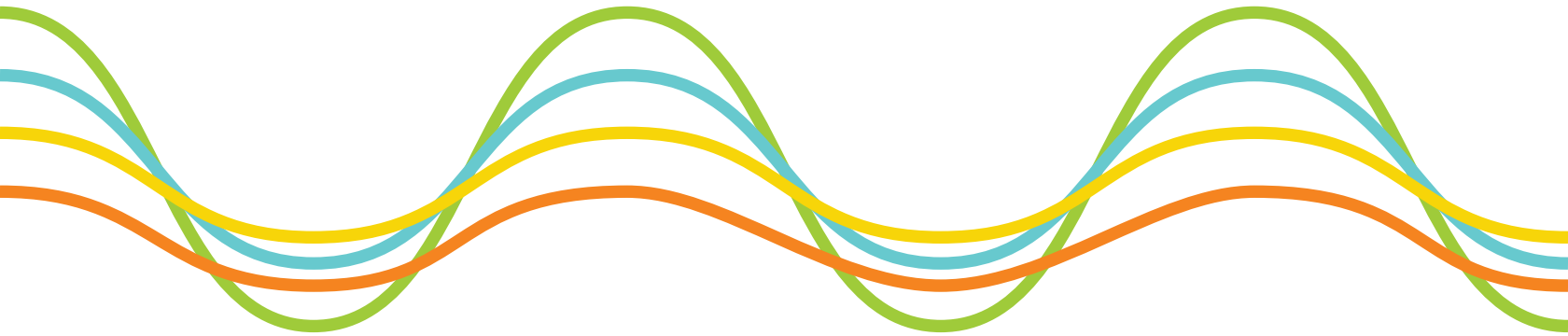
Understanding the Impact of Electric Generation Choices on North Carolina Residential Electricity Rates



NC SUSTAINABLE
ENERGY ASSOCIATION

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ENERGY ASSOCIATION

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Mission:
Founded in 1978, the NC Sustainable Energy Association is a 501(c)3 non-profit membership organization of individuals, businesses, government and non-profits working to ensure a sustainable future by promoting renewable energy and energy efficiency for the benefit of North Carolina through education, public policy and economic development.

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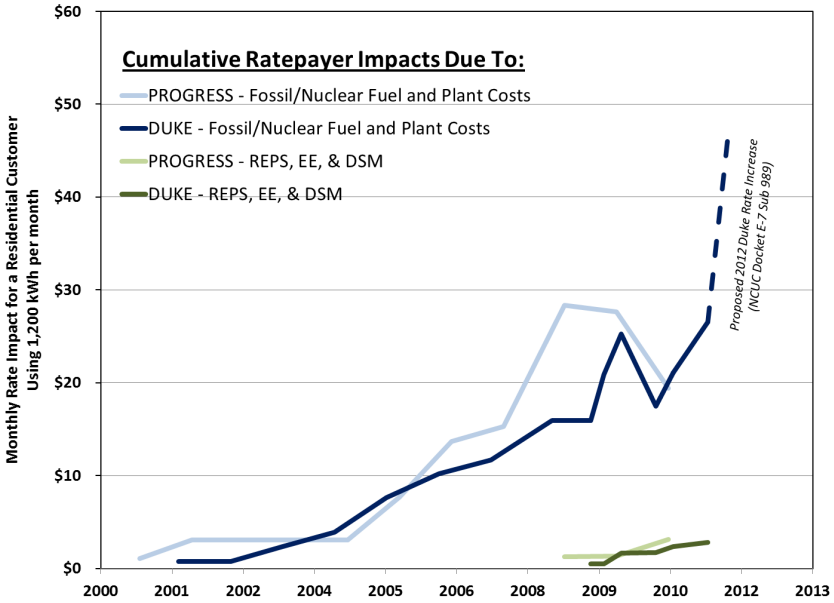


Annually, the North Carolina Utilities Commission (NCUC) issues orders on how much electricity rates must be increased or decreased. In making this decision, they consider several cost factors, such as the impact of fuel- and non-fuel related rates on utility ratepayers. The North Carolina Sustainable Energy Association (NCSEA) examined NCUC dockets to evaluate the role of energy resource choices as drivers of electric rate increases in North Carolina over the past decade, illustrated above for an average residential ratepayer. This paper specifically focuses on the portion of recent rate changes attributable to fossil fuel and nuclear generation costs and renewable energy and energy efficiency costs as required by North Carolina's Renewable Energy and Energy Efficiency Portfolio Standard (REPS) law. This paper is necessary to fill a public information gap on how our energy choices drive electricity rate changes in North Carolina.

These orders indicate that generation choices made by North Carolina's electricity providers – primarily Duke Energy and Progress Energy - have driven electricity rate increases over the past decade. These resource choices also have long-term implications for future ratepayer costs.

Specifically, the data suggests:

- The majority of the increases in residential electric bills over the past decade are attributable to cost recovery for new conventional power plants and for their increasingly expensive fuels, which often exhibit price volatility.
- Spending on conventional fuels almost exclusively benefits other states.

- REPS compliance costs have had a more modest impact on ratepayer bills than rising fossil/nuclear fuel prices and cost recovery for new fossil fuel plants.

- As long as each rate increase is approved by the NC Utilities Commission, there is no legal limit to the new fossil and nuclear plant costs and fuel expenditures that utilities may recover from ratepayers. In contrast, there is a legal cost limit on renewable energy, including those renewable resources that do not require fuel and have no annual fuel costs.

I. OVERVIEW OF NORTH CAROLINA'S ELECTRIC POWER INDUSTRY

For more than a decade, retail electric rates in North Carolina have been rising. Until now, no single document has provided decision makers, the media, and ratepayers with digestible information on the relative contribution fossil fuels, nuclear, renewable energy and energy efficiency have made to the rise in electric bills. Given this information gap, this publication intends to clarify the cost of resources as a cause of recent electric rate changes in North Carolina.

Annually, the North Carolina Utilities Commission (NCUC) receives information from Duke Energy and Progress Energy regarding changes in their costs, and then issues an order deciding how much electricity rates must be increased or decreased for electric utilities to appropriately recover their costs. In making this decision, they consider several cost factors, such as the impact of fuel- and non-fuel related expenses on utility ratepayers. While Duke Energy and Progress Energy have passed a modest cost of compliance with North Carolina's Renewable Energy and Energy Efficiency Portfolio Standard (REPS) on to their customers, data from North Carolina Utilities Commission (NCUC) dockets demonstrate that electricity rate changes over the past decade were predominantly driven by (1) fluctuations in fuel prices for fossil and nuclear fuels and (2) cost recovery for new investments in building coal and natural gas power plants. These two factors are a result of the long-term plant investment decisions made by the utilities.

This section is intended to provide background on North Carolina's electric power industry, the resource choices made by Duke and Progress and the role played by the REPS law in influencing those choices.

Characteristics of a "Regulated" Electricity Market

North Carolina has what is called a "regulated" electricity market. In a regulated market, the state is divided into territories and each investor-owned utility is given a monopoly market to supply electricity to customers in its territory. In exchange for this captive customer base and guaranteed profit, investor-owned utilities must abide by the rules set by state regulators and must adhere to standards of reliability, safety and affordability of electricity supply.

In a regulated market like North Carolina, there are three types of electric utilities:

1) Investor-Owned Utilities (IOUs),
2) Municipally-Owned Utilities, or "municipals", and
3) Electric Membership Corporations, or "EMCs".*

While municipals and EMCs supply electricity on the retail level to a major portion of North Carolina, this analysis focuses on the IOUs, specifically Duke Energy and Progress Energy. Duke Energy and Progress Energy generate and sell 96% of North Carolina's electricity at both the

* More information on North Carolina's municipal utilities and electric membership corporations can be found at http://www.electricities.com/ and http://www.ncemcs.com/about/ncemc.htm, respectively.

wholesale and retail level, with a considerable portion of their electricity going to North Carolina's municipals and EMCs via wholesale electricity markets.[1]

How Investor-Owned Utilities Make Money in a Regulated Market

Under North Carolina's regulated utility structure, investor owned utilities do not make a profit merely from selling electricity. Instead, electricity rates are set by regulators to allow investor-owned utilities to earn a fixed return on the money they invest in building approved new facilities to meet electricity demand. In other words, adding new facilities will increase rates to consumers so that utilities can recover both construction costs and approved returns on that investment. With regulatory approval, variable costs from increases or decreases in fuel prices are passed through to ratepayers by annually increasing or decreasing rates.

Fuel Sources for North Carolina Electricity Generation

As the generators of 96% of North Carolina's electricity, Duke and Progress generate 89.5% of their power with nuclear and coal-fired power plants. While Duke and Progress plan to retire a number of coal-fired units that are not outfitted with modern pollution controls and replace that capacity with combined-cycle natural gas units, coal and nuclear power will continue to dominate Duke and Progress' respective generation portfolios in the near- and medium-term. In addition to coal, nuclear and natural gas-fired generation, Duke and Progress own a substantial number of hydroelectric stations and some renewable energy. Tables 1 and 2 below detail the fuel sources employed in generating electricity in North Carolina.

Table 1: North Carolina Electricity Generation by Source (2009)[2]

Source	Total Delivered Energy in MWh (2009)	% of Total
Coal	65,082,782	55.0%
Nuclear	40,847,711	34.5%
Natural Gas	4,851,885	4.1%
Hydroelectric	5,214,334	4.4%
Renewables	1,893,404	1.6%
Other	517,287	0.4%
TOTAL	**118,407,403**	

State Dependence on Imported Fuels

Duke and Progress import all of the fuels they use to generate electricity, with the exception of renewable energy. This means that virtually all of the money their customers spend on these fuels flows out of the state without creating significant numbers of new jobs or directly fostering in-state economic development. In 2010, Duke and Progress spent a combined $2.5 billion on imported fossil fuels and $2.2 billion on imported coal alone. While nuclear and natural gas sourcing data is largely confidential and cannot be included in this analysis, data from the U.S. Energy Information Administration in Table 2 shows that Duke and Progress imported 100% of the coal used in their power plants from four places, 95% of which was mined in West Virginia and Kentucky. Overall, U.S. government data indicates that Duke and Progress spend an amount equivalent to nearly 1% of North Carolina's total economic output on fossil fuels mined

in other states.[3] Tables 2 and 3 below detail the sourcing of the fuels used to generate electricity in North Carolina.

Table 2: Duke Energy and Progress Energy Total Imported Fossil Fuels (2010)[4]

Duke Energy Carolinas, LLC and Progress Energy Carolinas, Inc. Fossil Fuel Imports (2010)	
Duke Energy Natural Gas Imports	$20,125,484
Duke Energy Coal Imports	$1,181,592,622
Progress Energy Natural Gas Imports	$273,203,488
Progress Energy Coal Imports	$991,778,073
Total Duke and Progress Natural Gas Imports	$293,328,971
Total Duke and Progress Coal Imports	$2,173,370,695
Total Duke and Progress Imported Fossil Fuels	**$2,466,699,666**

Table 3: North Carolina Coal Imports by Source (2010)[5]

North Carolina Coal Imports by Source State or Nation (2010)		
State or Nation	*Total Value of Imported Coal*	*% of Total*
West Virginia	$1,425,272,127	65.6%
Kentucky	$633,554,617	29.1%
Virginia	$101,945,464	4.7%
Colombia	$12,699,976	0.6%
Total North Carolina Imported Coal	**$2,173,472,185**	

North Carolina's Renewable Energy and Energy Efficiency Portfolio Standard (REPS)

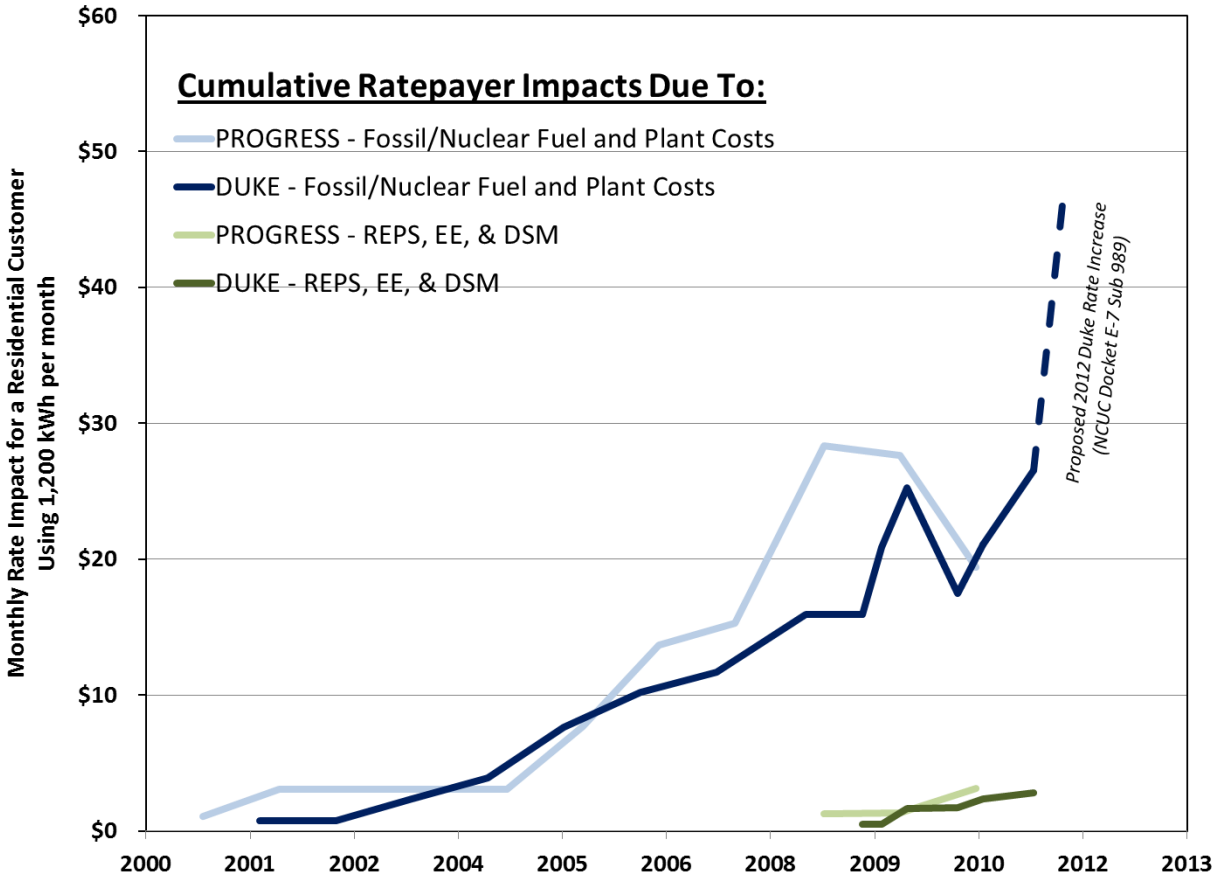
NC Session Law 2007-396 requires 12.5% of retail electricity sales to be supplied with renewable energy resources & energy efficiency measures by 2021, known as the REPS law. Investor-owned utilities (IOUs) (Duke and Progress) are able to meet 40% of this 12.5% requirement by using energy efficiency. The remaining 60% of the 12.5% requirement must be met through purchasing renewable energy credits (RECs). The regulation specifies that Duke and Progress must rely upon "in-state" renewable facilities to satisfy at least 75% of this requirement. The NC Utilities Commission currently defines "in-state" as a location inside the IOU's service territory, which spans North Carolina and part of South Carolina. Furthermore, Session Law 2007-396 specifies a minimum "set aside" for three particular resources. It requires a minimum of 0.20% of total retail sales come from solar energy and 0.20% from swine waste by the year 2018, and a minimum of 900,000 MWh be generated using poultry litter by the year 2014.

With the exception of poultry litter, the REPS requirements increase gradually until 2021. Moreover, unique to the REPS in NC's energy law, the costs of compliance with the REPS law are capped in order to protect rate-payers from unforeseen cost increases. Since the law was passed in 2007, natural gas and renewable energy are the only resources that have significantly declined in cost. For residential customers, an annual cap of $10 per account will be in place during 2011, an annual cap of $12 per account during years 2012-2014, and an annual cap of $34 per account thereafter.

II. DUKE ENERGY AND PROGRESS ENERGY RATE CHANGES SINCE 2000

An analysis of North Carolina Utilities Commission (NCUC) dockets indicates increases in residential electricity rates proposed by Duke Energy and Progress Energy and/or approved by the NCUC over the past decade were driven by rising fuel costs for conventional power generation rather than by investments in and purchase of renewable energy and energy efficiency. [6,7] In some years, accounting measures that transfer cost recovery from fuel-related rates to non-fuel related rates partially offset the significant rise in fossil fuel costs, offsetting a rise in fossil fuels, resulting in a net lower rate increase that left customers unaware of the rising trend in fossil fuel costs. While the NCUC did approve a temporary reduction in rates in 2010 due to a decrease in fuel usage during the current economic downturn, the chart below and figures in Section III illustrate a long-term trend of rising fuel and plant costs, which is also reflected in the 15.5% average rate increase Duke Energy proposed on July 1, 2011.[8]

Figure 1: Cumulative Rate Impact on Residential Customers consuming 1,200 kWh/month[9]



***NOTE**: 2012 REPS, EE and DSM data is not yet available*

Progress Energy Rate Impacts

Progress Energy's filings with NCUC since 2000 have been broken down into three resource cost components that change year-to-year: (1) fuel- and plant-related rate changes, (2) Demand Side Management (DSM) and Energy Efficiency (EE) rate changes, and (3) compliance costs for the state Renewable Energy and Efficiency Portfolio Standard (REPS) per customer under the cost cap established by the General Assembly. The first two items are denominated in dollars per kWh, while the last is denominated in a fixed amount per customer per month. The calculations below derive the monthly impact due to fossil and nuclear fuel and plant costs for an average residential customer consuming 1,200 kWh[10] per month. These amounts are contrasted against the monthly impacts of the REPS, EE and DSM combined.

Figure 2: Progress Energy Resource-Related Rate Changes Approved by the NCUC[11]

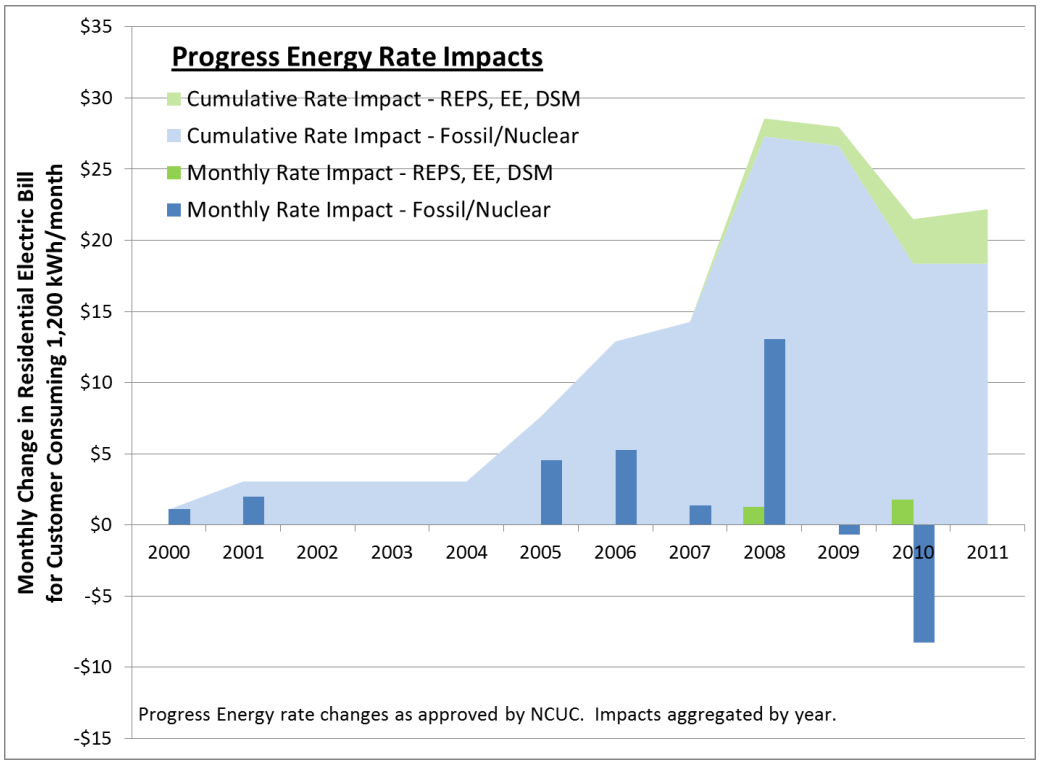


Table 4: Progress Energy Rate Impact Drivers

Progress Energy Rate Impact Drivers (2000-2011)	
Fossil/Nuclear Fuel and Plant Cost Impacts	**83%**
Renewables and Efficiency Cost Impacts	**17%**
Progress Energy Rate Impact Drivers Since REPS Enactment (2007-2011)	
Fossil/Nuclear Fuel and Plant Cost Impacts	**64%**
Renewables and Efficiency Cost Impacts	**36%**

Duke Energy Rate Impacts

Duke Energy's filings with NCUC since 2000 have been broken down into the same three components as for Progress Energy above: (1) fossil and nuclear fuel- and plant-related rate charges, which also include the costs of pollution control equipment, (2) DSM and EE rate changes, and (3) REPS charges per customer. The fuel/plant and EE/DSM components are given in cents per kWh, while the REPS rate change is given as a fixed amount per customer per month. As with the previously presented Progress Energy data, for an average residential Duke Energy customer consuming 1,200 kWh per month, the calculations below show the monthly electric bill impact is largely due to fossil and nuclear fuel and plant costs. These figures are compared to the combined rate impacts attributable to REPS compliance, energy efficiency, and demand-side management. While Progress Energy's fuel and plant costs are entirely made up of the fuel component, a part of Duke Energy's fuel and plant costs include cost recovery for the new Cliffside coal unit that is currently under construction. However, fuel costs are still the dominant driver of rate increases for Duke Energy customers, as illustrated in detail in Appendices B, C, and D.

Figure 3: Duke Energy Resource-Related Rate Changes Approved by the NCUC (2012 Proposed)[12]

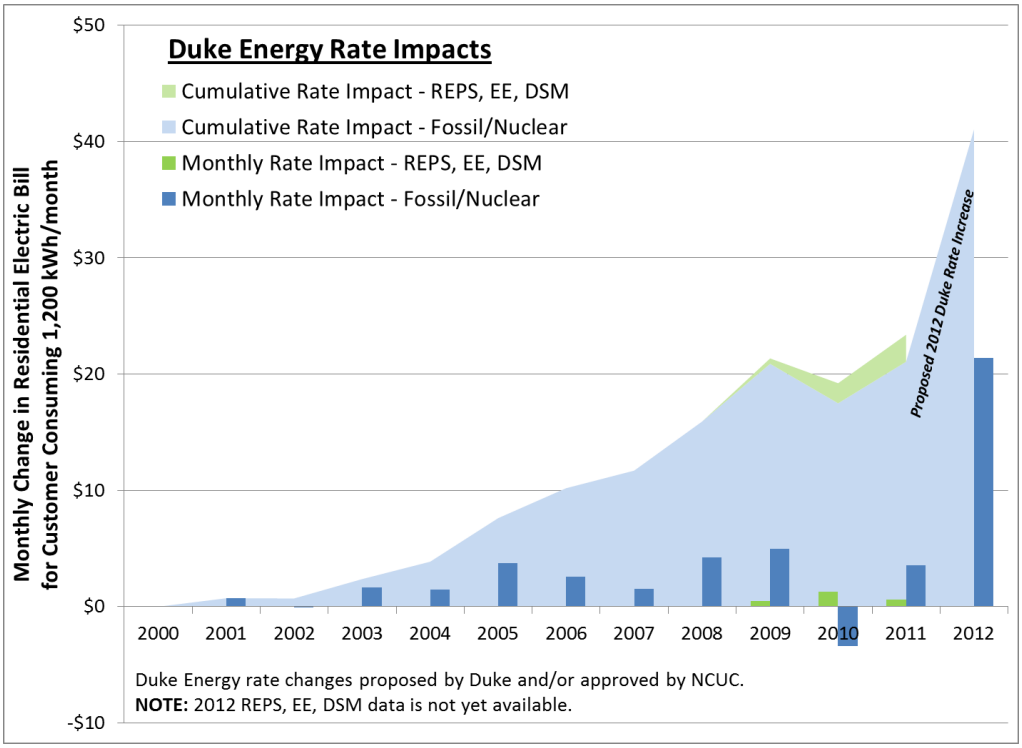


Table 5: Duke Energy Rate Impact Drivers[13]

Duke Energy Rate Impact Drivers (2000-2011)	
Fossil/Nuclear Fuel and Plant Cost Impacts	**90%**
Renewables and Efficiency Cost Impacts	**10%**
Duke Energy Rate Impact Drivers Since REPS Enactment (2007-2011)	
Fossil/Nuclear Fuel and Plant Cost Impacts	**82%**
Renewables and Efficiency Cost Impacts	**18%**

III. PRIMARY DRIVERS OF DUKE ENERGY AND PROGRESS ENERGY RATE INCREASES

The data presented in Section II suggests that the majority of Duke and Progress' residential electricity rate increases in recent years have been driven by 1) conventional fuel prices, 2) the cost of new conventional generation and 3) compliance with the REPS law. In addition, given that there is no statutory cost cap on nuclear or fossil fuel-or plant related rate increases, these trends make further rate hikes likely as electricity demand rebounds with continued economic recovery and investor-owned utilities construct new conventional power plants to replace older units.

Driver #1 - Conventional Fuel Prices

In addition to a general upward trend in costs, in the past decade fossil fuel and uranium prices have begun to exhibit price volatility. In terms of fossil fuels, the medium-term trend of volatile and rising coal and natural gas prices is also likely to continue due to the globalization of fuel markets, rapidly increasing global demand from developing countries for U.S. coal and the race of nearly all U.S. states to significantly increase their consumption rates of natural gas and the inexorable depletion of Central Appalachian (CAPP) coal. Figures 4, 5, and 6 effectively illustrate the trend towards rising and uncertain paths for conventional fuels.

Coal

Figure 4: Historical Spot Market Coal Prices (In Dollars per Short Ton)[14]

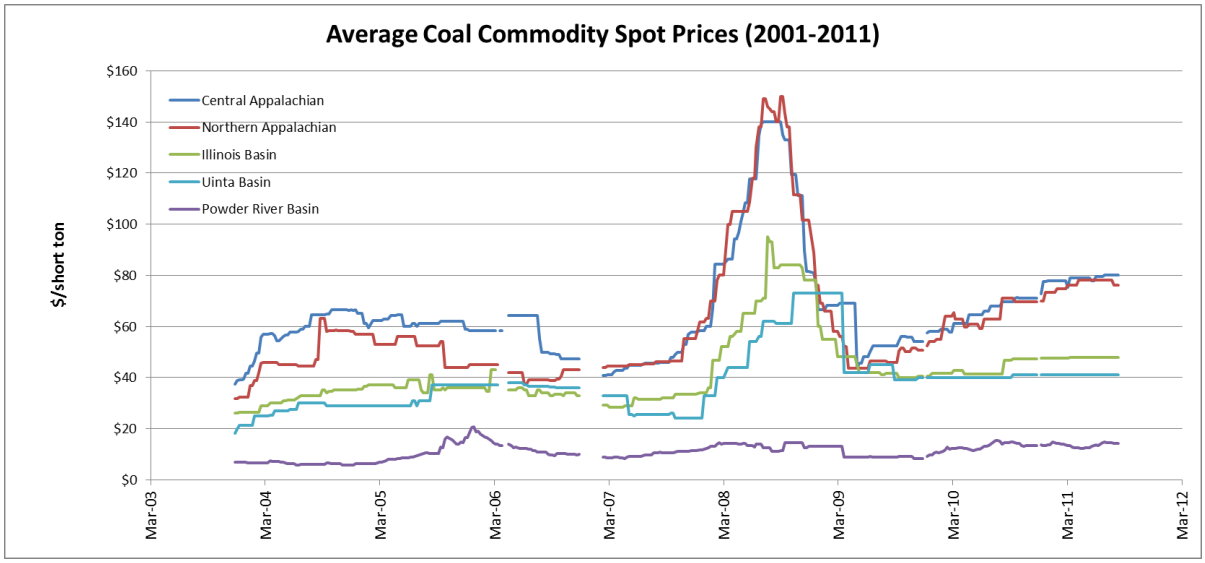


Figure 4 is a graph showing the spot market price of coal from various coal-producing basins in the United States. Nearly all of Duke and Progress' coal is Central Appalachian (CAPP) coal that is mined primarily in West Virginia, Kentucky and Virginia.[15] As Figure 4 indicates, CAPP prices spiked in 2008 and have gradually risen since that time, a pace correlated with the halting pace of economic recovery. These trends, in tandem with expected CAPP production declines[16] and enhanced federal regulation of coal mines and coal mining techniques, suggest that CAPP prices will continue to rise as gradual economic recovery continues.

Natural Gas

Figure 5: Historical Average of Natural Gas Prices for Electricity Generation[17]

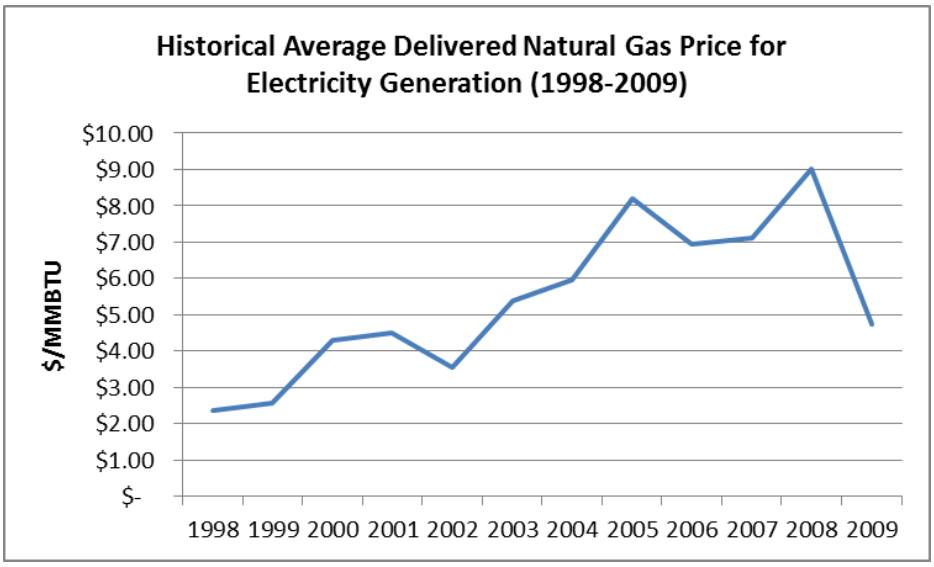


Figure 5 illustrates the trend in the price of delivered natural gas for the electric power industry.† While natural gas prices have dropped since 2008 and remained quite low due to increased domestic gas supply, the overall trend during the study period has been towards greater volatility and higher prices during periods of stronger economic performance.

Uranium

Figure 6: Historical Uranium Spot Prices (1980-2011)[18]

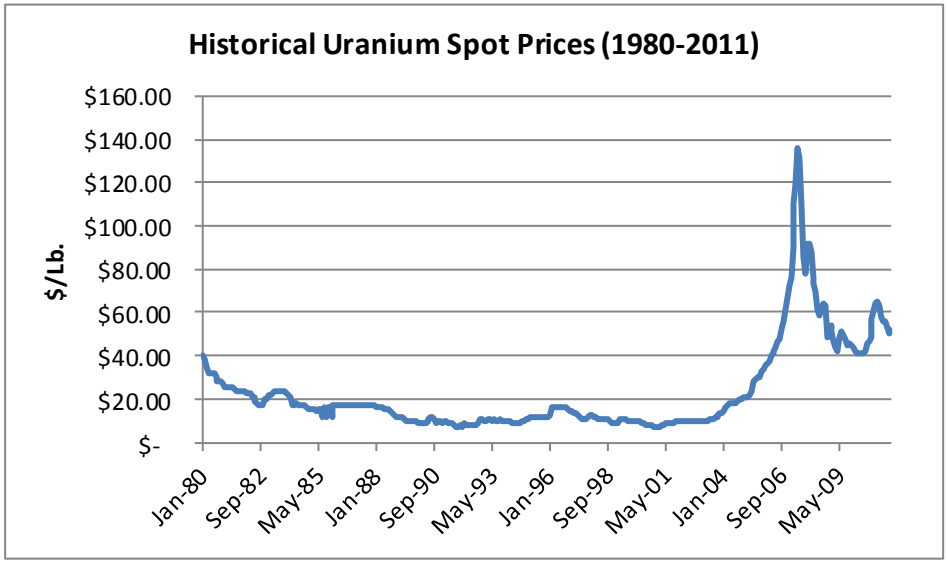


Figure 6 shows the price of uranium in international markets over the past 30 years. Similar to CAPP coal and natural gas, uranium prices spiked in the period preceding the 2008 financial

† These prices can be distinguished from the commonly referenced Henry Hub price, because Figure 5 accounts for transmission and distribution of the gas through pipelines and other fuel-handling costs.

crisis and have remained somewhat lower ever since. However, given that utilities in the U.S. and China continue to plan and build new reactors, the price of conventional uranium shows signs of continuing to track with the health of the economy and of the international nuclear industry, which remains uncertain in the wake of the March 2011 Fukushima Dai-ichi disaster.

Driver #2 - Cost to Ratepayers of New Conventional Generation

In addition to the rising cost of fuels, new generation capacity will be needed to keep pace with electricity demand. It appears that some utility customers do not understand the difference in rate impact of using an existing coal power plant that has been fully amortized versus building and using a new coal power plant. At present, Duke and Progress plan to meet a significant proportion of such demand with new nuclear and natural gas generation. In recent testimony before the NCUC regarding the proposed merger of Duke Energy and Progress Energy, Duke Energy's CEO Jim Rogers declared that his utility will pursue additional state policy measures to shift the risk of financing the construction of new conventional power plants away from utility shareholders and on to their customers.

Cost of New Coal Generation: Cliffside Units 5 and 6

Duke began construction of a new 825-MW coal unit in 2008. Cliffside Unit 6 is scheduled to be completed in 2012 at an estimated cost of $2.4 billion.[19] An earlier notice included a cost estimate of $1.8 billion.[20] This cost, plus an additional return on investment for Duke, will likely be recovered from ratepayers. Overall, it is difficult for utility ratepayers to determine, based on customer notices they have received, exactly how much their monthly electric bills have risen to pay the construction and financing costs of Cliffside Units 5 and 6.[21] This is because the rate increases related to the new coal plant are bundled with a series of other rate changes within the notices,[22,23] making it impossible for ratepayers to isolate the rate impact of the cost of any new plant.

Table 6: Current Estimated Costs of New Cliffside Unit 6 and Modernization of Unit 5

Plant Capacity	825 MW
Construction Timeline	2008-2012
Plant Cost	$2.4 billion
Monthly Impacts to NC Ratepayers	Amount of increase is undetermined

Cost of New Natural Gas Generation

In addition to Cliffside, Duke and Progress have also been building several other new combined cycle natural gas units. Neither Duke nor Progress has been authorized by the NCUC to recover costs for their new natural gas plants as of September 2011, but Duke's most recent request for a 15% rate increase is primarily intended to cover its building costs over the last several years. [24] Duke is also expected to file for another increase in 2012 to help complete work on Cliffside and its two new combined cycle plants, Buck and Dan River. [25] Progress may follow suit in the near future to recover costs for its new Richmond and Lee combined cycle facilities.

Table 7: Current Estimated Costs of New Combined Cycle Natural Gas Power Plants

	Buck Duke	Dan River Duke	Richmond Progress	Lee Progress	Totals
Plant Capacity	620 MW	620 MW	600 MW	950 MW	2,790 MW
Plant Cost	$600 million	$710 million	$575 million	$900 million	$2.8 billion
Monthly Impact to NC Ratepayers	Amount is unknown	Amount is unknown	Amount is unknown	Amount is unknown	Amount is unknown

Sources: Duke Energy[26], Progress Energy[27,28], media reports[29,30]. Note: Progress Energy's Sutton combined cycle unit not included due to its very recent groundbreaking (May 2011).

Duke and Progress have spent a combined $2.8 billion on the new combined cycle plants. Although the costs that will ultimately be recovered from ratepayers are not transparent, they are significant. The lack of transparency regarding the cost to ratepayers of these capacity additions does not allow the public to fully evaluate the costs and benefits of these far-reaching decisions before the costs are passed on to ratepayers. It also fails to account for exposure to long-term fuel price risk, which is borne almost entirely by ratepayers.

Overall, the estimated combined construction and financing cost of these new coal and natural gas plants is $5.2 billion.[31]

Driver #3 - Cost to Ratepayers of REPS Compliance

The third, less impactful driver of recent rate increases is the cost of complying with the state REPS law. As illustrated in Section II, the cost of REPS compliance represented 10% of Duke's resource-related costs impacting rate increases[‡] and 17% of Progress' resource-related costs impacting rate changes since 2000.

Unlike the confidential cost information for new fossil capacity additions made in recent years by Duke and Progress, the costs to ratepayers of the REPS law are reported on customer bills and limited by aforementioned statutory cost caps. For example, North Carolina ratepayers can look at their electric bills and see exactly how much REPS compliance costs them each month, which consumers are unable to do for new conventional capacity or changes in fossil fuel costs. Furthermore, as noted previously, REPS costs are capped by law, which means that North Carolina's ratepayers are thus protected from excessive rate increases, though so far costs have not come close to reaching the caps. Table 7 below outlines 2010 REPS, EE and DSM related charges.

Table 8: Summary of Renewable Energy & Efficiency Annual Rate Impacts for 2010

2010 RE & EE Impact Estimates	
Monthly REPS impact on residential ratepayers in 2010	$0.27 per month (Duke Energy) $0.58 per month (Progress Energy)
Average monthly EE and DSM impact on residential ratepayers in 2010	$1.47 per month (Duke Energy) $2.66 per month (Progress Energy)

[‡] This proportion does not account for Duke's most recent rate increase because accompanying REPS data is not yet available.

While information on the specific costs of REPS compliance is kept confidential by the utilities, publicly available data suggests that much of the REPS compliance cost has been spent on banking RECs for future years rather than just upon compliance with in-year requirements. Several factors are motivating consumers to become more energy efficient and to buy distributed renewable energy systems, including consumer reaction to the rise of their electricity bills over the past decade as conventional energy has become more expensive and avoided cost rates catch up with the rising cost of conventional energy.

IV. CONCLUSIONS

Residential electric bills have risen over the last decade. These cost increases are primarily attributable to utility resource planning decisions, which are made in response to the biases of state energy policy and regulation and the financial biases these regulations create in an electric utilities preferences for one resource or program over another.

An examination of resource-related costs reveals the vast majority of recent residential rate increases driven by energy resources are due to increased fossil and nuclear fuel costs. Because North Carolina produces none of the fossil or nuclear fuels used in the state's electricity generation, nearly all the money spent to procure coal, natural gas, and uranium benefits companies and citizens in other states.

Further, a portion of recent rate increases is due to new fossil plant expenditures, most significantly in Duke Energy's proposed 2012 rate increase.

Another small portion of recent rate increases is due to the cost of compliance with our State's REPS law. Furthermore, REPS compliance has reduced ratepayer exposure to rising, volatile fossil fuel prices and has done so with more transparent costs to ratepayers that are capped by law.

This review of fossil fuel price history indicates that building new fossil fuel and nuclear plants inherently increases ratepayers' long-term risk exposure to the often rising and volatile fuel prices. This risk is compounded by the lack of transparency of the cost of new construction and the absence of a cap on fossil and nuclear expenses.

In addition, utilities continue to state that new nuclear power plants cannot be built without policy changes that will shift financial risk for the construction of new conventional power plants away from the utilities' shareholders and onto the utilities' customers. This policy trend of using ratepayers to finance new power plant construction, whether or not the plant is ever completed, has become a southeast regional policy trend.

APPENDIX

Appendix A – List of NCUC Dockets Used in this Analysis

Billing Changes Effective	Source
PROGRESS ENERGY	
10/1/2000	Docket No. E-2 Sub 765, Order Approving Fuel Charge Adjustment (8/29/2000)
10/1/2001	Docket No. E-2 Sub 784, Order Approving Fuel Charge Adjustment (9/13/2001)
10/1/2005	Docket No. E-2 Sub 868, Order Approving Fuel Charge Adjustment (9/26/2005)
10/1/2006	Docket No. E-2 Sub 889, Order Approving Fuel Charge Adjustment (9/25/2006)
10/1/2007	Docket No. E-2 Sub 903, Order Approving Fuel Charge Adjustment (9/25/2007)
12/1/2008	Docket No. E-2 Sub 929, Notice to Customers of Change in Rates (11/20/2008)
12/1/2009	Docket No. E-2 Sub 949, Notice to Customers of Change in Rates (11/24/2009)
12/1/2010	Docket No. E-2 Sub 977, Notice to Customers of Change in Rates (11/17/2010)
DUKE ENERGY	
7/1/2001	Docket No. E-7, Sub 685, Order Approving Fuel Charge Adjustment (6/25/2001)
7/1/2002	Docket No. E-7, Sub 708, Order Approving Fuel Charge Adjustment (6/25/2002)
7/1/2003	Docket No. E-7, Sub 725, Order Approving Fuel Charge Adjustment (6/25/2003)
7/1/2004	Docket No. E-7, Sub 746, Order Approving Fuel Charge Adjustment (6/23/2004)
7/1/2005	Docket No. E-7, Sub 780, Order Approving Fuel Charge Adjustment (6/15/2005)
7/1/2006	Docket No. E-7, Sub 805, Order Approving Fuel Charge Adjustment (6/27/2006)
7/1/2007	Docket No. E-7, Sub 825, Order Approving Fuel Charge Adjustment (6/21/2007)
9/1/2008	Docket No. E-7, Sub 847, Order Approving Fuel Charge Adjustment (8/8/2008)
	Docket No. E-7, Sub 831, Duke's Notice to Customers of Changes in Rates (5/1/2009)
1/1/2010	Docket No. E-7, Sub 831, Order Approving Customer Notice (12/23/2009)
	Docket No. E-7, Sub 872, Order Approving Customer Notice (12/23/2009)
	Docket No. E-7, Sub 875, Errata Order (8/21/2009)
	Docket No. E-7, Sub 909, Order Approving Customer Notice (12/23/2009)
1/1/2011	Docket No. E-7, Sub 909, Duke's Notice to Customers (12/21/2010)
	Docket No. E-7, Sub 934, Order Approving Customer Notice with Edits (8/23/2010)
	Docket No. E-7, Sub 936, Order Approving Customer Notice with Edits (8/23/2010)
	Docket No. E-7, Sub 941, Order Approving Notice to Customers (9/20/2010)
9/1/2011	Docket No. E-7, Sub 984, Order Approving Notice to Customers with Edits (8/26/2011)
~2012	Docket E-7, Sub 989, 6/22/2011. Application for Adjustment of Rates and Charges for Electric Charges in North Carolina.

Appendix B - Detailed Analysis of Approved Rate Changes for Progress Energy

Billing changes effective	**10/1/2000**	**10/1/2001**	**10/1/2005**	**10/1/2006**	**10/1/2007**	**12/1/2008**	**12/1/2009**	**12/1/2010**
REPS, EE, and DSM								
REPS Change ($/month/customer)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.36	$0.29	-$0.07
EE/DSM change ($/kWh)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Monthly impact due to REPS, EE, & DSM (Nominal)	$0.00	$0.00	$0.00	$0.00	$0.00	$1.25	$0.06	$1.80
Monthly impact due to REPS, EE, & DSM (2010$)	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$1.26**	**$0.06**	**$1.80**
Cumulative	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$1.26**	**$1.33**	**$3.13**
Fuel and Plant								
Fuel and plant change ($/kWh)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.01	$0.00	-$0.01
Monthly impact due to fossil and nuclear fuel and plant costs (Nominal)	$0.86	$1.60	$3.77	$4.87	$1.30	$10.58	-$0.54	-$6.72
Monthly impact due to fossil and nuclear fuel and plant costs (2010$	**$1.09**	**$1.97**	**$4.21**	**$5.27**	**$1.37**	**$10.72**	**-$0.55**	**-$6.72**
Cumulative	**$1.09**	**$3.06**	**$7.27**	**$12.54**	**$13.90**	**$24.62**	**$24.07**	**$17.35**

(Modeled data for residential customer using 1,200 kWh per month)

Appendix F - Detailed Analysis of Proposed and/or Approved Rate Changes for Duke Energy

Billing changes effective	**7/1/2001**	**7/1/2002**	**7/1/2003**	**7/1/2004**	**7/1/2005**	**7/1/2006**	**7/1/2007**	**9/1/2008**	**6/1/2009**	**9/1/2009**	**1/1/2010**	**9/1/2010**	**1/1/2011**	**9/1/2011**	**2012****
REPS, EE, DSM															
REPS change ($/month/customer)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.16	$0.11	$0.00	$0.49	N/A
EE/DSM change ($/kWh)	$0.00000	$0.00000	$0.00000	$0.00000	$0.00000	$0.00000	$0.00000	$0.00000	$0.00038	$0.00000	$0.00082	$0.00000	$0.00050	$0.00	N/A
EE/DSM change (cents/kWh)	0	0	0	0	0	0	0	0	0.0382	0	0.0824	0	0.0496	0	N/A
REPS, EE and DSM Monthly Impacts (Nominal$)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.46	$0.00	$1.15	$0.11	$0.60	$0.49	N/A
REPS, EE and DSM Monthly Impacts (2010$)	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.47**	**$0.00**	**$1.15**	**$0.11**	**$0.60**	**$0.49**	**N/A**
Cumulative	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.47**	**$0.47**	**$1.61**	**$1.72**	**$2.32**	**$2.81**	**N/A**
Fuel and Plant															
Fuel and plant change (cents/kWh)	0.049	-0.001	0.117	0.108	0.2796	0.1986	0.1197	0.3476	0	0.4065	0.3646	-0.6473	0.298	0.4549	1.464
Fuel and Plant Monthly Impact (Nominal$)	$0.59	-$0.01	$1.40	$1.30	$3.36	$2.38	$1.44	$4.17	$0.00	$4.88	$4.38	-$7.77	$3.58	$5.46	$21.37
Fuel and Plant Monthly Impact (2010$)	**$0.72**	**-$0.01**	**$1.66**	**$1.50**	**$3.75**	**$2.58**	**$1.51**	**$4.22**	**$0.00**	**$4.96**	**$4.38**	**-$7.77**	**$3.58**	**$5.46**	**$21.37**
Cumulative	**$0.72**	**$0.71**	**$2.37**	**$3.87**	**$7.62**	**$10.19**	**$11.70**	**$15.93**	**$15.93**	**$20.89**	**$25.26**	**$17.49**	**$21.07**	**$26.53**	**$47.90**

(**2012 numbers represent Duke's proposed rate increase. Modeled data for residential customer using 1,200 kWh per month)

[1] North Carolina Energy Policy Council (2010). North Carolina State Energy Report, March 2010. http://www.nccommerce.com/Portals/14/Documents/Publications/ANNUAL%20NC%20ENERGY%20REPORT%20final%20feb%202010%20v2-1.pdf

[2] Energy Information Administration (2011). *North Carolina's Electricity Profile*. http://205.254.135.24/cneaf/electricity/st_profiles/north_carolina.pdf

[3] U.S. Bureau of Economic Analysis (2011).*2010 North Carolina Gross State Product*. http://www.bea.gov/regional/gsp/

[4] Energy Information Administration (2011). *EIA Form 923, Section 5*. http://205.254.135.24/cneaf/electricity/page/eia906_920.html

[5] Ibid.

[6] See Appendix A for a list of documents including hyperlinks.

[7] See Appendix A for a list of documents including hyperlinks.

[8] All data on Duke's proposed rate increase is included in Exhibits A and B of North Carolina Utilities Commission (2011). *Application for Adjustment of Rates and Charges Applicable to Electric Charges in North Carolina*. Docket No. E-7, Sub 989, 6/26/2011. <http://ncuc.commerce.state.nc.us/cgi-bin/fldrdocs.ndm/INPUT?compdesc=Duke%20Energy%20Carolinas%2C%20LLC&docketdesc=&comptype=E&docknumb=7&Search=Search&suffix1=&subnumb=989&suffix2=&parm1=000135371&parm2=07/12/2011&parm3=FAAAAA39111B>

[9] Average residential consumption in 2010 was 1,216 kWh/month for Duke customers and 1,261 kWh/month for Progress customers. Data Source: Energy Information Administration (2011). *EIA Form 826*. http://205.254.135.24/cneaf/electricity/page/eia826.html

[10] Average residential consumption in 2010 was 1,216 kWh/month for Duke customers and 1,261 kWh/month for Progress customers. Data Source: Energy Information Administration (2011). *EIA Form 826*. http://205.254.135.24/cneaf/electricity/page/eia826.html

[11] All rate impacts are adjusted for inflation in 2010 constant dollars. Unlike Duke, Progress has not yet proposed a general rate increase for 2012.

[12] All rate impacts are adjusted for inflation in 2010 constant dollars. Pie graphs do not include Duke's proposed rate increase since REPS, EE and DSM data for 2012 is not yet available.

[13] Table 5 does not include Duke Energy's most recent proposed rate increase because REPS, EE and DSM data for the same year is not yet available.

[14] Gaps represent missing EIA data. Source is Energy Information Agency (2011). *Historical Average Weekly Coal Commodity Spot Prices*. http://205.254.135.24/coal/news_markets/spot.cfm

[15] Energy Information Administration (2011). *EIA Form 923, Section 5*. http://205.254.135.24/cneaf/electricity/page/eia906_920.html

[16] Energy Information Administration (2011). Annual Energy Outlook 2011. http://205.254.135.24/forecasts/aeo/pdf/0383%282011%29.pdf

[17] Energy Information Administration (2011). *Annual Natural Gas Electric Power Price (1998-2009)*. http://205.254.135.24/dnav/ng/hist/n3045us3A.htm

[18] International Monetary Fund (2011). *IMF Primary Commodity Prices*. http://www.imf.org/external/np/res/commod/index.aspx

[19] Duke Energy (2011). *2010 Annual Report*. <http://www.duke-energy.com/pdfs/Duke-Energy-2010-SAR.pdf>

[20] Duke Energy (2009). *Cliffside Steam Station Modernization*. <http://www.duke-energy.com/pdfs/NG-Cliffside-fact-sheet.pdf>

[21] Note: both Duke Energy and Progress Energy provide separate line items on customer bills for the monthly cost of energy efficiency and renewable energy, but not for new conventional power plants or rising fossil fuel costs.

[22] North Carolina Utilities Commission (2009). *Order Approving Customer Notice*. Docket No. E-7, Sub 909, 12/23/2009. <http://ncuc.commerce.state.nc.us/cgi-bin/webview/senddoc.pgm?dispfmt=&itype=Q&authorization=&parm2=NAAAAA75390B&parm3=000130186>

[23] North Carolina Utilities Commission (2010). *Duke's Notice to Customers*. Docket No. E-7, Sub 909, 12/21/2010. <http://ncuc.commerce.state.nc.us/cgi-

bin/webview/senddoc.pgm?dispfmt=&itype=Q&authorization=&parm2=LAAAAA26301B&parm3=00 0130688>

[24] North Carolina Utilities Commission (2011). *Application for Adjustment of Rates and Charges for Electric Charges in North Carolina*. Docket E-7, Sub 989, 6/22/2011. http://ncuc.commerce.state.nc.us/cgi-bin/docksrch.ndm/INPUT?COMPNUM=e-7&COMPSUB=989&PROC=Search&frmmnth=00&frmday=00&frmyear=****&numret=20

[25] Ibid.

[26] Duke Energy (2011). *2010 Annual Report, p. 7 (2011)*. <http://www.duke-energy.com/pdfs/Duke-Energy-2010-SAR.pdf>

[27] Progress Energy (2011). *Corporate Responsibility Report, Fleet Modernization*. <https://www.progress-energy.com/commitment/corporate-responsibility-report/customers/powersystem.page>

[28] Progress Energy, Press Release (2011). "Progress Energy begins operation of new power plant in Richmond County." 6/1/2011. <https://www.progress-energy.com/company/media-room/news-archive/press-release.page?title=Progress+Energy+begins+operation+of+new+power+plant+in+Richmond+County+&pubdate=06-01-2011>

[29] Ford, Emily (2011). "Duke Steam Site Takes Shape." *Salisbury Post* (5/25/2011). <http://www.salisburypost.com/News/052511-Duke-Energy-Buck-Combined-Cycle-Plant-main-story-qcd>

[30] WRAL. "Progress Energy to build $900M plant in Goldsboro." *wral.com*(8/18/2009) <http://www.wral.com/business/story/5817985/>

[31] Includes the cost of new Cliffside Unit 6 and modernization of Cliffside Unit 5