

A Responsible Energy Future for North Carolina
Updated November 2015

DUKE ENERGY CONTINUES TO LOOK ONLY AT THE SHORT-TERM AND RELIES HEAVILY ON POLLUTING COAL AND RISKY NATURAL GAS

Each year Duke Energy must file a 15-year plan for meeting electricity demand in North Carolina. In reviewing these integrated resource plans or IRPs, the NC Utilities Commission is required to ensure the "least cost mix" of generation and energy saving measures that is achievable – and the NC Supreme Court has specified that the IRPs are intended to prevent the costly overbuilding of new power plants.

This update of NC WARN's A RESPONSIBLE ENERGY FUTURE FOR NORTH CAROLINA¹ examines the most recent Duke Energy IRPs.² Duke Energy continues to exaggerate its growth of electricity sales, and as a result continues to operate polluting coal plants, and increasingly rely on risky and environmentally threatening natural gas plants. Instead of taking actions to mitigate the climate crisis, Duke Energy continues to take the short-term view and double down on dirty energy.

Duke Energy's business model in its monopoly states is to prevent competition, build new power plants that are not needed, and force customers to pay for them through increased rates. In its latest plans, Duke Energy continues to ignore rapid and profound changes in the electricity marketplace, and excludes the external costs of its economic choices such as detrimental contamination of air and water, and contributing to the worsening climate crisis.

If the Commission approves Duke's latest 15-year plan, it approves a status quo threatening to bankrupt North Carolina's economy and continue polluting our air and water, and contributing profoundly to the climate crisis. NC WARN has reviewed Duke Energy's latest IRPs, filed September 2015, and objects to Duke Energy's long range plans for the following reasons:

CONTINUED EXAGGERATION OF GROWTH OF ELECTRICITY SALES

In the Carolinas, Duke's two utilities base their 15-year plans on the projection that electricity usage will increase 1.2% each year. Based on that growth, Duke Energy Carolinas and Duke Energy Progress plan to build a total of 11,003 megawatts (MW) of new power

generation capacity – the equivalent of fourteen large power plants. The combined utilities would effectively increase their generating capacity by 24.2% over the next 15 years.

As noted in NC WARN's full report, the US Energy Information Administration, the American Council for an Energy Efficient Economy (ACEEE), and actual growth for the past decade are evidence that energy sales will remain flat into the future. Duke Energy's growth assumptions are economically irrational.

An exaggerated growth projection is the crutch of Duke Energy's case to build more power plants in the Carolinas that aren't needed. Building unneeded power plants serves as profit center for the monopoly utility while draining money from captive ratepayers.

EVEN MORE EXCESS CAPACITY IN THE SOUTHEAST

In December 2014 NC WARN filed a complaint with federal regulators, arguing that electricity customers are being gouged by billions of dollars in unwarranted rate increases because, despite huge amounts of excess power generation capacity (dozens of large plants sit idle most of the year), Duke Energy and other southeastern utilities keep building more plants instead of buying power from each other.

Instead of taking NC WARN's claims into consideration, Duke Energy's latest plan actually increases the minimum level of excess capacity above peak demand (known as the reserve margin) that the utility uses to plan for energy needs in the future from 14.5% of generation capacity to 17%. The only rationale offered for such an increase was a reserve study performed by a consultant hired by Duke Energy. The study is not publicly available. Duke's projects its reserve margins to be above the 17% level during the peak usage times of almost every single year over the planning horizon – even reaching as high as 27% for Duke Energy Carolinas and 29.4% for Duke Energy Progress.

Meanwhile, both utilities still do not incorporate purchases from neighboring utilities into their plans at any respectable level. Both Duke Energy Carolinas and Duke Energy Progress say in their IRPs that they do not intend to extend power purchase agreements that expire between now and 2020. There are no justifiable reasons why Duke Energy and the other Southeastern utilities should continue building power plants while choosing not to share power as needed.

SQUANDERING RATEPAYER MONEY

The Duke Energy Carolinas IRP has two planning models, one with carbon sensitivity and the other with no carbon sensitivity. The carbon sensitivity model still includes building two nuclear plants at the Lee Nuclear Station in South Carolina, although the timeline has been pushed far into the planning horizon. Duke Energy CEO Lynn Good recently suggested that the utility may be backing off of the project.

The Lee project is by far the most expensive option, with estimates exceeding \$24 billion. Similar projects underway in Georgia and South Carolina are suffering huge delays and cost overruns. These extremely risky plants are being pursued only because the utilities in those two states are allowed to automatically pass on construction costs to customers in advance of the plants producing any electricity. The financial cost of the nuclear / natural gas future will be in the \$35 billion range, over the next 15 years.

The no carbon sensitivity model eliminates the nuclear plants and replaces them MW for MW with natural gas combustion turbines, replacing baseload nuclear with plants usually relied on for peak periods. This draws into question the need for all of the baseload plants forecast in the IRPs.

Most of Duke Energy's IRPs relies on increasing the use of large natural gas-burning plants, with gas coming from the Gulf of Mexico or from fracking gas fields in Pennsylvania and West Virginia. These plants are also costly. The 750-megawatt combined cycle natural gas plant under construction near Anderson, South Carolina will cost in excess of \$1 billion, and a similar \$750 million natural gas-burning plant is proposed for construction in Asheville along with a costly transmission and substation project. If the natural gas plants build out, the financial cost to rate payers will be in the \$15 billion range, over the next 15 years. Natural gas prices, now low because of fracking, are expected to be extremely volatile over the next decade.³

Coal is still a major component of Duke's long-range plans that, along with its devastating impact on the environment, is draining money from the North Carolina economy. The company sends more than \$1.76 billion dollars out of the state each year to purchase coal for power generation in the Carolinas.

MAKING THE CLIMATE CRISIS WORSE

Duke Energy's IRP plans for retirement of only two coal-fired power plants between 2015 and 2030 – the two units at its Asheville facility and the 5 units at its Allen facility. The Allen

units are rarely used (operating an average of only 23% of the hours in 2014); therefore their closure represents only a small reduction in Duke Energy's carbon emissions. Duke Energy will continue to operate the majority of their coal plants and emit climate-wrecking CO₂.

The utilities' long range plans proposed adding between 8,578 and 10,928 MW of new natural gas capacity in the Carolinas by 2030. Numerous studies have shown that natural gas may be worse for the climate than coal due to the leakage of methane during various stages of fracking, refining, and transportation, including pipelines.⁴ According to the Intergovernmental Panel on Climate Change, methane is 86 times more potent in warming the atmosphere than carbon dioxide over a 20-year period. Despite Duke Energy's PR claims, a path forward that relies heavily on natural gas is not going to reduce climate destruction.

A BETTER PATH FORWARD

Unlike Duke Energy's "build plants, raise rates" business model, the Responsible Energy Future NC WARN proposes is competition driven; the primary goal is to maximize efficiencies and thus minimize costs to ratepayers and curb carbon and other pollution. The most significant differences are outlined below:

- NC WARN's plan forecasts zero growth in usage, an assumption supported by data from the US EIA and the ACEEE, among others – and by actual growth for the past decade.
- Increase energy efficiency and demand-side management programs (DSM) to 24% of energy sales over the 15-year planning horizon. A recently released report by ACEEE shows that utility energy efficiency programs remain the best value for North Carolina's energy dollar.
- Combined Heat and Power (CHP) and microgrids are able to replace 10% of energy demand in the REF plan, while CHP is minimally utilized in Duke Energy's forecasts.
- Renewable wind and solar is very conservatively increased to 7% of energy in the REF plan, compared with the 4% of energy in the Duke Energy plan.
- Wholesale purchases in the REF plan make up 6% of energy sales compared to a negligible percentage in Duke Energy's plan.
- Reliable storage options will allow renewable sources to play a far greater role in our energy future.

The Responsible Energy Future allows for closure of all coal-fired power plants, eliminates the need for new centralized generating plants and, as a result, decreases rates and

pollution. NC WARN's plan would reduce costs to North and South Carolina customers over the 15-year planning period eliminating new construction and volatile out-of-state fuel sources.

Distributed renewable energy

A significant component of the Responsible Energy Future plan is for renewable energy to account for 7% of total electricity sales in North Carolina by 2029. The installed cost of solar has come down 50% in five years, making the resource more cost competitive than ever. And, according to the U.S. Department of Energy, the average cost of solar in the U.S. is expected to be equal to the cost of natural gas *fuel alone* by 2019 to 2020.⁵ In October of 2014 Deutschebank reported that solar is now cost-competitive with traditional power plants in ten states, and will reach such "grid parity" in all states by 2016 or 2017, and that doesn't take into account all of the externalized costs of burning fossil fuels.⁶

Moving forward, further development of storage technology is poised to bolster the rapid growth of distributed renewable energy such as wind and solar. The nearly 2,000 MW of pumped storage capacity already owned by Duke Energy in the Carolinas allows for much more solar and wind energy to be added to the system without causing supply issues.

Combined heat and power & on-site generation

For the first time, Duke Energy's IRP includes a small amount of combined heat and power (CHP). However, the utility has planned to implement only 160 MW total of this proven and economical technology by 2030. This falls far short of what CHP could contribute to the energy needs of the Carolinas.

Up to 10 conventional power plants could be replaced in the Carolinas by the development of CHP systems for commercial, industrial, and institutional customers, as well as publicly-owned facilities that use both heat and electricity.

In the US, CHP represents nearly 10% of total generating capacity, and the Oak Ridge National Lab made the case for scaling up the use of CHP to 20% of US generating capacity by 2030. The limited amount of CHP capacity already in place in the Carolinas is a result of private industry investments – without support from Duke. CHP remains a virtually untapped resource for the future.

WHAT DOES THIS MEAN FOR NORTH CAROLINA?

At a minimum, Duke Energy's business model will cause rates to increase drastically if its IRP is approved. As rates increase under the Duke Energy plan, residential, small business, local

government and other customers will face increasing financial burdens. For many low-income families, this may mean choosing between electricity and food or medicine. Just by eliminating coal plants NC WARN's approach can save North and South Carolina electricity customers an estimated *annual* savings of more than \$1.7 billion.

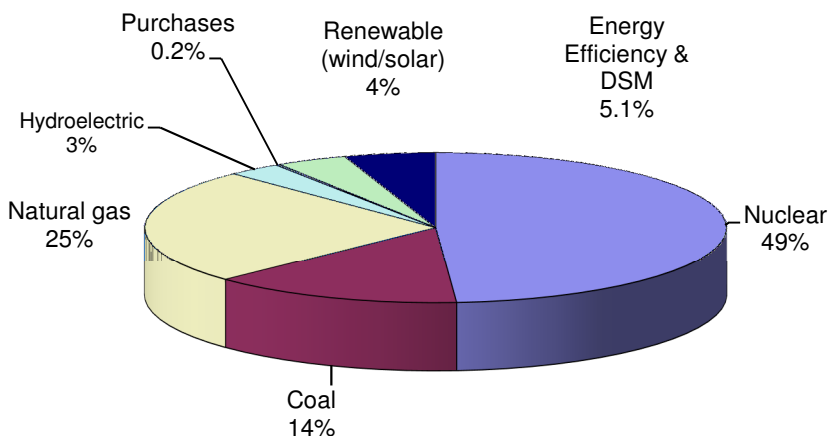
In addition to keeping rates lower, another advantage of the Responsible Energy Future plan is its positive economic benefit for North Carolina. A 2015 study by the NC Sustainable Energy Association showed that there are now 23,000 clean energy jobs in North Carolina, and clean energy has contributed \$6.3 billion to the state economy from 2007 to 2014.⁷

North Carolina has the workforce, business infrastructure and public support in position to ramp up the use of renewable energy, energy efficiency and CHP, and move this state forward in the clean energy revolution.

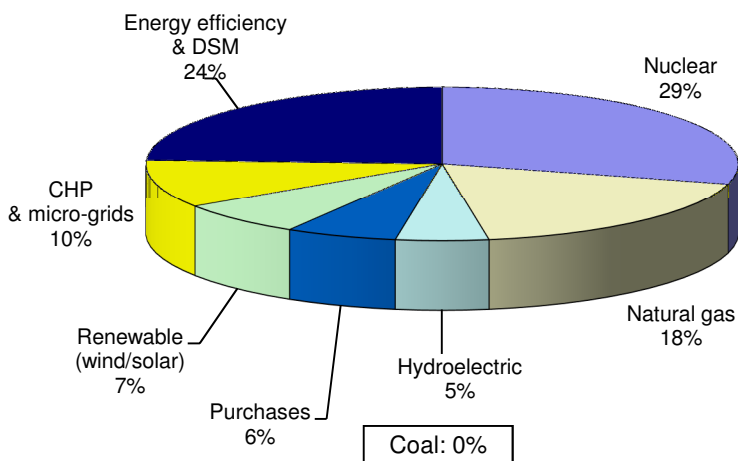
The Responsible Energy Future is a plan that promotes job creation, economic fairness, and a healthier place to live, all while helping to slow climate change.

NC WARN is a member-based nonprofit tackling the accelerating crisis posed by climate change – along with the various risks of nuclear power – by watch-dogging Duke Energy practices and working for a swift North Carolina transition to energy efficiency and clean power generation. In partnership with other citizen groups, NC WARN uses sound scientific research to inform and involve the public in key decisions regarding climate and energy justice.

Duke Energy 2029 Plan (Energy Sales)



Responsible Energy Future (Energy Sales)



NOTE: Duke Energy Carolinas and Duke Energy Progress' 2015 IRP Update Reports do not report projections for the combined company, and reports projected resources only in terms of capacity, not energy sales. Therefore, NC WARN is continuing to use its energy sales calculations from its Responsible Energy Future Update from March of 2015, which is available at <http://www.ncwarn.org/wp-content/uploads/ResponsibleEnergyFuture-3-3-15.pdf>

¹ The NC WARN report, A RESPONSIBLE ENERGY FUTURE FOR NORTH CAROLINA, with the annual updates is available at www.ncwarn.org/responsible-energy-future/. Citations to some of the factual data contained in this update are found in the original report and the annual updates.

² The 2015 IRPs for Duke Energy Carolinas and Duke Energy Progress were filed with the NC Utilities Commission on September 1, 2015, in Docket E-100, Sub 141 and are available on the Commission's website, www.ncuc.net. Note that approximately 70% of Duke Energy's service area is in North Carolina, while the remaining 30% is in South Carolina.

³ *Rating the States on Their Risk of Natural Gas Overreliance*, by Union of Concerned Scientists, October 2015; <http://www.ucsusa.org/clean-energy/rating-the-states-on-their-risk-of-natural-gas-overreliance#.Vh6VAitd-ay>;

Shale and Wall Street: Was the Decline in Natural Gas Prices Orchestrated? By Deborah Rogers, Energy Policy Forum, February 2013; <http://shalebubble.org/wall-street/>

Natural Gas Infrastructure Implications of Increased Demand from the Electric Power Sector, USDOE, February 2015, http://energy.gov/sites/prod/files/2015/02/f19/DOE%20Report%20Natural%20Gas%20Infrastructure%20V_02-02.pdf;

⁴ The most recent and comprehensive article on the impacts of methane and air emissions is Robert Howarth's *Methane emissions and climatic warming risk from hydraulic fracturing and shale gas development: implications for policy*; www.eeb.cornell.edu/howarth/publications/f_EECT-61539-perspectives-on-air-emissions-of-methane-and-climatic-warmin_100815_27470.pdf

⁵ *Utility-Scale Solar 2014: An Empirical Analysis of Project Cost, Performance and Pricing Trends in the United States*, by Mark Bolinger and Joachim Seel, September 2015; <https://emp.lbl.gov/publications/utility-scale-solar-2014>

Lazard's Levelized Cost of Energy Analysis, Version 8.0, September 2014; www.lazard.com/perspective/levelized-cost-of-energy-v8-abstract/

⁶ *Solar grid parity in a low oil price era*; Deutsche Bank report; March 10, 2015; www.db.com/cr/en/concrete-deutsche-bank-report-solar-grid-parity-in-a-low-oil-price-era.htm

⁷ *Economic and Rate Impact Analysis of Clean Energy Development in North Carolina—2015 Update*; prepared for NC Sustainable Energy Association by RTI International, February 2015; http://c.ymcdn.com/sites/energync.site-ym.com/resource/resmgr/Resources_Page/RTI_2015.pdf