are weak to nonexistent, and compliance is often poor. Energy efficiency spending by Southeastern utilities remains especially low when compared the nation as a whole.[1] Coupled with high energy intensity is a rapidly growing population. Parts of the Southeast are experiencing high levels of growth, even as much of the country remains mired in the recession.

North Carolina (NC) and South Carolina (SC) are emblematic of the problems and opportunities of energy efficiency in the Southeast. Each state points to trends within the Southeast and the country at large. North Carolina is among the fastest growing states in the US, and continues to draw new residents from elsewhere. It is also a net electricity importer. South Carolina is growing, albeit more slowly, and is comparatively more depressed economically. It has a large industrial base, but produces more electricity than it uses. We have chosen to examine the states together because their electricity markets are inextricably linked. The two largest utilities, Duke Energy and Progress Energy, operate in both states, and most of the electricity exported from SC is sold to NC.[2]

Population growth, coupled with energy intensity, has created a "perfect storm" for utilities in the Carolinas. Left unabated, the rising population and lax energy efficiency will

[1] See http://www.ceres.org/resources/reports/benchmarking-electric-utilities-2011/view
[2] Duke and Progress are expected to merge in 2012, becoming the largest utility in the US.

significantly increase the demand for electricity. Utilities are obligated to meet this demand using least-cost means. The traditional approach is to build additional generating capacity to meet increased demand, and utilities in the Carolinas currently plan to build new coal, natural gas and nuclear facilities. This paper puts an estimated price tag on these plans.

Based on our findings, we argue that the traditional approach simply is too expensive for the Carolinas, both economically and socially. By our calculations, the medium-case capital cost of building enough new plants for the next 15 to 20 years will be $74 billion. This price tag does not include the cost of increased emissions, water withdrawals and fuel price volatility. It also will exclude costs that are less easily quantified, such as loss of environmental quality. By contrast, improving the efficiency of buildings in the Carolinas easily can negate the expected increase in electricity demand. Previous studies have shown that efficiency is significantly cheaper, and provides a number of other monetized and non-monetized benefits. The situation for utilities in North and South Carolina is a microcosm for utility models in the US at large.

The Problem Scenario

North and South Carolina have experienced tremendous growth in the last several decades, and this growth is projected to continue. North Carolina's population grew 18.5% from 2000 to 2010, to more than 9.5 million residents. This growth will continue, as NC's 2030 population is projected to be more than 50% larger than its population in 2000 (US Census Bureau, 2011). South Carolina too has experienced considerable growth and will continue to do so in the coming decades. SC's population grew more than 15% from 2000 to 2010, and is projected to grow another 28% by 2030 (ibid). The Carolinas continue to draw residents from other states, despite the lingering effects of the recession. Indeed, NC ranked 4th for new housing starts in 2010, and the Raleigh-Durham-Chapel Hill housing market is among the best performing in the US (ibid).

Complicating matters further is NC's Clean Smokestacks Act. The 2008 legislation mandates that all coal plants in NC meet more stringent emissions standards. While NC utilities have added emissions equipment to some plants, they have opted to retire older, less efficient units. In all, NC utilities plan to retire more than 3500 MW of older coal capacity. While this legislation is likely to improve air quality in parts of NC, it has added to the perceived need for new generating capability.

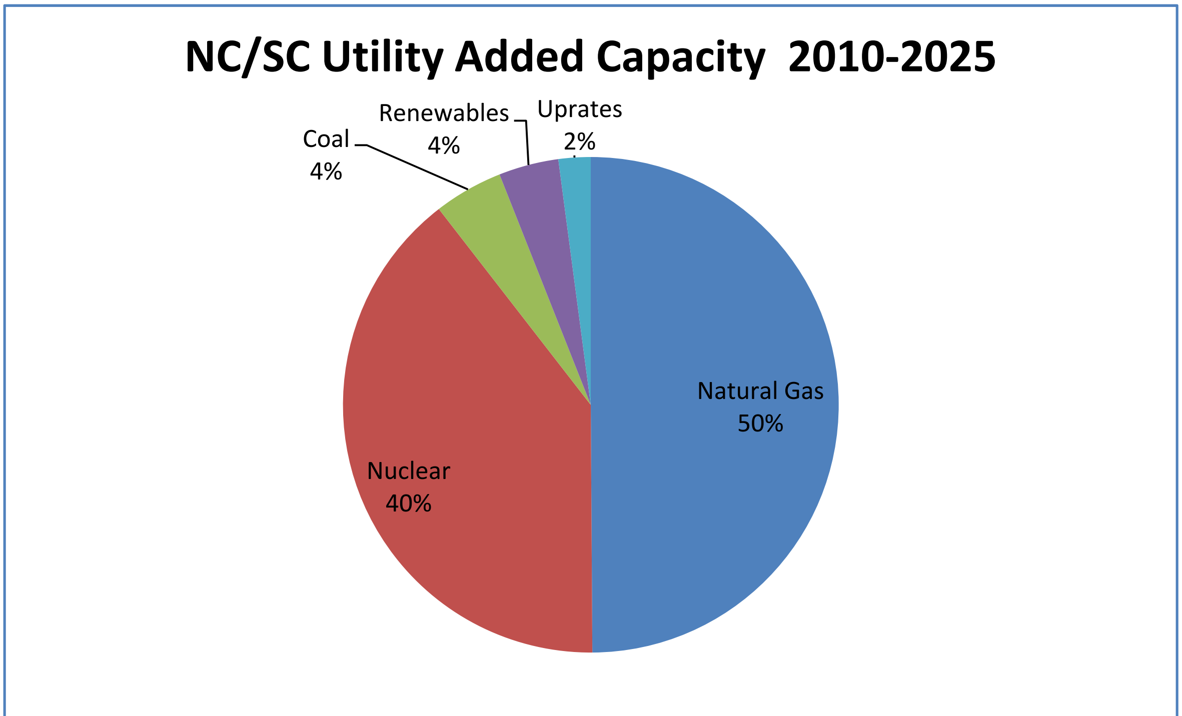
Left unabated, all of these factors will contribute to substantially increased electricity generation demand. Currently, North Carolina's electricity consumption is approximately 135,000 GWh per year (EIA, 2012a). Without improved efficiency, this will rise to between 160,000 GWh and more than 200,000 GWh by 2030 (Eldridge et al, 2010, SACE, 2008). South Carolina's current consumption is 83,000 GWh per year (EIA, 2012b). Without efficiency initiatives, SC's electricity demand will grow to about 95,000 GWh per year by 2025 (Neubauer & Watson, 2009). Put together, the Carolinas currently consume 218,000 GWh a year, which could grow to at least 255,000 GWh by 2025.

The Traditional Solution: Build, Baby, Build!

Faced with such intense growth, utilities of the Carolinas have responded with plans to build a large number of new generating facilities. According to their most recent Integrated Resource Plans (IRP), the utilities of North and South Carolina plan to build 18,413 MW of new generating capacity by 2025 to 2030.[3] Even after accounting for various derates and planned retirements, new construction still will result in nearly 15,000 MW of additional capacity. This represents a 33% increase over current summer capacity in the Carolinas.

The utilities of the Carolinas predominantly plan to build natural gas and nuclear generating facilities. Of the total, almost half, 9,191 MW, of new capacity is planned to be natural gas-fired. This will be a mixture of combined cycle plants and combustion turbines. Another 7,292 MW of planned new capacity will be nuclear. Nearly all of these nuclear units are planned to be Westinghouse AP1000 reactors, with the lone exception being Dominion's choice of a GE/Hitachi unit. The rest of the new capacity will be made up of coal, various renewables, and uprates to existing facilities.[4]

Figure 1. Fuel Mix for Planned Capacity Additions by North and South Carolina Utilities, 2010-2025/2030



Sources: Utility IRPs,[3] and EIA, 2010

Economic Costs

The construction costs for this plan are formidable. Table 1 depicts low, medium and high estimates of capital costs for construction of new generating facilities based on Carolina utility IRPs.

[3] The Duke IRP time horizon goes to 2030, whereas all others go to 2025. Individual IRPs are listed in the references under the respective company name. See also MC2, 2011a and MC2, 2011b.

[4] The totals for renewables and coal could vary slightly, as Dominion's "Hybrid Energy Center" plant is designed to be fueled by either coal or biomass.

Table 1. Estimated Capital Costs for New Power Plants in the Carolinas, 2010-2025/2030

	Low Estimate	Mid Estimate	High Estimate
Duke	$19.6	$27.6	$32.3
Progress	$17.2	$27.2	$34.6
SC G&E	$ 5.5	$10.3	$13.1
Santee Cooper	$4.4	$8	$10.6
Dominion[5]	$0.6	$0.9	$1
Total	**$47.3 billion**	**$74 billion**	**$91.6 billion**

The values[6] in Table 1 represent an enormous increase over what Carolina utilities have spent in the previous decade and a half. From 1995 to 2010, the five major utilities of the Carolinas added only 9,706 MW of new capacity at an estimated capital cost of $8.8 billion. Thus, in the next fifteen to twenty years, they plan to build twice as much new capacity at approximately five to ten times the cost.

Other Costs

Emissions. Hydrocarbon emissions will increase as a result of the current plan for meeting electricity demand in the Carolinas. Based on the EPA's most recent estimates for emissions per MWh in the Carolinas, the addition of 37,000 GWh per year of electricity demand means an additional 46.3 million pounds of smog-forming Nitrogen Oxides (NOx) released into the atmosphere annually. It would also mean 176.9 million pounds of additional Sulfur Dioxide (SO_2) emissions per year (EPA, 2011). Levy, et al. developed a rubric for estimating human health costs from power plant emissions (2009). Using this metric, the additional NOx emissions would cost Carolina residents $111 million a year, while the SO_2 would result in $1.7 billion of additional health costs per year.[7][8]

Emissions also entail other costs to these states. Particulate emissions have caused a marked drop in visibility across the Carolinas, a factor that has impacted the tourist economy of western North Carolina (NPS, 1994).[9] Any additional emissions also represent significant economic costs in crop productivity and property damage.[10] These totals do not include damage to ecosystem health and biodiversity, the costs of which are less easily monetized.

Carbon dioxide emissions would also increase substantially. Based on the EPA's 2007 estimates for carbon intensity of electricity in the Carolinas, the additional 37,000 GWh would

[5] Dominion totals are adjusted to reflect the portion that will be paid by ratepayers in the Carolinas. See Methods and Assumptions section below for calculations.
[6] Original data from most recent IRPs from five major utilities in the Carolinas and EIA, 2010. See Methods and Assumptions section below for calculations to arrive at values listed in the table.
[7] Levy et al. include indirect health costs, such as lost productivity and increased insurance rates. Levy et al. estimate that fine particulate emissions have especially high human health costs. However, fine particulate emissions are not yet included in the EPA's eGrid inventory, and thus they are not included here.
[8] Given the projected fuel mix, it is likely that the pollution intensity per MWh will be somewhat reduced by 2025, which would also reduce the associated health costs. Externalized health costs will nonetheless remain a cost of electricity production as long as combustion is involved, and a significant portion of the Carolina's electricity will still come from coal by 2025.
[9] While coal-fired power plants are a major source of particulate emissions, it is difficult to discern the exact proportion of visibility loss that is due to power plants within the Carolinas.
[10] Acid deposition from SO2 emissions speeds corrosion of iron, steel and cement, among other materials.

result in 41 billion pounds of added carbon dioxide emissions per year (2011). Priced at $20 a ton, these additional CO_2emissions would cost $414 million a year.[11]

Water withdrawals. Withdrawals of freshwater are another cost that grows in tandem with the construction of new power plants. Thermoelectric water use accounts for 49% of all water withdrawals in the US, and 3% of all water consumption. Thermoelectric water use is already especially high in the Carolinas. NC currently ranks sixth among states for thermoelectric water use, representing 5% of total US withdrawals. SC is ranked 13th, and represents another 3% of US withdrawals (USGS, 2011). Despite the impending retirement of older coal plants in NC, the overall amount of thermoelectric water use will rise substantially with the construction of 18,000 MW of new capacity. Eldridge, et al. estimated that unchecked electricity demand in NC would result in 3 billion gallons a day of additional water withdrawals by 2025 (2010). Thermoelectric water demands also have the ability to disrupt reliable power delivery. Indeed, the McGuire nuclear plant outside of Charlotte has been shut down several times due to the water level in Lake Wiley being too low for reliable cooling.

Methods and Assumptions

Power Plant Pricing

The costs listed are derived from the utilities' own estimates, either from the most recent IRPs, utility websites or from utility-supplied numbers cited by local media. For plants in the less immediate future, we have used estimates from the EIA's 2010 updated capital costs report, which vary depending on the type of plant. For example, the EIA estimates that a natural gas-fired combined cycle plant will cost $974 per kilowatt, whereas advanced nuclear is projected to cost $5,335 per kilowatt. These numbers should be considered a conservative estimate of capital costs and do not include fuel cost, operating expenses, construction overages and delays, or the potential for future carbon taxes.

The report also estimates the Carolinas' share of utility costs. Four of the five major Carolina utilities generate only in North and South Carolina.[12] Duke and Progress both generate and sell in North and South Carolina. SC G&E and Santee Cooper operate only in South Carolina. However, the third largest seller of electricity in NC is Dominion, which operates predominantly in Virginia. To estimate NC's share, we used 2009 EIA data to examine the split in electricity consumption from Dominion in each state. In 2009 Dominion sold a total of nearly 81,225,989 MWh of electricity. Of this, only 4,330,318 MWh of electricity were sold to customers in North Carolina (EIA, 2012a). Thus, Dominion sold 5.3% of its total generation to NC ratepayers in 2009. We applied the same rate to Dominion's estimated capital cost to determine the share that will be paid by ratepayers in NC. Of course, in practice electricity does not stop at state lines, and power generated by plants in South Carolina or Virginia is sold to ratepayers in North Carolina as needed.

[11] A 2007 IPCC study found that the average estimate for economically efficient carbon pricing was $43 a ton, though estimates ranged widely from $1 a ton to $1500 a ton. However, the average carbon price in developed countries is currently about $20.
[12] Duke also has units in IN and OH, while Progress has an additional division in Florida. These are considered separate entities.

Nuclear assumptions. Assumptions regarding the cost of constructing nuclear generating facilities have special relevance. For one, nuclear plants are especially expensive to build. Secondly, a majority of the new nuclear plants currently proposed are in the Southeast, including five to seven new reactors in the Carolinas (Utility IRPs). New nuclear generation makes up nearly 40% of proposed new electricity generation. Thus, the assumptions used to estimate the cost of nuclear construction bear extra explanation.

The low estimate depicted in Table 1 reflects the utilities' own estimates of the costs of future nuclear plants. These estimates historically have proven optimistic. For example, Progress Energy's Shearon Harris plant in Wake County initially was planned to include 4 reactors and to cost $1.1 billion to construct. When the plant came on line in 1987, the net result was a single reactor that had cost $3.9 billion. In 2011 dollars, this equates to about $8,600 per kilowatt, more than twice the rate Progress's current estimate for two additional units at the Harris plant. New generation plants may be even more expensive than Harris. A plant proposed by Progress, in Levy County, Florida, currently is projected to cost $22.5 billion by Progress's own estimates. A 2011 study estimated that the final cost would be $29.5 billion (Chang et al., 2011). The Levy County plant could cost between $10,130 and $13,290 per kilowatt.[13] Therefore, the $47.3 billion dollar low estimate uses the utilities' own projections that are approximately half the cost per kilowatt of the last reactor built in the Carolinas.

The reactors proposed for construction in the Carolinas are a new design that has not yet been approved by the Nuclear Regulatory Commission (NRC). The Westinghouse AP1000 is a so-called third-plus generation reactor, which is argued to be both inherently safer and less expensive to build than previous reactor designs. However, the design has not yet been built in the US, and the first AP1000 is not scheduled to come online in China until 2013. Thus, claims of reduced cost are yet unproven. Also, new reactor designs usually go through rounds of NRC-directed revisions. These revisions often delay start up, and may significantly increase costs, especially if reactor construction has already begun when the revision is issued. While federal loan guarantees could reduce financing costs greatly, none of the reactors proposed for the Carolinas is projected to be completed in time to meet the aid deadline.[14]

Also, our low estimates do not include any of the expected end-of-life costs associated with reactors. Retired nuclear plants must go through the process of decommissioning, whereby they are dismantled in such a way as to remove all potentially radioactive components for safe disposal. Based on the experience of plants in the US and Western Europe, we estimate that decommissioning will cost about 10% of construction (Exelon, 2011). Even beyond decommissioning, the final disposal of spent nuclear fuel is still in a state of regulatory flux. This gray area likely will affect the cost of future nuclear plants. Our estimates assume that the current fund set aside for the permanent disposal of spent fuel waste will be adequate. However, it is possible that this fund will not be adequate, given that approximately a third of the $30 billion fund has been spent on the Yucca Mountain facility, which has been canceled with no alternative site yet identified.[15]

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[13] It is not clear why Progress Energy has not revised its NC plant costs to reflect the increases at the Levy County facility.

[14] Georgia Power's Vogtle Units 3 and 4 are the only proposed reactors in the US that are projected to qualify for the loan guarantees (Chang et al, 2011).

[15] The reactor meltdowns at the Fukushima Daichi nuclear facility in Japan may also affect the future costs associated with new and existing nuclear plants in the Carolinas and around the world. At this time no specific new regulations have been proposed by the NRC, so it is unclear what effect this will have on capital costs.

We have designated our low, medium and high cost estimates with these factors in mind. The low estimates use figures provided by the companies themselves. The medium estimate reflects the inflation-adjusted cost of the Shearon Harris Plant, since it is the most recently constructed reactor in the Carolinas. The high estimate applies Progress Energy's current estimate for the Levy County, Florida plant to all proposed third-plus generation reactors. In addition, the medium and high estimates include an additional ten percent to account for the cost of decommissioning.

Emission pricing. NOx and SO_2 emissions were calculated using the Environmental Protection Agency's eGrid dataset. In 2007, the most recent dataset available, utilities in the SRVC region of SERC (NC, SC, VA) produced an average of 1.25 lbs of NOx and 4.78 lbs. of SO_2 for every MWh of electricity produced. We then applied this figure to the estimated 37,000 GWh of additional yearly demand that is anticipated in our business-as-usual scenario. Levy, et al. (2009) estimates that the human health costs of NOx emissions work out to an average of $4,800 per ton. Similarly, they estimate the costs of SO_2 emissions average $19,000 per ton released. Levy, et al. estimated that costs of fine particulate emissions were particularly expensive at $72,000 per ton. We have not included the costs of fine particulates due to difficulty in finding reliable estimates of the particulate emissions from power plants.

Similarly, CO_2 emissions were calculated using the EPA's eGrid dataset (EPA, 2012). In 2007, electricity producers in the SRVC region averaged 1,118 pounds of CO_2 emissions per MWh of electricity produced. As with criteria pollutants, we then applied this figure to the estimated 37,000 GWh of additional yearly demand that is anticipated in the business-as-usual scenario. A 2007 study by a working group of the United Nations' Intergovernmental Panel on Climate Change (IPCC) summarized previous estimates of an efficient price for CO_2 emissions. The study found that the average estimated efficient price for emitted CO_2 was $43 per ton, though this was within a wide range. The carbon pricing implemented by most countries thus far has fallen well short of this estimate, averaging about $20 per ton. Given the political delays in instituting carbon pricing in the US, it is unlikely that future carbon pricing in the US will be more aggressive than that of Western Europe.

Discussion

The price of electricity in the Carolinas likely will be affected by the need for high levels of capital investment. Despite high growth rates, it is unlikely that utilities will take on enough new customers to offset the estimated capital cost investment. Utilities of the Carolinas will have to raise retail rates significantly to cover the cost of all of this capital investment.[16] Given the unpopularity of more expensive electricity, utilities and the public may seek alternatives.

Fuel Switching

Given the cost of nuclear construction, it is possible that Carolina utilities will cancel some of their planned construction, especially if no new federal incentives are offered. Assuming that demand remains on its current trajectory, this means that utilities will have to

[16] Indeed, Duke Energy is currently requesting an 18% in rates in order to offset the cost of the Cliffside Unit 6 plant and offshore wind exploration.

substitute one type of generation for the lost nuclear capacity. Under current market conditions, natural gas plants would be the most likely substitutes for baseload capacity, most likely combined cycle (CC) plants supplemented by combustion turbines (CT). Such plants are inexpensive to build and have significantly lower emissions than other fossil fuel plants. Natural gas is currently inexpensive, and enthusiasm has been buoyed by recent discoveries of recoverable deposits in shale formations in the continental US. However, widespread substitution is not without its risks for utilities. Fuel prices may be volatile, and a number of factors could increase natural gas prices. For one, the reserve estimates recently produced by the gas industry have been criticized as grossly optimistic (Urbina, 2012). It is also possible that hydraulic fracturing will be more closely regulated in the future, increasing the cost of extraction. Lastly, cost could be driven up by the simple mechanism of higher demand. Utilities around the country simultaneously are eyeing the current price of natural gas and constructing new plants accordingly. These factors could work in tandem to make gas prices particularly high or volatile. Higher prices would make natural gas impractical as a baseload source of electricity, and the gap left by cancelled nuclear plants would remain.

Other generation methods are unlikely to take up the slack. While coal is currently the dominant fuel type for generation in the Carolinas, it has become significantly less attractive for several reasons. For one, new coal plants are not inexpensive, as they require significant investment in emissions equipment to meet current EPA standards. Local opposition may also make new coal plant construction difficult. In addition, the price of US coal has been rising steadily in response to worldwide demand (EIA, 2011). The possibility of some form of carbon taxation in the future provides additional financial risk, and carbon sequestration technologies are estimated to make coal as expensive as nuclear (ibid). In contrast, on-shore wind and solar have been decreasing steadily in price, and NC REPS legislation requires utilities to use both types of generation by 2020. However, wind and solar are relatively intermittent in output. Unless there is an available method of energy storage, wind and solar are not considered practical for baseload generation. Put simply, there are no longer any cheap methods of generating electricity.

The Efficiency Alternative

Instead, it would be much less expensive simply to reduce electricity demand. The Carolinas have the potential to reduce projected electricity demand significantly through improved building energy codes, enhanced utility efficiency incentives and other measures.

Of all states, the Carolinas have the most to gain from improved energy efficiency standards for new buildings. Residential and commercial building construction remains relatively strong, especially in NC. There were nearly 34,000 residential housing starts in NC in 2011, making NC fourth in housing starts in the US after Texas, California and Florida. There were an additional 14,000 starts in SC (NAHB, 2012). Thus, improved building codes have the potential to reach 48,000 new residences in the Carolinas annually, even in a sluggish economy. Bearing in mind the amount of new construction, both Carolinas have substantial room for improvement to their current energy codes. Both NC and SC recently have adopted the 2009 IECC residential standard.[17] While these changes represent significant improvement, the new laws put the Carolinas "at the front of the caboose."

[17] North Carolina also has an added provision for a "High Efficiency Residential Option," or HERO code, which incentivizes 30% above code energy efficiency.

While improved building codes would have significant effect, the electric utilities themselves have the greatest potential to improve the efficiency of *existing* buildings. Electric utilities in the Southeast traditionally have spent very little on energy efficiency, and utilities in the Carolinas largely have followed this trend. A 2011 study ranked 50 utilities across the US according to their spending on energy efficiency programs. Utilities in the Southeast ranked particularly poorly (Jones et al., 2011).[18] Using the same methodology, MC2 analysis placed 2009 spending by all utilities in North and South Carolina in the bottom 20th percentile of the rankings. Spending by Duke and Progress was considerably better in 2010, but would still only rank 32nd and 35th in the original study, respectively.

Thus, there is substantial room for improvement in energy efficiency in the Carolinas. Noting these deficiencies, several previous studies have estimated the energy efficiency potential of the Carolinas. The two most recent studies of efficiency potential in the Carolinas examined the effects of improved building codes, enhanced utility efficiency programs and other measures. The medium cases of these studies suggest that together, the Carolinas could save a combined 57,000 GWh a year by 2025 (Eldridge, et al., 2010 and Neubauer & Watson, 2009). This total vastly exceeds the estimated increase in demand by 2025, and is in line with other estimates of the potential for efficiency in the US (McKinsey, 2009 and Nadel, et al, 2004).

The economic costs of implementing greater energy efficiency in the Carolinas are significantly cheaper than building new power plants. For one, investing in efficiency eliminates much of the capital cost associated with building new generating capacity. Utility efficiency programs require relatively little upfront capital compared to plant construction. Even thereafter, the costs associated with administration and consumer incentives for efficiency programs are far less than the operating costs of any power plant. Previous research has placed the utility cost of energy efficiency at an average of 2.5 cents per kWh, well below the operating costs of any type of power plant (Friedrich et al, 2009).

Conclusion: Barriers to a Cheaper, Cleaner Future

Enhancing the efficiency of the Carolinas is clearly a preferred choice to building new power plants. The capital costs alone of building additional power plants are prohibitive, and utilities inevitably will pass these costs on to ratepayers. Capital costs are compounded by higher utility bills, higher human health costs from emissions, and water resources stretched thinner. Fixing the buildings of Carolinas not only avoids enormous capital costs, but entails continued savings. More efficient houses and commercial buildings are marginally more expensive on the front end, but these costs are more than made up for by the accumulated savings on utility bills. The five major utilities can benefit as well. New "generation" via efficiency programs is substantially less expensive than any other type of generation. Efficiency is the ultimate baseload "generator," as it entails low operation and maintenance costs, and is in effect around the clock. Efficiency may also provide greater flexibility, both financially and for load management.

Despite this potential, there are significant barriers to implementing the alternative method of meeting electricity demand in the Carolinas. Currently, utilities in the Carolinas predominantly are incented to build power plants and sell electricity. Previous studies have

[18] For an explanation of the methodology, see http://www.ceres.org/resources/reports/benchmarking-electric-utilities-2011/view

linked successful utility efficiency programs to establishing Energy Efficiency Resource Standards (EERS) and decoupling utility profits from the sale of electricity (Jones et al, 2011). North Carolina has made some movement toward these policies. In 2008, North Carolina adopted a Renewable Energy Resource Standard (REPS). The law allows that some of the required renewable energy generation can be met with energy efficiency, and NC utilities are allowed to profit from this lost revenue. Nonetheless, the savings requirement is capped at .125% for 2012. South Carolina has no such standard at all. Thus, there is significant room for policy to better promote utility spending on energy efficiency in the Carolinas.

While the details are specific to North and South Carolina, the perfect storm outlined here is representative of the choices that utilities face across the US. Electric utilities can choose the old model of garnering revenue, despite its costs on the societal level. On the other hand, utilities can embrace a new model of revenue generation, one based on meeting demand through enhanced efficiency. This will be difficult without incentives from state lawmakers, however. Much like their counterparts in the rest of the country, lawmakers in North and South Carolina have the ability to make their residents and businesses healthier and wealthier. State policies that encourage energy efficiency can be a winning proposition for ratepayers, utilities and society at large.

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