

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

STATE OF VIRGINIA
DOMINION ENERGY CENTER

2023 MAR -1 P 3:39

PETITION OF

VIRGINIA ELECTRIC AND POWER COMPANY

CASE NO. PUR-2022-00124

For approval of its 2022 RPS Development Plan
under § 56-585.5 D 4 of the Code of Virginia
and related requests

REPORT OF D. MATHIAS ROUSSY, JR., HEARING EXAMINER
(PUBLIC VERSION)

March 1, 2023

Every year, Virginia Electric and Power Company d/b/a Dominion Energy Virginia ("Dominion" or "Company") must file with the State Corporation Commission ("Commission") a plan for meeting the Commonwealth's renewable portfolio standard ("RPS") requirements, together with any associated requests for solar, wind, or storage construction and cost recovery.

In 2021 and 2022, the Commission approved Dominion's general RPS development plan and approved, among other things, specific proposals to: (1) construct and recover the costs for 747 megawatts ("MW") of solar and 70 MW of storage that Dominion would own; and (2) enter power purchase agreements for 612 MW of solar and 33 MW of storage.

This case involves Dominion's third RPS plan filing, which proposes to: (1) construct and recover the costs of an additional 474 MW of solar and 16 MW of storage that Dominion would own, with an estimated total cost of \$1.2 billion, excluding financing costs; and (2) enter power purchase agreements for an additional 270 MW of solar and 49 MW of storage.

Based on the record of this case, I recommend that the Commission find Dominion's general RPS development plan – which leaves open multiple potential compliance options – is reasonable and prudent. I also recommend the Commission approve all 270 MW of the proposed purchases and approve the Company's proposal to construct and recover the costs for 471 MW of solar projects it would own. While all of the proposed projects Dominion would own are economically challenged – even with the benefit of the federal Inflation Reduction Act – the two projects I recommend be denied are significantly uneconomic for Dominion's ratepayers in all of the economic analyses in this case. For the 16 MW storage project I recommend be denied, Dominion's evidence indicates that the negative value of this project to ratepayers is nearly \$37 million, on a net present value basis. For the three MW solar project I recommend be denied, Dominion's evidence indicates that the negative value to its ratepayers is more than double the positive value for all of society from reduced carbon emissions. Put simply, the record demonstrates that Dominion's ratepayers would be far better off if Dominion pursued alternative options. However, the record could support approval of these two projects if the Commission gives less weight to the economic analysis and/or more weight to other relevant considerations. Alternatively, the record could support denial of more projects if the Commission assigns greater weight to certain economic analysis in this case.

Dominion's filing also proposes to update Rider CE, the existing rate adjustment clause used to recover some of the actual and projected costs of Dominion's approved RPS facilities, and also to include costs for its proposed projects. The record supports an updated annual revenue requirement of \$87.9 million if the Commission adopts my recommendation to deny two projects, or \$89.2 million if the Commission adopts all of Dominion's proposals instead.

Dominion's filing also includes the Company's first RPS compliance report. This report indicates that Dominion over-complied in 2021, but that any over-compliance can be credited to future compliance years.

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HISTORY OF THE CASE

The Virginia Clean Economy Act (“VCEA”) was enacted during the 2020 General Assembly Session.¹ The VCEA, among other things, established in the Code of Virginia (“Code”) a mandatory renewable energy portfolio standard program (“RPS Program”) for Dominion.² In connection with the statutory RPS requirements, Dominion must file with the Commission annual plans and petitions for approval of new solar and onshore wind generation capacity.³ Such annual filings must also include Dominion’s plan to meet energy storage project targets set by the VCEA.⁴

On October 14, 2022, Dominion submitted its annual RPS filing⁵ for 2022 (“Petition”).⁶ The Petition requests, among other things, that the Commission:⁷

- (1) Approve the Company’s annual plan for the development of new solar, onshore wind, and energy storage resources (“RPS Development Plan”) in connection with the mandatory RPS Program pursuant to Code § 56-585.5 D 4;
- (2) Grant certificates of public convenience and necessity (“CPCNs”) and approval to construct and operate 8 utility-scale projects totaling approximately 474 MW of solar and 15.7 MW of energy storage (“CE-3 Projects”) pursuant to Code § 56-580 D;
- (3) Approve to recover, through the existing Rider CE rate adjustment clause, the costs of (a) the CE-3 Projects and related interconnection facilities and (b) two distributed solar projects, representing four distributed solar facilities, totaling approximately 6 MW, and related interconnection facilities (“CE-3 Distributed Solar Projects”) pursuant to Code § 56-585.1 A 6;
- (4) Approve an update to Rider CE for cost recovery associated with solar projects and related interconnection facilities approved by the Commission in prior annual RPS proceedings; and
- (5) Make a prudence determination for Dominion to enter into 13 power purchase agreements (“PPAs”) for resources totaling approximately 270 MW of solar and 49 MW of energy storage (“CE-3 PPAs”) pursuant to Code § 56-585.1:4.

¹ 2020 Va. Acts chs. 1193, 1194.

² Code § 56-585.5. Appalachian Power Company (“APCo”) is also subject to a mandatory RPS Program.

³ Code § 56-585.5 D 4.

⁴ *Id.*

⁵ Dominion filed errata on October 31, 2022, December 16, 2022, and January 27, 2023.

⁶ Dominion filed its Petition in a public version and an extraordinarily sensitive version. Concurrent with its Petition, Dominion filed a Motion for Entry of a Protective Order and Additional Protective Treatment. A Hearing Examiner’s Protective Ruling and Additional Protective Treatment for Extraordinarily Sensitive Information was entered on October 31, 2022.

⁷ See, e.g., Exhibit (“Ex.”) 8 (Petition) at 1. When cited in footnotes, “Petition” refers to the legal petition filed as part of the 2022 RPS plan filing package.

On October 27, 2022, the Commission issued an Order for Notice and Hearing that, among other things, directed the Company to provide notice of its Petition; directed the Commission's Staff ("Staff") to investigate the Petition and file testimony and exhibits containing Staff's findings and recommendations; established a procedural schedule, including a hearing to receive telephonic public witness testimony on January 30, 2023, and to receive the evidence of the parties and Staff on January 31, 2023; provided a date for Dominion to file any supplemental testimony addressing the impacts of the federal Inflation Reduction Act⁸ on its proposals; and provided opportunities for interested persons to intervene and participate.⁹

On November 22, 2022, Dominion filed supplemental testimony addressing the impacts of the federal Inflation Reduction Act.

On December 6, 2022, Dominion filed proof of notice and service.¹⁰

On December 9, 2022, the Department of Environmental Quality ("DEQ") filed the results of a coordinated review of the Petition by various agencies ("DEQ Report"),¹¹ which included a Wetlands Impact Consultation provided by DEQ's Office of Wetlands and Stream Protection.

On January 11, 2023, the Commission issued an Order Assigning Hearing Examiner, which assigned a Hearing Examiner to conduct all further proceedings in this case and to file a final report containing findings and recommendations.

On January 20, 2023, a Hearing Examiner's Ruling established special procedures for the in-person portion of the public hearing.

Notices of participation were filed in this case by Appalachian Voices; the Virginia Committee for Fair Utility Rates ("Committee"); the Office of the Attorney General's Division of Consumer Counsel ("Consumer Counsel"); and Walmart, Inc. ("Walmart").¹²

Twelve public comments were filed in this proceeding. On January 30, 2023, the public witness portion of the hearing was convened, as scheduled. Six public witnesses testified either telephonically or using Microsoft Teams.

On January 31 - February 1, 2023, the hearing to receive the evidence of the parties and Staff was convened, as scheduled, in the Commission's courtroom. Elaine S. Ryan, Esquire, Sarah Bennett Bures, Esquire, Nicole M. Allaband, Esquire, Paul E. Pfeffer, Esquire, and Lisa R. Crabtree, Esquire, appeared on behalf of Dominion. Nate Benforado, Esquire, and Grayson Holmes, Esquire, appeared on behalf of Appalachian Voices. Timothy G. McCormick,

⁸ Inflation Reduction Act of 2022, Public Law 117-169 (2022) ("Inflation Reduction Act").

⁹ This case was docketed on August 24, 2022, by the Commission's Order on Waiver Requests, which granted in part Dominion's Motion for Limited Waivers of Commission Rules filed on August 2, 2022.

¹⁰ At the hearing, proof of notice and service was admitted into the record as Exhibit 7.

¹¹ Ex. 45.

¹² The Solar Energy Industries Association ("SEIA") also filed a notice of participation. SEIA subsequently decided to withdraw this notice and participated in this proceeding through the submission of public comments and public witness testimony. Tr. at 6-7 (Armstrong).

Esquire, represented the Committee. C. Mitch Burton, Jr., Esquire, and John E. Farmer, Jr., Esquire, appeared on behalf of Consumer Counsel. Carrie Harris Grundmann, Esquire, represented Walmart. Frederick D. Ochsenhirt, Esquire, Andrew F. Major, Esquire, Simeon Brown, Esquire, and K. Beth Clowers, Esquire, appeared on behalf of Staff. The hearing concluded with closing arguments by counsel.

The parties and Staff were provided the opportunity to file limited post-hearing briefs on the meaning of the "35 percent" and "65 percent" provisions of Code § 56-585.5 D. On February 6, 2023, Appalachian Voices, Consumer Counsel, Dominion, and Walmart filed post-hearing briefs on this issue.

PUBLIC COMMENTS

Edward W. Early and Janet F. Early filed joint comments by counsel and also filed separate individual comments. In their joint comments,¹³ the Earlys explained that they own two parcels of property adjacent to the proposed Courthouse Solar project.¹⁴ They requested that the Commission deny a CPCN for Courthouse Solar. The Earlys identified three factors that they assert make this project contrary to the public interest and which they believe were not sufficiently considered or addressed by the Charlotte County Board of Supervisors in its approval of a conditional use permit for the project. These three factors are: (1) traffic safety; (2) impacts on the area immediately surrounding the project; and (3) the aggregate environmental impact of this project together with other projects approved by the Charlotte County Board of Supervisors.

The Earlys indicated that two of the construction entrances approved by the Board of Supervisors as part of the conditional use permit present significant safety issues. The first approved entrance follows Route 40 (George Washington Highway) and then Engleside Lane, which is a private road referred to by the Earlys and other commentators as the "CCC Road." The second approved entrance is on Eureka School Road. The Earlys indicated that both approved entrances would require large trucks and heavy construction vehicles to navigate tight turns, narrow roads, and hilly topography with limited sight distances in locations close to several private driveway entrances and the Eureka Elementary School. The Earlys asked the Commission to consider imposing a condition requiring that an alternative entrance be used in lieu of the two approved entrances identified by the Earlys. According to the Earlys, they suggested their alternative to both County officials and Dominion. The Earlys provided an attachment to their joint comments, which illustrates some of their safety concerns and their proposed alternative entrance route.¹⁵

As for the environmental impacts on the immediate surrounding area, the Earlys focused on the potential impacts of panels located between the CCC Road and an unnamed stream.

¹³ Ex. 3. As discussed below, counsel for the Earlys sponsored these comments, subject to cross-examination, during public witness testimony. Issues raised regarding the environmental impact of Courthouse Solar are addressed in Section II of this Report's Analysis.

¹⁴ Dominion's Petition identifies the location of these parcels. See Ex. 15 (Flowers direct) at Attached Sched. 5, pp. 26, 27, 31, 35, 48-49.

¹⁵ Ex. 3 at Attachment A.

Here, the Earlys' property "wraps around the panels" and the fenced area would protrude into their viewshed. The Earlys indicated that the most desirable locations for a future home on their property are on high ground along the CCC Road, where the project would have the greatest visual impact on their property. The Earlys added that careful management of the solar panels would be required to ensure they do not impact the Roanoke Creek/Roanoke River/Kerr Reservoir system. If the Courthouse Solar project proceeds, the Earlys indicated that the elimination of all panels between the CCC Road and the unnamed stream should be considered. In their view, eliminating these panels would also eliminate some costly engineering and construction challenges for the project.

In addressing aggregate impacts, the Earlys included as an attachment to their comments a map to demonstrate how many solar projects in Charlotte County either have a conditional use permit or one pending. The Earlys indicated that the unprecedented rate of solar project approvals is outpacing Charlotte County's ability to effectively analyze or plan for responsible development, construction, and operation.

In their joint comments, the Earlys recognized the anti-duplication provisions of Code § 56-46.1(A). However, the Earlys contend the local government has failed to properly consider and address the impacts they identified and therefore it is now the Commission's responsibility.

Ms. Early's individual comments¹⁶ also requested that the Courthouse Solar project be denied. She indicated that the Earlys' land is under a conservation easement. She does not believe there are any safe entrances to the site and therefore she believes serious accidents will likely occur. She thinks readying the CCC Road for access would also be very expensive and time-consuming. She expressed concern about harm to, among other things, the Roanoke Creek watershed, plants, animals, her family's enjoyment of its land, wetlands, and carbon-sequestering trees. She described local approval as a "foregone conclusion and that money was the sole deciding factor, despite our efforts to explain the negative environmental and other dangers for the Courthouse Solar project." She indicated that the subject area contains a large amount of high-value vegetation, some of which has been well managed for economically valuable timber rotations over the years. She described the local approval of this project as "a bad decision ... a stab to the heart."

Mr. Early's individual comments¹⁷ asserted that the Courthouse Solar project has been poorly planned and will have a negative effect. He indicated that in 2008 the Earlys placed almost 300 acres around their home under a conservation easement, never imagining the area would be "threatened" by a project like Courthouse Solar. He indicated that Charlotte County zoning provisions were modified to allow this project to go forward in 2020 during the "distracted initial stages" of the pandemic. He asserted that the Earlys had no prior notice and that local officials ignored their written letters, comments, and conversations. Reiterating his concerns about traffic safety, he described Eureka Road as narrow and winding, used by school traffic and as a short-cut for others, some at high speed. He described Route 40 as extremely

¹⁶ Ex. 4. As discussed below, Ms. Early sponsored these comments, subject to cross-examination, during public witness testimony.

¹⁷ Ex. 5. As discussed below, Mr. Early sponsored these comments, subject to cross-examination, during public witness testimony.

dangerous, with hills and curves, especially between Charlotte Courthouse and Eureka School Road. He indicated that accidents occur frequently near his home, including wildlife collisions. Mr. Early concluded that "[w]hen a large industrial solar development goes into what has been a wonderful wildlife habitat, endangering people, wildlife and an important creek and its corridor, a much wider geographic area will suffer."

Melissa Early is a resident of Ogden, Utah. Growing up on her family's farm on Route 40 inspired her career as a habitat and impact analysis biologist. She wrote the forest management plan for the mixed hardwoods and pines on her family's 300-acre farm that is protected by a conservation easement. In her experience, the country road is not safe for use by all the vehicles and machinery that would need to access the Courthouse Solar site. She described the Roanoke Creek watershed as uniquely rural in character, identified on the ConserveVirginia map, and a host for several stops along the Virginia Birding and Wildlife Trail. The Roanoke Creek is a highly valued wildlife corridor, with intact high value forests and wetlands. Citing her experience fowl hunting with her father, she indicated this location is also highly valued for family traditions. In her opinion, converting 900 acres of this rolling landscape to industrial solar would cause significant sedimentation impacts. Ms. Early recommended that the Courthouse Solar project be denied. According to her, solar belongs on rooftops, urbanized areas, and locations that are already impacted. She asked, "Why allow an intact forested corridor that is sequestering carbon and providing numerous valuable ecosystem services to the local community to be developed into an industrial solar monoculture, approved by a rubber stamping Board of Supervisors?"

Ruth and James Davis have lived on Route 40 (George Washington Highway), across from the CCC Road, for many years. They are concerned because Route 40 is already a very dangerous road, with many curves. They often hear vehicles driving over the raised center line of the highway. Deer frequently cross the road and at least one fatal accident happened near the front of the Davis's house. They asked that the CCC Road not be used for any solar project that has to be built.

Patricia Amos also lives on Route 40, almost directly across from the CCC Road. Exiting from her driveway is already dangerous because of a curve in the road. Route 40 has many hills and curves and has a limited shoulder where a ditch is next to the road in most places. She asked that the CCC Road not be used for construction traffic for the Courthouse Solar project. Like the Davises, Ms. Amos frequently hears vehicles driving over the bumpy centerline of Route 40. She indicated that many accidents have occurred in this area and people have died. She added that logging and other trucks already travel on Route 40 at high speeds.

Gloria Long also lives on Route 40, across from the Courthouse Solar site, near the CCC Road. She protested using the CCC Road as an access road for the project. She asserted that it would cause too much traffic, noise, and disturbance, and might also cause accidents or delays. She indicated this location is across the street from her child's bus stop.

Samuel P. Walker is a Charlotte County native and forest land manager who, while employed with Stanley Land and Lumber Corporation, managed timberlands that include what is now known as the Charlotte State Forest. He was surprised and saddened to learn about the

request for local approval of the Courthouse Solar project, which would be four miles upstream from the Charlotte State Forest. He finds it counterproductive to cover prime agricultural and forest land with solar panels when there are so many benign, unproductive, alternative sites available. He noted that Virginia's forests are the third largest contributor to the Commonwealth's economy and over 600 forested acres of the Courthouse Solar project has been designated as "high value" by the Virginia Department of Forestry ("DOF"). In his opinion, we should be increasing – not diminishing – Virginia farms and forests, which will become increasingly important on a national level should current climate patterns persist.

Mr. Walker expressed concern about the consideration given by the Charlotte County Board of Supervisors to five approved solar projects, four of which are in the Roanoke Creek drainage. Problems with soil compaction, erosion, runoff, and declining water quality seem inevitable to him, given the tree removal and grading required in rolling topography. He indicated problems have already developed with several Virginia projects, citing a DEQ consent decree for the Twittys Creek project. He described forested riparian buffers as essential, and he believes they should exceed the 300 feet recommended by the Department of Wildlife Resources ("DWR") and should be measured from the top of the stream bank (rather than the centerline).

In Mr. Walker's opinion, rural local governments empowered by the VCEA to regulate the size, siting, construction, and operation of utility-scale solar farms are ill-equipped with resources and experience to do so. Because he believes Charlotte County officials inadequately addressed environmental concerns, he recommended that Dominion consider abandoning the Courthouse Solar project or significantly reducing its size and increasing the riparian buffers.

Kathryn Griffith, a long-time Charlotte County resident, is concerned about the Courthouse Solar project due to safety and environmental issues. She believes local officials "gave negligible attention" to such issues "in their haste to approve the project" and did not ask for guidance or advice from Virginia's natural resource agencies or from other counties experienced with similar projects. She expressed concern about a primary construction entrance being on a sloping and curving section of Route 40 – a major highway which sees traffic throughout the day, especially associated with morning and evening school buses and workers. She indicated one traffic fatality associated with solar farm construction has already occurred. She cited the amount of forested acreage at this site that the DOF has designated as "high value," the Roanoke Creek's onsite presence, the proximity of the site to Charlotte State Forest and the confluence of the Roanoke Creek and Staunton River, and the number of solar projects approved in Charlotte County. She wants Dominion to pause this project to reconsider safety and environmental issues before proceeding.

Citing several other solar projects approved in the area, **Kathy Lee Erlandson Liston** is concerned that the Courthouse Solar project would put further stress on the Roanoke Creek watershed. She believes this project's buffers are inadequate. She believes Dominion and Charlotte County engaged in a questionable and "unethical if not illegal, negotiation" for this project. She attached to her comments a letter from Dominion's Vice President of Business Affairs to Charlotte County officials. She thinks "it was an out and out bribe" that Dominion offered to accelerate a one million dollar payment already committed to Charlotte County if, as shown in the attached letter: (1) Charlotte County approved the Randolph Solar project;

(2) Dominion thereafter acquired the Randolph Solar project from SolUnesco; and (3) the Commission approves a CPCN for the Courthouse Solar project as a 167 MW facility.¹⁸ Ms. Liston asked that the Commission deny a CPCN for the Courthouse Solar project.

Pamela Kent Pettus, of Keysville, stated that the VCEA places primary responsibility on local governments to determine where solar facilities will be located, their size, and the terms under which they are permitted.¹⁹ She identified several characteristics of the Courthouse Solar site that she believes should have caused the Charlotte County Board of Supervisors to question whether that site is an appropriate location for a 167 MW utility-scale solar project. She indicated that local officials, however, did not question the appropriateness of this site, discuss appropriate criteria for a utility-scale solar site, identify potential adverse impacts, or discuss how such impacts might be avoided or mitigated.

Ms. Pettus provided map printouts from ConserveVirginia, which indicate the 30% of the Commonwealth's undeveloped land that natural resource agencies consider the highest priority for conservation. Charlotte County's Roanoke Creek and Staunton River corridors stand out to her.

Ms. Pettus believes the Commission would be mistaken to assume that the conditional use permit approval for Courthouse Solar followed a careful review that included ample fact finding, analysis, and robust discussion. She discussed questions she believes local officials should have asked, information these officials should have sought, and citizen concerns raised, about environmental impacts.

It appears to Ms. Pettus that the Commission has the responsibility to evaluate the combined impact from multiple utility-scale solar projects within a single watershed. In addition to Courthouse Solar, she indicated that Charlotte County has approved conditional use permits for Twittys Creek Solar (15 MW), Tall Pines Solar (240 MW), and Randolph Solar (800 MW).²⁰ She attached a spreadsheet that she indicated represents recorded options on several thousand more acres recorded by solar developers. Ms. Pettus emphasized that the Courthouse Solar site is not just in the watershed. The Roanoke Creek and its extensive wetlands bisect the site. Based on the projects with approved conditional use permits and recorded solar options, Ms. Pettus expects ongoing sediment flows that will have grave consequences for soils, streams, wetlands, forests and wildlife habitat.

Ms. Pettus found it "mind boggling" that no local officials raised concerns regarding traffic safety during construction, especially after a recent fatality at the entrance to the Twittys Creek solar site. She described Eureka School Road as a narrow, winding secondary road with no center line and no shoulders and questioned whether school buses, teachers, staff and parents should share this road with tractor trailers and other construction vehicles. She described the entrance at Route 40 as entering at a sharp angle where the highway begins a downhill curve

¹⁸ Ms. Liston's comments indicate that Randolph Solar is a planned 800 MW project that has been approved by the Charlotte County Board of Supervisors.

¹⁹ As discussed below, Ms. Pettus sponsored these comments, subject to cross-examination, during public witness testimony. Ex. 6.

²⁰ On this point, she attached to her comments the same Piedmont Environmental Council map the Earlys provided.

across from multiple driveways. Ms. Pettus indicated that she met with VDOT staff, who told her that VDOT does not typically review temporary construction entrances and that she should have raised such concerns during the local review process. However, Ms. Pettus also indicated that a year after local approval, one of the three Courthouse Solar landowner applicants purchased more than 200 adjoining acres, which creates the opportunity for a safer construction entrance onto Route 40.

In Ms. Pettus's opinion, the driving force for approval of so many large projects in Charlotte County is the income individual landowners, especially large acreage landowners, expect from leasing their land for solar. She indicated that much needed public discussion has been limited because many Charlotte County residents have or are seeking solar options. She indicated several Charlotte County Planning Commission members have recorded solar options, are negotiating options, or have relatives or business relations with options. She indicated that all would recuse themselves from discussing or voting on projects for which they have options.

Ms. Pettus speculated that Dominion may have been unaware of the significance of the Roanoke Creek corridor when it acquired the Courthouse Solar project from Novi Energy. She discussed the Staunton River, the Virginia Birding and Wildlife Trail, the Staunton River Battlefield State Park, Mulberry Hill property and concluded that few Virginia counties "can claim a creek that reflects this much investment by the Commonwealth."

According to Ms. Pettus, the shift to renewable energy is necessary. She recognized that solar facilities bring opportunities and benefits, but also challenges and adverse impacts. In her view, responsible solar development requires avoiding inappropriate sites and inevitable negative impacts for all sites which can be minimized by limiting the overall project size and area to be cleared. She urged Dominion to eliminate Courthouse Solar and join the effort to make the Roanoke Creek southern Virginia's "emerald necklace."

For several of the same reasons identified in other comments, **Thomas Charlton**, a Falls Church resident, urged Dominion to eliminate Courthouse Solar and join efforts to protect the Roanoke Creek corridor. Mr. Charlton thinks it was a bad idea for the VCEA to place primary responsibility for the regulation of solar plants with local governments.

SEIA supports the Commission granting the requested CPCNs and finding the CE-3 PPAs are prudent. SEIA indicated that the subject projects represent a diverse portfolio of sizes, technologies, and geographical locations, and emphasized the importance of their in-state location. However, SEIA argued that Dominion's procurement practices need to be reformed to affordably meet the scale of solar generation required by the VCEA. More specifically, SEIA indicated that Dominion must procure nearly six times more onshore wind and solar and 16 times more energy storage capacity.

It is unclear to SEIA how Dominion will meet the VCEA petition requirements for distributed and for large-scale projects. For distributed resources, SEIA indicated that the approximately 30 MW distributed generation proposed in the two prior RPS plan petitions is less than one-fourth of the annual MW necessary for Dominion to steadily progress towards the statutory petition requirement for 1,100 MW. For utility-scale resources, SEIA contrasted the

approximately 570 MW average annual amount of RPS resources Dominion anticipates being brought online from 2021 to 2024 to the 1,180 MW amount Dominion's RPS Development Plan includes for each year starting in 2026. SEIA indicated that the future target MW amounts shown in the RPS Development Plan reflect Dominion's "hope" and "best guess."²¹

SEIA believes changes Dominion made to its request for proposals ("RFP") process, while helpful, are not significant enough to result in the volume of development needed to achieve the VCEA targets. SEIA described the results of Dominion's recent RFPs as less than robust, with one yielding 22 MW of the 175 MW of distributed resources sought and another yielding less than the 1,100 MW of utility-scale resources sought.²²

SEIA asserted that Dominion's RFP process should be made more transparent. SEIA indicated that while non-price criteria and associated weighting are provided, the act is subjective and being performed by "in house teams." It is unclear to SEIA what comprises Dominion's "further diligence" or what Dominion considers "key risks" that can result in proposals from being dropped from further consideration.²³

SEIA recommended that the Commission require an independent evaluator "perform more of the evaluation steps for all RPS-related projects (both those sourced through and outside the competitive RFP process) and to prevent Dominion from controlling steps that lack clear quantitative guidance for how similar bids should be treated."²⁴ In SEIA's view, an independent evaluator "will ensure that all projects are reviewed in an unbiased manner and provide the development community the assurance that [Dominion-]sourced projects are not unfairly advantaged."²⁵ SEIA also recommended that Dominion be directed to submit template contracts for large and small development projects to the Commission for review and approval. SEIA believes that such a requirement would increase RFP participation and help ensure that contract risks are fairly divided between Dominion and the developer.²⁶

SEIA referenced Case No. PUR-2022-00073, which the Commission initiated to solicit comments on distributed-energy interconnection issues. SEIA recommended that the Commission open a proceeding to revise Dominion's interconnection process using the information collected in PUR-2022-00073.²⁷

SEIA also recommended changes to RPS compliance tracking. SEIA indicated that the *2021 RPS Plan Order*²⁸ approved "very rudimentary metrics proposed by Dominion" and also

²¹ Ex. 1 at 6, 7.

²² *Id.* at 11, 13.

²³ *Id.* at 11.

²⁴ *Id.* at 12.

²⁵ *Id.*

²⁶ *Id.* at 13.

²⁷ *Id.* at 14-15.

²⁸ *Petition of Virginia Electric and Power Company, For approval of the RPS Development Plan, approval and certification of the proposed CE-2 Solar Projects pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, revisions of rate adjustment clause, designated Rider CE, under § 56-585.1 A 6 of the Code of Virginia, and a prudence determination to enter into power purchase agreements pursuant to § 56-585.1:4 of the Code of Virginia*, Case No. PUR-2021-00146, Final Order (Mar. 15, 2022) ("*2021 RPS Plan Order*").

endorsed Dominion's proposal to make electronically available a report from the Generation Attribute Tracking System ("GATS") of PJM Interconnection, LLC ("PJM"). SEIA described the 2021 Compliance Report Dominion submitted with the Petition as lacking detail and source data needed for a vigorous review.²⁹ SEIA renewed its request from the 2021 RPS plan proceeding that a stakeholder engagement process be established to provide for the Commission a recommendation for reporting requirements. SEIA envisions this proposal would include robust reporting metrics, including spreadsheet templates that should be used for compliance.³⁰

Should the Commission not establish the stakeholder engagement process recommended by SEIA, SEIA alternatively recommended that current reporting metrics be augmented by requiring Dominion to detail the sources of the data in the report and provide an officer verification as to its truth and accuracy. SEIA indicated that such verifications are common in states with robust compliance metrics, such as California. As part of its annual compliance filing, SEIA also recommended Dominion be required to submit its "renewable net short" position, which is also required in some other states. This would include, among other things, a detailed analysis of how banked renewable energy certificates ("RECs") will be used for future compliance.³¹

While SEIA acknowledged that PJM's GATS has the potential to be a reliable tool for tracking REC compliance in Virginia, SEIA indicated certain steps need to be taken. SEIA believes that there are deficiencies in the GATS certification system that could allow non-compliant RECs to be submitted and retired. SEIA recommended that the Commission establish a process in which the Commission registers projects with GATS, similar to a process used by Maryland, Pennsylvania, and Washington, D.C.³²

SUMMARY OF THE RECORD

Public Witnesses

Jeanne Armstrong, Senior Regulatory Counsel for SEIA, adopted the written public comments filed by SEIA,³³ which are summarized above. In her opinion, Dominion has not established a clear path toward efficient, cost-effective procurement of the necessary renewable and energy storage resources to meet the VCEA's requirements. She believes Dominion's progress is insufficient and Dominion's RPS Development Plan does not indicate how the Company plans to "up its game."³⁴ Ms. Armstrong believes Dominion's RFP process is underperforming and warrants engagement of an independent evaluator to ensure a transparent process and unbiased review.³⁵

²⁹ Ex. 1 at 16-18.

³⁰ *Id.* at 18-19.

³¹ *Id.*

³² *Id.* at 19-20.

³³ Ex. 1.

³⁴ Tr. at 12 (Armstrong).

³⁵ Tr. at 13-14 (Armstrong).

For the RPS compliance process, Ms. Armstrong believes developers need more information about the resources Dominion already has under contract and more information about the existing supply and demand for RECs in Virginia. She thinks a “net short position” forecasted by Dominion about RPS compliance over the next few years would provide developers an additional data point to use to decide whether to enter the market.³⁶

Jason Bulluck, Director of the Division of Natural Heritage at the Department of Conservation and Recreation (“DCR”), adopted comments he filed on behalf of DCR prior to the hearing.³⁷ Mr. Bulluck highlighted the difference between Dominion’s vegetation management plan and DCR’s recommended invasive species management plan.³⁸ He also highlighted DCR’s recommendation for planting native pollinator plant species and reiterated that this recommendation is “not all or nothing.”³⁹ His comments respond to some of Dominion’s rebuttal testimony about the availability and planting window for native species. He described, among other things, the Pollinator-Smart Program developed in 2019 by DEQ and DCR. This voluntary program allows developers to assess their proposed project, including the planting plan and other ecological assets of the facility, using a scorecard.⁴⁰

Mr. Bulluck acknowledged that, when the Commonwealth’s localities review solar projects, some localities may consider or make recommendations on the issues he identified.⁴¹ He is not aware of whether DEQ’s permit by rule requires an invasive species management plan and does not believe the permit by rule requires planting pollinators.⁴²

Kerry Hutcherson, Esquire, adopted the written public comments he filed on behalf of the Earlys,⁴³ which are summarized above. His main point is that the Commission should deny a CPCN for the Courthouse Solar project because it “presents some environmental and public safety issues that are significant and that have not been sufficiently considered or addressed by the Charlotte County Board of Supervisors.”⁴⁴ He indicated that while there was a “small amount of consideration on some of the environmental impacts or scenic impacts” that resulted in the inclusion of scenic buffers in the conditional use permit process, he described this development as “too little and too late.”⁴⁵ Although appreciative of these buffers, he indicated there will still be some significant impacts to the watershed and downstream resources that need to be considered.⁴⁶ From what he can tell, construction entrances and traffic safety issues “were not even considered at all.”⁴⁷ He clarified that, based on his review of the local record and discussions with his clients, what he believes was not considered was whether the entrances on Route 40 and Eureka School Road were safe entrances, whether they were designed in a safe

³⁶ Tr. at 16-18 (Armstrong).

³⁷ Ex. 2.

³⁸ Tr. at 21-23 (Bulluck).

³⁹ Tr. at 23-25 (Bulluck).

⁴⁰ Ex. 2 at 2-3.

⁴¹ Tr. at 26-27 (Bulluck).

⁴² Tr. at 27-28 (Bulluck).

⁴³ Ex. 3.

⁴⁴ Tr. at 32-33 (Hutcherson).

⁴⁵ Tr. at 36 (Hutcherson).

⁴⁶ Tr. at 36-37 (Hutcherson).

⁴⁷ Tr. at 37 (Hutcherson).

manner, and whether they included any sort of requirement that there be additional oversight.⁴⁸ According to Mr. Hutcherson, VDOT typically gets involved in the oversight of permit entrances, not construction entrances.⁴⁹

Janet Early adopted her written public comments,⁵⁰ which are summarized above. She believes local approval of Courthouse Solar should never have happened and she recommended the Commission reject this project. She testified that the Charlotte County Planning Commission and Board of Supervisors members “rushed ahead, ignoring our many pleas for long-term planning and consideration of the traffic dangers, watershed, and environmental questions and more.”⁵¹ She described the Route 40 entrance for the site as dangerous because of hills, curves, nearby driveways, narrow shoulders, ditches, and “the many speeding large lumber and other trucks already using the highway.”⁵² She also described the Eureka School Road entrance as dangerous.⁵³ Ms. Early underscored the importance of the Roanoke Creek watershed. Since the Courthouse Solar project would be built on both sides of the creek, she believes stormwater runoff would be twice as likely.⁵⁴ She explained that adjacent to, and upstream from, the Earlys’ conservation easement is another conservation easement of approximately 1,100 acres with extensive wetlands and woods. She believes the “planned clear cutting of hundreds of acres of carbon-sequestering trees for solar sites is obviously counterproductive, harming the air, animals, plants, and watershed.”⁵⁵

Ed Early adopted his written public comments,⁵⁶ which are summarized above. He further explained his familiarity with the Roanoke Creek, which serves as part of his property border. He explained that the CCC Road is an old fire trail road that has never been a public road. In his opinion, the Courthouse Solar project would jeopardize water quality and wildlife habitat and would impair his family’s peace and enjoyment of nature on their own property. He expressed dismay about local approvals and notice regarding the project and reiterated some of the concerns expressed in his written comments about traffic safety.⁵⁷

Pamela Kent Pettus read several parts of her written public comments,⁵⁸ which were admitted into the record and are summarized above. Ms. Pettus concluded her testimony by stating that while she supports the shift to renewable energy, solar projects that avoid inappropriate sites, are of reasonable size, and minimize environmental impacts will require local governments and Dominion to seek guidance from natural resource agencies.⁵⁹

⁴⁸ Tr. at 37-38 (Hutcherson).

⁴⁹ Tr. at 39 (Hutcherson).

⁵⁰ Ex. 4.

⁵¹ Tr. at 42-44 (Early, J.).

⁵² Tr. at 44-45 (Early, J.).

⁵³ Tr. at 45 (Early, J.).

⁵⁴ *Id.*

⁵⁵ Tr. at 46 (Early, J.).

⁵⁶ Ex. 5.

⁵⁷ Tr. at 49-54 (Early, E.).

⁵⁸ Ex. 6.

⁵⁹ Tr. at 63 (Pettus).

RPS Development Plan

Dominion's RPS Development Plan identifies Dominion's progress toward meeting the VCEA's solar and onshore wind development targets. Dominion has constructed or purchased approximately 2,616 MW of such nameplate capacity, as of August 31, 2022.⁶⁰ The Company presented the following near-term (2021 through 2024) and longer-term (through 2035) plan targets for utility-scale solar and onshore wind and distributed solar.⁶¹

Utility-Scale and Distributed Solar and Onshore Wind Through 2024 (MWs)

	Prior Years	2021	2022	2023	2024	Total
Utility-Scale	386.4	378.0	246.4	908.5	746.5	2,665.8
Company-Owned System	296.4	100.0	62.0	431.0	375.0	1,264.4
Company-Owned Ring-Fenced ²	70.0	178.0	99.4	127.0	0	474.4
PPA	20.0	100.0	85.0	350.5	371.5	927.0
Distributed Solar	6.4	0	6.6	42.0	4.0	59.0
Company-Owned System	6.4	0	3.6	6.0	0.0	16.0
PPA	0	0	3.0	36.0	4.0	43.0
Total	392.8	378.0	253.0	950.5	750.5	2,724.8
Company-Owned System	302.8	100.0	65.6	437.0	375.0	1,280.4
Company-Owned Ring-Fenced ²	70.0	178.0	99.4	127.0	0	474.4
PPA	20.0	100.0	88.0	386.5	375.5	970.0

Utility-Scale Solar and Onshore Wind Through 2035 (MW)

	Prior Years	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total	%
Total	2,666	699	1,180	1,211	1,005	983	990	990	990	990	990	1005	13,699	100
Company-Owned	1,739	349	815	836	655	655	655	655	655	655	650	650	8,969	65
PPA	927	350	365	375	350	328	335	335	335	335	340	355	4,730	35

Distributed Solar Through 2035 (MW)

	Prior Years	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total	%
Total	59	81	93	91	97	97	97	97	97	97	97	97	1,100	100
Company-Owned	16	51	60	60	66	66	66	66	66	66	66	66	715	65
PPA	43	30	33	31	31	31	31	31	31	31	31	31	385	35

The Company reported that, based on information known as of June 30, 2022, certified accelerated renewable energy buyers ("ARBs") have approximately 1,301 MW of solar or onshore wind generation resources under contract. Pursuant to Code § 56-585.5 G, this capacity

⁶⁰ Ex. 10 (RPS Development Plan) at 4. Of this amount, approximately 56 MW qualify as distributed solar under the VCEA. *Id.*

⁶¹ *Id.* at 4 and corrected 5 (footnotes omitted). For all three tables, the values for each year represent generation facilities that achieved or are expected to achieve commercial operation in that year. Ring-fenced amounts represent ring-fenced resources that are not under contract with an ARB. *Id.* For the longer-term tables provided in this section of the Report, fractions are rounded.

will offset the 16,100 MW statutory target for solar and wind development, resulting in a revised development target of 14,799 MW.⁶²

For energy storage, the Company presented the following near-term (2021 through 2024) and longer-term (through 2035) plan targets.⁶³

Energy Storage Through 2025 (MW)

	2021	2022	2023	2024	2025	Total
Total	0	20	20	112	16	168
Company-Owned	0	20	0	50	16	86
PPA	0	0	20	62	0	82

Energy Storage Through 2035 (MW)

	Prior Years	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total	%
Total	168	195	166	198	225	249	283	291	316	314	295	2,700	100
Company-Owned	86	151	107	127	147	167	187	187	207	207	187	1,760	65
PPA	82	44	59	71	78	82	96	104	109	107	108	940	35

The 2022 RPS Development Plan discussed RFPs that have been completed. In addition, on April 29, 2022, the Company issued two RFPs, distinguished by ownership arrangement. One RFP covers development proposals by storage, wind, and solar, including utility-scale and distributed solar resources ("2022 Development Bid RFP"). The second RFP covers PPA proposals for all such resources ("2022 PPA Bid RFP"), with bids due February 1, 2023. Beginning in 2022, Dominion allows development proposals to be continually submitted throughout the year.⁶⁴

Dominion's 2022 RPS Development Plan discussed the integrated resource plan ("IRP") modeling assumptions⁶⁵ and results presented in the 2022 IRP Update.⁶⁶ Dominion instructed its model to select solar and energy storage resources consistent with the 2022 RPS Development Plan for Alternative Plans B and D. In contrast, all new generation resources were selected on a least-cost optimized basis without regard for the VCEA development targets in Virginia for Alternative Plans C and E.⁶⁷ Plan A is the least cost plan that meets applicable carbon regulations and the mandatory RPS Program requirements of the VCEA, but does not meet the development targets for solar, wind, and energy storage resources in Virginia.⁶⁸ Dominion presented the results of this modeling using the following table.⁶⁹

⁶² *Id.* at 5. See also Exs. 10, 10-ES (RPS Development Plan) at Attachment 5 (providing information on ARBs).

⁶³ Ex. 10 (RPS Development Plan) at corrected 8. The values for each year represent facilities that are expected to achieve commercial operation in that year. These figures exclude pilot storage. *Id.* Fractions are rounded.

⁶⁴ *Id.* at 6.

⁶⁵ *Id.* at Attachment 6.

⁶⁶ *Commonwealth of Virginia, ex rel. State Corporation Commission, In re: Virginia Electric and Power Company's 2022 Update to its Integrated Resource Plan pursuant to Va. Code § 56-597 et seq.*, Case No. PUR-2022-00147, Final Order (Oct. 31, 2022) ("2022 IRP Update" or "2022 IRP Update Order", as applicable).

⁶⁷ Ex. 10 (RPS Development Plan) at 11.

⁶⁸ *Id.* at 9 and Attachment 6.

⁶⁹ *Id.* at 11.

	Plan A	Plan B	Plan C	Plan D	Plan E
NPV Total (\$B)	\$68.1	\$83.7	\$77.2	\$88.9	\$88.1
Approximate CO₂ Emissions from Company in 2047 (Metric Tons)	18.9 M	5.1 M	4.9 M	0 M	0 M
Solar (MW)	14,829 15-yr 26,829 25-yr	13,692 15-yr 25,692 25-yr	13,329 15-yr 25,329 25-yr	13,812 15-yr 27,012 25-yr	16,586 15-yr 29,786 25-yr
Wind (MW)	-- 15-yr -- 25-yr	2,600 15-yr 2,600 25-yr	-- 15-yr 160 25-yr	3,400 15-yr 4,400 25-yr	800 15-yr 4,400 25-yr
Storage (MW)	-- 15-yr -- 25-yr	2,620 15-yr 3,070 25-yr	30 15-yr 2,400 25-yr	3,220 15-yr 9,220 25-yr	4,030 15-yr 10,030 25-yr
Nuclear (MW)	-- 15-yr -- 25-yr	-- 15-yr 1,140 25-yr	-- 15-yr 2,280 25-yr	-- 15-yr 2,280 25-yr	-- 15-yr 2,280 25-yr
Natural Gas Fired (MW)	1,940 15-yr 2,425 25-yr	-- 15-yr -- 25-yr	-- 15-yr -- 25-yr	-- 15-yr -- 25-yr	-- 15-yr -- 25-yr
Retirements (MW)	2,567 15-yr 2,567 25-yr	2,561 15-yr 4,792 25-yr	2,561 15-yr 4,792 25-yr	2,561 15-yr 13,356 25-yr	2,561 15-yr 13,356 25-yr

Based on these results, Dominion concluded that “Plans B through E all show the significant development of solar and energy storage envisioned by the VCEA, suggesting it remains prudent to proceed with development as set forth in this 2022 RPS Development Plan.”⁷⁰

Dominion’s 2022 RPS Development Plan includes information on the Company’s existing ring-fenced solar facilities,⁷¹ historical (2016-2021) annual capacity factors for the Company’s solar fleet,⁷² lifetime revenue requirement of Company-owned resources,⁷³ and potential environmental justice impacts of different renewable options.⁷⁴

Another part of Dominion’s Petition is its RPS Program compliance report for calendar year 2021 (“2021 Compliance Report”). This report indicates that Dominion retired approximately 7.4 million RECs to comply with the 2021 RPS requirement. The Company showed its calculation of the compliance requirement, but noted that these calculations do not incorporate the treatment directed by the *RPS Allocation Order*⁷⁵ for customers who purchase renewable energy from a competitive service provider.⁷⁶ Dominion’s 2021 Compliance Report shows the number of RECs retired for 2021 compliance, broken down by resource type, vintage, and location.⁷⁷

⁷⁰ *Id.*

⁷¹ *Id.* at Attachment 3.

⁷² *Id.* at Attachment 4.

⁷³ *Id.* at Attachment 12.

⁷⁴ *Id.* at Attachment 13.

⁷⁵ *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex. Parte: Allocating RPS costs to certain customers of Virginia Electric and Power Company*, Case No. PUR-2020-00164, 2021 S.C.C. Ann. Rep. 270, 272, Final Order (Sep. 23, 2021) (“*RPS Allocation Order*”).

⁷⁶ Ex. 11 (2021 Compliance Report) at 4. Of this amount, 73,932 RECs were retired to comply with the 1% carveout for resources that are one MW nameplate capacity or less. *Id.* at 7.

⁷⁷ *Id.* at 5-6. See also Ex. 14 (detailing every REC used for 2021 compliance).

Dominion's 2022 RPS Development Plan provided a consolidated bill analysis under two methodologies⁷⁸ – one of which was directed by the 2020 RPS Plan Order.⁷⁹ Dominion summarized its results with the following tables.⁸⁰

RPS Program Incremental Bill Impacts Using Commission-Directed Methodology

Year	Residential ¹	Small General Service ²	Large General Service ³
2021	\$0.37	\$2.01	\$1,572.00
2022	\$4.52	\$21.43	\$16,796.00
2023	\$9.32	\$46.63	\$31,914.00
2024	\$13.81	\$66.20	\$40,048.00
2025	\$20.41	\$97.14	\$57,360.00
2026	\$22.27	\$101.36	\$50,330.00
2027	\$28.16	\$124.13	\$54,186.00
2028	\$28.54	\$124.19	\$49,804.00
2029	\$31.38	\$138.29	\$58,550.00
2030	\$34.00	\$149.84	\$63,094.00
2031	\$38.08	\$167.55	\$70,258.00
2032	\$43.53	\$192.00	\$81,980.00
2033	\$46.72	\$205.26	\$85,876.00
2034	\$51.31	\$220.57	\$82,966.00
2035	\$52.02	\$223.66	\$82,990.00

RPS Program Incremental Bill Impacts Using Company Methodology

Year	Residential ¹	Small General Service ²	Large General Service ³
2021	\$0.37	\$2.01	\$1,572.00
2022	\$4.51	\$21.40	\$16,766.00
2023	\$9.27	\$46.36	\$31,650.00
2024	\$13.07	\$69.18	\$44,448.00
2025	\$19.08	\$100.69	\$63,492.00
2026	\$20.29	\$104.41	\$57,766.00
2027	\$24.70	\$125.06	\$62,864.00
2028	\$24.19	\$121.46	\$57,878.00
2029	\$25.89	\$130.63	\$64,140.00
2030	\$27.46	\$138.50	\$67,858.00
2031	\$30.06	\$151.51	\$73,902.00
2032	\$33.69	\$170.12	\$83,940.00
2033	\$35.57	\$179.21	\$87,164.00
2034	\$38.28	\$190.83	\$86,384.00
2035	\$38.01	\$189.13	\$84,494.00

⁷⁸ *Id.* at Attachment 11.

⁷⁹ *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex Parte: Establishing 2020 RPS Proceeding for Virginia Electric and Power Company*, Case No. PUR-2020-00134, 2021 S.C.C. Ann. Rep. 242, Final Order (Apr. 30, 2021) (“2020 RPS Plan Order”).

⁸⁰ Ex. 10 (RPS Development Plan) at 15. Residential impacts represent a customer using 1,000 kilowatt-hour (“kWh”)/month. Small general service impacts represent a Rate Schedule GS-1 customer using 6,000 kWh/month. Large general service impacts represent a GS-4 customer with a 10 MW demand and using 6,000,000 kWh/month. *Id.*

Dominion – Direct Testimony

In support of its Petition, the Company offered the direct testimonies of **Todd Flowers**, Director, Business Development for the Company; **Brian M. Keefer**, Manager of Power Contracts and Origination for the Company; **Victoria A. Drummond**, Director of Strategic Planning with Dominion Energy Services, Inc.; **Amelia H. Boschen**, Manager, Environmental for Dominion Energy Environmental Services; **Ruth B. Prideaux**, Director, Renewable Energy for the Company; **M. Jason Holland**, Director of Electric Distribution Operations and Emergency Preparedness for the Company; **Elizabeth B. Lecky**, Manager of Regulation in the Company's Regulatory Accounting Department; and **Christopher C. Hewett**, Regulatory Specialist in the Company's Customer Rates Department.

Mr. Flowers⁸¹ provided updated costs and project schedules for the previously approved solar and storage projects recoverable through Rider CE. At the time of the Petition, work was ongoing for all three CE-1 Solar Projects approved by the *2020 RPS Plan Order*, although Dominion expected that Grassfield Solar would be placed in service during October 2022.⁸² As updated by Mr. Flowers,⁸³ the projected costs for all three projects exceed the corresponding budget amounts, as summarized below (in millions).

CE-1 Project	Budget	Update	Increase
Grassfield Solar (20 MW)	\$38.3	\$40.8	\$2.5
Norge Solar (20 MW)	\$38.7	\$41.7	\$3.0
Sycamore Solar (42 MW)	\$91.2	\$98.8	\$7.7
Total	\$168.2	\$181.3	\$13.1 (7.8%)

At the time of the Petition, work was ongoing for all 13 CE-2 projects approved by the *2021 RPS Plan Order*, which consist of (a) 11 utility-scale solar generating facilities totaling 561 MW ("CE-2 Solar Projects"); (b) one 100 MW solar generating facility paired with a 50 MW storage resource ("CE-2 Solar + Storage Project"); (c) one stand-alone 20 MW storage resource ("CE-2 Storage Project"); and (d) two distributed solar projects totaling 4 MW ("CE-2 Distributed Solar Projects").⁸⁴ As updated by Mr. Flowers, the total estimated cost for the CE-2 Solar Projects has increased by \$23.1 million (2.1%).⁸⁵ Mr. Flowers indicated that the projected total capital expenditures for the other three categories of CE-2 projects have not changed.⁸⁶

Notwithstanding these increased costs, Mr. Flowers asserted that expenditures for the CE-1 and CE-2 Solar Projects are reasonable and prudent. Mr. Flowers generally attributed cost increases for the CE-1 and CE-2 Solar Projects to higher prices for solar modules, resulting from

⁸¹ In addition to his direct testimony, Mr. Flowers sponsored or co-sponsored Exhibit 1 to the Petition, Filing Schedules 46A and B, and several parts of the RPS Development Plan. Ex. 15 (Flowers direct) at 2-3.

⁸² Ex. 15 (Flowers direct) at 3-4 and attached Sched. 1. See also Ex. 59 (Ricketts) at 2 (indicating Grassfield Solar was placed in service on October 20, 2022).

⁸³ Ex. 15 (Flowers direct) at 5, attached Sched. 1. All MW figures in this summary of Mr. Flowers' direct testimony are nameplate, alternating current ("AC") capacity.

⁸⁴ *Id.* at 4 and attached Sched. 2.

⁸⁵ *Id.* at 5, attached Sched. 2.

⁸⁶ *Id.* at attached Sched. 2, pp. 8-10.

the increased commodity markets and federal tariff impacts; increased interconnection costs; the ongoing effects of the pandemic on labor availability; and additional requirements imposed by the relevant localities. He generally attributed delays in project schedules to delays in the shipment of major equipment; permitting delays from the relevant authorities, which is partially related to limited staffing resources at the relevant authorities; and implementation of new state and federal requirements.⁸⁷

Mr. Flowers provided the following summary listing of the proposed CE-3 Projects and CE-3 Distributed Solar Projects.⁸⁸

Project	Size (MWac)	Locality	Interconnection	COD
Utility-scale Solar				
Bridleton	20.0	Henrico County	Distribution	2025
Cerulean	62.0	Richmond County	Transmission	2025
Courthouse	167.0	Charlotte County	Transmission	2025
Kings Creek	20.0	York County	Distribution	2025
Moon Corner	60.0	Richmond County	Transmission	2025
North Ridge	20.0	Powhatan County	Distribution	2025
Southern Virginia	125.0	Pittsylvania County	Transmission	2024
Distributed Solar				
Ivy Landfill ¹	3.0	Albemarle County	Distribution	2023
Racefield	3.0	James City County	Distribution	2023
Utility-scale Storage				
Shands	15.7	Sussex County	Distribution	2025

Notes: (1) Consists of three individual 1 MW (AC) facilities on contiguous locations.

Dominion's Petition requests a CPCN for all of these projects except for the two CE-3 Distributed Solar Projects.⁸⁹ Mr. Flowers testified that developments at the Federal Energy Regulatory Commission and PJM regarding interconnection queue reform do not change the above commercial operation dates.⁹⁰ He provided summaries and maps for these projects.⁹¹

Mr. Flowers asserted that the CE-3 Projects and CE-3 Distributed Solar Projects are needed to comply with the VCEA, and also to serve customers' capacity and energy needs. The CE-3 Storage Project will also enhance the reliability and performance of the Company's system, a purpose recognized in the VCEA.⁹² He indicated that the CE-3 Projects and CE-3 Distributed

⁸⁷ *Id.* at 5-6. See also Ex. 15-ES (Flowers direct) at attached Sched. 2 (providing detail on cost increases and decreases for cost categories with a projected 5% deviation from the budgeted amount).

⁸⁸ Ex. 15 (Flowers direct) at 7.

⁸⁹ *Id.* at 8. For the CE-3 Distributed Solar Projects, the Company submitted letters to Staff stating its intention to construct these projects, consistent with 20 VAC 5-302-10 and the Commission's determination that the similarly sized CE-2 Distributed Solar Projects did not require a CPCN. *Id.* at 8 and attached Sched. 13.

⁹⁰ Tr. at 147 (Flowers).

⁹¹ Ex. 15 (Flowers direct) at attached Schedules 3-12.

⁹² *Id.* at 8-9.

Solar Projects will provide environmental benefits by displacing the output from fossil fuel-fired facilities, thereby reducing the system's carbon emissions. In addition to environmental benefits, the CE-3 Projects and CE-3 Distributed Solar Projects are eligible for federal tax credits that will reduce overall customer costs.⁹³

Mr. Flowers explained how Dominion selected these projects through an RFP process and also outside of such a process. Mr. Flowers co-sponsored a report on an RFP issued on April 29, 2021 ("2021 Solar-Wind-Storage RFP"),⁹⁴ from which three of the proposed CE-3 Projects and all of the CE-3 PPAs were chosen.⁹⁵ This report provides details of the RFP process, requirements, price and non-price evaluation criteria, and the results.⁹⁶ Prior to receiving bids from developers for PPA projects, Dominion submitted to Staff site summary and cost estimates for projects that were to be evaluated concurrently with the projects offered in the RFP.⁹⁷ Three solar projects were selected out of the 33 development proposals received (11 solar, 21 stand-alone storage, and 1 onshore wind) in response to this RFP. Dominion also selected four solar projects and one storage project that were Company-sourced.⁹⁸

Mr. Flowers co-sponsored a similar report for an RFP also issued on April 29, 2021, for distributed solar resources ("2021 Distributed Solar RFP").⁹⁹ Of the 27 development proposals received, the Company selected the two CE-3 Distributed Solar Projects.¹⁰⁰

Mr. Flowers provided a general project milestone schedule for the projects.¹⁰¹ He cautioned that project schedules could be affected by ongoing PJM queue reform efforts. PJM has proposed a two-year transition to work through a backlog of interconnection requests that includes the CE-3 Projects.¹⁰²

Mr. Flowers indicated that the Company would pursue additional tax credits that are now available for the CE-3 Projects and the CE-3 Distributed Solar Projects due to the Inflation Reduction Act, which Dominion expects to further reduce the overall customer costs.¹⁰³

Mr. Flowers addressed economic development¹⁰⁴ and the potential environmental justice impacts of each proposed project.¹⁰⁵ He also sponsored the conditional use permit approved for

⁹³ *Id.* at 9.

⁹⁴ Ex. 12 at Filing Sched. 46A, Statement 1. Mr. Flowers co-sponsored Filing Schedule 46A with Company witness Keefer. As discussed below, Mr. Keefer testified about the PPAs that Dominion selected through the RFP process.

⁹⁵ Dominion selected the Bridleton, Kings Creek, and North Ridge Solar projects from the 2021 Solar-Wind-Storage RFP. *See, e.g.*, Ex. 15 (Flowers direct) at attached Sched. 3, p. 1, Sched. 6, p. 1, and Sched. 8, p. 1.

⁹⁶ The results include summaries of the bids received and bid scores or rankings according to price and non-price criteria. *See* Ex. 12-ES at Filing Sched. 46A, Statement 1, pp. 99-124.

⁹⁷ Ex. 12 at Filing Sched. 46A, Statement 1 at 4. This communication was provided under seal. Ex. 12-ES at Filing Sched. 46A, Statement 1, pp. 93-97.

⁹⁸ Ex. 15 (Flowers direct) at 11.

⁹⁹ Ex. 12 and 12-ES at Filing Sched. 46A, Statement 2.

¹⁰⁰ Ex. 15 (Flowers direct) at 11-12.

¹⁰¹ *Id.* at attached Sched. 15.

¹⁰² *Id.* at 13-14.

¹⁰³ *Id.* at 14-15.

¹⁰⁴ *Id.* at 15-16.

¹⁰⁵ *Id.* at 16 and attached Schedules 3-12.

the proposed Courthouse Solar project and related materials from the Charlotte County Planning Commission and Board of Supervisors.¹⁰⁶

Mr. Flowers is aware that siting agreements have been entered for the Courthouse Solar and Bridleton Solar projects.¹⁰⁷ He represented that the costs of these agreements are included in Dominion's estimated project costs presented in this case.¹⁰⁸

Mr. Flowers indicated that the subject projects will help the Company meet various requirements and targets from the VCEA, including directives for Dominion to petition for: (i) 16,100 MW of solar or onshore wind resources, including 200 MW on "previously developed project sites" and 1,100 MW from solar projects with nameplate capacity of 3 MW or less by 2035; (ii) 3,000 MW of solar or onshore wind resources by 2024; (iii) 2,700 MW of storage by 2035; and (iv) 250 MW of storage by 2025.¹⁰⁹ Mr. Flowers indicated that the 20 MW Kings Creek Solar project location qualifies as a previously developed project site. He noted that this project may also be eligible for enhanced federal tax credits under the Inflation Reduction Act due to its location.¹¹⁰ Mr. Flowers indicated that the 3 MW Ivy Landfill Solar project also qualifies as a previously developed project site.¹¹¹

Mr. Flowers used publicly available data from the U.S. Energy Information Administration to calculate a Virginia average DC/AC ratio of 1.31.¹¹² For projects below this average, Mr. Flowers provided an explanation.¹¹³

Mr. Flowers provided estimated costs for the seven CE-3 Projects that are utility-scale, solar projects ("CE-3 Solar Projects"). The total estimated costs for the CE-3 Solar Projects are approximately \$1.1873 billion, excluding financing costs, or approximately \$2,505/kilowatt ("kW") at the total 474 MW (nominal AC) rating.¹¹⁴ He indicated these estimated costs are based on fixed-price engineering, procurement and construction ("EPC") contract negotiations established through a competitive solicitation process.¹¹⁵ The cost for each of these projects,

¹⁰⁶ Exs. 16-18; Tr. at 128-30, 134 (Flowers).

¹⁰⁷ Tr. at 138-42 (Flowers). Counsel for Dominion indicated that these siting agreements were entered pursuant to Code § 15.2-2316.7. Tr. at 155 (Ryan). This statute, enacted in 2020 and amended in 2021, states as follows:

A. Any applicant for a solar project or an energy storage project shall give to the host locality written notice of the applicant's intent to locate in such locality and request a meeting. Such applicant shall meet, discuss, and negotiate a siting agreement with such locality.

B. The siting agreement may include terms and conditions, including (i) mitigation of any impacts of such solar project or energy storage project; (ii) financial compensation to the host locality to address capital needs set out in the (a) capital improvement plan adopted by the host locality, (b) current fiscal budget of the host locality, or (c) fiscal fund balance policy adopted by the host locality; or (iii) assistance by the applicant in the deployment of broadband, as defined in § 56-585.1:9, in such locality.

¹⁰⁸ Tr. at 140, 157 (Flowers).

¹⁰⁹ Ex. 15 (Flowers direct) at 17-18, 20-24.

¹¹⁰ *Id.* at 17-18. The project site is a former Naval underground tank storage facility. *Id.* at 17.

¹¹¹ *Id.* at 21. As its name indicates, the project site is a landfill. *Id.*

¹¹² *Id.* at 18.

¹¹³ *Id.* at attached Scheds. 3, 5-6, 8-9 at Feasibility and Engineering Design.

¹¹⁴ *Id.* at 19.

¹¹⁵ *Id.* at 20.

along with some of the additional information provided by Mr. Flowers,¹¹⁶ is discussed in this Report's CPCN Analysis below.

Mr. Flowers asserted that the CE-3 Solar Projects will benefit customers. Citing Ms. Drummond's direct testimony, he asserted that these projects are estimated to provide \$185 million positive net present value or, under a high fuel sensitivity, more than \$385 million.¹¹⁷

Dominion's estimated costs for the CE-3 Distributed Solar Projects total approximately \$28.7 million, excluding financing cost, or approximately \$4,775/kW at the total six MW (nominal AC) rating.¹¹⁸ Mr. Flowers indicated these estimated costs are based on fixed-price EPC contract negotiations established through a competitive process.¹¹⁹ The cost for each of these projects is discussed further in this Report's Rider CE Analysis below.

Mr. Flowers indicated that the CE-3 Distributed Solar Projects provide diversification of project resource scale and size as compared to utility-scale projects. Projects of smaller scale provide opportunities in land development, interconnection, and a more diverse set of project developers.¹²⁰

Dominion's estimated cost for the CE-3 Storage Project is \$57.6 million, or \$3,669/kW, excluding financing costs.¹²¹ Mr. Flowers indicated that this estimated cost is based on fixed-price EPC contract negotiations established through a competitive process.¹²² The cost of this project is discussed further in this Report's CPCN Analysis below.

According to Mr. Flowers, the CE-3 Storage Project would primarily function as a capacity resource in the near-term, with the ability to charge during periods of lower electricity demand (and lower prices) and discharge during periods of higher electricity demand (and higher prices).¹²³ He indicated that the Company would also evaluate whether and when to pursue opportunities in PJM's sub-hourly real-time energy market and PJM's regulation and reserves market.¹²⁴

Mr. Flowers acknowledged that the net present value analysis for the CE-3 Storage Project is negative compared to the market. However, he indicated this traditional economic analysis used for generation resources does not capture all the potential value streams for storage resources.¹²⁵

According to Mr. Flowers, safety is a critical element in the development of the

¹¹⁶ *Id.* at attached Scheds. 3-9.

¹¹⁷ *Id.* at 19-20.

¹¹⁸ *Id.* at 22.

¹¹⁹ *Id.* at 23.

¹²⁰ *Id.*

¹²¹ *Id.* at attached Sched. 12, p 1.

¹²² *Id.* at 24-25.

¹²³ *Id.* at 25.

¹²⁴ *Id.* at 25-26.

¹²⁵ *Id.* at 27.

CE-3 Storage Project. This project would include 25-foot minimum spacing requirements between enclosures to prevent fire spread and would meet all applicable federal, state, and local safety standards. Dominion intends to use fire and gas detectors, exhaust ventilation, and manual fire suppression and flooding systems to detect and suppress any thermal events that may happen on site. Dominion would also work with local emergency responders to ensure proper training.¹²⁶

Mr. Flowers concluded that the projects presented by the Petition are prudent, cost-effective resources that will:

- Further the directives of the VCEA to develop significant amounts of new renewable generation and energy storage capacity in the Commonwealth, including the sub-targets for (1) new distributed solar resources, and (2) solar projects on previously developed project sites;
- Support compliance with the mandatory RPS Program requirements;
- Address the Company's need for energy and capacity to meet its forecasted load growth;
- Provide emissions-free energy from renewable energy resources;
- Enhance the reliability and performance of the Company's system through the addition of a new energy storage resource;
- Contribute to fuel diversity so that the Company's generation portfolio is not overly dependent on any one fuel source;
- Enhance the cost-effectiveness and customer value of projects by pursuing available federal tax credits; and
- Support economic development in the Commonwealth.¹²⁷

Together with the PPAs presented by Company witness Keefer, the resources presented by the Petition total approximately 750 MW of new solar capacity and 65 MW of storage capacity, of which approximately 36% and 76%, respectively, is from facilities owned by third parties.¹²⁸

Mr. Keefer supported the Company's request that the Commission determine the CE-3 PPAs, totaling 270 MW of solar and 49 MW of storage, are reasonable and prudent. He also provided a status update on PPAs previously approved under the VCEA.¹²⁹

At the time of the Petition, work was ongoing for all but one of the previously approved PPAs, which consist of six PPAs for utility-scale solar generating facilities totaling 416 MW, approved by the *2020 RPS Plan Order* ("CE-1 Solar PPAs") and the following approved by the *2021 RPS Plan Order*: (i) five PPAs for utility-scale solar generating facilities totaling 137 MW ("CE-2 Solar PPAs"); (ii) one PPA for a stand-alone storage resource totaling 20 MW ("CE-2 Storage PPA"); (iii) two PPAs for utility-scale solar generating facilities paired with storage totaling 26 MW of solar and 13 MW of storage; and (iv) 12 PPAs for 16 small-scale solar generating facilities totaling 33 MW ("CE-2 Distributed Solar PPAs").¹³⁰

¹²⁶ *Id.* at 24.

¹²⁷ *Id.* at 28-29.

¹²⁸ *Id.* at 29.

¹²⁹ In addition to his direct testimony, Mr. Keefer sponsored or co-sponsored Filing Schedules 46A and 46C and several parts of the RPS Development Plan. Ex. 22 (Keefer direct) at 2-3.

¹³⁰ *Id.* at 3.

Mr. Keefer reported that one of the CE-2 Distributed Solar PPAs was terminated because the developer could not obtain a conditional use permit from the relevant locality. Additionally, Dominion understands that developers are seeing the same cost increases Dominion is incurring for its own projects, as discussed by Mr. Flowers. According to Mr. Keefer, [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED]

[END EXTRAORDINARILY SENSITIVE INFORMATION]¹³¹

Turning to the proposed CE-3 PPAs, Mr. Keefer provided the following summary information, with the price and developer information designated as extraordinarily sensitive.¹³²

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION (bolded)]

CE-3 Solar PPAs

Project	Size (MWac)	Locality	Developer	Year 1 Price (\$/MWh)	COD
Switchgrass	69.0	City of Suffolk	[REDACTED]	[REDACTED]	2024
Groves	16.2	Westmoreland	[REDACTED]	[REDACTED]	2024
Jarratt	48.4	Greenville	[REDACTED]	[REDACTED]	2024
Augusta	105.0	Augusta	[REDACTED]	[REDACTED]	2024
Harrisonburg	15.0	Rockingham	[REDACTED]	[REDACTED]	2024

CE-3 Storage PPAs

Project	Size (MWac)	Locality	Developer	Year 1 Price (\$/MWh)	COD
Cedar	20.0	Chesapeake	[REDACTED]	[REDACTED]	2024
Hampton	29.0	Hampton	[REDACTED]	[REDACTED]	2024

CE-3 Distributed Solar PPAs

Project	Size (MWac)	Locality	Developer	Year 1 Price (\$/MWh)	COD
Pivot Energy VA2	1.0	James City	[REDACTED]	[REDACTED]	2024
Kenbridge B	3.0	Lunenburg	[REDACTED]	[REDACTED]	2023
Fishersville A	3.0	Augusta	[REDACTED]	[REDACTED]	2023
USS Hilltop	3.0	Rockbridge	[REDACTED]	[REDACTED]	2023
Orange A	3.0	Orange	[REDACTED]	[REDACTED]	2023
Petersburg C	3.0	Chesterfield	[REDACTED]	[REDACTED]	2023

[END EXTRAORDINARILY SENSITIVE INFORMATION]

¹³¹ Exs. 22, 22-ES (Keefer direct) at 3-4. See also Ex. 24-ES.

¹³² Exs. 22, 22-ES (Keefer direct) at corrected 5. "COD" is the projected commercial operations date.

Mr. Keefer testified that of all the above resources, only two of the CE-3 Solar PPAs and CE-3 Storage PPAs would be interconnected to the transmission grid. All but one of the solar PPAs use single-axis tracking technology. Both CE-3 Storage PPAs are for lithium-ion facilities.¹³³ The Company intends to recover the costs of the CE-3 PPAs through Rider PPA.¹³⁴

The structure of the CE-3 Solar PPAs and the CE-3 Distributed Solar PPAs are similar to those approved by the Commission in prior RPS plan proceedings. Through these PPAs, the Company has agreed to purchase all the output from the facilities, including RECs.¹³⁵ The CE-3 Storage PPAs are structured as tolling arrangements, whereby Dominion will pay the owner of the facility each month for the rights to utilize the storage device. Dominion will pay for the electricity used to charge the facilities and will receive all revenue derived from the facilities. While payments are not based on production, contractual protections, such as an availability guarantee, mitigate the Company's exposure to the risk of underperformance. Compared to the CE-2 Storage PPAs, the CE-3 Storage PPAs have a term of 15 (not 20) years¹³⁶ and do not provide an option for the Company to purchase the resource from its owners.¹³⁷

Mr. Keefer indicated that these PPAs will help Dominion meet various requirements and targets from the VCEA.¹³⁸ In addition to the general RPS Program requirements, Dominion expects that one MW of the CE-3 Distributed Solar PPAs will be eligible for the 1% carve-out for distributed resources that are one MW or less.¹³⁹ At this time, Dominion intends for any RECs generated by the CE-3 PPAs to be banked or used for RPS Program compliance.¹⁴⁰

Mr. Keefer co-sponsored the reports on the 2021 Solar-Wind-Storage RFP¹⁴¹ and the 2021 Distributed Solar RFP discussed by Mr. Flowers.¹⁴² Of the 48 PPA proposals received from the 2021 Solar-Wind-Storage RFP, the Company selected eight utility-scale solar PPAs and three storage PPAs. However, after three developers informed Dominion that four PPA proposals were no longer economically viable at their bid prices, this left the five CE-3 Solar PPAs and the two CE-3 Storage PPAs.¹⁴³ Mr. Keefer expressed concern that if Dominion had selected the additional eight conforming bids that the Company did not select, it would have sent a market signal that Dominion is indifferent to price.¹⁴⁴ He acknowledged that Appalachian Voices recommended acceptance of these eight bids in part because they had lower leveled

¹³³ Ex. 22 (Keefer direct) at 5. USS Hilltop uses fixed tilt technology. *Id.*

¹³⁴ *Id.* at 13.

¹³⁵ *Id.* at 9.

¹³⁶ Mr. Keefer testified that Dominion learned from the industry, not developers, that a 15-year term is the market standard. Tr. at 545, 560-61 (Keefer). He indicated that this shorter term helps minimize customer risks associated with the later part of a project's life. Tr. at 545 (Keefer).

¹³⁷ Ex. 22 (Keefer direct) at 9-10. On rebuttal, Mr. Keefer testified that in 2022 the purchase option was removed from the Company's form PPA. Ex. 63 (Keefer rebuttal) at 9.

¹³⁸ Ex. 22 (Keefer direct) at 6.

¹³⁹ *Id.* at 10.

¹⁴⁰ *Id.*

¹⁴¹ Ex. 12 at Filing Sched. 46A, Statement 1. Mr. Flowers co-sponsored Filing Schedule 46A with Company witness Keefer.

¹⁴² Exs. 12, 12-ES at Filing Sched. 46A, Statement 2.

¹⁴³ Ex. 22 (Keefer direct) at 7-8.

¹⁴⁴ Tr. at 548-49 (Keefer).

costs of energy (“LCOEs”) than Company-owned projects.¹⁴⁵

Of the 17 PPA proposals received from the 2021 Distributed Solar RFP, the Company selected nine. However, after two developers withdrew three proposals, this left the six CE-3 Distributed Solar PPAs.¹⁴⁶

Mr. Keefer addressed economic development¹⁴⁷ and the potential environmental justice impacts of the CE-3 PPAs.¹⁴⁸ Of the 13 total sites, six are located within one mile of a community considered an environmental justice community under the Virginia Environmental Justice Act (“VEJ Act”).¹⁴⁹ Mr. Keefer provided a map to illustrate that the CE-3 PPAs are spread across the Commonwealth and do not cluster in any specific community or communities.¹⁵⁰

Ms. Drummond supported the Company’s forecasted need for the CE-3 Projects, the CE-3 Distributed Solar Projects, and the CE-3 PPAs.¹⁵¹ In 2026, the Company-owned solar projects and the solar PPAs are expected to provide approximately 866,410 MWh and 492,870 MWh of energy production, respectively. Together, these resources would contribute approximately 1,359,200 RECs, or 7.7% of the forecasted REC need, in 2026.¹⁵²

Ms. Drummond provided a chart to illustrate the effect that the proposed CE-3 resources would have on Dominion’s projected capacity position.¹⁵³ Her chart is included below in Section II of this Report’s Analysis.

According to Ms. Drummond adding solar and storage facilities now will ensure that customers benefit from federal tax credits available under current tax law.¹⁵⁴

Ms. Drummond provided Dominion’s net present value economic analyses of the CE-3 Projects compared to market purchases.¹⁵⁵ PLEXOS modeling software was used to calculate net present values over the 35-year operating lives for solar resources and 20-year operating lives for storage resources under a cost-of-service methodology. She indicated that Dominion used the same assumptions for the modeling completed in support of the Petition as the Company used in the 2022 IRP Update. Dominion used the 2022 PJM load forecast, scaled down to the Dominion load serving entity level and then adjusted to account for energy

¹⁴⁵ Tr. at 556 (Keefer).

¹⁴⁶ Ex. 22 (Keefer direct) at 8.

¹⁴⁷ *Id.* at 10-11.

¹⁴⁸ *Id.* at 11-12.

¹⁴⁹ *Id.* at corrected 11. The VEJ Act was codified as Code §§ 2.2-234 and 2.2-235.

¹⁵⁰ Ex. 22 (Keefer direct) at 12 and attached Sched. 2.

¹⁵¹ In addition to her direct testimony, Ms. Drummond sponsored Filing Schedule 46D and portions of the RPS Development Plan. Ex. 25 (Drummond direct) at 2-3.

¹⁵² *Id.* at 5-6. One REC is generated from each MWh of applicable energy production. *Id.* at 5.

¹⁵³ *Id.* at 7.

¹⁵⁴ *Id.* at 10.

¹⁵⁵ She provided this analysis notwithstanding her opinion that the VCEA “shifted the question of options away from a choice between a number of different types of generating resources, to the options being between the Company-owned projects available and, separately, between the PPAs available.” *Id.* at 11 (internal quotations omitted).

efficiency programs and retail choice.¹⁵⁶ A base case commodity price forecast prepared by ICF International, Inc. (“ICF”), vintage March 2022, was used, consistent with the 2022 IRP Update. ICF forecasted REC prices for utility-scale projects, but for distributed solar Virginia RECs, the Company used an average of recent actual traded distributed RECs beginning in 2021 and escalated 1% annually.¹⁵⁷ Dominion also performed a modeling sensitivity that incorporates a high fuel price commodity forecast prepared by ICF for the 2022 IRP Update.¹⁵⁸

For solar projects, Dominion assumed a capacity factor based on the lower of the design capacity factor or the three-year average of the Company’s existing solar facilities in Virginia. Dominion also modeled the projects using their design capacity factors to the extent they are higher than the three-year average.¹⁵⁹ For capacity value, Dominion used the most recent effective load carrying capability methodology annual values published in December 2021.¹⁶⁰

For federal tax credits, Ms. Drummond indicated that Dominion’s Petition assumed the law as it existed just prior to enactment of the Inflation Reduction Act. At that time, approximately 83.5% of the CE-3 Projects’ and the CE-3 Distributed Solar Projects’ capital expenditures qualified for the 26% investment tax credit (“ITC”) with the remainder qualifying for the 22% ITC, depending on project commencement. She indicated this equated to \$235 million in federal tax credits. However, she expected that the Inflation Reduction Act will have a positive effect on these projects from a federal tax credit perspective, as the Company will pursue additional tax credits available under the new law.¹⁶¹

Ms. Drummond indicated that Dominion also quantified and included REC benefits and a social cost of carbon in its net present value analyses for the solar projects.¹⁶² REC benefits are incorporated as an avoided cost (added as a benefit for each project) under two scenarios: (i) a forecasted market price for RECs; and (ii) the statutory deficiency payment.¹⁶³ Dominion believes the second scenario is more likely based on the Company’s concerns about REC supply if the Company does not develop projects or incentivize their development through PPAs.¹⁶⁴ To calculate a social cost of carbon benefit, Dominion multiplied each project’s annual solar generation by the marginal carbon dioxide (“CO₂”) emissions intensity from the 2021 PJM Emission Report “to determine how much carbon the project would displace.” Dominion then multiplied that amount by the federal government’s forecasted social cost of carbon (\$51 per metric ton in 2021).¹⁶⁵

¹⁵⁶ *Id.* While the Company continues to have concerns with using this load forecast, which is consistent with prior Commission orders, for 2022 this forecast is similar to the Company’s load forecast. *Id.* at 11-12.

¹⁵⁷ *Id.* at 12.

¹⁵⁸ *Id.* at 16.

¹⁵⁹ *Id.* at 12-13.

¹⁶⁰ *Id.* at 13. *See also* Ex. 30.

¹⁶¹ Ex. 25 (Drummond direct) at 13-14. As discussed below, Ms. Drummond also provided supplemental direct testimony that incorporated the effects of the Inflation Reduction Act.

¹⁶² *Id.* at 14.

¹⁶³ *Id.*

¹⁶⁴ *Id.* at 15.

¹⁶⁵ *Id.* at 15-16; Ex. 28; Tr. at 602-03 (Drummond).

For the CE-3 Projects, Ms. Drummond summarized the results of the net present value analysis filed with the Petition using the following two tables that only differ due to the assumed REC price.¹⁶⁶ More specifically (as noted), the first table assumes an avoided Virginia REC benefit priced at the statutory penalty rate for RPS non-compliance while the second table assumes the same benefit is priced using the ICF forecast primarily.

					Base Fuel	High Fuel
Project Name	Project Type	Output Measure	Solar MW	Storage MW	NPV \$M	NPV \$M
CE-3 Solar Projects						
Bridleton	Solar	Design	20.0		6.9	15.3
Cerulean	Solar	Design	62.0		25.4	56.7
Cerulean	Solar	3-Year Avg.	62.0		6.5	35.6
Courthouse	Solar	Design	167.0		53.6	124.7
Kings Creek	Solar	Design	20.0		10.5	19.0
Moon Corner	Solar	Design	60.0		13.0	43.3
Moon Corner	Solar	3-Year Avg.	60.0		1.4	29.5
North Ridge	Solar	Design	20.0		9.2	18.4
Southern Virginia	Solar	Design	125.0		67.1	120.6
CE-3 Distributed Solar Projects						
Ivy Landfill ¹	Distributed Solar	Design	3.0		(2.6)	(1.2)
Ivy Landfill ¹	Distributed Solar	3-Year Avg.	3.0		(3.9)	(2.6)
Racefield	Distributed Solar	Design	3.0		(4.4)	(2.9)
Racefield	Distributed Solar	3-Year Avg.	3.0		(4.9)	(3.4)
CE-3 Storage Projects						
Shands	Storage			15.7	(49.3)	(48.9)

Notes: Includes social cost of carbon and REC benefit valued at applicable deficiency payment.

(1) Comprised of three 1 MW facilities, making this project eligible for a premium value for RECs.

					Base Fuel	High Fuel
Project Name	Project Type	Output Measure	Solar MW	Storage MW	NPV \$M	NPV \$M
CE-3 Solar Projects						
Bridleton	Solar	Design	20.0		(7.5)	(2.3)
Cerulean	Solar	Design	62.0		(28.0)	(8.3)
Cerulean	Solar	3-Year Avg.	62.0		(43.3)	(25.1)
Courthouse	Solar	Design	167.0		(68.7)	(24.2)
Kings Creek	Solar	Design	20.0		(4.2)	1.1
Moon Corner	Solar	Design	60.0		(38.7)	(19.6)
Moon Corner	Solar	3-Year Avg.	60.0		(46.8)	(29.2)
North Ridge	Solar	Design	20.0		(6.8)	(0.9)
Southern Virginia	Solar	Design	125.0		(26.4)	7.5
CE-3 Distributed Solar Projects						
Ivy Landfill ¹	Distributed Solar	Design	3.0		(3.5)	(2.0)
Ivy Landfill ¹	Distributed Solar	3-Year Avg.	3.0		(4.7)	(3.3)
Racefield	Distributed Solar	Design	3.0		(7.2)	(6.2)
Racefield	Distributed Solar	3-Year Avg.	3.0		(7.5)	(6.6)
CE-3 Storage Projects						
Shands	Storage			15.7	(49.3)	(48.9)

Notes: Includes social cost of carbon and REC benefit valued at forecasted market price.

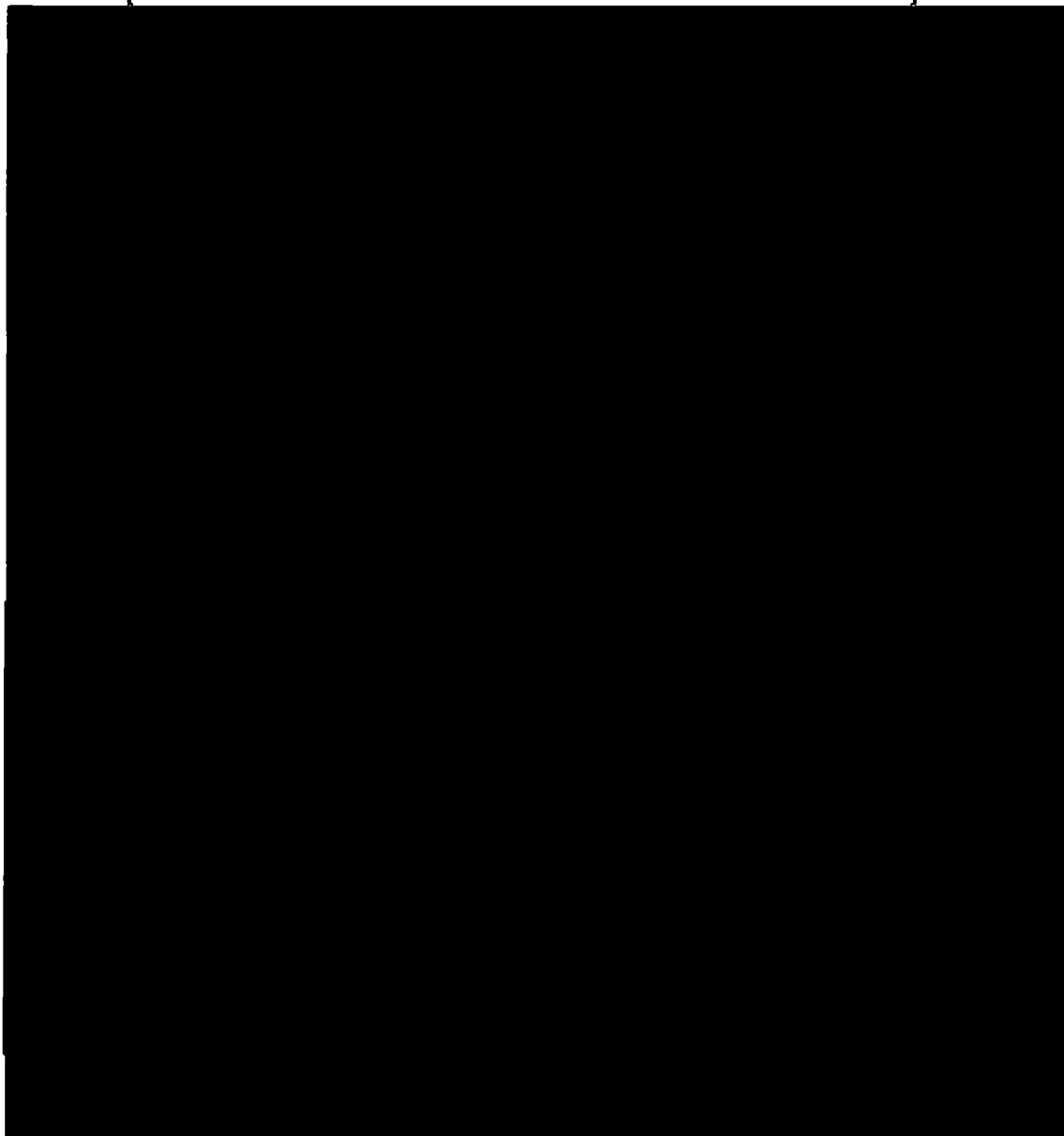
(1) Comprised of three 1 MW facilities, making this project eligible for a premium value for RECs.

¹⁶⁶ Ex. 25 (Drummond direct) at attached Scheds. 1-2.

Ms. Drummond testified that the "high fuel" prices used in the Company's sensitivity analysis (far-right column results in her tables) are lower than recent market prices.¹⁶⁷ She provided charts showing the forecasted commodity prices for the "high fuel" sensitivity.¹⁶⁸

She summarized the results of Dominion's economic analysis of the CE-3 PPAs using the following two tables that also differ based on the REC benefit scenario (as noted).¹⁶⁹

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]



[END EXTRAORDINARILY SENSITIVE INFORMATION]

¹⁶⁷ *Id.* at 16-17.

¹⁶⁸ Ex. 29.

¹⁶⁹ Ex. 25 (Drummond direct) at attached Schedules 3-4.

Ms. Boschen discussed the environmental impact analysis performed by Dominion for the CE-3 Projects. She also sponsored the DEQ Supplements for each of the eight CE-3 Projects, which are attached to her direct testimony.¹⁷⁰

For air impacts, Ms. Boschen expects localized impacts during construction of the CE-3 Projects. She does not expect any impact to ambient air quality from operation of the solar facilities and expects insignificant air impacts from emergency generators associated with long-term operations of the storage resource. Ms. Boschen expects that the CE-3 Projects will not generate any wastewater and water requirements will generally be very minimal.¹⁷¹

Ms. Boschen explained how stormwater discharges during construction and runoff during operation are regulated.¹⁷² While the CE-3 Projects will be designed to avoid and minimize impacts to wetlands and streams, the Company will work with all applicable regulatory agencies to obtain permits and provide appropriate mitigation if there are unavoidable impacts to streams or wetlands.¹⁷³

Similarly, while the CE-3 Projects will be designed to avoid and minimize impacts to archaeological, historic, scenic, and architectural resources to the greatest extent practicable, Dominion will work with the Department of Historic Resources ("DHR"), and other stakeholders as needed, if mitigation for unavoidable impacts is required.¹⁷⁴

According to Ms. Boschen, adverse impacts to natural heritage resources are not expected.¹⁷⁵ The Company made efforts to avoid and minimize the need for tree removal and habitat fragmentation where possible.¹⁷⁶

Ms. Boschen committed that Dominion will apply for and receive all applicable permits and approvals prior to construction. Additionally, the Company will use avoidance and best management practices to meet all applicable environmental regulations and permit conditions.¹⁷⁷

Environmental impacts specific to each of the CE-3 Projects, including those identified by Ms. Boschen, are discussed in this Report's CPCN Analysis below.

Ms. Prideaux sponsored Filing Schedule 46E, which provides the Company's updated projected and actual operations and maintenance ("O&M") and capital maintenance costs and provides certain cost support information for the utility-scale CE-1 Solar Projects and CE-2

¹⁷⁰ DEQ Supplements were not provided for the CE-3 Distributed Solar Projects because, as discussed by Mr. Flowers, the Company did not request CPCNs for these projects. However, Ms. Boschen represented that the Company will comply with all relevant environmental laws and regulations in the construction of these projects, and will obtain all necessary permits from the appropriate agencies. Ex. 33 (Boschen direct) at 2.

¹⁷¹ *Id.* at 3-4.

¹⁷² *Id.* at 4-5.

¹⁷³ *Id.* at 5.

¹⁷⁴ *Id.* at 5-6.

¹⁷⁵ *Id.* at 6.

¹⁷⁶ *Id.*

¹⁷⁷ *Id.* at 7.

Projects.¹⁷⁸ For O&M, Ms. Prideaux's cost projections incorporate [BEGIN
EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED]

[REDACTED] [END EXTRAORDINARILY SENSITIVE INFORMATION]¹⁷⁹

Ms. Prideaux also provided, among other things, the Company's current five-year O&M and capital budget plans for each of the CE-1 Solar Projects and CE-2 Projects.¹⁸⁰

Mr. Holland sponsored Filing Schedule 46F, which provides the Company's updated projected and actual O&M and capital maintenance costs and provides certain cost support information for the CE-2 Distributed Solar Projects.¹⁸¹ Mr. Holland also provided, among other things, the Company's current five-year O&M and capital budget plans for each of these projects.¹⁸²

Ms. Lecky calculated the Petition's proposed Rider CE revenue requirement of \$89,154,000.¹⁸³ This amount is based on: (1) annualized total Projected Cost Recovery Factor revenue requirements of \$115,590,000 and \$70,629,000 for pre-commercial operation and post-commercial operation periods, respectively; and (2) an Actual Cost True-Up Factor revenue requirement of (\$3,185,000).¹⁸⁴

Ms. Lecky reported that the following facilities are expected to begin commercial operations during the rate year in this case:¹⁸⁵

¹⁷⁸ Ex. 36 (Prideaux direct) at 2.

¹⁷⁹ Ex. 36-ES (Prideaux direct) at 3-5.

¹⁸⁰ *Id.* at attached Scheds. 1 and 2.

¹⁸¹ Ex. 37 (Holland direct) at 2.

¹⁸² Ex. 37-ES (Holland direct) at attached Sched. 1.

¹⁸³ Ex. 38 (Lecky direct) at 14, attached Scheds. 1-4. In addition to her testimony, Ms. Lecky sponsored or co-sponsored Filings Schedules 3-5, and 8, and parts of Filing Schedule 46G and the RPS Development Plan. *Id.* at 3.

¹⁸⁴ *Id.* at 9-12, 14.

¹⁸⁵ *Id.* at 8-9.

Site	In-Service Date
CE-1 Solar Projects	
Norge Solar	7/1/2023
CE-2 Projects	
Camellia Solar	10/1/2023
Fountain Creek Solar	12/1/2023
Otter Creek Solar	12/1/2023
Piney Creek Solar	12/1/2023
Quillwort Solar	10/1/2023
Sebera Solar	10/1/2023
Solidago Solar	6/1/2023
Sweet Sue Solar	10/1/2023
Winterberry Solar	10/1/2023
Winterpock Solar	10/1/2023
CE-3 Distributed Solar Projects	
Ivy Landfill Distributed Solar	12/1/2023
Racefield Distributed Solar	11/1/2023

Ms. Lecky represented that Dominion's proposed revenue requirement is consistent with the calculations presented in the prior RPS plan case, with two exceptions. First, the Petition uses an updated revenue lag based on 2021 data in certain cash working capital calculations in this filing, which she understood would be litigated in Case No. PUR-2022-00062. Second, her revenue requirement incorporates the following changes to expected commercial operations dates.¹⁸⁶

Site	Prior COD	New COD
CE-1 Solar Projects		
Grassfield Solar	4/30/2022	8/1/2022 ¹
Norge Solar	12/1/2022	7/1/2023
Sycamore Solar	9/1/2022	11/1/2022
CE-2 Projects		
Walnut Solar	10/1/2023	12/1/2024
Fountain Creek Solar	10/1/2023	12/1/2023
Otter Creek Solar	10/1/2023	12/1/2023
Piney Creek Solar	10/1/2023	12/1/2023
Solidago Solar	10/1/2023	6/1/2023
Dry Bridge Storage	10/1/2022	12/1/2022
Dulles Solar + Storage	10/1/2022	12/1/2024

Ms. Lecky's revenue requirement calculations incorporate the 9.35% rate of return on common equity and capital structure approved in Case No. PUR-2021-00058, for the period subsequent to November 18, 2021 (when the triennial review order was entered). For the period prior to that date, her calculations incorporate the 9.2% return on equity approved in Case No. PUR-2019-00050.¹⁸⁷

¹⁸⁶ *Id.* at 3-4.

¹⁸⁷ *Id.* at 5.

Pursuant to the “costs and benefits” framework approved by the *2020 RPS Plan Order*, Ms. Lecky’s proposed revenue requirement includes estimated capacity benefits. The Petition uses the proxy value Dominion proposed in Case No. PUR-2021-00156 but the Company will update Rider CE as needed to incorporate the Commission’s decision on the proxy value. Ms. Lecky’s proposed revenue requirement does not include any REC benefits because Dominion does not plan to retire any RECs produced by the Rider CE projects during the rate year. She allocated estimated energy benefits on an energy-only basis, per the *2020 RPS Plan Order*.¹⁸⁸ Estimated capacity and energy benefits are only included for Company-owned projects, and not PPAs, pursuant to the framework approved by the *2020 RPS Plan Order*.¹⁸⁹

The Petition’s revenue requirement calculations include ITCs based on the relevant laws as they existed as of August 1, 2022. However, Ms. Lecky recognized that these amounts may change due to the Inflation Reduction Act, which can be incorporated in future filings.¹⁹⁰

Mr. Hewett sponsored the proposed Rider CE, based on the proposed revenue requirement presented by Ms. Lecky.¹⁹¹ He explained the Company’s proposed allocation of Rider CE to the Virginia jurisdiction and customer classes.¹⁹² He identified the customer impact of the Company’s proposed Rider CE increase.¹⁹³ As proposed, the monthly bill of a residential customer using 1,000 kWh would increase by \$0.38.¹⁹⁴ The proposed residential Rider CE rate is 0.1698 cents/kWh,¹⁹⁵ which equates to a monthly Rider CE charge of approximately \$1.70 for a residential customer using 1,000 kWh.

Dominion – Supplemental Direct Testimony

Dominion filed the supplemental direct testimony of **James M. Gabbert**, Manager – Income Tax, for Dominion Energy Services, Inc., and **Ms. Drummond**.

Mr. Gabbert addressed the impacts of the Inflation Reduction Act on the Petition. He explained the difference between ITCs and production tax credits (“PTCs”). He also explained that under Internal Revenue Code normalization rules, the benefit from ITCs cannot be recognized immediately. Rather, it must flow through cost-of-service as a reduction to income tax expense over the remaining book life of the relevant property.¹⁹⁶ He provided the following overview of the Inflation Reduction Act, which he refers to as the “IRA.”

Eligibility for ITCs and PTCs. The IRA extends ITCs and PTCs for renewable energy technologies, including wind and solar, for at least ten years and expands the qualifying technologies to include hydrogen, biogas, nuclear, and, after 2024, other zero-emissions facilities. The IRA also expands the qualifying technologies

¹⁸⁸ *Id.* at 7.

¹⁸⁹ *Id.* at 13.

¹⁹⁰ *Id.* at 8.

¹⁹¹ Ex. 40 (Hewett direct) at 2 and attached Sched. 2.

¹⁹² *Id.* at 3-7 and attached Schedules. 1-4.

¹⁹³ *Id.* at attached Sched. 3.

¹⁹⁴ *Id.* at 7.

¹⁹⁵ *Id.* at attached Sched. 2 (Rate Schedule 1).

¹⁹⁶ Ex. 41 (Gabbert supp. direct) at 2.

for ITCs specifically to include stand-alone storage greater than 5 [kW]. Eligible property for credits is expanded to include interconnection property for certain small projects (i.e., 5 [MW] or less).

ITC and PTC Tiered Credit System. The IRA introduces a tiered credit system applicable for both ITCs and PTCs. The ITCs are broken into a base credit that is 6% of qualified basis. ITCs can then be increased to 30% of qualified basis if the project either (i) meets new wage and apprenticeship requirement (together, the “labor requirements”); or (ii) satisfies the “begins construction” test prior to 60 days after guidance is issued related to the labor requirements. Under the wage requirements, the taxpayer must ensure that any laborers and mechanics are paid prevailing wages during the construction of a project and, during the relevant credit period (five years for the ITC, or ten years for the PTC), for any alterations and repairs of the project. Subject to certain exceptions, the apprenticeship requirements require a taxpayer to ensure that no less than a certain percentage of total labor hours for the construction of the project are performed by qualified apprentices. Similarly, the PTCs are broken into a base credit and increased credit for meeting labor requirements. The amount of PTCs then continues to be adjusted annually for inflation.

Domestic Content Bonus. ITCs can be further increased by 10% if domestic content is used in the project. This bonus requires that the taxpayer certify that any steel, iron, and a minimum percentage of manufactured product that are part of the facility were produced in the United States.

Community-Based Bonuses. An additional 10% ITC increase is available if the facility is located in an energy community. An “energy community” is generally defined as a brownfield site; an area with high employment or tax revenues in the coal, oil, or gas industry and a high unemployment rate; or an area in which a coal mine or coal fire[d] electric generation unit has been retired. For solar and wind projects less than 5 MW, additional credits may be applied for if a project is located in a low-income community or Indian land. Table 1 summarizes the tiered credit system and potential bonuses.

	PTC ¹	ITC ²
Base credit, and	0.550¢/kWh	6% of basis
Increased credit (assuming labor requirements are satisfied)	2.200¢/ kWh	24% of basis
Plus: Bonus credit for domestic content	0.275¢/ kWh	10% of basis
Plus: Bonus credit if located in energy community	0.275¢/ kWh	10% of basis
Total potential credit (Bonus credit + Additional credits)	3.300¢/ kWh	50% of basis

Transfer of Credits. For taxable years beginning after December 31, 2022, taxpayers may elect to transfer certain credits to an unrelated taxpayer for cash....

Normalization for Storage. For stand-alone storage technology with a maximum capacity greater than 500 kW, the IRA permits taxpayers to opt out of the ITC

normalization requirement. The election may not be made if it is prohibited by the public utility commission or other similar body which regulates the utility.

Alternative Minimum Tax. For taxable years beginning after December 31, 2022, the IRA will impose an alternative minimum tax regime on any corporation which has an average annual adjusted financial statement income for any consecutive three-year period in excess of \$1 billion.... The tentative minimum tax is generally equal to 15% of the corporation's annual adjusted financial statement income....¹⁹⁷

Mr. Gabbert expects all the CE-3 Projects and the CE-3 Distributed Solar Projects are eligible for additional federal tax credits, subject to additional IRS guidance. More specifically, all of these projects should be eligible for 30% ITCs if they either (i) meet the labor requirements; or (ii) begin construction prior to 60 days after guidance is issued related to the labor requirements. Additionally, all projects except the CE-3 Storage Project should be eligible for either PTCs or ITCs. Two projects – Kings Creek Solar and Ivy Landfill Distributed Solar – may qualify for a 10% ITC or PTC bonus for being located in an “energy community.” Two projects – Ivy Landfill Distributed Solar and Racefield Distributed Solar – are less than five MW and will likely qualify to have interconnection costs included in the basis for calculating ITCs.¹⁹⁸

Mr. Gabbert expects substantial guidance from the IRS, which could be significant for purposes of determining which tax credits to select.¹⁹⁹ As of the time of the hearing, the guidance received – regarding the beginning of construction, labor and apprenticeship requirements – was consistent with his expectations.²⁰⁰

Mr. Gabbert identified three factors that, along with additional IRS guidance, will guide the Company's consideration of the most beneficial tax credits. First, he cited the relative increase in the ITC being larger than the relative increase in the PTC. Second, he indicated that ITCs, which are based on facility cost, have less risk because PTCs incorporate inflation adjustments and can be impacted by facility production. Third, while transferring ITCs to a third party may provide a reasonable option, particularly if normalization requirements do not apply, there is uncertainty about the market for such transfers.²⁰¹ From what he has seen, the PTC option appears to be more beneficial than ITCs for most of the relevant projects.²⁰²

Mr. Gabbert added that Dominion generally selects the federal tax credit option at the time a facility is placed in service. Accordingly, the Company has time to decide between the tax options for the CE-3 Projects and the CE-3 Distributed Solar Projects.²⁰³

¹⁹⁷ *Id.* at 3-5. Footnote 1 to his table indicates “Credit amount as of 2022. The PTC is adjusted annually for inflation.” Footnote 2 to his table indicates “These amounts do not include bonus credits for solar and wind projects located in low-income communities or on Indian land.” *Id.* at 4.

¹⁹⁸ *Id.* at 5-6.

¹⁹⁹ *Id.* at 6-8.

²⁰⁰ Tr. at 270-72 (Gabbert).

²⁰¹ Ex. 41 (Gabbert supp. direct) at 8-9.

²⁰² Tr. at 273 (Gabbert).

²⁰³ Ex. 41 (Gabbert supp. direct) at 9.

The CE-3 Storage Project (Shands Storage) is small enough to opt out of the normalization requirements for this project, which the Company intends to do. Mr. Gabbert indicated that this would allow the Company to recognize the full benefit of the associated ITCs sooner, which could accelerate the benefit to customers. Mr. Gabbert asked the Commission to find that it does not prohibit this election.²⁰⁴

Ms. Drummond presented the results of an updated net present value analysis that incorporates two different potential federal tax credit scenarios under the Inflation Reduction Act: (1) an increased ITC option; and (2) an increased PTC option. For the increased ITC option, the modeling assumption incorporated in her supplemental testimony changed from her direct testimony as follows.²⁰⁵

Project	As-Filed Direct Testimony	Supplemental Testimony
Southern Virginia Solar	26%	30%
North Ridge Solar	22%	30%
Kings Creek Solar ¹	22%	30 and 40%
Bridleton Solar	22%	30%
Cerulean Solar	26%	30%
Courthouse Solar	26%	30%
Moon Corner Solar	26%	30%
Ivy Landfill Solar ¹	22%	30 and 40%
Racefield Solar	22%	30%
Shands Storage	0%	30%

1. May qualify for the 10% energy community bonus tax credit.

For this supplemental modeling, the Company incorporated project-specific assumptions for the percentage of capital for each project eligible for ITCs. This included the assumption that projects below five MW may include interconnection costs in ITC calculations. Additionally, the Company modeled the results for the CE-3 Storage Project (Shands Storage) without normalizing ITCs.²⁰⁶

For the PTC option, Ms. Drummond explained that Dominion modeled all solar projects as receiving 100% PTCs for ten years starting at a rate of 2.75 cents/kWh, which is adjusted annually based on the inflation adjustment factor. For the two projects that may qualify for the energy community bonus tax credit, Dominion modeled these two projects with an additional 10% PTC value. The CE-3 Storage Project (Shands Storage) was not modeled under this scenario, because stand-alone storage is not eligible for PTCs.²⁰⁷

²⁰⁴ *Id.* at 10.

²⁰⁵ Ex. 26 (Drummond supp. direct) at 2-3.

²⁰⁶ *Id.* at 3-4.

²⁰⁷ *Id.* at 4.

The modeling results indicate that the Inflation Reduction Act reduces the cost of all projects for customers.²⁰⁸ Ms. Drummond summarized the results of her updated net present value analysis with the following table.²⁰⁹

				As Filed	30% ITC	40% ITC*	PTC	PTC with 10% Bonus*
Project Name	Project Type	Output Measure	MW	NPV \$M	NPV \$M	NPV \$M	NPV \$M	NPV \$M
CE-3 Solar Projects								
Bridleton	Solar	Design	20.0	6.9	7.9		12.3	
Cerulean	Solar	Design	62.0	25.4	25.7		41.8	
Cerulean	Solar	3-Year Avg.	62.0	6.5	6.8		20.7	
Courthouse	Solar	Design	167.0	53.6	50.9		92.0	
Kings Creek	Solar	Design	20.0	10.5	11.6	13.2	15.9	16.8
Moon Corner	Solar	Design	60.0	13.0	11.5		28.2	
Moon Corner	Solar	3-Year Avg.	60.0	1.4	(0.1)		14.4	
North Ridge	Solar	Design	20.0	9.2	10.1		15.0	
Southern Virginia	Solar	Design	125.0	67.1	69.5		97.4	
CE-3 Distributed Solar Projects								
Ivy Landfill	Distributed Solar	Design	3.0	(2.6)	(2.0)	(1.3)	(2.2)	(2.1)
Ivy Landfill	Distributed Solar	3-Year Avg.	3.0	(3.9)	(3.2)	(2.6)	(3.6)	(3.5)
Racefield	Distributed Solar	Design	3.0	(4.4)	(4.0)		(4.0)	
Racefield	Distributed Solar	3-Year Avg.	3.0	(4.9)	(4.4)		(4.6)	
CE-3 Storage Projects								
Shands**	Storage		15.7	(49.3)	(36.8)		N/A	

The Company used the base case commodity forecast for all NPVs shown.

*Bonus 10% ITC or PTC would be received if the project qualifies for the energy community bonus tax credit.

**If Shands Storage was required to normalize tax credits, the NPV would be (\$41,898,300).

Walmart

Walmart offered the testimony of **Lisa V. Perry**, Senior Manager, Energy Services for Walmart. Most of Walmart's facilities in Dominion's service territory competitively shop for their electric supply pursuant to the aggregation pilot authorized during the 2020 General Assembly Session.²¹⁰ To the extent Walmart takes service from Dominion, such service is provided under Rate Schedules GS-2 and GS-3.²¹¹

According to Ms. Perry, Walmart has no position on Dominion's 2022 RPS Development Plan. Walmart did not oppose the Company's proposed cost allocation, for purposes of this case.²¹²

Appalachian Voices

Appalachian Voices offered the testimony of **Gregory L. Abbott**. Mr. Abbott compared RPS planning and IRP planning.²¹³ He described the Company's 2022 IRP Update as a

²⁰⁸ *Id.*

²⁰⁹ *Id.* at attached Supp. Sched. 1.

²¹⁰ Ex. 42 (Perry) at 2-3 (citing 2020 Va. Acts ch. 796).

²¹¹ Ex. 42 (Perry) at 3.

²¹² *Id.* at 7, 11.

²¹³ Ex. 43 (Abbott) at 4-7.

foundational document for the 2022 RPS Development Plan, and recommended that IRPs be included as a support document filed in future RPS plan filings.²¹⁴ He believes it is important that Staff and respondents have the ability to examine the model assumptions and inputs to determine if the economic analysis supporting the CE-3 Projects and CE-3 PPAs is reasonable.²¹⁵

Mr. Abbott discussed several major recent developments, including the effects of geopolitical pressures on energy markets, a significant increase in PJM's peak load and sales forecasts for Dominion, and federal regulatory changes to PJM's capacity market rules.²¹⁶

While acknowledging that Dominion's peak load forecast and energy sales forecast follow the Commission's specific directive in Case No. PUR-2018-00065 for Dominion to prospectively use an adjusted version of PJM's forecast,²¹⁷ Mr. Abbott expressed concerns about the Company's forecasts. He used several charts to illustrate how the forecasts have increased in the 2022 IRP Update.²¹⁸

Mr. Abbott described the large increase in the energy sales forecast for Dominion as "especially concerning." He found it troubling that PJM uses a data center forecast provided by Dominion and Northern Virginia Electric Cooperative to increase PJM's load forecast for Dominion. Mr. Abbott believes that, going forward, the Commission might reconsider the use of PJM's load forecast.²¹⁹ Based on comparisons of actual peak and energy sales with prior forecasts from Dominion's IRP proceedings, he indicated that Dominion's internal forecasts (through 2018 IRP) exhibit an upside bias.²²⁰

Mr. Abbott is also concerned that Dominion's capacity price forecast may be too high, given recent changes to PJM's capacity market rules and a comparison of Dominion's prior capacity price forecasts compared to actual prices.²²¹

Mr. Abbott ultimately did not recommend revising the economic analysis in this case, nor did he recommend rejecting any of the CE-3 Projects or CE-3 PPAs. However, he believes his concerns call into question the reasonableness of the Company's RPS Development Plan.²²² Additionally "[g]iven the uncertainty and volatility in the energy sales forecast in particular, [he] believe[s] it is imperative to develop a strategy to mitigate the forecast risk on future build plans contained in future RPS Development Plans."²²³ He described the risk as potentially "building a fleet of Company-owned resources to meet a future energy sales forecast that may turn out to be illusory [which] could cause captive customers to pay for resources that are not needed."²²⁴ He

²¹⁴ *Id.* at 8.

²¹⁵ *Id.* at 7; Tr. at 285-86 (Abbott).

²¹⁶ Ex. 43 (Abbott) at 9-23.

²¹⁷ *Id.* at 11.

²¹⁸ *Id.* at 12.

²¹⁹ *Id.* at 13.

²²⁰ *Id.* at 14-15.

²²¹ *Id.* at 16-18.

²²² *Id.* at 19.

²²³ *Id.*

²²⁴ *Id.* at 21.

indicated there is also a risk that any peak load or energy sales growth that occurs will come from sales to future ARBs, which are excluded from the calculation of RPS obligations.²²⁵

In addition to peak load and energy sales forecast risk, Mr. Abbott testified that solar PPAs better address performance risk, project development risk, and risk of damaged solar cells during transportation or installation.²²⁶

Mr. Abbott identified Appalachian Voices' legal position that the Code establishes a 35% level for solar and onshore wind generation capacity to be owned by third-parties as a floor, and not an exact requirement.²²⁷ He indicated an exact 35% requirement would be difficult to achieve as a practical matter and would negate the flexibility provided by PPAs with purchase options.²²⁸ To the extent Dominion decides not to execute a solar PPA because of its legal conclusion that the 35% amount is an exact requirement, Mr. Abbott indicated this would highlight the need for a Commission ruling on the legal issue.²²⁹ It appears to Mr. Abbott that Dominion's legal position did influence its decision to pass on some conforming solar PPA bids.²³⁰

Mr. Abbott initially recommended that the Commission approve all solar PPAs with a lower levelized cost of energy than the least expensive proposed CE-3 utility-scale solar projects. He indicated that should the Commission determine that the proposed CE-3 utility-scale projects are reasonable and prudent in this case, then "logic would dictate that those solar PPAs that provide more value and fewer risks at a lower cost are also reasonable and prudent."²³¹ Mr. Abbott later recognized that "it is too late to execute these solar PPAs that were passed over."²³² However, with an eye towards next year's RPS filing case, Mr. Abbott recommended that the Commission direct Dominion to: (a) diligently pursue all conforming lower-cost PPAs to execute; or (b) explain the basis for any decision not to do so for any such PPA.²³³

Mr. Abbott identified two concerns with Dominion's modeling assumptions that he indicated may be better addressed in Dominion's 2023 IRP filing.²³⁴ However, for one of these concerns, he recommended that Dominion be required to: (1) provide in the 2023 IRP Update an analysis and discussion of potential ways in which future expired solar PPA contracts can be factored into its load forecast;²³⁵ and (2) allow its modeling for the upcoming 2023 IRP case to select the purchase option in existing PPAs.²³⁶

²²⁵ *Id.* at 22.

²²⁶ *Id.* at 23-26.

²²⁷ *See, e.g., id.* at 30.

²²⁸ *Id.* at 31-32.

²²⁹ Tr. at 282 (Abbott).

²³⁰ Tr. at 281-82 (Abbott). *See also* Ex. 43 (Abbott) at 28; Tr.-ES at 317-18 (Abbott).

²³¹ Ex. 43 (Abbott) at 28.

²³² Tr. at 281 (Abbott).

²³³ *Id.*

²³⁴ Ex. 43 (Abbott) at 32-35; Tr. at 286-90 (Abbott).

²³⁵ Tr. at 288 (Abbott).

²³⁶ Tr. at 290 (Abbott).

DEQ Report

In the DEQ Report, DEQ identified the permits and approvals the CE-3 Projects likely would require.²³⁷ The DEQ Report also made recommendations based on information and analysis submitted by reviewing agencies. DEQ's recommendations, which are in addition to requirements of federal, state, or local law or regulations listed above, are summarized below.²³⁸

- Follow DEQ recommendations including the avoidance and minimization of impacts to wetlands and streams.
- Take all reasonable precautions to limit emissions of oxides of nitrogen and volatile organic compounds, principally by controlling or limiting the burning of fossil fuels.
- Reduce solid waste at the source, reuse it and recycle it to the maximum extent practicable, and follow DEQ's recommendations to manage waste, as applicable.
- Coordinate with DCR on a small whorled pogonia inventory at the Moon Corner Solar site.
- Coordinate with DCR on a plan to minimize fragmentation of ecological cores at identified sites.
- Development of an invasive species management plan and the planting of native pollinator plants may be coordinated with DCR.
- Coordinate with DCR for updates to the Biotics Data System database.
- Coordinate with DWR on its site-specific recommendations for identified solar sites.
- Coordinate with DWR on its design, construction, and operation-specific recommendations for all solar sites.
- Coordinate with DWR on its recommendations for the protection of aquatic resources.
- Coordinate with DWR on its general recommendations for the protection of wildlife resources.
- Coordinate with the Virginia Outdoors Foundation should projects change or if construction does not begin within 24 months of its response.
- Coordinate with DOF on its recommendations for the protection of forest resources.
- Employ best management practices and spill prevention and control countermeasures as appropriate for the protection of water supply resources.
- Limit the use of pesticides and herbicides to the extent practicable.

Staff

Staff presented the results of its investigation through the testimonies of **Arwen T. Otwell**, Utility Specialist with the Commission's Division of Utility Accounting and Finance ("UAF"); **Katya Kuleshova**, Principal Analyst with the Commission's Division of Public Utility Regulation ("PUR"); **Donna T. Pippert**, Regulatory Consultant in UAF; **Amanda A. Ricketts**, Analyst with PUR; **Bernadette Johnson**, General Manager, Power & Renewables, for Enverus, Inc. ("Enverus"); and **Neil Joshipura**, Principal Utilities Engineering Manager with PUR.

²³⁷ Ex. 45 (DEQ Report) at 4-5.

²³⁸ *Id.* at 6-7.

Ms. Otwell discussed the Company's consolidated bill impact analysis directed by the 2020 RPS Plan Order. She presented the following table to summarize future annual RPS bill impacts on a residential customer using 1,000 kWh/month, based on the Company's Plan B from its 2022 IRP Update, during three points in time (2022, 2030, 2035).²³⁹

TABLE 1			
Residential (Schedule 1) RPS Bill Impact for 2022, 2030, and 2035			
Includes Riders CE and RPS, pending Rider OSW, and a future PPA Rider.			
Line No.	Year	Monthly Bill Impact*	Annual Bill Impact
1	2022	\$ 4.52	\$ 54.24
2	2030	\$ 34.00	\$ 408.00
3	2035	\$ 52.02	\$ 624.24

* See Company Figure 11 on Page 15 of the Company's RPS Development Plan

While she did not take issue with the Company's bill impact analysis, she cautioned that this analysis may not be definitive because the Company's future resources may be deployed or modeled in a different manner than presented in this proceeding.²⁴⁰ She also noted that this bill analysis, as well as Staff's recommended Rider CE and lifetime revenue requirements, do not incorporate any additional tax credit benefits from the Inflation Reduction Act.²⁴¹

Ms. Otwell calculated Staff's recommended revenue requirement, which is only \$2,532 higher than the Company's proposed revenue requirement. She noted the Commission has historically limited revenue requirements to amounts noticed to the public and that any excess will be collected, with carrying costs, in a future true-up factor.²⁴² She presented Staff's rate year revenue requirements broken down by project.²⁴³

²³⁹ Ex. 48 (Otwell) at 3.

²⁴⁰ *Id.*

²⁴¹ *Id.* at 4.

²⁴² *Id.* at 5.

²⁴³ *Id.* at 6.

TABLE 2 CE Solar & Storage Projects Revenue Requirements, by Project (in Thousands) For the Rate Year May 01, 2023 to April 30, 2024			
Line No.	Description	Amount	Total
	<u>CE-1 Projects</u>		
1	CE-1 Grassfield Solar	\$ 1,547	
2	CE-1 Norge Solar	\$ 260	
3	CE-1 Sycamore Solar	\$ 3,052	
4	Actual Cost True-Up Factor	<u>\$ (3,286)</u>	
5	Total CE-1 Solar Revenue Requirement		\$ 2,474
	<u>CE-2 Projects</u>		
6	CE-2 Camelika Solar	\$ 1,317	
7	CE-2 Dulles Solar	\$ 9,554	
8	CE-2 Fountain Creek Solar	\$ 4,424	
9	CE-2 Otter Creek Solar	\$ 3,871	
10	CE-2 Piney Creek Solar	\$ 8,553	
11	CE-2 Quiltwort Solar	\$ 1,175	
12	CE-2 Sebera Solar	\$ 1,230	
13	CE-2 Solidago Solar	\$ 306	
14	CE-2 Sweet Sue Solar	\$ 5,292	
15	CE-2 Walnut Solar	\$ 11,573	
16	CE-2 Winterberry Solar	\$ 1,197	
17	CE-2 Winterpock Solar	\$ 1,665	
18	CE-2 Blackbear Solar	\$ 499	
19	CE-2 Springfield Solar	\$ 471	
20	CE-2 Dry Bridge Storage	\$ 3,759	
21	CE-2 Dulles Storage	<u>\$ 2,221</u>	
22	Total CE-2 Storage Revenue Requirement		\$ 57,106
	<u>CE-3 Storage</u>		
23	CE-3 Shands Storage		\$ 833
	<u>CE-3 Distributed Solar</u>		
24	CE-3 Ivy Landfill Solar	\$ 283	
25	CE-3 Springfield Solar	<u>\$ 410</u>	
26	Total CE-3 Distributed Solar Revenue Requirement		\$ 673
	<u>CE-3 Solar</u>		
27	CE-3 Bridleton Solar	\$ 993	
28	CE-3 Cerulean Solar	\$ 2,349	
29	CE-3 Courthouse Solar	\$ 6,378	
30	CE-3 Kings Creek Solar	\$ 1,175	
31	CE-3 Moon Corner Solar	\$ 1,415	
32	CE-3 North Ridge Solar	\$ 1,013	
33	CE-3 Southern VA Solar	<u>\$ 14,747</u>	
34	Total CE-3 Solar Revenue Requirement		\$ 28,070
35	Total Rate Year Revenue Requirement		<u>\$ 89,156</u>

Ms. Otwell reported the results of Staff's review of 2021 Rider CE actual costs and revenue recoveries. Due to project delays, Dominion incurred approximately half of the anticipated costs for 2021, resulting in a negative true-up proposed in the instant case.²⁴⁴ She indicated that the delays in project schedules can generally be attributed to the delayed shipment of major equipment, permitting delays, and implementation of new state and federal requirements. Staff did not discover any material discrepancies in this year's audit of Rider CE.²⁴⁵

²⁴⁴ *Id.* at 7.

²⁴⁵ *Id.* at 8.

Ms. Otwell presented the \$455.7 million total Rider CE lifetime revenue requirement calculated by Staff, by project, with the following table.²⁴⁶

CE Solar & Storage Projects Lifetime Revenue Requirement (in Thousands)			
Line No.	Description	Amount	Total
<u>CE-1 Solar</u>			
1	CE-1 Grassfield Solar	\$ (8,354)	
2	CE-1 Norge Solar	\$ (3,314)	
3	CE-1 Sycamore Solar	\$ 18,325	
4	Total CE-1 Solar Lifetime Revenue Requirement		\$ 8,656
<u>CE-2 Solar</u>			
5	CE-2 Dry Bridge Storage	\$ 49,221	
6	CE-2 Dulles Storage	\$ 71,358	
7	CE-2 Blackbear Solar	\$ 8,458	
8	CE-2 Springfield Solar	\$ 5,701	
9	CE-2 Camellia Solar	\$ 3,739	
10	CE-2 Dulles Solar	\$ 12,282	
11	CE-2 Fountain Creek Solar	\$ (50,986)	
12	CE-2 Otter Creek Solar	\$ (15,192)	
13	CE-2 Piney Creek Solar	\$ (2,146)	
14	CE-2 Quailwort Solar	\$ (917)	
15	CE-2 Sebera Solar	\$ 487	
16	CE-2 Solidago Solar	\$ (5,255)	
17	CE-2 Sweet Sue Solar	\$ 27,183	
18	CE-2 Walnut Solar	\$ (85,007)	
19	CE-2 Winterberry Solar	\$ (137)	
20	CE-2 Winterpock Solar	\$ 16,898	
21	Total CE-2 Solar Lifetime Revenue Requirement		\$ 33,665
<u>CE-3 Solar</u>			
22	CE-3 Courthouse	\$ 73,502	
23	CE-3 Cerulean	\$ 78,383	
24	CE-3 Bridleton	\$ 20,499	
25	CE-3 North Ridge	\$ 19,585	
26	CE-3 Moon Corner	\$ 91,398	
27	CE-3 Southern VA	\$ 21,163	
28	CE-3 Kings Creek	\$ 7,637	
29	Total CE-3 Solar Lifetime Revenue Requirement		\$ 312,147
<u>CE-3 Storage</u>			
30	CE-3 Shands	\$ 77,034	
31	Total CE-3 Storage Lifetime Revenue Requirement		\$ 77,034
<u>CE-3 Distributed Solar</u>			
32	CE-3 DER Ivy	\$ 12,691	
33	CE-3 DER Racefield	\$ 11,459	
34	Total CE-3 Distributed Solar Lifetime Revenue Requirement		\$ 24,150
35	Total Lifetime Revenue Requirement		\$ 455,653

Ms. Kuleshova identified parts of the Petition that provided information required by the Commission, including information on ring-fenced facilities, ARBs, and the actual capacity factor of each Commission-approved solar facility.²⁴⁷ Staff recommended that the Commission clarify that Dominion should include in future RPS filings its underlying economic analyses.²⁴⁸

²⁴⁶ *Id.* at corrected 9. Ms. Otwell also presented the project-specific long-term revenue requirements broken down by year. *Id.* at corrected attached Ex. AO-36.

²⁴⁷ Ex. 50 (Kuleshova) at 5-6 and Attachment KK-15. See also *id.* at Attachment KK-2 (showing individual capacity factors, by year, and also a 22.5% three-year average across all identified solar facilities).

²⁴⁸ *Id.* at 33 (citing language from the 2021 RPS Plan Order directing Dominion “to provide both sets of economic analysis for review with its application”).

Ms. Kuleshova discussed Dominion's RFP process, including refinements and updates to the 2021 RFP process.²⁴⁹ While Ms. Kuleshova appreciated Dominion's decision to use both a 1-2-3 and 1-3-9 scoring system for non-price evaluations of development and PPA proposals, she pointed out that for the CE-3 Projects this scoring was applied to original bids, which is not necessarily the information on which Dominion ultimately based its decisions.²⁵⁰ She suggested that the Commission consider directing Dominion to include in future filings updated information on its non-price evaluations of future development projects.²⁵¹ In contrast, for the CE-3 PPAs, scoring for non-price evaluations was applied to complete information, which allowed Staff to rank the CE-3 PPAs.²⁵²

Ms. Kuleshova suggested that the Commission consider directing Dominion to modify its RFP process such that more bids for projects on previously developed sites will be received.²⁵³ Staff appreciated that Dominion has begun considering such bids, although only one such development project (Kings Creek) was proposed in the instant case.²⁵⁴ Ms. Kuleshova encouraged Dominion to coordinate with the Virginia Department of Energy ("Virginia DOE") on how to convey information it has obtained on such sites.²⁵⁵ She also suggested a Company webinar or stakeholder group to help developers understand relevant bonus tax treatment available under the Inflation Reduction Act.²⁵⁶

In discussing refinements to RFPs underway for post-CE-3 resources, Ms. Kuleshova suggested further refinement may be necessary given the high number of non-conforming development bids (85%) from the 2021 Solar-Wind-Storage RFP. She questioned whether the Company was fully responsive to the requirements of Code § 56-585.5 D 3 regarding minimum thresholds or assumptions used and detailed instructions to be included in the RFP.²⁵⁷ Staff verified that the two categories that resulted in non-conformity determinations from the 2021 Solar-Wind-Storage RFP were identified as "Required" in a checklist provided to solar or storage development proposal bidders.²⁵⁸ Ms. Kuleshova does not know how to reconcile all the information Dominion provides for bidders with the low percentage of bids that are conforming.²⁵⁹

It also appears to Staff that Dominion deprioritized cost in its evaluation of development proposals. In support of this conclusion, Ms. Kuleshova cited to, among other things, the following statement from the Company's report on the 2021 Solar-Wind-Storage RFP: "For development proposals that were included in the scoring process, the Company primarily relied on the non-price evaluation to select a list of finalists that posed the least risk."²⁶⁰

²⁴⁹ *Id.* at 6-9.

²⁵⁰ *Id.* at 7.

²⁵¹ *Id.* at 7-8.

²⁵² *Id.* at 8.

²⁵³ *Id.* at 9.

²⁵⁴ *Id.*

²⁵⁵ Tr. at 379 (Kuleshova).

²⁵⁶ *Id.*

²⁵⁷ Ex. 50 (Kuleshova) at 11-12.

²⁵⁸ Exs. 50, 50-ES (Kuleshova) at 12-14 and Attachment KK-9.

²⁵⁹ Tr. at 457-58 (Kuleshova).

²⁶⁰ Ex. 50 (Kuleshova) at 20 (citing Ex. 12 at Filing Sched. 46A, Statement 1, p. 9).

According to Ms. Kuleshova, the process for the 2021 Solar-Wind-Storage RFP does not allow Staff to compare the economics of the proposed CE-3 Projects with the economics of other development proposals rejected by the Company based on their risk profiles. However, Staff evaluated each of the CE-3 Projects on its own merits using a traditional economic analysis and through a comparison with the previously approved CE-2 Projects.²⁶¹

Staff used different approaches to evaluate the economics of the CE-3 Projects. Based on a traditional economic analysis, Ms. Kuleshova indicated that – even with the expanded tax benefits of the Inflation Reduction Act – all but two of the proposed CE-3 Projects – Kings Creek and Southern Virginia – have negative net present values if REC benefits included in the results are valued using ICF’s forecasted REC prices. Given the magnitude of solar generation that has been constructed or is in development in Virginia, Staff believes that the forecasted market price (not the deficiency payment amount) is an appropriate way to incorporate REC benefits into the results.²⁶² She presented the results of this analysis in the table below.²⁶³

Market RECs ICF	NPV as filed	NPV with the effects of the IRA			
CE-3 Development Projects	NPV with Virginia RECs and Social Cost of Carbon	NPV with 30% ITC	NPV with PTC	NPV with 40% ITC	NPV with PTC and 10% bonus
	\$ million	\$ million	\$ million	\$ million	\$ million
Bridleton	(7.5)	(6.5)	(2.1)		
Cerulean	(28.0)	(27.7)	(11.6)		
Courthouse	(68.7)	(71.4)	(30.3)		
Kings Creek	(4.2)	(3.1)	1.2	(1.7)	1.9
Moon Corner	(38.7)	(40.1)	(23.5)		
North Ridge	(6.8)	(5.8)	(0.9)		
Southern Virginia	(26.4)	(24.1)	3.9		
DER Ivy	(3.5)	(2.8)	(3.1)	(2.2)	(3.0)
DER Racefield	(7.2)	(6.7)	(6.8)		
Shands Storage	(49.3)	(36.8)	n/a		

Ms. Kuleshova indicated that if additional tax bonuses are assumed for Kings Creek and Ivy Landfill (“DER Ivy” in her tables), the results shown above would increase to positive \$2.1 million for Kings Creek and negative \$3.0 million for Ivy Landfill.²⁶⁴ However, Ms. Kuleshova testified that removing an avoided battery cost assumption included for six of the seven utility-scale solar projects would decrease their net present values.²⁶⁵

²⁶¹ Ex. 50 (Kuleshova) at 15.

²⁶² *Id.* at 15-16 and Attachment KK-10.

²⁶³ *Id.* at 16. Ms. Kuleshova’s testimony further breaks down these results. *Id.* at 75.

²⁶⁴ *Id.* at 75-76.

²⁶⁵ *Id.* at 74. Dominion did not include this avoided cost for Southern Virginia. *Id.* at 70-71, 74.

Staff also presented these net present value results with the ICF REC forecast replaced by Enverus's higher REC forecast (sponsored by Staff witness Johnson) for the utility-scale CE-3 Projects. She showed the results of this analysis using the table below.²⁶⁶

Market RECs Enverus	NPV with Virginia RECs and Social Cost of Carbon	NPV with the effects of the IRA			
CE-3 Development Projects		NPV with 30% ITC	NPV with PTC	NPV with 40% ITC	NPV with PTC and 10% bonus
	\$ million	\$ million	\$ million	\$ million	\$ million
Bridleton	(3.4)	(2.5)	1.9		
Cerulean	(12.4)	(12.8)	3.3		
Courthouse	(32.5)	(37.2)	3.9		
Kings Creek	(0.0)	1.0	5.3	2.6	6.2
Moon Corner	(23.3)	(25.7)	(9.0)		
North Ridge	(2.2)	(1.3)	3.5		
Southern Virginia	(1.0)	1.6	29.6		
DER Ivy	(3.3)	(2.8)	(3.1)	(2.2)	(3.0)
DER Racefield	(6.5)	(6.0)	(6.1)		
Shands Storage	(49.3)	(36.8)	n/a		

As reflected in the difference between the preceding two tables, Ms. Kuleshova indicated that the change in REC price forecast improved the economic outlook for the CE-3 Solar Projects, with all except Moon Corner having positive net present values if the PTC benefit is chosen. However, if the ITC benefit is chosen instead, the net present values remain negative for all projects except Kings Creek and Southern Virginia.²⁶⁷

Ms. Kuleshova also calculated weighted average net present value/kW figures for the CE-3 Projects and the CE-2 Projects. Based on a comparison of these figures, she concluded that the CE-3 solar projects are less economical than the CE-2 solar projects.²⁶⁸

According to Ms. Kuleshova, the CE-3 Distributed Solar Projects and the CE-3 Storage Project appear uneconomical under traditional economic analysis under all sets of assumptions available to Staff to date.²⁶⁹

Staff also performed a traditional economic analysis of the CE-3 PPAs. Ms. Kuleshova pointed out that Dominion cannot take advantage of the recently expanded federal tax benefits for which the PPA resources will be eligible because Dominion's agreements do not provide for

²⁶⁶ *Id.* at 17.

²⁶⁷ *Id.* at 76.

²⁶⁸ *Id.* at 18-19.

²⁶⁹ *Id.* at 21.

price adjustments based on subsequent tax law changes.²⁷⁰ Staff found four of the CE-3 PPAs to be clearly economical. For the other nine CE-3 PPAs, Staff is concerned about their economic viability if the ICF REC price forecast materializes.²⁷¹ Ms. Kuleshova provided the following table summarizing the results for the CE-3 Solar PPAs assuming the ICF REC price forecast.²⁷²

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]



[END EXTRAORDINARILY SENSITIVE INFORMATION]

²⁷⁰ *Id.* at 22, 28.

²⁷¹ *Id.* at 22.

²⁷² Ex. 50-ES (Kuleshova) at 26.

Under the Enverus REC price forecast assumptions, six of the 13 proposed CE-3 PPAs are economical, according to Staff's analysis.²⁷³ Ms. Kuleshova provided the following table summarizing these results.²⁷⁴

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]

[END EXTRAORDINARILY SENSITIVE INFORMATION]

As for the results from the RFP process, [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED] [END EXTRAORDINARILY SENSITIVE INFORMATION]²⁷⁵

Ms. Kuleshova identified the net present value results for the CE-3 Storage PPAs. Ms. Kuleshova described the CE-3 Storage PPAs as both uneconomical and risky.²⁷⁶ [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED]

²⁷³ Ex. 50 (Kuleshova) at 22.

²⁷⁴ Ex. 50-ES (Kuleshova) at 27.

²⁷⁵ *Id.* at 22.

²⁷⁶ *Id.* at 27. Dominion made this statement public. Ex. 63 (Keefer rebuttal) at 6.

²⁷⁷ Ex. 50-ES (Kuleshova) at 27; Ex. 25 (Drummond direct) at attached Schedules 3 and 4.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] [END EXTRAORDINARILY SENSITIVE INFORMATION]²⁷⁸

Ms. Kuleshova compared the net present values, on a per kW basis, of the CE-3 Storage PPAs and the CE-3 Storage Project, which is summarized in the table below.²⁷⁹

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]

[REDACTED]

[END EXTRAORDINARILY SENSITIVE INFORMATION]

Ms. Kuleshova provided the same type of comparison for the CE-3 Solar PPAs, CE-3 Solar Projects, CE-3 Distributed Solar Projects, and CE-3 Distributed Solar PPAs (using both the ICF and Enverus REC forecasts), using the tables below.²⁸⁰

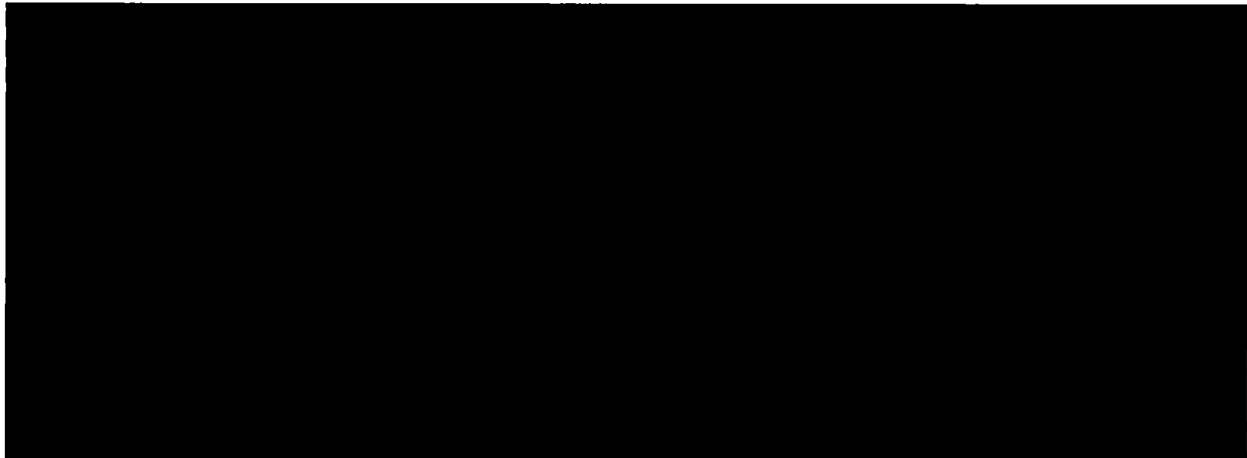
[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]

[REDACTED]

²⁷⁸ Ex. 50-ES (Kuleshova) at 28-29.

²⁷⁹ *Id.* at 23.

²⁸⁰ *Id.* at corrected 24.



[END EXTRAORDINARILY SENSITIVE INFORMATION]

From an environmental standpoint, Ms. Kuleshova is unsure whether the CE-3 Projects or CE-3 PPAs are the least invasive projects. Based on Ms. Kuleshova's high-level review of the maps for the utility-scale CE-3 Projects, she observed that three solar projects impact ecological cores of very high value and forested areas of very high or outstanding value and four projects will impact wetlands, streams or creeks.²⁸¹ She was unable to verify environmental aspects of the CE-3 PPAs based on currently available information.²⁸²

For future RFPs, Ms. Kuleshova believes that the contractual framework for PPAs may be too rigid and offered several potential changes to that framework for the Commission's consideration. First, to better align future PPA pricing with market and economic conditions and prevent situations in which developers withdraw PPAs from consideration for economic reasons, Staff suggested directing the Company to add more flexibility to both first year PPA pricing and the 2.5% PPA price escalator. One potential option would be to allow developers to propose PPA price escalators, which may also include step changes, based on their analysis of the economic outlook. The Company has the analytical tool to compare PPAs with different escalators.²⁸³ She indicated this comparison would not be hard.²⁸⁴

Ms. Kuleshova also recommended either a broad elimination of "the best and final offer" condition for PPA pricing, or a narrower opportunity to revise PPA prices in response to significant economic events not pertaining to a specific PPA, during a specified window after bid submission.²⁸⁵ She does not believe there would be incentive to game the system if sufficient PPA capacity is short-listed by Dominion. She also believes customers would benefit if developers chose to reduce their prices. She indicated that Dominion could establish an upward pricing limit that would not be shared with developers.²⁸⁶ If a short-listed PPA developer

²⁸¹ *Id.* at 29 and 97.

²⁸² *Id.* at 30.

²⁸³ *Id.* at 30-31.

²⁸⁴ Tr. at 402-03 (Kuleshova).

²⁸⁵ Ex. 50 (Kuleshova) at 30-31; Tr. at 389-90 (Kuleshova).

²⁸⁶ Tr. at 390-91 (Kuleshova).

decides to reprice its offer upward, it would be at risk of being rejected by Dominion.²⁸⁷ While Ms. Kuleshova's recommendation contemplated the potential for either upward or downward adjustments, she confirmed, based on an order of the North Carolina Utility Commission ("NCUC"),²⁸⁸ her understanding that the NCUC approved a downward-only bid refresh option.²⁸⁹ Ms. Kuleshova anticipated that the deadline for any repricing would need to be between one month to two weeks prior to an RPS plan filing.²⁹⁰

Ms. Kuleshova addressed the inclusion of a purchase option in PPAs, which Dominion recently removed. She indicated that the benefit of such an option could increase the PPA price. She also recognized that Dominion (or others) could purchase a PPA facility even without a purchase option in the agreement.²⁹¹

To the extent future PPA contracts include an option for the Company to purchase the underlying projects, Staff recommended such contracts allow the Company to purchase PPA projects if and when it becomes necessary, instead of tying such an option to a specific contract year. Ms. Kuleshova indicated this could partially mitigate project risks for both Dominion and developers.²⁹²

Ms. Kuleshova testified that cost increases and project delays are the key risks that have materialized for the CE-1 and CE-2 Projects. She added that environmental groups are apparently concerned about forest clearing in the Dulles Solar and Storage Project area.²⁹³ Staff generally agreed with the Company's explanation of the cost increases. Ms. Kuleshova detailed various problems experienced by the CE-1 and CE-2 Projects to date and recognized that the total available contingency budget was insufficient to cover these projects' cost increases.²⁹⁴

Ms. Kuleshova suggested that the Commission consider directing Dominion to review local requirements more thoroughly before seeking Commission approval of a project.²⁹⁵ She provided a table showing additional CE-1 and CE-2 Project costs due to local requirements.²⁹⁶

Ms. Kuleshova offered two further suggestions regarding local requirements. First, she suggested that Dominion include in its next RFP the list of counties that do not restrict solar development at this time, as well as a list of known solar development restrictions in counties that impose them.²⁹⁷ Second, she recommended that future RPS plan filings include a discrete budget subcategory for action and projected costs of compliance.²⁹⁸

²⁸⁷ Tr. at 453 (Kuleshova).

²⁸⁸ Ex. 55.

²⁸⁹ Tr. at 405 (Kuleshova).

²⁹⁰ Tr. at 448 (Kuleshova).

²⁹¹ Tr. at 396-99 (Kuleshova). *See also* Ex. 54.

²⁹² Ex. 50 (Kuleshova) at 31-32.

²⁹³ *Id.* at 38.

²⁹⁴ *Id.* at 38-42.

²⁹⁵ *Id.* at 40.

²⁹⁶ Ex. 50-ES (Kuleshova) at 41.

²⁹⁷ Tr. at 383 (Kuleshova).

²⁹⁸ Tr. at 385 (Kuleshova).

Following up on Mr. Keefer's recognition that developers and Dominion are experiencing similar cost increases, Ms. Kuleshova [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED]

[END EXTRAORDINARILY SENSITIVE INFORMATION]²⁹⁹

Ms. Kuleshova highlighted three additional key risk areas for the Commission's consideration: (i) site selection for the CE-3 Solar Projects; (ii) design capacity factor of five utility-scale CE-3 Solar Projects being below the three-year average for the Company's tracking solar fleet in Virginia; and (iii) certain issues associated with the EPC contracts.³⁰⁰

Ms. Kuleshova explained that five out of the seven utility-scale CE-3 Solar Projects have a DC/AC ratio below the state average. According to the Company, this is "primarily due to land availability constraints to the site's buildable area."³⁰¹ Ms. Kuleshova suggested that the Commission consider directing Dominion to conduct a comprehensive study of buildable areas for solar projects in Virginia, perhaps based on a similar study performed by the Nature Conservancy and overlay these areas over the map of the Company's transmission and distribution grid to identify the most attractive spots for solar projects, from a site feasibility and/or constructability perspective. She further suggested that the Company be directed to share the list of such potential project sites with the development community in the course of the 2024 RFP.³⁰² Ms. Kuleshova cited statutory provisions indicating that Dominion's RFPs should provide the "preferred general location of additional capacity," but she acknowledged that Dominion's research on potential solar project sites may be considered competitively sensitive.³⁰³

Ms. Kuleshova conveyed Staff's concern that the design capacity factor for the same five CE-3 Solar Projects, as well as the weighted average design capacity factor for all utility-scale CE-3 Solar Projects (21.3%), is lower than both the 3-year average achieved by the Company's tracking solar fleet in Virginia (22.5%) and the weighted average design capacity factor for all utility-scale CE-3 Solar PPAs (24.4%). She believes these lower design capacity factors could be related to risks pertaining to site selection and EPC issues.³⁰⁴

Ms. Kuleshova raised concerns regarding the selection of EPC contractors. In particular, Staff discovered that [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED]

²⁹⁹ Ex. 50-ES (Kuleshova) at 41-42, 42 n.96, and Attachment KK-18.

³⁰⁰ Ex. 50 (Kuleshova) at 44.

³⁰¹ *Id.* at 34.

³⁰² *Id.* at 45-46.

³⁰³ Tr. at 382-83 (Kuleshova) (quoting Code § 56-585.5 D 3).

³⁰⁴ Exs. 50, 50-ES (Kuleshova) at 46-47.

██████████ [END EXTRAORDINARILY SENSITIVE INFORMATION] Although Staff did not offer specific suggestions to address the competitiveness of the EPC contractors' selection process, Staff recommended that the Commission direct the Company to evaluate and seek opportunities to refine this process to create a more competitive process going forward.³⁰⁵

Regarding the CE-3 PPAs, Staff reported that all CE-3 PPAs have been executed, and do not contain provisions to adjust the agreed-upon price based on subsequent changes to tax laws. This does not allow the Company to take advantage of the benefits that the CE-3 PPA facilities would be eligible for under the Inflation Reduction Act.³⁰⁶ However, [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION] ██████████

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██████████ [END EXTRAORDINARILY SENSITIVE INFORMATION]

Ms. Kuleshova (along with Mr. Joshipura) addressed Dominion's requested CPCNs. Staff believes that the CE-3 Projects are needed for compliance with the VCEA to meet the policy goal of transitioning the Company's existing generation fleet to a zero-carbon fleet. Staff recognized that the CE-3 Projects, if approved, will be available to serve native load requirements (*i.e.*, customers' capacity and energy needs), but characterized this as only a secondary need for the CE-3 Projects. She explained that Dominion's projected capacity gap is significantly driven by VCEA-related retirements of fossil fuel units, rather than customer load growth. She recognized that the CE-3 Projects are not the only available means for Dominion to close the projected capacity and energy gaps,³⁰⁸ but acknowledged it would be imprudent to rely entirely on market purchases to close such gaps.³⁰⁹

As presented in the Petition, the total estimated cost (*i.e.*, construction capital expenditure) for the CE-3 Solar Projects is approximately \$1.1873 billion, excluding financing costs, or approximately \$2,505 per kW at the total 474 MW (nominal AC) rating. Ms. Kuleshova presented the following table showing this cost information for each of the CE-3 Projects, as well as similar information for CE-2 Projects.³¹⁰

³⁰⁵ Exs. 50, 50-ES (Kuleshova) at 47-49.

³⁰⁶ Ex. 50 (Kuleshova) at 50, Attachment KK-12.

³⁰⁷ Ex. 50-ES (Kuleshova) at 50.

³⁰⁸ Ex. 50 (Kuleshova) at 51-54.

³⁰⁹ Tr. at 460-61 (Kuleshova).

³¹⁰ Ex. 50 (Kuleshova) at 55-56. The Company's distributed projects are not included in this discussion or table.

CE-3 Projects	Total estimated costs (construction CAPEX), \$ million	Nameplate capacity, MW AC	Cost per kilowatt, \$/kW
Bridleton	46.4	20	2,320
Cerulean	183.2	62	2,955
Courthouse	409.9	167	2,454
Kings Creek	48.8	20	2,439
Moon Corner	185.0	60	3,083
North Ridge	52.5	20	2,625
Southern Virginia	261.5	125	2,092
CE-3 Solar	1,187.5	474	2,505
<i>Compare with:</i>			
CE-2 Solar as filed	1,104.5	561	1,969
CE-2 Solar, 2022	1,127.5	561	2,010
CE-2 Dulles Solar ¹³³	199.4	100	1,994
CE-3 Storage	57.6	15.7	3,669
<i>Compare with:</i>			
CE-2 Dry Bridge	41.2	20	2,059
CE-2 Dulles Storage ¹³⁴	80.2	50	1,604

Based on Ms. Kuleshova's calculations, the average construction cost per kW of the CE-3 Solar Projects is approximately 25% higher than the CE-2 Solar Projects' average, as revised in 2022. For the CE-3 Storage Project, the total estimated cost is \$57.6 million, excluding financing costs, or approximately \$3,669/kW at the total 15.7 MW (nominal AC) rating. The construction cost per kW of the CE-3 Storage Project is approximately 78% higher than the CE-2 Storage Project (Dry Bridge) and more than twice as much as Dulles Storage (*i.e.*, the storage component of the CE-2 Solar + Storage Project).³¹¹

Ms. Kuleshova testified that the CE-3 Solar Projects are primarily Company-sourced. Excluding PPAs, 414 MW and \$1.0396 billion are Company-sourced and 60 MW and \$147.7 million were sourced through the 2021 RFP.³¹² The CE-3 Storage Project (Shands Storage) was Company-sourced through a bilateral transaction, after being rejected in the 2020 Solar-Wind-Storage RFP. Dominion also self-developed the Brunswick Storage project, but it is not proposed for the Commission's consideration in the instant case. Further, the Company received 21 development proposals for storage projects through the 2021 RFP but did not select any of them to be proposed in the instant case. Some of these RFP-sourced storage proposals were determined to be non-conforming, while others had development risks. Including PPAs, 314 MW of the proposed solar projects/PPAs are RFP-sourced.³¹³

Staff reported that the construction capital expenditures for the proposed CE-3 Solar Projects are 67% higher (on a \$/kW AC basis) than the numbers for utility-scale solar projects

³¹¹ *Id.* at 55.

³¹² *Id.* at 57.

³¹³ *Id.* at 58-59.

used by Mangum Economics, LLC (“Mangum”) in its reports on economic and fiscal contributions of the CE-3 Projects. Mangum assumptions were ultimately based on the averages for capital investment, construction costs, and capital equipment costs of the 3.6 GW of projects for which Mangum prepared studies in 2022.³¹⁴

Ms. Kuleshova described Dominion’s net present value economic analysis. Staff has methodological concerns with certain assumptions used in the PLEXOS modeling of the CE-3 Projects, but which were not specifically discussed by Company witness Drummond. These assumptions include: (1) an avoided cost of battery storage units included in PLEXOS net present values of several CE-3 Projects; and (2) a “shadow price” of the social cost of carbon was added to the PLEXOS dispatch cost of fossil fueled units, which makes their dispatch appear less economic to the PLEXOS model. Staff believes that these assumptions inflate the net present values of the CE-3 Projects.³¹⁵

According to Ms. Kuleshova, the shadow price input makes the proposed renewable resources appear more economic due to the PLEXOS model selecting the Company’s fossil fueled units to run less frequently, thus increasing the volume of PJM energy purchases (as compared to fuel purchases for the Company’s resources) potentially displaced by the proposed resources. She suggested that the Commission consider directing Dominion to eliminate the shadow price assumption from its baseline PLEXOS scenarios for renewable resources proposed in future RPS Filings. Staff recommended that the Company be directed to include Regional Greenhouse Gas Initiative (“RGGI”) compliance costs in the baseline dispatch costs of the Company’s fossil fueled units. For an additional data point reflective of possible future conditions, the Commission could direct Dominion to run an additional scenario in which dispatch costs of the Company’s fossil fueled units would include *both* RGGI compliance costs *and* the Company’s forecast for the federal carbon tax.³¹⁶

Notwithstanding Staff’s concerns about aspects of the Company’s modeling methodology, Ms. Kuleshova presented the results of Dominion’s two modeled scenarios, but she broke the Company’s results into additional components for further insight. She provided the following table to summarize the breakdown of results for Scenario 1A (deficiency payment as the REC value, and design capacity factor).³¹⁷

³¹⁴ *Id.* at 59-60 and Attachments KK-22 and KK-23.

³¹⁵ *Id.* at 61-62.

³¹⁶ *Id.* at 63.

³¹⁷ *Id.* at 68-69. She noted that the figures in the last three columns are found in Company witness Drummond’s Supplemental Schedule 1. *Id.* Ms. Kuleshova also provided this information with a tax bonus added for Kings Creek and Ivy Landfill Distributed Solar. *Id.* at 70.

Design Capacity Factor, REC value equals statutory deficiency payment	Type	Solar MW	Storage MW	Project's PLEXOS NPV without federal tax credits, RECs, or SCoC	NPV of avoided REC cost (VCEA deficiency payment = \$45/\$75 + 1% p.a.)	NPV of SCoC Topside	NPV with pre-IRA ITC, RECs and SCoC	NPV with post-IRA ITC, RECs and SCoC	NPV with post-IRA PTC, RECs and SCoC
				\$ million	\$ million	\$ million	\$ million	\$ million	\$ million
CE-3 Solar Projects									
Bridleton	Solar	20		(29.8)	20.1	12.7	6.9	7.9	12.3
Cerulean	Solar	62		(114.0)	74.4	47.1	25.4	25.7	41.8
Courthouse	Solar	167		(264.2)	170.3	107.8	53.6	50.9	92.0
Kings Creek	Solar	20		(27.1)	20.5	13.0	10.5	11.6	15.9
Moon Corner	Solar	60		(122.4)	71.9	45.6	13.0	11.5	28.2
North Ridge	Solar	20		(31.5)	22.1	14.0	9.2	10.1	15.0
Southern Virginia	Solar	125		(175.3)	131.1	82.5	67.1	69.5	97.4
CE-3 Distributed Solar Projects									
DER Ivy Landfill	Solar	3		(12.4)	6.2	2.3	(2.6)	(2.0)	(2.2)
DER Racefield	Solar	3		(12.1)	3.9	2.5	(4.4)	(4.0)	(4.0)
CE-3 Storage Project									
Shands	Storage	0	15.7	(49.3)			(49.3)	(36.8)	

For proposed projects that Dominion included an avoided battery storage cost, Ms. Kuleshova also showed Dominion's net present value results for Scenario 1A without the avoided battery storage cost.³¹⁸

Turning to Dominion's Scenario 1B, Ms. Kuleshova explained that changing the assumed capacity factor from the design basis to 22.5% would only affect two CE-3 Solar Projects (Cerulean and Moon Corner) and the two CE-3 Distributed Solar Projects (Ivy Landfill and Racefield) because only those projects have design capacity factors above 22.5%.³¹⁹ For Dominion's Scenario 1B, which incorporated the 22.5% capacity factor, Ms. Kuleshova provided a similar net present value breakdown by component – with and without the avoided battery storage cost, where applicable.³²⁰

Ms. Kuleshova evaluated the Company's analysis of LCOE, which is the generation-weighted average cost per MWh of total projected energy output over the operating life of a project.³²¹ Dominion used the first-year capacity factor for each facility to estimate its lifetime energy output for the purposes of the LCOE calculation, and such estimates exceed the Company-projected energy output by approximately 8%. This, she explained, leads to lower (better) LCOE values because each facility's cost is divided by its high-level energy output estimates that exceed the Company's own projections. She suggested that the Commission direct

³¹⁸ *Id.* at 71.

³¹⁹ *Id.* at 71-72.

³²⁰ *See, e.g., id.* at 73-74.

³²¹ *Id.* at 84.

Dominion to incorporate in its LCOE model the same projected lifetime energy output for each facility that the Company is using to calculate REC and social cost of carbon benefits in its net present value calculation, for both accuracy and consistency purposes.³²² Dominion also changed its LCOE calculation methodology in the instant filing by discounting LCOE values to 2022, rather than the years in which each facility enters commercial operations (as was the case with the LCOE calculation in the 2021 RPS Proceeding). While Staff did not oppose discounting LCOE values to present *per se*, due to the timing of the instant case, Staff believes that LCOE values calculated in 2023 dollars provide a more accurate present value outlook. Because Staff believes that LCOEs as of the commercial operations year for each project should not be disregarded, Staff analyzed LCOE using both 2023 and the commercial operations dates.³²³

Ms. Kuleshova presented the Company's LCOE results for the CE-3 Projects in the following table.³²⁴

Design Capacity Factor, ICF REC price forecast	LCOE not adjusted for RECs, 30% ITC, \$/MWh	LCOE not adjusted for RECs, 2.75 cents per kWh PTC, \$/MWh	LCOE adjusted for RECs, 30% ITC, \$/MWh	LCOE adjusted for RECs, 2.75 cents per kWh PTC, \$/MWh
Utility-scale CE-3 Solar Projects				
Bridleton	\$ 95	\$ 89	\$ 84	\$ 77
Cerulean	\$ 89	\$ 82	\$ 77	\$ 70
Courthouse	\$ 89	\$ 81	\$ 78	\$ 70
Kings Creek	\$ 87	\$ 80	\$ 75	\$ 68
Moon Corner	\$ 93	\$ 86	\$ 82	\$ 74
North Ridge	\$ 90	\$ 84	\$ 79	\$ 72
Southern Virginia	\$ 80	\$ 73	\$ 68	\$ 60
CE-3 Distributed Solar Projects				
Ivy Landfill	\$ 163	\$ 169	\$ 149	\$ 155
Racefield	\$ 155	\$ 159	\$ 141	\$ 145
CE-3 Storage Project				
Shands	\$ 222		\$ 222	
LCOEs revised to incorporate tax bonuses				
Kings Creek – tax bonus	\$ 83	\$ 78	\$ 71	\$ 67
Ivy Landfill – tax bonus	\$ 157	\$ 167	\$ 143	\$ 154

³²² *Id.* at 85.

³²³ *Id.* at 85-86.

³²⁴ *Id.* at 87.

Ms. Kuleshova also presented alternative LCOE calculations. Staff changed two assumptions: (1) substituting each facility's projected energy output for the output estimate based on its first-year design capacity factor; and (2) discounting LCOE values to different years.³²⁵ Staff presented these alternative calculations two ways – first assuming the ITC benefit and second assuming the PTC benefit. Tables showing Staff's alternative results are shown below.³²⁶

	LCOE not adjusted for RECs, 30% ITC						LCOE adjusted for RECs, 30% ITC					
	LCOE as of COD year			LCOE at present			LCOE as of COD year			LCOE at present		
	2026 dollars	2025 dollars	2024 dollars	2023 dollars	2022 dollars	2022 dollars (Company)	2026 dollars	2025 dollars	2024 dollars	2023 dollars	2022 dollars	2022 dollars (Company)
Utility-scale CE-3 Solar Projects												
Bridleton	\$ 134			\$ 111	\$ 104	\$ 95	\$ 119			\$ 99	\$ 93	\$ 84
Cerulean	\$ 125			\$ 104	\$ 97	\$ 89	\$ 110			\$ 91	\$ 86	\$ 77
Courthouse	\$ 125			\$ 103	\$ 97	\$ 89	\$ 110			\$ 91	\$ 85	\$ 78
Kings Creek	\$ 122			\$ 101	\$ 95	\$ 87	\$ 107			\$ 88	\$ 83	\$ 75
Moon Corner	\$ 132			\$ 109	\$ 102	\$ 93	\$ 117			\$ 96	\$ 91	\$ 82
North Ridge	\$ 127			\$ 105	\$ 99	\$ 90	\$ 112			\$ 93	\$ 87	\$ 79
Southern VA		\$ 107		\$ 94	\$ 88	\$ 80		\$ 91		\$ 80	\$ 76	\$ 68
CE-3 Distributed Solar Projects												
Ivy Landfill			\$ 202	\$ 189	\$ 178	\$ 163			\$ 186	\$ 175	\$ 164	\$ 149
Racefield			\$ 193	\$ 181	\$ 170	\$ 155			\$ 177	\$ 167	\$ 156	\$ 141
CE-3 Storage Project												
Shands	\$ 286			\$ 236	\$ 222	\$ 222						\$ 222
LCOEs revised to incorporate tax bonuses												
Kings Creek	\$ 117			\$ 97	\$ 91	\$ 83	\$ 102			\$ 84	\$ 79	\$ 71
Ivy Landfill			\$ 195	\$ 183	\$ 172	\$ 157			\$ 179	\$ 168	\$ 158	\$ 143

	LCOE not adjusted for RECs, PTC						LCOE adjusted for RECs, PTC					
	LCOE as of COD year			LCOE at present			LCOE as of COD year			LCOE at present		
	2026 dollars	2025 dollars	2024 dollars	2023 dollars	2022 dollars	2022 dollars (Company)	2026 dollars	2025 dollars	2024 dollars	2023 dollars	2022 dollars	2022 dollars (Company)
Utility-scale CE-3 Solar Projects												
Bridleton	\$ 127			\$ 105	\$ 99	\$ 89	\$ 112			\$ 93	\$ 87	\$ 77
Cerulean	\$ 118			\$ 98	\$ 92	\$ 82	\$ 103			\$ 85	\$ 80	\$ 70
Courthouse	\$ 116			\$ 96	\$ 90	\$ 81	\$ 101			\$ 83	\$ 78	\$ 70
Kings Creek	\$ 115			\$ 95	\$ 90	\$ 80	\$ 100			\$ 83	\$ 78	\$ 68
Moon Corner	\$ 123			\$ 102	\$ 96	\$ 86	\$ 108			\$ 89	\$ 84	\$ 74
North Ridge	\$ 120			\$ 99	\$ 93	\$ 84	\$ 105			\$ 87	\$ 81	\$ 72
Southern VA		\$ 99		\$ 87	\$ 82	\$ 73		\$ 84		\$ 74	\$ 69	\$ 60
CE-3 Distributed Solar Projects												
Ivy Landfill			\$ 212	\$ 199	\$ 187	\$ 169			\$ 197	\$ 184	\$ 173	\$ 155
Racefield			\$ 200	\$ 187	\$ 176	\$ 159			\$ 184	\$ 173	\$ 162	\$ 145
LCOEs revised to incorporate tax bonuses												
Kings Creek	\$ 113			\$ 94	\$ 88	\$ 78	\$ 98			\$ 81	\$ 76	\$ 67
Ivy Landfill			\$ 210	\$ 197	\$ 185	\$ 167			\$ 194	\$ 182	\$ 171	\$ 154

³²⁵ *Id.*

³²⁶ *Id.* at 88-89.

Ms. Kuleshova testified that these LCOE values of the utility-scale CE-3 Solar Projects are [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED] [END EXTRAORDINARILY

SENSITIVE INFORMATION]³²⁷ These values are not adjusted for RECs.³²⁸

Turning to the Company's O&M assumptions and testimony [BEGIN
EXTRAORDINARILY SENSITIVE INFORMATION] [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] [END EXTRAORDINARILY SENSITIVE INFORMATION]³²⁹

Ms. Kuleshova verified the federal \$51 per metric ton forecasted social cost of carbon figure incorporated in Dominion's analysis. She relayed Staff's belief that estimating a benefit based on this cost is consistent with the VCEA's requirement for Dominion to include, and the Commission to consider, the social cost of carbon in any application to construct a new generating facility.³³⁰ Ms. Kuleshova supports Dominion's adoption of one of Staff's three methodological recommendations on the social cost of carbon benefit calculation from the 2021 RPS Filing proceeding – the use of weighted average PJM marginal on-peak and off-peak emission rates for the associated benefit calculation. She states, however, that the Company did not forecast any downward trend for the future PJM marginal emission rates and simply extrapolated the 2021 emission rates into the future. Staff continues to believe that incorporating a downward trend for the future PJM marginal emission rates would be an appropriate methodological adjustment for the purposes of estimating the social cost of carbon benefit.³³¹

Ms. Kuleshova addressed the economic development benefits claimed by Dominion. She summarized the estimates from the Mangum Report with a table that is included in this Report's CPCN Analysis.³³² Based on the Mangum Report and its disclaimers, Staff believes that, although the CE-3 Projects will likely provide some regional economic and fiscal benefits,

³²⁷ Ex. 50-ES (Kuleshova) at 89, 111.

³²⁸ Tr. at 433-34 (Kuleshova).

³²⁹ Ex. 50-ES (Kuleshova) at 90-93 and Attachment KK-25.

³³⁰ Ex. 50 (Kuleshova) at 95.

³³¹ *Id.* at 95-96.

³³² *Id.* at 99.

Mangum's estimates of the economic contribution of the CE-3 Projects are uncertain and should not be treated as forecasts.³³³

Ms. Kuleshova provided Staff's assessment of environmental justice considerations for the CE-3 Projects.³³⁴ She noted that most of the CE-3 Projects are located in "historically economically disadvantaged communities." For some projects, the proportion of the population of color within the study area also exceeds the Virginia average of 38% (which makes them "environmental justice communities") or 50% (making them a "community in which a majority of the population are people of color").³³⁵ Staff identified three areas of concern. First, the Company's analysis pertaining to historically economically disadvantaged communities under the VCEA appears to have been performed at the level of census block groups rather than census tracts, as required by the VCEA. Second, the data set associated with income levels and proportion of population of color that the Company used for environmental justice assessments is proprietary ESRI data consisting of estimates for the 2020/2025 period based on 2010 census geography. Dominion compared this data in its environmental justice assessments to the Department of Housing and Urban Development ("HUD") data for the latest available fiscal year, which may be as late as 2022, depending on the county or metropolitan area. In other words, the ESRI data is not normalized to the same year as the HUD data, which leads to potentially different median household size and income across years. Third, the Company's analysis assumes the federal poverty level based on a family size of four, with two adults and two children. However, the Company is not normalizing the median family income in the respective census block groups to a family size of four. In other words, the median family income in each census block group is compared against the 2021 HHS Federal Poverty Guidelines for a family of four, whereas the family size in the respective census blocks may differ, which would then require corresponding adjustments of the poverty level. While Ms. Kuleshova highlighted these three concerns for the Commission's consideration, Staff did not take a position on whether the Company has complied with the VCEA or VEJ Act with respect to environmental justice.³³⁶

Turning back to the CE-3 PPAs, Ms. Kuleshova testified that Staff's assessment of need for the CE-3 PPAs is the same as for the CE-3 Projects. They are needed to comply with the VCEA and secondarily they will provide energy and capacity to the Company's customers.³³⁷

Ms. Kuleshova calculated an estimated total cost for each of the CE-3 PPAs. Over the 20-year duration of the PPAs [BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]

[END EXTRAORDINARILY SENSITIVE INFORMATION]³³⁸

³³³ *Id.* at 99-100.

³³⁴ *Id.* at Attachment KK-27.

³³⁵ *Id.* at 101-02.

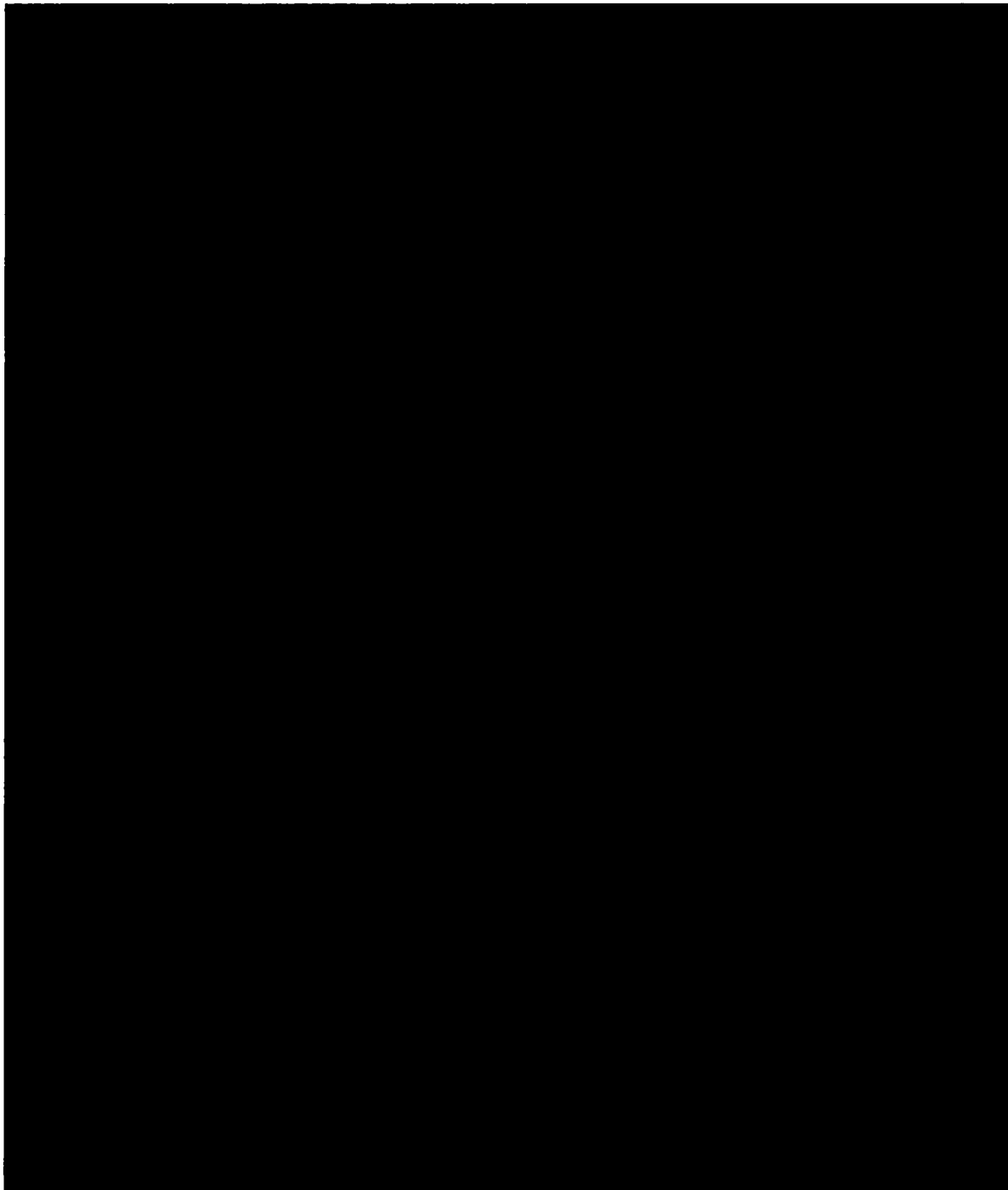
³³⁶ *Id.* at 102-103.

³³⁷ *Id.* at 105.

³³⁸ Ex. 50-ES (Kuleshova) at 106.

Ms. Kuleshova presented net present value results for the CE-3 PPAs under the same scenarios as the CE-3 Projects, as shown in the tables below.³³⁹

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]



³³⁹ *Id.* at 108-10. The third table assumes the Enverus forecast as indicated in the header, not the ICF forecast as indicated in the left column.

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] [END EXTRAORDINARILY SENSITIVE INFORMATION]

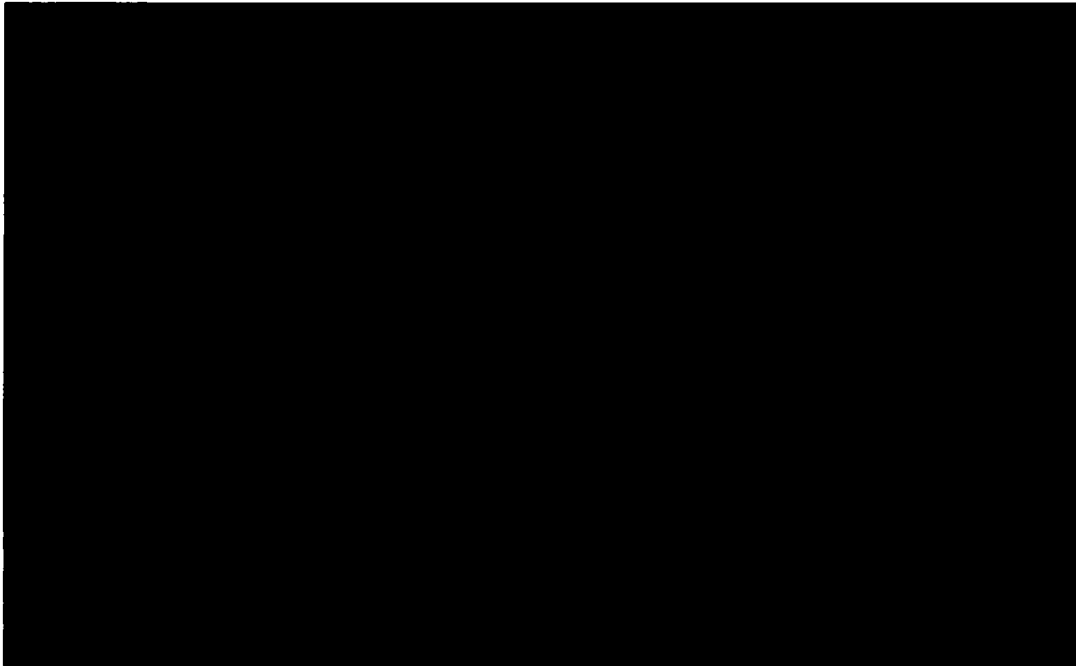
³⁴⁰ *Id.* at 109, 117.

³⁴¹ *Id.* at 117; Tr. at 370 (Kuleshova).

³⁴² Ex. 50-ES (Kuleshova) at 110.

Ms. Kuleshova calculated the LCOEs for the CE-3 PPAs, as shown in the table below.³⁴³

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]



[END EXTRAORDINARILY SENSITIVE INFORMATION]

Ms. Kuleshova also provided information on the environmental impacts, economic development benefits, and environmental justice assessments of the CE-3 PPAs.³⁴⁴

For the two CE-3 Distributed Solar Projects (Ivy Landfill and Racefield) that Dominion seeks cost recovery (but not CPCNs), Ms. Kuleshova explained that their net present values are negative even when adjusted for statutory deficiency payments and the social cost of carbon benefit, with either the ITC or PTC benefits of the Inflation Reduction Act incorporated.³⁴⁵

Ms. Pippert addressed the capital structures and associated costs of capital used to calculate the Rider CE revenue requirement. Staff verified the capital structures and costs of capital proposed by Dominion and supported their use in this case.³⁴⁶

Ms. Ricketts addressed Dominion's capacity and energy position, absent VCEA additions and with anticipated generation retirements. She indicated that in 2022 Dominion is forecasted to have excess capacity of 1,432 MW when accounting for Commission-approved construction. Accounting for the announced retirements of Chesterfield Units 5 and 6 and Yorktown Unit 3, which Dominion anticipates will occur before 2024 and the Code requires before 2025, Dominion's forecasted excess capacity position turns to a capacity deficit of

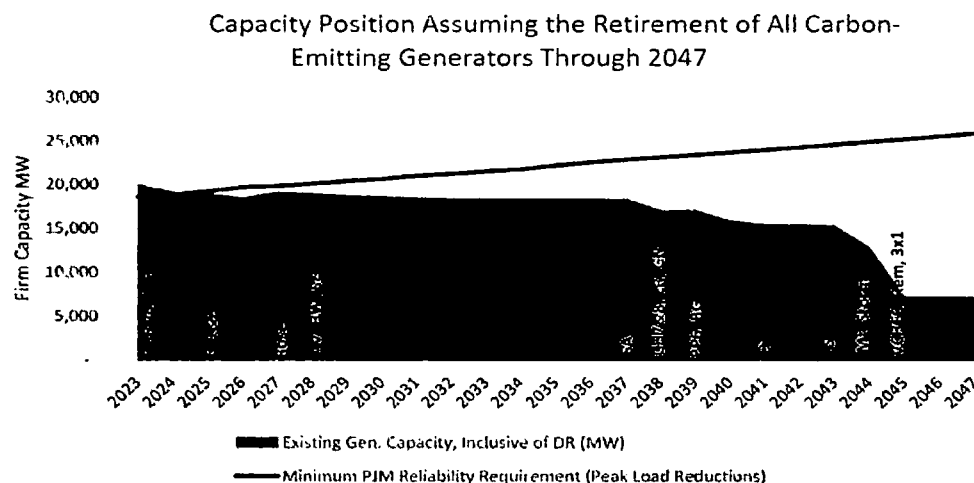
³⁴³ *Id.* at 111. The LCOE numbers in this table are not adjusted for RECs. Tr. at 433-34 (Kuleshova).

³⁴⁴ Exs. 50, 50-ES (Kuleshova) at 112 and Attachment KK-28.

³⁴⁵ Ex. 50 (Kuleshova) at 113.

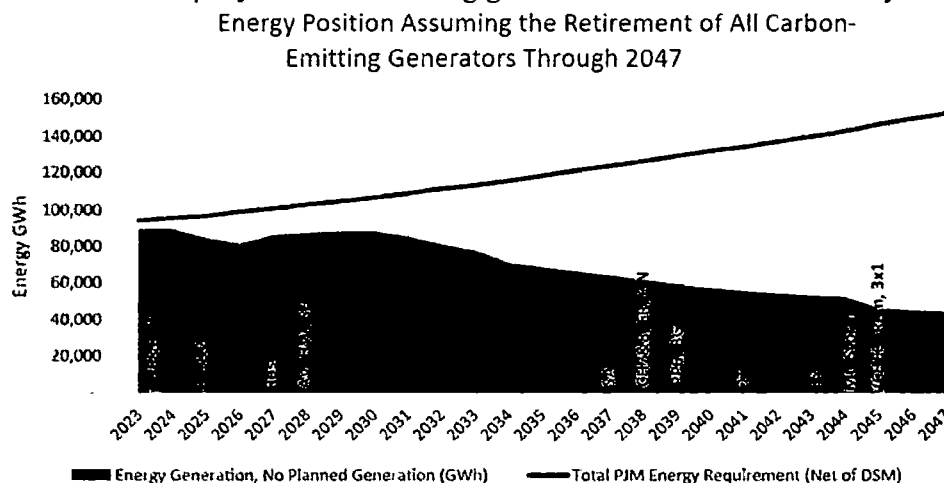
³⁴⁶ Ex. 46 (Pippert) at 2-3.

202 MW in 2025.³⁴⁷ As shown in Company witness Drummond's testimony, Dominion forecasts an increasing "capacity gap" through 2047, as additional generation units are retired.³⁴⁸ Ms. Ricketts recognized that Ms. Drummond's illustrative capacity figures assume the continued operation of several of the Company's natural gas generating facilities.³⁴⁹ Ms. Ricketts presented the following graphic to illustrate Dominion's forecasted capacity position if all of the Company's carbon-emitting generation facilities are retired by 2045.³⁵⁰



With these assumed retirements, the forecasted capacity deficit would be approximately 17,968 MW by 2045 and 18,695 MW by 2047, as shown above.³⁵¹

Ms. Ricketts presented a similar graphic to illustrate Dominion's forecasted energy position if all of the Company's carbon-emitting generation facilities are retired by 2045.³⁵²



³⁴⁷ Ex. 59 (Ricketts) at 4-6.

³⁴⁸ *Id.* at 5.

³⁴⁹ *Id.* at 6.

³⁵⁰ *Id.* at 7.

³⁵¹ *Id.*

³⁵² *Id.* at 9.

As shown, the forecasted energy deficit with these retirements and no additional generation would be approximately 99,793 gigawatt-hours (“GWh”) by 2045 and 107,237 GWh by 2047.³⁵³

Ms. Ricketts identified several Staff concerns with inputs and assumptions in the modeling used in support of Dominion’s Petition. First, when modeling generic solar resources, Ms. Ricketts questioned Dominion’s use of degraded maximum capacity of solar facilities to calculate the three-year historical average capacity factor modeling assumption for such resources. Typically, Staff would expect the average annual capacity factor to be calculated against the installed nameplate capacity of a generation facility.³⁵⁴ She indicated that using degraded maximum capacity can require the Company to purchase more energy or to construct and/or contract for more generation, resulting in increased net present value costs of each plan.³⁵⁵

Turning to the annual capacity factor used by the Company to model its proposed solar generating resources, Ms. Ricketts did not oppose Dominion’s decision to use the design average capacity factor when such factor is lower than the reported three-year historical average annual capacity factor.³⁵⁶

Ms. Ricketts questioned Dominion’s modeling assumption for energy efficiency beginning in 2026. For 2022 through 2025, Dominion incorporated the increasing annual targets included in Code § 56-596.2, Dominion held energy efficiency at the statutory 2025 level in 2026 and beyond. Ms. Ricketts indicated that the Commission may consider requiring Dominion to continue modeling incremental increases in energy savings into the future. While not a recommendation, she noted that the savings targets for 2022-2025 increase by 1.25% per year.³⁵⁷ Ms. Ricketts acknowledged a time may come when operational limitations impact the degree to which energy can be saved.³⁵⁸

While Dominion’s modeling assumed the Commonwealth withdraws from RGGI in the future, Ms. Ricketts provided the results of sensitivity modelling runs by the Company in the 2022 IRP Update assuming continued RGGI participation.³⁵⁹ Until there is further clarity regarding Virginia’s continued membership in RGGI, Ms. Ricketts recommended that the Commission consider requiring Dominion to file, in future RPS proceedings, modeling results both including and excluding the compliance costs of RGGI.³⁶⁰

Ms. Ricketts discussed the carbon “shadow price” Dominion used in its modeling, which decreases dispatch of carbon-emitting generation resources (and increases market purchases and builds) in the model. This shadow price is a blend of an assumed direct federal carbon tax and a forecasted social cost of carbon. Since there is not currently a federal carbon tax and Staff witness Johnson does not believe one will be adopted in the near-term, Ms. Ricketts recommended that the Commission direct Dominion, in future RPS plan cases, to perform model

³⁵³ *Id.*

³⁵⁴ *Id.* at 10-11.

³⁵⁵ *Id.* at 11.

³⁵⁶ *Id.* at 12-13. *See also* Ex. 50 (Kuleshova) at 35-36.

³⁵⁷ Ex. 59 (Ricketts) at 13-15.

³⁵⁸ *Id.* at 14.

³⁵⁹ *Id.* at Attachment AAR-2.

³⁶⁰ *Id.* at 15-16.

runs of its least-cost and preferred plans including no federal carbon tax and only those costs associated with carbon regulation currently in place through RGGI. This would allow the model to operate the existing generation fleet and select new resources, as needed, based on prevailing carbon regulation in the Commonwealth. Should the Commission want supplemental information on alternative carbon regulatory structures, modeling runs using Dominion's carbon assumptions in the current case could also be provided in future cases.³⁶¹ She clarified that Staff's concern in this regard is not the level of the shadow price, but its very inclusion.³⁶²

Ms. Ricketts testified that Staff does not oppose Dominion's energy sales forecast. However, she indicated that this forecast is generally higher than the Enverus energy forecast sponsored by Staff witness Johnson. Ms. Ricketts recognized that lower energy requirements can require fewer generating resources or market energy purchases and lower REC requirements.³⁶³

Ms. Ricketts pointed to REC price risks identified by Staff witness Johnson. Ms. Ricketts expects that a higher REC price forecast would improve the value of Company-owned and contracted resources that create RECs. On the other hand, REC purchase prices would increase. While any specific impacts would require additional modeling analysis, Staff expects that Company-owned and/or contracted resources would appear preferable to REC purchases with a higher REC price forecast.³⁶⁴ According to Ms. Ricketts, Dominion estimated that the REC requirement will be approximately 10.9 million RECs for 2023. This estimate grows to forecasted amounts of 54.7 million by 2037 and 99.5 million by 2047.³⁶⁵

Ms. Ricketts summarized the five alternative plans Dominion presented with its Petition.³⁶⁶ She expressed Staff's concern about Dominion's reluctance to address system planning issues in RPS Plan proceedings. She conveyed Staff's belief that it would be appropriate to address in RPS plan proceedings potential system modeling issues that are identified during the intervals between litigated IRP proceedings.³⁶⁷

Ms. Ricketts addressed Dominion's 2021 Compliance Report, which was filed with the Petition.³⁶⁸ She concluded that Staff does not oppose the Company's report based on the information provided in this proceeding.³⁶⁹

Ms. Ricketts addressed cost allocation for Rider CE. She recognized that Dominion proposed to use Factor 1 (average and excess) to allocate demand-related costs and benefits (capacity); and to use Factor 3 to allocate Rider CE projects' energy revenues and any REC

³⁶¹ *Id.* at 16-18.

³⁶² Tr. at 477 (Ricketts).

³⁶³ Ex. 59 (Ricketts) at 18-19.

³⁶⁴ *Id.* at 19-20.

³⁶⁵ *Id.* at 23.

³⁶⁶ *Id.* at 20-37.

³⁶⁷ Tr. at 474-75 (Ricketts).

³⁶⁸ Ex. 59 (Ricketts) at 37-41.

³⁶⁹ *Id.* at 41.

benefits to customers. Staff agreed with Dominion that any decisions from Case No. PUR-2021-00156 that affect Rider CE can be incorporated in future Rider CE proceedings.³⁷⁰

Ms. Ricketts discussed Dominion's calculation of the proposed Rider CE rates, which Staff did not oppose. She confirmed that a residential customer using 1,000 kWh per month would experience a monthly bill increase of \$0.38.³⁷¹

Ms. Johnson sponsored a report that provided price and load forecasts prepared by Enverus and reviewed the Company's forecasts ("Enverus Report").³⁷² The Enverus Report contained the following summary of findings.

Forecast comparison:

- The Company, PJM, and Enverus all employ different methodologies depending on the forecast subject item; however, all use scientific approaches that can reasonably be expected to map to a legitimately possible outcome.
- Forecasting in the current global environment has become increasingly difficult due to extraordinary global events resulting in extremely volatile commodity prices and consumption patterns that are largely unprecedented in the past 10 years. Therefore, differences in the forecasts are not surprising and can be expected.
 - The Company's price forecasts rely on analysis provided by [ICF] as of [March 14,] 2022.
 - As described in Staff Informal Set 3 response: "Where possible, the Company uses a blend of 18 months market prices, 18 months blended prices, and months 37+ are purely the ICF forecast price. The Company updated market prices for its long-term system modeling as of [June 28,] 2022."
 - Enverus also uses a blend of market prices and analyst generated outlooks. The mixture of market and analyst outlooks varies depending on the reliability of the observable market and likely differs from that used by the Company, but both approaches represent best-efforts at identifying a reasonable outlook.
 - [Dominion's] price forecasts shown in this presentation reflect the price forecasts found in Appendix 4O of the 2022 IRP Update.
 - Enverus agrees with the approach of blending observable forward market prices when available and transparent because the inherent "crowd-sourcing" nature of forward markets is naturally resistant to a single analyst outlier viewpoint.
- Of note, as the world emerges from the global pandemic and as PJM contemplates the changing methodologies for forecasting data center load, we observe a noticeable increase in the forecasted load during this cycle as compared to recent IRPs. Enverus expects this volatility to continue as these new forces evolve.
- Price Forecasts for both fuel and power prices between the Company and Enverus do differ, but not in an unacceptable manner. Variances are mostly attributable to differences in timing of when the forecasts were created. In addition, there are reasonable differences in the outlook for near-term effects of recent global volatility.

³⁷⁰ *Id.* at 42.

³⁷¹ *Id.* at 43 (discussing Dominion's removal of ARB and competitive service provider load from allocation factor calculations).

³⁷² Ex. 49 (Johnson) at Attachment.

- Load Forecasts for the Company and Enverus are generally in-line with each other while noted they both exhibit an increase from recent forecast trends in PJM. This is also consistent with the forecasts issued by [PJM].
- Capacity Market Prices is where Enverus's outlook differs most from the Company's. The majority of this difference is likely due to the assumption of participation in a Federal Carbon Tax....

Historical forecast performance:

- When comparing actual prices to the Company's forecasts after the fact, the short-term portion of the forecasts are generally accurate.
- For IRPs filed more than 2-3 years ago, the trend across the long-term portion of both price and sales forecasts exhibited overly optimistic positive trajectories that were not supported by actual results.
- However, that pattern appears to have been corrected with the past few IRPs and this 2022 IRP appears to have a reasonable outlook for both prices and sales.
- That said, due to the extreme volatility currently being exhibited across energy commodities, extreme caution is paramount in applying too much confidence to any forecast in today's market. This is apparent in the forecasts issued by the Company, by Enverus, and by PJM during this cycle which exhibit a change in pattern from recent IRPs. More time is needed to assess current trends.

Company forecasting methodologies:

- The Company provides a robust and transparent discussion of its methodology in Chapter 4 of the 2022 IRP Update.
- The Company largely relies on historical econometric signals and attempts to blend separate short-term and long-term methodologies to appropriately account for the dominant drivers for each time horizon.
- Enverus relies more heavily on machine learning in load forecasting in order to better capture trends that may not be apparent in subjective observance of econometric data.
- In other instances, Enverus does employ similar frameworks as laid out in Chapter 4 of the 2022 IRP Update and does not object to their use.
- However, with any forecast methodology, the output can be greatly affected by varying inputs used to accommodate desired results.
- Therefore, to continue to refine its forecast, the Company could endeavor to:
 - Utilize timelier price and economic inputs.
 - Provide easily deciphered sensitivity bands around price and load forecasts to showcase the inevitable deviation from the scenario.

Enverus does not strongly object to the forecasts, or the methodologies employed in the 2022 RPS Plan....³⁷³

When asked about Enverus's conclusion, Ms. Johnson characterized its position as "neutral," with Enverus more in line with Dominion than has historically been the case.³⁷⁴

Enverus, using weather normalized data analysis, measured 3% load growth between 2019 and 2020 and 6% load growth between 2020 and 2021. Enverus found this growth

³⁷³ *Id.* at Attachment, pp. 5-7.

³⁷⁴ Tr. at 351 (Johnson).

“remarkable” as PJM measured demand destruction of 3% and approximately 1% in these years. Enverus recognized, among other things, the trend of load growth from data centers. Enverus counted 150 data centers in Northern Virginia in 2019 and 520 by 2022.³⁷⁵

According to Ms. Johnson, long-term growth of data centers may not be as sustainable as the rate seen in recent years. She identified factors that could cause future increases, decreases, and volatility in data center growth.³⁷⁶ She recognized uncertainty regarding data center growth in the future and the extent to which such growth will be from ARBs.³⁷⁷

Regarding whether modelling should assume RGGI participation or a federal carbon tax, Ms. Johnson supports modeling based on current law at the applicable time.³⁷⁸

Ms. Johnson concluded that “[i]t’s very hard to predict the market right now, given what’s going on geopolitically on the policy side, supply chain issues related to when can you actually build these facilities. There’s just a lot of unknown.”³⁷⁹

Mr. Joshipura reviewed the reliability analyses for the CE-3 Projects. He explained that in the Commonwealth, entities requesting a generator interconnection must abide by either: (a) the Commission’s Regulations Governing Interconnection of Small Electrical Generators and Storage;³⁸⁰ or (b) PJM’s New Services Request Process. He explained that under these processes, most interconnection requests are evaluated by PJM and/or the incumbent electric utility using three interconnection studies. These studies identify: (1) any projected impacts of the facility’s interconnection upon the electric power system (at distribution and/or transmission levels); (2) any network upgrades required to resolve such impacts; and (3) estimated costs for constructing network upgrades and the associated cost responsibilities.³⁸¹ Once these studies are complete, an interconnection agreement is executed between the requesting entity, the transmission provider, and (where applicable) PJM. The interconnection processes ensure that any projected negative reliability impacts on the system are identified and addressed prior to interconnection.³⁸²

Mr. Joshipura testified that with Small Generator Interconnection Agreements in place for the Bridleton Solar, Kings Creek Solar, North Ridge Solar, and Shands Storage projects (all of which involve distribution voltage level interconnections), Staff does not oppose the Company’s requested CPCNs for these projects.³⁸³ Staff also agrees with the Company that the interconnection facilities for these four projects are ordinary extensions that do not require separate CPCNs.³⁸⁴

³⁷⁵ Ex. 49 (Johnson) at Attachment, p. 16.

³⁷⁶ Tr. at 340-41 (Johnson).

³⁷⁷ Tr. at 342 (Johnson).

³⁷⁸ Tr. at 346-47 (Johnson).

³⁷⁹ Tr. at 350 (Johnson).

³⁸⁰ 20 VAC 5-314-10 *et seq.*

³⁸¹ Ex. 47 (Joshipura) at 2.

³⁸² *Id.* at 2-3.

³⁸³ *Id.* at 5-6, 10.

³⁸⁴ *Id.* at 6-7, 10.

According to Mr. Joshipura, the four CE-3 Solar Projects that would interconnect at a transmission-voltage level (Cerulean, Courthouse, Moon Corner, and Southern Virginia)³⁸⁵ have completed System Impact Studies in PJM's process, but have not completed Facilities Studies or executed Interconnection Service Agreements.³⁸⁶ While their status in the PJM process means any unaddressed adverse impact on electric system reliability is not fully known, Staff does not oppose the CPCNs requested for these interconnection facilities on the condition that Dominion obtain and file with the Commission executed Interconnection Service Agreements indicating no unaddressed adverse impacts on system reliability.³⁸⁷ He identified several projects that the *2020 RPS Plan Order* and *2021 RPS Plan Order* approved subject to such a condition.³⁸⁸ Staff also agrees with the Company that the interconnection facilities for these four projects are ordinary extensions that do not require separate CPCNs.³⁸⁹

Mr. Joshipura also voiced Staff's agreement with the Company that CPCNs are not required for the CE-3 Distributed Solar Projects, pursuant to Commission regulation.³⁹⁰

Dominion – Rebuttal

Dominion offered the rebuttal testimonies of **Messrs. Flowers and Keefer, Ms. Drummond, Ms. Boschen, and Molly Parker**, Director of Environmental Services for the Company.

Mr. Flowers updated the Commission on the status of Interconnection Service Agreements. Dominion anticipates an agreement by the end of the first quarter in 2023 for Southern Virginia Solar and in the fourth quarter of 2025 for Cerulean Solar, Courthouse Solar, and Moon Corner Solar. However, he cautioned that PJM's issuance of these agreements is beyond Dominion's control and may be impacted by PJM queue reform. Mr. Flowers did not oppose Staff witness Joshipura's recommendation to file such agreements for these four projects once they are executed.³⁹¹

Citing, among other things, Staff witness Kuleshova's comparison of the CE-3 Project costs to the CE-2 Project costs, Mr. Flowers did not dispute that the solar and storage industry has seen project cost increases. However, he indicated that it is important to compare "like for like." He also emphasized that the estimated costs of the CE-3 projects are based on competitive bidding processes for qualified EPC contractors and the characteristics of each site, which were optimized based on each project's available and buildable land area.³⁹²

Mr. Flowers disagreed with Ms. Kuleshova's suggestion that Dominion be directed to review more thoroughly local requirements so that more accurate cost information can be provided. Mr. Flowers indicated that localities can add requirements through the building permit

³⁸⁵ *Id.* at 5.

³⁸⁶ *Id.* at 7.

³⁸⁷ *Id.* at 7-8.

³⁸⁸ *Id.*

³⁸⁹ *Id.* at 8-9.

³⁹⁰ *Id.* at 12 (referencing 20 VAC 5-302-10).

³⁹¹ Ex. 61 (Flowers rebuttal) at 4.

³⁹² *Id.* at 4-5.

process, which comes after Dominion gets broader approval for the project through the locality and approval from the Commission. Permitting agencies can also add new requirements as projects near construction. Because Dominion cannot predict at the time of filing for approval the requirements that may arise during the construction process, Mr. Flowers does not believe a more thorough review of local requirements is possible.³⁹³ He also thinks Staff witness Kuleshova's recommendation for Dominion to provide developers with information about localities restrictions would be difficult, and potentially detrimental.³⁹⁴

Mr. Flowers does not believe a Commission directive regarding the Company's EPC process is necessary. He is not concerned about the EPCs selected for the CE-3 Projects executing on these projects. He indicated that Strata and DEPCOM have been actively permitting and constructing Virginia solar facilities with the Company and its affiliates since 2017. As to the concentration of the EPC contracts for the CE-3 Projects with specific vendors, he believes this reflects the current solar development and construction environment and does not reflect an uncompetitive EPC RFP process. He provided various reasons why EPC contractors declined to bid on the CE-3 Projects, the primary reason being that they do not want to take cost and schedule risk for supplying the solar panels.³⁹⁵ Mr. Flowers indicated the Company is actively exploring solutions to the current cost- and risk-related issues facing solar construction and, going forward, the Company plans to continue to explore options to increase the number of firms participating and bidding in the EPC RFP process.³⁹⁶

[BEGIN EXTRAORDINARILY SENSITIVE INFORMATION]

[REDACTED]

[END EXTRAORDINARILY SENSITIVE INFORMATION]³⁹⁷

Mr. Flowers addressed Ms. Kuleshova's testimony about the relationship between the design capacity factor and land constraints. He recognized that constraints on buildable area are the primary driver for solar capacity sizing and can impact DC capacity, AC capacity, DC/AC ratio, and capacity factor. He identified numerous potential constraints on properties and testified that "[a]s solar development continues in this Commonwealth, solar facilities will have more land constraints." He characterized these factors as "the reality of solar development in the Commonwealth."³⁹⁸

³⁹³ *Id.* at 5-6.

³⁹⁴ Tr. at 515-16 (Flowers).

³⁹⁵ Ex. 61 (Flowers rebuttal) at 6-7.

³⁹⁶ *Id.* at 7.

³⁹⁷ Tr.-ES at 538-41 (Flowers).

³⁹⁸ Ex. 61 (Flowers rebuttal) at 7-8.

Mr. Flowers addressed Ms. Kuleshova's suggestion that Dominion conduct a comprehensive study of buildable areas for solar projects and potentially share that information with the development community. He opposed this suggestion, indicating that sharing this type of competitively sensitive information would be unprecedented and detrimental to Dominion and its customers as developers could use the information to develop solar facilities that would not serve Dominion's customers.³⁹⁹

Mr. Flowers testified that the values presented in the Mangum economic development reports are estimates that are not intended to be a precise forecast of what relevant localities or the Commonwealth can expect.⁴⁰⁰

Mr. Flowers took issue with Ms. Kuleshova's testimony about the relatively low conformance rate for proposals from the 2021 Solar-Wind-Storage RFP and the statutory RFP requirements in Code § 56-585.5 D 3. He cited several external factors that create project risk and can impact the ability of development proposals to meet Dominion's RFP requirements including: PJM's interconnection queue delay and reforms, refinement of local ordinances and zoning requirements including the addition of some solar restrictions, and refinement of federal and state agency requirements. He indicated that the RFP process is transparent and its requirements are intended to mitigate risk for the benefit of customers. He stood by the Company's selection process for the CE-3 Projects.⁴⁰¹ He testified that the requirements for a conforming project are clearly represented in the materials provided to interested developers and available on Dominion's website. He added that Dominion has a dedicated email address for potential bidders to direct questions and the Company hosts an annual RFP webinar to provide information and allow developers to provide input or ask questions.⁴⁰² While he believes the process is already very transparent to bidders, Dominion is open to specific suggestions for improving conformance rates.⁴⁰³

Mr. Flowers indicated that qualitative factors identified through the non-price evaluation (using 1-2-3 and 1-3-9 scoring) can impact project costs as well as feasibility. Among other examples, he cited the "Construction Risk" non-price evaluation category, which includes review of the topography of a project site and geotechnical information.⁴⁰⁴ If a project is selected, the evaluation is then followed by a comprehensive diligence effort by the Company. If a project is not selected, it may be reconsidered as additional studies, the inclusion of additional parcels, or other factors may improve the project's viability. According to Mr. Flowers, the "non-price evaluation is only one step in a multi-step process to find the best projects available with the least risk and at a reasonable cost to construct and operate on behalf of customers."⁴⁰⁵ Mr. Flowers believes "re-scoring" projects throughout the RFP process would be impractical and would not enhance the evaluation process.⁴⁰⁶

³⁹⁹ *Id.* at 8-9.

⁴⁰⁰ *Id.* at 9.

⁴⁰¹ *Id.* at 10-12; Tr. at 517 (Flowers).

⁴⁰² Ex. 61 (Flowers rebuttal) at 16-17. He indicated that the RFP document, the RFP checklist, and all supplemental specification documents are informed by the requirements of Code § 56-585.5 D 3. *Id.* at 17.

⁴⁰³ *Id.* at 17.

⁴⁰⁴ *Id.* at 12-14.

⁴⁰⁵ *Id.* at 14.

⁴⁰⁶ *Id.* at 15.

Mr. Flowers is open to considering specific suggestions for increasing previously developed project site bids. However, he believes the current RFP structure, which includes no restrictions on how many of these projects Dominion will consider, appropriately encourages bids for such projects.⁴⁰⁷ Because of how long brownfield sites take to develop, he indicated that the fruits of Dominion's proactive approach to these projects will not be seen for a couple of years.⁴⁰⁸

Mr. Flowers disagreed with Ms. Kuleshova's suggestion that Dominion has deprioritized cost in its evaluation of development proposals. He indicated price remains fundamental, although this primarily occurs through the results of the non-price evaluation, which correlates to expected capital costs.⁴⁰⁹

Mr. Flowers indicated that the Company does not oppose considering Staff witness Kuleshova's recommendation to increase the weighing of a non-price factor in a specific category.⁴¹⁰

Mr. Flowers testified that the split of 65% utility-owned projects and 35% PPAs is reflected in the Company's development plan and the Company's actions "to find the best projects within each category."⁴¹¹ He disagreed that Dominion must meet this split each year and offered the opinion that "the statute is clear that these allocation percentages are aligned with interim targets in 2024, 2027, and 2030 for solar and onshore wind."⁴¹²

Mr. Flowers discussed the traffic safety concerns raised in public witness testimony and comments about the Courthouse Solar project. He provided a map illustrating slopes around the construction entrance near the Earlys' property.⁴¹³ He explained relevant items from the conditional use permit and further VDOT approval that would be required for this entrance.⁴¹⁴

Mr. Keefer described the 13 CE-3 PPAs as "those with the best balance of competitive pricing and risk for our customers of the proposals received in the 2021 Solar-Wind-Storage RFP and the 2021 Distributed Solar RFP."⁴¹⁵ Regarding the non-price "Counterparty Financial Strength" evaluation category, he indicated that the Company executed 13 PPAs with 7 different developers that represented the bulk of the companies to submit conforming PPA bids. PPA proposals from developers with better credit scores were not intentionally excluded from the PPA short list.⁴¹⁶ Regarding the non-price "Environmental Permitting and Approval Risk" category, Mr. Keefer highlighted that Dominion does not have control over how a developer

⁴⁰⁷ *Id.*

⁴⁰⁸ Tr. at 513-14, 524-25 (Flowers).

⁴⁰⁹ Ex. 61 (Flowers rebuttal) at 18.

⁴¹⁰ *Id.*

⁴¹¹ *Id.* at 20.

⁴¹² *Id.*

⁴¹³ Ex. 62.

⁴¹⁴ Tr. at 508-11 (Flowers).

⁴¹⁵ Ex. 63 (Keefer rebuttal) at 3.

⁴¹⁶ *Id.* at 4. He also identified various provisions in the executed PPAs that mitigate risk associated with counterparty financial strength. *Id.*

develops its project and therefore this criterion focuses on the risk to the project development schedule based on one or more environmental constraints.⁴¹⁷

In Mr. Keefer's view, it would not be prudent for Dominion to include in PPAs a provision to adjust prices to account for changes in tax laws. He emphasized that these agreements are firm commitments for both parties – especially as to price – and that developers likely would not agree to such a provision where the customer gets the benefit of decreased costs without taking on any risk for increased costs.⁴¹⁸ While customers may not see a CE-3 PPA price benefit from the Inflation Reduction Act, the tax benefits may improve the economic well-being of these projects and ensure that they come online for the benefit of customers.⁴¹⁹

Mr. Keefer does not believe the two CE-3 Storage PPAs are uneconomical and risky. He testified that, from Dominion's evaluation of the possible storage PPAs, the CE-3 Storage PPAs represented the best balance of competitive pricing and risk. He indicated the PPAs include protections in the event the underlying projects turn out not to be viable, but cited provisions for reduced payments during periods of extended or frequent outages. He also indicated that traditional economic analysis "does not fully account for potential participation of storage projects in ancillary service markets, or the role of storage in enhancing system reliability, a purpose recognized by the VCEA."⁴²⁰

Mr. Keefer opposed Appalachian Voices' witness Abbott's recommendation that the Commission approve several solar PPAs that the Company did not propose for approval. Mr. Keefer explained that Dominion has not executed contracts for those PPA bids and can no longer hold those bidders to their bid prices. He also stood by the Company's rationale for not pursuing those PPAs.⁴²¹

Mr. Keefer opposed Staff witness Kuleshova's recommendations for more flexibility in first year PPA pricing by eliminating the "best and final offer" condition and for more flexibility related to the 2.5% price escalator. He testified that eliminating the "best and final offer" requirement would make it difficult to equitably compare all of the PPA bids and threaten the integrity of the RPF process. He also explained the rationale for requiring developers to submit pricing based on a uniform 2.5% escalator.⁴²² He acknowledged that he has not analyzed whether a 1% escalator might provide a developer the same incentive to maintain its facilities through the PPA term.⁴²³ He expects the net present value of a PPA bid with a 2.5% escalator would probably be comparable to a bid with a 1.0% escalator, meaning the year one price would probably be adjusted higher with a lower escalator. He expressed concern specifically with the potential for a negative escalator.⁴²⁴

⁴¹⁷ *Id.* at 5.

⁴¹⁸ *Id.*

⁴¹⁹ *Id.* at 5-6.

⁴²⁰ *Id.* at 6-7.

⁴²¹ *Id.* at 7.

⁴²² *Id.* at 7-9; Tr. at 562-64 (Keefer).

⁴²³ Tr. at 563-64 (Keefer).

⁴²⁴ Tr. at 580, 586 (Keefer).

Mr. Keefer testified that allowing for PPAs to be repriced after initial bidding would be unfair to developers and allowing higher repriced bids risks the integrity of the RFP process.⁴²⁵ However, he is unfamiliar with whether Dominion holds counterparties to the same standard for its Company-owned projects.⁴²⁶

Mr. Keefer addressed Ms. Kuleshova's suggestion that future PPA contracts with purchase options should allow for the option to be exercised if and when necessary. He described this suggestion as moot because the Company removed the purchase option from its form PPAs in 2022 and expressed concerns about the risk implications of including such a provision.⁴²⁷ He indicated the purchase option was removed at the request of developers and he is not aware of any obvious customer benefits of such an option.⁴²⁸

Mr. Keefer indicated it takes an inappropriate "inferential leap" to conclude that RECs are available for purchase based on the amount of solar generation constructed or under development in Virginia. He believes it is likely that the majority of RECs associated with these sites are already under contract to either fulfill RPS obligations in other states or to achieve corporate sustainability goals.⁴²⁹ He indicated this is the case for many of the largest sites identified by Ms. Kuleshova and explained further that projects under development may never be completed.⁴³⁰

According to Mr. Keefer, it is appropriate to assume the avoided deficiency payment to value REC benefits when evaluating each project's economics because the market for Virginia RECs is "thinly traded" and the Company would be subject to these penalties when there is insufficient REC supply. He believes the Virginia REC market price may quickly reach the level of the penalty for non-compliance.⁴³¹

Ms. Drummond did not agree with Staff witness Kuleshova's characterization of capacity and energy as "secondary" needs for the CE-3 Projects and PPAs. While Ms. Drummond did not dispute that Dominion's capacity need is driven by the retirement of carbon-emitting coal and biomass units over the next ten years, these retirements are consistent with Code § 56-585.5 B and a higher load forecast results in an increased need for capacity.⁴³² She also indicated Dominion's current status as a net purchaser of energy will continue in the future in all of the Company's alternative plans. She found this more striking considering that the energy deficit figures shown in her direct testimony assume normal weather.⁴³³

Ms. Drummond agreed that market purchases are an option for closing Dominion's capacity and energy "gaps" but raised concerns about overreliance on this option. She indicated there are limits to the amount of capacity and energy Dominion can purchase and physically

⁴²⁵ Tr. at 575 (Keefer).

⁴²⁶ Tr. at 576 (Keefer).

⁴²⁷ Ex. 63 (Keefer rebuttal) at 9-10.

⁴²⁸ Tr. at 553-54 (Keefer). *See also* Ex. 54.

⁴²⁹ Ex. 63 (Keefer rebuttal) at 10-11.

⁴³⁰ *Id.* at 11.

⁴³¹ *Id.* at 11-12.

⁴³² Ex. 64 (Drummond rebuttal) at 4.

⁴³³ *Id.* at 5.

receive. She also identified the risk that, as other states retire generation and bring more renewable generation online, capacity and energy available for purchase – especially during the winter – may decrease.⁴³⁴ She pointed to Winter Storm Elliott this past December when North Carolina was unable to import power from PJM and rolling blackouts were implemented in North Carolina and Tennessee.⁴³⁵ Ms. Drummond indicated that the higher load forecast in this case shows an even greater need than shown in last year's proceeding, when the Commission found that the CE-2 Projects were needed to comply with the VCEA and to serve customers' capacity and energy needs.⁴³⁶

To assess the economics of the CE-3 PPAs, Ms. Drummond recommended focusing on the net present value results in her supplemental direct testimony. While she did not disagree with the numbers shown in Ms. Kuleshova's tables, Ms. Drummond believes that any results showing net present values without some form of quantified benefits for both RECs and the social cost of carbon are incomplete.⁴³⁷ She also repeated that net present value calculations must be viewed with the understanding that they contain numerous assumptions as Dominion awaits guidance on the Inflation Reduction Act. She acknowledged that currently available information shows that PTCs would be most beneficial to customers for utility-scale solar projects, and she indicated that Dominion intends to take all reasonable steps to ensure that customers receive the full benefits of the Inflation Reduction Act.⁴³⁸

Ms. Drummond explained the Company's justification for using the statutory deficiency penalty to calculate REC benefits in the net present value analysis. The Company believes it is probable that Dominion – and ultimately customers – will have to pay the deficiency payment (without receiving any of the renewable energy benefits that come from developing actual facilities) if the CE-3 Solar Projects and the CE-3 Solar PPAs are not completed. Citing corporate net-zero commitments, Ms. Drummond does not believe Dominion can count on the availability of third-party RECs to meet statutory requirements that span a 25-year planning period, especially RECs from projects located in Virginia. She conceded that a market-driven REC forecast would be appropriate “[i]f in fact the Company does start to exceed the RPS Program requirement or a robust Virginia REC market develops.”⁴³⁹

Ms. Drummond identified two aspects of the net present value methodology where Dominion and Staff disagree: (1) the inclusion of avoided costs of battery storage units in the net present values for certain projects; and (2) adding the social cost of carbon as a dispatch adder in PLEXOS for fossil-fired units.⁴⁴⁰ She indicated that Dominion included battery storage avoided costs because:

⁴³⁴ *Id.* Ms. Drummond detailed the capacity emergency transfer limit for the DOM Zone from a recent PJM capacity auction as well as an hourly energy limit that Dominion models based on past experience. Tr. at 609-10 (Drummond).

⁴³⁵ Tr. at 607-08 (Drummond).

⁴³⁶ Ex. 64 (Drummond rebuttal) at 6.

⁴³⁷ *Id.*

⁴³⁸ *Id.* at 7.

⁴³⁹ *Id.* at 7-8.

⁴⁴⁰ *Id.* at 8-9.

in simulating the complex power system, over the long term, adding a specific new resource will be displacing some other development or additional market purchases....[R]esources such as batteries may represent a legitimate least cost resource for solar units to displace. Battery costs are expected to decline in the future while costs of other resources like capacity purchases are expected to increase. In addition, given the focus on the development of clean energy resources in Virginia, there are currently few options to replace new resources outside of market purchases or battery storage.⁴⁴¹

As for the social cost of carbon dispatch adder, Ms. Drummond indicated that any impact on the modeling analysis would be minimal because the market price forecast does not include this cost and Dominion is already a net purchaser of energy without it. She indicated that Dominion's gradual addition of this adder is a conservative approach with no impact to carbon emitting generators until 2031 and the full social cost of carbon is incorporated in 2046.⁴⁴²

Ms. Drummond opposed Staff witness Kuleshova's recommendation that the social cost of carbon calculation should incorporate the assumption that PJM marginal rates will decline in the future. Ms. Drummond indicated that she expects that the recent decline in marginal PJM emission rates due to coal retirements will level off at a rate close to the intensity of a natural gas fired unit and may increase in some years. In 2021, the marginal unit in PJM was a carbon-emitting generator more than 85% of the time. Additionally, while she did not disagree that the marginal emission rates may still decline, Dominion does not have a forecast for such rates over the next 35 years and does not believe it is reasonable to speculate on rate changes.⁴⁴³

Ms. Drummond disagreed with Staff witness Kuleshova's recommendation to include the underlying net present value analyses as part of future filings. While these spreadsheets are difficult to convert to PDF for filing and are not easily reviewed in hard copy form, Dominion would not oppose providing this information electronically on the same day or within a few days of the filing.⁴⁴⁴

Ms. Drummond testified that negative net present value results should not be determinative of whether the Commission should approve the CE-3 Projects, the CE-3 Distributed Solar Projects, and the CE-3 PPAs. She emphasized, among other things, that this analysis assumes normal weather and Staff did not analyze the Company's high fuel price sensitivity.⁴⁴⁵

Ms. Drummond did not object to Ms. Kuleshova's calculation of LCOE values in 2023 dollars. However, she recommended a single commercial operation year as the best method of LCOE comparison because further adjustments to varying commercial operation years could

⁴⁴¹ *Id.* at 9-10.

⁴⁴² *Id.* at 10.

⁴⁴³ *Id.* at 11. *See also* Ex. 28; Tr. at 605 (Drummond).

⁴⁴⁴ Ex. 64 (Drummond rebuttal) at 12.

⁴⁴⁵ *Id.*

confuse the high-level comparison value of LCOE values.⁴⁴⁶ Ms. Drummond generally agreed with Ms. Kuleshova that using energy output instead of design capacity factors would more accurately represent energy over the project life. However, Ms. Drummond downplayed the value of LCOE analysis, indicating such results are not intended to be as detailed as project-specific net present value analyses and indicated that similar adjustments are not made in industry values that are used for comparison.⁴⁴⁷

Ms. Drummond opposed the recommendation of Appalachian Voices' witness Abbott to attach the most recent IRP or update filing to its annual RPS plan filings. She relayed Dominion's position that neither Virginia law nor prior Commission orders intend to turn the annual RPS plan cases into IRP cases. She also noted that color versions of the IRP filing are published, as a matter of course, on Dominion's website.⁴⁴⁸

Ms. Drummond addressed testimony on long-term system modeling assumptions, although she believes many, if not all, of the issues raised would be better addressed in the upcoming IRP proceeding.⁴⁴⁹ These issues include assumptions regarding solar degradation, RGGI membership, social cost of carbon dispatch adder, energy efficiency, expired solar PPAs, coal dispatch, the commodity forecast, and load forecast.

Ms. Drummond asserted that the modeling assumption of 0.5% solar degradation is an industry standard assumption and that the "theoretical maximum annual energy production" of solar resources does decrease every year. Accordingly, Dominion includes such degradation in the capacity factor when modeling both existing and generic solar resources.⁴⁵⁰

Regarding the Company's modeling assumption that Virginia would exit RGGI, Ms. Drummond testified that this assumption was supported based on information at the time of modeling and Dominion continues to believe RGGI exit is likely.⁴⁵¹ She presented sensitivity results from the 2022 IRP Update, which she indicated show that it would be more expensive for customers if Virginia remains in RGGI, while making essentially no difference in carbon emissions other than in Plan A.⁴⁵²

For the social cost of carbon dispatch adder, Ms. Drummond indicated that this adder supports the reduction of carbon emissions over the longer term, consistent with the goals of Dominion and Virginia. She believes the estimate used in the modeling was conservative because it was added in 2031 and slowly ramped up over time. She noted that a recent proposal from the U.S. Environmental Protection Agency ("EPA") showed a \$190 per ton estimate compared to the \$51 federal government estimate used in the Company's long-term modeling.⁴⁵³

⁴⁴⁶ *Id.* at 13.

⁴⁴⁷ *Id.* at 13-14.

⁴⁴⁸ *Id.* at 14.

⁴⁴⁹ *Id.* at 15.

⁴⁵⁰ *Id.*

⁴⁵¹ *Id.* at 15-16.

⁴⁵² *Id.* at 16.

⁴⁵³ *Id.* at 16-17.