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# Key Shortcomings in Duke's North Carolina IRPs

## *An Issue-by-Issue Analysis: Part 4*

## Executive Summary

Duke Energy's proposed integrated resource plans (IRPs) for its two operating North Carolina utilities—Duke Energy Carolinas and Duke Energy Progress—outline six possible scenarios for the company to follow in the next 15 years.

Five scenarios entail significant new gas-fired power generation capacity to meet forecasted future power needs across its service territory. A sixth "no new gas" scenario carries the highest estimated cost—almost as if Duke set it up as a strawman designed to illustrate that turning away from gas would be bad policy. Instead, it shows that the transition can indeed be accomplished without new gas generation, and the question now is just how to go about it to keep costs as low as possible.

In this series, IEEFA examines specific aspects of the Duke proposals to highlight errors we believe policymakers in the state need to consider. Among these are reviews of Duke's assumptions concerning natural gas—both for new gas supply and gas-fired generation resources (published in January, this analysis is available here)—that we believe are directly at odds with the company's 2050 net zero carbon pledge; its overly optimistic growth assumptions for energy and peak demand (published in early February and available here); and a look at its aversion to battery storage technology (published in late February and available here.)

The analysis below focuses on Duke's half-hearted embrace of solar and wind generation. This embrace can be characterized as "yes, but"—yes, these technologies have potential, but it would be better to wait for costs to come down. IEEFA believes this is a significant error on the company's part. These technologies are clearly economically competitive today as their broad adoption across the U.S. demonstrates. Duke's reluctance, meanwhile, simply underscores the company's continued wholehearted embrace of conventional generation resources, particularly gas-fired options.

# Duke and Renewables: A Half-Hearted Embrace

## *Offshore Wind Remains Off the Table*

The pending integrated resource plans (IRPs) submitted by Duke Energy Progress and Duke Energy Carolinas (Duke Energy's two operating subsidiaries in North and South Carolina) both effectively dismiss the potential of offshore wind, even though most of the other states along the East Coast are actively pushing the development of this resource.

In the companies' two base case analyses, for example, no offshore wind would be developed through 2035. This finding looks particularly outdated in light of the Biden administration's announcement last month that it intended to push for the construction of 30 gigawatts of offshore wind by 2030 along the East Coast.

Looking at wind in general, the company is only slightly more positive: "**Wind generation**, whether onshore wind generated in the Carolinas or wheeled in from other regions of the country, or offshore wind generated off the coast of the Carolinas, **may become a viable contributor to the Company's resource mix over the planning horizon** (emphasis added)."[1]

That, in a nutshell, explains Duke's approach to renewable energy resources throughout the IRPs it filed last year with North and South Carolina regulators—essentially saying that solar and wind simply aren't competitive now, but might be, at some point in the 2030s.

The reality in the utility sector is much different. Avangrid Renewables, the green energy development arm of Spanish utility company Iberdrola, sent federal regulators a plan last December to build 2,500 megawatts (MW) of wind capacity off the coast of North Carolina, with the possibility of beginning construction on the first 800MW in 2025.

**The company's offshore opposition could cost North Carolina.**

Avangrid's North Carolina proposal is just one of three the company is developing, including the Vineyard Wind project in Massachusetts. That 800MW project could soon be the first large-scale offshore wind project cleared for construction in the U.S., but it won't be the last. Projects with a total generating capacity of just under 29 gigawatts (GW) are under development, with as much as 6.5GW of that total aiming for commercialization by the mid-2020s. Clearly, Avangrid and the backers of the 11 other projects along the East Coast have a much more optimistic outlook on offshore wind's potential than Duke.

The company's offshore opposition could cost North Carolina. In its economic analysis of the project, Avangrid estimated it could lead to $1.5 billion in construction spending and related sales, with Virginia, especially the Hampton

[1] Duke Energy Carolinas. Integrated Resource Plan. 2020, p. 39.

Roads area, reaping the largest benefits despite the facility's location off the North Carolina coast.

## *The Solar Situation*

A similar disconnect is evident in the company's approach to new solar generation. In the Duke Energy Carolinas base case with a carbon tax added, the company projected that it would add 3,050MW of new solar capacity in its service territory in the coming 15 years. DEC dubbed this a "significant amount of growth," but here again the reality is much different. Adding 200MW annually for the next 15 years hardly qualifies as "significant" for a company with 2.5 million customers.

Northern Indiana Public Service Company LLC (NIPSCO), a subsidiary of NiSource Inc., is actually making a "significant" commitment to solar. The company, which has just 468,000 electric customers, announced last October that it was developing three solar projects in the state totaling 900MW that would be commercially available by 2023. The company had previously announced two solar projects totaling 300MW with scheduled in-service dates of early to mid-2023. In mid-March, the company announced another deal to add 200MW of solar by 2022.

Combining the two Duke companies' plans boosts their base case solar growth through 2035 to 8,375MW, or an average of 558MW annually. Florida Power & Light, by contrast, is in the early phase of its 10-year plan to install 30 million solar panels by 2030. The company never specified a generation total for the program, but it almost certainly will be at least 10,500MW.[2] Similarly, American Electric Power recently announced plans to install 10,000MW of renewable energy by 2030. FP&L and AEP are both somewhat larger than Duke's combined Carolina utilities, but the difference in scale and timing is still noteworthy.

## *Battery Storage Options?*

Another serious shortcoming in Duke's approach to renewables is the company's failure to study the potential of installing battery storage units next to the roughly 4,000MW of existing solar generation capacity in its Carolina service territories. The company is quick to warn that extensive transmission system investments would be required to facilitate the transition to more renewables and storage; it estimates in the "no new gas" IRP option that these costs could reach $9 billion. Despite this, the company fails to discuss the potential impact of storage at its existing solar resources. Clearly, being able to make better use of the already installed transmission system—by storing solar-generated electricity onsite when it is not needed and then tapping into that resource during higher demand periods—should have major systemwide benefits. But no such analysis is available, at least not publicly.

[2] Greentech Media. Unpacking Florida Power & Light's '30 Million Solar Panels' Promise. January 18,2019. This estimate was based on 350 watts per panel. Current state of the art PV panels are now capable of producing 500W and above, so the exact generation will depend on the specific type of panels FP&L installs through the duration of the program.

This shortcoming is also apparent in the company's commentary concerning its winter peak demand needs. The company rightly discounts solar's ability to contribute to early morning winter peak demand periods, estimating that the system's roughly 4,000MW of existing generation would supply just 39MW of capacity. But it fails to take the next step and assess the impact of adding storage to that existing solar, although it does state in an appendix to its IRP that solar plus storage provides "25% of the solar nameplate capacity towards meeting winter peak demand."[3]

Using this data, it is fair to assume that the existing 4,000MW of system solar could provide 1,000MW of capacity during the winter peak, a number that would significantly reduce the 3,500MW increase in winter peak demand expected across the two utilities in the coming 15 years. It also would significantly delay the need for any new gas-fired combustion turbines if the companies pursued the storage option first. Further, as IEEFA argued in an earlier analysis, the companies' projections for future demand growth are likely overstated given its actual results over the past decade. As such, the storage option could meet an even higher percentage of actual future winter peak demand growth.

## *Recommendations for Regulators*

Before North Carolina regulators sign off on Duke's IRPs, they should require the company to issue an all-source request for proposals for new renewable energy generation and battery storage options. Only by doing this will the commission, and Duke, get current, real-world cost estimates for projects to be built in the next year or two, instead of relying on outdated information.

Failure to do this risks saddling ratepayers with new, soon-to-be-stranded, gas-fired generation capacity, and ignores the compelling economic case that has led other utilities across the U.S. to rapidly add renewable energy and battery storage as a key part of their power infrastructure.

[3] Duke Energy Carolinas, *op. cit.*, p. 353.

# About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

# About the Author

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An IEEFA analyst and editor, Dennis Wamsted has covered energy and environmental policy and technology issues for 30 years. He is the former editor of The Energy Daily, a Washington, D.C.-based newsletter, and is a graduate of Harvard University.