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VIA ELECTRONIC FILING

Ms. Janice Fulmore, Deputy Clerk
Ms. Antonia Dunston, Deputy Clerk
North Carolina Utilities Commission
Dobbs Building
430 North Salisbury Street
Raleigh, North Carolina 27603

*Re: 2018 Integrated Resource Plans and Related 2018 REPS Compliance Plans
Docket No. E-100, Sub 157*

Dear Deputy Clerks:

Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina, submits for filing in the above-referenced docket its Proposed Order.

Please do not hesitate to contact me should you have any questions. Thank you for your assistance with this matter.

Very truly yours,

/s/Andrea R. Kells

ARK:mth

Enclosure

For the Using and Consuming Public:

Diana Downey, Staff Attorney; Heather D. Fennell, Staff Attorney; and Bob Gillam, Staff Attorney; Public Staff-North Carolina Utilities Commission, 4326 Mail Service Center, Raleigh, North Carolina 27699-4300

BY THE COMMISSION: Integrated Resource Planning (IRP) is intended to identify those electric resource options that can be obtained at least cost to the utility and its ratepayers consistent with the provision of adequate, reliable electric service. IRP considers demand-side alternatives, including conservation, efficiency, and load management, as well as supply-side alternatives in the selection of resource options. Commission Rule R8-60 defines an overall framework within which the IRP process takes place in North Carolina. Analysis of the long-range need for future electric generating capacity pursuant to G.S. 62-110.1 is included in the Rule as a part of the IRP process.

General Statute (G.S.) 62-110.1(c) requires the Commission to “develop, publicize, and keep current an analysis of the long-range needs” for electricity in this State. The Commission’s analysis should include: (1) its estimate of the probable future growth of the use of electricity; (2) the probable needed generating reserves; (3) the extent, size, mix, and general location of generating plants; and (4) arrangements for pooling power to the extent not regulated by the Federal Energy Regulatory Commission (FERC). Further, G.S. 62-110.1 requires the Commission to consider this analysis in acting upon any petition for the issuance of a certificate for public convenience and necessity for construction of a generating facility. In addition, G.S. 62-110.1 requires the Commission to submit annually to the Governor and to the appropriate committees of the General Assembly a report of its: (1) analysis and plan; (2) progress to date in carrying

out such plan; and (3) program for the ensuing year in connection with such plan. G.S. 62-15(d) requires the Public Staff to assist the Commission in making its analysis and plan pursuant to G.S. 62-110.1.

G.S. 62-2(a)(3a) declares it a policy of the State to:

assure that resources necessary to meet future growth through the provision of adequate, reliable utility service include use of the entire spectrum of demand-side options, including but not limited to conservation, load management and efficiency programs, as additional sources of energy supply and/or energy demand reductions. To that end, to require energy planning and fixing of rates in a manner to result in the least cost mix of generation and demand-reduction measures which is achievable, including consideration of appropriate rewards to utilities for efficiency and conservation which decrease utility bills.

Session Law (S.L.) 2007-397 (Senate Bill 3), signed into law on August 20, 2007, amended G.S. 62-2(a) to add subsection (a)(10) that provides that it is the policy of North Carolina “to promote the development of renewable energy and energy efficiency through the implementation of a Renewable Energy and Energy Efficiency Portfolio Standard (REPS)” that will: (1) diversify the resources used to reliably meet the energy needs of North Carolina’s consumers; (2) provide greater energy security through the use of indigenous energy resources available in North Carolina; (3) encourage private investment in renewable energy and energy efficiency; and (4) provide improved air quality and other benefits to the citizens of North Carolina. To that end, Senate Bill 3 further provides that “[e]ach electric power supplier to which G.S. 62-110.1 applies shall include an assessment of demand-side management and energy efficiency in its resource plans submitted to the Commission and shall submit cost-effective demand-side

management and energy efficiency options that require incentives to the Commission for approval.”¹

Senate Bill 3 also defines demand-side management (DSM) as “activities, programs, or initiatives undertaken by an electric power supplier or its customers to shift the timing of electric use from peak to nonpeak demand periods” and defines an energy efficiency (EE) measure as “an equipment, physical or program change implemented after 1 January 2007, that results in less energy being used to perform the same function.”² Energy Efficiency measures do not include DSM.

To meet the requirements of G.S. 62-110.1 and G.S. 62-2(a)(3a), the Commission conducts an annual investigation into the electric utilities’ IRPs. Commission Rule R8-60 requires that each utility, to the extent that it is responsible for procurement of any or all of its individual power supply resources,³ furnish the Commission with a biennial report in even-numbered years that contains the specific information set out in Rule R8-60. In odd-numbered years, each of the electric utilities must file an annual report updating its most recently filed biennial report.

Further, Commission Rule R8-67(b) requires any electric power supplier subject to Rule R8-60 to file a REPS compliance plan as part of each biennial and annual report. In addition, each biennial and annual report should: (1) be accompanied by a short-term action plan that discusses those specific actions currently being taken by the utility to implement the activities chosen as appropriate per the applicable biennial and annual

¹ G.S. 62-133.9(c).

² G.S. 62-133.8(a)(2) and (4).

³ During the 2013 Session, the General Assembly enacted S.L. 2013-187 (House Bill 223), which exempted the EMCs from the requirements of G.S. 62-110.1(c) and G.S. 62-42, effective July 1, 2013. As a result, EMCs are no longer subject to the requirements of Rule R8-60 and are no longer required to submit IRPs to the Commission for review.

reports; and (2) incorporate information concerning the construction of transmission lines pursuant to Commission Rule R8-62(p).

Within 150 days after the filing of each utility's biennial report and within 60 days after the filing of each utility's annual report, the Public Staff or any other intervenor may file its own plan or an evaluation of, or comments on, the utilities' biennial and annual reports. Furthermore, the Public Staff or any other intervenor may identify any issue that it believes should be the subject of an evidentiary hearing. The Commission must schedule one or more hearings to receive public testimony.

2018 BIENNIAL REPORTS

This Order addresses the 2018 biennial reports (2018 IRPs) filed in Docket No. E-100, Sub 157, by Duke Energy Progress, LLC (DEP), Duke Energy Carolinas, LLC (DEC), and Dominion Energy North Carolina (DENC) (collectively, the investor-owned utilities, utilities, or IOUs). In addition, this Order also addresses the REPS compliance plans filed by the IOUs.

The following parties have been allowed to intervene in this docket: Broad River Energy, LLC (Broad River); Carolina Industrial Group for Fair Utility Rates I, II, and III (CIGFUR); Carolina Utility Customers Association, Inc. (CUCA); Ecoplexus Inc. (Ecoplexus); Environmental Defense Fund (EDF); North Carolina Clean Energy Business Alliance (NCCEBA); North Carolina Sustainable Energy Association (NCSEA); North Carolina Waste Awareness and Reduction Network (NC WARN); and jointly, Southern Alliance for Clean Energy, Sierra Club, and the Natural Resources Defense Council (SACE, the Sierra Club, and NRDC). The Public Staff's intervention is

recognized pursuant to G.S. 62-15(d) and Commission Rule R1-19(e). The Attorney General's Office intervention is recognized pursuant to G.S. 62-20.

PROCEDURAL HISTORY

On May 1, 2018, DENC filed its 2018 Integrated Resource Plan (2018 IRP) pursuant to Commission Rule R8-60 in the above-captioned docket as well as with the Virginia State Corporation Commission (VSCC). On the same date, DENC also filed its 2018 REPS Compliance Plan. DENC held its North Carolina stakeholder meeting on its 2018 IRP on December 7, 2018. On the same day, the VSCC issued an order directing DENC to refile its 2018 IRP to include a least-cost plan and address implementation of Virginia Senate Bill 966, among other directives.⁴

On May 22, 2018, NCSEA filed its Petition to Intervene. The Petition was granted on May 30, 2018.

On July 3, 2018, CIGFUR filed a Petition to Intervene. The Petition was granted on July 6, 2019.

On July 6, 2018, NC WARN filed a Petition to Intervene. The Petition was granted on July 12, 2019.

On July 27, 2018, NCCEBA filed its Petition to Intervene. On July 30, 2018, NCCEBA's Petition to Intervene was granted.

On August 21, 2018, Ecoplexus filed a Petition to Intervene. The Petition was granted on December 18, 2018.

⁴ *Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Va. Code § 56-597 et seq.*, Order, Case No. PUR-2018-00065 (Dec. 7, 2018) (VSCC 2018 IRP Order).

On September 5, 2018, DEP and DEC filed their 2018 IRPs and REPS Compliance Plans.

On September 27, 2018, the Commission issued its *Order Scheduling Public Hearing on 2018 IRP Reports and Related 2018 REPS Compliance Plans* and scheduled a public hearing for February 4, 2019.

On October 3, 2018, CUCA filed a Petition to Intervene. The Petition was granted on October 10, 2018.

On October 26, 2018, EDF filed a Petition to Intervene. The Petition was granted on October 29, 2018.

On October 31, 2018, SACE, Sierra Club, and NRDC filed a Petition to Intervene. The Petition was granted on November 8, 2018.

On November 8, 2018 NC WARN filed a Motion for Evidentiary Hearing.

On November 15, 2018, DEC and DEP filed a Response in Opposition to NC WARN's Motion for Evidentiary Hearing. DENC filed its Response in Opposition on November 27, 2018.

On December 14, 2018, NC WARN filed its initial comments.

On December 20, 2018, Broad River filed a Petition to Intervene. The Petition was granted on December 21, 2018.

On December 21, 2018, the Attorney General's Office filed a Notice of Intervention.

On January 9, 2019, DENC filed its Affidavit of Publication

On January 22, 2019, the Public Staff and DENC filed a Joint Motion for Extension of Time to extend the deadline for filing of initial comments, as DENC would

be filing a revised 2018 IRP in compliance with the VSCC 2018 IRP Order (Compliance Filing). The Commission granted the Motion on January 24, 2019, and required initial comments to be filed 60 days from the date DENC filed its Compliance Filing, and reply comments to be filed 60 days thereafter.

On February 4, 2019, a public hearing was held.

On February 15, 2019, EDF filed its initial comments.

On February 21, 2019, the City of Charlotte and Mecklenburg County requested a public hearing.

On March 7, 2019, DENC submitted its Compliance Filing.

On March 7, 2019, the Public Staff, NCSEA, SACE, Sierra Club, NRDC, and the Attorney General's Office filed their initial comments on the DEC, DEP, and DENC 2018 REPS Compliance Plans.

On March 11, 2019, the General Assembly of Western North Carolina filed comments and a request for public hearing.

On March 12, 2019, the Public Staff filed a correction to its initial comments on the DEC, DEP, and DENC 2018 REPS Compliance Plans.

On April 29, 2019, DEC and DEP filed a Motion for Extension of Time to file reply comments to May 20, 2019. On May 1, 2019, the Commission granted the extension to May 20, 2019.

On May 6, 2019, the Public Staff filed its initial comments on DENC's 2018 IRP and Compliance Filing

On May 24, 2019, the Public Staff filed a correction to its initial comments on the DEC, DEP, and DENC 2018 REPS Compliance Plans.

On July 5, 2019, DENC filed its reply comments.

On July 10, 2019, the Public Staff filed a Joint Motion for Extension of Time to File Proposed Orders. The Motion was granted on July 12, 2019, and the deadline to file proposed orders was extended until July 26, 2019.

On July 26, 2019, the Public Staff and the IOUs filed proposed orders.

PUBLIC HEARING

Pursuant to G.S. 62-110.1(c), the Commission held a required public hearing in Raleigh on February 4, 2019, at 7:00 p.m. where 49 public witnesses spoke. In summary, the testimonies of the public witnesses focused on the need to encourage energy efficiency and renewable and emerging resources, such as solar, wind, and battery storage, and raised other concerns such as those related to natural gas and pipeline development.

FINDINGS OF FACT

1. DENC's 15-year forecasts of native load requirements and other system capacity or firm energy obligations as modified by the Compliance Filing are reasonable and appropriate and should be accepted.
2. DENC's consideration of supply-side and demand-side resources is expected to satisfy those loads and is reasonable and appropriate.
3. DENC's reserve margin reflected in its 2018 IRP and Compliance Filing is reasonable and appropriate and should be accepted.
4. DENC's use of DSM Resources during system peaks is reasonable and appropriate.
5. DENC's efforts and plans to offer DSM and EE measures and programs are reasonable and appropriate.

6. DENC's approach to addressing carbon is appropriate for planning purposes pending further federal or state actions that provide clarity on the possibility of carbon regulations.

7. DENC's comprehensive risk analysis provides valuable insight into how each Alternative Plan would be expected to perform under various scenarios, and DENC should continue to perform such analysis of Alternative Plans in future full IRPs.

8. DENC's analysis of the rate impact of each Alternative Plan over the planning horizon is reasonable and appropriate for the current docket, and DENC should recalculate the rate impact analysis of the modified Alternative Plans found in its Compliance Filing in its 2019 IRP update.

9. DENC's description of battery storage technologies is sufficient to meet the requirements set forth in the Commission's Order in Docket No. E-100, Sub 147 in light of its ongoing efforts to assess such technologies and should be accepted.

10. The 2018 REPS Compliance Plan submitted by DENC is reasonable and should be accepted.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 1

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

Summary of the Evidence

Chapter 2 of DENC's 2018 IRP describes DENC's methodology for forecasting its peak demand and energy sales needs. DENC presented its 15-year peak and energy forecasts (2019-2033) and compound annual growth rates (CAGRs) for the relevant years. In its Compliance Filing, DENC revised its peak demand forecast using the PJM

Interconnection, L.L.C. (PJM) DOM Zone non-coincident peak forecast (the PJM load forecast), which resulted in a reduction of the 2018 IRP's peak demand forecast. This revision is addressed at Section 3.d of the Compliance Filing. DENC's 2018 IRP is modeled to procure both supply-side and demand-side resources with the annual forecast of summer peak demands. While PJM predicts that the DOM Zone will become a winter peaking system in 2024, because DENC is part of PJM and the Compliance Filing uses the PJM load forecast, DENC continued to model its 2018 IRP based on summer peak demand. DENC predicted its energy sales to grow at an average annual rate of .7%, which is a decrease from the 1.5% growth rate predicted in DENC's 2016 IRP. Relatedly, DENC's 2018 IRP predicted that the savings from EE programs is anticipated to reduce energy sales by 2% by 2033, which is a greater reduction compared to the 1% reduction in energy sales predicted in DENC's 2016 IRP.

Based on its review, the Public Staff supported the use of the PJM load forecast, and concluded that DENC's revised peak load and energy sales forecasts as contained in the Compliance Filing are reasonable for planning purposes. The Public Staff recommended that DENC's 2020 IRP also rely on the PJM coincident peak scaled down for DENC's load serving entity forecast for its baseline peak and energy forecasts, and encouraged DENC to present its internal peak demand and energy forecasts as a comparison and to allow for a sensitivity analysis with an alternative expansion plan. The Public Staff also noted the growing dominance of winter peaks, which it stated appears to represent a shift in the use of electricity that warrants further examination with respect to DENC's econometric and statistical forecast models. More specifically, the Public Staff noted that DENC's Compliance Filing shows that its winter peaks will

grow at a CAGR of 1.5%, while its summer peaks will grow at a CAGR of .7%, suggesting that DENC will become a winter peaking system in 2024. Nevertheless, even though PJM predicts that the DOM Zone will become a winter peaking system, the Public Staff noted that the fact that PJM is a summer peaking system warrants that DENC procure adequate capacity for the summer peak demand forecast.

The Public Staff also recommended that DENC include in future IRPs and updates a discussion of its use of data from smart meters to inform load forecasting, cost of service studies, and rate designs.

In EDF's comments, which were filed prior to DENC's submission of its Compliance Filing, EDF posited that DENC's load forecast may be too high because it relied upon the same projection methodology that was rejected in Virginia. EDF recommended the Commission carefully analyze the utilities' load growth assumptions, including performing a thorough backcast analysis to determine whether the load growth assumptions are reasonable.

DENC stated in its reply comments that it is not opposed to showing both the PJM and Company load forecasts for the 2020 IRP. In addition, consistent with the Public Staff's recommendation, DENC stated that it is committed to studying the effects of the winter peak on its econometric and statistical forecast models either through its own analysis or that of an outside consultant. DENC noted that in its final order on its 2018 IRP and Compliance Filing,⁵ the VSCC directed DENC to continue to use the PJM load forecast, reduced by the energy efficiency spending requirement of Virginia Senate Bill 966, both as an energy reduction and a supply resource, and separately identify the

⁵ *In re: Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Va. Code § 56-597 et seq.*, Case No. PUR-2018-00065 (June 27, 2019) (VSCC Compliance Order).

load associated with data centers in its 2020 IRP. Therefore, DENC noted, the PJM load forecast is now required to be used in DENC's future full IRP filings.

With regard to smart meter data, DENC noted that Virginia now requires it to evaluate “[l]ong-term electric distribution grid planning and proposed electric distribution grid transformation projects” in preparing its full IRPs beginning with the 2020 IRP, and that information about the use of smart meters will also be part of DENC's Grid Transformation Plan, which it intends to refile with the VSCC in 2019. DENC also noted that its ability to use smart meter data to inform load forecasting, cost of service studies, and rate designs will be limited until it can fully deploy smart meters throughout its service territory. Nevertheless, DENC stated that it intends to use data from its smart meters to inform these matters when sufficient data is available.

Discussion and Conclusions

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission concludes that DENC's peak load and energy sales forecasts as presented in the Compliance Filing are reasonable for planning purposes. For future full IRP filings, starting with the 2020 IRP, the Commission agrees with the Public Staff's recommendation that the Company include both PJM and Company load forecasts. DENC's commitment to studying the effects of winter peaks on its forecast models, consistent with the Public Staff's recommendation, is also reasonable and should be reflected in its 2020 IRP. Additionally, given the revised load forecast contained in DENC's Compliance Filing and its and the Public Staff's comments, we decline to direct the backcast analysis recommended by EDF. As a final matter, the Commission concludes that it is appropriate for DENC to evaluate the application of

smart meter data to inform load forecasting and other topics when that data becomes available.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 2

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

Summary of the Evidence

Chapter 3 of DENC's IRP describes the existing and proposed supply- and demand-side resources that it plans to use to meet its forecasted load.

On the supply side, DENC owns a fleet of 100 generation units, including 4 nuclear, 12 coal, 4 natural gas-steam, 10 combined-cycles, 41 combustion turbines, 4 biomass, 2 heavy oil, 6 pumped storage, 14 hydro, and 3 solar with a total summer capacity of approximately 18,265 MW. DENC's existing generation fleet comprises a mix of generation resources with varying operating characteristics and fueling requirements. DENC also has contracted 905 MW of fossil-burning and renewable non-utility generators (NUGs), which provide firm capacity as well as associated energy and ancillary services to meet its load requirements. Section 3.1.2 of DENC's 2018 IRP also describes its existing renewable resources, as well as changes planned for its existing generation, including uprates and derates, environmental improvements, retirements and blackstart units, NUG contracts, wholesale power sales, and purchased power. This section also discusses DENC's other renewable energy efforts. Section 5.2 discusses additional solar generation under development by DENC, which is included in the 2018 IRP.

On the demand side, Chapter 3 describes the obligations imposed on DENC by the Virginia Grid Transformation and Security Act (GTSA), including development of proposed energy conservation measures with a projected cost of no less than \$870 million over ten years. The IRP also discusses DENC's current offerings of DSM and EE programs. The Public Staff's statements regarding DSM/EE programs will be address further herein under Finding of Fact No. 5.

Section 5.3 of the 2018 IRP discusses DENC's efforts to seek extensions of its nuclear licenses. DENC has filed a letter of intent with the Nuclear Regulatory Commission (NRC) to apply for subsequent license renewals (SLRs) of Surry Units 1 and 2 and North Anna Units 1 and 2.

In its comments, the Public Staff noted as it has in previous IRP comments that one of the most significant issues energy utilities face is the pending expiration of operating licenses for nuclear energy resources in the next 20 to 30 years. The Public Staff noted that the NRC has issued initial regulatory guidance documents that suggest an extension past the current 60-year licenses may be allowed in the future. Consistent with this guidance, the Public Staff acknowledged DENC's efforts in this regard. The Public Staff recommended that the Commission continue to direct DENC in future IRPs to include a discussion and evaluation of potential subsequent license renewals for each of its existing nuclear units, including an anticipated schedule for SLR application submission and review and an evaluation of the risks and required costs for upgrades. The Public Staff also stated DENC should continue to reflect any such relicensing plans in future IRPs. In its reply comments, DENC stated that it will continue to provide the recommended SLR information in future IRPs.

The Public Staff also discussed the solar additions contemplated in the Alternative Plans contained in the Compliance Plan, and noted the re-dispatch charge associated with higher levels of solar penetration calculated by DENC. The Public Staff recommended that DENC continue to discuss mitigation strategies to address the 2016 IRP comments of high levels of solar penetration and system operations, including revising and improving its estimates of both fixed and variable integration costs. The Public Staff also noted that, to the extent that DENC identifies required mitigation strategies to address the aggregate effect of distributed solar photovoltaic (PV) generation, such as the addition of supplemental combustion turbines (CT) to address generation volatility or ramp rates, those applicable costs should be assigned to the overall installed cost of solar.

EDF recommended that rather than use a model to estimate costs, the IOUs follow the approach used by the Midwest utility NIPSCO and issue an all-source RFP to obtain information regarding the cost of future supply options.

In reply, DENC stated that it is committed to continuing and improving its efforts to analyze solar integration costs and would provide the results of that effort in the 2020 IRP. With respect to the Public Staff's comment that any applicable costs related to mitigation strategy to address the aggregate effect of distributed solar PV, DENC noted that in its 2015 Update Filing and 2016 IRP, its model addressed the overall installed cost of solar by adding one solar-paired CT for each 1,000 MW of solar capacity in several of its plans. In its 2016 IRP, however, DENC committed to evaluate the "integration costs" of solar in future IRPs and then did so in its 2017 IRP update by determining the cost impact on generation operations at varying levels of solar

penetration. DENC explained that this impact was referred to as the “re-dispatch cost” and was used as a variable cost adder for all solar generation evaluated in the 2017 Update and 2018 IRP. DENC stated that it intends to further refine its integration costs analysis in future IRPs and IRP updates based on the methodology used in the 2017 and 2018 IRPs. As part of that analysis, DENC stated that it intends to consider the costs associated with any identified strategies to mitigate the aggregate effect of distributed solar PV on its system.

Finally, the Public Staff summarized the NUG information presented in DENC’s original filing, and commented on the inclusion of Figure 3.1.1.3 in the 2018 IRP, which provides capacity resource mix by unit type, including NUGs, and Appendix 3B, which provides non-company owned generation that includes NUGs. The Public Staff recommended that in future IRPs, DENC: (1) clarify its definition of a NUG facility and use that definition consistently throughout the IRP; (2) re-evaluate which generating facilities sell energy directly to DENC and identify them separately from facilities that do not; (3) separately identify facilities that sell energy/capacity directly to DENC from facilities that sell directly into PJM; and (4) maintain consistency with references to nameplate rating or equivalent firm capacity rating throughout the document. In its reply comments, DENC explained that based on discussions of these recommendations with the Public Staff, it agreed to make changes to its Appendix 3B and Figure 3.1.1.3 in future full IRPs to address the Public Staff’s concerns. In addition, DENC noted that it plans to provide an updated version of Appendix 3B as part of the 2019 IRP update filing to the extent the information is available.

Discussion and Conclusions

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission finds and concludes that the information and analysis presented in DENC's 2018 IRP and Compliance Filing relating to its evaluation of generation resources meets the requirements of Rule R8-60. The Commission also specifically finds and concludes that DENC's discussion and analysis of its nuclear relicensing plans, and its modeling of solar energy and capacity as presented in its 2018 IRP, is reasonable and appropriate for planning purposes in this docket. The Public Staff's recommendations for DENC's presentation of NUG information in its IRPs, as agreed to by DENC, are reasonable and appropriate and should be accepted. Consistent with these conclusions, the Commission rejects EDF's proposal that the utilities issue an all-source RFP.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 3

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

Summary of the Evidence

Chapter 4 of DENC's 2018 IRP discusses its Planning Assumptions, and states that DENC participates in the PJM capacity planning process for short- and long-term capacity planning. As a PJM member, DENC is a signatory to PJM's Reliability Assurance Agreement, which obligates it to own or procure sufficient capacity to maintain overall system reliability. PJM determines these obligations for each zone through its annual load forecast and reserve margin guidelines, and then conducts a capacity auction through its Short-Term Capacity Planning Process for meeting these

requirements three years into the future. This auction process determines the reserve margin and the capacity price for each zone for the third year. DENC is obligated to obtain enough capacity to cover its PJM-determined capacity requirements either from the auction or through bilateral trades.

DENC uses PJM's reserve margin guidelines in conjunction with its own load forecast to determine its long-term capacity requirement. PJM's 2017 Reserve Requirement Study recommended using a reserve margin of 15.9%. DENC uses a coincidence factor to account for the historically different peak periods between DENC and PJM and determine the reserve margin needed to meet reliability targets. The coincidence factor reduces DENC's reserve margin requirement to 11.7%. The same 11.7% requirement was utilized in the Compliance Filing.

The Public Staff stated that DENC's calculation of the adjusted reserve margin and the coincidence factor appear reasonable for planning purposes and recommended that DENC maintain its proposed reserve margins as presented. The Public Staff also discussed the manner in which DENC assigns solar and wind resources a percentage of their nameplate capacity towards meeting summer and winter peak demand when calculating its reserve margin (the "capacity value"). Noting that DENC's proposed capacity values for solar are significantly lower than the PJM class average, the Public Staff commented that DENC should continue to evaluate renewable resources' contribution to coincident peak and update its models to reflect the additional research. The Public Staff clarified that while it is not recommending the 2018 IRP be re-filed with revised capacity values, in future IRPs, DENC should be required to: (1) provide PJM's capacity value for renewable resources as a comparison benchmark; and (2) to

the extent that DENC's calculated capacity values or methodology differ from PJM's, provide a justification for the difference. The Public Staff also recommended that in future IRPs, DENC evaluate the "feasibility and benefits of advanced analytic techniques that incorporate sub-hourly modeling, more granular system performance data, probabilistic analysis, and to the extent these advanced analytics are available at reasonable cost, utilize these resources to provide better information and understanding on optimizing reserve margin needs, as well as overall system performance."

In its reply comments, DENC stated that it does not oppose the Public Staff's recommendation that, in future IRPs, DENC should provide information regarding PJM's capacity value for renewable resources as well as a justification for any difference between DENC's and PJM's calculated capacity values or methodology. Accordingly, DENC stated that it would provide such information in its 2019 IRP update. In addition, DENC noted that the VSCC has directed DENC to, in future full IRPs, model future solar PV tracking resources using two alternative capacity factor values: (a) the actual capacity performance of Company-owned solar tracking fleet in Virginia using an average of the most recent three-year period; and (b) 25%. Finally, DENC stated that it will evaluate incorporating a sub-hourly analysis into the 2020 IRP. DENC noted that because it uses internal information to establish the adjusted reserve margin and coincidence factor and the use of advanced analytical techniques requires a level of detail not provided in the PJM forecast, it will therefore use available internal data and forecasts when evaluating the feasibility and benefits of advanced analytical techniques in the 2020 IRP.

Discussion and Conclusions

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission concludes that the reserve margin included in DENC's 2018 IRP and Compliance Filing is reasonable for planning purposes in this docket and should be accepted. In addition, the Commission accepts the Public Staff's recommendation, which DENC agreed to implement beginning with its 2019 IRP update, that, in future IRP filings, DENC should provide information regarding PJM's capacity value for renewable resources and a justification for any difference between DENC's and PJM's calculated capacity values or methodology. Based on DENC's obligation to comply with the VSCC's directives regarding modeling of solar PV capacity factors, the Commission concludes that this recommendation is reasonable. Finally, based on DENC's reply comments, the Commission finds DENC's agreement to evaluate incorporating a sub-hourly analysis into the 2020 IRP to be reasonable, as well as its plan to use available internal data and forecasts.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 4

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

Summary of the Evidence

The Public Staff noted that DENC's 2018 annual system peak of 17,792 MW occurred on January 7, 2018, at the hour ending 8:00 a.m., at system-wide temperature of 7 degrees. In addition, the Public Staff stated that DENC's summer system peak of 16,528 MW occurred on July 2, 2018, at the hour ending 5:00 p.m., at a system-wide temperature of 91 degrees. According to the Public Staff, DENC activated its DSM

resources during both the winter and summer seasonal peaks. With respect to DSM activations during its 15 highest peak loads from July 2017 through August 2018, the Public Staff noted that DENC activated its Residential AC Cycling program nine times and its Distributed Generation program thirteen times over the fifteen highest peak demands.

The Public Staff acknowledged that load conditions, energy prices, generation resource availability, and customer tolerance for the use of DSM are all important considerations in determining which DSM resources should be deployed. It further noted that use of DSM resources is largely dependent on the circumstances and cannot be prescribed in any definitive manner. Nevertheless, the Public Staff concluded that the utilities should maximize the use of their DSM to reduce fuel costs, especially when marginal costs of energy are high.

With respect to DENC, the Public Staff noted its concern with the difference in DSM resources available in the winter and the summer due, in part, to the fact that the winter season programs are typically not cost effective. In particular, the Public Staff noted that DENC activated its distributed generation program during its 2018 winter peak and most of the other near peaks during the winter season; however, the activations only led to a four MW to six MW load reduction. Accordingly, and consistent with its recommendation to DEC and DEP, the Public Staff recommended that each utility investigate and implement any cost-effective DSM that would be available to respond to the growth of the winter peak demands.

DENC stated that it will continue to identify and seek approval to implement DSM and EE programs that are cost effective or meet public policy goals. With respect

to the design of DSM programs to meet winter as well as summer peak demands, DENC commented that its Distributed Generation program is currently available in Virginia during winter periods to non-residential customers who meet participation requirements based upon size. DENC further explained that it recently received approval for a demand response residential thermostat control program in Virginia and will be filing for approval of that program in North Carolina in July 2019. In addition, DENC commented that 10 new EE programs addressing both summer and winter peaks as well as energy requirements were approved by the VSCC in May 2019 and will be brought to the Commission for approval in July 2019. DENC explained that while demand response programs can be used to reduce peak periods explicitly, EE programs can also provide reductions during winter hours. Nevertheless, DENC noted that these reductions are not dispatchable and instead occur because a measure installed through the program is providing energy savings during a peak hour and thus providing a winter peak reduction. DENC underscored that since the actual system peak drives the need for additional resources to meet reliability requirements, it is difficult for programs that provide benefits in mainly non-peak hours to provide a meaningful amount of benefits. Finally, DENC noted that it is participating in a stakeholder process required by the GTSA to help it identify potential opportunities for EE and demand response and is hopeful this will lead to additional DSM resources in the future that will address both summer and winter peak hours.

Discussion and Conclusions

The Commission recognizes that load conditions, energy prices, generation resource availability, and customer tolerance for the use of DSM are all important

considerations in determining which DSM resources should be deployed and that use of DSM resources is largely dependent on the circumstances and cannot be prescribed in any definitive manner. With respect to the Public Staff's comments regarding the difference in DSM resources available in the winter compared to the summer, we find that DENC is already taking appropriate steps to investigate and implement any cost effective DSM that would be available to respond to the growth of winter peak demands, and note in particular DENC's plans to bring the new DSM/EE programs that have been approved by the VSCC to North Carolina for our review. Accordingly, the Commission does not find it necessary to make any further recommendation at this time.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 5

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

Summary of the Evidence

As discussed in support of Finding of Fact No. 2, DENC describes its existing and planned demand-side resources, including current and proposed DSM and EE programs, and current consumer education programs, in Chapter 3 (specifically, Section 3.2) of the 2018 IRP.

The Public Staff's review of DENC's DSM/EE forecasts and programs indicated that DENC complied with the requirements of Commission Rule R8-60 and previous Commission orders regarding the forecasting of DSM and EE program savings, as well as the presentation of data related to those savings. In particular, the Public staff noted that DENC's EE programs have undergone significant changes since the 2017 IRP update. As the Public Staff explained, DENC's portfolio relies heavily on the DSM and

EE portfolio available in Virginia and the decisions made by the VSCC regarding that portfolio. The Public Staff noted that DENC's 2018 IRP reduced the energy savings by 30% over the planning horizon from the savings that were identified in the 2017 IRP update due, in large part, to the cancellation of several programs in Virginia that were offered on a system-wide basis. The Public Staff acknowledged that it has worked with DENC to evaluate whether any of the cancelled programs can continue to be offered on a North Carolina-only basis and when it can be offered cost-effectively even in the short term, DENC has requested approval from the Commission. The Public Staff recommended that DENC continue to evaluate the potential to cost-effectively implement an EE program on a North Carolina-only basis, anytime DENC is denied approval by the VSCC to implement the program on a system-wide basis.

The Public Staff noted further that DENC completed a market potential study in late 2017 that identified 3,042 GWhs of achievable savings over a 10-year period, and stated that DENC indicated that it did not incorporate any of the measures identified in the study in its 2018 IRP. The Public Staff stated that much of the economic potential for residential and non-residential sectors lies in lighting and space heating and cooling measures, and observed from the report that (1) there are no recommendations on specific measures that would contribute toward the achievable potential going forward for either case, and (2) the achievable potential excludes the impacts of customers who are eligible to opt out of utility-sponsored EE portfolios. The Public Staff also noted that DENC has initiated an EE stakeholder process as required by the GTSA, and that meetings have occurred and are likely to continue in the future with the intent of

bringing interested parties, including the Public Staff, together to discuss how EE can be implemented in Virginia.

The Public Staff recommended further that DENC continue to explain any changes of its savings projections that are more than 10% different than the previous IRP or IRP update, and that it should identify any changes in EE-related technologies, regulatory standards, or other trends that would impact future projections of EE savings regardless of the 10% threshold. The Public Staff recommended that these changes and trends should receive more detailed discussion in the IRPs.

In response to the Public Staff's recommendation, DENC confirmed that it will continue to consider North Carolina-only basis programs if the VSCC does not approve a filed program.

In addition, DENC noted that it has recently contracted for a new appliance saturation study, conditional demand analysis, and market potential study to reflect changes in stock, standards and potential for energy consumption and reductions. DENC explained the importance of the study given the exclusion of larger customers due to the passage of the GTSA in Virginia. As DENC explained, many of the measures reflected in the 2017 market potential study are already included in current Company-sponsored programs. DENC noted that the most current market potential study is provided to vendors (so they are aware of potentially cost effective measures) when it issues a solicitation for new DSM program designs. Of note, the market potential study is performed by an outside vendor and reflects its high level screen based upon the Total Resource Cost test only. DENC stated that any proposed program would

be analyzed by DENC for feasibility and cost-effectiveness prior to filing with a commission for implementation.

DENC stated that the VSCC approved all 11 proposed DSM programs, including 10 EE programs, by order issued May 2, 2019, that applications to the Commission for approval of each of these programs was under development, and that it plans to submit those applications in July 2019. For clarification, DENC noted that while the Public Staff comments characterized the GTSA as “requiring” it “to spend” \$870 million over the next 10 years on EE, the GTSA requirement is for DENC to *propose* programs that spend that amount on EE over the next decade. DENC stated that it intends to propose programs that meet the required spending amount, but implementation of those programs would be dependent on VSCC approval.

Finally, DENC stated that it is willing to comply with the Public Staff’s recommendations regarding explanation of changes of savings projections that are more than 10% different than the previous IRP or IRP update, and identification of any changes in EE-related technologies, regulatory standards, or other trends that would impact future projections of EE savings regardless of the 10% threshold.

Discussion and Conclusions

Based on the foregoing, the comments of the parties, and the entire record in this proceeding, the Commission concludes that DENC has complied with the requirements of Commission Rule R8-60 and previous Commission orders regarding the forecasting of DSM and EE program savings, as well as the presentation of data related to those savings. In addition, the Commission agrees with the Public Staff’s recommendation that DENC should continue to evaluate the potential to cost-effectively implement an

EE program on a North Carolina-only basis, anytime DENC is denied approval by the VSCC to implement the program on a system-wide basis. The Commission further acknowledges and commends DENC's efforts to date to work with the Public Staff and seek Commission approval of North Carolina-only programs. The Commission recognizes DENC's stated willingness to comply with the Public Staff's recommendations regarding changes in savings projects, and will anticipate DENC including this information in future IRP filings, but does not see any need to impose any additional, affirmative reporting requirements on DENC at this time.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 6

The evidence supporting this finding is contained in DENC's 2018 IRP and the record in this proceeding. In the Commission's final order in the 2016 IRP proceeding, Docket No. E-100, Sub 147 (2016 Final Order), the Commission acknowledged the uncertainties existing at that time with regard to carbon regulation generally and specifically as to the Clean Power Plan. The Commission also, however, stated its expectation that the utilities continue to analyze the impacts of carbon emissions under different scenarios in their planning.

Summary of the Evidence

DENC indicated in its 2018 IRP that it believes carbon regulation will occur in the future. In Section 6.4 of the IRP, DENC included a least cost plan with no carbon constraints (Plan A), and four compliance plans with state and federal carbon constraints (Plans B through E). Similarly, while the potential for Virginia to join the Regional Greenhouse Gas Initiative (RGGI) or to create an intrastate RGGI-type program specific to the Commonwealth is unresolved, DENC has considered the carbon emission

reductions necessary for a RGGI-like program in its Plans B, C, and D. In Section 3.1.3.1 of the 2018 IRP, DENC presents the most likely scenario for a RGGI program in which Virginia's carbon emissions for 2020 are capped at 33 to 34 million tons with a 3% per year reduction for 10 years.

No party objected to DENC's treatment of the potential for carbon regulation in its 2018 IRP.

Discussion and Conclusions

As it did in the 2016 Final Order, the Commission acknowledges the continued uncertainties with regard to carbon regulation. The Commission also, however, continues to expect the utilities to analyze the impacts of carbon emissions under different scenarios in their planning. Based on the foregoing, the Commission concludes that DENC has met this expectation and that the methodologies it used to address carbon in its 2018 IRP are appropriate for planning purposes pending further federal and state actions that provide clarity on the possibility of carbon regulation.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 7

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

Summary of the Evidence

DENC performed a comprehensive risk analysis of each of its portfolios in its 2018 IRP, but did not rerun the analysis for the revised Alternative Plans presented in the Compliance Filing. This approach identified key sources of "portfolio risk" within each of the Alternative Plans, including natural gas prices, natural gas basis, coal prices,

oil prices, load, hourly solar generation, CO2 emission allowance prices, and new generation capital costs. To perform the analysis, DENC used a stochastic (probabilistic) model—AURORA— to run many possible futures in hundreds of iterations, each of which creates variations in key drivers of portfolio risk, utilizing Monte-Carlo techniques. The model runs are then distilled into an expected levelized cost, a standard deviation, and an “upward” standard deviation to calculate the adverse cost risk to DENC’s customers.

The Public Staff found that DENC’s approach of analyzing various Alternative Plan scenarios for exposure to fuel price volatility and customer rate impacts, and of utilizing a probabilistic risk assessment framework, provides insightful information to its customers and the Commission, and recommended that it continue to provide comprehensive risk analysis of Alternative Plans in future IRPs and IRP updates.

In its reply comments, DENC stated that it plans to continue to provide comprehensive risk analyses in each full IRP filing, including for the 2020 IRP, but does not support providing this level of analysis in the IRP updates consistent with the IRP update requirement to summarize “significant amendments or revisions to the most recently filed biennial report.” DENC explained that the comprehensive risk analysis process is resource-intensive and requires approximately five months to complete as a result of the need to (1) model the entire Eastern Interconnect in the AURORA model, and (2) generate 200 simulations of the model for individual risk factors. As DENC explained, because the 2019 IRP update is due in less than two months, it does not have sufficient time to provide the additional analysis recommended by the Public Staff.

Discussion and Conclusions

The Commission recognizes that risk analyses, such as that utilized by DENC, may better inform the IRP process. However, the Commission declines to adopt the recommendation of the Public Staff to require that the analysis be re-run for IRP updates as it would place an impracticable and undue burden on DENC given the time required to complete the analysis. DENC should continue to provide comprehensive risk analysis of Alternative Plans in future full IRPs.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 8

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

Summary of the Evidence

DENC's 2018 IRP and Compliance Filing present the incremental cost of compliance of each of the Alternative Plans compared to the least cost option (Alternative Plan A).

The Public Staff commented that as a result of the VSCC 2018 IRP Order, the incremental compliance costs of the legislation contemplated in the Alternative Plans increases significantly, as Alternative Plan A is stripped of many of the legislative mandates that added costs. The Public Staff likewise noted that in DENC's original 2018 IRP, DENC demonstrated the rate impact of each Alternative Plan over the planning horizon, but commented that those estimates are no longer valid due to the changes in investment decisions for the planning horizon reflected in the Compliance Filing. The Public Staff recommended that DENC submit as a supplemental filing in

this proceeding the recalculated rate impact analysis of the modified Alternative Plans found in its Compliance Filing.

In response to the Public Staff's recommendation, DENC explained that the data underlying the analysis of the Alternative Plans contained in the Compliance Filing would not provide an accurate snapshot of the potential rate impact of the modified Alternative Plans contained in the Compliance Filing because it is more than one year old. As an alternative to the Public Staff's proposal for a supplemental filing in this proceeding, DENC asked the Commission to permit DENC to provide an updated rate impact analysis of the Alternative Plans in its 2019 IRP update that is due to be filed by September 1, 2019.

Discussion and Conclusions

The Commission agrees with DENC that a recalculated rate impact analysis of the modified Alternative Plans found in DENC's Compliance Filing would be of little utility since the underlying data is more than a year old. Accordingly, the Commission finds that DENC should provide an updated rate impact analysis of the Alternative Plans in its 2019 IRP update, rather than as a supplement to this docket.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 9

The evidence supporting this finding is contained in DENC's 2018 IRP and Compliance Filing and the record in this proceeding.

In the 2016 Final Order, the Commission required the utilities to "provide in future IRPs or IRP updates a more complete and thorough assessment of battery storage technologies including the 'full value' as discussed in the NCSEA comments. If the standard technical and economic analyses of generation resources somehow preclude the

complete and thorough assessment of battery storage technologies, then a separate discussion of this point should be included in the IRPs.”

Summary of the Evidence

DENC addressed battery storage at Section 5.1.2 of the 2018 IRP and Section 3.c.iv of the Compliance Filing. As referenced in the Compliance Filing and by the Public Staff, in addition, the GTSA requires DENC to submit a proposal to deploy a battery storage pilot of up to 30 MW.

The Public Staff acknowledged DENC’s recognition that energy storage could have value to provide grid stability as more renewable energy sources are integrated into the grid and could reduce the intermittency of wind and solar generation. The Public Staff contended, however, that DENC did not comply with the Commission’s directive to assess battery storage technology. The Public Staff noted that DENC did not consider battery storage technologies for further analysis in its busbar curve, and asserted that DENC did not appear to thoroughly assess battery storage technologies and did not otherwise justify their absence from the IRP. The Public Staff therefore recommended that DENC be required to submit a supplemental filing to its 2018 IRP with a more detailed analysis of why battery storage technologies were excluded from its busbar curves, including a quantitative analysis of energy storage costs. The Public Staff also encouraged DENC to address how its solar integration cost estimates are affected by battery storage, including a discussion of whether the legislatively mandated 5,000 MW of solar could be more cost effectively integrated if coupled with energy storage techniques. The Public Staff suggested that DENC should also be required to file this information in future IRPs and IRP updates.

In its reply comments, DENC noted that many types of technologies can store energy, including electrical, thermal, mechanical, and electrochemical technologies. DENC explained that hydroelectric pumped storage, a form of mechanical energy storage, accounts for the greatest share of large-scale energy storage power capacity in the United States. DENC explained further, however, that large-scale energy storage capacity additions since 2003 have been almost exclusively electrochemical (or battery) storage. According to DENC, as of May 2019, there has been limited operating experience in utility scale applications of batteries with 901 MW for the entire United States (298 MW in PJM).

DENC further explained that it is in the early stages of battery research and has relied on publically available industry guidance regarding battery storage projects to help evaluate the technology's merits as compared to traditional generation sources. DENC acknowledged that battery storage can be a viable future option for peak shifting at a stand-alone storage facility or while co-located at a solar farm and may also improve overall energy production at a solar facility via capturing energy that may be clipped by the inverters.

Because battery storage is still in its early stages of development, DENC stated that the estimates for a battery storage facility in the 2018 IRP were more reflective of a pilot program versus a larger utility scale facility. In addition, DENC explained that CTs can provide backup for periods of lower production from solar facilities, such as prolonged weather patterns or projected variations in capacity factors over the course of a year. DENC stated that CTs in the 2018 IRP short-term action plan were slated for deployment in 2022 and 2023, at approximately 458 MW nominal capacity per facility

and an overnight installed cost of \$476 per kilowatt (kW). According to DENC, pricing of an equivalent battery storage facility was not cost competitive based on those 2018 estimates. As a result, based on the 2018 economics and technology, DENC stated that it does not expect battery storage facilities to significantly displace CT facilities supplementing the solar generation profile within the next several years.

DENC stated that in the 2018 IRP, it screened out battery storage resources as part of its future resource analysis because of (1) limited utility scale operating experiences, (2) PJM being in the process of revising its tariffs for energy storage resources due to FERC Order 841, and (3) high costs. In the Compliance Filing, a 30 MW battery storage pilot program was available as an option in the “final” PLEXOS IRP modeling based on the directive in the VSCC 2018 IRP Order. DENC stated that the 30 MW battery storage pilot was not chosen by the model as a least-cost option in Plan A. According to DENC, this validates its decision in the 2018 IRP to screen out battery storage resources in its 2018 IRP future resource process because of their then (i.e., 2018) high cost relative to their benefits as a generating resource. Nevertheless, DENC acknowledged that the battery storage pilot was forced into all other Plans (Alternative Plans B through F) as required by the VSCC 2018 IRP Order.

Notwithstanding their treatment in the 2018 IRP, DENC stated that it will include battery storage and other energy storage options such as pumped storage facilities in the busbar analysis and provide the results of that revised analysis in its 2019 IRP update.

Finally, DENC stated that it disagrees with the recommendation from Public Staff that the Commission require DENC to submit a supplemental filing to specifically address how its solar integration cost estimates are affected by battery storage.

According to DENC, it will not have sufficient information to analyze the effect on solar integration for the 2020 IRP because DENC's experience with battery storage technologies is still in its early stages of development. Nevertheless, DENC stated that it will continue to assess battery storage technologies in future IRPs and IRP updates as required by prior Commission orders, and will report and incorporate the results of any relevant experience with battery storage. As part of that effort, DENC will as directed by the VSCC Compliance Order model battery storage using the most updated cost estimates available in its future full IRP filings.

Discussion and Conclusions

The Commission recognizes the potential role that battery storage could play with respect to intermittent distributed generation such as solar and wind. However, the Commission also recognizes the current challenges to implementation as a result of cost-effectiveness, reliability, and useful lives of battery technologies. In light of these limitations and the information provided by DENC in its reply comments regarding its ongoing assessment of battery storage options, as well as its intent to incorporate the results of such assessments in future IRP filings, the Commission declines to require DENC to submit a supplemental filing on the topic at this time.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 10

The evidence supporting this finding of fact is contained in the record in this proceeding and in DENC's 2018 REPS Compliance Plan.

Summary of the Evidence

DENC filed its 2018 REPS Compliance Plan with its 2018 IRP in this proceeding on May 1, 2018. DENC indicated that it plans to meet North Carolina's statutory goals during the planning period through the use of Renewable Energy Certificates (RECs), EE and new company-generated renewable energy where economically feasible. As noted by DENC, G.S. 62-133.8(d) sets the compliance target for solar in years 2018, 2019, and 2020 at 0.20% of the previous year's total electric power sold to retail customers in North Carolina. In its October 8, 2018 *Order Modifying the Swine and Poultry Waste Set-Aside Requirement and Providing Other Relief*, the Commission reduced the initial swine waste set-aside requirement for the IOUs to 0.02% and modified the poultry waste set-aside aggregate requirement to 300,000 MWh. DENC indicated that it will continue implementing 17 EE programs in North Carolina to meet the REPS requirement.

DENC stated that the programs will contribute to the overall REPS goals, subject to approval by the Commission. DENC also stated that it is responsible for meeting the REPS requirements for the Town of Windsor, one of its wholesale customers. DENC also noted that it has unique flexibility to meet both its obligations and the Town of Windsor's requirements, with out-of-state RECs, in accordance with the Commission order of September 22, 2009, that clarified that DENC may use out-of-state RECs to meet all of its REPS requirements per G.S. 62-133.8(b)(2e).

DENC also indicated that its strategy for compliance with solar requirements is to buy unbundled solar RECs to minimize the compliance cost to the ratepayers. DENC has purchased or entered into contracts to purchase solar RECs for its compliance with G.S. 62-133.8 (d) through 2020, which will provide enough solar RECs to satisfy its

compliance for the years 2018-2020. DENC has also executed contracts with solar facilities in North Carolina to satisfy the in-state portion of the Town of Windsor's compliance requirements for the years 2018-2020.

DENC noted that it joined a collaborative Swine Waste REC Buyers Group in 2012 to help meet its Swine Waste Set-Aside requirements in 2018-2020. DENC also reported that independent of that group, it has executed swine waste to energy contracts with two suppliers. DENC stated that it has sufficient RECs in NC-RETS to meet the 2018-2020 Swine Set-Aside requirements.

Similar to its efforts with the swine waste requirements, DENC stated that it joined the Poultry REC Buyers Group in 2012 to meet its Poultry Waste Set-Aside requirement, which initially executed two long-term poultry waste contracts for DENC (as part of the Buyers Group) and two long-term contracts for the Town of Windsor's in-state requirements. One of these contracts was terminated by mutual agreement in 2013. As a result, DENC and the Poultry REC Buyers Group requested Commission approval for an RFP for a new Poultry Waste Set-Aside contract(s). This request for an RFP was granted and resulted in two additional contracts. DENC indicated that it will likely have enough in-state RECs for Town of Windsor compliance with the Poultry Set-Aside in 2018 and DENC is reasonably confident Town of Windsor will be in compliance with the Poultry Set-Aside in 2019 and 2020. DENC stated that it has continued to search for opportunities to purchase poultry waste RECs in North Carolina and throughout the United States, and these efforts yielded multiple poultry waste REC contracts to enable compliance with both DENC's and the Town of Windsor's out-of-state requirements for years 2018, 2019, and 2020.

DENC indicated that it plans to comply with the general REPS requirements, which began in 2012, using a combination of the approved options to include obtaining qualifying RECs, applying EE programs, and using company-generated new renewable energy that qualify under North Carolina law. DENC provided a list of the EE programs and resulting potential savings based on a projected system allocation. For the Town of Windsor, DENC stated that it plans to comply with the general REPS requirements using its Southeast Power Administration allocation of hydroelectric RECs, in-state solar RECs, in-state biomass RECs and out-of-state biomass RECs.

In accordance with the requirements of Rule R8-67, DENC's REPS Compliance Plan listed for itself and, where applicable, for the Town of Windsor: projected North Carolina retail sales and year-end number of customer accounts by customer class for each year of the planning period; a statement regarding current and projected avoided cost rates for each year of the planning period; projected total and incremental costs anticipated to implement its REPS Compliance Plan for each year of the planning period; and a comparison of projected costs to the annual cost caps contained in G.S. 62-133.8(h)(4). Finally, DENC provided an estimate of the amount of the REPS rider necessary to fully recover the projected costs.

The Public Staff stated in its comments that DENC has contracted for and banked sufficient resources to meet the REPS requirements under G.S. 62.133.8(b)-(d). No other party commented on DENC's REPS Compliance Plan.

Discussion and Conclusions

Based on the foregoing, the Commission's review of DENC's 2018 REPS Compliance Plan, and the entire record in this proceeding, the Commission concludes

that the 2018 REPS Compliance Plan submitted by DENC is reasonable for purposes of this proceeding and should be approved.

IT IS, THEREFORE, SO ORDERED, as follows:

1. That this Order shall be, and is hereby, adopted as part of the Commission's current analysis and plan for the expansion of facilities to meet future requirements for electricity for North Carolina pursuant to G.S. 62-110.1(c).
2. That DENC's forecasts of native load requirements and other system capacity or firm energy obligations, supply-side and demand-side resources expected to satisfy those loads, and reserve margins are reasonable for planning purposes, and the Commission accepts DENC's 2018 IRP, as modified by the Compliance Filing, as filed in this docket.
3. That the 2018 REPS Compliance Plan filed by DENC is hereby accepted.
4. That DENC, in the preparation of future IRPs and, as applicable, IRP updates, shall adhere to the conclusions and directives of the Commission documented in the body of this Order.

ISSUED BY ORDER OF THE COMMISSION.

This the ____ day of _____, 2019.

NORTH CAROLINA UTILITIES COMMISSION

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing *Proposed Order*, as filed in Docket No. E-100, Sub 157, were served electronically or via U.S. mail, first-class, postage prepaid, upon all parties of record.

This, the 26th day of July, 2019.

/s/Nicholas A. Dantonio

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