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May 19, 2025

Via Electronic Filing

Mr. Bernard Logan, Clerk
State Corporation Commission
Document Control Center
1300 East Main Street - 1st Floor
Richmond, VA 23219

Re: Commonwealth of Virginia, Ex Rel. State Corporation Commission In re: Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Virginia Code§ 56-597 et seq.
Case No. PUR-2024-00184

Dear Mr. Logan:

Enclosed for filing in the above referenced matter is the *Post Hearing Brief of Microsoft Corporation ("Microsoft")*, in the above referenced matter.

Pursuant to Rule 140 of the Commission's Rules of Practice and Procedure, Microsoft is providing service of documents in this case exclusively via email unless parties request otherwise. If any party copied on this correspondence would like to receive hard copies of documents, such party is asked to let me know that.

Thank you for your attention to this matter.

Sincerely,

Cliona Mary Robb

Enclosures

cc: Certificate of Service
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COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

COMMONWEALTH OF VIRGINIA, *ex rel.*

STATE CORPORATION COMMISSION

CASE NO. PUR-2024-00184

In re: Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Va. Code § 56-597 *et seq.*

POST HEARING BRIEF

OF

MICROSOFT CORPORATION

May 19, 2025

COMMONWEALTH OF VIRGINIA, *ex rel.*

STATE CORPORATION COMMISSION CASE NO. PUR-2024-00184

In re: Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Va. Code § 56-597 *et seq.*

Post Hearing Brief of Microsoft Corporation

Pursuant to Rule 200 of the Rules of Practice and Procedure of the State Corporation Commission ("Commission")[1] and the ruling of Judge Hudson at the conclusion of the evidentiary hearing on April 18, 2025, Respondent Microsoft Corporation ("Microsoft"), by counsel, hereby files this Brief in support of its positions in the above-captioned proceeding.

Microsoft is a major consumer of electricity in Virginia and Dominion's service territory. As a significant component of its business model, Microsoft owns and operates data centers that provide cloud services, enabling critical business and societal functions. This effort supports economic development in Virginia, currently employing more than 684 full-time employees and contractors across its existing Virginia data center campuses. Microsoft also invests to meet its sustainability targets. Procuring reliable, sustainable, and cost-effective energy is one of the key factors in Microsoft selecting the location of data centers and other operations, and consequently Microsoft urges the Commission to focus on the critical aspect of resource adequacy presented by Dominion's 2024 IRP, while also keeping an eye on meeting sustainability targets in future IRPs.[2]

[1] 5 VAC 5-20-200.

[2] *See* Microsoft Notice of Participation filed on January 17, 2025 at 2, Hearing Exhibit 38 (Stover Direct Testimony at 1-2.

Microsoft's issues matrix is attached as Exhibit A to this Brief. Microsoft takes no position on what Commission requirements for IRPs have grown stale over the passage of time and defers to other parties with more extensive experience in intervening in IRP proceedings to provide the Commission with constructive comments on that topic.

I. Introduction

Microsoft endorses the Commission providing guidance to Dominion on enhancements to modeling and forecasting for future IRPs. While there was considerable debate during the evidentiary hearing on the merits of Dominion's 2024 IRP, Microsoft has the sense that there is significant support among other respondents for these modeling and forecasting enhancements. The Staff of the Commission ("Staff")[3] and the Attorney General's Office of Consumer Counsel ("Consumer Counsel")[4] do not oppose approval of the 2024 IRP as a planning document and urge Dominion to improve modeling and forecasting in its future IRPs going forward. This more neutral stance is significant because it comes from the Staff, which expended a considerable amount of time and effort assessing the 2024 IRP, and from the Consumer Counsel, which represents ratepayer interests.

Consensus on this point is significant because it is vital that the Commission focus on enhancements to future IRPs rather than having Dominion spend more effort on its 2024 IRP. Dominion has to address resource adequacy in an increasingly complex planning environment. It would best serve the interests of all Dominion's customers in keeping the lights on and continue toward meeting the decarbonization targets outlined under the Virginia Clean Economy Act

[3] Tr. at 108, 118 (Opening Statement by Staff Counsel), stating that Staff "does not make a recommendation that the *2024* IRP be found unreasonable," and confirming that Staffs eeks clarity and information "for the Company's *future* IRP filings" (emphasis added).

[4] Tr. at 107 (Opening Statement by Consumer Counsel), stating "Consumer Council does not at this time oppose the Company's IRP for the limited purpose for which it is filed under the IRP statutes."

(VCEA), for the Commission to direct Dominion to enhance future IRPs. Distractions by issues better addressed in other Commission dockets, and amendments to the 2024 IRP without a clear connection to the facts on the ground in Virginia, would not serve the public interest.

Dominion's 2024 IRP is sufficient for addressing resource planning based on a snapshot in time in 2024. The Commission should recognize it as such and direct Dominion's energies to enhancing future IRPs. Microsoft agrees with the Staff that this snapshot is "fuzzy around the edges."[5] Dominion can make improvements to address a more complex planning environment and produce a clearer image in the 2026 IRP.

II. Summary

A. Giving Due Weight to Governing Statute

Some parties urge the Commission to deny approval of the 2024 IRP because it does not provide what they deem sufficient answers to zero carbon emissions resources or data center cost allocation[6] or demand side management programs. Microsoft recognizes the importance of all these topics, but giving them undue weight in this integrated resource planning docket will result in the Commission failing to comply with its legal obligations under the Electric Utility Integrated Resource Planning Statute, Va. Code § 56-597 et seq ("IRP Statute") to assess resource adequacy.

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[5] Tr. at 118-119 (Opening Statement by Staff counsel).

[6] Hearing Exhibit 31 (Extracting Profit from the Public: How Utility Ratepayers Are Paying for Big Tech's Power) addresses allegations of cost subsidies with examples that have no nexus to Virginia and are in flat contradiction of the findings of Hearing Exhibit 8 (JLARC Report) at 44, which focused exclusively on Virginia and determined that "data centers are currently paying full cost of service." The JLARC Report at 49 also advised that "utilities and SCC are in the best position to address future cost concerns through cost allocation and rate design." This is precisely the task being addressed in the 2025 Biennial Review Docket. Accordingly, the *Extracting Profit* exhibit should be given no weight by the Commission, particularly when there was no ability to address it in any pre-filed testimony, in contrast to the JLARC Report and the IRP Best Practices Guide, both of which were addressed in Dr. Stover's Direct Testimony and other parties' pre-filed testimony in this docket.

The Commission does indeed have responsibility for doing in-depth assessments of zero carbon emissions resources, data center cost allocation and demand side management programs, but that responsibility is best exercised in ongoing Commission proceedings that develop a robust record focused solely on these issues. For example, issues regarding zero carbon emissions compliance have just recently been addressed in the renewable portfolio standards docket, Case No PUR-2024-00147 ("RPS Docket").[7] Data center allocation is currently being addressed in Dominion's biennial review docket, Case No. PUR-2025-00058 ("2025 Biennial Review Docket").[8] And demand side management programs are currently being addressed in the DSM docket, Case No PUR-2024-00222 ("DSM Program Docket").[9]

Consequently, in this docket Microsoft urges the Commission to focus on its duty to assess resource adequacy obligations under the IRP Statute and determine (a) whether the Commission should accept Dominion's 2024 IRP as a planning document based on a snapshot in time and (b) whether the Commission should provide guidance for future IRPs. Microsoft believes that when the Commission duly considers resource adequacy, the Commission would determine that the 2024 IRP should be accepted and also determine that additional guidance is needed for future IRPs.

B. Complying with the Virginia Clean Economy Act

As discussed in Section III. D of this Brief, the 2024 IRP satisfies and surpasses Dominion's obligations under the VCEA to petition for approval of solar, wind, and energy

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[7] *Petition of Virginia Electric and Power Company for approval of its 2024 RPS Development Plan under § 56 585.5 D 4 of the Code of Virginia and related requests*, Case No. PUR-2024-00147, Final Order at 7, 11 (Apr. 15, 2025).
[8] *Application of Virginia Electric and Power Company for a 2025 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia*, Case No. PUR-2025-00058, Application at 11-14 (Mar. 31, 2025); *id.*, Stuller Testimony at 5-9 (Mar. 31, 2025).
[9] *Application of Virginia Electric and Power Company for approval of its 2024 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2024-00222, Order for Notice and Hearing at 1-3, 11-12 (Jan. 27, 2025); *id.*, Application at 1-2, 4, 6-12, 20-21 (Dec. 13, 2025).

storage resources by 2035, pursuant to its VCEA-compliant portfolios. As described in Section III. D, Dominion sets forth in the 2024 IRP how it intends to meet its obligations under the VCEA, which require Dominion, in proceedings separate from this IRP proceeding, to petition for certain resources with no carbon emissions, to match specific percentages of its load with renewable energy certificates ("RECs") from certain resources with no carbon emissions, and to annually submit a plan and submit for approval of such plan to meet its renewable portfolio standard (RPS) program goals.

The VCEA also contemplates the retirement of certain fossil fuel units within specific timeframes, and Microsoft supports directing Dominion in its 2026 IRP to extend its planning horizon to 2045 to better inform the Commission as to how Dominion can position a cost-effective path toward this mandatory target. Various parties expressed frustration that the 2024 IRP does not propose retirements of fossil fuel units, recognizes the need for new natural gas facilities, and has a planning horizon that ends before 2045. However, as a resource adequacy document, the 2024 IRP is bound to grapple with the reality of growing customer load and PJM's rules governing capacity. Indeed, Dominion's analysis concluded that new natural gas capacity is needed *even without additional data center growth*, driven by PJM's evolving capacity accreditation framework, broader load growth, and regulatory mandates requiring the retirement or conversion of existing coal units.

This approach of incorporating 2045 into the 2026 IRP rather than the 2024 IRP is appropriate for two reasons.

First, nothing in the VCEA excuses Dominion from meeting its obligation to serve new and existing load under Virginia law.[10] Indeed, in the event Dominion is not able to meet the

[10] Va. Code § 56-234 A ("It shall be the duty of every public utility to furnish reasonably adequate service and facilities at reasonable and just rates to any person, firm or corporation along its lines desiring same. . . ")

VCEA, the VCEA provides for deficiency payments when Dominion falls short of meeting its RPS Program goal,[11] recognizing that all of the goals may not be met all of the time. Additionally, the VCEA also permits Dominion to "petition the Commission for relief from the requirements of this subsection on the basis that the requirement would threaten the reliability or security of electric service to customers." [12] Consequently, even under the terms of the VCEA itself, Dominion is obliged to consider whether meeting the VCEA goals will threaten reliability.

Second, the 2026 IRP is likely to encompass ongoing developments with the overall PJM capacity market that include evolving ELCCs, load forecast, and generation build/retirement decisions; a changed landscape under Virginia law governing local permitting of utility scale solar; and progress regarding alternatives such as long duration energy storage that make the need for such a waiver more or less likely. Making such a waiver determination in the 2024 IRP could well be premature given the fluidity of current developments on the PJM capacity market,[13] the early stages of Dominion's long duration energy storage pilot,[14] the need to further develop and validate other low carbon dispatchable generation technologies (i.e., small modular reactors, next-generation geothermal, traditional nuclear, etc.), and ongoing efforts to achieve consensus on local permitting for utility scale solar projects.[15]

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[11] Va. Code § 56-585.5 D 5 (specifying the amount of the deficiency payments when Dominion "is unable to meet the compliance obligations of the RPS Program requirements").
[12] Va. Code § 56-585.5 B 4.
[13] *See e.g.*. Tr. at 440 (Goggin surrebuttal), noting that "we may see markedly higher capacity values as PJM actually runs the auctions in subsequent years."
[14] *See e.g.* Tr. at 1344 (cross of Flowers by Walmart counsel), noting that Mr. Flowers is looking forward to the day when Dominion's long duration energy storage project comes online to give Dominion valuable information on how the Form and EOS projects operate.
[15] Tr. at 1333-1334 (cross of Flowers by Sierra Club counsel), noting that Dominion is working with localities regarding solar permitting "[s]o over time, maybe there will be a change in position and receptivity will turn the other way".

C. Accepting 2024 IRP and providing guidance for future IRPs

The applicable law, coupled with the evidence presented in this proceeding, should lead the Commission to (1) accept the 2024 IRP as adequate for addressing resource planning based on a snapshot in 2024 and (2) provide guidance to Dominion for future IRP filings regarding refinements to address the increasing complexity in achieving resource adequacy and VCEA compliance, such as adopting locational modeling, extending the planning period to 2045, and expanding the range of technologies considered. Conversely, withholding approval of the 2024 IRP would thwart the purpose of the IRP Statute because it would necessarily result in Dominion spending additional resources on the 2024 IRP instead of focusing those resources on what is required to make the 2026 IRP a more effective planning document.

III. Legal standards.

A. Complying with Electric Utility Integrated Resource Planning Statute

This proceeding is governed by Chapter 24 of Title 56 of the Virginia Code, Va. Code § 56-597 *et seq.*, which is titled "Electric Utility Integrated Resource Planning" and referred to in this Brief as the IRP Statute. The Commission's determination of whether the 2024 IRP is reasonable and in the public interest[16] should not be based on whether the 2024 IRP perfectly satisfies the needs of stakeholders that narrowly focus one or two elements of the IRP to the exclusion of all other required elements. Instead, that determination should be based on the extent to which the 2024 IRP complies with seven operative provisions of the IRP Statute, which are considered in detail below.

1. First operative provision: definition of an IRP

The first operative provision of the IRP Statute concerns the definition of an IRP:

[16] Va. Code § 56-599 E.

> "Integrated resource plan" or "IRP" means a document developed by an electric utility that provides a forecast of its load obligations and a plan to meet those obligations by supply side and demand side resources over the ensuing 15 years to promote reasonable prices, reliable service, energy independence, and environmental responsibility.[17]

There is sufficient evidence in the record to support that the 2024 IRP complies with this definition of an IRP. As discussed in greater detail in Section IV of this Brief, Dominion presented a forecast of its load obligations and its plan using supply side and demand side resources over 15 years that, under the applicable circumstances of the VCEA parameters and unprecedented load demand, promote reasonable prices, reliable service, energy independence, and environmental responsibility.

2. Second operative provision: contents of an IRP

The second operative provision of the IRP Statute concerns the contents of an IRP:

> An IRP should:
>
> 1. Integrate, over the planning period, the electric utility's forecast of demand for electric generation supply with recommended plans to meet that forecasted demand and assure adequate and sufficient reliability of service, including:
>
> a. Generating electricity from generation facilities that it currently operates or intends to construct or purchase;
>
> b. Purchasing electricity from affiliates and third parties;
>
> c. Reducing load growth and peak demand growth through cost-effective demand reduction programs; and
>
> d. Utilizing energy storage facilities to help meet forecasted demand and assure adequate and sufficient reliability of service;
>
> 2. Identify a portfolio of electric generation supply resources, including purchased and self-generated electric power, that:
>
> a. Consistent with § 56-585.1, is most likely to provide the electric generation supply needed to meet the forecasted demand, net of any reductions from demand side programs, so that the utility will continue to provide reliable service at reasonable prices over the long term; and

[17] Va. Code § 56-597.

> b. Will consider low cost energy/capacity available from short-term or spot market transactions, consistent with a reasonable assessment of risk with respect to both price and generation supply availability over the term of the plan;
>
> 3. Reflect a diversity of electric generation supply and cost-effective demand reduction contracts and services so as to reduce the risks associated with an over-reliance on any particular fuel or type of generation demand and supply resources and be consistent with the Commonwealth's energy policies as set forth in § 45.2-1706.1; and
>
> 4. Include such additional information as the Commission requests pertaining to how the electric utility intends to meets its obligation to provide electric generation service for use by its retail customers over the planning period. [18]

There is sufficient evidence in the record to support that the 2024 IRP complies with these content requirements. These content requirements establish that an IRP is a resource adequacy document and should be evaluated as such by the Commission. The rationale for accepting Dominion's resource adequacy analysis will be discussed in greater detail in Section IV of this Brief.

3. Third operative provision: what an IRP shall consider

The third operative provision of the IRP Statute concerns what an IRP shall consider:

> Each integrated resource plan shall consider options for maintaining and enhancing rate stability, *energy independence*, *economic development including retention and expansion of energy-intensive industries*, and *service reliability*.[19]

When addressing the criticism of the 2024 IRP, it is important for the Commission to keep in mind what aspects of the IRP are required. These required aspects include considering options for maintaining and enhancing *energy independence*. The build out of natural gas facilities, which is one of the most criticized aspects of the 2024 IRP, is essential for maintaining and enhancing energy independence in light of the increasing capacity constrictions within PJM in general and the DOM Zone in particular.

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[18] Va. Code § 56-598.
[19] Va. Code § 56-599 A (emphasis added).

The accommodation of increasing amounts of data center load, another one of the most criticized aspects of the 2024 IRP, is also essential for *economic development, including retention and expansion of energy-intensive industries* like data centers. Without additional natural gas facilities, it simply is not possible to maintain and enhance *service reliability* given the reality of capacity restrictions, unprecedented load growth, and downgrading of capacity assigned to VCEA-compliant resources. It is important to keep in mind that additional natural gas facilities are needed even when data center load growth is taken off the table. This is due to developments regarding PJM's calculations of ELCCs for all generation units, coupled with the modeling boundary conditions for VCEA-compliant resources, growing electrification, and the desire to retire coal facilities. Section IV of this Brief will describe in greater detail how sufficient evidence supports a finding that the Dominion IRP satisfies these required elements of the IRP Statute.

4. Fourth operative provision: compliance with Commission orders

The fourth operative provision of the IRP Statute concerns compliance with Commission orders:

> All updated integrated resource plans shall comply with the provisions of any relevant order of the Commission establishing guidelines for the format and contents of updated and revised integrated resource plans.[20]

Dominion's IRP includes a compliance chart that cross-references each statutory, regulatory, and Commission order applicable to IRPs under Virginia law with the corresponding section of the IRP demonstrating compliance.[21] This chart serves as a roadmap demonstrating Dominion's adherence to the Commission's orders and evidentiary guidelines, helping establish that it has

[20] Va. Code § 56-599 A.
[21] Hearing Exhibit 2 (2024 IRP as filed on October 15, 2024 with corrections filed on October 24, 2024 and December 3, 2024) ("2024 IRP") at 1-9.

fulfilled its planning obligations and providing a transparent framework for evaluating the reasonableness of its long-term resource strategy.

5. Fifth operative provision: what shall be evaluated and may be proposed

The fifth operative provision of the IRP Statute concerns what Dominion shall systematically evaluate and may propose:

> In preparing an integrated resource plan, each electric utility *shall* systematically evaluate and *may* propose:
>
> 1. Entering into short-term and long-term electric power purchase contracts;
>
> 2. Owning and operating electric power generation facilities;
>
> 3. Building new generation facilities;
>
> 4. Relying on purchases from the short term or spot markets;
>
> 5. Making investments in demand-side resources, including energy efficiency and demand-side management services;
>
> 6. Taking such other actions, as the Commission may approve, to diversify its generation supply portfolio and ensure that the electric utility is able to implement an approved plan;
>
> 7. The methods by which the electric utility proposes to acquire the supply and demand resources identified in its proposed integrated resource plan;
>
> 8. The effect of current and pending state and federal environmental regulations upon the continued operation of existing electric generation facilities or options for construction of new electric generation facilities;
>
> 9. The most cost effective means of complying with current and pending state and federal environmental regulations, including compliance options to minimize effects on customer rates of such regulations;
>
> 10. Long-term electric distribution grid planning and proposed electric distribution grid transformation projects, including a comprehensive assessment of the potential application of grid-enhancing technologies and advanced conductors in a manner that ensures grid reliability and safeguards the cybersecurity and physical security of the electric distribution grid. An electric utility that does not include grid-enhancing technologies or advanced conductors in an integrated resource plan shall include a detailed explanation of why such technologies or conductors are not included in such plan;

> 11. Developing a long-term plan for energy efficiency measures to accomplish policy goals of reduction in customer bills, particularly for low-income, elderly, and disabled customers; reduction in emissions; and reduction in carbon intensity; and
>
> 12. Developing a long-term plan to integrate new energy storage facilities into existing generation and distribution assets to assist with grid transformation.[22]

As discussed in Section IV of this Brief, there is sufficient evidence in the record to support that the 2024 IRP complies with this directive concerning what Dominion shall evaluate and what it may propose.

6. Sixth operative provision: facility retirement study

The sixth operative provision of the Electric Utility Integrated Resource Planning statute concerns a facility retirement study:

> As part of preparing any integrated resource plan pursuant to this section, each utility shall conduct a facility retirement study for owned facilities located in the Commonwealth that emit carbon dioxide as a byproduct of combusting fuel and shall include the study results in its integrated resource plan. Upon filing the integrated resource plan with the Commission, the utility shall contemporaneously disclose the study results to each planning district commission, county board of supervisors, and city and town council where such electric generation unit is located, the Department of Energy, the Department of Housing and Community Development, the Virginia Employment Commission, and the Virginia Council on Environmental Justice. The disclosure shall include (i) the driving factors of the decision to retire and (ii) the anticipated retirement year of any electric generation unit included in the plan. Any electric generating facility with an anticipated retirement date that meets the criteria of § 45.2-1701.1 shall comply with the public disclosure requirements therein.[23]

Dominion's IRP includes such facility retirement studies.[24] Dominion conducted a 15-year cash flow analysis focused on retirement of coal-fired, biomass-fired, and large CC generation facilities and evaluated 15-year cash flows under three portfolios (REC REP Only Without VCEA, VCEA Without EPA, VCEA With EPA) using two commodity price forecasts.

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[22] Va. Code § 56-599 B (emphasis added).
[23] Va. Code § 56-599 C.
[24] Hearing Exhibit 2 (2024 IRP) at 74-75.

Dominion also performed an additional analysis in PLEXOS using the same unit-specific data, allowing the model to determine the timing of unit retirements.

7. Seventh operative provision: stakeholder review process

The seventh operative provision of the IRP Statute concerns a stakeholder review process.

> As part of preparing any integrated resource plan pursuant to this section, each utility shall conduct outreach to engage the public in a stakeholder review process and provide opportunities for the public to contribute information, input, and ideas on the utility's integrated resource plan, including the plan's development methodology, modeling inputs, and assumptions, as well as the ability for the public to make relevant inquiries, to the utility when formulating its integrated resource plan. Each utility shall report its public outreach efforts to the Commission. The stakeholder review process shall include representatives from multiple interest groups, including residential and industrial classes of ratepayers. Each utility shall, at the time of the filing of its integrated resource plan, report on any stakeholder meetings that have occurred prior to the filing date.[25]

As discussed in Section IV.F of this Brief, there is sufficient evidence in the record to support that the 2024 IRP complies with this directive concerning Dominion's conducting outreach to engage over 200 participants in a stakeholder review process and providing its report to the Commission.

B. Assessing statutes incorporated by reference in the IRP Statute

The IRP statute incorporates by reference only two statutes, which are described below.

1. Va. Code § 56-585.1 regarding electricity generation supply net of reductions from demand side programs providing reliable service at reasonable prices

The second operative provision of the IRP, which addresses the contents of an IRP, calls for Dominion to "identify a portfolio of electric generation supply resources, including purchased and self-generated electric power, that:. . .consistent with § 56-585.1, is most likely to provide the electric generation supply needed to meet the forecasted demand, net of any reductions from

[25] Va. Code § 56-599 D.

demand side programs, so that the utility will continue to provide reliable service at reasonable prices over the long term."

Va. Code § 56-585.1 directs the Commission to establish fair rates of return on common equity for generation and distribution services. It further authorizes utilities to petition for, and the Commission to approve, rate adjustment clauses to recover certain costs relating to generation facilities and projects—including nuclear, coal, renewable energy—as well as underground distribution facilities, compliance with renewable energy portfolio standards, and energy efficiency programs, among other categories.

The IRP must consider the requirements of Va. Code § 56-585.1 to ensure that the proposed resource plans are consistent with the regulatory standards for cost recovery, rate design, and service reliability. This connection ensures that utility planning and rate-setting processes are integrated and aligned with the Commonwealth's broader regulatory objectives of ensuring reliable electricity service at reasonable prices.

However, the IRP statute does not import Va. Code § 56-585.1 A 5's standard of review into the IRP proceeding. Va. Code § 56-585.1 A 5 provides the standard of review that applies to applications for certificates of public convenience and necessity ("CPCNs"). By contrast, an IRP proceeding under Va. Code § 56-597 *et seq.* is a planning exercise and informational docket and does not review applications for approval of any particular resource. That determination is reserved for future CPCN proceedings under Va. Code § 56-585.1. Therefore, the standard for approval of construction of new utility-owned, carbon-emitting generating facilities is inapplicable in the IRP context. Instead, the IRP is reviewed under the reasonableness and public interest standard provided in Va. Code § 56-599 as it applies to the seven operative provisions of the IRP Statute discussed above.

2. Va. Code § 45.2-1706.1 regarding the Commonwealth's energy policies

The second operative provision of the IRP, which addresses the contents of an IRP, calls for the IRP to "[r]eflect a diversity of electric generation supply and cost-effective demand reduction contracts and services so as to reduce the risks associated with an over-reliance on any particular fuel or type of generation demand and supply resources and be consistent with the Commonwealth's energy policies as set forth in § 45.2-1706.1."

Va. Code § 45.2-1706.1 outlines the Commonwealth's Clean Energy Policy, which aims to address climate change by gradually reducing carbon emissions while ensuring an adequate and reliable energy supply at reasonable cost for the benefit of all user classes and the Commonwealth's economy.[26] Importantly, the Clean Energy Policy does not "preclude reliable access to electricity and natural gas during the transition to renewable energy" and does not "amend, repeal, or override any contrary provision of applicable law."[27]

C. Distinguishing the IRP proceeding from proceedings addressing VCEA resources, DSM resources, and cost allocation issues.

The IRP Statute focuses on long-term planning for electric utility infrastructure and resource adequacy to ensure electric utilities meet projected demand reliably and at reasonable cost. The IRP process is not the mechanism through which VCEA resources, DSM resources, or cost allocation issues are evaluated.

VCEA resources, as noted in Section II above, are routinely evaluated by the Commission, with the most recent evaluation being done in the 2024 RPS Docket, Case No. PUR-2024-00147. The VCEA instituted a mandatory RPS program requiring Dominion to meet "annual goals for

[26] *See* Va. Code § 45.2-1706 C 3, 5-6.
[27] Va. Code § 45.2-1706 F.

the sale of renewable energy to all retail customers in the utility's service territory."[28] In the 2024 RPS Docket, conducted pursuant to § 56-585.5 D of the VCEA, the Commission assesses the reasonableness and prudence of proposed VCEA-compliant solar, wind, and energy storage resources, along with associated requests for cost recovery.[29] The Commission's separate treatment of IRP and RPS filings demonstrates that the 2024 RPS docket—not the 2024 IRP docket—is the appropriate venue for reviewing the details of individual VCEA projects and determining whether they meet statutory requirements under the VCEA.

DSM resources, as noted in Section II above, are routinely evaluated by the Commission, with the most recent evaluation being done in the 2024 DSM Program Docket, Case No. PUR-2024-00222. While DSM resources are included in the IRP for planning purposes, DSM resources are subject to detailed review in a separate docket pursuant to Va. Code § 56-585.1 A 5. In the 2024 DSM Program Docket, Dominion must demonstrate that each proposed DSM program is cost-effective, in the public interest, and consistent with statutory energy savings targets—elements which are not adjudicated in IRP proceedings.[30] The IRP is a resource adequacy planning document, and the DSM docket remains the proper mechanism for review and approval of individual DSM programs.

Cost allocation issues related to data center load, as noted in Section II above, are currently being addressed in the 2025 Biennial Review Docket. While the IRP accounts for anticipated data center load growth in its planning assumptions, the IRP proceeding is not the appropriate venue for resolving cost allocation issues arising from that growth. Cost allocation is a ratemaking issue subject to Commission review in Dominion's biennial review proceeding under Va. Code § 56-

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[28] Va. Code § 56-585.5 C.
[29] *Id.*; *see also, e.g., Petition of Virginia Electric and Power Company, For approval of its 2024 RPS Development Plan under § 56-585.5 D 4 of the Code of Virginia and related requests*, Case No. PUR-2024-00147.
[30] Va. Code § 56-585.1 A 5.

585.1 A.[31] In addition to cost allocation, Dominion's biennial review assesses its cost of service, earnings, terms and conditions, rate design and adjustments, and rate of return—elements which are not adjudicated in IRP proceedings. Accordingly, disputes over responsibility for data center driven costs are properly addressed in the 2025 Biennial Review Docket, not through the 2024 IRP docket.

The 2024 RPS Docket, the 2024 DSM Program Docket, and the 2025 Biennial Review Docket each establish their own distinct proceedings, separate from the IRP proceeding, for addressing the specific issues and requirements related to consideration and approval of VCEA resources, consideration and approval of DSM resources, and consideration and approval of cost allocation related to data center load.

Accordingly, issues related to specific VCEA resources, DSM resources, and data center cost allocation are beyond the scope of an IRP proceeding conducted pursuant to the IRP Statute, which places its paramount focus on resource adequacy issues.

D. Assessing compliance with the VCEA

1. Compliance with the VCEA petition provisions

Under the VCEA, Dominion must *petition* the Commission for necessary approvals to construct, acquire, or purchase 16,100 MW of solar or onshore wind generation and up to 5,200 MW of offshore wind capacity by 2035.[32] Additionally, Dominion must *petition* the Commission for necessary approvals to develop or procure 2,700 MW of energy storage resources by 2035.[33] Va. Code § 56-585.5 E. The 2024 IRP plans for a future that satisfies and surpasses these

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[31] *See, e.g., Application of Virginia Electric and Power Company for a 2025 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia*, Case No. PUR-2025-00058 (March 31, 2025).

[32] Va. Code § 56-585.5 D. (emphasis added)

[33] Va. Code § 56-585.5 E. (emphasis added)

obligations in its VCEA compliant portfolios. In its VCEA-compliant VCEA with EPA portfolio, Dominion proposes to petition for 12.2 GW of solar, 3.5 GW of offshore wind, and 4.1 GW of storage resources by 2035.[34] In its VCEA-compliant VCEA Without EPA portfolio, Dominion proposes to build the same.[35]

2. **Consistency with VCEA retirement and reliability provisions**

The VCEA contemplates Dominion retiring all carbon-emitting generation units by 2045.[36] However, it also expressly provides for continued operation of such units where necessary to preserve system reliability.[37] This exception underscores the General Assembly's recognition that maintaining grid reliability at reasonable rates may necessitate continued operation of fossil fuel resources until suitable replacements are available and operational. As discussed in Section II B above, it makes sense for the Commission to direct Dominion in its 2026 IRP to include 2045 in its planning horizon to help the Commission assess whether a waiver will be needed.

3. **Compliance with obligation to serve**

Compliance with the VCEA forms part of Dominion's duties, but it does not displace or override Dominion's core obligation to maintain reliable service. Va. Code § 56-234 A provides that "[i]t shall be the duty of every public utility to furnish reasonably adequate service and facilities at reasonable and just rates to any person, firm or corporation along its lines desiring same." Dominion's duty to serve remains paramount, and the VCEA does not require Dominion to sacrifice reliability if renewable resources alone are insufficient to meet demand. The VCEA explicitly concedes this point by providing for the continued use of fossil fuel generation units

[34] *See* Hearing Exhibit 2 (2024 IRP) at 61.
[35] Hearing Exhibit 2 (2024 IRP) at 63.
[36] Va. Code § 56-585.5 B 2, C 1.
[37] *See* Va. Code § 56-585.5 B.

where necessary to ensure reliability.[38] As a result of its manifold statutory obligations, Dominion must pursue VCEA compliance to the extent feasible while continuing to marshal all necessary resources—including fossil-fuel generation—to fulfill its obligation to provide safe and reliable electric service at reasonable rates.

IV. Argument

Dominion's approach to load forecasting is essentially a three-step process. First, Dominion determines what the demand is going to be via its load forecast. Then Dominion lowers that demand based on energy efficiency and demand side management inputs. Finally, Dominion determines what is needed to meet that lowered demand.[39]

Regarding the load forecast, the preponderance of the evidence supports accepting Dominion's load forecast – in this case the PJM-derived forecast - for purpose of its 2024 IRP and providing direction to Dominion to take certain steps for future IRPs. Such direction would address the increasingly complex planning environment that Dominion is facing due to challenges posed by meeting its VCEA goals in the context of load growth not anticipated when the VCEA was enacted. Sections A to C below set forth the rationale for determining that Dominion's forecast is sufficient, that arguments rejecting the forecast are not sufficient, and that enhancements should be adopted for load forecasts in future IRPs.

Regarding the lowering of demand based on energy efficiency and demand side management, the preponderance of the evidence supports accepting Dominion's approach for purposes of this 2024 IRP, as discussed in Section D below.

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[38] *See* Va. Code § 56-585.5 B.

[39] Tr. at 778 (cross of Freed by Dominion counsel); Tr. at 1047 (cross of Compton by Sierra Club counsel).

Regarding determining what is needed to meet that lowered demand, the preponderance of the evidence supports accepting Dominion's approach for determining the facilities needed for purposes of this 2024 IRP, as discussed in Section E below.

Section F below addresses another statutory ground for assessing the 2024 IRP and sets forth the rationale for determining that Dominion's stakeholder process was adequate.

A. Accepting Dominion's load forecast for purposes of this IRP

The Commission should accept Dominion's load forecast for three reasons. First, Dominion has considerable expertise in forecasting data center load, which is driving the unprecedented load growth in the load forecast, and multiple parties in this proceeding supported, in full or in part, the amount of load growth determined by Dominion. Second, as PJM developed its forecast, it solicited large load adjustments from the individual load serving entities. During this process, PJM independently reviewed and accepted Dominion's data center load forecast without adjustments, even though PJM has made adjustments to the load forecasts of other load serving entities (LSEs). Third, the JLARC Report independently corroborates Dominion's data center load forecast. Fourth, the risks of rejecting Dominion's load forecast in its 2024 IRP are considerably greater than the risks of accepting its load forecast, given the asymmetric nature of the load forecast risks and the need to respond to load growth in a timely manner to address the resource adequacy risks faced across the DOM Zone.

1. Dominion's methods are appropriate

Dr. Stover, who has expertise in forecasting, resource adequacy, and data-driven decision making, determined that "Dominion's approach to load forecasting, resource modeling, and

scenario analysis aligns with industry standards for integrated resource planning."[40] Dr. Stover observed that Dominion took these steps when performing its resource planning analysis:

(1) Developing a system-wide forecast for future energy and peak load needs, incorporating trends in residential, commercial, and industrial demands, as well as the expected growth from electric vehicles and data centers

(2) Establishing annual and overall build limits for various technologies to ensure the feasibility of selected resources given constraints such as

   a. labor, supply chains, land availability, and interconnection timelines

   b. mandated builds and decarbonization targes under the VCEA

   c. the latest planning reserve margin (PRM) targets and effective load carrying capability (ELCC) values from PJM.[41]

Dominion then used these inputs to develop potential resource plans for 2025 to 2039 through using an optimization model designed to identify the lowest-cost generation mix while meeting capacity, energy, clean energy, and other system constraints. Dr. Stover stressed that a key requirement in Dominion's model was having the selected portfolio reliably and affordably serve customer demand, while fulfilling capacity obligations, which are met through a combination of new generation resources, power purchase agreements, and market purchases from the PJM market.[42]

The testimony of the Commission Staff also supports the Commission accepting Dominion's load forecast. Although Staff used a different model, this model largely produced

[40] Hearing Exhibit 38 (Stover Direct Testimony) at 3.
[41] Hearing Exhibit 38 (Stover Direct Testimony) at 3-4.
[42] Hearing Exhibit 38 (Stover Direct Testimony) at 4.

the same results, with Staff's load forecast being slightly higher in the near term[43] and slightly lower in later years.[44]

Even Appalachian Voices' witness Wilson, who expressed considerable skepticism regarding Dominion's data center load forecast, basically accepted Dominion's short term forecast.[45] Mr. Wilson's skepticism regarding the data center load forecast in the longer term was based on his assertion that the long term forecast was highly uncertain due to Northern Virginia being overbuilt, local opposition, power costs in PJM, and data centers operating outside of Virginia. Dominion explained, in both its pre-filed rebuttal testimony[46] and its surrebuttal testimony during the hearing,[47] why these claims were not accurate. In addition, Mr. Wilson criticized the Dominion forecast because a data center could contract for a certain amount of capacity in an electric service agreements (ESAs) but that was a ceiling: it did not mean the customer would use all that capacity.[48] Dr. Stover found this reasoning to be faulty because Dominion's forecast was based on metered load (what customers actually used) rather than on the capacity set forth in ESAs.[49]

Mr. Blackwell concurred with Dr. Stover's assessment that Dominion utilized three best practices for forecasting data center load. First, assess historical metered data. Second, actively seek customer intelligence on future plans. Third, evaluate independent reports on data center load.[50] Mr. Blackwell emphasized that Dominion does not forecast by contract but instead starts with statistical forecasting over 10 years of metered data for every Dominion data account, then

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[43] Hearing Exhibit 49 (Curtis Direct Testimony) at 4.
[44] Hearing Exhibit 49 (Curtis Direct Testimony) at 4.
[45] Hearing Exhibit 29 (Wilson Direct Testimony) at 6.
[46] Hearing Exhibit 69 (Blackwell Rebuttal Testimony) at 6-10, 16-20.
[47] Tr. at 1192-1200, 1223-1230 (Blackwell surrebuttal).
[48] Tr. at 463-464 (Wilson surrebuttal), questioning ramp up of loads by data centers.
[49] Tr. at 723 (cross of Stover by Dominion counsel).
[50] Tr. at 1223-1224 (Blackwell surrebuttal).

runs a statistical forecast on Dominion's eight largest customers, and for the remaining 42 customers forecasts them as a group based on the assumption that within the 42, they submit duplicate projects and not all 42 will are going to proceed forward.[51]

2. PJM accepts Dominion's forecast after independent verification

During the evidentiary hearing, Mr. Wilson asserted that PJM did not independently verify Dominion's load forecast with a credible forecasting entity such as S&P Global,[52] but Dr. Stover established that this claim was not accurate. Dr. Stover explained how the *PJM Load Adjustment Requests Summary for 2025 Load Forecast—Preliminary* demonstrated that PJM - in consultation with its independent consultant - accepted Dominion's load forecast.[53] Dr. Stover pointed that this third-party consultant is 451 Research, which is a partner with S&P Global, the same entity that was specifically identified by Mr. Wilson as a credible forecasting entity.[54] Mr. Bocanegra stressed that PJM was aware of, concerned about, and actively taking measures to attempt to control for the double counting issue concerning customers who express interest in multiple territories by only plan to move to one territory.[55] Mr. Bocanegra explained that Dominion enacts its own measures to avoid double counting, and then PJM exercises its own separate judgement and expertise to avoid double counting.[56] Mr. Blackwell had significant insights on this topic, describing how PJM does not simply accept Dominion's data center

[51] Tr. at 1196-1197 (Blackwell surrebuttal).
[52] Tr. at 458-59 (Wilson surrebuttal).
[53] Tr. at 627-28 (Stover surrebuttal); Hearing Exhibit 39 (PJM Load Adjustment Requests Summary for 2025 Load Forecast—Preliminary) at 17-19 and 26 accepting Dominion's load forecast; at 22 and 26 adjusting Duke's load forecast; at 26 adjusting DQE load forecast.
[54] Tr. at 626-629 (Stover surrebuttal). *See* Tr. at 548-549 (cross of Wilson by Dominion counsel) regarding Mr. Wilson recommending that "S&P Global or somebody like that" should assess data center load.
[55] Tr. at 1119-1120 (Bocanegra surrebuttal).
[56] Tr. at 1120 (Bocanegra surrebuttal).

forecast. Instead, it is an adversarial process where Dominion has to defend the forecast in a public forum involving numerous stakeholders.[57]

Moreover, it was established during the evidentiary hearing that PJM's 2025 forecast of data center load is higher than its 2024 forecast of data center load[58] and it projected robust load growth over 10 years (6.3 %), over 15 years (4.9%), and over 20 years (4.0%).[59]

3. JLARC independently corroborates data center forecast

The JLARC Report provides additional independent verification that the data center forecast used by Dominion and PJM is accurate. The report noted that JLARC's independent forecast largely matches the most recent forecast by PJM.[60] JLARC's independent forecast was developed using actual historic energy usage and then employed advanced statistical methods to project use going forward. That result was checked against the data reported by utilities on future data load requests, but that load request data was not used to formulate the JLARC forecast.[61]

4. Failure to accept the forecast would threaten resource adequacy, which undermines the purpose of the IRP

Dr. Stover recognized how critical reliable forecasting is, stating that "overestimating demand risks stranded assets, while underestimating demand could lead to system reliability issues." However, under the particular circumstances applicable to the 2024 IRP, Dr. Stover determined that Dominion's plan "has substantially greater risks for underestimating load demand than overestimating demand."[62]

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[57] Tr. at 1198 (Blackwell surrebuttal).
[58] Tr. at 827 (cross of Curtis by Dominion counsel). Exhibit 50 (2025 PJM Long-Term Forecast Report, dated January 24, 2025).
[59] Tr. at 827 (cross of Curtis by Dominion counsel).
[60] Hearing Exhibit 8 (JLARC Report) at ii.
[61] Hearing Exhibit 8 (JLARC Report) at 28.
[62] Hearing Exhibit 38 (Stover Direct Testimony) at 6

He explained that if the 2024 IRP erred in the direction of overestimating demand—which could occur if the actual data center load was lower than Dominion forecasted—then the remedy was fairly straightforward. The 2024 IRP allows Dominion the flexibility to adjust by reducing capacity purchases from the market.[63] He observed that this conclusion was confirmed by the Commission-ordered Supplemental IRP, which found that even with load growth capped at 2024 levels, deviations in portfolio selection before 2032 were minimal, with more significant deviations emerging only in the timeframe beyond 2032.[64] This establishes that "Dominion has sufficient flexibility and time to course correct if load materializes at a rate that is slower than anticipated."[65]

The same is not true if any adjustments to the 2024 IRP result in underestimating load growth. When that happens, Dr. Stover cautioned that "there are meaningful risks." [66] The greater risks associated with underestimating load growth are due to Dominion's proposed resource mixes reaching the build limits of most technologies. This means that Dominion has limited ability to course correct by expanding its planned generation builds to accommodate load that is greater than its approved IRP forecast. Instead, Dominion would need to increase reliance on capacity market purchases, which is problematic because in the 2024 IRP's VCEA with EPA scenario, Dominion's purchased capacity plans are near its identified 3,300 MW limit in 2026, 2038, and 2039. In those years, the build limits and caps on capacity purchases mean that Dominion cannot support higher than anticipated growth. The bottom line is that, when dealing with the market fundamentals driving Dominion's load forecast, with Dominion's accuracy in

[63] Hearing Exhibit 38 (Stover Direct Testimony) at 6.
[64] Hearing Exhibit 38 (Stover Direct Testimony) at 6.
[65] Hearing Exhibit 38 (Stover Direct Testimony) at 6.
[66] Hearing Exhibit 38 (Stover Direct Testimony) at 7.

data center projections, and the asymmetric risks of forecast errors, Dr. Stover recommends that the Commission accept the load forecast in the 2024 IRP.[67]

B. Assessing issues regarding data center load

The preceding section addresses claims for rejecting Dominion's data center forecast because it is inaccurate. As discussed in that section, Dominion's data center forecast should be accepted for purposes of the 2024 IRP because its methods are appropriate, because PJM and JLARC have independently reviewed and accepted the forecast, and because the risks of having too low a forecast are far greater than the risks of having too high a forecast.

In addition to questioning the accuracy of the forecast, those parties that seek to have the Commission discount the data center load forecast appear to object to the existence of data center load on the Dominion system. This objection would have the Commission ignore the realities on the ground—data center load growth is a reality in Dominion's service territory—and would have the Commission ignore Dominion's obligation to serve under Virginia law. None of these are appropriate reasons for discounting the data center load forecast. However, those addressing concerns about data center load growth did raise three additional issues that are helpful to evaluate separately.

1. Properly assessing data center contracts

Mr. Blackwell credibly disputed claims made throughout the evidentiary hearing that data center contracts were backroom deals that unduly favored data center customers. This was based on his extensive experience working directly with data center contracts since 2013, in contrast to Mr. Wilson, who had never a negotiated a data center contract.[68]

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[67] Hearing Exhibit 38 (Stover Direct Testimony) at 8.
[68] Tr. at 1203-1204 (Blackwell surrebuttal).

Mr. Blackwell explained that, pursuant to its statutory obligation to serve, Dominion enters into a series of contracts in which there is no negotiation on cost estimates, on the ultimate costs, and on the ultimate timeline.[69] There was a standard contract for all customers, and the fundamental contract provisions do not vary from customer to customer.[70] Data centers, like all customers, naturally prefer lower costs and faster timelines, but that is not what Dominion's contract regime provides. The data center customer's payments are based on Dominion's actual costs, and the time frame is based on Dominion's ability to construct the given facility, which is currently 4 to 7 years out.[71] As Mr. Blackwell emphasized, there is no role here for Commission Staff oversight because the only variables in the standard contract are based on the size and location of the customer's load, and no Commission oversight changes those variables.[72]

There was much attention paid to a screen shot from a Dominion economic development website. When pressed on this issue, Mr. Blackwell explained that Dominion is actively marketing to a variety of industries because Dominion's job is to provide electric service and to try and make it as easy as possible for new customers. He stressed that this is good for the economic development of the Commonwealth.[73]

2. Getting an accurate understanding of data center load

Microsoft acknowledges a valid point raised by those concerned with data center load related to getting an accurate understanding of data center load. Microsoft agrees that staking so much of the load growth forecast on data center load requires getting as accurate an understanding as possible as to what will happen to data center load in the future. Ironically, the

[69] Tr. at 1205 (Blackwell surrebuttal).
[70] Tr. at 1206-1207 (Blackwell surrebuttal).
[71] Tr. at 1205-1206 (Blackwell surrebuttal).
[72] Tr. at 1218-1219 (Blackwell surrebuttal).
[73] Tr. at 1257 (cross of Blackwell by Clean Virginia counsel).

"partnership" notion that several parties derided during the hearing[74] is essential to having an accurate understanding of data center load. Dr. Stover emphasizes the importance of the Commission fostering stronger collaboration between "generation developers, *large-load customers*, Dominion LSE, and other LSEs."[75] Such collaboration is the appropriate answer to addressing the valid concern of needing to get the data center forecast as accurate as possible.

During the evidentiary hearing, Dr. Stover was asked to address news articles dealing with Microsoft contracting changes. Dr. Stover explained that he was not a Microsoft employee, and he was generally aware of public reporting on this issue but could not establish any link between the reports and Microsoft's load in Dominion's territory.[76] Based on the description in the articles, the only location tied to such reports was Licking County, Ohio.[77] Nonetheless, Dr. Stover was pressed repeatedly on this issue and ultimately suggested that "Dominion is better positioned to speak to those kinds of contracting issues."[78] No party elected to discuss these news articles with Dominion.

Dr. Stover was also asked about an article he co-authored that mentioned the issue of double counting.[79] Dr. Stover explained that the purpose of the article was to review the overall context and discussion around data center challenges,[80] and he acknowledged that double counting is, as Mr. Wilson described, a challenge that's discussed concerning data center load forecasts. Dr. Stover clarified that having this general acknowledgement of double counting

[74] Tr. at 974-75, 1032-33, 1200-202, 1255-56 (discussing Exhibit 60 regarding Dominion "true partner" quote on economic development website).
[75] Hearing Exhibit 38 (Stover Direct Testimony) at 15 (emphasis added).
[76] Tr. 634-643 (cross of Stover by App Voices counsel), referring to Hearing Exhibits 40, 41, and 42.
[77] Tr. at 640 (cross of Stover by App Voices counsel).
[78] Tr. at 643 (cross of Stover by App Voices counsel).
[79] Tr. at 644-651 (cross of Stover by App Voices counsel), referring to Exhibit 43.
[80] Tr. at 648 (cross of Stover by App Voices counsel).

being identified as a data center issue did not mean he determined double counting to be an issue with the 2024 IRP load forecast. He stressed

> I think it's fair to say that this is a factor that needs to be thought through, as I believe Dominion has raised . . . I wouldn't think it's fair to say that I specifically quantified the specific risks here. I think Dominion is better positioned to speak through how it talks about these types of risks, and it's my understanding that Dominion does take these kind of challenges into its thought process.[81]

Dr. Stover ultimately acknowledged the significant link between avoiding double counting and having close communications with customers,[82] which reinforces the recommendation in his Direct Testimony discussed in Section IV. C.3.c. below that there be stronger collaboration between generation developers, large-load customers, Dominion as an LSE and other LSEs. Dr. Stover further explained that forecasting errors was a known challenge in resource planning for all customer classes: it was not unique to data centers.[83]

Dr. Stover also clarified under cross examination his position on Dominion's use of market intelligence. The counsel for Appalachian Voices was critical of Dr. Stover for his recommendation that the Commission accept Dominion's forecast when Dr. Stover did not have access to the specific details underlying that forecast.[84] Dr. Stover explained that he endorsed as a best practice Dominion's use of direct conversations with customers as a means of gathering market intelligence on data center load, but he recognized that this created a challenge to transparency for its forecast. He thought providing more transparency on this data was an area where Dominion could improve, but due to the highly sensitive nature of such market intelligence, the solution may need to be creative.[85] Dominion should also collaborate with PJM

[81] Tr.at 650-651 (cross of Stover by App Voices counsel).
[82] Tr. at 724 to 725 (redirect of Stover).
[83] Tr. at 696-697 (cross of Stover by Sierra Club counsel).
[84] Tr. at 652 (cross of Stover by App Voices counsel).
[85] Tr. at 651-621 (cross of Stover by App Voices counsel).

to ensure the evaluation of load supplements submitted by varying load serving entities is more transparent to address stakeholder concerns for double counting and more clearly connect it to load forecast used in other contexts, like transmission planning. It is also worth bearing in mind that Mr. Wilson, the expert witness for Appalachian Voices, could not name a single party that did what Mr. Wilson would consider an acceptable forecast,[86] and that, as discussed in Section IV. A 2 of this Brief, PJM used a third party consultant that Mr. Wilson spoke favorably of to independently evaluate Dominion's forecast.

This passage from Walmart's cross of Dr. Stover nicely illustrates why Dr. Stover supports accepting the data center demand forecast in the 2024 IRP despite Mr. Wilson's critiques, despite issues raised in news articles with no nexus to load in Dominion's territory, and despite Dr. Stover's acknowledgement that greater transparency should be provided in future IRPs:

> Q. . . . So I provide the context for those statements to say if the data center industry is, as I believe Ap Voices Witness Jim Wilson suggested, building out infrastructure for the future but not necessary supply planning to use all of that infrastructure, does that present any concerns to you, as a resource planning expert, in terms of what actual load and energy usage the Company should expect on its system?
>
> A. I agree that being very thoughtful about load forecasting *and proactive and being in contact with its customers is critical*, and that forecasts do adjust over time. However, I don't agree with Witness Wilson's characterization, specifically kind of one area I would highlight that -- again, I think Dominion is better positioned, but my observation and why I feel comfortable with their forecast as a base load is that *they specifically forecast meter demand* and, as a savvy operator, *understand this difference between building out capacity and actual meter demand*. So specifically I would highlight that context of Dominion's understanding of this difference based on their statements, based on their document, the document that was raised with Witness Wilson. So *generally agree that it's very critical that Dominion stays in constant contact*

[86] Tr. at 550 (cross of Wilson by Dominion counsel).

with its customers, which is my understanding that it does, and that it forecasts for this actual meter demand.

Q But — so let's back up on that. Customers who have a desire to have infrastructure available when they are ready for it, would you expect them to tell the Company, we don't actually expect to build this out; we just want to have it available? Or are they likely to do what is necessary to preserve what I would describe as the optionality of that capacity in the future?

A Again, I think this is getting at some of the data center strategies. I can only speak to some of the load forecasting that Dominion has performed. *It's my understanding that their forecasting is quite accurate, has proven to be quite accurate on actual meter demand, so they have a proven track record here.* However, I agree *there is room for increased transparency to assuage some of these concerns from various stakeholders.*

Q I just want to make sure that, you know, so is it your position that we should base the past as an indicator of what's going to happen in the future?

A. No. And I very much appreciate that clarifying question. *It has to be both.* The past is a critical indicator of history, *as well as needing to use fundamental analysis, customer conversation, customer intelligence, and marrying the two when getting the right approach.* And this is best practice in forecasting across all classes. For example, I'd highlight some of the challenges of forecasting electric vehicles. Challenging that data gives us a lot of information on how EVs behave, but you need to get ahead of what technologies are changing, policies are changing, and other aspects. *This marrying of the two, looking in the past to find trends while going to the future of customer intelligence, in my view, is the right approach. I defer to Dominion to speak to the exact implementation of how they do that, but observe generally they follow these best principles.*[87]

In addition to Dr. Stover's assessment as an expert in load forecasting, Dominion provided insights from its extensive experience with data center customers. Mr. Blackwell stressed that while a $250,000 cost for a Substation Engineering Letter of Authorization (SELOA) would not weed out all speculative projects, the $20 million to $200 million cost for a construction letter of authorization (CLOA) would pose a deterrent, particularly when lenders require certainty before they provide that amount of funding.[88] He also clarified that when a customer has a CLOA for a

[87] Tr. at 704 to 707 (cross of Stover by Walmart counsel) (emphasis added).
[88] Tr. at 1212-1213 (Blackwell surrebuttal). Tr. at 1277 (cross of Blackwell by Microsoft counsel).

300 MW facility, that same customer is obliged to sign an electric service agreement (ESA) for 300 MW: it cannot later decide that it will sign an ESA for a lower amount.[89]

3. Considering impact of data center load on other customers

Microsoft also does not dispute another valid point raised by those with concerns about data center load growth, which considers the impact of such growth on other customers. The Commission itself, in convening its Technical Conference on data center load growth on December 16, 2025 in Case No. PUR-2024-00144, appeared to recognize this concern. During that Technical Conference, Dominion suggested that this concern was best addressed in its upcoming biennial review proceeding. Dominion has indeed addressed cost allocation issues related to data centers in its 2025 Biennial Review Docket in Case No. PUR-2025-00058,[90] as explained by Dominion's witnesses Sunkins[91] and Compton[92] during the evidentiary hearing. The 2025 Biennial Review Docket is the appropriate answer to respondents' concerns about addressing the impacts of data center load on other customers.

C. Giving due consideration to the increasingly complex planning environment

Although Dr. Stover supports the Commission accepting Dominion's 2024 IRP, that does not mean he embraces a business-as-usual approach to future IRPs. Instead, he recognizes that maintaining resource adequacy in the context of the VCEA's carbon free emissions goals and unprecedented load growth[93] creates an increasingly complex planning environment. These

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[89] Tr. at 1300 (cross of Blackwell by Staff).

[90] *Application of Virginia Electric and Power Company for a 2025 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia*, Case No. PUR-2025-00058, Application at 11-14 (Mar. 31, 2025); *id.*, Stuller Testimony at 5-9 (Mar. 31, 2025).

[91] Tr. at 335 (cross of Sunkins by Sierra Club counsel) noting that Dominion had recently presented a cost allocation proposal related to high load customers on its biennial review proceeding.

[92] Tr. at 1072-1073 (cross of Compton by Consumer Counsel) agreeing that Dominion has proposed a separate rate class in its biennial review application.

[93] *See, e.g.* Hearing Exhibit 50 (2025 PJM Long-Term Forecast Report, dated January 24, 2025). (PJM 2024 load forecast showed PJM increasing by 24 GW and DOM Zone increasing by 16 GW through 2034, and the PJM 2025

circumstances warrant the Commission providing guidance to Dominion in how best to address these complexities in its next fully litigated IRP.

1. Challenges making the planning environment in the future increasingly more complex

There are three challenges that Dr. Stover identifies as making the planning environment that Dominion will encounter in the future more complex.

a. Difficulty in fulling assessing Dominion's data center load with information that is currently available

The first concerns the increasing difficulty for stakeholders to fully assess Dominion's data center load forecast with the information that is currently available. For future IRPs, more detailed information related to load forecast assumptions is needed to bridge the gap between (a) the data used in the PJM transmission planning and resource adequacy process and (b) the data used in the Dominion data center forecast. Bridging this gap would improve overall planning accuracy and effectiveness.[94]

Dr. Stover's concern is that there are multiple load serving entities ("LSEs") within the Dominion zone, including Dominion itself, municipal utilities, and electric cooperatives. Dominion is the primary overall transmission operator for the entire DOM Zone but is only responsible for serving the capacity and energy needs of customers within the DOM LSE footprint.[95] Because many PJM processes are reported at the DOM Zone level (including load forecast and transmission planning), there are challenges distinguishing the different entities within the DOM Zone from each other. There's also difficulty in dealing with generation and transmission planning when these are done separately and at different levels of granularity with

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load forecast shows even greater increases, with PJM increasing by 55 GW by 2035 and the DOM Zone increasing by 19 GW in 2035).

[94] Hearing Exhibit 38 (Stover Direct Testimony) at 8-9.

[95] Hearing Exhibit 38 (Stover Direct Testimony) at 9.

generation planning performed by each LSE separately (and, for Dominion, within its IRP), while transmission planning is performed by Dominion and PJM for the overall DOM Zone. The example Dr. Stover provided was stakeholders being unable to directly map a new large load request submitted in the PJM M3 Supplement Process—which is used for transmission planning across the entire DOM Zone—to the same load request in the overall Dominion data center forecast—which is used for generation planning in the IRP within the DOM LSE only.[96]

b. Substantial projected load growth from electric cooperatives without clarity on resources to serve this load

The second planning complexity Dr. Stover identified relates to the substantial projected growth in data center demand from the electric cooperatives coupled with the lack of clarity on the feasibility of their planned pathway to meeting their rapidly increasing energy and capacity needs. In the 2025 PJM load forecast, the Northern Virginia Electric Cooperative ("NOVEC") for its retail customers and the Old Dominion Electric Cooperative ("ODEC") for its retail coop customers members have a combined projected load growth of over 10,000 MW due to data center requests by 2035. None of the electric cooperatives provide IRPs to the Commission, so there is limited visibility within the context of the 2024 IRP on their exact plans to meet this substantial load growth. However, Dr. Stover concluded, based on comments made in conjunction with the Commission's December 16, 2024 Technical Conference on data center load in Case No. PUR-2024-00144, that market energy and capacity purchases and sleeve PPAs agreements with merchant generation will play a major role, rather than the electric cooperatives building new generation themselves. This could create substantial upward pressure on the capacity and energy prices in the DOM Zone due to increasing demand for a limited supply of merchant generating resources. [97]

[96] Hearing Exhibit 38 (Stover Direct Testimony) at 9-10.
[97] Hearing Exhibit 38 (Stover Direct Testimony) at 10-11.

Dr. Stover reiterated during the evidentiary hearing that it was imperative the Commission keep in mind the impact on Dominion's customers from load growth within other LSEs within the DOM Zone for which Dominion is the transmission operator. This load growth results in both resource adequacy stress and transmission stress within the DOM LSE, including significant upward pressure on energy and capacity prices.[98] Dr. Stover noted that Compton's rebuttal testimony appeared to support this concern when Mr. Compton observed that load growth is higher outside of the DOM LSE and that other LSEs have not committed to supply resources.[99] Failure to address this in the 2026 IRP could lead to resource adequacy challenges within the DOM Zone.[100]

c. PJM's updates to its ELCC calculations

The third and final planning complexity Dr. Stover identified stems from PJM's 2024 updates to its ELCC calculations, which FERC approved in January 2024. Those reforms substantially decreased the accredited capacity assigned to solar resources when compared to other resources. This creates a significant new challenge for Dominion's resource planning, given that Dominion must continue expanding solar capacity to meet its decarbonization targets under the VCEA, which was enacted in 2020, well before PJM's ELCC reforms. Due to these PJM updates, Dominion in its 2024 IRP receives more limited capacity credit for its solar resources.[101]

2. Potential blind spot regarding Dominion's approach to resource adequacy

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[98] Tr. at 629-630 (Stover surrebuttal).
[99] Tr. at 632-633 (Stover surrebuttal). Hearing Exhibit 63 (Compton Rebuttal Testimony) at 32.
[100] Tr. at 632-633 (Stover surrebuttal).
[101] Hearing Exhibit 38 (Stover Direct Testimony) at 11. *See also* Hearing Exhibit 54 (PJM ELCC Class Rating) (points at declining accreditation across the board, but especially to demand response and solar, which highlights resource adequacy challenges for variable resources).

These three planning complexities may create a blind spot regarding Dominion's approach to resource adequacy. The 2024 IRP relies on 2,300 MW to 3,300 MW of capacity purchases annually. In many instances, capacity purchases are a reasonable and prudent avenue for an LSE to meet its capacity obligations. However, Dr. Stover urges Dominion to fully consider the wider DOM Zone and PJM context when assessing the prudency of these purchases for future IRPs. This consideration is necessary because, as Dr. Stover explains, the "PJM capacity market is a financial construct."

> It is designed to incentivize and compensate generators for providing capacity, but it does not guarantee that new generating resources will actually be interconnected to grid. If both the co-op utilities and Dominion LSE rely on capacity purchases but sufficient new generating resources are not built to fulfill these capacity needs, it can create substantial upward pressure on capacity prices and if extreme enough, create reliability risks. Similar concerns on tightening market conditions and pressure on capacity markets in the Dominion zone and wider PJM market have been raised in recent reports and FERC filings including the PJM Energy Transition in PJM: Resource Retirements, Replacements & Risks report [102], PJM's request to FERC for an interconnection fast track[103], and the JLARC data center report[104]. These tightening conditions have led to unusually high capacity prices in the recent 2025/2026 Base Residual auction – with the wider PJM experiencing an 833 percent increase from previous years and Dominion clearing at a higher price than the rest of PJM. In my opinion, these tightening conditions are genuine and reflect load growth across PJM and declining ELCC ratings.[105]

Dr. Stover concludes that Dominion has time before its next IRP to address the planning complexities and potential blind spot he has identified. To do this, Dominion should be directed to "*broaden the scope of that IRP* to explicitly consider what impact load growth and resource planning from other LSEs in the Dominion zone and wider PJM market may have on the ability of the Dominion LSE to ensure that sufficient resources will be available in the capacity market to support market purchases as an affordable and reliable pathway for the Dominion LSE

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[102] https://www.pjm.com/-/media/DotCom/library/reports-notices/special-reports/2023/energy-transition-in-pjm-resource-retirements-replacements-and-risks.ashx

[103] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20250211-3120&optimized=false

[104] https://jlarc.virginia.gov/pdfs/reports/Rpt598-2.pdf at p. 7.

[105] Hearing Exhibit 38 (Stover Direct Testimony) at 12.

meeting its capacity obligations."[106] This concern about relying too heavily on market purchases is addressed in the IRP Best Practices Guide in Best Practice 23 concerning market interaction assumptions. The Guide cautions that "high reliance on the market requires proper justification" and points to the Puget Sound Energy 2021 IRP to illustrate the importance of "assessing regional energy and capacity availability."[107] After aligning its resource adequacy model with regional reliability modeling, Puget Sound Energy ultimately determined that it needed to lower its market purchase limit from 1500 MW to 500 MW, which resulted in designing its preferred portfolio to reflect additional firm capacity contracts.[108]

In addition to considering potential issues with the capacity market, Dr. Stover also seeks to have the Commission take proactive steps to *increase the coordination* between LSEs in the DOM Zone to help ensure sufficient generation is brought onto the system to support cost effective and reliable capacity purchases.[109]

3. Enhancements to future IRPs to address the increasing planning complexities and the potential blind spot

In order for this broader scope and increased coordination to active the objective of removing possible blind spots for its resource adequacy analysis, the next IRP should adopt four enhancements that more explicitly consider the impact of transmission constraints and stress on Dominion's system.

a. Jointly planning generation and transmission system

First, this entails going beyond imposing limits on capacity imports from the wider PJM market, which Dominion has already done in its 2024 IRP. The next IRP should take into

[106] Hearing Exhibit 38 (Stover Direct Testimony) at 12-13 (emphasis added).
[107] Hearing Exhibit 53 (IRP Best Practices Guide) at 46.
[108] Hearing Exhibit (IRP Best Practices Guide) at 46.
[109] Hearing Exhibit 38 (Stover Direct Testimony) at 13.

account how Dominion relies on separate transmission planning processes, such as PJM's Regional Transmission Expansion Planning (RTEP) exercise, to inform its transmission planning.[110] Dr. Stover recommends that Dominion's next IRP adopt an alternative planning approach by jointly planning generation and transmission systems, which would lead to more robust decision-making for both generation and transmission planning, unlocking efficiencies that planning generation and transmission processes separately may overlook.[111] This joint planning approach could, in Dr. Stover's assessment,

> enhance coordination, create a more transparent planning framework, and provide stakeholders with a clearer understanding of how their energy needs are met from both a generation and transmission perspective, leading to long-term holistic grid solutions to meet the forecasted demand.[112]

Dr. Vance in her pre-filed rebuttal testimony cited the FERC Standards of Conduct as a barrier to Dominion being able to address generation and transmission planning in its 2026 IRP.[113] Mr. Compton during the evidentiary hearing indicated that transmission import limits, as one example, cannot be shared with generation or business development teams until the information is public.[114] Dr. Stover conceded that he was not a lawyer, so he did not have a legal position on FERC's Standards of Conduct, but he observed that Dominion already considers certain transmission issues within the 2024 IRP, and he further observed that other utilities have considered transmission as a selectable resource in their IRPs, such as the PacifiCorp 2023 IRP.[115]

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[110] Hearing Exhibit 38 (Stover Direct Testimony) at 13.
[111] Hearing Exhibit 38 (Stover Direct Testimony) at 14.
[112] Hearing Exhibit 38 (Stover Direct Testimony) at 14.
[113] Hearing Exhibit 76 (Vance Rebuttal Testimony) at 13-14.
[114] Tr. at 1012-1013 (Compton surrebuttal).
[115] Tr. at 634 (Stover surrebuttal).

Indeed, on March 25, 2025, Microsoft responded to Dominion's discovery addressing FERC Standard of Conduct issues related to Dr. Stover's pre-filed testimony, indicating that "including transmission within IRPs has been identified as an emerging practice in various forums."[116] Dr. Stover explained that "in Pacificorp's 2023 IRP, transmission projects are included, and transmission is treated as a selectable resource."[117] Similarly, he indicated that Salt River Project and Duke Energy have begun adopting an integrated system planning approach,[118] which his Direct Testimony indicated involves jointly planning generation and transmission systems.[119] Dr. Stover also pointed out that in its 2021 IRP, NIPSCO considered benefits brought to the transmission system by various resources.[120] Dr. Stover believes working toward an integrated system planning-type approach "would provide efficiencies to both planning efforts and help mitigate transmission congestion,"[121] which could be done via "rely[ing] on *public* information, such as from the PJM Transmission Expansion Advisory Committee."[122] Dr. Stover objected to using the FERC Standards of Conduct as a barrier:

> I don't think that's fair. There's a fair amount of public resources that could be leveraged to make great decisions. Specially there's a lot of information about load within the DOM Zone. . . . So fair enough that we have to honor FERC regulations, but we can use a wide account of public information from PJM to start making some of these decisions.[123]

This establishes that FERC Standards of Conduct have not proven to be a barrier for at least four utilities that jointly plan generation and transmission in their IRPs, and it also establishes that

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[116] Exhibit 56 (Microsoft Response to Dominion's Second Set, No. 7).
[117] Exhibit 56 (Microsoft Response to Dominion's Second Set, No. 7). *See also* Tr.at 718-719 (Cross of Stover by Dominion Counsel)
[118] Exhibit 56 (Microsoft Response to Dominion's Second Set, No. 7).
[119] Hearing Exhibit 38 (Stover Direct Testimony) at 14.
[120] Exhibit 56 (Microsoft Response to Dominion's Second Set, No. 7).
[121] Exhibit 56 (Microsoft Response to Dominion's Second Set, No. 7).
[122] Exhibit 56 (Microsoft Response to Dominion's Second Set, No. 7) (emphasis added).
[123] Tr. at 719-720 (cross of Stover by Dominion counsel).

such work can be done using publicly available information. Dominion provided no information to rebut these facts. Moreover, the IRP Best Practice Guide endorses Best Practice 26, which entails "consider[ing] transmission alternatives and expansion of regional transmission infrastructure as part of the resource planning process," because "this best practice informs regional transmission planning and helps co-optimize transmission expansion and generation portfolio development."[124]

b. Considering locational modeling

The second enhancement that Dr. Stover recommends for Dominion's next IRP is to consider the locational aspect of load growth. This approach, which was discussed at length during the evidentiary hearing as "locational modeling," had support from various parties, including Dr. Laws on behalf of Appalachian Voices and Mr. Smith on behalf of the Commission Staff.

In his pre-filed testimony, Dr. Stover observed that the 2024 IRP does not consider the locational aspect of load growth: it treats all load growth as fungible. For instance, this locational-agnostic approach does not recognize that a new data center located in Data Center Alley in Northern Virginia—an area experiencing local stress in the transmission system—would not have the same impact as a new data center located in other areas such as Central Virginia that do not have the same amount of local stress. When Dominion does not factor in the locational aspect of load growth, Dominion's modeling could fail to identify intra-zonal constraints developing due to new congestion patterns in the grid. Dr. Stover endorses the recommendation made in the 2024 annual report of the Commission on Electric Utility Regulation (CEUR) that

[124] Hearing Exhibit 53 (IRP Best Practices Guide) at 48-49.

Dominion fortify its proactive approach to data center load forecasting by adding a locational element to its forecasts.[125]

During Dr. Stover's surrebuttal testimony, he agreed with Dr. Laws that breaking Dominion into subzones for the purposes of location modeling can be easily accomplished within a modeling tool like PLEXOS using a hub and spoke type model.[126] This assessment was made in response to Dr. Laws' surrebuttal testimony, where Dr. Laws in turn agreed with Mr. Smith's pre-filed testimony that the Commission require Dominion to model at least four nodes in PLEXOS going forward.[127] Dr. Laws explained "there are many advantages to adopting a zonal analysis, including accounting for land constraints . . ."[128] Dr. Laws did not accept the concern expressed in Mr. Compton's rebuttal testimony that locational modeling would require significant work with little value. Mr. Compton was concerned that a full power flow model was needed, but Dr. Laws explained that a pipe and bubble model would suffice and would not add meaningful complexity to the planning models. Although the hub and spoke/pipe and bubble/zonal model that Dr. Stover, Dr. Laws, and Mr. Smith found acceptable is not as accurate as nodal modeling, this approach is, in Dr. Laws' words, "likely sufficient from a resource planning perspective" and is "much less computationally and data intensive." [129]

Dr. Stover also rejected Mr. Compton's concerns that a locational modeling has little value and would be too difficult if it involved power flow modeling. Dr. Stover went one step further in his critique, noting that Dominion is already doing power flow modeling in its 2024 IRP to establish transmission limits for importing power from outside of the DOM Zone, and

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[125] Hearing Exhibit 38 (Stover Direct Testimony) at 14 (citing https://rga.lis.virginia.gov/Published/2025/RD53/PDF).
[126] Tr. at 622-623 (Stover surrebuttal).
[127] Tr. at 416 (Laws surrebuttal, addressing Hearing Exhibit 52 (Smith Direct Testimony)).
[128] Tr. at 416 (Laws surrebuttal).
[129] Tr. at 417 (Laws surrebuttal).

urged that a power flow model would be critical to address transmission constraints *within* the DOM Zone.[130] During cross examination by Commission Staff counsel, Dr. Stover clarified his suggestion for clarifying or tweaking Mr. Smith's zonal approach[131] to go beyond geographical limits and focus on transmission congestion areas, which could be identified using tools like power flow:

> Q. And during your surrebuttal today, you indicated that you agreed with Staff Witness Smith with his recommendation about the nodal or locational modeling; is that correct?
> A. I should clarify. My understanding of Staff Witness Smith's recommendation was that it was more of a hub-and-spoke-type model, as recommended by Witness Laws. Apologies if I misunderstood his recommendation. But the general thought of geographic fidelity, I very much agree with.
> Q Okay. And in your surrebuttal, I wrote down that you also said you would even take it further to include transmission limits. Can you explain you what meant by that?
> A. Yeah. So, specifically, I really like this recommendation, and my suggestion was instead of just thinking about it as a geographic factor, would sort of say, yes, and let's look at very key transmission limits. So we're picking those zones very carefully so we can get ahead of some of . . .these challenges and look at these key transmission limits. So take that recommendation even further and look at these key transmission limits, and this is how a hub-and-spoke type model would be set up, break it into different zones with these known transmission limits in between them.
> Q. When you say "transmission limits," would you mean, like, transmission limits on the system?
> A. Yeah. It's exactly the model—the type of analysis Dominion did for its ability to import from outside of DOM Zone, just thinking about it within the DOM Zone.[132]

During Mr. Smith's surrebuttal, he provided further support for this locational modeling approach by observing that the purpose of this approach—modeling the DOM LSE as multiple nodes to better reflect actual availability and timing of imports, and to provide information necessary to identify additional specific notes to include in the model—are all supported as best

[130] Tr. at 630-631 (Stover surrebuttal).
[131] Tr. at 634-635 (Stover surrebuttal) addressing Mr. Smith's testimony.
[132] Tr. at 715-716 (cross of Stover by Staff).

practices by the United States Department of Energy in its IRP Best Practices Guide.[133] Mr. Smith acknowledged that his approach was the same as Dr. Stover's, with the hubs being the zones and the spokes being the transmission between the various zones that would capture the transmission constraints on power moving from one place to the other. Any new resources would be placed within the zone to capture congestion costs that are a function of the locational differences and the choices being made.[134] Mr. Smith explained that the purpose of locational modeling was to see if the model would make different selections if the model took into consideration the location where a resource was placed.[135] The rationale is not just to understand what the constraints are but to understand what the model does when it is allowed to consider constraints when making resource and dispatch selections, which may be very different from the ones selected with a model using one zone with no constraints.[136]

Despite the enthusiasm shown by Dr. Laws, Dr. Stover, and Mr. Smith for locational modeling, Dominion's witnesses continued to express skepticism towards this approach. Mr. Compton claimed that Mr. Smith's approach using four zones would essentially require "four separate IRPs."[137] Ms. Scheller thought location modeling was not needed at all because the need to go to that level of precision could be satisfied through "more review of data that's already available rather than adding extra modeling exercises that would really make interpretation more challenging."[138] Mr. Bocanegra objected because "breaking the IRP modeling into four or more zones could create several logistical forecasting issues."[139] Dr. Vance did not think it was feasible because "it just turns into a more complicated exercise

[133] Tr. at 856 (Smith surrebuttal), citing to Hearing Exhibit 53 (IRP Best Practices Guide).
[134] Tr. at 892-829 (cross of Smith by Microsoft counsel).
[135] Tr. at 921 (cross of Smith by Dominion counsel).
[136] Tr. at 926. (cross of Smith by Dominion counsel).
[137] Tr. at 1012 (Compton surrebuttal).
[138] Tr. at 1092-1093 (Scheller surrebuttal).
[139] Tr. at 1121 (Bocanegra surrebuttal).

because you're looking at more risk and . . . questions that require more engineering judgments across a larger set basically."[140]

When weighing these assessments from Dominion's expert witnesses, the Commission should consider the fact that Dominion's witnesses have *no* internal experience with locational modeling for IRPs. Mr. Bocanegra acknowledged that he had no experience with locational modeling.[141] Mr. Compton when even further, stressing that "[m]y team and myself network with other IRP modelers at conferences, et cetera, and we've yet to meet anyone that does locational modeling."[142] So the Dominion experts not only have no experience themselves, they apparently *don't even know* an IRP modeler with experience in locational modeling. This is in sharp contrast with other expert witnesses such as Dr. Stover and Dr. Laws, who, as discussed above, do have expertise with locational modeling for IRPs and provided guidance on matters such as the PLEXOIS model being able to handle locational modeling and also how locational modeling could be structured for the 2024 IRP via such as the use of a hub and spoke modeling that focused on transmission nodes associated with congestion within the DOM LSE.

The Commission should also consider factors that make locational modeling less arduous. Mr. Compton acknowledged that if the Commission did require locational modeling, then using the hub and spoke approach recommended by Dr. Stover would be less complex.[143] Mr. Compton also acknowledged that in the final order in the RPS Docket, the Commission directed Dominion to model, to the extent practicable, the locational values of future RPS resources. Since Dominion is now required to do this for RPS filings, Mr. Compton agreed that

[140] Tr. at 1432 (Vance surrebuttal).
[141] Tr. at 1147 (cross of Bocanegra by Microsoft counsel).
[142] Tr. at 1011 (Compton surrebuttal).
[143] Tr. at 1061 (cross of Compton by Microsoft counsel).

Dominion's starting point for the 2026 IRP would be after it had already done some locational modeling for the RPS proceeding.[144]

Taken altogether, these circumstances weigh in favor of the Commission requiring Dominion, in its 2026 IRP, to incorporate locational modeling into its expansion plan forecast or take steps to prove that it isn't needed – namely that all generation will in fact be deliverable to demand and not negatively impacted by intra-zone congestion. And to Dominion's credit, during the evidentiary hearing Dominion went beyond saying that locational modeling was simply too hard to consider. Dominion indicated that if the Commission did address locational modeling, then a way to implement that would be to direct Dominion to discuss locational modeling with the Commission Staff and report out on that discussion as part of its 2025 IRP update. During Dominion's cross of Staff witness Smith, Dominion's counsel asked if Staff would be willing to "meet with Dominion and sort of informally work through some of these issues and assumptions" related to locational modeling "to help achieve what Staff is looking for."[145] Mr. Compton said that Dominion was willing, in those locational modeling discussions with the Staff and Dominion, to also have another technical expert participate who had familiarity with locational modeling for IRPs, such as Dr. Stover, as long as Staff was agreeable to that.[146] Mr. Bocanegra was also agreeable to this approach as long as the Staff had no objections or qualms about that.[147] Dr. Vance said "I honestly look forward to speaking, if the Commission so desires and Staff so desires, to meet with other people as well, . . . a conversation where we can work through all of the different potential options we have."[148]

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[144] Tr. at 1082 (cross of Compton by Staff counsel).
[145] Tr. at 929 (cross of Smith by Dominion counsel).
[146] Tr. at 1062 (cross of Compton by Microsoft counsel).
[147] Tr. at 1147 (cross of Bocanegra by Microsoft counsel)
[148] Tr. at 1433-1434 (Vance surrebuttal).

Accordingly, the record in this proceeding provides solid support for the Commission to direct Dominion, the Commission Staff, and expert witnesses with experience in locational modeling and IRPs, such as Dr. Stover and Dr. Laws, to discuss how to implement locational modeling in Dominion's 2026 IRP and to provide a summary of such discussions in Dominion's 2025 IRP update. Such an approach would also be supported by the IRP Best Practices Guide, Practice 2, regarding engaging technically sophisticated stakeholders in IRP modeling based on the value provided to commission staff by such technical experts.[149] Such efforts should be focused on tackling the real challenges and blind spots emerging in the Dominion zone – zone wide load growth which is concentrated far from likely areas of generation investment and limited visibility into intra-zone congestion. It is not Microsoft's intention to require more advanced modeling for its own sake; rather, Microsoft is in support of using enhanced modeling as it is warranted. Capturing this locational element of the future demand growth and resource mix will allow Dominion to prevent a future in which Dominion had sufficient energy but cannot deliver it due to intra-zone congestion.

c. Greater coordination with key stakeholders

The third enhancement that Dr. Stover recommends is greater coordination with key stakeholders across the Dominion zone. He asks that Dominion's next IRP be informed by collaboration of Dominion with PJM and with other DOM Zone LSEs to account for intra-zone constraints and to explicitly model electric cooperative load and plans to build new generation resources by other entities within the zone to determine the impact on resource adequacy and transmission constraints via an integrated Dominion Zone and PJM model. The lack of visibility into the resource plans of other LSEs in the Dominion Zone represents a substantial planning

[149] Exhibit 53 (IRP Best Practices Guide) at 12.

challenge for Dominion and a potential reliability risk for the broader public in the Commonwealth. This collaboration offers several benefits. It could help ensure that sufficient generation is added to the system to avoid extreme capacity spikes or reliability risks. Also, to the extent the Commission can foster stronger collaboration between generation developers, large-load customers, Dominion as an LSE and other LSEs, this could allow future IRPs to reflect innovative pathways for new generation development, such as sleeved power purchase agreements and build-own-transfer agreements. Dr. Stover seeks to have Dominion actively pursue these partnerships and leverage creative solutions to expand its build limits for different resource types in its next IRP.[150]

d. Expanding the planning horizon to develop a strategy to reliably and affordably exit from natural gas resources

The fourth enhancement that Dr. Stover recommends for Dominion's next IRP is to expand its planning horizon to 2045 in order for Dominion to develop a strategy to reliably and affordably transition from natural-gas-based resources to meet the VCEA decarbonization mandates.[151] Dr. Stover observes that this should result in Dominion considering a wider range of alternative technologies to help it reliably and affordably exit from reliance on natural gas.[152]

Dr. Stover acknowledged that Dominion itself recognized the evaluation of alternative technologies as an area to improve in its next IRP cycle, stating that Dominion will continue to evaluate the range of possible supply side resources, including long duration energy storage, direct air capture, and carbon capture and sequestration. In Dr. Stover's assessment, these

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[150] Hearing Exhibit 38 (Stover Direct Testimony) at 15.

[151] Hearing Exhibit 38 (Stover Direct Testimony) at 16; Tr. at 677 (cross of Stover by App Voices counsel).

[152] *See* Hearing Exhibit 53 (IRP Best Practices Guide) at 39 provides similar guidance:

> The challenge for planners is to ensure they evaluate emerging technologies consistently and make informed and transparent decisions about which emerging technologies to include in capacity expansion modeling. Consistent, unbiased evaluation allows utilities to understand the cost and system impacts for particular technologies and clearly communicate to regulators and stakeholders the reasoning for technologies utilities included and omitted from resource plans for a given timeframe.

represent nascent but promising technologies because they are potentially clean, high ELCC resources that could replace or augment natural gas-based resources. Dr. Stover further recommended that Dominion consider hydrogen and renewable natural gas blending as further carbon potential pathways.[153]

As Dr. Stover recognized during cross examination, long duration energy storage is a very promising technology that could be an important resource towards meeting VCEA requirements, but he deferred to the Commission about requiring long duration energy storage in future IRPs.[154] Dr. Stover agreed that modeling battery storage for 8 hours or longer was an area that could be improved in the 2026 IRP.[155] Dr. Stover acknowledged that long duration storage was one of the wider range of technologies that Dominion should consider in a future IRP.[156]

When questioned about his assessment that Dominion was making progress towards the VCEA decarbonization goals, Dr. Stover cited 19 gigawatts for renewables that Dominion had placed within the 2024 IRP, while still acknowledging the importance of adding 2045 to the 2026 IRP in order to create a glide path that "can meet the deadline in a thoughtful way that balances both resource adequacy and cost." [157] When pressed on how the 2024 IRP addressed retirements and reducing emissions, Dr. Stover's assessment was that the 2024 IRP reduced the carbon emissions' intensity over the planning horizon.[158] He also endorsed adding the 2045 deadline to the 2026 IRP.[159]

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[153] Hearing Exhibit 38 (Stover Direct Testimony) at 16. *See also* Hearing Exhibit 53 (IRP Best Practices Guide) at 39, "examples of emerging technologies include small nuclear reactors, long duration energy storage, hydrogen, and CCS".
[154] Tr. at 658-659 (cross of Stover by App Voices counsel).
[155] Tr. at 699 (cross of Stover by Walmart counsel).
[156] Tr. at 714-715 (cross of Stover by Staff counsel).
[157] Tr. at 666-667 (cross of Stover by App Voices counsel).
[158] Tr. at 673 (cross of Stover by App Voices counsel). *See also* Tr. at 677 (cross of Stover by App Voices counsel), about adding 2045 to future IRPs .
[159] Hearing Exhibit 38 (Stover Direct Testimony) at 15-16.

Dr. Stover was asked during the evidentiary hearing about an article he co-authored concerning navigating challenges and opportunities in a carbon-free energy future. Dr. Stover explained that this article had no bearing on the 2024 IRP because it dealt with a 100% carbon free premise, which is not contained in the 2024 IRP. He also found the article to be inapplicable because Dominion was bound to meet its capacity obligations within PJM, which entails compliance with the ELCCs as set by PJM.[160] In fact, the article had no bearing whatsoever to an IRP because it was specifically modeling a study based on data centers looking at various technology futures.[161] He emphasized that he and the other co-authors of the article "found the amount of resources needed to be built highly infeasible."[162]

When Dr. Stover was questioned about having any objections to the 2024 IRP including natural gas facilities, Dr. Stover pointed out that natural gas was being built even in the absence of data center load growth.[163] Dr. Stover also noted that higher load growth, coupled with large users that had sustainability objectives, could help enable technologies such as SMRs and offshore wind to come online by providing a wider customer base to support such technologies.[164] This insight is supported by Mr. Blackwell's observation that the vast majority of data centers have renewable energy targets, and Dominion partners with them on achieving these goals when possible.[165]

Regarding the ability of data centers to decarbonize by switching from back up diesel generation to solar and storage, Dr. Stover explained that it would be hard to use solar and storage to replicate back up diesel generation as a behind the meter resource due to engineering

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[160] Tr. at 653-660, referring to Hearing Exhibit 45 (Carbon-Free Energy Future: Navigating Challenges and Opportunities).
[161] Tr. at 660-66 (cross of Stover by App Voices counsel).
[162] Tr. at 666-667 (cross of Stover by App Voices counsel).
[163] Tr. at 689 (cross of Stover by Sierra Club counsel).
[164] Tr. at 689 (cross of Stover by Sierra Club counsel).
[165] Tr. at 1254 (cross of Blackwell by Sierra Club counsel).

and land constraints, and even front of the meter faces the fact that one-for-one replication is not feasible due to the lower ELCC values assigned to energy limited and variable resources of solar and storage. [166] Mr. Blackwell reinforced this concern regarding land constraints on behind the meter generation, saying that he is not aware of any battery and storage installation by any data center in Dominion's service territory, and he thought that was based on practical obstacles to such installations. This involved land constraints and land costs in areas like Loudon County, where 10 acres to generate one MW of solar meant for a 300 MW data center meant you would need 3,000 acres. He observed that Dominion has difficulties getting five to seven acres allocated on data center property for a standard substation design. The need to occupy as much space as possible with servers means that some data centers balk at the standard substation design and instead opt for a premium substation design that is twice as expensive but allows them to shrink the size of the substation in half. Mr. Blackwell emphasized that Dominion is not seeing any interest by data centers in putting additional infrastructure on their property.[167]

D. Accepting Dominion's assessment of how to lower demand based on energy efficiency and demand side management for purposes of the 2024 IRP

1. Assessing DSM for data centers

When asked to address the ability of data centers to engage in demand response, Dr. Stover urged being thoughtful about a balanced portfolio that is assessed very carefully. For instance, there are negative consequences of using diesel back up generation such as emissions limits, and there is also the declining efficacy of demand response over time, based on ELCC values.[168] Dr. Stover also recognized that there are proposals for energy efficiency technologies applicable to data centers that can lead to significant energy savings, but he characterized these

[166] Tr. at 693 (cross of Stover by Sierra Club counsel).
[167] Tr. at 1236-1239 (Blackwell surrebuttal).
[168] Tr. at 695-696 (cross of Stover by Sierra Club counsel).

as "emerging ideas." He was not aware that any of these are achievable at scale in a meaningful way.[169]

The most definitive guidance on the actual application of DSM to data centers was provided by Mr. Blackwell, who stressed the need to understand, when you are forecasting any type of load growth, how particular types of load behaves. Based on over 10 years of experience with metered data, he did not agree with Dr. Laws' recommendation that Dominion incorporate a sensitivity that incorporates meaningful demand response participation by data centers and include that as part of a customer contract. He said Dominion was seeing no curtailments by its data center customers, as illustrated by a graph showing DOM Zone LMP versus Dominion data center load for the month of January 2025. This graph established that the minimum demand for data centers in this month was 2,796 MW and the maximum demand was 2,946 MW, a difference of only 158 MW. His point was that data center demand basically did not budge even though the LMPs around January 18, 19, and 20 ranged from under $50 per MW to $250 per MW. When an industry does not budge in response to a $200 differential in LPM pricing, that indicates a lack of ability to engage in demand response. Mr. Blackwell thought that one constraint was federal and state emissions rules limiting data centers to running during an emergency declared by PJM—an emergency declared by Dominion would not suffice. Other than that, data centers have very limited permission to operate their diesel generators, and that has to be dedicated for maintenance purposes, basically running for a short period once a month to make sure they are still operational.[170]

[169] Tr. at 711 (cross of Stover by City counsel).
[170] Tr. at 1230-1235 (Blackwell surrebuttal). Hearing Exhibit 70 (chart showing PJM LMPs and data center load in January 2025).

The JLARC Report supports Mr. Blackwell's interpretation of the PJM data, noting that participating in demand response and energy efficiency "could have a marginal effect on data center energy impacts" but "will not substantially reduce their energy demands or the challenges posed by growing demand."[171] This occurs because "data center companies have strong incentives to keep facilities fully operational to meet their customer and end-user computing needs, and these typically outweigh financial incentives offered by voluntary utility demand response programs."[172] Similarly, "any energy saved from efficiency gains is likely to be used to perform more computing activity. One company representative noted 'at the end of the day, a 200 MW data center is going to be a 200 MW data center.'"[173]

2. Assessing DSM as load reducer rather than as a selectable resource

Several parties criticized Dominion's IRP for modeling DSM as a load modifier rather than as a selectable resource, arguing that this methodology fails to fully value DSM's potential. However, it is important to clarify that Dominion's approach is consistent with recognized industry best practices. The IRP Best Practices Guide describes these approaches as the "load modifier approach" and the "competitive resource approach" and explicitly states:

> Rather than prescribe one approach, the following sections provide best practices for implementing each of the methods, depending upon the approach regulators or utilities select.[174]

Dominion's current approach, which incorporates DSM as a forecasted reduction to its load forecast, is an example of a utility selecting the load modifier approach. There is no regulatory or industry requirement mandating that DSM be modeled exclusively as a selectable resource.

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[171] Exhibit 8 (JLARC Report) at 37.
[172] Hearing Exhibit 8 (JLARC Report) at 39.
[173] Hearing Exhibit 8 (JLARC Report) at 39
[174] Hearing Exhibit 53 (IRP Best Practices Guide) at 40-41.

Indeed, many utilities across the country employ a similar approach, particularly where DSM programs are administered through separate planning tracks and evaluated using parallel cost-effectiveness testing.[175] While certain parties have expressed a preference for selectable-resource modeling, the mere existence of alternative modeling options does not undermine the validity of Dominion's current method. As such, while Dominion may carefully consider selectable-resource modeling in future IRPs if so directed by the Commission, its existing approach provides no basis for rejecting the 2024 IRP.

3. Assessing realistic contributions of DSM

Dr. Roumpani and other stakeholders have asserted that DSM alone offers a cost-effective pathway to meet Dominion's projected capacity needs. It certainly makes sense to maximize cost-effective DSM, but testimony by certain parties overstates the economic viability and capacity contribution of the DSM portfolio. Specifically, Dr. Roumpani claims that three DSM scenarios—50%, 75%, and 100% Incentive levels—were evaluated in the Virginia Energy Efficiency Potential Study and that all reported Total Resource Cost (TRC) scores above one, signifying cost-effectiveness.[176] This assertion is inaccurate. As confirmed by Mr. Freed and documented in the study itself, only two scenarios (50% and 75% Incentive) were evaluated, and neither had a TRC exceeding one.[177] The study explicitly states: "TRCs less than 1.00 indicate that the costs of the program exceed the benefits as measured by energy and demand avoided costs."[178]

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[175] *See generally,* Tr. at 712-713 (cross of Stover by City counsel), observing that Dr. Stover has seen DSM modeled both ways in IRPs and does not take a position of it.
[176] Hearing Exhibit 35 (Roumpani Direct Testimony) at 41-42.
[177] *See ,e.g.* Hearing Exhibit 47 (Freed Direct Testimony) at 11-12; Tr.at 766-767 (cross of Freed by Clean Virginia counsel).
[178] Hearing Exhibit 48 (Virginia Energy Efficiency Potential Study 2024 to 2033) at 4.

Moreover, Dr. Roumpani cites a "more than 700 MW" peak reduction potential under a purported 100% incentive scenario.[179] The market potential study does not include this scenario. Its highest published peak demand reduction estimate is 547 MW under the 75% scenario.[180] Dr. Roumpani's extrapolated figure is unsupported by the study's record.

Equally important, one could interpret the DSM arguments raised by several stakeholders in this proceeding to assume that peak demand reductions from DSM can substitute directly for firm capacity resources on a one-for-one basis. It is important to address this clearly as a flawed interpretation because these savings are not evenly distributed across all hours. Many measures, such as lighting, may provide large savings in some hours but contribute very little during critical peak periods, especially in winter. Mischaracterizing these impacts can lead to overestimating the capacity contribution of energy efficiency and misunderstanding its value in resource adequacy modeling. This distinction is particularly significant in Dominion's service territory and across the broader PJM market, where winter peak events and shifting evening peaks increasingly challenge traditional planning assumptions. Overstating the firm capacity contribution of DSM risks distorting planning outcomes and could jeopardize system reliability.

This concern was raised by Dr. Stover when he cautioned against assuming that a DSM resource can contribute in every hour, stressing the importance of

> being careful to get through the some of the capacity implications of how these [DSM resources] behave in extreme events. And that was my recommendation whether they were modeled on the load side or on the selectable resource side.[181]

Similar concerns have been raised in the IRP Best Practices Guide. The guide addressed this issue in the context of modeling the capacity contribution – referred to as the resource adequacy

[179] Hearing Exhibit 35 (Roumpani Direct Testimony) at 45.
[180] Hearing Exhibit 48 (Virginia Energy Efficiency Potential Study 2024 to 2033) at 5, Table 1-1.
[181] Tr. at 712 (cross of Stover by City counsel).

contribution - of DSM resources. Specifically, the guide stated: "In particular, conflating load and distributed resources for resource adequacy assessments introduces distortions due to the inherent differences in risk and uncertainty profiles"[182]

A more productive approach towards DSM resources was raised by several parties, including municipal stakeholders, who were concerned that Dominion's stakeholder engagement process for DSM was insufficiently inclusive and proactive.[183] Meaningful engagement with stakeholders—including cities, municipalities, and large customers—may well assist in developing a robust DSM portfolio that reflects the full range of achievable and innovative measures. Again, the best approach to address this issue is not to deny approval of the 2024 IRP but instead to direct this as an enhancement to the 2026 IRP.

While Dominion's current DSM planning process meets minimum procedural requirements, it could make sense to encourage Dominion to expand and strengthen its collaborative framework. Effective DSM planning requires not just procedural inclusion but also active solicitation of creative solutions and responsive program design that incorporates evolving customer needs, new technologies, and dynamic market conditions. To this end, Dominion should consider forming formal stakeholder advisory groups, piloting co-developed DSM initiatives with local governments and large energy users and exploring targeted DSM offerings (such as advanced building controls, industrial efficiency retrofits, and new forms of demand response) that address emerging grid challenges.[184]

However, none of these suggested enhancements warrant the Commission rejecting the 2024 IRP. Instead, they offer potential areas of future improvement in future IRP cycles to

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[182] Hearing Exhibit 53 (IRP Best Practices Guide) at 30.
[183] Hearing Exhibit 47 (Freed Direct Testimony) at 13-14; Tr. 750-753 (Freed surrebuttal).
[184] *See generally* Tr. at 742-764 (Freed surrebuttal).

ensure that DSM plays a central but achievable role in Dominion's long-term resource planning. In sum, while Microsoft strongly supports maximizing cost-effective DSM and enhancing collaborative engagement to unlock innovative DSM opportunities, it is critical to recognize that Dominion's current modeling approach is consistent with industry best practices and that the record demonstrates material overstatements in certain parties' claims regarding DSM cost-effectiveness and capacity contributions. Concerns raised by DSM proponents, which may well be valid for seeking to improve future IRPs, do not provide sufficient grounds to reject the 2024 IRP.

E. Accepting Dominion's assessment of what resources are needed to meet the lowered demand for purposes of the 2024 IRP

At the outset, it should be acknowledged that the 2024 IRP does not give a short shift to carbon free emissions resources. Dominion's witness Flowers stressed during the evidentiary hearing that the build limits used in the 2024 IRP were based on what is realistically achievable given current permitting and interconnection restrictions.[185] Utility scale solar in particular is facing stiff local opposition, including outright bans in some instances, with Mr. Flowers citing local permitting issues for utility scale solar facilities in Fluvanna, Greensville, Bedford, Henry, Pittsylvania, Halifax, Rockingham, August, Gloucester, and Clark counties.[186] Due consideration of such issues is entirely appropriate in IRPs, as evidenced by Best Practice 12 in the IRP Best Practices Guide, which calls for including realistic assumptions about resource availability timing, without unnecessary constraints.[187] This includes

> . . . the risk of construction delays due to *siting* and *permitting*, *local opposition*, the interconnection queue, and supply chain constraints. Utilities must carefully

[185] Tr. at 1317-20 (Flowers surrebuttal).
[186] Tr. at 1323 (cross of Flowers by App Voices counsel)
[187] Hearing Exhibit 53 (IRP Best Practices Guide) at 34.

> balance between letting optimization models optimize and *imposing constraints to reflect real-world construction* and interconnection bottlenecks.[188]

Mr. Flowers further observed that such build limits did not constrain Dominion's built out of renewable generation because Dominion had yet to come close to meeting its build limits.[189] Dr. Stover observed in his pre-filed testimony that "Dominion proposed various potential resource mixes that include solar, storage, wind, nuclear, and natural gas, with nearly 80% of incremental power generation over the next 15 years being carbon-free."[190] Dr. Stover concluded that

> The proposed plans make meaningful and positive progress toward achieving the decarbonization and clean energy targets in the VCEA. The plans propose building 12,000 MW of new solar between 2024-2039, 3,400 MW of new offshore wind, 4,500MW of new battery storage, and small modular nuclear reactors beginning in the mid-2030s, in addition to the 4,750 MW of solar in operation or under development and meaningful progress on Coastal Virginia Offshore Wind (CVOW).[191]

But even with all these renewable resources, it remains an inescapable fact that, for resource adequacy purposes, even more generation—using an approach that for now includes natural gas facilities—is needed. Indeed, the supplement to the 2024 IRP that removed data center load growth established that natural gas facilities were needed even in the absence of data center load growth.[192]

When questioned about the build limits in the 2024 IRP, Dr. Stover said he had not evaluated the specific build limits in the 2024 IRP. He acknowledged that "build limits are . . . an important part of the prudent IRP context."[193] He further observed that in three of the years

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[188] Hearing Exhibit 53 (IRP Best Practices Guide) at 34 (emphasis added).
[189] Tr. at 1317-20 (Flowers surrebuttal).
[190] Hearing Exhibit 38 (Stover Direct Testimony) at 4-5.
[191] Hearing Exhibit 38 (Stover Direct Testimony) at 4-5.
[192] Hearing Exhibit 3 (SCC Directed 2024 IRP Supplement), Figure 3.1 Sensitivity Modeling Results (showing 3,938 MW of natural gas facility with no data center load growth compared to 5,934 MW of natural gas facilities with data center load growth).
[193] Tr. At 674 (cross of Stover by Appalachian Voices counsel)

during the planning horizon, Dominion is at the build limits for all their technology reserves, which is atypical.[194] As highlighted by several stakeholders and Best Practice 36 in the IRP Best Practices Guide, it is critical to "let optimization models optimize."[195] The degree of constraint posed by Dominions build limits raises concerns from resource adequacy and modeling prudency perspectives. Given these factors, he concluded it would be worthwhile for Dominion in future IRPs to provide more information on why it chose those build limits—though he was not commenting on the prudency of the exact build limits—and he would defer to Dominion on better explaining their thought processes there.[196] This represents a critical area of improvement in future IRP cycles. The Commission should order Dominion to provide detailed analysis and justification for technology build limits that are met across all modeling efforts – as was the case for almost all technologies in this IRP.

Dr. Stover was also questioned about certain forms of electric development leading to poorer health for communities in which they are located. He stressed there was a balance in finding the right tradeoff, but emphasized that "resource adequacy is critical to maintaining public health in the Commonwealth." [197]

Regarding Dominion's decision to include SMRs in the 2024 IRP and not to include traditional scale nuclear, Dr. Stover was asked if the financial challenges of large scale nuclear facilities were comparable to SMRs, and he indicated they were not because SMRs were smaller sequential investments.[198] Mr. Flowers explained that Dominion was not opposed to continuing to consider traditional nuclear facilities if such an option became viable in the future regarding

[194] Tr. At 674 (cross of Stover by Appalachian Voices counsel)
[195] IRP Best Practices Guide at 63.
[196] Tr. at 673-674 (cross of Stover by App Voices counsel).
[197] Tr, at 675 (cross of Stover by App Voices counsel).
[198] Tr. at 699 to 702 (cross of Stover by Walmart counsel).

costs, siting, and construction timelines. However, SMRs for many utilities are a priority and focus for a myriad of reasons.[199] Mr. Flowers concerns regarding traditional nuclear went beyond the fact that Vogtle was seven years behind schedule and its original cost estimate was $7 billion compared to its final cost at over $30 billion.[200] He was even more concerned that the Hinkley Point C facility in Europe, which should have been able to achieve nth of a kind benefits due to being the fifth and sixth European pressurized reactor units, was instead following in the footsteps of Vogtle.[201] In sharp contrast, the SMR projects he is following are moving forward on schedule. He stressed how rare it is to get a review by the Nuclear Regulatory Commission on time, yet TerraPower has done just that. Their safety evaluation report was received ahead of schedule, which he characterized as unprecedented.[202]

Basically, standard modules allow an assembly-line fabrication that produces good quality, precision, dramatically reduced costs, and the ability to deliver components much more quickly.[203] Another key advantage for SMRs concerns siting. SMRs use substantially less water. That means they are much easier to site in Virginia, which does not have suitable sites with a big body of water needed for new traditional nuclear reactors. SMRs also do not require the 10 mile emergency planning zone that traditional nuclear reactors require. Nor do SMRs require emergency generators to cool them down. And SMRs do not require operator actions to cool them down: Mr. Flowers described them as "walk away safe."[204]

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[199] Tr. at 1303 to 1304 (Flowers surrebuttal). *See also* Hearing Exhibit 53 (IRP Best Practices Guide) at 39, listing SMRs as an example of an emerging supply side technology.
[200] Tr. at 1304 (Flowers surrebuttal).
[201] Tr. at 1304-1305 (Flowers surrebuttal). *See also* Hearing Exhibit 53 (IRP Best Practices Guide), citing Vogtle in its description of traditional nuclear plants having "high cost uncertainty".
[202] Tr. at 1306. (Flowers surrebuttal).
[203] Tr. at 1306-1307 (Flowers surrebuttal).
[204] Tr. at 1308 to 1301 (Flowers surrebuttal).

Financing is another key advantage. You can deploy capital incrementally, which means you can produce more megawatts sooner that if you followed the path of deploying one really large unit that takes much longer to construct.[205] Policy support also provides an advantage, following passage at the federal level of the ADVANCE Act in 2024 and passage in Virginia in 2024 of Senate Bill 454 providing for seeking a rate adjustment clause for certain preliminary costs.[206]

Mr. Flowers also addressed the cancellation of the SMR project being done by the Utah Association of Municipal Power Systems (UAMPS). This was being built on a subscription model based on subscribers getting the offtake. That model, coupled with rising interest rates, inflation, cost of steel and cost of concrete combined to make the project uneconomic for UAMPS. The same result may not apply in a utility-owned context, and in any event the UAMPS project moved the ball forward because other facilities going through the nuclear licensing process will benefit from NuScale having gone before.[207] Mr. Flowers did not see this result as indicative of the ability to deploy SMRs successfully. Instead, he viewed it in the context of simply being a single project that got cancelled, just as 30 percent of utility-scale wind and solar projects have been cancelled in the United States.[208]

Overall, when assessing what resources should be included in the 2024 IRP, the IRP Best Practices Guide provides sound guidance:

> Ultimately, best practices in resource adequacy are not about developing robust static metrics, but rather developing an iterative process for establishing system need, valuing resource contribution to system need, and testing how well a resulting portfolio meets system needs.[209]

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[205] Tr. at 1308. (Flowers surrebuttal) *See also*, Tr. At 699-702 (cross of Stover by Sierra Club counsel) explaining how financial challenges of SMRs differ from those applicable to traditional nuclear because SMRs involve smaller sequential investments.
[206] Tr. at 1310 to 1311 (Flowers surrebuttal).
[207] Tr. at 1312 (Flowers surrebuttal).
[208] Tr. at 1313-1314 (Flowers surrebuttal).
[209] Hearing Exhibit 53 (IRP Best Practices Guide) at 14.

This addresses Dr. Stover's concern about explicitly evaluating the viability of capacity purchases, and it supports being prudent about approaches that rely too heavily on resources that are still in the "potential" stage. It also supports being cautious about relying on robust solar buildouts that do not reflect reality on the ground.

F. Rejecting claims that the IRP stakeholder process was inadequate

This case marks the first application of the stakeholder process requirement as set forth in the IRP Statute, and Dominion's implementation of that process has fulfilled its obligations thereunder. The record demonstrates that Dominion conducted a robust and inclusive stakeholder process that meaningfully engaged participants and informed the development of its filing.

The IRP Statute directs Dominion to "conduct outreach to engage the public in a stakeholder review process."[210] In response to this directive, Dominion engaged a diverse group of approximately 200 individual stakeholders, including SCC staff, "local, state, and federal government officials; non-governmental organizations; tribes; nonprofit groups; military/defense sector; unions," and residential and industrial rate payers, among others.[211] To alert all potential stakeholders of their opportunity to participate, Dominion "posted public notices in 29 newspapers in Virginia and 18 newspapers in North Carolina."[212]

The IRP Statute next directs Dominion to "provide opportunities for the public to contribute information, input, and ideas on the utility's integrated resource plan, including the plan's development methodology, modeling inputs, and assumptions" and make relevant inquiries.[213] Dominion did just this by engaging in a yearlong stakeholder process "consist[ing] of four phases: (1) a kick-off meeting that provided all stakeholders with a foundation of knowledge

[210] Va. Code § 56-599 D.
[211] Hearing Exhibit 2 at App'x 1 (2024 IRP Stakeholder Process Report), p. 2.
[212] Hearing Exhibit 2 at 3; App'x 1 (2024 IRP Stakeholder Process Report), p 2.
[213] Va. Code § 56-599 D.

on the IRP" and gathered information, input, and ideas on the IRP; "(2) [ten] small group meetings where stakeholders had candid conversations with the facilitators; (3) topic-specific workshops for more in-depth conversations," including workshops on modeling, environmental justice, and reliability; and "(4) summary meetings before the filing to review the collective input and recommendations of stakeholders incorporated into the IRP, and after the filing for an overview of final information."[214]

The IRP Statute also directs Dominion to "report its public outreach efforts to the Commission" and "report on any stakeholder meetings that have occurred prior to the filing date" at the time of filing.[215] Dominion provides these reports in its IRP filings.[216]

Further, to ensure that the stakeholder process was "conducted efficiently, fairly, and effectively," Dominion "retained the expertise of professional third-party facilitators."[217]

During the Stakeholder Process, Dominion reported that it

> . . . received feedback from stakeholders regarding all aspects of the IRP, both quantitative and qualitative. The Company carefully considered all feedback and questions received, and incorporated them into the 2024 IRP where possible, while taking into consideration complex modeling constraints, the need for complete data, and operational and regulatory requirements.[218]

Specifically, Dominion granted stakeholders' requests by incorporating the following into its 2024 IRP: (1) committed to evaluating the use of long duration storage, tidal wave, hydrogen, geothermal, and carbon capture in future IRPs and included SMRs in its 2024 IRP modeling; (2) included more information on carbon emissions and carbon intensity; (3) incorporated increased energy efficiency into its 2024 IRP modeling; (4) modeled a sensitivity showing different scenario

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[214] Hearing Exhibit 2 at 3; App'x 1 (2024 IRP Stakeholder Process Report"), pp. 2-6.
[215] Va. Code § 56-599 D.
[216] *See, e.g.*, Hearing Exhibit 2 at App'x 1 (2024 IRP Stakeholder Process Report).
[217] Hearing Exhibit 2 at 3; at App'x 1, (2024 IRP Stakeholder Process Report), p. 1.
[218] *Id.* at 4; *id.* at App'x 1, p. 9.

ranges for higher and lower load forecasts; (5) an extreme weather analysis; (6) a detailed description of Dominion's project-specific environmental justice process, including how it considers environmental justice in the context of energy infrastructure development; (7) information on the potential application of GETS and advanced conductors and their impact on reliability; (8) modeling the Stakeholder Input Case that contemplated VCEA compliance, including no new natural gas-fired generation and retirements of carbon-emitting generating units by 2045.[219]

Finally, Commission guidelines provide for a 15-year planning period in Dominion's IRPs, which Dominion followed here.[220] This timeframe was clearly communicated to stakeholders during the stakeholder process, as acknowledged by Commission Staff.[221]

While future refinements can be expected as the process matures in its future iterations, the stakeholder process was conducted in full compliance with statutory requirements in this instance. Accordingly, the Commission should find that the process undertaken in this case satisfies the applicable legal standard.

V. Conclusion

Based on the evidence presented in this proceeding, the Commission should take two steps. First, it should accept the 2024 IRP as an assessment of resource planning that is in accordance with the IRP Statute. Second, the Commission should provide guidance to Dominion regarding enhancements for future IRPs.

[219] *Id.* at App'x 1, p. 9-10.
[220] Tr. at 984-986.
[221] Hearing Exhibit 61 (Aug. 23, 2024 stakeholder process PowerPoint presentation); Tr. at 982-983 (cross of Boehnlein by Dominion counsel).

A. Accepting the 2024 IRP

The Commission should accept the 2024 IRP because the IRP's assessment of resource planning complies with the seven operative provisions of the IRP Statute.

Although various parties advocated for different forecasts with different mixes of supply side and demand side, that does not change the fact that Dominion's forecast and its plans to meet such obligations are in accordance with standard industry practices. The 2024 IRP set forth a portfolio of generation resources that is most likely to provide the generation needed to meet forecasted demand, net of reductions from demand side programs that would allow Dominion to provide reliable service at reasonable prices over the long term. These reflected a diversity of generation supply and cost-effective demand reduction contracts and services that reduced risks associated with an over-reliance of any particular fuel or type of generation. These were consistent with the Commonwealth's energy policies in Va. Code § 45.2-1706.1, which aims to reduce climate change by gradually reducing carbon emissions while ensuring an adequate and reliable energy supply, and which does not preclude access to natural gas during the transition to renewable energy.

The 2024 IRP must consider options for maintaining and enhancing rate stability, energy independence, economic development including retention and expansion of energy-intensive industries, and service reliability. This focus on retention and expansion of energy-intensive industries is a particular reason for the Commission to avoid giving undue weight to critiques of the 2024 IRP that would have the Commission stifle or delay or give little credence to the existence of data center load growth and the facilities needed to ensure sufficient reliability to meet electricity demand for all customers in Virginia.

Dominion has specified how it complies with Commission orders and guidelines. Some parties will likely focus on whether Dominion has complied to the maximum extent they desire with a particular order or guideline. However, a determination of overall compliance with the seven operative provisions of the IRP Statute should be deemed a more fitting yardstick for the Commission to find the 2024 IRP is sufficient. Significantly, the IRP Statute directs that Dominion, in preparing its 2024 IRP, *shall e*valuate the 12 factors set forth in Section III. A. 5 of this Brief, after which Dominion *may* propose one or more of those factors. This means that when a party objects to something being excluded from the 2024 IRP, such as traditional nuclear generation, that does not provide grounds for rejecting the 2024 IRP if Dominion evaluated traditional nuclear generation in the course of preparing the 2024 IRP and elected to exclude it from the 2024 IRP. Dominion has also provided the facility retirement study and conducted the stakeholder engagement that is required by the IRP Statute.

B. Enhancing future IRPs

But the Commission's obligation to assess Dominion's plans for resource adequacy will not be complete if the Commission simply approves the 2024 IRP. Despite following many industry best practices, the Commission should account for the atypical challenges facing Dominion and specify recommended enhancements in creativity, robustness of modeling, and communication with stakeholders within future IRPs. Such enhancements will best position Dominion to meet the moment by expanding its resource adequacy approach in a manner which best serves the public interest and results in a portfolio mix which is reliable, affordable, and increasingly clean. These enhancements should include having future Dominion IRPs informed by the following:

1. maintaining the responsibility and oversight for energy and resource adequacy firmly in the hands of Dominion and Commonwealth by evaluating the prudency of capacity purchases,
2. more transparently connecting the generation and transmission planning processes and finding efficiencies between these planning efforts,
3. proactively identifying and managing transmission congestion within the DOM Zone by incorporating the locational element of load growth and generation builds, such as via locational modeling,
4. ensuring collaboration of Dominion with PJM and with other DOM Zone LSEs to account for intra-zone constraints and to explicitly model electrical cooperative load and plans to build new generation resources by other entities within the zone to determine the impact on resource adequacy and transmission constraints via an integrated DOM Zone and PJM model,
5. fostering stronger collaboration between generation developers, large-load customers, Dominion as an LSE and other LSEs, and
6. extending the planning period to 2045 to consider a wider range of alternative technologies to help reliably and affordably exit from reliance on natural gas, such as long duration energy storage, direct air capture, carbon capture and sequestration, and hydrogen and renewable natural gas blending.

Respectfully submitted,

MICROSOFT CORPORATION

May 19, 2025 By: _____
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CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing was emailed to the parties below on this 19th day of May, 2025.

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Exhibit A

Issues Matrix

Issues Matrix for 2024 IRP, Case N0. PUR-2024-00184

Compliance with Laws and Regulations	
Reasonable & Public Interest	Microsoft requests that IRP be found to be reasonable and in the public interest, under applicable statues and regulations. Given the increasingly complex planning environment that Dominion faces in future years, Microsoft also requests that the Commission direct Dominion to adopt certain enhancements in future IRPs.
Compliance with the IRP Statute	Microsoft requests that the 2024 IRP be found to comply with Dominion's obligations under the IRP Statute, including the 15 year planning horizon required by statue and regulations. For future IRPs, Microsoft requests that Dominion be directed to include 2045 in its planning horizon.
Compliance with the VCEA	Microsoft requests that the 2024 IRP be found to comply with Dominion's obligations under the VCEA, including petitioning for approval of solar, wind, and energy storage resources.
Compliance with Obligations to Serve	Microsoft requests that the Commission find that the 2024 IRP is consistent with Dominion's obligation to serve all customer classes.
Stakeholder Engagement	Microsoft requests that the Commission find that the 2024 IRP stakeholder process satisfies the statutory requirements. For future IRPS, Microsoft requests that Dominion continue to stay in close collaboration with its customers to best equip it to accurately perform load forecast, improve transparency around its approach to load forecasting, and find creative solutions including de-risking new technologies, bringing new generation, and identifying new DSM solutions.
Assessment of Demand	
Load Forecast	Microsoft requests that Dominion's load forecast be found reasonable for the 2024 IRP. For future IRPs, Microsoft requests certain enhancements, including that Dominion more clearly connect its IRP forecast to forecasts used in other contexts, particularly PJM's transmission forecast.
Non-DOM LSE DC Load (Coops)	For future IRPs, Microsoft requests that Dominion be directed to consider load growth occurring in the non-Dominion load serving entities in the DOM Zone, based on such load growth posing risks to Dominion with respect to transmission stress and resource adequacy
Planning Environment (DOM, PJM, Others)	Microsoft requests that the Commission find that the 2024 IRP establishes a sufficient baseline. For future IRPs, Microsoft requests the following steps. Having Dominion consider the wider context in the DOM Zone and PJM zone in future IRP cycles. Having Dominion more explicitly consider load growth, generation addition/retirements, and current and future transmission constraints within the DOM Zone and the PJM market more generally. Having Dominion coordinate with stakeholders and other load serving entities within the DOM Zone to gain better clarity on their current plan for meeting the substantial load growth in their systems.
Planning Horizon (15 yrs vs. thru 2045)	Microsoft requests that the Commission find that the 15 year planning horizon in the 2024 IRP is consistent with Dominion's current statutory and regulatory obligations. For future IRPs, Microsoft requests that the Commission order Dominion to plan through 2045 to ensure a reliable and affordable glidepath to the mandatory retirement date.

Assessment of Demand Side Management Resources	
Treatment of DSM (EE & DR)	Microsoft takes no position on the treatment of DSM as a selectable resources versus a load-side modifier. Microsoft highlights that both options are considered acceptable in industry practices and both have benefits. Microsoft also highlights that a separate proceeding is ongoing to review and approve various DSM programs. Given that Dominion followed best practice and given the separate DSM proceeding, Microsoft requests that the Commission find that criticisms of Dominion modeling approach and stakeholder process are not sufficient to warrant rejection of the 2024 IRP, but may warrant further discussion with stakeholders to evaluate alternative modeling approaches and creative pathways to bring additional DSM to the system.
Assessment of Other Resources Need to Meet Demand	
Supply Portfolio Alternatives	For future IRPs, Microsoft requests that the Commission order Dominion to consider a wider range of technology alternatives, including long-duration energy storage, carbon capture and underground storage, and others.
Resource Builds & Limits	Microsoft requests that the Commission finds that build limits are generally a best practice within IRP planning to represent realistic land, labor, and supply constraints. Microsoft takes no position on the exact selected build limits used within the 2024 IRP. However, given the importance of build limits to the selected portfolios, Microsoft requests that the Commission order Dominion in future IRPs to provide more transparency around its build limits for key technology types, particularly if the modeling is choosing to build to the build limits. Microsoft also requests that Dominion in future IRPs continue to work with stakeholders and regulators to find all pathways to increase build limits.
Retirements	For future IRPS, Microsoft requests that the Commission order Dominion to provide a more transparent plan regarding the retirement or fuel retrofit of its fossil fuel plants.
Resource Adequacy Concerns	For future IRPs, Microsoft requests that the Commission take these steps. First, find that the DOM Zone, Dominion utility, and the Commonwealth have substantial emerging resource adequacy challenges. Second, urge Dominion to more actively evaluate these emerging resource adequacy risks, rather than ceding this responsibility to the PJM market. Third, have Dominion more explicitly confirm that sufficient capacity resources will be available in the wider market to support their desired level of capacity purchases.
ELCC assumptions	Microsoft requests that the Commission find that Dominion's use of the PJM-defined marginal indicative ELCCs in the 2024 IRP and future IRPs is reasonable.
PJM Capacity and Energy Price Forecasts	For future IRPs, Microsoft request that Dominion more explicitly report the assumed load growth, generation addition/retirements, and transmission additions underlying its capacity and energy forecasts..
Natural Gas Asset Additions	For future IRPs, Microsoft requests that the Commission order Dominion to create a more explicit plan to reliably, affordably, and gradually exit its position from natural gas to satisfy the 2045 mandatory retirement targets.
Emerging Technology Options	For future IRPs, Microsoft requests that the Commission order Dominion to engage with all stakeholders to de-risk emerging supply technologies and accelerate their viability as realistic resources to consider in future IRP cycles.

Assessment of Other Resources Need to Meet Demand (cont.)	
Representation of Transmission in the IRP	For future IRPs, Microsoft requests that the Commission order that Dominion more explicitly model the transmission system. These considerations should consider the risks of transmission stress within the DOM Zone which may prevent the delivery of energy to certain portfolios of the DOM Zone. Dominion should also consider load growth from all load serving entities within the DOM Zone. Microsoft requests that these types of analysis are performed in a manner that satisfies all legal requirements, including relying on publicly available data or creating independent planning organization to best support joint transmission and generation planning.
Location-Based Modeling (sub-zonal)	For future IRPs Microsoft requests that the Commission direct Dominion to work with the Commission Staff and other technical experts to explore new methods to capture transmission stress within the context of resource planning, as needed after further evaluation. This kind of analysis could include locational modeling: breaking the system into multiple zones in a hub-and-spoke model and capturing the locational element of load growth, depending on the findings of the collaboration with Dominion, Staff, and other technical experts.
Integrated System Planning Needs	For future IRPs, Microsoft requests that the Commission, based on finding that integrating generation and transmission planning could provide synergies, direct Dominion to make clearer connection between the forecasts and planning performed in the IRP process with its transmission planning processes and work toward synergies between these planning efforts.