

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH
DOCKET NO. E-100, SUB 157**

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of 2018 Integrated Resource Plans And Related 2018 Compliance Plans) ATTORNEY GENERAL'S OFFICE) PARTIAL PROPOSED ORDER) REGARDING DUKE ENERGY PROGRESS) and DUKE ENERGY CAROLINAS) 2018 INTEGRATED RESOURCE PLANS
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Pursuant to the Commission's 12 June 2019 Order Requiring Filing of Proposed Orders, the North Carolina Attorney General's Office ("AGO") respectfully submits the following partial proposed order in the above-captioned docket regarding the 2018 Integrated Resource Plans filed by Duke Energy Progress ("DEP") and Duke Energy Carolinas ("DEC") (collectively "Duke").

**ENERGY EFFICIENCY MEASURES and
DEMAND-SIDE MANAGEMENT**

AGO Comments – Energy Efficiency Measures and Demand Side Management

The AGO recommended that Duke's plans be supplemented to include a more robust consideration of modern energy efficiency and demand-side management ("EE/DSM") measures that reduce consumption or shift load to off-peak times -- including measures that are targeted to winter peaks. The AGO discussed three concerns.

First, the AGO, like the Public Staff, identified as a major shortcoming in Duke's plans that they offer little to no residential demand-side measures to lower winter peaks. The lack of emphasis on winter EE/DSM measures is particularly

problematic given the importance Duke placed on planning to meet winter peaks in the analysis of its requirements for additional generating resources.

Duke evaluated a direct load control program as a possible demand-side management measure, and found it to be too costly. However, that result is not cause to overlook other opportunities. The AGO's consultant Strategen Consulting, LLC, commented that there are numerous advanced demand-side management programs that have been found to be cost-effective in other jurisdictions; these programs could be used to shave winter peaks. Strategen gave examples of two such programs that are being designed with reasonable costs for ratepayers by encouraging customers to use their own devices (called "Bring Your Own Device" or "BYOD" measures). One such measure is a smart thermostat program where, instead of directly installing smart thermostats, the utility recruits and acquires participants who bring their own devices. Another example is a utility BYOD program in which the utility shares access with the customer's battery storage system to lower peaks on cold winter nights. Customers purchase the batteries and are provided incentives that are based on the amount of energy transferred from the customer's battery to the grid.

Strategen noted that Duke currently integrates smart thermostats into three of its energy efficiency offerings, but observed that Duke's offerings are limited, Duke's offerings do not include other types of devices, and Duke's offerings do not appear to focus on obtaining flexible (i.e. dispatchable) HVAC measures that could help address winter peaks. For example, one of the Duke programs provides an incentive for using a smart thermostat, but does not appear to make use of the

device for demand response or load shifting. Another Duke program incentivizes winter demand reduction, but at a lower level than in summer, and has a small amount of participating winter capacity. None of the Duke programs allow for customers to bring other devices, such as energy storage, to increase flexible capacity in both the winter and summer. As such, more emphasis is needed in Duke's plans on the design and development of measures that address winter resource requirements.

The AGO also agreed with the Public Staff that new time-of-use schedules have great potential for helping residential customers curb loads during winter peaking events.

The second concern addressed in the AGO comments is about how demand-side programs are evaluated in Duke's planning process. The AGO agreed with NCSEA, and SACE, Sierra Club, and NRDC that it would be valuable to model energy efficiency measures and demand-side management on a level playing field with other resources. Strategen noted that modeling demand-side resources alongside supply-side resources is considered a best practice in the industry. Without that approach, demand-side measures cannot be fairly compared to supply-side alternatives, potentially limiting the amount of cost-effective energy efficiency and demand-side measures selected, resulting in a higher cost portfolio.

The third concern raised by the AGO is that Duke's plans appear to assume that additional energy efficiency savings will not be achieved in future planning years once current measures have been tapped out. That assumption overlooks

advances in technology, including automation and load controls. Strategen predicts that such advances will most likely “unlock new forms of cost-effective energy efficiency and demand management.”

Proposed Commission Conclusions - Energy Efficiency Measures and Demand Side Management

The Commission shares the concerns expressed by the AGO and other parties that Duke’s plans do not give adequate consideration to modern energy efficiency and demand-side management (“EE/DSM”) measures, particularly measures that are targeted to winter peaks.

In the last biennial IRP proceeding, we agreed with the Public Staff that measures are needed that are designed for wintertime, and we directed that “additional emphasis should be placed on defining and implementing cost-effective DSM programs that will be available to respond to winter peak demands.”¹ Later, in our Order addressing Duke’s 2017 Update Reports, we applauded the efforts of DEP, particularly the work in the Western Region by the Energy Innovation Task Force that focused on existing and new measures, including an increase in participation in the winter program and resulting increase in curtailable winter load.² However, we noted that DEC’s 2017 IRP plan included winter DSM resources that were about 80 MW less than were included in the 2016 IRP Report.

¹ See our Order Accepting Integrated Resource Plans and Accepting REPS Compliance Plans *In the Matter of 2016 Biennial Integrated Resource Plans and Related 2016 REPS Compliance Plans* issued 27 June 2017 in Docket No. E-100, Sub 147 at 26.

² Order Accepting Filing of 2017 Update Reports and Accepting 2017 REPS Compliance Plans issued 16 April 2018 in Docket No. E-100, Sub 147 at 7.

Accordingly, we ordered DEC to discuss the decline in detail and discuss its plans for re-emphasizing DSM.³

The Public Staff reports that it has worked with utilities to find ways to implement new cost-effective residential DSM programs that could reduce residential demands during winter peaking events, but, so far, no program design has proven to be cost-effective, including the option of using DEP's EnergyWise program as a model for a similar DEC program. The Public Staff recommends that more efforts be directed to winter measures.

We agree that more efforts are needed. Duke has not adequately addressed demand-side resources as an approach to meeting winter peaks and should supplement their IRP plans in their Updates. Therefore, Duke is directed to supplement their IRPs at the time they file their Updates to report on innovative EE/DSM measures and program successes in other states, including a discussion of the feasibility of using each such measure here. In addition, Duke is directed to review, evaluate, and report about whether Duke's existing programs reducing summer peaks may be revised to encourage participation and benefits in winter.

We also agree that time-of-use rate designs offer great potential. Duke is investing in costly metering infrastructure, and the successful development of innovative rate designs will be important to justifying the investment cost.

Another significant concern about Duke's IRP planning approach is Duke not modeling demand-side programs with the other resource options to determine a least cost portfolio. The AGO agreed with other stakeholders that it would be

³ Id.

valuable to model EE/DSM measures on a level playing field with other resources, and Duke's System Optimizer model could be configured in a way that allows for incremental EE/DSM measures to be selected if they are more cost-effective than generation alternatives.

In past IRP proceedings, we have concluded that Duke's approach is appropriate although it does not model EE/DSM measures with other resources, but instead evaluates economic and achievable energy efficiency potential linked to the assessment of avoided cost calculations.⁴ We recognize, however, that using a model that evaluates all potential resources has advantages. Our Rule R8-60(g) calls for planning that includes both demand-side and supply-side options to determine an integrated resource plan that offers the least cost combination (on a long-term basis) of reliable resources for meeting the anticipated needs of its system. Multiple factors come into play, and the *integrated* planning alternatives are not fully considered in Duke's approach that separates supply-side and demand-side options.

Therefore, Duke is directed for its 2020 IRP to configure its System Optimizer model to allow incremental EE/DSM measures to be selected if they are more cost-effective. That approach will better inform planning. Duke should engage stakeholders as it develops the assumptions applied to the new configuration of the model. We believe that the integrated modeling approach will help inform more sophisticated planning options given the improved data becoming available about grid function and consumption patterns. This approach

⁴ 2016 IRP order at 32-33.

is also more consistent with the commitments identified in Executive Order 80 to address climate change and transition to a clean energy economy.⁵

NATURAL GAS-FIRED POWER GENERATION

AGO Comments – Natural Gas-Fired Power Generation

The AGO commented that Duke's continued reliance on natural gas plants as the primary way to meet future resource needs is not justified because Duke's plans have not adequately considered the economic and environmental risks of that option.

One concern about Duke's heavy reliance on natural gas generation for planning purposes is that natural gas production and consumption are associated with significant carbon dioxide and methane emissions, greenhouse gases that contribute to climate change, whereas alternatives that use renewables paired with storage are not. Climate change has real costs affecting ratepayers. The economic costs associated with frequent and intense hurricanes, such as those experienced in North Carolina in the past year, were cited as key factors motivating Executive Order No. 80. That order highlights a State commitment to fight climate change and transition to a clean economy, setting a goal of reducing statewide greenhouse gas emissions to 40% below 2005 levels by 2025. The AGO advocated that the Commission broaden its consideration of environmental factors in light of the policy goals announced in Executive Order 80.

Another concern about Duke's increased reliance on natural gas power production is the economic risk of that option. The AGO and Strategen agreed

⁵ Executive Order No. 80, "North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy" (Oct. 29, 2018).

with the recommendation made by the Public Staff that Duke should be directed to use an analytical tool similar to the Comprehensive Risk Analysis that was employed in the initial IRP report of Dominion Energy North Carolina (“DENP” or “Dominion”) in order to address the relative riskiness of alternative resources. That tool considers tradeoffs between the costs and riskiness of the resources that make up the portfolio. The risk assessment may take into account not only the potential volatility of prices but also risks associated with climate change impacts and mitigation efforts. If Duke is directed to perform a Comprehensive Risk Analysis, Strategen notes that there should be transparency about the assumptions used in the analysis and recommends that Duke should either supply a working copy of the model so that assumptions may be evaluated by other parties in detail or should run alternative specifications and scenarios for others.

Duke’s increased reliance on natural gas power production also poses a longer-term risk that the investment may become stranded before the end of the useful life of such plants. Conventional gas-fired plants are built to last for decades, and new emission standards or technological change may cause the plants to become uneconomic. This concern was identified by the Indiana Utility Regulatory Commission when it rejected an 850 MW natural gas plant proposal. The Indiana Commission directed Vectren to evaluate alternatives to the large, centralized generation approach, given the potential that the plant could become a stranded asset as the cost of renewable energy declines.

Proposed Commission Conclusions - Natural Gas-Fired Power Generation

Duke's planning relies heavily on natural gas generation, and Duke continues to project additional construction of natural gas plants to meet future resource requirements. In the last biennial proceeding, we determined *not* to take a broader review of environmental factors, such as climate change impact from the methane and carbon dioxide greenhouse gases emitted during the production and consumption of natural gas. Given the State policies expressed in Executive Order 80, however, we believe that this consideration should be given more attention in future resource planning.

Further, we agree that the use of a Comprehensive Risk Analysis tool, as advocated by the Public Staff and others, will better inform the planning process regarding the relative risks of resource options that make up Duke's portfolio. We also agree that the risk of stranded investment is a long-term concern that should be weighed in the planning process.

Therefore, we direct Duke in its 2020 plans to consider any additional environmental costs associated with the reliance on natural gas for new generating resources, to use a Comprehensive Risk Analysis tool, and to expressly identify and value any risk of stranded natural gas investment.

STORAGE-PLUS-RENEWABLES

AGO Comments – Storage-Plus-Renewables

The AGO commented that Duke's plans, when modeling resource alternatives, do not adequately address solar-plus-storage resources as options to meet peak hours of demand. The AGO believes that this issue is important to the

development of reasonable resource plans because, as was pointed out in NCSEA comments, battery storage technologies provide flexibility that enables a larger part of Duke's energy and capacity requirements to be satisfied at lower economic and environmental costs. Given the current broad array of storage technologies with different sizes, configurations, and operating characteristics, modeling should include an array of storage alternatives consistent with industry best practice.

Duke considered only one solar-plus-storage technology configuration in the initial screen of the model used to evaluate resource options: a 2 MW battery with 8 MWh of duration paired with a 2 MW solar facility. In contrast, Duke's initial modeling screen included nine natural gas-burning technologies, two coal technologies, two nuclear technologies, and two stand-alone storage technologies. Further, the ratio of PV to storage in Duke's one option does not necessarily align with recent trends in the industry. Strategen noted that batteries recently procured by utilities in other states (Hawaii, Arizona, Nevada, and Colorado) have been much larger in order to benefit from economies of scale and lower siting and interconnection costs (e.g., installing one 100 MW battery is cheaper than fifty 2 MW batteries).

The AGO asserted that battery storage offers several advantages as described in Strategen's memorandum that are not sufficiently evaluated in Duke's plans:

- Storage is a valuable tool to address peak demand.
- Storage has a modular design and can be added in small increments that fit growth. Whereas larger traditional power plants often add more capacity than is needed, at least until load growth catches up to the installed capacity, storage can be added relatively quickly as needed or avoided

altogether if load growth does not materialize.

- Storage enhances the resilience of the grid during catastrophic events like hurricanes. The effectiveness of storage was demonstrated during Hurricane Irma, when two large battery storage projects in the Dominican Republic helped stabilize grid frequency and alleviate fluctuations caused when 40% of the generation fleet had suffered an outage.
- The importance of creating a resilient electric grid that integrates clean energy resources is a factor discussed in Executive Order No. 80, the North Carolina policy addressing climate change.
- Recent studies have shown that inverter-based resources (like batteries) have actually responded faster and more accurately than traditional generators in the face of a disturbance.

The AGO recommended two improvements to Duke's analysis of storage.

First, multiple storage alternatives should be modeled alongside other resource alternatives. That way, Duke's model would select the sizes and ratios of solar plus storage that fit a system need (rather than pre-selecting more limited options). Second, the model should use publicly-available cost estimates wherever possible to make the assumptions underlying the model results more transparent. The model used by intervenor NCSEA relied on publicly-available cost estimates from the National Renewable Energy Laboratory and Lazard that are considered to be industry standards.

Proposed Commission Conclusions - Storage-Plus-Renewables

In the last biennial IRP proceeding, we directed Duke to provide a more complete and thorough assessment of battery storage technologies and values in its IRPs in this proceeding. We expect a robust approach will be taken in the modeling used in Duke's plans going forward. Multiple storage alternatives should be modeled alongside other resource alternatives, and the model should use

publicly-available cost estimates wherever possible to make the assumptions underlying the model results more transparent.

SOLAR CAPACITY

AGO Comments – Solar Capacity

The AGO agreed with concerns expressed by the other intervenors about Duke's assessment of the capacity value of solar energy. To the extent that solar capacity is undervalued, that causes Duke's plans to include more traditional thermal capacity resources than are necessary, leading to increased costs to Duke's customers.

AGO consultant Strategen reviewed the Astrape analysis prepared for Duke and detailed multiple aspects of Astrape's capacity value calculation that could potentially undervalue solar resources. Strategen described the following flaws:

"1. Underlying load and non-solar resources within each solar tranche

Duke's analysis shows declining capacity value as solar penetration increases in subsequent MW tranche additions. While this general trend is to be expected, it is not clear if each subsequent solar tranche also included changes to the underlying load and non-solar resources on Duke's system. In reality, higher MW solar scenarios would coincide with other changes. For example, a) load growth may occur predominately in the summer, thus shifting the share of loss of load expectation ("LOLE") towards summer months, or b) the mix of non-solar generators may change towards those with fewer outages. Both of these could affect the calculated solar capacity value and potentially increase it relative to what has been portrayed.

2. Demand response availability in winter

In Duke's analysis, it is assumed that there are significantly less demand response resources available in winter versus summer (625 MW less for DEC, and 503 MW less for DEP). This has the effect of increasing LOLE during winter hours, and in turn could decrease solar capacity value. If in fact Duke's system is increasingly a winter peaking system, it is not clear why existing/new demand response resources couldn't be targeted more towards winter peak load hours instead and modeled accordingly.

3. Share of tracking PV resources

Duke's analysis assumes a 25% share of single-axis tracking systems versus 75% fixed tilt. While this appears consistent with historical deployment in NC, other jurisdictions have shown a greater trend towards tracking systems. It's possible this broader trend could also occur in NC going forward and would lead to a higher overall capacity value for the solar fleet.

4. Assistance from neighboring Balancing Areas

A critical underlying assumption in Duke's analysis is the availability of resources from neighboring balancing areas. The reported occurrence of a greater share of LOLE hours during winter signifies a greater unavailability of neighboring resources during this season. However, several of the balancing areas neighboring Duke not only have significant excess capacity exceeding their reserve margins but they are also summer peaking systems. Thus, it appears that there should be substantial winter resources available from neighboring systems. If the availability of neighboring resources in winter is modeled at too low a level it could have the effect of increasing LOLE at these times, and in turn reducing solar capacity value.

5. Outage rates for combustion turbines

Public Staff points out that in Duke's analysis, "Solar resources are also treated differently than dispatchable thermal resources in that those thermal resources receive a capacity value of 100%, despite the fact that even dispatchable thermal resources are not guaranteed to be available 100% of the time in High Risk Hours due to planned and forced outages. Strategen agrees with Staff's assessment that this reflects inconsistent treatment between resource types that should be remedied. Either capacity value of non-solar resources should be de-rated according to their outage rates, or a different methodology should be adopted.

6. Adjustment of combustion turbine versus load

As the Public Staff points out in their comments, Duke's approach of adjusting the combustion turbine value to determine capacity value "varies slightly from a traditional (effective load carrying capacity) study, where load is adjusted to achieve a (loss of load expectation) of 0.1 events/year." Strategen agrees with Public Staff's observation. Furthermore, since DEP is modeled as two load centers (east and west), Duke's approach could also lead to a lower solar capacity value than the traditional method, depending on where the combustion turbine is located in the model and what transmission constraints are assumed.

Strategen believes that, conceptually, an effective load carrying capability (“ELCC”) framework, such as that used by Duke can be a sound approach to determining the capacity value of solar for resource planning. However, before such a framework can be adopted, more information is needed regarding certain underlying assumptions in Duke’s analysis. Thus, for the purposes of the 2018 IRP, the method proposed by Public Staff seems acceptable and would be consistent with past practice in NC. An ELCC approach could be explored for future IRPs but stakeholders should have additional opportunities to review the evaluation framework proposed by Duke and the Commission should provide guidance on it as well. For these reasons, Strategen believes Public Staff’s recommendations regarding solar capacity value are reasonable.”⁶

Taking into account these concerns, the AGO recommends that Duke be required to reevaluate the calculation of solar capacity and respond to Strategen’s concerns as well as concerns identified by other parties.

Proposed Commission Conclusions – Solar Capacity

The Commission agrees with the concerns expressed about Duke’s evaluation of the capacity value of solar resources. We are concerned that Duke’s plans may include more natural gas generation than necessary to the extent that solar capacity is undervalued.

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission directs Duke in their Updates to review and revise the calculation of solar capacity value to ensure that solar is not being undervalued as a capacity resource. The revised study should respond to the concerns discussed by intervenors. The study should also take into consideration any impact on capacity value created by pairing solar with storage.

⁶ Strategen Attachment to the AGO Reply Comments at 10-11.

COAL FLEET RETIREMENT OPTIONS

AGO Comments – Coal Fleet Retirement Options

The AGO's Reply Comments supported the Initial Comments of NCSEA, SACE, Sierra Club, and NRDC concerning problems with the way that the coal fleet is evaluated in modeling by forcing results that are based on coal retirements linked to the depreciated book value of units, and designating some as must-run units, regardless of cost. AGO consultant Strategen noted that these assumptions violate the premise of the optimization process, which is designed to allow the model to determine the least cost outcome. Duke's approach creates an artificial limitation upon the ability of plants to be retired when it is economic to do so.

Further, Duke plans to operate numerous coal units at low capacity factors over the planning period. Coal plants are not designed to operate infrequently and at low capacity factors, and the intermittent operation of the plants may lead to higher costs than if the coal plants are simply retired. Previous coal retirement analyses conducted by Duke only evaluated natural gas plants as replacement options for coal; those analyses did not assess the potential of other alternatives, such as solar-plus-storage, that may be more cost-effective. Recent studies performed in Oregon, Indiana, and other states indicate that substantial savings can be achieved through planned retirements.

The AGO and Strategen noted that the costs and potential cost avoidance related to coal operations and retirement decisions are significant. Due to the numerous assumptions within Duke's IRPs regarding coal fleet retirement options, the Commission should direct Duke to study and report the costs of operating

versus retiring coal plants on a station-by-station basis and a per-unit basis, and the Commission should direct Duke to evaluate the coal units in modeling for least cost alternatives.

Duke Reply Comments – Coal Fleet Retirement Options

Duke commented that they have performed multiple analyses regarding the retirement options of its coal units. However, in response to data requests, Duke acknowledged that only one alternative option was considered; that being a natural gas plant when they evaluated whether a coal facility should be retired. One reason given by Duke is that it considers wind and solar options not to be dispatchable; therefore, Duke's analysis treats wind and solar options as unacceptable.

Proposed Commission Conclusions – Coal Fleet Retirement Options

We agree that, by limiting the evaluation of coal plants in its models, Duke has limited the ability of the models to determine the least cost approach to meeting resource requirements.

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission concludes that Duke should provide in their 2020 IRPs a study and report of the costs of operating versus retiring coal plants on a station-by-station basis and a per-unit basis. The study should assess the potential of a solar-plus-storage resources, not only natural gas resources, as a replacements for the coal unit. Further, coal units should be modeled alongside other resource options to evaluate the least-cost alternatives.

DISTRIBUTED ENERGY RESOURCES

AGO Comments – Distributed Energy Resources

The AGO supported the recommendation made by intervenor NCSEA that a holistic approach should be adopted for the evaluation of the improvements and investments that will be needed to modernize Duke's distribution and transmission grid to better enable use of energy resources such as storage or demand-side measures. Planning and modeling for the future grid – including the integration of distributed resources into distribution and transmission systems – are important pieces of developing integrated resource plans. Strategen noted that some forecasts indicate that distributed resources will almost double by 2023, and North Carolina has witnessed tremendous growth in solar installations and projects. These forecasts need to be considered when formulating integrated resource plans. Accordingly, the AGO recommended that the Commission review and take a proactive role in the planning of integrated distribution planning, either by opening a rulemaking for that purpose or by other appropriate procedures.

Duke Reply Comments – Distributed Energy Resources

Duke acknowledged that smart meter data has the potential to be very informative from a load forecasting perspective. Duke offered to update the Public Staff on Duke's progress in incorporating smart meter data into the load forecasting process. However, Duke noted that there are a number of existing dockets to deal with integrated distribution planning, and Duke opposed additional formal reporting on integrated distribution planning in the IRPs.

Duke noted that it does not oppose a rulemaking, but recommended that the Commission allow interested parties to participate in a pre-rulemaking stakeholder process to facilitate a common understanding of the issues and to attempt to reach consensus on as many areas as possible to make the formal rulemaking process more collaborative and efficient.

Proposed Commission Conclusions – Distributed Energy Resources

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission concludes that this matter should be explored further by stakeholders as recommended by Duke. We request that Duke organize the stakeholder process and that the parties report on the process and conclusions within six (6) months.

INTEGRATED VOLTAGE VAR CONTROL PROGRAMS

AGO Comments – Integrated Voltage Var Control Programs

The AGO supported the Initial Comments of the Public Staff and other parties who recommended that the Integrated Voltage Var Control (“IVVC”) program be included in Duke’s load forecasts developed in IRPs for future years of capacity planning. IVVC is the process of optimally managing voltage levels and reactive power to achieve more efficient grid operation by reducing system losses, peak demand, energy consumption, or a combination of all three.

NCSEA noted that Duke has previously predicted that IVVC will enable 2% energy savings and a 1.4% reduction in peak demand. Strategen posited that IVVC technologies today can create energy savings above 3% and peak demand reductions of approximately 5%, or three times greater than Duke’s estimate.

Duke Reply Comments – Integrated Voltage Var Control Programs

Duke commented that their grid improvement plans include IVVC, which will allow Duke to manage distribution circuits to reduce impacts to customers with large motors sensitive to voltage control and allow the use of peak shaving and emergency modes of operation, but did not reflect its grid improvement plans in their IRPs.

Duke commented that “based upon stakeholder feedback,” Duke “added a DEC IVVC program” and advised that they “plan to reflect the DEC IVVC program in future IRPs.” Duke did not address the existence or status of any DEP IVVC program.

Proposed Commission Conclusions – Integrated Voltage Var Control Programs

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission directs both DEP and DEC, in their IRP Updates, to add or supplement their reports to include Integrated Voltage Var Control program impacts on load forecasts. Further, Duke is directed to include the impacts of Integrated Voltage Var Control programs in the load forecasts of all of its future IRPs, with sufficient discussion to show that all reasonable savings and demand reductions are being pursued.

RATEPAYER IMPACTS

AGO Comments – Ratepayer Impacts

The AGO supported the recommendations of the Public Staff and other parties that Duke should be required to provide an analysis of the residential annual rate impacts of each of its portfolios similar to that presented in Dominion’s

2016 and 2018 IRPs. The AGO recommended that the analysis should show the impacts of the portfolios on ratepayer bills, and the analysis should not be limited to residential ratepayers, but rather, should be applied generally to all customer classes. Further the bill impact analysis should include a breakout of the portion of rates that are fuel-related and thus bear the price risk borne by ratepayers.

Proposed Commission Conclusions – Ratepayer Impacts

The Commission, based on the foregoing, the comments of the parties, and the entire record in this proceeding, directs Duke to submit revised Plans with their Updates that provide an analysis of the ratepayer impacts of their portfolios, including a breakout of the portions of bills that are fuel-related.

IT IS, THEREFORE, ORDERED as follows:

1. Duke shall supplement its IRPs at the time they file their Updates to report on innovative EE/DSM measures and program successes in other states, including a discussion of the feasibility of using each such measure here. In addition, Duke is directed to review, evaluate, and report about whether Duke's existing programs reducing summer peaks may be revised to encourage participation and benefits in winter, and report on the feasibility of using such measures here.

2. Duke is directed for its 2020 IRP to configure its System Optimizer model to allow incremental EE/DSM measures to be selected if they are more cost-effective. That approach will better inform planning. Duke should engage stakeholders as it develops the assumptions applied to the new configuration of the model.

3. Duke is directed in its 2020 plans to consider any additional environmental costs associated with the reliance on natural gas for new generating resources, to use a Comprehensive Risk Analysis tool, and to expressly identify and value any risk of stranded natural gas investment

4. Duke is directed in its 2020 IRP to engage in a robust approach to modeling storage and solar plus storage resource options going forward. Multiple storage alternatives should be modeled alongside other resource alternatives, and the model should use publicly-available cost estimates wherever possible to make the assumptions underlying the model results more transparent.

5. Duke shall review and revise the calculation of solar capacity value in the Updates to ensure that solar is not being undervalued as a capacity resource. The revised study should respond to the concerns discussed by intervenors. The study should also take into consideration any impact on capacity value created by pairing solar with storage.

6. Duke shall provide in their 2020 IRPs a more thorough analysis of the costs of operating versus retiring coal plants on a station-by-station basis and a per-unit basis. Further, coal units should be modeled alongside other resource options, including but not limited to solar-plus-storage resources, to evaluate the least-cost alternatives.

7. Procedures to address integrated distribution planning should be explored further by stakeholders and, to that end, Duke is directed to organize the stakeholder process and report on the process and conclusions within six (6) months of the date of this order.

8. Duke DEC and DEP shall, in the IRP Updates, add or supplement their reports to include Integrated Voltage Var Control program impacts on load forecasts. Further, DEC and DEP are directed to include the impacts of Integrated Voltage Var Control programs in the load forecasts of all future IRPs, with sufficient discussion to show that all reasonable savings and demand reductions are being pursued.

9. Duke shall submit revised Plans with their Updates that provide an analysis of the ratepayer impacts of their portfolios, including a breakout of the portions of bills that are fuel-related.

Respectfully submitted this the 26th day of July, 2019.

JOSHUA H. STEIN
ATTORNEY GENERAL

/s/

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CERTIFICATE OF SERVICE

The undersigned certifies that she has served a copy of the foregoing ATTORNEY GENERAL'S OFFICE PROPOSED PARTIAL ORDER upon the parties of record in this proceeding by email or by depositing a copy of the same in the United States Mail, postage prepaid, this the 26th day of July, 2019.

/s/
Margaret A. Force
Assistant Attorney General