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October 5, 2021

VIA ELECTRONIC FILING

The Honorable Bernard Logan, Clerk
Virginia State Corporation Commission
Document Control Center
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1300 East Main Street
Richmond, VA 23219

**Re: In the Matter of establishing regulations for a shared solar program
pursuant to § 56-594.3 of the Code of Virginia
Case No. PUR-2020-000125**

Dear Mr. Logan:

Enclosed for filing in the above-referenced proceeding, please find the Direct
Testimony of Karl R. Rábago on behalf of the Coalition for Community Solar Access.

Please do not hesitate to contact me if you have any questions.

Sincerely,

/s/ Eric J. Wallace

Eric J. Wallace

Enclosure
cc: Service List

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

COMMONWEALTH OF VIRGINIA, *ex rel*)
STATE CORPORATION COMMISSION)

CASE NO. PUR-2020-00125

Ex Parte: In the matter of establishing)
regulations for a shared solar program)
pursuant to § 56-594.3 of the Code of Virginia)

DIRECT TESTIMONY OF KARL R. RÁBAGO
ON BEHALF OF THE
COALITION FOR COMMUNITY SOLAR ACCESS

October 5, 2021

Summary of Karl R. Rábago Direct Testimony

I am Karl R. Rábago, and I appear on behalf of the Coalition for Community Solar Access (“CCSA”). I am principal of Rábago Energy LLC, a Colorado limited liability company, with a business address of 2025 E. 24th Avenue, Denver, Colorado, 80205.

My testimony presents CCSA’s proposals for the Shared Solar Program bill credit rate and minimum bill. I discuss the statutory and regulatory requirements for the shared solar bill credit rate and minimum bill, as well as important policy and program factors regarding these critical components of the Shared Solar Program.

Bill Credit Rate: CCSA maintains its position that the shared solar bill credit rate should be calculated based on publicly reported U.S. Energy Information Agency (“EIA”) revenue and sales data. My testimony explains why the bill credit rate should be calculated based on EIA gross revenue data, inclusive of applicable taxes, rather than the net revenue figure reported in Dominion’s Federal Energy Regulatory Commission (“FERC”) Form 1.

Minimum Bill: CCSA continues to recommend that the shared solar minimum bill be a fixed amount for all customers in each customer class, rather than Dominion’s proposed volumetric minimum bill rate. My testimony explains the statutory framework for the minimum bill and details CCSA’s minimum bill proposal, which is based on incremental costs of the Shared Solar Program added on top of the otherwise applicable Basic Customer Charge.

I conclude my testimony by recommending that the Commission reject Dominion’s shared solar bill credit rate and minimum bill proposals. Instead, I recommend that the Commission adopt CCSA’s proposals for the bill credit rate and minimum bill, which will help to establish a workable Shared Solar Program to benefit subscribing customers, while attracting private capital from developers seeking to invest in Virginia’s clean energy economy through participation in the Shared Solar Program.

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I. WITNESS IDENTIFICATION AND QUALIFICATIONS

A. My name is Karl R. Rábago. I am the principal of Rábago Energy LLC, a Colorado limited liability company, located at 2025 E. 24th Avenue, Denver, Colorado, 80205. I appear here in my capacity as an expert witness on behalf of the Coalition for Community Solar Access (“CCSA”).

A. I have worked for more than 30 years in the electricity industry and related fields. I have been actively involved in a wide range of electric utility issues across the United States as an expert witness.

Q. Have you ever testified before the Virginia State Corporation Commission or other regulatory agencies?

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(“Commission”) Cases PUE-2012-00064, PUE-2013-00088, PUE-2014-00026, PUE-2015-00035, PUE-2015-00036, PUE-2016-00049, PUE-2016-00050, PUR-2017-00051, PUR-2017-00045, PUR-2018-00065, PUR-2019-00050, PUR-2020-00035, PUR-2020-00135, PUR-2020-00134, PUR-2020-00169, and PUR-2021-00054. Additionally, in the past nine years, I have submitted testimony, comments, or presentations in proceedings in Alabama, Arkansas, Arizona, California, Colorado, Connecticut, District of Columbia, Florida, Georgia, Guam, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nevada, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, Puerto Rico, Rhode Island, Vermont, Virginia, Washington, and Wisconsin. I have also testified before the U.S. Congress and have been a participant in comments and briefs filed at several federal agencies and courts. A listing of my previous testimony is attached as Exhibit KRR-2.

Q. What information did you review in preparing this testimony?

A. I reviewed Virginia’s shared solar statute, § 56-594.3 of the Code of Virginia (“Shared Solar Statute”), the Commission’s shared solar regulations, 20 VAC 5-340-10 *et seq.* (“Shared Solar Rules”), orders by the Commission in this proceeding, and filings and discovery responses in this proceeding by the Commission Staff, the Department of Mines, Minerals and Energy (“DMME”), CCSA, the Chesapeake Solar and Storage Association (“CHESSA”),¹ legislators, and Dominion Virginia Electric Power (“Dominion”). I have also familiarized myself with minimum bills in other U.S. jurisdictions. My testimony provides reference information for other sources of authority

¹ CHESSA was formerly known as the Maryland-DC-Delaware-Virginia Solar Energy Industries Association (“MDV-SEIA”).

1 or information upon which I relied.

2 **Q. What is the purpose of your testimony?**

3 A. In this testimony, I discuss important legal and policy factors that the Commission should
4 follow in setting the bill credit rate and minimum bill for the Shared Solar Program. I also
5 propose a bill credit rate calculation as well as a minimum bill amount for shared solar
6 subscribers. Finally, I address flaws in Dominion's proposal for the bill credit rate and the
7 minimum bill, including Dominion's failure to propose a minimum bill amount that
8 conforms to the requirements of the Shared Solar Statute.²

9 **Q. What do you conclude?**

10 A. The Shared Solar Statute allows Dominion to charge a minimum bill which, by law, should
11 compensate Dominion for the incremental costs of the Shared Solar Program through
12 charges on non-exempt shared solar subscribers. Dominion's own filing demonstrates that
13 the Shared Solar Program will add \$300,000 per year in incremental costs.³ When divided
14 over a fully subscribed program, that equates to about \$1 per month in incremental costs
15 per customer. Dominion, however, does not approach the minimum bill this way. Rather,
16 Dominion attempts to collect additional revenues through the minimum bill for bill credits
17 that are earned through a subscriber's participation in the Shared Solar Program. This is a
18 flawed approach because (1) it collects far more from subscribers than the incremental cost
19 of the program, in violation of the law, and (2) it presumes Dominion is entitled to nearly
20 eliminate bill credits through inflation of the minimum bill. Dominion has made no
21 showing of incremental distribution, transmission, or generation costs resulting from the

² See Va. Code § 56-594.3.

³ Trexler Direct Test. at 18:11-13.

1 Shared Solar Program. Charging Dominion's proposed minimum bill rate of about 7.5
 2 cents per kilowatt-hour to Shared Solar Program subscribers is not only a violation of the
 3 Shared Solar Statute, but would make the program wholly unworkable. On the other hand,
 4 even if the entire Dominion proposed rate were applied to its fuel charge rate, as required
 5 by the Shared Solar Statute, and the Shared Solar Program were fully subscribed overnight,
 6 it would increase that charge by less than four one-hundredths of a cent per kilowatt-hour.⁴
 7 Even if generously interpreted as a zealous effort to more than eliminate even such a
 8 minimal potential cost shift, it bears noting that Commission Staff very recently concluded
 9 that Dominion will likely have a \$212.4 million per year revenue *surplus* under current
 10 rates.⁵ There is no statutory or sound policy basis for approving Dominion's minimum bill
 11 rate proposal.

12 **II. POLICY AND STATUTORY BACKGROUND**

13 **Q. What guidance has been provided to the Commission regarding the Shared Solar** 14 **Program?**

15 A. Under the Shared Solar Statute, the Commission is charged with establishing by
 16 regulation a program that affords customers the opportunity to participate in shared solar
 17 projects.⁶ The Shared Solar Statute was one of several pieces of legislation intended to
 18 "place the Commonwealth on a clear and unambiguous path toward a new economy
 19 based on clean energy sources, and transitioning away from traditional fossil fuels," and

⁴ Estimated based on 200 MW of shared solar, Dominion's 7.428 cent proposed minimum bill rate, and approximately 71 billion kWh in annual sales.

⁵ Case No. PUR-2021-00058, Virginia Electric and Power Company - For a 2021 triennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia, Pre-filed Testimony of Staff Witness Patrick W. Carr at 8 (Sept. 17, 2021).

⁶ Va. Code § 56-594.3(B).

1 which are intended to “open competition for new entrants, and not simply make
 2 incremental changes that largely maintain the status quo.”⁷ Shared Solar Program
 3 implementation should avoid “ambiguous, unsubstantiated costs that would significantly
 4 impact the ability to finance projects” and “suppress investor interest.”⁸ Implementation
 5 should not delay customers’ ability to participate in the program or otherwise create
 6 uncertainties and delays that will negatively impact the success of this program.⁹ The
 7 intent of the Shared Solar Statute was the establishment of a Shared Solar Program that is
 8 fair and workable, and that would “open the door to solar energy for Virginians by
 9 avoiding the financial and logistical hurdles for consumers and businesses to install
 10 rooftop solar.”¹⁰

11 **Q. What specific requirements does the Shared Solar Statute impose on the**
 12 **Commission?**

13 A. The Shared Solar Statute includes a list of fifteen additional requirements for the Shared
 14 Solar Program.¹¹ Of particular relevance to my testimony regarding the bill credit rate
 15 and the minimum bill are the first, which requires that the Commission’s rules
 16 “reasonably allow for the creation of shared solar facilities,”¹² and the ninth and the last,
 17 which allow the utility to recover, respectively, reasonable costs of administering the

⁷ PUR-2020-00125, Letter from State Senators Jennifer McClellan and Scott Surovell and Delegates Rip Sullivan, Jay Jones, Mark Keam, and Alfonso Lopez to Commission (Nov. 4, 2020).

⁸ *Id.*

⁹ *Id.*

¹⁰ PUR-2020-00125, Letter from Senator Scott Surovell and Delegate Jay Jones to Commission (Apr. 29, 2021).

¹¹ Va. Code § 56-594.3(F).

¹² Va. Code § 56.594.3(F)(1).

program¹³ and any difference between the bill credits provided to subscribers and the cost of energy injected into the grid by a shared solar facility.¹⁴ These provisions confirm that the Shared Solar Program must be “fair and workable.” The minimum bill, among other charges and fees, should not be set at a level that makes the program unworkable. Further, utility costs associated with Shared Solar Program energy costs and credits are to be recovered through purchased power costs, not through the minimum bill.¹⁵

The Shared Solar Program Bill Credit Rate

Q. What does the Shared Solar Statute require regarding the bill credit rate?

A. The Shared Solar Statute defines the “applicable bill credit rate” as the “dollar-per-kilowatt-hour rate used to calculate the subscriber’s bill credit,” and defines “bill credit” as “the monetary value of the electricity, in kilowatt-hours, generated by the shared solar facility allocated to a subscriber to offset that subscriber’s electricity bill.”¹⁶ Further, the Shared Solar Statute provides that “each subscriber” “shall receive an applicable bill credit based on the subscriber’s customer class of residential, commercial, or industrial,” and that “each class’s applicable credit rate shall be calculated by the Commission annually by dividing revenues to the class by sales, measured in kilowatt-hours, to that class to yield a bill credit rate for the class (\$/kWh).”¹⁷

Q. What do the Commission’s Shared Solar Rules require regarding the applicable bill credit rate?

¹³ Va. Code § 56-594.3(F)(9).

¹⁴ Va. Code § 56-594.3(F)(15).

¹⁵ *Id.*

¹⁶ Va. Code § 56-594.3(A).

¹⁷ Va. Code § 56-594.3(C).

1 A. On December 23, 2020, the Commission issued an Order Adopting Rules (the “Shared
 2 Solar Order”) for a Shared Solar Program pursuant to the Shared Solar Statute.¹⁸ In the
 3 Shared Solar Order, the Commission acknowledged stakeholder comments “asserting that
 4 the applicable bill credit rate does not require a proceeding; rather, in December of each
 5 year, the Commission could calculate an annual bill credit rate based on publicly
 6 available information and thereafter publish or post its calculation.”¹⁹ Accordingly, the
 7 Commission adopted the Commission Staff’s revisions to the proposed Shared Solar
 8 Rules consistent with that applicable bill credit rate calculation methodology.²⁰ As
 9 promulgated by the Commission, the Shared Solar Rules provide that “[t]he commission
 10 shall establish the yearly applicable bill credit rate for the subscriber’s residential,
 11 commercial, or industrial rate class.”²¹ In its Order for Notice and Hearing in this
 12 proceeding, the Commission stated that it would adopt a bill credit calculation method
 13 and the resulting bill credit for each customer class in this proceeding.²²

14 ***The Shared Solar Program Minimum Bill***

15 **Q. What does the Shared Solar Statute require regarding the minimum bill?**

16 A. Subsection D of the Shared Solar Statute contains a minimum bill provision as follows:

17 D. The Commission shall establish a minimum bill, which shall
 18 include the costs of all utility infrastructure and services used to
 19 provide electric service and administrative costs of the shared solar
 20 program. The Commission may modify the minimum bill over time.
 21 In establishing the minimum bill, the Commission shall (i) consider
 22 further costs the Commission deems relevant to ensure subscribing
 23 customers pay a fair share of the costs of providing electric services

¹⁸ On December 30, 2020, the Commission issued a Correcting Order to address a scribal error of the Shared Solar Order.

¹⁹ Shared Solar Order at 8.

²⁰ *Id.*

²¹ 20 VAC 5-340-60(F)(4).

²² Case No. PUR-2020-00125, Order for Notice and Hearing at 5-6 (July 23, 2021).

and (ii) minimize the costs shifted to customers not in a shared solar program. Low-income customers shall be exempt from the minimum bill.²³

Q. Are there any exemptions from the minimum bill?

A. Yes. Virginia Code § 56-594.3(D) states that low-income subscribers are exempt from the minimum bill.

Q. What are the key elements of the Shared Solar Statute's minimum bill provision?

A. The minimum bill is defined as "*an amount* determined by the Commission under subsection D that subscribers are required to, at a minimum, *pay on their utility bill* each month after accounting for any bill credits."²⁴ The minimum bill must be reduced to a specific bill amount to comply with the Shared Solar Statute. The minimum bill provision further requires:

- The minimum bill shall include utility costs of the Shared Solar Program. The Shared Solar Statute breaks these program costs into two categories: (1) Shared Solar Program utility infrastructure and services used to provide electric service; and (2) Shared Solar Program administrative costs.²⁵ For both categories, the costs to be included in the minimum bill are limited to costs *of the Shared Solar Program*.²⁶ This language requires the utility to demonstrate, as the proponent of the charge, that a cost has been or will be incurred specifically to support the program.
- The minimum bill may be modified over time.²⁷ This provision ensures that as utility's program-specific costs reflected in duly approved rates increase or decrease

²³ Va. Code § 56-594.3(D).

²⁴ Va. Code § 56.594.3(A) (emphasis added).

²⁵ § 56-594.3(D).

²⁶ *Id.* (emphasis added).

²⁷ *Id.*

1 because of program operation, changes in costs may be captured in subsequent
2 modifications to the minimum bill amount.

- 3 • The Commission is further required *to consider* costs relevant to ensuring that
4 subscribers pay a fair share of electric service provided to subscribers of the program
5 and *to minimize* costs shifted to non-subscribers.²⁸ The minimum bill is intended to
6 capture incremental costs created by the Shared Solar Program and to avoid
7 significant cross subsidization of Shared Solar Program costs. These provisions
8 reflect the traditional and appropriate standard that voluntary program non-
9 participants should not be required to pay costs of the voluntary program after
10 considering benefits they realize as non-participants. This statutory guidance does not
11 allow for the mischaracterization of bill credits as costs of the program to be
12 recovered through the minimum bill.

13 **Q. How has the Commission reflected these minimum bill provisions in its rules?**

14 A. The Commissions' Shared Solar Rules provide:

15 The minimum bill components established as set forth in
16 subdivision 1 of this subsection and updated as deemed necessary
17 by the commission shall be limited to such costs as determined by
18 the commission to be just and reasonable based on evidence
19 provided by the parties to the evidentiary hearing process. Such
20 costs must reflect incremental costs of the shared solar program and
21 not otherwise recovered by the utility from participating subscribers.
22 The following factors shall be considered by the commission in
23 determining whether costs proposed by the utility are incremental to
24 the shared solar program and eligible for inclusion in the minimum
25 bill:

26 a. The extent to which the costs are utility infrastructure and
27 services used to provide electric service for the shared solar
28 program;

²⁸ *Id.*

b. The extent to which the costs are administrative costs of the shared solar program;

c. Whether including the cost in the minimum bill is necessary to ensure subscribing customers pay a fair share of the costs of providing electric services to the subscribers;

d. Whether including the cost in the minimum bill will minimize the costs shifted to customers not in a shared solar program; and

e. Whether including the cost in the minimum bill is otherwise consistent with the requirements of § 56-594.3 of the Code of Virginia.²⁹

Q. What are the key provisions of the Commission's minimum bill composition rule?

A. The rule implements the plain language of the Shared Solar Statute and carries out legislative intent in several key aspects. The Commission's shared solar minimum bill rule:

- Emphasizes that the minimum bill is intended to result in charges that are just and reasonable.
- Makes it clear that the minimum bill is intended for the recovery of incremental costs of the Shared Solar Program not otherwise recovered by the host utility.
- Allows for the minimum bill to be a vehicle for recovery of costs as necessary to ensure that shared solar subscribers pay a fair share for their electric service.
- Allows for the minimum bill to be a vehicle for collection of Shared Solar Program costs as appropriate to minimize costs shifted to non-subscriber customers.

The rule therefore properly reflects the statutory separation of the crediting mechanism in the Shared Solar Statute from the minimum bill provision and is intended to ensure that

²⁹ 20 VAC 5-340-80(A)(2) (Minimum bill composition).

the resulting rates are just and reasonable and will result in a fair and workable Shared Solar Program.

Q. How are minimum bills typically designed?

A. A minimum bill is most commonly a mechanism designed primarily to recover fixed costs that vary according to factors other than the level of energy usage, like customer costs, and that charges a set amount for every customer within a customer class. That is, a minimum bill might be \$10 per customer/meter per month. A minimum bill differs from a fixed customer charge, or basic service/customer charge because it technically deviates from cost-causation principles in order to recover a minimum amount of revenues from each and every customer, with possible exceptions.³⁰ That is, a minimum bill is designed to be set at or near the lowest-common denominator of usage level to recover in a fixed sum a relatively small amount of the fixed costs normally recovered through usage-based rate elements, much like and, in some cases, as an alternative or supplement to a basic customer charge.

Q. What are the relative benefits of a minimum bill approach?

A. For utilities, the chief benefit of a minimum bill is revenue certainty. For customers, the chief benefits of the minimum bill are charge certainty and ease of understanding. A minimum bill is a set amount that every customer pays and that for most users, most of the time, would have been paid anyway.

Q. What do we know about practices in other states and through commentary from experts about the design and formulation of minimum bills?

³⁰ In actual effect, even a basic service charge deviates from strict cost causation at the individual customer level. The cost of a service drop for a multi-family resident is much less than the cost of service drops for suburban customers, for example.

A. The most important consideration in designing a minimum bill is that it should not be set so high as to frustrate the success of the program in which it operates or to inadvertently impose charges on customers that unreasonably deviate from the principle of cost causation. A utility proposal for an unreasonably high minimum bill in the Shared Solar Program will impose a competitive disadvantage on the competitive entities and new clean energy markets that the program was designed to encourage. An unreasonably high minimum bill will also encourage energy waste because subscribers will see no bill-reducing benefit in efficient use of energy. While the Shared Solar Statute reasonably excludes customers defined as low-income customers,³¹ an unreasonably high minimum bill will discourage participation in the Shared Solar Program by customers of modest means who may not qualify as low-income customers. An unreasonably high minimum bill would therefore impede the ability of shared solar projects to support the benefits provided to low-income customers exempted from minimum bill charges, because the low-income customer benefits are facilitated by broad participation of non-exempt subscribers in the Shared Solar Program. CCSA and CHESSA addressed these issues in comments filed in this proceeding:

An excessive minimum bill is also out of alignment with best practices in minimum bill rate design. Minimum bills are not widely used in the U.S.,³² but they have been studied, and in some cases, deemed potentially more effective than “fixed charges,” particularly when coupled with other rate design elements. When designed well,

³¹ As discussed later in this testimony, Dominion has effectively proposed a minimum bill for low-income customers, in further contravention of the Shared Solar Statute, by making non-bypassable charges non-offsettable by bill credits.

³² PUR-2020-00125, Comments of CCSA & CHESSA at 6 n.12 (Apr. 30, 2021) (“CCSA & CHESSA could not identify another example of a minimum bill (outside of Virginia) being employed in any shared solar program. There are states in which all residential customers pay a minimum bill and there are some states where residential solar customers, with on-site solar, pay a minimum bill.”)

1 a minimum bill can help balance a utility's interest in guaranteeing
 2 some level of revenue collection without undermining customer
 3 participation in clean energy programs.³³ That said, as with all
 4 "fixed charges," a minimum bill requirement carries potential trade-
 5 offs. Minimum bills can negatively distort price signals (associated
 6 with consumption and efficiency) while also placing a higher burden
 7 on low-use customers (who are often low-income customers).³⁴
 8 While eligible low-income customers are exempt from the shared
 9 solar minimum bill, it should nevertheless be set at a level that will
 10 allow all customers to participate in the shared solar program, not
 11 just high-usage customers. As a result, minimum bills should be
 12 designed to support a viable program for all customers, to avoid
 13 being regressive and unjustly discriminatory.

14 Further, a key assumption in determining a successful
 15 minimum bill is to not overly burden customers to the point where
 16 participation in a clean energy program no longer makes financial
 17 sense. As an example, at least in the case of onsite solar net
 18 metering, one analysis determined that a reasonable amount for
 19 recovering utility costs associated with billing, metering, customer
 20 care, and part of the distribution system should amount to no more
 21 than \$15-\$20/month.³⁵ The NREL analysis also highlights the
 22 importance of balancing reasonable cost recovery for utilities
 23 without undermining the economics for customers in clean energy
 24 programs. These studies are also consistent with a recent decision
 25 for residential rooftop solar customers in South Carolina, where the
 26 Public Service Commission adopted a \$13.50 minimum bill,

³³ *Id.* at 6 n.13 (citing J. Lazar, Electric Utility Residential Customer Charges and Minimum Bills: Alternative Approaches for Recovering Basic Distribution Costs (Nov. 13, 2014), available at <https://www.raponline.org/knowledge-center/electric-utility-residential-customer-charges-and-minimum-bills-alternative-approaches-for-recovering-basic-distribution-costs/>; Energy Central, The Minimum Bill: A First Step to Fair Utility Rates in a Distributed Energy Age (Sept. 16, 2014), available at <https://energycentral.com/c/ec/minimum-bill-first-step-fair-utility-rates-distributed-energy-age>; L. Bird et al., NREL, Impact of Rate Design Alternatives on Residential Solar Customer Bills: Increased Fixed Charges, Minimum Bills and Demand-Based Rates (Sept. 2015), available at <https://www.nrel.gov/docs/fy15osti/64850.pdf>).

³⁴ *Id.* at 6 n.14 (citing J. Lazar, Electric Utility Residential Customer Charges and Minimum Bills: Alternative Approaches for Recovering Basic Distribution Costs, Regulatory Assistance Project (Nov. 13, 2014), available at: <https://www.raponline.org/knowledge-center/electric-utility-residential-customer-charges-and-minimum-bills-alternative-approaches-for-recovering-basic-distribution-costs/>).

³⁵ *Id.* at 7 n.15 (citing J. Kennerly, *The Minimum Bill: A First Step to Fair Utility Rates in a Distributed Energy Age* (2014) available at <https://energycentral.com/c/ec/minimum-bill-first-step-fair-utility-rates-distributed-energy-age>).

1 inclusive of the “Basic Facilities Charge,” for residential solar
2 customers within Dominion’s South Carolina service territory.³⁶

3 **Q. What does this mean in this proceeding?**

4 A. The minimum bill mechanism is intended to recover incremental Shared Solar Program
5 costs. Utility infrastructure and services costs associated with the operation of the shared
6 solar generator are recovered through up front and ongoing interconnection costs
7 assessed on shared solar facilities. Energy cost differences—the difference between the
8 value of the energy injected into the grid from the shared solar facility and the costs that
9 the utility would otherwise incur to generate or procure, transmit, and distribute energy—
10 are collected through the purchased power charges. The only remaining administrative
11 costs of the Shared Solar Program that must be reflected in the minimum bill are the
12 incremental costs incurred by the utility for apportioning, crediting, and billing shared
13 solar subscribers.³⁷

14 Furthermore, this guidance means that the minimum bill mechanism employed in
15 Virginia’s Shared Solar Program should adhere to principles of simplicity and ease of
16 understanding, and be supportive of a workable program.

17 **III. BILL CREDIT RATE METHODOLOGY RECOMMENDATION AND**
18 **CRITIQUE OF DOMINION’S PROPOSAL**

19 **Q. What do you recommend regarding the methodology for determining the bill credit**
20 **rate for the Shared Solar Program?**

21 A. Use of publicly published data from a government source increases transparency and
22 understandability and allows for efficient development of a shared solar market. I

³⁶ *Id.* at 7 n.16 (citing South Carolina Public Service Commission, April 28, 2021 Directive (Docket No. 2020-229-E), *available at* <https://dms.psc.sc.gov/Attachments/Matter/b2e7c059-6429-41ed-a346-0e07caf88078>).

³⁷ See CCSA & CHESSA Comments and Hearing Request at 40-43 (Nov. 2, 2020).

1 therefore recommend that the Commission establish the applicable bill credit rates for
 2 each customer class (residential, commercial, and industrial) for the Shared Solar
 3 Program based on the most recent posted U.S. Energy Information Agency (“EIA”) data.
 4 For example, the most recent available data posted by EIA provides that the Dominion
 5 revenues for residential customers in 2019 were \$3,596,331,600 associated with
 6 29,829,089 megawatt hours of electricity sales.³⁸ Applying the statutory formulae for the
 7 Shared Solar Program (*i.e.*, “dividing revenues to the class by sales”),³⁹ the 2021
 8 applicable bill credit rate is 12.06 cents per kilowatt hour for residential customers.⁴⁰ The
 9 2021 applicable bill credit rate is 7.94 cents per kilowatt hour for commercial customers
 10 and 6.45 cents per kilowatt hour for industrial customers.⁴¹ Updated EIA data is posted in
 11 October of each year and available for the Commission’s December calculation of the
 12 applicable bill credit rate for each rate class (residential, commercial, and industrial) for
 13 the coming year.⁴²

14 **Q. Can you describe Dominion’s bill credit rate calculation proposal?**

15 A. Yes. Dominion initially proposed using EIA data (net of taxes) to calculate the shared
 16 solar bill credit rates for each customer class.⁴³ Dominion changed its position in the

³⁸ U.S. Energy Information Administration, Electricity, Electric Sales, Revenue, and Average Price, Table T6 (Release Date: October 6, 2020), *available at* https://www.eia.gov/electricity/sales_revenue_price/. Note that the EIA revenue and sales data is posted in October of each year showing data from the prior calendar year.

³⁹ Va. Code § 56-594.3(C).

⁴⁰ *Id.*

⁴¹ U.S. Energy Information Administration, Electricity, Electric Sales, Revenue, and Average Price, Tables T7 (commercial) and T8 (industrial) (Release Date: October 6, 2020), *available at* https://www.eia.gov/electricity/sales_revenue_price/.

⁴² See Shared Solar Order at 8.

⁴³ See PUR-2021-00125, Virginia Electric and Power Company’s Response to Motion for Clarification of the Bill Credit Rates for the Shared Solar Program at 2 (May 10, 2021).

1 recent Direct Testimony of Witness Trexler filed in this proceeding on September 21,
2 2021. Dominion now proposes to use the total revenues and sales from FERC Form 1.
3 Dominion states that it “reports the Virginia information from FERC Form 1 to the
4 Commission by March 31 of each year,” and that it can use that to “provide
5 jurisdictionalized revenues and sales data by revenue class and a calculation of the
6 applicable bill credit rate for the Program.”⁴⁴

7 **Q. How does Dominion justify its proposed methodology for determining the bill credit**
8 **rate?**

9 A. Dominion states that the FERC Form 1 provides the “relevant information to the
10 Commission in a timely manner,” and that using this methodology will “ensure
11 consistency in the administration of the Multi-Family and Shared Solar Programs.”⁴⁵

12 **Q. Do you agree with Dominion’s justification?**

13 A. No, because the FERC Form 1 data that Dominion provided included revenue values that
14 were net of utility and consumption taxes. Assuming Form 1 data is always net of taxes,
15 this would make the Form 1 revenue number incomplete with regard to the Shared Solar
16 Statute’s requirement to use the “revenues to the class”⁴⁶ divided by sales to determine
17 the bill credit rates. The FERC Form 1 data falls short of the statutory requirement and
18 therefore undermines Dominion’s justification.

19 **Q. How does the EIA data differ the Form 1 data in terms of utilizing it for the**
20 **Commission’s annual update to the shared solar bill credit rates?**

⁴⁴ Trexler Direct Test. at 4:22-24.

⁴⁵ Trexler Direct Test. at 4:19-22, 5:5-8.

⁴⁶ Va. Code § 56-594.3(C).

1 A. There are three notable distinctions between the EIA data and the Form 1 data. The first
 2 is that the EIA data provides revenue amounts that are inclusive of taxes collected from
 3 customers, whereas the FERC Form 1 data does not.⁴⁷ The second is that the EIA data is
 4 posted in October of each year, whereas the FERC Form 1 data is made available by the
 5 utility in March.⁴⁸ The third is that the Form 1 data is already being used to determine
 6 rates in the Multi-Family Shared Solar program, and the EIA data is not.⁴⁹

7 **Q. How do you justify using the EIA data for the Shared Solar Program based on the**
 8 **three distinctions described above?**

9 A. The primary justification for utilizing the EIA data is that it tracks revenue amounts that
 10 are inclusive of taxes collected. The Shared Solar Statute states that “each class's
 11 applicable credit rate shall be calculated by the Commission annually by dividing
 12 revenues to the class by sales, measured in kilowatt-hours, to that class to yield a bill
 13 credit rate for the class (\$/kWh).”⁵⁰ The statute does not provide that the revenues to the
 14 class should be net of utility and consumption taxes, as Dominion proposes. Dominion
 15 reported the Table T6, T7, and T8 revenue data to EIA as “revenue” and the data appears
 16 in the EIA tables in a column labeled “Revenues (Thousands of Dollars).”⁵¹ Further,
 17 CCSA believes the statutory bill credit calculation based on total revenues to each
 18 customer class captures the full cost paid by a Dominion customer with regard to their

⁴⁷ See Exhibit KRR-3 (Dominion Response to CCSA 3-1 and Attachment CCSA Set 3-1(KG)).

⁴⁸ See Trexler Direct Test. at 4:21-22.

⁴⁹ See Trexler Direct. Test. at 5:5-8.

⁵⁰ Va. Code § 56-594.3(C).

⁵¹ U.S. Energy Information Administration, Electricity, Electric Sales, Revenue, and Average Price, Tables T6 (residential), T7 (commercial), and T8 (industrial) (Release Date: October 6, 2020), available at <https://www.eia.gov/electricity/sales revenue price/>.

electricity consumption. This “gross revenue” amount should include not only energy or demand charges, but also state and local income taxes, customer service charges, environmental surcharges, franchise fees, fuel adjustments, and other miscellaneous charges applied to end-use customers during normal billing operations. Using the EIA data rather than FERC Form 1 data to calculate the applicable bill credit rate will ensure that the bill credits more accurately reflect the full costs that customers pay for their electricity.

With regard to timing, the difference of having the data for determining the upcoming year's bill credit rate in March versus October is trivial and not a material issue for the Commission. In the Shared Solar Order, the Commission adopted Staff's recommended language based on comments from stakeholders that "in December of each year, the Commission could calculate an annual bill credit rate based on publicly available information and thereafter publish or post its calculation."⁵² Once the EIA data is posted in October, there will be several weeks to update the applicable bill credit rate based on a calculation that will take minutes (*i.e.*, total revenue divided by total sales (in kilowatt hours) for each customer class). Timing should not be an issue for the bill credit rate calculation and publication.

Regarding the differences in bill credit calculation between the Multi-Family and Shared Solar Programs, I see no compelling reason to align the programs precisely. Each program is the product of a different statute using different terminology to describe the respective bill credit rate. Mere convenience in using a similar calculation is not sufficient to override the substantive differences in the calculated amounts and

⁵² Shared Solar Order at 8.

underlying statutory definitions. The Multi-Family Shared Solar Statute states: “The Commission shall annually calculate the applicable bill credit rate as the effective retail rate of the customer’s rate class, which shall be inclusive of all supply charges, delivery charges, demand charges, fixed charges, and any applicable riders or other charges to the customer.”⁵³ This list of effective retail rate components does not include utility and consumption taxes. By contrast, the Shared Solar Statute states that the calculation for determining the programs bill credit rate is to simply divide “revenues to the class by sales.”⁵⁴

IV. CCSA MINIMUM BILL RECOMMENDATION

Q. Based on the minimum bill guidance and requirements discussed above, what does CCSA recommend regarding the Shared Solar Program minimum bill?

A. CCSA continues to recommend that the minimum bill be limited in its scope and not unworkably constrain the ability of customers to realize savings. The minimum bill should be based on the incremental administrative costs of the Shared Solar Program and assessed in addition to a minimum bill component matching the customer’s applicable Basic Customer Charge. The incremental administrative charge component should be calculated based on the total expected annual administrative costs of the Shared Solar Program divided by the expected average subscription amount of shared solar customers to yield a dollar per month minimum amount, which would apply to all non-exempt (low-income) subscribers within a rate class. That incremental administrative charge

⁵³ Va. Code § 56-585.1:12(D).

⁵⁴ Va. Code § 56-594-3(C).

1 component should be in addition to the applicable Basic Customer Charge for the
2 subscriber's rate schedule.

3 **Q. What costs should be included in the incremental administrative charge component**
4 **of the shared solar minimum bill?**

5 A. Administrative costs should include, at a maximum, the cost of managing data flow
6 between the utility and subscriber organizations, the cost of utility staff time directly
7 attributable to managing utility customer inquiries from shared solar subscribers, and
8 incremental billing functionality required to facilitate bill crediting. Indeed, the General
9 Assembly has already determined that such costs should be minimal in requiring net
10 crediting whereby the utility applies the net of the customer's bill credit and subscription
11 cost to the customer's bill and pays the developer the balance. The General Assembly has
12 determined that, at most, those costs should be 1% of the bill credit.⁵⁵ Dominion has not
13 shown how billing costs are driven by capabilities incremental to those needed for net
14 crediting. Importantly, net crediting and any other incremental billing functions
15 associated with the Shared Solar Program should have minimal cost because Dominion
16 can integrate Shared Solar Program billing into its new Customer Information Platform,
17 which was the justification for delaying the enrollment date for the Shared Solar Program
18 until July 2023 to accommodate development of that platform.⁵⁶

⁵⁵ Va. Code § 56-594.3(F)(14) ("The net crediting fee shall not exceed one percent of the bill credit value.").

⁵⁶ *See id.* (providing that the Commission shall "[r]equire net crediting functionality as part of any new customer information platform approved by the Commission.") and § 56-594.3(G) ("Within 180 days of finalization of the Commission's adoption of regulations for the shared solar program, a utility shall, provided that the utility has successfully implemented its customer information platform, begin crediting subscriber accounts of each shared solar facility interconnected in its service territory, subject to the requirements of this section and regulations adopted thereto.").

1 CCSA's minimum bill proposal will avoid confusion and frustration among
2 shared solar subscribers. Shared solar subscribers should not be required to pay costs
3 unrelated to the Shared Solar Program through the shared solar minimum bill.

4 Dominion's proposed minimum bill is designed to collect rents from customers at nearly
5 the same level as a non-participation bill, which will frustrate and confuse customers
6 seeking to invest private dollars in supporting a new competitive program for solar
7 energy development in the Commonwealth.

8 CCSA's minimum bill proposal provides the structure for a predictable and
9 reasonable calculation of the minimum bill costs. Once set at a reasonable level reflecting
10 only incremental costs associated with Shared Solar Program implementation and
11 operations, the minimum bill should be kept consistent, protecting customers from
12 frequent changes and supporting overall program financeability. Dominion's proposed
13 volumetric minimum bill that varies with subscription level would create an unreasonably
14 complex and unjust minimum bill that will discourage customers from participating and
15 discourage developers from investing in Virginia's clean economy through the Shared
16 Solar Program.

17 **Q. How does your recommended approach align with the Shared Solar Statute**
18 **provisions?**

19 A. By law, the minimum bill exists to ensure Dominion recovers from participating
20 customers the incremental costs of infrastructure and services specifically for the Shared
21 Solar Program. The minimum bill should not, then, recover utility costs that are not
22 caused by the Shared Solar Program. This raises two related questions: First, what utility
23 costs are specifically caused by the Shared Solar Program? Second, of those costs, which

1 of them are not recovered through some other mechanism? The minimum bill should
 2 only recover those incremental costs identified by the second question. The Shared Solar
 3 Statute reflects these principles by narrowly delineating the costs that must be included in
 4 the minimum bill to “the costs of all utility infrastructure and services used to provide
 5 electric service and administrative costs *of the shared solar program*.”⁵⁷ Utility
 6 infrastructure and services costs associated with the operation of the shared solar
 7 generator are recovered through upfront and ongoing interconnection costs assessed on
 8 shared solar facilities. Energy cost differences—the difference in value between shared
 9 solar generation and costs the utility would otherwise incur to generate or procure,
 10 transmit, and distribute equivalent energy generation—are recovered or credited through
 11 the purchased power charges. Therefore, the only remaining costs of the Shared Solar
 12 Program that must be reflected in the minimum bill are administrative, that is, the costs
 13 incurred by the utility for apportioning, crediting, and billing shared solar subscribers.⁵⁸

14 I recommend that the Commission focus on the direct and incremental costs and
 15 benefits of shared solar operations and billing integration. Fairness can only be fully
 16 assessed through a comprehensive, transparent, objective, and forward-looking
 17 assessment of the costs and benefits of shared solar operations.

18 Incremental and ongoing generation facility costs are captured in interconnection
 19 charges, which are paid by the subscriber organizations. The minimum bill amounts for
 20 incremental costs should be limited to the non-facility-related costs of program
 21 administration. Shared solar customers are fully charged for all the approved costs for

⁵⁷ Va. Code § 56-594.3(D) (emphasis added).

⁵⁸ See CCSA & CHESSA Comments and Hearing Request at 40-43 (Nov. 2, 2020).

1 service at their premises and are subscribing to shared solar facilities to benefit from the
2 bill credits associated with the facility's output and to help accelerate the development of
3 renewable generation for Virginia's clean energy economy. No minimum bill charges are
4 justified to ensure fair share payment of costs as a result. Ensuring that the minimum bill
5 is additive to the Basic Customer Charge, as proposed by CCSA, provides a contribution
6 to non-subscriber cost minimization as relates to fixed costs that do not vary with
7 consumption.

8 **Q. How does your proposal comport with the Shared Solar Statute and the**
9 **Commission's Shared Solar Rules?**

10 A. This proposal aligns with the statutory and regulatory provisions:

- 11 • The costs that the utility can demonstrate as being incremental costs of the Shared
12 Solar Program are recovered. Since infrastructure costs associated with shared solar
13 facility interconnection are recovered directly from the facility, the only incremental
14 costs are those associated with administrative and billing activities for shared solar
15 subscribers. As explained in this testimony, Dominion has indicated that these costs
16 will be around \$300,000, yielding a minimum bill amount of \$1.
- 17 • All costs of electric service for subscribers are charged and accounted for on
18 subscriber bills.⁵⁹ Separately, and without reducing those charges, a portion of the
19 amount due is offset on the bill by shared solar bill credits earned through program
20 subscription. This is the effect of *crediting* and does not indicate that subscribers are
21 not paying their fair share of electric service. In simple terms, the level of shared solar

⁵⁹ See Trexler Direct Test. at 11:17-18 ("The [Shared Solar Program] does not have its own delivery component, nor, as a value crediting scheme, does it need one.").

1 output does not reduce the subscriber's charges for electric service, only the final
 2 amount of the bill. The shared solar bill credit is a *post hoc* adjustment to the bill
 3 amount based on the statutory bill credit rate.

- 4 • The amount of costs associated with fixed costs that do not vary with usage, but
 5 instead are based on the number of customers, is reflected in the Basic Customer
 6 Charges that Dominion imposes. As such, ensuring that the minimum bill level is at
 7 least as great as the otherwise applicable Basic Customer Charge offers a reliable and
 8 reasonable level of minimizing the costs that might be otherwise spread to non-
 9 subscriber customers.
- 10 • Any differences between the value of shared solar credits and the value of injected
 11 energy from shared solar facilities must be addressed outside the minimum bill
 12 provision, which is statutorily focused on recovering the incremental costs of
 13 providing electric service to shared solar subscribers. The net bill reduction for the
 14 shared solar subscriber due to earned shared solar credits does not constitute a cost of
 15 service. The Shared Solar Statute provides that the means for collection of any
 16 difference between the bill credit provided to shared solar subscribers and the cost of
 17 energy injected into the grid is "as a cost of purchased power pursuant to [Va. Code]
 18 § 56-249.6."⁶⁰ Under the Commission's Shared Solar Rules, bill credits are to be
 19 applied through the utility's fuel factor.⁶¹

20 **Q. What is the specific amount of the minimum bill that you propose?**

⁶⁰ Va. Code § 56-594.3(F)(15).

⁶¹ 20 VAC 5-340-60(F)(6).

1 A. In addition to the \$1 monthly administrative component that I will address, I propose that
 2 shared solar customers continue to pay the Basic Customer Charge associated with their
 3 rate schedule. For example, the current customer charge for the Residential Rate
 4 schedules 1, 1G, DP-R, and 1EV is \$6.58 per billing month.⁶² This rate can vary
 5 significantly depending on the specific schedule utilized by the customer, particularly for
 6 commercial customers. For small general service commercial customers on Schedule GS-
 7 1 taking single-phase service, the Basic Customer Charge is \$10.78 per customer per
 8 month. For GS-1 customers taking three-phase service, the customer charge is \$14.54 per
 9 customer per month. The Basic Customer Charge is in the range of \$19-\$25 per customer
 10 per month for intermediate (medium-sized) customers, and between \$112-\$120 per
 11 customer per month for large general service customers.⁶³ The Basic Customer Charge
 12 ensures recovery of the basic costs of connection that do not vary with the level of the
 13 customers usage, and so, like a minimum bill, should not be reduced or eliminated by
 14 shared solar credits.

15 **Q. How is the additional \$1 per customer per month calculated?**

16 A. Dominion's estimate of approximately \$302,300 in incremental administrative costs
 17 appears reasonable for a fully subscribed Shared Solar Program.⁶⁴ When spread across
 18 the estimated output of 200 MW of solar generation,⁶⁵ this cost will result in a minimum

⁶² Dominion Tariff, Rate Schedule 1 – Basic Residential Rate, *available at*
<https://www.dominionenergy.com/virginia/rates-and-tariffs/residential-rates>.

⁶³ See Dominion Tariff, Business Rates, *available at*
<https://www.dominionenergy.com/virginia/rates-and-tariffs>.

⁶⁴ See Trexler Direct Test. at 18:11-13.

⁶⁵ Va. Code § 56-594.3(E).

1 bill amount of about \$1 per customer per month for shared solar subscribers.⁶⁶ In future
 2 years, when Dominion can demonstrate and reasonably allocate actual incremental billing
 3 system costs as reflected in duly approved rates and that are specifically associated with
 4 serving shared solar customers, Dominion should be permitted to request that such costs
 5 be included in the minimum bill.

6 **Q. Please summarize your minimum bill recommendation.**

7 A. I recommend that the Commission approve a \$1 per customer per month minimum bill
 8 for the incremental costs of the Shared Solar Program. This \$1 charge would be added on
 9 top of the fixed Basic Customer Charge that customers pay.⁶⁷ Thus, residential
 10 participating customers would pay a total of \$7.58/month (\$1 for shared solar incremental
 11 costs in the minimum bill plus \$6.58 for Basic Customer Charge). This approach would
 12 avoid potentially regressive impacts and provide simplicity and understandability in the
 13 minimum bill design. Shared solar customers would continue to pay their Basic Customer
 14 Charge because they remain customers of the utility, and they would pay the added
 15 administrative costs of also participating in the Shared Solar Program. Because the Basic
 16 Customer Charge is established through existing Commission ratemaking procedures
 17 based on fixed costs of providing electric service, it provides an administratively efficient
 18 foundation on the bill to which the minimum bill is separately added and does not require
 19 a separate evaluation of such costs.

⁶⁶ Calculated as 200 MW x 8,760 hours x 19% capacity factor = 332,880 MWh. Assuming the “representative” Dominion customer uses 1 MWh per month, and that the Dominion administrative costs are about \$302,300, a minimum bill of \$0.91, or about \$1.00 per customer month, would be justified.

⁶⁷ This is comparable to net metering under Va. Code § 56-594 where customer cannot completely zero out their bill but must always pay the fixed Basic Customer Charge.

1 **V. DOMINION'S MINIMUM BILL PROPOSAL IS FUNDAMENTALLY**
 2 **INCONSISTENT WITH THE SHARED SOLAR STATUTE**

3 **Q. Before discussing Dominion's minimum bill proposal in detail, please identify how**
 4 **Dominion's proposal is fundamentally inconsistent with the Shared Solar Statute.**

5 A. The first fundamental flaw in Dominion's proposal is that it simply does not propose a
 6 minimum bill *amount*. Rather it proposes a volumetric *rate* that varies with the shared
 7 solar subscription level.⁶⁸ It is impossible to tell from Dominion's filings what the
 8 minimum bill would be for any particular customer in any particular month until after a
 9 subscription decision is made. Moreover, the Commission's Standard Consumer
 10 Disclosure Form for the Shared Solar Program⁶⁹ contemplates that some subscribers may
 11 size their subscription based on a fixed amount of output (*e.g.*, 500 kWh), while others
 12 may have a variable subscription based on a percentage output of the shared solar facility
 13 (*e.g.*, 5 kW). As a practical matter, given the seasonal variability of solar generation,
 14 customers are nearly certain to be subscribed to a portion of the project (*e.g.*, 5kW) rather
 15 than an amount of generation. Under Dominion's proposal, these subscribers would see
 16 their minimum bill rise and fall over the course of the year and subscribers may even pay
 17 more to Dominion in some months than they would absent being a shared solar
 18 subscriber. Establishing a fixed minimum bill for all subscribers within each customer
 19 class is consistent with the statutory directive that the minimum bill be a set amount and
 20 will help minimize potential customer confusion regarding this important financial
 21 component of the program.

⁶⁸ Trexler Direct Test. at 21, Table 3.

⁶⁹ State Corporation Commission, Shared Solar Programs, Standardized Consumer Disclosure: Shared Solar Program, *available at* <https://scc.virginia.gov/pages/Shared-Solar>.

Dominion's proposal appears to be designed with the intent of charging shared solar subscribers, via the minimum bill, for the full cost of service (net of the avoided wholesale cost rate) that Dominion would have recovered from the subscriber customer if they were non-subscribers. This approach does not yield a minimum bill amount at all.

Q. How does Dominion define a cost shift and is Dominion's approach reasonable?

A. Dominion's definition of a cost shift is the amount of any charges it expects to collect from any individual customer that is reduced by a shared solar bill credit (net of the wholesale avoided cost rate).⁷⁰ This is an unreasonable approach. A cost shift cannot occur unless Dominion's overall revenues fall below the level projected in the rate case that set the currently applicable rates. *Potential* cost shifts occur any time revenues do not match expectations for any reason. Potential cost shifts are ubiquitous in cost-of-service regulation if for no other reason than that rates are set at average levels for an entire class. Many factors can increase or decrease the revenues that a utility recovers once rates are set, but until the changes reach the level of requiring a readjustment of rates to ensure adequate overall revenue recovery, no cost shift has occurred. In addition, and as discussed further in this testimony, Dominion has not fully evaluated the value of injected energy from shared solar facilities, and so it has no way of knowing whether the value to Dominion of that energy more than offsets the credits issued to shared solar subscribers.⁷¹

⁷⁰ Trexler Direct Test. at 8:12-19 ("While the Program is intended to provide generation credits to offset some of the participating customers' generation supply, the Program will not satisfy all of subscribers' electric needs. Participants will still rely on utility services that carry considerable costs that all utility customers are required to pay. These are the same utility services the participants relied on before they subscribed and will rely on as a Program participant or Subscriber. If subscribing customers are exempted from these costs, such costs would be shifted to other utility customers who are not participating in the Program.").

⁷¹ Nor has Dominion offered analysis to show what the cost of service is of likely shared solar subscribers who, as renters or low usage customers may have very low costs of service and be

1 The Shared Solar Statute requires minimization of cost shifts, which in turn requires an
 2 objective quantification of benefits and costs as well as a determination of materiality
 3 supported by evidence. Dominion has not provided evidence to support its proposed
 4 minimum bill charges.

5 **Q. How does Dominion describe its approach?**

6 A. The second fundamental flaw in Dominion's approach is that its "proposal is to apply the
 7 minimum bill against the bill credit in a given billing period to determine a net bill
 8 credit."⁷² This approach, which treats shared solar subscribers as if they were alternative
 9 supply customers, is contrary to the plain language and structure of the Shared Solar
 10 Program as set forth in the Shared Solar Statute and Shared Solar Rules. Shared solar
 11 subscriber organizations are not Competitive Service Providers ("CSPs"), and shared
 12 solar customers are not shopping with a CSP for electric supply service by participating
 13 in the Shared Solar Program. Dominion's attempt to conflate shared solar subscriptions
 14 with alternative generation supply service should be rejected.

15 **Q. Is Dominion consistent in its minimum bill approach?**

16 A. Yes, Dominion consistently goes to great lengths to maximize the size of the minimum
 17 bill it proposes. But in other respects, Dominion is unreasonable and inconsistent. For
 18 example, Dominion's Witness Trexler asserts that the Shared Solar Program is meant to
 19 recover incremental costs and does not have incremental delivery component costs, but
 20 nonetheless seeks to reduce the bill credit by the cost of delivery of electric service to

paying in excess of their actual cost of service to begin with. *See* Exhibit KRR-3 (Dominion Response to CCSA 1-27).

⁷² Trexler Direct Test. at 9:21-22.

1 subscribers.⁷³ Witness Trexler asserts that delivery charges for distribution and
 2 transmission and generation balancing service charges (calculated based on generation
 3 service charges) are *incremental* costs of the Shared Solar Program.⁷⁴ These are not
 4 incremental Shared Solar Program costs. Indeed, Witness Trexler concedes that
 5 “participating customers will continue to be billed for their metered usage for their
 6 account at the Commission approved rates of their Principal Tariff.”⁷⁵ Distribution
 7 service charges, generation charges, and transmission charges are all included in
 8 Dominion’s Principal Tariffs (*e.g.*, Schedule 1 for Residential Service). These are not
 9 incremental charges for the Shared Solar Program and should not be included in the
 10 minimum bill.

11 **Q. How do you respond to Dominion’s “avoided cost benefit” argument?**

12 A. Dominion takes the position that the Shared Solar Program is an “avoided cost benefit”⁷⁶
 13 program as regards generation from shared solar facilities, but makes broad-sweeping
 14 assertions about customer usage patterns unsupported by actual data for any customer
 15 class or any individual subscriber as if it were required to provide generation balancing to
 16 serve shared solar subscribers with the actual electricity from shared solar facilities.⁷⁷
 17 Dominion asserts its minimum bill is necessary to collect the costs of serving shared solar
 18 subscribers while offering nothing but class average values based on embedded rates
 19 regarding those costs.

⁷³ Trexler Direct Test. at 12:4-22.

⁷⁴ Trexler Direct Test. at 10-18.

⁷⁵ Trexler Direct Test. at 9:6-8.

⁷⁶ Trexler Direct Test. at 13:16-19.

⁷⁷ See Trexler Direct Test. at 13:4-14.

1 **Q. Do shared solar credits potentially reduce revenues that Dominion would normally**
2 **collect from shared solar subscribers?**

3 A. Possibly, but it depends on whether the value of the energy injected from the shared solar
4 facility is greater or less than the value of the energy that Dominion would otherwise be
5 required to produce or procure, transmit, and deliver. Even if the result is a deficiency to
6 Dominion, the utility is kept whole by the explicit provisions in the Shared Solar Statute
7 and Shared Solar Rules, which provide that energy cost differences are to be addressed as
8 an adjustment to the cost of purchased power through the fuel factor.⁷⁸ The difference
9 could be positive or negative. Dominion performed no analysis of the value of injected
10 energy from shared solar facilities, which may exceed the amount of the bill credits.

11 **Q. Is Dominion's proposed minimum bill consistent with others you have seen?**

12 A. CCSA and CHESSA provided a detailed explanation regarding minimum bills, with
13 which I agree. That explanation also addresses the problem that Dominion's proposal is
14 simply too complex and difficult to understand:

15 To the extent that Dominion is proposing a volumetric
16 minimum bill,⁷⁹ such a proposal conflicts with the shared solar
17 statute and is inconsistent with generally accepted minimum bill
18 designs as discussed in analyses by the National Renewable Energy
19 Laboratory ("NREL") and Regulatory Assistance Project ("RAP").
20 NREL and RAP describe "minimum monthly bills" as mechanisms
21 for ensuring that customers pay a specified minimum amount each

⁷⁸ Va. Code § 56-594.3(F)(15) states that the Commission shall "[a]llow the utility to recover as the cost of purchased power pursuant to § 56-249.6 any difference between the bill credit provided to the subscriber and the cost of energy injected into the grid by the subscriber organization." *See also* 20 VAC 5-340-60(F)(6) ("The bill credits associated with the shared solar program shall be applied through the utility's fuel factor.")

⁷⁹ PUR-2020-00125, Comments of CCSA & CHESSA at 3-4 (Apr. 30, 2021) ("Dominion's current proposal is volumetrically tied to subscription level. Subscriptions to shared solar projects are typically based on capacity, not generation, so the Dominion proposal could lead to a minimum bill that rises and falls over the course of a year. Dominion's proposal could also charge a minimum bill even if production differed from subscription level.")

1 month, despite the amount of electricity they purchase from the
 2 utility.⁸⁰ The definition of a minimum bill provided in Virginia's
 3 shared solar statute aligns with NREL and RAP. The [Commission's
 4 rule implementing the] shared solar statute states that the minimum
 5 bill is a "dollar per month amount" (20 VAC 5-340-20), a fixed
 6 minimum amount that must be paid each month.⁸¹

7 In addition, NREL and RAP describe the minimum bill as an
 8 alternative to a "fixed charge," such as the Basic Customer Charge
 9 used in Virginia. Such charges, which tend to not vary with usage,
 10 include fixed costs of providing electric service, such as metering,
 11 billing, and payment processing. As described further below,
 12 Dominion goes above and beyond what would be expected of a fixed
 13 charge or minimum bill in any other market. Indeed, Dominion's
 14 proposal is for a minimum bill that is roughly ten times higher than
 15 what the utility currently has in place as a Basic Customer Charge.

16 ... Further, the complexity of Dominion's proposal alone
 17 conflicts with the basic ratemaking principle that rates should be
 18 clear and understandable.⁸² Shared solar subscribers will need to
 19 understand the program economics to decide whether to subscribe
 20 to a shared solar facility. A simple minimum bill will facilitate
 21 customer participation while minimizing potential confusion.
 22 Clarity regarding the minimum bill will also assist shared solar
 23 project owners and financiers trying to evaluate program economics
 24 when deciding whether and to what extent to invest in Virginia's
 25 clean economy through the shared solar program.⁸³

⁸⁰ *Id.* at 3 n.6 (citing NREL, *Impact of Rate Design Alternatives on Residential Solar Customer Bills: Increased Fixed Charges, Minimum Bills and Demand-Based Rates* (2015), available at <https://www.nrel.gov/docs/fy15osti/64850.pdf>; J. Lazar, *Electric Utility Residential Customer Charges and Minimum Bills: Alternative Approaches for Recovering Basic Distribution Costs*, Regulatory Assistance Project (Nov. 13, 2014), available at: <https://www.raponline.org/knowledge-center/electric-utility-residential-customer-charges-and-minimum-bills-alternative-approaches-for-recovering-basic-distribution-costs/>).

⁸¹ *Id.* at 4 n.7 (citing Minimum Bill Proposal of Virginia Electric and Power Company at 2 (Mar. 1, 2021) ("By statute, [the minimum bill] is 'an amount ... that subscribers are required to, at a minimum, pay on their utility bill each month after accounting for any bill credits.'" (quoting Va. Code § 56-594.3(A))).

⁸² *Id.* at 4 n.8 (citing Bonbright et al, *Principles of Public Utility Rates*, at 383 (Pub. Util. Rep. Inc. 1988) (discussing desirable rate attributes, including "practical attributes of simplicity, certainty, convenience of payment, economy in collection, understandability, public acceptability, and feasibility of application")).

⁸³ *Id.* at 4.

Dominion now proposes to charge a minimum bill based on *subscription level*, requiring subscribers to become rate analysts capable of projecting actual output and allocation for each billing period against the minimum bill charge and subscription fees to even estimate whether a subscription would be cost-effective. With such a high minimum bill as proposed by Dominion, the customer confusion alone would make the Shared Solar Program practically unworkable. It is important to note that the unnecessary complexity and excessive charges proposed by Dominion would make it extremely hard for shared solar subscriber organizations to launch or operate their businesses in Virginia, much less effectively communicate program economics and risks to subscribers.

VI. SPECIFIC ISSUES WITH DOMINION'S MINIMUM BILL PROPOSAL

Q. What is the most obvious problem with Dominion's minimum bill proposal?

A. The Dominion minimum bill proposal would result in a minimum bill charge of \$74.28 per month for a shared solar subscriber with a subscription matching usage of 1,000 kWh per month for the residential class, which is about 63% of the bill that such a customer would pay if it were not a shared solar subscriber. The first version of the Dominion proposal appeared to be for a volumetric charge based on subscriber energy consumption. The current version appears to be intended as a charge based on shared solar subscription level. Dominion calls its approach "avoided cost credit" pricing, which is wholly inconsistent with the Shared Solar Statute. By statute, the shared solar bill credit rate is calculated by dividing revenues to the class by kWh sales to yield a \$/kWh bill credit rate.⁸⁴ Dominion's "avoided cost credit" pricing scheme directly contradicts the Shared Solar Statute's methodology and would result in a Shared Solar Program that is unfair

⁸⁴ Va. Code § 56-594.3(C).

1 and unworkable.

2 **Q. What is Dominion's justification for such an egregiously high minimum bill?**

3 A. Dominion asserts that if Shared Solar Program customers are not charged such a high
4 minimum bill costs would be shifted to non-participant customers.⁸⁵ This assertion
5 mischaracterizes what a cost shift is and how they work. First, Dominion ignores the fact
6 that subscriber customers will be fully charged for their energy consumption at current
7 rates. The Shared Solar Program does not exempt subscribers from those costs;
8 subscribers earn an offsetting credit by being subscribers.

9 Second, Dominion has about 71 billion kilowatt-hours in annual sales⁸⁶ over
10 which I presume it recovers its fuel costs. At a 19% capacity factor, the 200 MW of
11 shared solar generation provided for in the Shared Solar Program amounts to 262.8
12 gigawatt-hours of generation. Using Dominion's proposed 7.428 cent minimum bill rate,
13 this would mean adding about \$25 million to the fuel factor, which is where the Shared
14 Solar Statute requires bill credit and energy cost differences to be addressed.⁸⁷ Spread
15 over 71 billion units, this amounts to a very minimal increase of about \$0.00035 per
16 kilowatt-hour, or about 35 cents per month for a 1,000 kilowatt-hour per month user.
17 Dominion has not analyzed the value of the injected energy, nor has it shown any
18 incremental distribution, transmission, or generation costs associated with shared solar
19 generation, so these numbers are at the high end of any estimation. Importantly, these bill

⁸⁵ Trexler Direct Test. at 8:17-19.

⁸⁶ Case No. PUR-2021-00058, Virginia Electric and Power Company - For a 2021 triennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia, Public Application Vol. 16 of 17, Witness: PBH, Filing Schedule 42(a), Page 2 of 59 (Mar. 31, 2021).

⁸⁷ Va. Code § 56-594.3(F)(15).

1 credit costs pale in comparison to Dominion's anticipated \$212.4 million per year
 2 revenue *surplus* under current rates, as mentioned above.⁸⁸ Instead of following the
 3 requirements of the Shared Solar Statute, Dominion seeks to make the Shared Solar
 4 Program unworkable by creating an excessive volumetric minimum bill rate set on shared
 5 solar subscription level.

6 **Q. Why do you say that Dominion's approach would result in an unworkable shared**
 7 **solar program?**

8 A. Dominion's proposed minimum bill is simply too high, and directly conflicts with the
 9 statutory directive to establish a workable Shared Solar Program in Virginia.⁸⁹ Customers
 10 participating in the Shared Solar Program should not be required to pay an amount
 11 equivalent to two-thirds of their bill to Dominion as a charge for participating in a clean
 12 energy program.⁹⁰ Dominion's unreasonably high minimum bill would be risky,
 13 confusing, and contrary to the statutory policy to establish a viable Shared Solar Program
 14 to enable customers to directly support and benefit from solar energy development in the
 15 Commonwealth.

16 **Q. What is Dominion's view of the impacts of its proposal on Shared Solar Program**
 17 **workability?**

18 A. Dominion takes the view that workability, or Shared Solar Program "viability" is not the

⁸⁸ Case No. PUR-2021-00058, Virginia Electric and Power Company - For a 2021 triennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia, Pre-filed Testimony of Staff Witness Patrick W. Carr at 8 (Sept. 17, 2021).

⁸⁹ Va. Code § 56-594.3(B) ("The Commission shall establish by regulation a program that affords customers of a Phase II Utility the opportunity to participate in shared solar projects.").

⁹⁰ Based on Dominion's proposed minimum bill for a customer using 1,000 kWh per month and subscribing to 1,000 kWh of shared solar output. *See* Trexler Direct Test. at 21, Table 3.

appropriate benchmark against which to evaluate its proposals,⁹¹ and that it is too early to conclude that its extreme minimum bill would interfere with creating a workable Shared Solar Program.⁹² Dominion takes the view that the Shared Solar Statute requires the minimum bill that it proposes, a position with which I fundamentally disagree.

Q. Has Dominion conducted any research or analysis to support its assertion that the Shared Solar Program would be workable or viable with a minimum bill as it proposes?

A. No. The Company has not conducted any market research, load research, studies, or analysis of any kind of the electricity usage levels, patterns, and costs to provide electric service to customers who are likely to enroll in the Shared Solar Program.⁹³

Q. Why do you say that Dominion's approach is unfair?

A. Dominion's approach establishes no cost-causation relationship between the costs it seeks to collect through the minimum bill and the costs it incurs due to shared solar facility operations. Dominion's entire explanation relating to the costs to serve shared solar customers both before and after subscription to and participation in a Shared Solar Program is contained in its Minimum Bill Proposal filed on March 1, 2021, its Supplemental Information Regarding Minimal Bill Proposal filed on April 1, 2021, and Witness Trexler's Direct Testimony filed on September 21, 2021.⁹⁴ Dominion's approach ignores the role that shared solar customers play as economic sponsors of clean distributed solar generation and instead treats them as if they were wholesale generators.

⁹¹ Dominion, Reply to Comments and Requests for Hearing on Minimum Bill Proposal of Virginia Electric Power Company at 2 (May 21, 2021).

⁹² *Id.* at 4.

⁹³ Exhibit KRR-3 (Dominion Response to CCSA 1-27).

⁹⁴ Exhibit KRR-3 (Dominion Response to CCSA 1-28).

1 Dominion has not performed and does not possess any research, analysis, or other
 2 material on distributed generation that would be installed under the Shared Solar Program
 3 as relates to the Virginia Clean Economy Act, the Renewable Portfolio Standard, or
 4 Virginia's participation in the Regional Greenhouse Gas Initiative,⁹⁵ and has conducted
 5 no evaluation of how the Shared Solar Program would impact its Integrated Resource
 6 Planning process and plans.⁹⁶ Dominion's assertions about cost shifting, which I address
 7 in this testimony, are incorrect and premised on a flawed view of its entitlement to
 8 effectively eliminate savings customers may realize by participating in the Shared Solar
 9 Program. Dominion's approach appears specifically designed to make shared solar
 10 subscription unattractive to potential subscribers and, therefore, renders the Shared Solar
 11 Program unworkable.

12 **Q. What other positions taken by Dominion regarding the minimum bill are**
 13 **problematic?**

14 A. It is frankly alarming that Dominion also takes the position that it will be seeking to
 15 impose an administrative costs charge on shared solar subscribers in the amount of an
 16 additional \$10 to \$20 per customer per month.⁹⁷ Dominion states that it is still reviewing
 17 the process of adding shared solar billing to its current billing system and that it is years
 18 away from implementation.⁹⁸ It is inconceivable that a prudent utility of Dominion's size
 19 would incur incremental fixed costs, independent of subscription size, as large as \$120 to
 20 \$240 per customer per year for shared solar billing. Worse, there is little hope of

⁹⁵ Exhibit KRR-3 (Dominion Response to CCSA 1-31).

⁹⁶ Exhibit KRR-3 (Dominion Response to CCSA 1-32).

⁹⁷ Exhibit KRR-3 (Dominion Response to Staff 1-2).

⁹⁸ *Id.*

1 launching a workable Shared Solar Program with the threat of such charges hanging over
 2 the program. Worse still, Dominion states that it anticipates making a future filing to
 3 include even more administrative charges for costs related to the registration process for
 4 subscriber organizations, metering charges, and ongoing program administration.⁹⁹ Most
 5 egregious is that this program was delayed, by statute, for the purpose of allowing
 6 Dominion to implement its Customer Information Platform, ostensibly to leverage
 7 streamlined and modernized billing capabilities of this system; Dominion has no clear
 8 plan for doing just that.¹⁰⁰ Dominion asserts that adding Shared Solar Program billing
 9 functionality into its massively expensive CIP development project¹⁰¹ will add costs of
 10 about \$1 million,¹⁰² but provides no detailed support for this estimate. In my experience,
 11 excess administrative costs are too often a feature of utility implementation of new
 12 legislatively mandated programs and frustrate the success of those programs. Dominion
 13 seems to be positioning itself at the extreme end of such behavior, so careful scrutiny of
 14 the prudence of its spending will be warranted.

15 **Q. Is Dominion in the process of developing and implementing a new customer billing**
 16 **and information platform?**

⁹⁹ Exhibit KRR-3 (Dominion Response to Staff 1-4).

¹⁰⁰ See Va. Code § 56-594.3(F) (“The Commission shall establish by regulation a shared solar program that complies with the provisions of subsections B, C, D, and E by January 1, 2021, and shall require each utility to file any tariffs, agreements, or forms necessary for implementation of the program within 60 days of the utility’s full implementation of a new customer information platform or by July 1, 2023, whichever occurs first.”); *see also* § 56-594.3(G) (“Within 180 days of finalization of the Commission’s adoption of regulations for the shared solar program, a utility shall, provided that the utility has successfully implemented its customer information platform, begin crediting subscriber accounts of each shared solar facility interconnected in its service territory, subject to the requirements of this section and regulations adopted thereto.”).

¹⁰¹ Exhibit KRR-3 (Dominion’s Response to CCSA 3-4 states that the current estimated cost of the CIP project is \$389 million).

¹⁰² Exhibit KRR-3 (Dominion Response to CCSA 3-5).

A. Yes. And this makes the assertion by Dominion of \$120 to \$240 in annual incremental costs per subscriber for Shared Solar Program billing even more incredulous. The prudent course for Dominion is to incorporate Shared Solar Program billing in the broader customer information platform development to minimize overall costs.

Q. How does Dominion intend to recover these additional costs for billing and administrative functions?

A. Dominion has not yet said, and that is a problem.¹⁰³ If Shared Solar Program developers and customers do not have any way to know what charges face them over the critical first few years of the program, market development will be stifled, likely to the point of failure. Dominion's ability to also apply a "net crediting fee" to subscribers of shared solar projects that utilize net crediting creates an additional layer of economic uncertainty for Shared Solar Program developers.¹⁰⁴

Q. What specific issues do you want to emphasize regarding Dominion's minimum bill proposal?

A. The major problems associated with the Dominion proposal are: (1) Dominion's approach inverts the Shared Solar Statute's requirement to assess the costs of the Shared Solar Program into what is calls an "avoided cost credit" approach that is really just a "credit rate minus energy and capacity credit" approach that mischaracterizes bill credits as costs of the Shared Solar Program to be recovered through the minimum bill; (2) Dominion's failure to provide or offer any assessment of actual costs relating to the siting and operation of shared solar facilities beyond those recovered through one-time and

¹⁰³ Trexler Direct Test. at 18-19.

¹⁰⁴ Va. Code § 56-594.3(F)(14).

1 recurring interconnection costs; and (3) Dominion's failure to recognize or quantify any
2 locational or operational benefits associated with the operation of shared solar generation,
3 including billed revenues from sales of injected energy, transmission cost savings, and
4 distribution system cost savings, all of which will reduce the impact of and may even
5 outweigh the incremental bill credit-related costs addressed through the purchased
6 power/fuel cost recovery mechanism pursuant to Va. Code § 56-249.6.¹⁰⁵

7 **Q. What costs and charges are properly included in the minimum bill?**

8 A. As detailed previously in this testimony, the Shared Solar Statute expressly provides for a
9 minimum bill for shared solar subscribers that collects the costs created by the Shared
10 Solar Program from the program subscribers responsible for creating those costs. The
11 costs eligible for recovery in the minimum bill are therefore properly: (1) the incremental
12 or marginal costs of shared solar facilities or Shared Solar Program operations that are
13 not otherwise recovered (*e.g.*, through interconnection charges); (2) the incremental or
14 marginal costs that are created by an added customer service, administrative, or billing
15 burden undertaken by the utility; (3) the basic customer costs associated with electric
16 service that do not vary with usage and that recover the costs of adding customers to the
17 system; or (4) other utility costs that are both non-volumetric and still reasonably
18 assigned to customers that subscribe to the Shared Solar Program.

19 **Q. What do you mean when you say that Dominion "inverts" the Shared Solar**
20 **Statute's approach to the minimum bill?**

21 A. The Shared Solar Statute builds up the minimum bill from zero, consistent with how
22 minimum bills are typically designed. However, Dominion's approach assumes that it is

¹⁰⁵ Va. Code § 56-594.3(F)(15).

entitled to collect every dollar it would have collected from a shared solar subscriber *except for* a small credit for avoided energy and capacity costs—what it calls the “avoided cost credit” approach. Dominion appears to be trying to alter the clear language of the Shared Solar Statute by replacing the separate bill credit and minimum bill mechanisms with a totally different mechanism of its own creation.

Q. What is your opinion of Dominion’s assertion that a minimum bill that charges for everything except energy and some capacity value from shared solar production is necessary to prevent an improper cost shift?

A. I disagree. Dominion’s cost shift arguments are wrong as a matter of fact and law. As I have explained in this testimony, the Shared Solar Statute establishes: (1) the bill credit rate based on the total revenue and volume of sales to each customer class; and (2) a minimum bill to recover the incremental costs of the Shared Solar Program.¹⁰⁶ The Shared Solar Statute assigns the purchased power/fuel costs factor as the mechanism for addressing difference in energy value.¹⁰⁷ Dominion has performed no analysis of the offsetting benefits of shared solar facility operations and generation to justify its assertion that Shared Solar Program operation generates incremental costs equal to nearly two-thirds of a customer’s bill for a 1,000 kWh customer subscriber.

Q. What kinds of benefits is Dominion ignoring with its “avoided costs credit” approach?

A. Fundamentally, shared solar subscribers are supporting the construction and operation of clean, distributed solar generation. As such, they supplement and offset costs that the

¹⁰⁶ Va. Code § 56-594.3(C)-(D).

¹⁰⁷ Va. Code § 56-594.3(F)(15).

1 general body of customers would otherwise have to pay to support Virginia's clean
2 energy transition. Shared solar subscribers are frontline volunteers, mitigating costs that
3 Dominion would otherwise incur to develop solar to meet the requirements of the
4 Virginia Clean Economy Act and the Renewable Portfolio Standard and which Dominion
5 has not accounted for. Shared solar facilities can also be optimally sited to provide
6 locational benefits to a grid that must support many gigawatts of new variable resources,
7 something else Dominion has not accounted for in its proposal. Even in the near term,
8 shared solar generation can be injected into the grid at or near distribution load, providing
9 transmission and distribution system savings that Dominion has not accounted for. As
10 part of a shared solar development effort, non-exempt customers help make clean
11 distributed energy and the benefits of bill credits available to low-income customers,
12 helping them to manage their electric bills better and addressing the energy justice goals
13 of the VCEA, while likely providing the direct benefit of reducing bad debt for the utility
14 by making customer bills more manageable. Dominion has not accounted for these
15 benefits either. Exported energy from shared solar facilities does not physically travel to
16 the homes of shared solar subscribers. That energy will serve the nearest unserved load
17 and will pass through a revenue meter when it does so. That service will generate full
18 retail billings by Dominion, but without incurring the total system costs that drive
19 Dominion's cost of service.

20 **Q. What steps should Dominion take to better understand the contributions that**
21 **shared solar generation can make to the grid and to achieving Virginia's clean**
22 **energy policy goals?**

23 **A.** As CCSA and CHESSA said in comments in this proceeding, Dominion can contribute to

1 identifying and minimizing any net costs of the program borne by non-participants by
 2 such measures as: (1) a full benefit-cost analysis; (2) more transparent and forward-
 3 looking integrated resource planning; (3) including distribution resource planning; and
 4 (4) more effective delivery of energy efficiency and demand response programs for
 5 shared solar customers.¹⁰⁸

6 **Q. Do you have any other concerns regarding Dominion's minimum bill proposal?**

7 A. Yes. Dominion's proposal to charge low-income customers a minimum bill for non-
 8 bypassable charges should be rejected.¹⁰⁹ First, non-bypassable charges should not be
 9 included in the minimum bill because they are not incremental program costs. Second,
 10 low-income customers are exempt from the minimum bill, which Dominion
 11 acknowledges.¹¹⁰ Accordingly, Dominion's proposal to impose a shared solar minimum
 12 bill on low-income customers directly conflicts with the Shared Solar Statute and must be
 13 rejected.

14 **VII. SUMMARY OF RECOMMENDATIONS**

15 **Q. Please summarize your recommendations to the Commission.**

16 A. I recommend that the Commission:

- 17 • Adopt CCSA's shared solar bill credit rate calculation methodology based on publicly
 18 reported EIA gross revenue data;
- 19 • Reject Dominion's new proposal to use FERC Form 1 data to calculate the shared
 20 solar bill credit rate;

¹⁰⁸ See Comments of CCSA and CHESSA at 10 (Apr. 30, 2021).

¹⁰⁹ Trexler Direct Test. at 21:7-12.

¹¹⁰ Trexler Direct Test. at 6:1-6 ("By law, the minimum bill may be modified over time and low-income customers are exempt from paying it.")

- 1 • Adopt CCSA's minimum bill proposal, which is based on the incremental
2 administrative costs of the Shared Solar Program charged in addition to the applicable
3 Basic Customer Charge; and
- 4 • Reject Dominion's proposal for an excessive, volumetric minimum bill that would
5 render the Shared Solar Program non-viable.
- 6 **Q. Does this conclude your testimony?**
- 7 **A. Yes.**

Case No. PUR-2020-00125

Exhibit KRR-1

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Nationally recognized leader and innovator in electricity and energy law, policy, and regulation. Experienced as a regulatory expert, utility executive, research and development manager, sustainability leader, senior government official, educator, and advocate. Successful track record of working with U.S. Congress, state legislatures, governors, regulators, city councils, business leaders, researchers, academia, and community groups. Nationally recognized speaker on energy, environment, and sustainable development matters. Managed staff as large as 250; responsible for operations of research facilities with staff in excess of 600. Developed and managed budgets in excess of \$300 million. Law teaching experience at Pace University Elisabeth Haub School of Law, University of Houston Law Center, and U.S. Military Academy at West Point. Military veteran.

Employment**RÁBAGO ENERGY LLC**

Principal: July 2012—Present. Consulting practice dedicated to providing business sustainability, expert witness, and regulatory advice and services to organizations in the clean and advanced energy sectors. Prepared and submitted testimony in more than 30 states and 100 electricity and gas regulatory proceedings. Recognized national leader in development and implementation of award-winning “Value of Solar” alternative to traditional net metering. Additional information at www.rabagoenergy.com.

- Chairman of the Board, Center for Resource Solutions (1997-present). CRS is a not-for-profit organization based at the Presidio in California. CRS developed and manages the Green-e Renewable Electricity Brand, a nationally and internationally recognized branding program for green power and green pricing products and programs. Past chair of the Green-e Governance Board.
- Director, Solar United Neighbors (2018-present).

PACE ENERGY AND CLIMATE CENTER, PACE UNIVERSITY ELISABETH HAUB SCHOOL OF LAW

Senior Policy Advisor: September 2019—September 2020. Part-time advisor and staff member. Provide expert witness, project management, and business development support on electric and gas regulatory and policy issues and activities.

Executive Director: May 2014—August 2019. Leader of a team of professional and technical experts and law students in energy and climate law, policy, and regulation. Secured funding for and managed execution of regulatory intervention, research, market development support, and advisory services. Taught Energy Law. Provided learning and development opportunities for law students. Additional activities:

- Former Director, Alliance for Clean Energy – New York (2018-2019).
- Former Director, Interstate Renewable Energy Council (IREC) (2012-2018).
- Former Co-Director and Principal Investigator, Northeast Solar Energy Market Coalition (2015-2017). The NESEMC was a US Department of Energy’s SunShot Initiative Solar Market Pathways project. Funded under a cooperative agreement between the US DOE and Pace University, the NESEMC worked to harmonize solar market policy and advance supportive policy and regulatory practices in the northeast United States.

Karl R. Rábago**AUSTIN ENERGY – THE CITY OF AUSTIN, TEXAS**

Vice President, Distributed Energy Services: April 2009—June 2012. Executive in 8th largest public power electric utility serving more than one million people in central Texas. Responsible for management and oversight of energy efficiency, demand response, and conservation programs; low-income weatherization; distributed solar and other renewable energy technologies; green buildings program; key accounts relationships; electric vehicle infrastructure; and market research and product development. Executive sponsor of Austin Energy's participation in an innovative federally-funded smart grid demonstration project led by the Pecan Street Project. Led teams that successfully secured over \$39 million in federal stimulus funds for energy efficiency, smart grid, and advanced electric transportation initiatives. Additional activities included:

- Director, Renewable Energy Markets Association. REMA is a trade association dedicated to maintaining and strengthening renewable energy markets in the United States.
- Membership on Pedernales Electric Cooperative Member Advisory Board. Invited by the Board of Directors to sit on first-ever board to provide formal input and guidance on energy efficiency and renewable energy issues for the nation's largest electric cooperative.

THE AES CORPORATION

Director, Government & Regulatory Affairs: June 2006—December 2008. Director, Global Regulatory Affairs, provided regulatory support and group management to AES's international electric utility operations on five continents. Managing Director, Standards and Practices, for Greenhouse Gas Services, LLC, a GE and AES venture committed to generating and marketing greenhouse gas credits to the U.S. voluntary market. Government and regulatory affairs manager for AES Wind Generation. Managed a portfolio of regulatory and legislative initiatives to support wind energy market development in Texas, across the United States, and in many international markets.

JICARILLA APACHE NATION UTILITY AUTHORITY

Director: 1998—2008. Located in New Mexico, the JANUA was an independent utility developing profitable and autonomous utility services that provide natural gas, water utility services, low income housing, and energy planning for the Nation. Authored "First Steps" renewable energy and energy efficiency strategic plan with support from U.S. Department of Energy.

HOUSTON ADVANCED RESEARCH CENTER

Group Director, Energy and Buildings Solutions: December 2003—May 2006. Leader of energy and building science staff at a mission-driven not-for-profit contract research organization based in The Woodlands, Texas. Responsible for developing, maintaining and expanding upon technology development, application, and commercialization support programmatic activities, including the Center for Fuel Cell Research and Applications; the Gulf Coast Combined Heat and Power Application Center; and the High-Performance Green Buildings Practice. Secured funding for major new initiative in carbon nanotechnology applications in the energy sector.

- President, Texas Renewable Energy Industries Association. As elected president of the statewide business association, led and managed successful efforts to secure and implement significant expansion of the state's renewable portfolio standard as well as other policy, regulatory, and market development activities.
- Director, Southwest Biofuels Initiative. Established the Initiative as an umbrella structure for a number of biofuels related projects.

Karl R. Rábago

- Member, Committee to Study the Environmental Impacts of Windpower, National Academies of Science National Research Council. The Committee was chartered by Congress and the Council on Environmental Quality to assess the impacts of wind power on the environment.
- Advisory Board Member, Environmental & Energy Law & Policy Journal, University of Houston Law Center.

CARGILL DOW LLC (NOW NATUREWORKS, LLC)

Sustainability Alliances Leader: April 2002—December 2003. Integrated sustainability principles into all aspects of a ground-breaking bio-based polymer manufacturing venture. Responsible for maintaining, enhancing and building relationships with stakeholders in the worldwide sustainability community, as well as managing corporate and external sustainability initiatives.

- Successfully completed Minnesota Management Institute at University of Minnesota Carlson School of Management, an alternative to an executive MBA program that surveyed fundamentals and new developments in finance, accounting, operations management, strategic planning, and human resource management.

ROCKY MOUNTAIN INSTITUTE

Managing Director/Principal: October 1999—April 2002. Co-authored "Small Is Profitable," a comprehensive analysis of the benefits of distributed energy resources. Provided consulting and advisory services to help business and government clients achieve sustainability through application and incorporation of Natural Capitalism principles.

- President of the Board, Texas Ratepayers Organization to Save Energy. Texas R.O.S.E. is a non-profit organization advocating low-income consumer issues and energy efficiency programs.
- Co-Founder and Chair of the Advisory Board, Renewable Energy Policy Project-Center for Renewable Energy and Sustainable Technology. REPP-CREST was a national non-profit research and internet services organization.

CH2M HILL

Vice President, Energy, Environment and Systems Group: July 1998—August 1999. Responsible for providing consulting services to a wide range of energy-related businesses and organizations, and for creating new business opportunities in the energy industry for an established engineering and consulting firm. Completed comprehensive electric utility restructuring studies for the states of Colorado and Alaska.

PLANERGY

Vice President, New Energy Markets: January 1998—July 1998. Responsible for developing and managing new business opportunities for the energy services market. Provided consulting and advisory services to utility and energy service companies.

ENVIRONMENTAL DEFENSE FUND

Energy Program Manager: March 1996—January 1998. Managed renewable energy, energy efficiency, and electric utility restructuring programs. Led regulatory intervention activities in Texas and California. In Texas, played a key role in crafting Deliberative Polling processes. Participated in national environmental and energy advocacy networks, including the Energy Advocates Network, the National Wind Coordinating Committee, the NCSL Advisory Committee on Energy, and the PV-COMPACT Coordinating Council. Frequently appeared before the Texas Legislature, Austin City Council, and regulatory commissions on electric restructuring issues.

Karl R. Rábago

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UNITED STATES DEPARTMENT OF ENERGY

Deputy Assistant Secretary, Utility Technologies: January 1995–March 1996. Manager of the Department's programs in renewable energy technologies and systems, electric energy systems, energy efficiency, and integrated resource planning. Supervised technology research, development and deployment activities in photovoltaics, wind energy, geothermal energy, solar thermal energy, biomass energy, high-temperature superconductivity, transmission and distribution, hydrogen, and electric and magnetic fields. Managed, coordinated, and developed international agreements. Supervised development and deployment support activities at national laboratories. Developed, advocated, and managed a Congressional budget appropriation of approximately \$300 million.

STATE OF TEXAS

Commissioner, Public Utility Commission of Texas. May 1992–December 1994. Appointed by Governor Ann W. Richards. Regulated electric and telephone utilities in Texas. Co-chair and organizer of the Texas Sustainable Energy Development Council. Vice-Chair of the National Association of Regulatory Utility Commissioners (NARUC) Committee on Energy Conservation. Member and co-creator of the Photovoltaic Collaborative Market Project to Accelerate Commercial Technology (PV-COMPACT).

LAW TEACHING

Professor for a Designated Service: Pace University Elisabeth Haub School of Law, 2014-2019. Non-tenured member of faculty. Taught Energy Law. Supervised a student intern practice.

Associate Professor of Law: University of Houston Law Center, 1990–1992. Full time, tenure track member of faculty. Courses taught: Criminal Law, Environmental Law, Criminal Procedure, Environmental Crimes Seminar, Wildlife Protection Law.

Assistant Professor: United States Military Academy, West Point, New York, 1988–1990. Member of the faculty in the Department of Law. Honorably discharged in August 1990, as Major in the Regular Army. Courses taught: Constitutional Law, Military Law, and Environmental Law Seminar.

LITIGATION

Trial Defense Attorney and Prosecutor, U.S. Army Judge Advocate General's Corps, Fort Polk, Louisiana, January 1985–July 1987. Assigned to Trial Defense Service and Office of the Staff Judge Advocate.

NON-LEGAL MILITARY SERVICE

Armored Cavalry Officer, 2d Squadron 9th Armored Cavalry, Fort Stewart, Georgia, May 1978–August 1981. Served as Logistics Staff Officer (S-4). Managed budget, supplies, fuel, ammunition, and other support for an Armored Cavalry Squadron. Served as Support Platoon Leader for the Squadron (logistical support), and as line Platoon Leader in an Armored Cavalry Troop. Graduate of Airborne and Ranger Schools. Special training in Air Mobilization Planning and Nuclear, Biological and Chemical Warfare.

Karl R. Rábago**Formal Education**

LL.M., Environmental Law, Pace University School of Law, 1990: Curriculum designed to provide breadth and depth in study of theoretical and practical aspects of environmental law. Courses included: International and Comparative Environmental Law, Conservation Law, Land Use Law, Seminar in Electric Utility Regulation, Scientific and Technical Issues Affecting Environmental Law, Environmental Regulation of Real Estate, Hazardous Wastes Law. Individual research with Hudson Riverkeeper Fund, Garrison, New York.

LL.M., Military Law, U.S. Army Judge Advocate General's School, 1988: Curriculum designed to prepare Judge Advocates for senior level staff service. Courses included: Administrative Law, Defensive Federal Litigation, Government Information Practices, Advanced Federal Litigation, Federal Tort Claims Act Seminar, Legal Writing and Communications, Comparative International Law.

J.D. with Honors, University of Texas School of Law, 1984: Attended law school under the U.S. Army Funded Legal Education Program, a fully funded scholarship awarded to 25 or fewer officers each year. Served as Editor-in-Chief (1983-84); Articles Editor (1982-83); Member (1982) of the Review of Litigation. Moot Court, Mock Trial, Board of Advocates. Summer internship at Staff Judge Advocate's offices. Prosecuted first cases prior to entering law school.

B.B.A., Business Management, Texas A&M University, 1977: ROTC Scholarship (3-yr). Member: Corps of Cadets, Parson's Mounted Cavalry, Wings & Sabers Scholarship Society, Rudder's Rangers, Town Hall Society, Freshman Honor Society, Alpha Phi Omega service fraternity.

Karl R. Rábago

Selected Publications

“Distributed Generation Law,” contributing author, American Bar Association Environment, Energy, and Resources Section (August 2020)

“National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources,” contributing author, National Energy Screening Project (August 2020)

“Achieving 100% Renewables: Supply-Shaping through Curtailment,” with Richard Perez, Marc Perez, and Morgan Putnam, PV Tech Power, Vol. 19 (May 2019).

“A Radical Idea to Get a High-Renewable Electric Grid: Build Way More Solar and Wind than Needed,” with Richard Perez, The Conversation, online at <http://bit.ly/2YjnM15> (May 29, 2019).

“Reversing Energy System Inequity: Urgency and Opportunity During the Clean Energy Transition,” with John Howat, John Colgan, Wendy Gerlitz, and Melanie Santiago-Mosier, National Consumer Law Center, online at www.nclc.org (Feb. 26, 2019).

“Revisiting Bonbright’s Principles of Public Utility Rates in a DER World,” with Radina Valova, The Electricity Journal, Vol. 31, Issue 8, pp. 9-13 (Oct. 2018).

“Achieving very high PV penetration – The need for an effective electricity remuneration framework and a central role for grid operators,” Richard Perez (corresponding author), Energy Policy, Vol. 96, pp. 27-35 (2016).

“The Net Metering Riddle,” Electricity Policy.com, April 2016.

“The Clean Power Plan,” Power Engineering Magazine (invited editorial), Vol. 119, Issue 12 (Dec. 2, 2015)

“The ‘Sharing Utility:’ Enabling & Rewarding Utility Performance, Service & Value in a Distributed Energy Age,” co-author, 51st State Initiative, Solar Electric Power Association (Feb. 27, 2015)

“Rethinking the Grid: Encouraging Distributed Generation,” Building Energy Magazine, Vol. 33, No. 1 Northeast Sustainable Energy Association (Spring 2015)

“The Value of Solar Tariff: Net Metering 2.0,” The ICER Chronicle, Ed. 1, p. 46 [International Confederation of Energy Regulators] (December 2013)

“A Regulator’s Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation,” co-author, Interstate Renewable Energy Council (October 2013)

“The ‘Value of Solar’ Rate: Designing an Improved Residential Solar Tariff,” Solar Industry, Vol. 6, No. 1 (Feb. 2013)

“Jicarilla Apache Nation Utility Authority Strategic Plan for Energy Efficiency and Renewable Energy Development,” lead author & project manager, U.S. Department of Energy First Steps Toward Developing Renewable Energy and Energy Efficiency on Tribal Lands Program (2008)

“A Review of Barriers to Biofuels Market Development in the United States,” 2 Environmental & Energy Law & Policy Journal 179 (2008)

“A Strategy for Developing Stationary Biodiesel Generation,” Cumberland Law Review, Vol. 36, p.461 (2006)

“Evaluating Fuel Cell Performance through Industry Collaboration,” co-author, Fuel Cell Magazine (2005)

“Applications of Life Cycle Assessment to NatureWorks™ Polylactide (PLA) Production,” co-author, Polymer Degradation and Stability 80, 403-19 (2003)

Karl R. Rábago

"An Energy Resource Investment Strategy for the City of San Francisco: Scenario Analysis of Alternative Electric Resource Options," contributing author, Prepared for the San Francisco Public Utilities Commission, Rocky Mountain Institute (2002)

"Small Is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size," co-author, Rocky Mountain Institute (2002)

"Socio-Economic and Legal Issues Related to an Evaluation of the Regulatory Structure of the Retail Electric Industry in the State of Colorado," with Thomas E. Feiler, Colorado Public Utilities Commission and Colorado Electricity Advisory Panel (April 1, 1999)

"Study of Electric Utility Restructuring in Alaska," with Thomas E. Feiler, Legislative Joint Committee on electric Restructuring and the Alaska Public Utilities Commission (April 1, 1999)

"New Markets and New Opportunities: Competition in the Electric Industry Opens the Way for Renewables and Empowers Customers," EEBA Excellence (Journal of the Energy Efficient Building Association) (Summer 1998)

"Building a Better Future: Why Public Support for Renewable Energy Makes Sense," Spectrum: The Journal of State Government (Spring 1998)

"The Green-e Program: An Opportunity for Customers," with Ryan Wiser and Jan Hamrin, Electricity Journal, Vol. 11, No. 1 (January/February 1998)

"Being Virtual: Beyond Restructuring and How We Get There," Proceedings of the First Symposium on the Virtual Utility, Kluwer Press (1997)

"Information Technology," Public Utilities Fortnightly (March 15, 1996)

"Better Decisions with Better Information: The Promise of GIS," with James P. Spiers, Public Utilities Fortnightly (November 1, 1993)

"The Regulatory Environment for Utility Energy Efficiency Programs," Proceedings of the Meeting on the Efficient Use of Electric Energy, Inter-American Development Bank (May 1993)

"An Alternative Framework for Low-Income Electric Ratepayer Services," with Danielle Jaussaud and Stephen Benenson, Proceedings of the Fourth National Conference on Integrated Resource Planning, National Association of Regulatory Utility Commissioners (September 1992)

"What Comes Out Must Go In: The Federal Non-Regulation of Cooling Water Intakes Under Section 316 of the Clean Water Act," Harvard Environmental Law Review, Vol. 16, p. 429 (1992)

"Least Cost Electricity for Texas," State Bar of Texas Environmental Law Journal, Vol. 22, p. 93 (1992)

"Environmental Costs of Electricity," Pace University School of Law, Contributor-Impingement and Entrainment Impacts, Oceana Publications, Inc. (1990)

211010102

Case No. PUR-2020-00125

Exhibit KRR-2

EXHIBIT KRR-2

Testimony Submitted by Karl R. Rábago
(as of 27 Sep 2021)

211010102

Date	Proceeding	Case/Docket #	On Behalf Of:
Dec. 21, 2012	VA Electric & Power Special Solar Power Tariff	Virginia State Corporation Commission Case # PUE-2012-00064	Southern Environmental Law Center
May 10, 2013	Georgia Power Company 2013 IRP	Georgia Public Service Commission Docket # 36498	Georgia Solar Energy Industries Association
Jun. 23, 2013	Louisiana Public Service Commission Re-examination of Net Metering Rules	Louisiana Public Service Commission Docket # R-31417	Gulf States Solar Energy Industries Association
Aug. 29, 2013	DTE (Detroit Edison) 2013 Renewable Energy Plan Review (Michigan)	Michigan Public Utilities Commission Case # U-17302	Environmental Law and Policy Center
Sep. 5, 2013	CE (Consumers Energy) 2013 Renewable Energy Plan Review (Michigan)	Michigan Public Utilities Commission Case # U-17301	Environmental Law and Policy Center
Sep. 27, 2013	North Carolina Utilities Commission 2012 Avoided Cost Case	North Carolina Utilities Commission Docket # E-100, Sub. 136	North Carolina Sustainable Energy Association
Oct. 18, 2013	Georgia Power Company 2013 Rate Case	Georgia Public Service Commission Docket # 36989	Georgia Solar Energy Industries Association
Nov. 4, 2013	PEPCO Rate Case (District of Columbia)	District of Columbia Public Service Commission Formal Case # 1103	Grid 2.0 Working Group & Sierra Club of Washington, D.C.
Apr. 24, 2014	Dominion Virginia Electric Power 2013 IRP	Virginia State Corporation Commission Case # PUE-2013-00088	Environmental Respondents
Apr. 25, 2014	North Carolina Utilities Commission 2014 Avoided Cost Case - Direct	North Carolina Utilities Commission Docket # E-100, Sub. 140	Southern Alliance for Clean Energy
May 7, 2014	Arizona Corporation Commission Investigation on the Value and Cost of Distributed Generation	Arizona Corporation Commission Docket # E-00000J-14-0023	Rábago Energy LLC (invited presentation and workshop participation)
Jun. 2, 2014	North Carolina Utilities Commission 2014 Avoided Cost Case – Response (Corrected)	North Carolina Utilities Commission Docket # E-100, Sub. 140	Southern Alliance for Clean Energy
Jun. 20, 2014	North Carolina Utilities Commission 2014 Avoided Cost Case – Rebuttal	North Carolina Utilities Commission Docket # E-100, Sub. 140	Southern Alliance for Clean Energy

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Jul. 23, 2014	Florida Energy Efficiency and Conservation Act, Goal Setting – FPL, Duke, TECO, Gulf	Florida Public Service Commission Docket # 130199-EI, 130200-EI, 130201-EI, 130202-EI	Southern Alliance for Clean Energy
Sep. 19, 2014	Ameren Missouri's Application for Authorization to Suspend Payment of Solar Rebates	Missouri Public Service Commission File No. ET-2014-0350, Tariff # YE-2014-0494	Missouri Solar Energy Industries Association
Aug. 6, 2014	Appalachian Power Company 2014 Biennial Rate Review	Virginia State Corporation Commission Case # PUE-2014-00026	Southern Environmental Law Center (Environmental Respondents)
Aug. 13, 2014	Wisconsin Public Service Corp. 2014 Rate Application	Wisconsin Public Service Commission Docket # 6690-UR-123	RENEW Wisconsin and Environmental Law & Policy Center
Aug. 28, 2014	WE Energies 2014 Rate Application	Wisconsin Public Service Commission Docket # 05-UR-107	RENEW Wisconsin and Environmental Law & Policy Center
Sep. 18, 2014	Madison Gas & Electric Company 2014 Rate Application	Wisconsin Public Service Commission Docket # 3720-UR-120	RENEW Wisconsin and Environmental Law & Policy Center
Sep. 29, 2014	SOLAR, LLC v. Missouri Public Service Commission	Missouri District Court Case # 14AC-CC00316	SOLAR, LLC
Jan. 28, 2016 (date of CPUC order)	Order Instituting Rulemaking to Develop a Successor to Existing Net Energy Metering Tariffs, etc.	California Public Utilities Commission Rulemaking 14-07-002	The Utility Reform Network (TURN)
Mar. 20, 2015	Orange and Rockland Utilities 2015 Rate Application	New York Public Service Commission Case # 14-E-0493	Pace Energy and Climate Center
May 22, 2015	DTE Electric Company Rate Application	Michigan Public Service Commission Case # U-17767	Michigan Environmental Council, NRDC, Sierra Club, and ELPC
Jul. 20, 2015	Hawaiian Electric Company and NextEra Application for Change of Control	Hawai'i Public Utilities Commission Docket # 2015-0022	Hawai'i Department of Business, Economic Development, and Tourism
Sep. 2, 2015	Wisc. PSCo Rate Application	Wisconsin Public Service Commission Case # 6690-UR-124	ELPC
Sep. 15, 2015	Dominion Virginia Electric Power 2015 IRP	Virginia State Corporation Commission Case # PUE-2015-00035	Environmental Respondents
Sep. 16, 2015	NYSEG & RGE Rate Cases	New York Public Service Commission Cases 15-E-0283, -0285	Pace Energy and Climate Center

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Oct. 14, 2015	Florida Power & Light Application for CCPN for Lake Okeechobee Plant	Florida Public Service Commission Case 150196-EI	Environmental Confederation of Southwest Florida
Oct. 27, 2015	Appalachian Power Company 2015 IRP	Virginia State Corporation Commission Case # PUE-2015-00036	Environmental Respondents
Nov. 23, 2015	Narragansett Electric Power/National Grid Rate Design Application	Rhode Island Public Utilities Commission Docket No. 4568	Wind Energy Development, LLC
Dec. 8, 2015	State of West Virginia, et al., v. U.S. EPA, et al.	U.S. Court of Appeals for the District of Columbia Circuit Case No. 15-1363 and Consolidated Cases	Declaration in Support of Environmental and Public Health Intervenor in Support of Movant Respondent-Intervenors' Responses in Opposition to Motions for Stay
Dec. 28, 2015	Ohio Power/AEP Affiliate PPA Application	Public Utilities Commission of Ohio Case No. 14-1693-EL-RDR	Environmental Law and Policy Center
Jan. 19, 2016	Ohio Edison Company, Cleveland Electric Illuminating Company, and Toledo Edison Company Application for Electric Security Plan (FirstEnergy Affiliate PPA)	Public Utilities Commission of Ohio Case No. 14-1297-EL-SSO	Environmental Law and Policy Center
Jan. 22, 2016	Northern Indiana Public Service Company (NIPSCO) Rate Case	Indiana Utility Regulatory Commission Cause No. 44688	Citizens Action Coalition and Environmental Law and Policy Center
Mar. 18, 2016	Northern Indiana Public Service Company (NIPSCO) Rate Case – Settlement Testimony	Indiana Utility Regulatory Commission Cause No. 44688	Joint Intervenor – Citizens Action Coalition and Environmental Law and Policy Center
Mar. 18, 2016	Comments on Pilot Rate Proposals by MidAmerican and Alliant	Iowa Utility Board NOI-2014-0001	Environmental Law and Policy Center
May 27, 2016	Consolidated Edison of New York Rate Case	New York Public Service Commission Case No. 16-E-0060	Pace Energy and Climate Center
Jun. 21, 2016	Federal Trade Commission: Workshop on Competition and Consumer Protection Issues in Solar Energy - Invited workshop presentation	Federal Trade Commission - Solar Electricity Project No. P161200	Pace Energy and Climate Center
Aug. 17, 2016	Dominion Virginia Electric Power 2016 IRP	Virginia State Corporation Commission Case # PUE-2016-00049	Environmental Respondents

Testimony Submitted by Karl R. Rábago
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Aug. 17, 2016	Dominion Virginia Electric Power 2016 IRP	Virginia State Corporation Commission Case # PUE-2016-00049	Environmental Respondents
Sep. 13, 2016	Appalachian Power Company 2016 IRP	Virginia State Corporation Commission Case # PUE-2016-00050	Environmental Respondents
Oct. 27, 2016	Consumers Energy PURPA Compliance Filing	Michigan Public Service Commission Case No. U-18090	Environmental Law & Policy Center, "Joint Intervenors"
Oct. 28, 2016	Delmarva, PEPCO (PHI) Utility Transformation Filing – Review of Filing & Utilities of the Future Whitepaper	Maryland Public Service Commission Case PC 44	Public Interest Advocates
Dec. 1, 2016	DTE Electric Company PURPA Compliance Filing	Michigan Public Service Commission Case No. U-18091	Environmental Law & Policy Center, "Joint Intervenors"
Dec. 16, 2016	Development of New Alternative Net Metering Tariffs - Rebuttal of Unutil Testimony	New Hampshire Public Utilities Commission Docket No. DE 16-576	New Hampshire Sustainable Energy Association ("NHSEA")
Jan. 13, 2017	Gulf Power Company Rate Case	Florida Public Service Commission Docket No. 160186-EI	Earthjustice, Southern Alliance for Clean Energy, League of Women Voters-Florida
Jan. 13, 2017	Alpena Power Company PURPA Compliance Filing	Michigan Public Service Commission Case No. U-18089	Environmental Law & Policy Center, "Joint Intervenors"
Jan. 13, 2017	Indiana Michigan Power Company PURPA Compliance Filing	Michigan Public Service Commission Case No. U-18092	Environmental Law & Policy Center, "Joint Intervenors"
Jan. 13, 2017	Northern States Power Company PURPA Compliance Filing	Michigan Public Service Commission Case No. U-18093	Environmental Law & Policy Center, "Joint Intervenors"
Jan. 13, 2017	Upper Peninsula Power Company PURPA Compliance Filing	Michigan Public Service Commission Case No. U-18094	Environmental Law & Policy Center, "Joint Intervenors"
Mar. 10, 2017	Eversource Energy Grid Modernization Plan	Massachusetts Department of Public Utilities Case No. 15-122/15-123	Cape Light Compact
Apr. 27, 2017	Eversource Rate Case & Grid Modernization Investments	Massachusetts Department of Public Utilities Case No. 17-05	Cape Light Compact
May 2, 2017	AEP Ohio Power Electric Security Plan	Public Utilities Commission of Ohio Case No. 16-1852-EL-SSO	Environmental Law & Policy Center

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Jun. 2, 2017	Vectren Energy TDSIC Plan	Indiana Utility Regulatory Commission Cause No. 44910	Citizens Action Coalition & Valley Watch
Jul. 26, 2017	Vectren Energy 2018-2020 Energy Efficiency Plan	Indiana Utility Regulatory Commission Cause No. 44927	Citizens Action Coalition
Jul. 28, 2017	Vectren Energy 2016-2017 Energy Efficiency Plan	Indiana Utility Regulatory Commission Cause No. 44645	Citizens Action Coalition
Aug. 1, 2017	Interstate Power & Light (Alliant) 2017 Rate Application	Iowa Utilities Board Docket No. RPU-2017-0001	Environmental Law & Policy Center, Iowa Environmental Council, Natural Resources Defense Council, and Solar Energy Industries Assoc.
Aug. 11, 2017	Dominion Virginia Electric Power 2017 IRP	Virginia State Corporation Commission Case # PUR-2017-00051	Environmental Respondents
Aug. 18, 2017	Appalachian Power Company 2017 IRP	Virginia State Corporation Commission Case # PUR-2017-00045	Environmental Respondents
Aug. 23, 2017	Pennsylvania Solar Future Project	Pennsylvania Dept. of Environmental Protection - Alternative Ratemaking Webinar	Pace Energy and Climate Center
Aug. 25, 2017	Niagara Mohawk Power Co. d/b/a National Grid Rate Case	New York Public Service Commission Case # 17-E-0238, 17-G-0239	Pace Energy and Climate Center
Sep. 15, 2017	Niagara Mohawk Power Co. d/b/a National Grid Rate Case	New York Public Service Commission Case # 17-E-0238, 17-G-0239	Pace Energy and Climate Center
Oct. 20, 2017	Missouri PSC Working Case to Explore Emerging Issues in Utility Regulation	Missouri Public Service Commission File No. EW-2017-0245	Renew Missouri
Nov. 21, 2017	Central Hudson Gas & Electric Co. Electric and Gas Rates Cases	New York Public Service Commission Case # 17-E-0459, -0460	Pace Energy and Climate Center
Jan. 16, 2018	Great Plains Energy, Inc. Merger with Westar Energy, Inc.	Missouri Public Service Commission Case # EM-2018-0012	Renew Missouri Advocates
Jan. 19, 2018	U.S. House of Representatives, Energy and Commerce Committee	Hearing on "The PURPA Modernization Act of 2017," H.R. 4476	Rábago Energy LLC

Testimony Submitted by Karl R. Rábago
(as of 27 Sep 2021)

Jan. 29, 2018	Joint Petition of Electric Distribution Companies for Approval of a Model SMART Tariff	Massachusetts Department of Public Utilities Case No. 17-140	Boston Community Capital Solar Energy Advantage Inc. (Jointly authored with Sheryl Musgrove)
Feb. 21, 2018	Joint Petition of Electric Distribution Companies for Approval of a Model SMART Tariff	Massachusetts Department of Public Utilities Case No. 17-140 - Surrebuttal	Boston Community Capital Solar Energy Advantage Inc. (Jointly authored with Sheryl Musgrove)
Apr. 6, 2018	Narragansett Electric Co., d/b/a National Grid Rate Case Filing	Rhode Island Public Utilities Commission Docket No. 4770	New Energy Rhode Island ("NERI")
Apr. 25, 2018	Narragansett Electric Co., d/b/a National Grid Power Sector Transformation Plan	Rhode Island Public Utilities Commission Docket No. 4780	New Energy Rhode Island ("NERI")
Apr. 26, 2018	U.S. EPA Proposed Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 82 Fed. Reg. 48,035 (Oct. 16, 2017) – "Clean Power Plan"	U.S. Environmental Protection Agency Docket No. EPA-HQ-OAR-2016-0592	Karl R. Rábago
May 25, 2018	Orange & Rockland Utilities, Inc. Rate Case Filing	New York Public Service Commission Case Nos. 18-E-0067, 18-G-0068	Pace Energy and Climate Center
Jun. 15, 2018	Orange & Rockland Utilities, Inc. Rate Case Filing	New York Public Service Commission Case Nos. 18-E-0067, 18-G-0068 – Rebuttal Testimony	Pace Energy and Climate Center
Aug. 10, 2018	Dominion Virginia Electric Power 2018 IRP	Virginia State Corporation Commission Case # PUR-2018-00065	Environmental Respondents
Sep. 20, 2018	Consumers Energy Company Rate Case	Michigan Public Service Commission Case No. U-20134	Environmental Law & Policy Center
Sep. 27, 2018	Potomac Electric Power Co. Notice to Construct Two 230 kV Underground Circuits	District of Columbia Public Service Commission Formal Case No. 1144	Solar United Neighbors of D.C.
Sep. 28, 2019	Arkansas Public Service Commission Investigation of Policies Related to Distributed Energy Resources	Arkansas Public Service Commission Docket No. 16-028-U	Arkansas Audubon Society & Arkansas Advanced Energy Association
Nov. 7, 2018	DTE Detroit Edison Rate Case	Michigan Public Service Commission Case No. U-20162	Natural Resources Defense Council, Michigan Environmental Council, Sierra Club

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(as of 27 Sep 2021)

Mar. 26, 2019	Guam Power Authority Petition to Modify Net Metering	Guam Public Utilities Commission Docket GPA 19-04	Micronesia Renewable Energy, Inc.
Apr. 4, 2019	Community Power Network & League of Women Voters of Florida v. JEA	Circuit Court Duval County of Florida Case No. 2018-CA-002497 Div: CV-D	Earthjustice
Apr. 16, 2019	Dominion Virginia Electric Power 2018 IRP – Compliance Filing	Virginia State Corporation Commission Case # PUR-2018-00065	Environmental Respondents
Apr. 25, 2019	Georgia Power 2019 IRP	Georgia Public Service Commission Docket No. 42310	GSEA & GSEIA
May 10, 2019	NV Energy NV GreenEnergy 2.0 Rider	Nevada Public Utilities Commission Docket Nos. 18-11015, 18-11016	Vote Solar
May 24, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Misc. Issues	New York Public Service Commission Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
May 24, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Low- and Moderate-Income Panel	New York Public Service Commission Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
May 30, 2019	Connecticut DEEP Shared Clean Energy Facility Program Proposal	Connecticut Department of Energy and Environmental Protection Docket No. 19-07-01	Connecticut Fund for the Environment
Jun. 3, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana
Jun. 14, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Rebuttal Testimony	New York Public Service Commission Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
Jun. 24, 2019	Program to Encourage Clean Energy in Westchester County Pursuant to Public Service law Section 74-a; Staff Investigation into a Moratorium on New Natural Gas Services in the Consolidated Edison Company of New York, Inc. Service Territory	New York Public Service Commission Case Nos. 19-M-0265, 19-G-0080	Earthjustice and Pace Energy and Climate Center
Jul. 12, 2019	Application of Virginia Electric and Power Company for the Determination of the Fair Rate of Return on Common Equity	Virginia State Corporation Commission Case # PUR-2019-00050	Virginia Poverty Law Center

Testimony Submitted by Karl R. Rábago
(as of 27 Sep 2021)

Jul. 15, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards – Reply Comments	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana
Aug. 1, 2019	Interstate Power and Light Company – General Rate Case	Iowa Utilities Board Docket No. RPU-2019-0001	Environmental Law & Policy Center and Iowa Environmental Council
Aug. 19, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Surrebuttal	New York Public Service Commission Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
Aug. 21, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources - Comments	Connecticut Department of Energy and Environmental Protection/Public Utility Regulatory Authority Docket No. 19-06-29	Connecticut Fund for the Environment and Save Our Sound
Sep. 10, 2019	Interstate Power and Light Company – General Rate Case - Rebuttal	Iowa Utilities Board Docket No. RPU-2019-0001	Environmental Law & Policy Center and Iowa Environmental Council
Sep. 18, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Comments and Response to Draft Study Outline	Connecticut Department of Energy and Environmental Protection/Public Utility Regulatory Authority Docket No. 19-06-29	Connecticut Fund for the Environment, Save Our Sound, E4theFuture, NE Clean Energy Council, NE Energy Efficiency Partnership, and Acadia Center
Sep. 20, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Participation in Technical Workshop 1	Connecticut Department of Energy and Environmental Protection/Public Utility Regulatory Authority Docket No. 19-06-29 http://www.ctn.state.ct.us/ctnplayer.asp?odID=16715	Connecticut Fund for the Environment and Save Our Sound
Oct. 4, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Participation in Technical Workshop 2	Connecticut Department of Energy and Environmental Protection/Public Utility Regulatory Authority Docket No. 19-06-29 http://www.ctn.state.ct.us/ctnplayer.asp?odID=16766	Connecticut Fund for the Environment and Save Our Sound
Oct. 15, 2019	Electronic Consideration of the Implementation of the Net Metering Act (KY SB 100)	Kentucky Public Service Commission Case No. 2019-00256	Kentuckians for the Commonwealth & Mountain Association for Community Economic Development

Testimony Submitted by Karl R. Rábago
(as of 27 Sep 2021)

Oct. 15, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards – Comments on City Council Utility Advisors' Report	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana, Vote Solar, 350 New Orleans, Alliance for Clean Energy, PosiGen, and Sierra Club
Oct. 17, 2019	Indiana Michigan Power Co. General Rate Case	Michigan Public Service Company Case No. U-20359	Environmental Law & Policy Center, The Ecology Center, the Solar Energy Industries Association, and Vote Solar
Dec. 4, 2019	Alabama Power Company Petition for Certificate of Convenience and Necessity	Alabama Public Service Commission Docket No. 32953	Energy Alabama and Gasp, Inc.
Dec. 5, 2019	In the Matter of Net Metering and the Implementation of Act 827 of 2015	Arkansas Public Service Commission Docket No. 16-027-R	National Audubon Society and Arkansas Advanced Energy Association
Dec. 6, 2019	Proposed Revisions to Vermont Public Utility Commission Rule 5.100	Vermont Public Utility Commission Case No. 19-0855-RULE	Renewable Energy Vermont ("REV")
Jan. 15, 2020	General Rate Case	Washington Utilities and Transportation Commission Docket Nos. UE-190529 & UG-190530	Puget Sound Energy
Feb. 11, 2020	Application of Entergy Arkansas, LLC for a Proposed Tariff Amendment: Solar Energy Purchase Option – Direct Testimony	Arkansas Public Service Commission Docket No. 19-042-TF	Arkansas Advanced Energy Association
Mar. 17, 2020	Application of Entergy Arkansas, LLC for a Proposed Tariff Amendment: Solar Energy Purchase Option – Surrebuttal Testimony	Arkansas Public Service Commission Docket No. 19-042-TF	Arkansas Advanced Energy Association
Jun. 16, 2020	PECO Energy Default Supply Plan V – Direct Testimony	Pennsylvania Public Utility Commission Docket No. P-2020-3019290	Environmental Respondents / Earthjustice
Jun. 24, 2020	Consumers Energy Company General Rate Case – Direct Testimony	Michigan Public Service Commission Case No. U-20697	Joint Clean Energy Organizations / Environmental Law & Policy Center
Jul. 14, 2020	Consumers Energy Company General Rate Case – Rebuttal Testimony	Michigan Public Service Commission Case No. U-20697	Joint Clean Energy Organizations / Environmental Law & Policy Center
Jul. 23, 2020	PECO Energy Default Supply Plan V – Surrebuttal Testimony	Pennsylvania Public Utility Commission Docket No. P-2020-3019290	Environmental Stakeholders / Earthjustice

Testimony Submitted by Karl R. Rábago
(as of 27 Sep 2021)

Sep. 15, 2020	Dominion Virginia Electric Power 2020 IRP – Direct Testimony	Virginia State Corporation Commission Case # PUR-2020-00035	Environmental Respondents
Sep. 18, 2020	Avoided Cost Proceeding for Georgia Power – Direct Testimony	Georgia Public Service Commission Docket No. 4822	Georgia Solar Energy Industries Association, Inc.
Sep. 29, 2020	Madison Gas and Electric – General Rate Case – Affidavit in Opposition to Electric Rates Settlement	Wisconsin Public Service Commission Docket No. 3270-UR-123	Sierra Club
Sep. 30, 2020	Madison Gas and Electric – General Rate Case – Gas Rates	Wisconsin Public Service Commission Docket No. 3270-UR-123	Sierra Club
Oct. 2, 2020	Duke Energy Florida Petition for Approval of Clean Energy Connect Program	Florida Public Service Commission Docket No. 20200176-EI	League of United Latin American Citizens of Florida
Sep. 30, 2020	Madison Gas and Electric – General Rate Case – Gas Rates	Wisconsin Public Service Commission Docket No. 3270-UR-123	Sierra Club
Oct. 2, 2020	Duke Energy Florida Petition for Approval of Clean Energy Connect Program	Florida Public Service Commission Docket No. 20200176-EI	League of United Latin American Citizens of Florida
Oct. 2, 2020	Ameren Illinois – Investigation re: Calculation of Distributed Generation Rebates	Illinois Commerce Commission Docket No. 20-0389	Joint Solar Parties
Dec. 9, 2020	Arkansas – In the Matter of a Rulemaking to Adopt an Evaluation, Measurement, and Verification Protocol and Propose M&V Amendments to the Commission’s Rules for Conservation and Energy Efficiency Programs; In the Matter of the Continuation, Expansion, and Enhancement of Public Utility Energy Efficiency Programs in Arkansas	Arkansas Public Service Commission Docket Nos. 10-100-R, 13-002-U	Arkansas Advanced Energy Association
Dec. 22, 2020	Appalachian Power Company 2020 Virginia Clean Economy Act Compliance Plan	Virginia State Corporation Commission Case No. PUR-2020-00135	Environmental Respondent
Jan. 4, 2021	Dominion Virginia Electric Power Company Clean Economy Compliance Plan	Virginia State Corporation Commission Case No. PUR-2020-00134	Environmental Respondent
Feb. 5, 2021	Ameren Illinois – Investigation re: Calculation of Distributed Generation Rebates - Rebuttal	Illinois Commerce Commission Docket No. 20-0389	Joint Solar Parties

Testimony Submitted by Karl R. Rábago
(as of 27 Sep 2021)

Feb. 15, 2021	Kentucky Power Company General Rate Case	Kentucky Public Service Commission Case No. 2020-00174	Joint Intervenors – Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society
Mar. 2, 2021	Dominion Virginia Electric Power Company Rider RGGI Proposal	Virginia State Corporation Commission Case No. PUR-2020-00169	Environmental Respondent
Mar. 5, 2021	Kentucky Utilities Company and Louisville Gas and Electric Company General Rate Cases	Kentucky Public Service Commission Case Nos. 2020-00349, 2020-00350	Joint Intervenors – Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society
Apr. 5, 2021	Docket to Review the Efficacy and Fairness of the Net Metering and Interconnection Rules – Comments	Mississippi Public Service Commission Docket No. 2021-AD-19	Entegrity Energy Partners, LLC & Audubon Delta / National Audubon Society
Apr. 13, 2021	Petition of Guam Power Authority for Creation of a New Energy Storage Rate – Comments of Micronesia Renewable Energy, Inc.	Guam Public Utilities Commission Docket No. 20-09	Micronesia Renewable Energy, Inc.
May 25, 2021	Petition of Episcopal Diocese of Rhode Island for Declaratory Judgment on Transmission System Costs and Related “Affected System Operator” Studies	Rhode Island Public Utility Commission Docket No. 4981	Episcopal Diocese of Rhode Island
Jun. 21, 2021	Petition for Rate Increase by Florida Power & Light Company – Direct Testimony	Florida Public Service Commission Docket No. 20210015-EI	Florida Rising, Inc., League of United Latin American Citizens of Florida, and Environmental Confederation of Southwest Florida, Inc.
Jun. 22, 2021	Application of Consumers Energy Company for Authority to Increase Its Rates for the Generation and Distribution of Electricity and Other Relief	Michigan Public Service Commission Case No. U-20963	The Environmental Law and Policy Center (EPLC)
Jun. 28, 2021	Pennsylvania Public Utility Commission v. PECO Energy Company (GRC)	Pennsylvania Utility Commission Docket No. R-2021-3024601	Clean Energy Advocates
Jul. 12, 2021	Application of Consumers Energy Company for Authority to Increase Its Rates for the Generation and Distribution of Electricity and Other Relief – Rebuttal	Michigan Public Service Commission Case No. U-20963	The Environmental Law and Policy Center (EPLC)
Jul. 28, 2021	Application of Shenandoah Valley Electric Cooperative for a General Increase in Rates	Virginia State Corporation Commission Case No. PUR-2021-00054	Solar United Neighbors of Virginia (SUN-VA)

EXHIBIT KRR-2

Testimony Submitted by Karl R. Rábago
(as of 27 Sep 2021)

Aug. 5, 2021	Kentucky Utilities Company and Louisville Gas and Electric Company General Rate Cases – Supp. Proceeding on Net Energy Metering	Kentucky Public Service Commission Case Nos. 2020-00349, 2020-00350	Joint Intervenors – Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society
Sep. 2, 2021	Madison Gas & Electric Co. – General Rate Case	Wisconsin Public Service Commission Docket No. 3270-UR-124	Sierra Club
Sep. 3, 2021	Dominion Virginia Electric Power Company – Triennial Rate Review – Direct Testimony on ROE	Virginia State Corporation Commission Case No. PUR-2020-00169	
Sep. 13, 2021	Petition for Rate Increase by Florida Power & Light Company – Settlement Testimony	Florida Public Service Commission Docket No. 20210015-EI	Florida Rising, Inc., League of United Latin American Citizens of Florida, and Environmental Confederation of Southwest Florida, Inc.
Sep. 20, 2021	Madison Gas & Electric Co. – General Rate Case – Surrebuttal Testimony	Wisconsin Public Service Commission Docket No. 3270-UR-124	Sierra Club
Sep. 27, 2021	Dakota Energy Cooperative, Inc. v. East River Electric Power Cooperative, Inc. and Basin Electric Power Cooperative – Expert Report	US. District Court, District of South Dakota (Southern Division) Case 4:20-CV-04192-LLP	Dakota Energy Cooperative, Inc.

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Case No. PUR-2020-00125

Exhibit KRR-3

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Virginia Electric and Power Company
Case No. PUR-2021-00125
Virginia State Corporation Commission Staff
Staff First Set

The following response to Question No. 2 of the First Set of Interrogatories and Requests for Production of Documents propounded by the Staff of the State Corporation Commission received on August 26, 2021 has been prepared under my supervision.

Robert J. Trexler
Director - Regulation
Virginia Electric and Power Company

Question No. 2

Please provide an estimate of expected administrative costs for administering the Shared Solar Program. If the Company is unable to provide a specific estimate, provide an estimate of the expected magnitude (cents, dollars, tens of dollars) of the administrative costs for administering the Shared Solar Program.

Response:

See the Company's March 1, 2021 filing of the Minimum Bill Proposal, specifically Section III.C. Although the Company is still reviewing the process in which it could best accommodate the Shared Solar program within its billing functions, including the forthcoming customer information platform, the Company has estimated and proposed a cost of billing the similar Multi-Family Shared Solar program.

The Company anticipates an administrative charge to the Subscribers of the Shared Solar program for billing and credit tracking. Since the Shared Solar program is a couple of years away from implementation, it may be premature to set a specific administrative cost to the Subscribers at this time, but the Company does anticipate that could be in the \$10 to \$20 per month range. This monthly rate would be independent of subscription size.

Additionally, the Company anticipates an administrative charge to the Subscriber Organizations of the Shared Solar program. For more information on this, please see the Company's response to Staff Set 1-4.

Virginia Electric and Power Company
Case No. PUR-2021-00125
Virginia State Corporation Commission Staff
Staff First Set

The following response to Question No. 4 of the First Set of Interrogatories and Requests for Production of Documents propounded by the Staff of the State Corporation Commission received on August 26, 2021 has been prepared under my supervision.

Robert J. Trexler
Director - Regulation
Virginia Electric and Power Company

Question No. 4

Please refer to the Company's Supplemental Information Regarding Minimum Bill Proposals filing, dated April 1, 2021, at page 7. Provide a narrative description and quantification, or estimate thereof, of the administrative charges expected to be charged to Subscriber Organizations described therein. Please also include a description and explanation of what cost(s) these charges would be intended to recover.

Response:

The Company anticipates a future filing of a Subscriber Organization tariff that would include administrative charges to cover costs related to the registration process as a Subscriber Organization, metering charges (covering installation, maintenance and reading of meters) and ongoing program administration. The ongoing program administration charges are to cover costs attributed to the Subscriber Organizations such as monthly reporting and tracking of the accumulated bill credits not allocated to Subscribers in a given month, as required in the statute.

Virginia Electric and Power Company
Case No. PUR-2020-00125
Coalition for Community Solar Access
First Set

The following response to Question No. 27 of the First Set of Interrogatories and Requests for Production of Documents Propounded by the Coalition for Community Solar Access received on August 11, 2021 has been prepared under my supervision.

Nathan Frost
Director – New Technology & Energy Conservation
Dominion Energy Virginia

Question No. 27

Please explain whether the Company has conducted any market research, load research, studies, or analysis of any kind of the electricity usage levels, patterns, and costs to provide electric service to customers who are likely to enroll in a shared solar program. Please provide copies of all documents related to such research and analysis.

Response:

The Company has not conducted any research or analysis referenced in question 27.

Virginia Electric and Power Company
Case No. PUR-2020-00125
Coalition for Community Solar Access
First Set

The following response to Question No. 28 of the First Set of Interrogatories and Requests for Production of Documents propounded by the Coalition for Community Solar Access received on August 11, 2021 has been prepared under my supervision.

Robert J. Trexler
Director - Regulation
Virginia Electric and Power Company

Question No. 28

Please provide a detailed explanation, including citations to existing studies, analysis, and research of all assumptions relied upon by the Company relating to the costs to serve shared solar customers both before and after subscription to and participation in a shared solar program.

Response:

See the Company's Minimum Bill Proposal filed on March 1, 2021 and the Company's Supplemental Information Regarding Minimal Bill Proposal filed on April 1, 2021.

Virginia Electric and Power Company
Case No. PUR-2021-00170
Coalition for Community Solar Access
First Set

The following response to Question No. 31 of the First Set of Interrogatories and Requests for Production of Documents Propounded by the Coalition for Community Solar Access received on August 11, 2021 has been prepared under my supervision.

Shane Compton
Manager – Integrated Strategic Planning
Dominion Energy Services, Inc.

Question No. 31

Please provide copies of all research, analysis, reports, or other materials in the possession of or created by the Company addressing the extent to which distributed generation installed under the shared solar company would impact the costs of achieving the requirements and objectives of the Virginia Clean Economy Act and the Renewable Portfolio Standard, as well as the costs of participation in the Regional Greenhouse Gas Initiative.

Response:

The Company has not performed and does not possess any research, analysis, or other material on distributed generation installed under the shared solar program as it relates to the VCEA, RPS or RGGI.

Virginia Electric and Power Company
Case No. PUR-2021-00170
Coalition for Community Solar Access
First Set

The following response to Question No. 32 of the First Set of Interrogatories and Requests for Production of Documents Propounded by the Coalition for Community Solar Access received on August 11, 2021 has been prepared under my supervision.

Shane Compton
Manager – Integrated Strategic Planning
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 32 of the First Set of Interrogatories and Requests for Production of Documents propounded by the Coalition for Community Solar Access received on August 11, 2021 has been prepared under my supervision.

Jontille D. Ray
McGuireWoods LLP

Question No. 32

Please provide a detailed explanation of how the impacts of the shared solar program will impact the Company's Integrated Resource Planning process and plans.

Response:

The Company objects to this interrogatory as it would require substantial original work for the Company to respond.

Virginia Electric and Power Company
Case No. PUR-2020-00125
Coalition for Community Solar Access
Third Set

The following response to Question No. 1 of the Third Set of Interrogatories and Requests for Production of Documents by the Coalition for Community Solar Access received on September 24, 2021 has been prepared under my supervision.

Kristin Gaberdiel
Accounting Supervisor
Dominion Energy Services, Inc.

Question No. 1

Please identify and explain any differences between the Company's data reported on the Company's FERC Form 1 and the Company's data reported in U.S. Energy Information Agency's Electric Sales, Revenue, and Average Price data (Tables T6, T7, T8). In addition to any generally applicable differences between the data reported, please identify and explain any specific differences in the data for Calendar Year 2019.

Response:

Please refer to Attachment CCSA Set 3-1 (KG) for the identification and explanation of differences between the FERC Form 1 and the EIA Tables. Please also note that the EIA information in Attachment CCSA Set 3-1 (KG) is presented excluding taxes.

EXHIBIT KRR-3

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Attachment CCSA Set 03-1 (KG)

EIA-T6 Residential Sector (excluding taxes)				
State	Customers	Sales	Revenues	Average Price
VA	2,245,174	29,829,089	3,476,995.7	\$ 11.66
NC	103,458	1,609,927	180,265.2	\$ 11.20
Total	2,348,632	31,439,016	3,657,260.9	\$ 11.63

EIA-T7 Commercial Sector (excluding taxes)				
State	Customers	Sales	Revenues	Average Price
VA	260,232	44,681,860	3,428,904.8	\$ 7.67
NC	18,268	960,497	89,936.7	\$ 9.36
Total	278,500	45,642,357	3,518,841.4	\$ 7.71

EIA-T8 Industrial Sector (excluding taxes)				
State	Customers	Sales	Revenues	Average Price
VA	581	5,962,659	371,848.3	\$ 6.24
NC	50	1,710,271	101,145.7	\$ 5.91
Total	631	7,672,930	472,994.0	\$ 6.16

EIA Totals (excluding taxes)				
State	Customers	Sales	Revenues	Average Price
VA	2,505,987	80,473,608	7,277,748.7	\$ 9.04
NC	121,776	4,280,695	371,347.6	\$ 8.67
Total	2,627,763	84,754,303	7,649,096.3	\$ 9.03

Reconciling Items - Residential			
State	Customers	Sales	Revenues
VA			
NC			
Total	-		

Reconciling Items - Commercial			
State	Customers	Sales	Revenues
VA	19	189,794	(16,996.0)
NC			
Total	19	189,794	(16,996.0)

Reconciling Items - Industrial			
State	Customers	Sales	Revenues
VA	7		2,311.0
NC			
Total	7	-	2,311.0

Total Reconciling Items			
State	Customers	Sales	Revenues
VA	26	189,794	(14,685.0)
NC	-	-	-
Total	26	189,794	(14,685.0)

FERC Form 1 - Residential				
State	Customers	Sales	Revenues	Average Price
VA	2,245,174	29,829,089	3,476,995.7	\$ 11.66
NC	103,458	1,609,927	180,265.2	\$ 11.20
Total	2,348,632	31,439,016	3,657,260.9	\$ 11.63

FERC Form 1 - Commercial				
State	Customers	Sales	Revenues	Average Price
VA	260,251	44,871,654	3,411,908.8	\$ 7.60
NC	18,268	960,497	89,936.7	\$ 9.36
Total	278,519	45,832,151	3,501,845.5	\$ 7.64

FERC Form 1 - Industrial				
State	Customers	Sales	Revenues	Average Price
VA	588	5,962,659	374,159.2	\$ 6.28
NC	50	1,710,271	101,145.7	\$ 5.91
Total	638	7,672,930	475,304.9	\$ 6.19

FERC Form 1 Totals				
State	Customers	Sales	Revenues	Average Price
VA	2,506,013	80,663,402	7,263,063.7	\$ 9.00
NC	121,776	4,280,695	371,347.6	\$ 8.67
Total	2,627,789	84,944,097	7,634,411.3	\$ 8.99

Virginia Electric and Power Company
Case No. PUR-2020-00125
Coalition for Community Solar Access
Third Set

The following response to Question No. 4 of the Third Set of Interrogatories and Requests for Production of Documents by the Coalition for Community Solar Access received on September 24, 2021 has been prepared under my supervision.

Heather Jennings
Director, Customer Information Platform
Dominion Energy Virginia

Question No. 4

What are the Company's projected costs to implement the Customer Information Platform?

Response:

The CIP scope and cost estimates are outlined in Case No. PUR-2021-00127. The 10-year total cost provided in Schedule 1 of my pre-filed Direct Testimony in that docket includes \$232 million capital and \$157 million O&M. These costs represent scope and costs that have been agreed to with vendors to date. This does not include the scope or costs discussed below in the response to Question No. 5.

Virginia Electric and Power Company
Case No. PUR-2020-00125
Coalition for Community Solar Access
Third Set

The following response to Question No. 5 of the Third Set of Interrogatories and Requests for Production of Documents by the Coalition for Community Solar Access received on September 24, 2021 has been prepared under my supervision.

Heather Jennings
Director, Customer Information Platform
Dominion Energy Virginia

Question No. 5

What are the Company's projected Customer Information Platform implementation costs associated with the shared solar program?

Response:

Currently the Company estimates that the cost to address the billing components specific to the Shared Solar Program with the Customer Information Platform is approximately \$1 million. This estimate does not include elements that are pending design decisions. As an example, the requirements have not been finalized for the development and execution of data transfer protocols, nor have requirements been finalized regarding identification of low-income customers.

CERTIFICATE OF SERVICE

I certify that a true copy of the foregoing was e-mailed, this 5th day of October, 2021, to each person listed below:

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