Commonwealth of Virginia
STATE CORPORATION COMMISSION

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November 30, 2022

The Honorable Richard L. Saslaw
Majority Leader, Senate of Virginia
Chairman, Committee on Commerce and Labor
Pocahontas Building
900 East Main Street
Richmond, VA 23219

The Honorable Kathy J. Byron
Member, Virginia House of Delegates
Chairman, Committee on Commerce and Energy
Pocahontas Building
900 East Main Street
Richmond, VA 23219

Dear Senator Saslaw and Delegate Byron:

Pursuant to Chapter 591 of the 2022 Virginia Acts of Assembly ("Chapter 591"), please find enclosed the Shared Solar Stakeholder Workgroup Report of the Staff of the State Corporation Commission ("Staff"). As directed by the legislation, the Staff, through a third-party facilitator, convened a stakeholder workgroup to evaluate shared solar programs for Phase I Utilities and those subject to the exemption in subsection G of § 56-580 of the Code of Virginia.

The Staff wishes to acknowledge and express appreciation for the participation of the Department of Environmental Quality, the Department of Energy, and all the stakeholders who assisted in this public process as directed by Chapter 591.

Please let me know if the Commission may be of further assistance.

Respectfully submitted,

David N. Essah

David N. Essah, Ph.D.

Enclosure

Chapter 591 Shared Solar Workgroup Report to General Assembly

Prepared for:

Virginia State Corporation Commission

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Executive Summary

During its 2022 General Session, the Virginia General Assembly enrolled, and the Governor signed Chapter 591 of the 2022 Virginia Acts of Assembly, directing the State Corporation Commission (SCC) to convene a stakeholder workgroup to evaluate shared solar programs for Appalachian Power Company (APCo) and Kentucky Utilities Company d/b/a Old Dominion Power Company (ODP). For this task, the SCC hired Sustainable Energy Advantage (SEA) to facilitate the stakeholder workgroup and prepare this report. SEA conducted four day-long stakeholder meetings, which in total consisted of seven different sessions. At each session, SEA solicited comment on various aspects of a potential shared solar program from 22 separate stakeholder organizations that included APCo and ODP, state agencies required by the enabling legislation, solar development interests, environmental advocates, and consumer advocates. The list of stakeholders that participated in the workgroup can be found in Table 1 of the body of this report. The topics covered by the seven sessions are listed below:

1. Discussion/Stakeholder Ranking of Overall Goals for the Process;
2. Potential Program Scale and Applicability;
3. Program Eligibility, Enrollment, and Mechanics;
4. Marketing and Customer Enrollment;
5. Bill Crediting Mechanics & Metering;
6. Bill Crediting and Project Compensation; and
7. Consumer Protection and Program Administration

In each session, SEA first presented on the regulations governing the existing Dominion Shared Solar program, to create a common understanding of a potential Virginia-specific shared solar program model for APCo and ODP. SEA then presented potential alternative program models from various shared solar offerings in other jurisdictions for stakeholders to comment on. Stakeholders were then offered the opportunity to ask clarifying questions on the presentation content prior to providing formal feedback. Opportunities were also provided for stakeholders to offer and discuss any program alternatives not contemplated by SEA in its review of shared solar potential alternatives. The process was not designed specifically to build consensus around a specific program design, but instead was intended to determine the areas upon which consensus exists on many of the technical and conceptual elements of shared solar programs. The formal feedback from the stakeholder groups (which have been anonymized to ensure maximum candor) is extensive in nature, and is therefore not herein summarized. Instead, that feedback, and the associated levels of consensus, can be found in the section of this report titled "Review of Stakeholder Discussion Sessions and Stakeholder Comments Regarding Potential Shared Solar Program Elements."

Overall, there was a general agreement that any program for APCo and ODP must minimize costs, institute strong consumer protections, and leverage existing funding (including funding and/or tax credits available from the Inflation Reduction Act of 2022). There was also consensus that APCo and ODP's customer bases differ significantly from Dominion's, further enhancing the need for consumer protections, and that there should be further investigation of some mechanism to incentivize shared solar project siting on previously disturbed parcels of land. Most stakeholders were open to discussing a shared solar program further in settings beyond the confines of the stakeholder group process, since significant differences of opinion still remained regarding key structural aspects of a potential shared solar program.

The participating stakeholders also identified other issues for further consideration and/or next steps, including, but not limited to:

- Consideration of ways to incentivize siting shared solar on disturbed parcels of land;
- How to measure the potential value of distributed energy resources in APCo and ODP service territories (though this was not explicitly endorsed by APCo or ODP);
- Stakeholder coordination on how to best leverage funding from the Inflation Reduction Act of 2022;
- Establishing a working group on how to develop an approach to "net crediting" that may apply to programs in APCo and ODP service territories;
- Ensuring that the costs and benefits of any programs established within APCo or ODP service territories (and the degree to which consumers are protected within such programs) are evaluated several years after deployment, were such programs to be established by law.

Introduction

During 2022 General Session, the General Assembly enrolled and the Governor signed Chapter 591 of the 2022 Virginia Acts of Assembly [S 660] on April 11, 2022 (Chapter 591). As enacted, this legislation directed the Virginia State Corporation Commission (SCC) to convene a stakeholder workgroup to evaluate shared solar programs for Appalachian Power Company (APCo) and Kentucky Utilities Company d/b/a Old Dominion Power Company (ODP). Chapter 591 directed the SCC to submit a written report (Report) of the workgroup's analysis to the Chairs of the House Committee on Commerce and Energy and Senate Committee on Commerce and Labor no later than November 30, 2022.

The SCC selected Sustainable Energy Advantage (SEA) to facilitate the stakeholder workgroup and prepare this report. SEA assembled stakeholders for a workgroup pursuant to Chapter 591's instructions and held four meetings with the stakeholders to solicit their perspective on policy design options for a shared solar program for APCo and ODP. Throughout this report, references to the "Utilities" refers to APCo and ODP, and not Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion).

Dominion, Virginia's largest investor-owned utility, already has a shared solar program approved by the SCC.[1] SEA utilized the SCC's rules governing that program (Dominion Rules) as a basis for evaluating a potential program for shared solar projects in APCo and ODP territories in conjunction with inputs from the stakeholder group.

The Chapter 591 directed stakeholder process was not focused on formulating consensus between the stakeholders, but rather on providing a forum for stakeholders to discuss a potential shared solar program and provide their positions on policy design options. The purpose of this Report is to summarize and organize various stakeholder positions regarding a potential program in APCo and ODP territories. All viewpoints and recommendations reflect the input of stakeholders, rather than those of the SCC or SEA.

[1] Dominion's shared solar program was created following the enactment of Chapter 1238 of the 2020 Virginia Acts of Assembly and the SCC's Order Adopting Rules in Case No. PUR-2020-00125, which adopted the rules governing Dominion's program.

Overview of Stakeholder Working Group Process

In facilitating the workgroup SEA and SCC staff invited a range of stakeholders to participate. Chapter 591 guided the selection of invited stakeholders, with the goal of soliciting input from a broad range of perspectives.

The stakeholders listed below were invited and participated in at least one meeting:

Table 1: List of Stakeholder Organizations Participating in At Least One Meeting

Stakeholder	Stakeholder Group Categorization
The Coalition for Community Solar Access	Solar Interest
Dimension Energy	Solar Interest
Nexamp	Solar Interest
Secure Futures	Solar Interest
Arcadia	Solar Interest
Solar United Neighbors	Solar Interest
Summit Ridge Energy	Solar Interest
OYA Solar	Solar Interest
Cypress Creek Renewables	Solar Interest
Apex Clean Energy	Solar Interest
Norfolk QOZ Solar Fund	Solar Interest
Pivot Energy	Solar Interest
Clean Virginia	Environmental Advocate
National Consumer Law Center	Consumer Advocate
Virginia Poverty Law Center	Consumer Advocate
Southern Environmental Law Center	Environmental Advocate
Appalachian Power Company (AEP)	Utility
Old Dominion Power (Louisville Gas & Electric / Kentucky Utilities)	Utility
Virginia Department of Energy	Governmental Entity

Stakeholder	Stakeholder Group Categorization
Virginia Department of Environmental Quality	Governmental Entity
Virginia Department of Agriculture and Consumer Services	Governmental Entity
The City of Blacksburg	Governmental Entity

Additional stakeholders were invited to each meeting and received materials but chose not to participate in the workgroup.

Over the course of four meetings, stakeholders commented on discrete aspects of shared solar programs, broken into subject-specific discussion "sessions" in order to focus feedback on individual facets of shared solar programs.

In each session, SEA first presented on the regulations governing the existing Dominion Shared Solar program to create a common understanding of a potential Virginia-specific shared solar model program for APCo and ODP. SEA then presented potential alternative program models from various shared solar offerings in other jurisdictions for stakeholders to comment on. Stakeholders were then offered the opportunity to ask clarifying questions on the presentation content. At the end of each session SEA asked every stakeholder in attendance for specific comments on and preferences related to the session topics. These comment periods often included a back-and-forth discussion among stakeholders. Additionally, the beginning of each meeting included time dedicated for any stakeholder to comment on or give a presentation pertaining to the subject matters covered in the previous meeting.

Review of Stakeholder Discussion Sessions and Stakeholder Comments Regarding Potential Shared Solar Program Elements

SEA solicited stakeholder input on multiple different potential shared solar programs aspects. SEA collected stakeholder input over seven discussion sessions covering discrete program elements, which took place during four full-day stakeholder meetings. Here, we synthesize the input of each interest group on each session topic.[2] These stakeholders are generally grouped as:

- Solar Interests (entities that develop or operate solar facilities, or related services, and their trade group(s))
- Utilities (APCo and ODP)
- Consumer or Environmental Advocates ("Advocates," non-profit organizations whose mission is focused on consumer standards/protections or environmental policy)
- Virginia Governmental Entities

Session #1: Discussion/Stakeholder Ranking of Overall Goals for the Process

During Session #1, SEA requested that stakeholders rate their priorities for goals and desired outcomes from any potential shared solar program for APCO and ODP. SEA requested that stakeholders choose from the following priorities:

- Support for solar/energy storage industry growth/market development;
- Maximizing of ratepayer benefits and minimizing ratepayer costs;
- Protecting consumers from (intentionally or unintentionally) deceptive or abusive practices;
- Leveraging recently-adopted federal clean energy tax credits/federal spending;
- Enhancing benefits for low-income and/or disadvantaged communities;
- Maximizing benefits (and minimizing impacts) to the transmission and distribution system;
- Maximizing near- and long-term local jobs/economic development;
- Meet Virginia Clean Economy Act targets and Regional Greenhouse Gas Initiative (RGGI) requirements;[3] and
- Encourage solar development on disturbed land/minimizes reliance on green space.

We summarize the Session #1 feedback provided by stakeholders below:

- Solar Interests prioritized support for industry growth as a major component of a shared solar program, as well as providing benefits to low-income and disadvantaged communities.
- Consumer and Environmental Advocates prioritized providing benefits to low-income and disadvantaged communities and reducing greenhouse gases.
- Areas of consensus that emerged among all stakeholders included encouraging solar development on disturbed land and protecting consumers from (intentionally or unintentionally)

[2] Please note that, in order to encourage candor from stakeholders, individual stakeholder positions will not be identified; rather, SEA broadly summarizes groups of stakeholders' feedback provided during the Working Group(s). The exception is the Utilities, who are regulated entities and who spoke at various times about the specifics of their service territories.

[3] During the meeting it was clarified that this encompasses reduction of greenhouse gas emissions more broadly.

deceptive or abusive practices. Solar Interests, while they agreed with encouraging development on disturbed land, did not concur with minimizing the use a green space for shared solar development without defining what qualifies a "green space" or how minimization of its use might be achieved.

- The maximization of ratepayer benefit/minimization of ratepayer cost was the most-often selected priority across all stakeholder groups. However, different stakeholders had different interpretations of this priority. The Utilities interpreted the maximization of ratepayer benefit/minimization of ratepayer costs as ensuring that the costs of any shared solar program are borne by program participants, and that non-participating customers of the Utilities do not pay for benefits that flow to participating utility customers, a phenomenon sometimes referred to as "cross-subsidization" or "cost shifting."
- Most Solar Interests argued that, from their perspective, maximizing the benefits of solar photovoltaic (PV) and minimizing ratepayer costs necessitated a reconsideration of the SCC's minimum bill decision in Case No. PUR-2020-00125 for non-low-income participants of the Dominion program. These parties asserted that customers who do not qualify as low-income are not exempt from the minimum bill and would likely be unable to realize the benefits of the program because the minimum bill would make participation economically unviable. We note that the Solar Interests further argued throughout the working group process that the Utilities had not adequately demonstrated that cost shifting from participants in the shared solar program to non-participants actually occurs when the costs are netted against the benefits of shared solar.
- Consumer and Environmental Advocates and Governmental Entities generally took the position that cost-shifting from participating to non-participating ratepayers should be minimized, but at the same time any program should be viable for a range of customers and provide savings for participants.

Session #2: Potential Program Scale and Applicability

Session #2 covered the following topics:

- Aggregate shared solar program size;
- Shared solar project size; and
- Program metrics and review (e.g., budget-based or megawatt-based).

We summarize the Session #2 feedback provided by stakeholders below:

- All stakeholders agreed that the 200 megawatt (MW) in Alternating Current (AC) size of the Dominion program was ultimately the result of a negotiated agreement in the enabling legislation rather than a technical capacity limit or market capacity limit. However, there was also broad agreement that any shared solar program would need to begin somewhere and that the market caps on project development (due to, for example, interconnection bottlenecks, siting challenges, customer interest) cannot be fully known until a program has been created and the market it facilitates has had time to mature. Stakeholders also generally agreed that the best metric for program size is based upon MW, and that the 5 MW_{AC} per project limit is a reasonable size to allow for some economies of scale without posing the siting and community acceptance issues associated with utility-scale solar. (We note these points relate to how to measure a program's scale and the sizes of individual projects. The discussion of overall program size immediately follows.)

- Several Solar Interest stakeholders stated that any shared solar program for the two utilities in question should be larger than the 200 MW limit of the Dominion program (proportional to the ratio of the Shared Solar Program to total Utility system capacity, not in gross terms). One Solar Interest suggested 4% of sales as a possible benchmark metric for program size that could scale across utilities (i.e. 4% of a given Utility's kWh sales could be the used for shared solar program sizing). They argued that there are larger programs in the utility service territories of several other jurisdictions (such as Xcel's in Minnesota). Solar Interests also argued that interconnection constraints functionally act as a cap on solar development beyond what the electric grid can reasonably sustain, regardless of program size, and pointed to the attrition rate in Maine's Net Energy Billing (NEB) program as an example. Solar Interests also expressed that long-term certainty in the market is an important program component.
- APCo and ODP expressed somewhat divergent views regarding the size of a potential shared solar program in their territories.
    - APCo suggested that a program sized proportionally to Dominion's would be acceptable and that any necessary program changes could be handled in the future if issues arose. APCo later offered that a 10 MW size limit could be a "starting point" for a shared solar program in its territory. APCo further asserted, however, that the utility-scale solar it is developing is more cost-effective than shared solar (although several Solar Interests and Consumer Advocates noted that utility-scale solar does not provide bill credits to specific customers).
    - ODP argued that scalability is a large issue for its jurisdiction (emphasizing the small size of its Virginia service territory and customer base) and expressed concerns that any loss of load (the amount of electric power served by a utility) would result in cost shifting. ODP further argued that aging infrastructure, difficult topography, and the demographics of the service territory further exacerbate scalability challenges. However, ODP did not explicitly oppose a shared solar program.
    - Both Utilities noted that they are winter-peaking systems, and therefore the benefits to the systems from solar power (which peaks in the summer) are less than for the PJM Interconnection as a whole.
- The Consumer and Environmental Advocates generally argued that the consumer demand for shared solar should be the determining factor in the program size, and that any decision should be based upon the most recent data available. Governmental Entities declined to comment on the program size specifically, although one Governmental Entity questioned what the minimum viable program size might be.

Session #3: Program Eligibility, Enrollment and Mechanics

Session #3 focused on the following topics:

- Minimum low-income thresholds for the shared solar program;
- Low-income trigger threshold to unlock additional capacity;
- "Mechanical completion" timelines for solar projects;[4] and

[4] Mechanically complete means fully constructed and prepared to operate, short of project interconnection to the distribution system.

- Financial security/security deposits for subscriber organizations.

We summarize the Session #3 stakeholder feedback below:

Demographics of APCo/ODP Service Territories

- The Utilities repeatedly emphasized the differences between their service territories and Dominion's, particularly their smaller size and lower-income customer base, especially regarding how those characteristics could affect transmission and distribution system cost allocation.
- In response, Solar Interests suggested that a disproportionately low-income customer base does not preclude a successful community solar program, noting that other utility districts with low-income and rural populations have operating community solar programs (Versant in Maine and New York State Electric and Gas Corporation in western New York).

Low-Income Capacity Trigger Threshold

- The low-income trigger threshold refers to the provision in the Dominion Rules 20VAC5-340-40 Subsection M that states that, once 45 MW of capacity is committed to Dominion low-income subscribers, project developers can access an additional 50 MW of shared solar program capacity in excess of the base program capacity of 150 MW.
- Though the Dominion Rules do not explicitly require that each facility have 30% of its subscribers be low-income, the statute requires that low-income residents subscribe to 30% of the total program capacity.[5] The Solar Interests stated that this discrepancy was a drafting oversight in the administrative rules and that there is in fact a 30% low-income requirement for each project. The Solar Interests argued that even if the Rules are ambiguous on this point, in practice, every Dominion project will allocate at least 30% of its capacity to low-income subscribers, including the additional 50 MW available upon certification of 30% low-income participation.
- Solar Interests further argued that due to the Dominion minimum bill - which they characterize as too high to enable participation by non-low-income residential customers - and the fact that low-income subscribers are exempt from that minimum bill requirement, it is plausible that all of the capacity for the Dominion program will be allocated to low-income subscribers.
- Though the Solar Interests and Consumer and Environmental Advocates suggested that they do not object to the development of projects in which low-income participants are the only participants, they stated their belief that the intent of any APCo/ODP shared solar program should enable participation by a range of different residential customer subscribers.

30% Low-Income Carveout

- APCo argued that given its low-income demographics, a shared solar program should avoid a low/moderate income component because any benefits provided to low-income shared solar customers would shift costs onto other low-income customers who do not participate in a shared solar program.
- The Environmental Advocates and Solar Interests supported the 30% low-income carve-out, although one solar developer questioned why there needs to be a program-wide low-income threshold if each project needs to meet a 30% low-income subscription requirement.

[5] See § 56-594.3. subsection E

- The Consumer Advocates encouraged the group to consider whether the program should be a solely low-income or mixed-market program but did not provide a definitive stance on one option or the other.
- The Governmental Entities, Consumer Advocates and Solar Interests all approvingly referenced the low-income stakeholder reports for Dominion's shared solar program as a robust starting point for any new shared solar program, and encouraged other stakeholders to read those stakeholder reports' recommendations.[6] Among other recommendations, the report recommended that any household living in a census block group where the median household income is below 80% of median statewide income should be considered "low-income" for the purposes of shared solar program eligibility.

Financial Security and Mechanical Completion Deadlines

- The Dominion Rules in 20VAC5-340-40 Subsection H provide that the utility may require "reasonable" financial security from the subscriber organization to protect the utility from the impact of a subscriber organization's nonperformance. The Rules do not specify a calculation for this amount, but instead provide that the amount "shall be commensurate with the level of risk assumed by the utility."
- The Dominion Rules in 20VAC5-340-40 Subsection J further require qualified projects to be "mechanically complete" within 24 months of project qualification/award of capacity, and that projects can receive one 12-month extension by posting an additional security deposit.
- The Solar Interests generally supported the Dominion Rule provisions regarding deadlines for mechanical completion, including the use of a bid deposit to reduce the number of speculative bids. However, Solar Interests suggested that the Dominion Rules are arbitrary and unclear regarding financial security, which runs contrary to the Solar Interests' stated need for certainty regarding the amount of required financial security to be paid for each nameplate kilowatt (kW) of eligible project capacity. The Solar Interests further asserted that certainty is good for the market, and that it is better to be specific when requiring financial security. Finally, the Solar Interests questioned whether there has been any demonstrated risk to the utility from nonperformance.
- The Consumer Advocates agreed with Solar Interests that the utility should not have significant leeway to determine financial security. APCo and ODP did not comment on this topic but expressed a desire to learn from developers about where there may be difficulties in the process.
- One Solar Interest stakeholder raised a concern that the mechanical completion deadline might be difficult for some projects to meet, noting that there may be a lack of infrastructure in some low-income areas, which could make the construction process more time-consuming.
- Another Solar Interest stakeholder noted that they want to make sure that there is a lower barrier for entry for smaller non-profit projects and appreciated that the Dominion Rules include an exemption for non-profits from the security deposit requirement.

Session #4: Marketing and Customer Enrollment

Session #4 focused on:

[6] See the April 22, 2021 report and the September 30, 2021 report for the Dominion shared solar low-income working group filed in the SCC's docket for Case No. PUR-2020-00125.

- The milestones that a subscription organization must meet to enroll customers;
- Measures to enhance enrollment of low-income customers and consolidated billing; and
- Rules regarding the transfer of data between subscriber organizations and the utility.

We summarize the Session #4 stakeholder feedback below.

Timeline for Customer Enrollment

- 20VAC5-340-50 of the Dominion Rules requires that subscriber organizations receive a license from the SCC prior to marketing to customers and must have an executed interconnection agreement prior to enrolling customers.
- The Solar Interests and Governmental Entities expressed support for the Dominion Rules and the steps those Rules require in order for a subscriber organization to receive capacity in the program and enroll customers. However, Solar Interests also noted a caveat that it's possible that APCo and ODP's interconnection process might be different from Dominion's process, and that those differences could reduce the effectiveness of the rules.
- One of the Governmental Entities noted that there is a grey area surrounding the date that a subscriber organization can officially begin contacting customers because a subscriber organization could start a wait list or begin general engagement with potential customers while waiting to onboard the customer until later in the process.
- The Consumer Advocates generally argued that, as a matter of consumer protection, subscribers should not be enrolled until there is reasonable certainty that the project will reach commercial operation and the project will begin generating bill credits to be assigned to subscriber bills. The Consumer Advocates argued that there should be a short window of time between when a contract with the Subscriber Organization is signed and when customers begin to receive bill credits.
- One of the Solar Interests shared that it typically signs-up residential customers within six months prior to project completion. The Utilities did not comment specifically on customer enrollment, although ODP argued that generally the Dominion model of shared solar is not applicable to ODP's service territory.

Data Handling and Transfer

- 20VAC5-340-60 of the Dominion Rules require that subscriber organizations provide monthly subscriber lists and the applicable kilowatt-hour (kWh) for each subscriber to the utility. The utility provides the subscriber organization with a report on the value of bill credits from each facility.
- APCo and ODP were unsure about their technical capabilities to handle data for the shared solar program and what level of information technology would be needed to carry out the program.
- The Solar Interests argued that there are utilities with low information technology capabilities that implement community solar programs, and that the sophistication of the data storage and transfer can vary based on the utility. The Solar Interests further supported the Dominion Rules as a broad framework but noted that specific tariff processes are important to produce efficient processes for transferring data between the subscriber organizations and the utility. The Solar Interests emphasized that methodology (e.g., sharing Excel sheets versus a data portal) is less important than billing accuracy and reliability. One of the Solar Interests argued in favor of a specific edit to the data transfer rules. According to the Dominion Rules, subscriber organizations

provide the utility with a list of subscribers and the generated kWh applicable to each subscription; Dominion then provides the subscriber organization with a report on the value of bill credits applicable to each subscriber. Solar Interests argued that rather than the subscriber organization telling the utility the number of kWh applicable to each subscriber, the utility should use each subscriber's applicable subscribed capacity percentage to apply bill credits, as the utility likely knows a project's kWh generation before the subscriber organization does.

- The Consumer Advocates emphasized that any rules must be very specific about which data are shared and how to protect consumers. Solar Interests argued that energy data belongs to customers and that the data should be used as customers see fit, and with their consent. Consumer Advocates argued that customers must give express permission before the SCC or other entity provides consumer information to a subscriber organization or its agent.

Low-Income Customer Enrollment

- 20VAC5-340-20 of the Dominion Rules defines "low-income customer" as a person or household whose income is not more than 80% of the median local income.
- Regarding the enrollment of low-income customers, both Consumer Advocates and Solar Interests supported multiple pathways for a customer to qualify as low-income.[7] The Consumer Advocates argued that low-income customers who receive benefits from energy assistance programs (such as the Low-Income Home Energy Assistance Program) should receive the full benefits of both those programs and the shared solar program.
- The Consumer and Environmental Advocates expressed a preference for net crediting (also referred to as consolidated billing), in which a customer only receives one bill from the utility rather than separate bills from the utility and subscriber organization. The Consumer Advocates further argued that net crediting is useful in reducing confusion for customers and can be a useful tool to enroll low-income customers. One of the Solar Interests did not support mandatory net crediting, and argued that net crediting is not helpful if poorly designed (such as including confusing language on the bill). The Consumer Advocates argued for the importance of customers easily understanding their subscription when they look at their bill.
- APCo noted that Utilities do not have a method for determining who is low-income and don't want to be responsible for that task. Consumer Advocates agreed that utilities should not be in the business of verifying income and noted that the current Dominion Rules require the subscriber organization to verify income.

Session #5: Bill Crediting Mechanics & Metering

Session #5 focused on the following topics:

- Net crediting (in which customers would receive a bill credit on their utility bill equivalent to the difference between the customer bill credit and the shared solar subscription charge);
- Speed of crediting to customer bills; and
- Solar project metering requirements.

[7] We note that customer eligibility as low-income is discussed in the Dominion shared solar low-income working group reports in the SCC's Case No. PUR-2020-00125. See the April 22, 2021 report and the September 30, 2021 report from the low-income working group.

We summarize the Session #5 stakeholder feedback below.

Net Crediting

- 20VAC5-340-60 Subsection B of the Dominion Rules states that subscriber organizations may offer separate billing or net crediting.
- ODP argued that if there is net crediting, the Utilities should be allowed to develop the billing process. ODP further stated that its billing system is very complex and that putting line items on a bill is difficult, and that offering net crediting could be costly from an administrative standpoint (but did not specifically cite a cost estimate to support its position). APCo argued that any costs associated with altering its existing billing system should be borne by program participants and not all utility customers. APCo favored dual billing (as opposed to consolidated billing, which is necessary for a net crediting regime) and supported a further discussion on the costs of net crediting, including a possible review of the fee utilities can charge for net crediting. 20VAC5-340-60 Subsection H-2 of the Dominion Rules states that the utility can charge a fee for net crediting, but the fee cannot exceed 1% of the bill credit value.
- Solar Interests argued that net crediting does not change the available space on a utility bill (thereby reducing the implementation complexity) and that while automation is helpful for billing, it is not necessary for a shared solar program. Solar Interests were generally supportive of the approach to net crediting and billing found in the Dominion Rules, and argued that net crediting should be included in any shared solar program. The Solar Interests disagreed with the Utilities that developing billing processes should be left to the Utilities; instead the Solar Interests and Governmental Entities agreed that it could be helpful to establish a working group to work with the Utilities to figure out specific processes for net crediting.
- The Consumer Advocates supported the Dominion Rules as a baseline, but would like to see rules for notional program(s) for ODP and APCo specifically require what the customer will view on their bill. The Consumer Advocates supported a separate working group for each of the Utilities.

Project Metering

- 20VAC5-340-60 Subsection I of the Dominion Rules require that shared solar facilities are front-of-the-meter and have a meter with 30-minute interval measurement capabilities. Dominion's Rules also allow customers to retain their current meter, rather than requiring them to change their meter (as is typical for the installation of rooftop solar projects, which typically use more advanced, bi-directional meters).
- A Governmental Entity cautioned that the rules should not be prescriptive so as to be prohibitive of future advancements in metering technology.
- The Consumer Advocates noted there are certain rules that they would especially like to keep for any future program, including the requirement that subscriber organizations must be responsible for all costs of the solar installation.

Speed of Shared Solar Crediting to Participating Customer Accounts

- 20VAC5-340-60 Subsection C of the Dominion Rules states that the utility must apply subscriber bill credits within two billing cycles following the cycle in which the solar facility generated the applicable energy.

- The Solar Interests argued that it could be better to have a faster cycle than two months, but that the 2-month cycle mandated by the Dominion Rules is likely more reasonable for the smaller utilities like APCo and ODP.
- APCo agreed that the credit timing rules seem reasonable, and that APCo can meet those timelines. ODP also found the Dominion Rules reasonable and stated that the one-to-two month's timeline is appropriate.
- The Consumer Advocates argued that customers need to understand that there is a one- or two-month lag to receive their credits and suggested a working group to look deeper into this issue.
- One of the Solar Interests noted that two months is the longest it can wait between generation and application of the bill credit.

Session #6: Bill Crediting and Project Compensation

Session #6 pertained to:

- The value of shared solar credits conveyed to participating customers;
- The carryover of credits and term of shared solar tariffs; and
- A discussion of potential minimum bills.

We summarize the Session #6 stakeholder feedback below.

Bill Credit Value for Participants

- § 56-594.3 of the Code of Virginia subpart C states that "Each subscriber… shall receive an applicable bill credit based on the subscriber's customer class of residential, commercial, or industrial. 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)." After an adjudicatory process, the SCC determined the credit values for each customer class using FERC Form 1 data.
    - This process yielded a Residential bill credit rate of 11.765¢/kWh, Commercial credit of 7.120¢/kWh, and an Industrial credit of 5.901¢/kWh for the first year.
- The Solar Interests, ODP, Governmental Entities, and many of the Consumer and Environmental Advocates agreed that the shared solar on-bill credit value should be based upon the retail electric power rate (i.e., power exported to the grid from a shared solar facility would be valued at similar rates to power purchased from a utility).
- Most stakeholders agreed that this was the simplest bill credit valuation structure, and that simplicity is an important consideration in program design, and particularly so for nascent programs such as shared solar in Virginia.
- The Solar Interests added that the retail value-based structure best approximates the rooftop solar net-metering configuration for shared solar, and that shared solar is used to facilitate access to solar power for customers who cannot put solar on their rooftop (for example, because they are renters or their roof is not viable for solar due to shading or orientation), who tend to be lower-income customers. APCo argued that projects should only be compensated based on the

wholesale energy they supply at market rates, and not include the distribution, administrative, or capacity components of retail rates.[8]

- APCo and ODP cautioned that providing shared solar bill credits to participating customers should be paired with strong measures to limit or eliminate any cost-shifting between program participants and non-participants. They stated that the SCC is the best forum to adjudicate such measures, and generally agree with the methodology adopted by the SCC in the Dominion program for both credits value and the minimum bill requirement. Both APCo and ODP argued that, because many of their customers are at or below the poverty level, any amount of cost shifting is of serious concern, and that the exemption from the minimum bill for low-income customers is less applicable to their territory than other utilities because it would result in cost shifting onto other low-income customers.
- Most Governmental Entities argued that some additional compensation (or other non-monetary aid) to help overcome the added costs and/or other challenges associated with siting projects on disturbed parcels, such as landfills, brownfields, parking lot canopies, or dual-use farming and solar, deserves further consideration, a position with which several Solar Interests agreed.
- Several of the Consumer Advocates disagreed with bill credit compensation based upon retail rates, and instead argued that a Value of Distributed Energy Resources (VDER) study should be conducted to properly value solar resources' contribution to the grid and set credit prices that reflect the benefits of DERs (and thus avoid significant cost shifting).

Minimum Bill

- In the Dominion program a minimum bill is assessed on non-low-income customers to ensure subscribers pay a "fair share" of the costs of providing electric services to subscribers, and minimize costs shifted to customers not participating in a shared solar program. The minimum bill is a required element of the Dominion program as per § 56-594.3 C of the Code of Virginia. The SCC approved a minimum bill guided by 20VAC5-340-80 of the Dominion Rules, which includes fixed customer and administrative charges, as well as volumetric components. The estimated monthly minimum bill for a residential customer that uses 1,000 kWh is $55.10.
- Both APCo and ODP maintained their position that all program costs should be borne by program participants, that in general the minimum bill methodology established in the Dominion program is an appropriate starting point for their service territories, and that the SCC is best positioned to make these determinations. APCo also added that it is not suggesting a further study of cost shifting at this time.
- The Solar Interests and the Consumer and Environmental Advocates strongly disagreed with APCo and ODP's assertions.
    - Most Solar Interests and Consumer and Environmental Advocates asserted that cost shifting is inherent in electric rates in multiple ways. For example, apartment buildings pay the same residential rate as single-family homes despite being less expensive to serve on average, and summer homes with infrequent use only pay the customer charge, but are not assessed a minimum bill. Therefore, these stakeholders asserted it is unfair to

[8] Neither APCo nor ODP provided tangible evidence that shared solar projects in their service territories could not defer or eliminate any amount of distribution or transmission system upgrades, capacity requirements, or other administrative costs.

single out solar programs as an impermissible cost shift, when other such cost shifts are commonplace in utility ratemaking.
    - The Solar Interests also argued that cost shifting was improperly taken as a given in the Dominion proceeding without sufficient, quantified proof that such cost shifting was likely to take place. The Solar Interests and Consumer and Environmental Advocates contended that the Dominion minimum bill calculation only accounted for the costs of the program without netting those costs against the benefits provided by solar resources, such as avoided energy, capacity, distribution, transmission, and environmental impact costs.
- Almost all of the Solar Interests and Consumer and Environmental Advocates supported a VDER study to evaluate the net costs and benefits of shared solar before any minimum bill would be applied to ODP and APCo. Different subsets of stakeholders offered different potential solutions.
- While one Solar Interest stakeholder denied that any cost shifting takes place at all, others suggested that some form of minimum payment may be fair, but that any such payment should only be approved if there is tangible proof of a cost shift.
- One Solar Interest stakeholder suggested that a minimum bill should be a fixed charge, while an Environmental Advocate suggested that a minimum bill could be volumetric, but only contain the Rate Adjustment Clause (RAC) charges (thereby roughly halving the minimum bill from the Dominion program).
- Yet another Solar Interest stakeholder suggested that, if and when cost shifting is proven, the New Mexico model could be adopted that stipulates that non-subscribers shall not be charged more than 3% of their aggregate retail rate to subsidize subscribers.[9]
- ODP argued that there may still be some cost shifting with a minimum bill, given that some of ODP's fixed costs that would otherwise be recovered via a fixed customer charge are instead included in the volumetric elements of customer rates.
- Many of the Solar Interests and Consumer and Environmental Advocates expressed frustration that many rate cases end in settlement agreements, which the stakeholders argued is non-transparent and obscures information regarding the extent to which cost shifting may occur in shared solar programs that could otherwise be elucidated in a fully adjudicated rate case.
- One of the Governmental Entities' positions was that a shared solar program should be economically viable for all customers to participate in and see savings from, but that a small minimum payment could be part of that program structure.
    - This particular Governmental Entity stakeholder offered that it would be willing to facilitate a study of the cost and benefits produced by independent and objective third-party analysts (including, for example, the National Renewable Energy Laboratory (NREL), but that such a study should not delay the implementation of any shared solar program for APCo and ODP.

Session #7: Consumer Protection and Program Administration

Session #7 focused on consumer protection and program administration. Most stakeholder comments focused on:

- Customer disclosures (by subscriber organizations);

[9] New Mexico Community Solar Act of 2021, SB0084, Section 7, subpart 8

- Billing practices; and
- Subscriber organization licensing.

We summarize the Session #7 stakeholder feedback below:

Consumer Protection and Contracts

- 20VAC5-340-50 of the Dominion Rules requires that subscriber organizations disclose information about the shared solar program and billing processes to the customer before executing a contract. The Dominion Rules require certain information in contracts between subscription organizations and subscribers, including, but not limited to, the price in $/kWh, the size of the subscription, the length of the contract, provisions for termination, and a toll-free number and address for complaints.
- The Solar Interests generally approved of the current Dominion Rules. APCo and ODP emphasized that much of their customer base is close to the poverty line and therefore consumer protection and truth in advertising are critical. The Solar Interests and Governmental Entities both felt the Dominion Rules were appropriate for APCo and ODP. APCo argued that subscribers should not be allowed to subscribe or cancel their subscription on a monthly basis due to the administrative burden this practice could place on Utility billing systems. The Consumer Advocates recommended that consumer protections be formalized and that protections not be limited to disclosure statements. Protections that the Consumer Advocates recommended, among others in this report, included:[10]
    - A three-day rescission clause in contracts between subscriber organizations and subscribers; and
    - The option for a consumer to be released from the contract if the solar project underperforms.

Net Crediting Minimum Savings Requirement

- SEA noted that 20VAC5-340-60 of the Dominion Rules requires that subscribers shall not pay more in subscription fees than they receive in bill credits, but that this provision only applies to net crediting and not to dual billing.
- The Consumer Advocates argued that guaranteed savings should be extended to cover the entire program.
- Both the Environmental Advocates and the Solar Interests agreed that the program rules should at least require that low-income customers have a subscription rate lower than the bill credit rate.

Disclosure

- The Consumer and Environmental Advocates emphasized the importance of consumers knowing what happens to Renewable Energy Credits (RECs, the title to the environmental attributes of the solar generation, i.e., the “cleanness” of the power) associated with the project to which they are subscribing. In its presentation, SEA noted that in the Maine NEB program, consumers receive a

[10] See Appendix B for the Consumer Advocates Letter a list of recommendations.

disclosure form clarifying that subscribers are not purchasing renewable energy but are supporting renewable energy development.[11]

- The Consumer Advocates felt that it would be beneficial to make this same clarification for participants in a shared solar program, i.e., that subscribers are not technically purchasing renewable energy if they are not retaining the RECs, but are instead supporting solar development. Participants generally liked the phrasing from Maine NEB, and Solar Interests noted that both Maine and Maryland have good disclosure materials.

Subscriber Organization Licensing

- 20VAC5-340-30 of the Dominion Rules states that subscriber organizations must obtain a license from the SCC prior to commencing business operations. The Dominion Rules require that the utility maintain a public list of approved projects, but does not require a public list of licensed subscriber organizations.
- Solar Interests were generally supportive of the Dominion Rules regarding subscriber organization licensing and reporting requirements. The Governmental Entities and Consumer Advocates supported the creation of a public list of licensed subscription organizations so that consumers can verify whether an organization that is contacting them is a licensed subscriber organization. The Consumer Advocates argued that in addition to a public list of licensed subscriber organizations, the SCC should make complaints against subscriber organizations publicly available.
- A Consumer Advocate suggested clarifying that subscriber organizations must follow all state and federal privacy laws. The Consumer Advocates further argued that subscriber organizations should be held responsible for any unlawful marketing performed by third party marketers, and recommended a similar rule as included in Maryland's rules.[12] The Consumer Advocates also recommended that there be no credit reporting for consumers who go into collection due to their participation in a shared solar program.
- Both the Consumer Advocates and Governmental Entities felt that it would be helpful to evaluate consumer protection in the future, possibly after the program has been operational for a few years.

Relation to 2022 Virginia Energy Plan

One of the Solar Interests and a Governmental Entity noted that during the time period that the workgroup was meeting, the 2022 Virginia Energy Plan was released. The plan included a recommendation in the "Competition" section that one way to offer customers more choice in source energy is to "remove barriers to distributed generation, including shared solar, and increase the ability of Virginians to install power resources on their property."

[11] The Maine NEB disclosure form states "By participating in this program, you are supporting renewable energy development but are not purchasing renewable energy. The energy generated by the project does not go directly to subscribers' homes, but instead is fed into the power grid."

[12] See Maryland Regulatory Code 20.62.05.15(B), "A subscriber organization is responsible for any fraudulent, deceptive, or other unlawful marketing performed by its agent while marketing or selling subscriptions on behalf the subscriber organization."

Impact of the Inflation Reduction Act of 2022 on Shared Solar Markets and Programs

During the workgroup meetings there were questions raised about the impact of the federal Inflation Reduction Act of 2022 (IRA) on solar energy development in the Utilities' jurisdictions. SEA provided an overview of the IRA provisions as they may apply to shared solar, as shown in Appendix A, and took stakeholder feedback on its presentation.

- A Governmental Entity expressed interest in pursuing federal discretionary funds. This Governmental Entity recommended further discussion outside of this particular working group to discuss how best to coordinate applying for such funds and what funding structure may be most cost-effective (e.g., loan-loss reserve funds). The Governmental Entity observed that discretionary funds from the Greenhouse Gas Reduction Fund must go to "National Climate Investment Institutions" which must be non-profits, and explicitly include public-sector green banks. This stakeholder noted that localities are able to establish local or regional green banks to access some of the funds, but there is not presently a statewide green bank in Virginia.
- A subset of Solar Interests noted that, while there is still some uncertainty surrounding the specifics of the IRA's implementation, the ultimate goal of state solar programs should be to attract private capital to achieve program objectives, for which the IRA presents several opportunities to leverage through expanded and newly transferable tax credits and discretionary spending by the federal government.
- A particular Solar Interest suggested that the best way to attract private capital to achieve program objectives may be through an upfront block incentive such as that found in the New York Inclusive Community Solar Adder, given that most projects are evaluated by developers on a net present value basis, whereby incentives closer to the beginning of a project are valued more highly due to discounting.
- One of the Environmental Advocates noted they are eager to see the map of "energy communities" from the federal government that could significantly improve the finances of shared solar in the areas that are deemed energy communities. A Governmental Entity pointed to unofficial analysis by Resources for the Future that indicated significant portions of Southwest Virginia may be eligible for bonus tax credits for renewable projects.

Stakeholder Recommendations Regarding Next Steps

Throughout the workgroup process, stakeholders made recommendations for the further consideration of certain topics, either through a future working group or a study. We provide those recommendations below, but note they are not ranked in any particular priority order.

Consider Ways to Incentivize Beneficial Siting of Shared Solar Projects on Disturbed Parcels of Land: Certain Governmental Entities and some of the Solar Interests and Advocates suggested that program elements to incentivize beneficial siting of shared solar could serve the public policy interests of land-use management while also helping to overcome some of the incremental costs associated with such siting decisions. Stakeholders commented that solar development on areas such as brownfields, landfills, dual-use agriculture and solar, and potentially over carports or other previously disturbed sites may alleviate some local opposition to solar development and that the Inflation Reduction Act has some incentives for land use aspects of a project. One of the Governmental Entities noted that the state Brownfields Fund, if properly funded, could provide one mechanism to provide incentives for beneficial siting.

Potential Value of Distributed Energy Resources (VDER) Study: Most stakeholders supported some form of a VDER study to quantify the net costs and benefits from shared solar projects in APCo or ODP territory. APCo did not support additional study of cost shifting at this time, and ODP did not express a position. Solar Interests and many of the Consumer and Environmental Advocates highlighted the potential for a VDER study to show the extent, or lack of, cost shifting in the program and use that study to inform any minimum bill calculation. A subset of Consumer Advocates suggested using VDER study results to set shared solar credit prices, rather than basing them on retail rates. As noted above, a Governmental Entity offered to potentially facilitate such a study should funding be appropriated.[13]

Capitalize on Inflation Reduction Act (IRA) funding: Many of the Governmental Entities, Solar Interests, and Advocates supported coordinating among relevant stakeholders to attract discretionary funding from the federal Inflation Reduction Act, such as from the Greenhouse Gas Reduction Fund. One Consumer Advocate argued that not pursuing these funds would essentially mean that Virginia would be subsidizing shared solar and other renewable energy development in other states without realizing benefits in-state. Stakeholders commented that such coordination could take the form of a future working group or could be a more informal process.

Working Group on Net Crediting Process: Solar Interests, Advocates and Governmental Entities strongly supported the creation of a working group to develop specific billing processes and procedures, in particular for net crediting. Issues for such a working group could include bill presentations, the interplay of different savings programs, coordination between subscriber organizations and Utilities, and understanding each Utility's billing platform. Some stakeholders from the Solar Interests and Consumer Advocates advocated for separate working groups for each Utility.

Evaluation of Consumer Protections: The Governmental Entities and Consumer Advocates recommended that it may be useful to re-evaluate consumer protection rules a few years after the program is operational to address any unforeseen problems that come up.

[13] We note that there are examples of VDER studies from other jurisdictions, such as a recent study in New Hampshire, and that New York used a VDER methodology to compensate projects.

Cost-Benefit Analysis: Solar Interests recommended that a cost-benefit analysis should occur within five years of the start of an APCo and ODP shared solar program to understand the full costs and benefits of the program.

Working Group to Develop APCo and ODP Programs- Consumer Advocates recommended that if there is legislation enacted to create a shared solar program in APCo and ODP territories, the same or an expanded list of stakeholders that helped develop the Dominion shared solar program should also develop ODP and APCo's programs.

Template of Financial Model: One Solar Interest stakeholder suggested that it would be helpful to have a public template of a very simple financial model for Virginia shared solar projects to better facilitate feedback from stakeholders on policy design.

Appendix A- SEA presentation slides

Meeting #1

Virginia State Corporation Commission (SCC) Phase 1 Utilities Shared Solar Workgroup

Meeting #1: Introduction/Program Goals and Scope

September 8, 2022

Sustainable Energy Advantage, LLC

DISCLAIMERS

- Pursuant to the Virginia General Assembly's directive, the State Corporation Commission has established this Phase I Utilities Shared Solar Task Force. The views expressed during the Task Force meetings do not state or reflect those of the Commission.
- These meetings are considered "open meetings" and we ask that everyone work to only discuss information that is public.
- **These open meetings will be recorded on the Microsoft Teams application.** Additionally, to ensure that the information gathered during these meetings is accurately portrayed, the MS transcription feature in Teams will be used.
  - NOTE: Files containing the recordings will not be posted publicly or shared outside of SEA.
- While gathering information for the report to be submitted to the General Assembly, we will not specifically refer to individuals or organizations by name in the report but rather generally to the ideas or positions of either the group or individual members.

Schedule for Meeting #1

- **9:00-9:15:** Welcome by SCC Staff
- **9:15-9:30:** Legislative Background, Purpose and Requirements for the Workgroup
- **9:30-10:00:** Discussion of Structure for Workgroup Discussion
- **10:00-10:30:** Participant Introductions/Beginning of Session #1: Discussion and Stakeholder Ranking of Shared Solar Program Design Principles
- **10:30-11:00:** Mid-Morning Break
- **11:00-12:30:** Continuation of Session #1: Discussion and Stakeholder Ranking of Shared Solar Program Design Principles
- **12:30-1:30:** Lunch Break
- **1:30-3:00:** Session #2: Potential Program Scale and Applicability
- **3:00-3:30:** Mid-Afternoon Break
- **3:30-4:45:** Continuation of Session #2: Potential Program Scale and Applicability
- **4:45-5:00:** Next Steps/Concluding Remarks

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Legislative Background, Purpose and Workgroup Requirements

Chapter 591 Overview & Requirements (1)

- Enacted April 11, 2022
- SCC to convene stakeholder workgroup to evaluate (not negotiate or determine) shared solar programs
- Statutorily-required participants (as verbatim):
  - Phase I Utilities
  - Coalition for Community Solar Access (CCSA)
  - Chesapeake Solar and Storage Association (CHESSA)
  - Virginia Department of Energy
  - Low-income community solar advocates
  - Consumer protection advocates
  - Solar advocacy organizations
  - Environmental advocacy organizations
  - Other solar industry and shared solar stakeholders; and
  - Community advocacy groups

Chapter 591 Overview & Requirements (2)

- Remote or electronic participation permitted
  - SCC has determined the process should be all-virtual
- Proceedings of stakeholder workgroup to be facilitated and documented by SCC staff
  - Sustainable Energy Advantage, LLC (SEA) has been selected to perform these services
- SEA will draft a written report to the Chairmen of the House Committee on Commerce and Energy and the Senate Committee on Commerce and Labor no later than November 30, 2022 (with simultaneous release to the public)

Important Note RE: "Evaluating" vs. Negotiating/Determining Shared Solar Program Designs

- The SCC (and SEA, for the purposes of workgroup facilitation and reporting) interprets Chapter 591 as requiring:
  - "Evaluation" of notional shared solar program designs
  - The discussion of said potential program designs amongst the stakeholders; and
  - Reporting the results of said discussions to relevant leaders of the General Assembly
- Thus, the purpose of this workgroup is **not** to propose a fully-baked program design, but to **ensure stakeholders of all relevant perspectives can share their perspectives** on key questions related to shared solar program design
- The question of whether (and/or how) a program should or will be designed resides with the General Assembly and the Governor, **not with the SCC or this workgroup**, following the completion of the workgroup's report

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Stakeholder Workgroup Discussion Structure

Stakeholder Meeting Timing/Logistics

- The workgroup will have 4 meetings, which will be held starting at 9:00 am Eastern Time (ET) on each of the following days, and will cover the following (anticipated) topics:
  - **Thursday, September 8, 2022:** Introduction/Program Goals and Scope
  - **Thursday, September 15, 2022:** Program Eligibility, Participation and Equity
  - **Wednesday, September 21, 2022:** Bill Crediting and Project Compensation
  - **Wednesday, September 28, 2022:** Program Administration and Consumer Protection
- ***Request for Stakeholders:*** *Please indicate if you would not be able to attend meetings 3 & 4 if they were delayed* ***one week each*** *for RE+/SPI (which many solar stakeholders will attend)*
- All four all-virtual meetings will be hosted and facilitated by SEA
  - Three of the meetings will be facilitated by Jim Kennerly of SEA, while either the third or fourth will be facilitated by Tom Michelman of SEA
- Each meeting will:
  - Last from **9:00 am to 5:00 pm ET**, and include **6 hours per meeting -day** of substantive content and discussion
  - Include a **half-hour mid-morning break** (scheduled for 10:30 am ET each day) and a **half-hour mid-afternoon break** (scheduled for 3:00 pm ET each day)
  - Each meeting will have a **one-hour lunch break** (from 12:30 pm-1:30 pm ET)

Protocol for Oral and/or Written Comments at Subsequent Meetings (1)

- Subsequent meetings (following the first) are structured to provide an opportunity to provide comment on material shared at the previous meeting **at the start of the next meeting**
- Stakeholders wishing to make an oral comment regarding material shared or discussed at the previous meeting must indicate their desire to do so to SEA and SCC staff **no less than 48 hours in advance of the start of the next meeting**
  - Any stakeholder may also draft written comments regarding the subject of the previous meeting in lieu of an oral comment, or to be shared orally prior to the next meeting
  - All written comments must be submitted on the same timeline

Protocol for Oral and/or Written Comments at Subsequent Meetings (2)

- All stakeholder presentations accompanying such oral comment must also be submitted **no less than 48 hours in advance of the start of the next meeting** to SEA and SCC staff for approval to be shared during the oral comment period
  - All presentations or written comments must be submitted to Cal Brown (cbrown@seadvantage.com) and Jim Kennerly (jkennerly@seadvantage.com), copying Shepelle Watkins-White (shepelle.watkins-white@scc.virginia.gov)

Tentative Schedule of Sessions Within Workgroup Meetings

- **Thursday, September 8, 2022:** Introduction/Program Goals and Scope
  - Session #1: Discussion and Stakeholder Ranking of Overall Goals for the Process
  - Session #2: Potential Program Scale and Applicability
- **Thursday, September 15, 2022:** Program Eligibility, Participation and Equity
  - One Hour of Comment on Prior Meeting
  - Session #3: Program Eligibility, Enrollment and Mechanics
  - Session #4: Marketing and Customer Enrollment
- **Wednesday, September 21, 2022:** Bill Crediting and Project Compensation
  - One Hour of Comment on Prior Meeting
  - Session #5: Bill Crediting Mechanics & Metering
  - Session #6: Bill Crediting and Project Compensation
- **Wednesday, September 28, 2022:** Consumer Protection and Program Administration
  - Continuation of Session #6: Bill Crediting and Project Compensation **OR** One hour period for comments on prior meeting's discussion
  - Session #7: Consumer Protection and Program Administration
  - Review of Outcomes of Sessions/Concluding Remarks

Structure of Stakeholder Discussion (1)

- Each organization with more than one participant has identified a "lead participant" who can speak on their organization's behalf.
- The purpose of each session will be threefold:
  - To review the **current Dominion Energy shared solar rule set** related to the subject of each session;
  - To review **alternatives to the current Dominion Energy shared solar rule set** utilized in other jurisdictions (as summarized by SEA)
  - Receive **feedback** **from each lead participant** **wishing to speak** (for each organization, regarding a notional shared solar program for KU and APCo)
- During periods in which feedback is sought, **lead participants are expected to remain on camera** (and **at minimum** be on camera during periods in which they are offering feedback)
- Lead participants are requested to **ensure their names are visible on-screen** (if they are not already)

Structure of Stakeholder Discussion (2)

- Each lead participant's feedback must be structured around the following responses in reference to particular program design features, in the context of a notional program for Phase I Utilities:
  - The **continuation, unchanged**, of the current Dominion rule set;
  - The **continuation, with specific changes**, of the current Dominion rule set;
  - **Adoption of any alternative program design features** as reviewed/discussed by SEA;
  - **Adoption of any alternatives not contemplated by SEA** in our review of shared solar potential alternatives;
  - A request for **additional time to consider their views**, and to share them at the next meeting (during the aforementioned oral comment period)

Structure of Stakeholder Discussion (3)

- Through active facilitation, SEA will aim to provide **proportionate amounts of time for all types of stakeholders** (Phase I Utilities, Solar/Solar Development Advocates, Environmental and Consumer/Community Advocates
- Stakeholders will be asked to provide input during each session in increments **no longer than 2-5 minutes**, to ensure appropriate representation of all perspectives
- The lead SEA facilitator is **permitted to recognize themselves**, but **strictly to clarify** lead participant remarks
- Other lead participants **can ask clarifying questions of other stakeholders** following the 2-5 minute periods provided to each lead participant by signaling to the SEA facilitator (through a "raised hand"), and being recognized
- Free and open discussion (subject to moderation by SEA as needed) will be permitted **once all lead participants have had an opportunity to speak**
- **Unrecognized interruptions of any kind <u>will not be permitted</u>**

Questions?

Session #1: Potential Shared Solar Program Design Principles

Lead Participant Introductions

Lead Participants for Meeting #1 (As Identified to SEA/SCC)

- Brandon Smithwood, Dimension Energy
- Mike Hornung, LGE-KU
- Peter Anderson, Appalachian Voices
- Charlie Coggeshall, Coalition for Community Solar Access (CCSA)
- Carrie Hearne (AM) and LarryCorkey (PM), Virginia Department of Energy
- Olivia Nedd, Vote Solar
- Larry Jackson (AM) and Amanda Cox (PM), Appalachian Power
- Will Giese, Solar Energy Industries Association (SEIA)
- Carmen Bingham, Virginia Poverty Law Center
- Connor Kish, Sierra Club
- Nitzan Goldberger, Chesapeake Solar and Storage Association (CHESSA)/New Leaf Energy
- Olivia Wein, National Consumer Law Center
- Mike Dowd, Virginia Department of Environmental Quality (DEQ)
- Trieste Lockwood, Lockwood Strategies (on behalf of Arcadia)
- Jennifer Perkins, Virginia Department of Agriculture and Consumer Services (DACS)
- Josephus Allmond, Southern Environmental Law Center (SELC)
- Lou Ann Wallace, Russell County Board of Supervisors
- Andy Wyatt, GRID Alternatives
- Carol Davis, City of Blacksburg, VA
- Cliona Robb, Thompson McMullan (on behalf of Secure Futures)
- Ruth McElroy Amundsen, Norfolk Solar QOZ Fund
- Annie Wagner, OneEnergy Renewables
- Leslie Elder, Summit Ridge Energy
- Tyler Jones, Pivot Energy
- Justin Biltz, Cypress Creek Renewables
- Hannah Coman, Apex Clean Energy
- Laura Gonzales, Clean Virginia
- Abbe Ramanan, Clean Energy Group/Clean Energy States Alliance
- Liz Veazey, Solar United Neighbors

Discussion of Potential Shared Solar Program Design Principles

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Potential Program Design Principles

1. Support for solar/energy storage industry growth/market development
2. Maximization of ratepayer benefit/minimization of ratepayer cost
3. Protecting consumers from (intentionally or unintentionally) deceptive or abusive practices
4. Leveraging recently-adopted federal clean energy tax credits/federal spending
5. Enhancement of benefits for low income and/or disadvantaged communities
6. Maximization of benefits/minimization of impacts to transmission and distribution system
7. Maximize near- and long-term local jobs/economic development
8. Meet Clean Economy Act targets and Regional Greenhouse Gas Initiative (RGGI) requirements
9. Encourage solar development on disturbed land/minimizes reliance on green space

Lead Participant "Homework" for Mid-Morning Break

- **Consider and rank order your top five (5)** the prior nine (9) program design objectives
- After returning from break, please:
  - Report back your rank ordering; and
  - Provide **no more than 2-5 minutes of comments** explaining your rankings

Mid-Morning Break (Will Return at 11:00 am ET)

For Lead Participant "Homework" (Ranking objectives)

Potential Program Design Principles

1. Support for solar/energy storage industry growth/market development
2. Maximization of ratepayer benefit/minimization of ratepayer cost
3. Protecting consumers from (intentionally or unintentionally) deceptive or abusive practices
4. Leveraging recently-adopted federal clean energy tax credits/federal spending
5. Enhancement of benefits for low income and/or disadvantaged communities
6. Maximization of benefits/minimization of impacts to transmission and distribution system
7. Maximize near- and long-term local jobs/economic development
8. Meet Clean Economy Act targets and Regional Greenhouse Gas Initiative (RGGI) requirements
9. Encourage solar development on disturbed land/minimizes reliance on green space

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Continued Discussion/Ranking of Program Design Principles

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Lunch Break
(Will Return at 1:30 pm ET)

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Session #2: Potential Program Scale and Applicability

Potential Program Scale and Applicability

Review of Existing Dominion Shared Solar Program Rule Set

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Summary of 20VAC5-340-10 (1)

- **Aggregate Program Capacity & Trigger for Expansion**
  - 150 MW aggregate program size
  - 30% of aggregate MW (equivalent to 45 MW) required to serve low-income customers
  - Expansion to 200 MW aggregate capacity permitted upon reaching 30% low-income participation in Dominion program
  - *Ramification*: No current annual minimum (or maximum) annual capacity qualified
- **Aggregate Per-Project Capacity**
  - Effective maximum project capacity of 5,000 kW (5 MW)
  - Functional "single parcel rule" limits smaller projects on same parcel with same owners to the above aggregate project value
  - *Comparison to Net Metering for Investor-Owned Utilities (IOUs)*:
    - Maximum residential per-project capacity of 25 kW
    - Maximum non-residential per-project capacity of 3 MW

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Summary of 20VAC5-340-10 (2)

- **Limitation on Participation in Other Programs**
  - Participants cannot simultaneously participate in shared solar if they are participating in the net metering or in the multi-family solar program (or vice versa)
- **Allowance for Case-by-Case Waivers of All Provisions**
  - A request for a waiver of any of the provisions in this chapter shall be considered by the State Corporation Commission on a case-by-case basis and may be granted upon such terms and conditions as the State Corporation Commission may impose.

Potential Program Scale and Applicability

Review of Potential Alternatives to Dominion Rule Set

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Alternative Means to Limit Program Capacity

- MW-Limited by Year
- Compensation-Limited
- Program Review-Limited
- Budget-Limited

Alternative #1: MW-Limited by Year

- **How it Works:** Program capacity can be limited annually (via competitive procurement procurement or standard offer (e.g. first come, first served) program)
- **Examples**
  - CT NRES/SCEF programs
  - RI Renewable Energy Growth (REG) program
  - VT Standard Offer (soon to expire)
- **Potential Upside**
  - If program is limited to annual capacity allocations (and particularly if the program is subject to competitive procurement), potential for ratepayer savings can be maximized if sufficient viable bids received
- **Potential Drawbacks (and Potential Mitigations)**
  - Procurements can, if not able to respond to market conditions, result in compensation rates that are too low, or otherwise encourage bidding that results in a "race-to-the-bottom" effect, which can be magnified if prices are based in part on competitive bids
  - ***Potential Mitigation:*** Allow for bid price cap adjustments annually (e.g. as in the REG program)

Alternative #2: Compensation-Limited (1)

- **How it Works**
  - No specific annual limit (or, potentially, any aggregate limit) on capacity; capacity functionally limited by non -retail compensation levels
- **Examples**
  - NY VDER (Value Stack/NY-Sun) (utilizes avoided resource costs based on quantifiable benefits of distributed generation)
  - Maine Net Energy Billing (no hard annual or aggregate capacity limit, limited functionally by compensation/interconnection)
  - MA SMART Program Post-400 MW capacity (utilizes declining -block incentive (DBI) framework)
  - CT NRES/SCEF, RI Renewable Energy Growth programs (utilizes tariff price caps for current-year solicitations based on prior year clearing prices, but subject to adjustment in certain circumstances)

Alternative #2: Compensation-Limited (2)

- **Potential Upside**
  - Programs with no actual limits (NY VDER) or no annual limits allow for a freer -flowing market without as many starts and stops
- **Potential Drawbacks (and Potential Mitigations)**
  - Programs without annual limits imposed by competitive procurement or through mid-program compensation rate adjustments may leave ratepayer savings on the table
  - ***Potential Mitigations:***
    - Annual program review dockets (like those in Connecticut) could be used as opportunities for "lessons learned" that can flow through to future projects qualifying after a certain date
    - Initial price-setting for a standard-offer program can be based on a Year 1 procurement, followed by more free-flowing standard-offer/first come first served approach

Alternative #3: Program Review-Limited

- **How it Works**
  - Program capacity can be obtained/projects can be qualified without specific annual limit, but program must be reviewed at a specific time or upon a specific triggering threshold
- **Examples**
  - MA SMART program (program review was triggered upon reaching 400 MW of qualified capacity, though qualification continued until 1,600 MW initial tranche threshold reached)
  - NY VDER/NY-Sun Mid-Point Review (program review expected to take place no later than the earlier of 50% capacity uptake in Upstate/ ConEd or yedr 2025)
  - CT NRES/SCEF (annual program review dockets prior to each procurement)
- **Potential Upside**
  - Making adjustments to programs could allow for balancing objectives more frequently (even as capacity can continue to be freely qualified), as well as potentially correcting problems before they become more difficult to manage
- **Potential Drawbacks (and Potential Mitigations)**
  - In certain cases, adjusting programs once (or rarely) could also introduce uncertainty into the program design, and could potentially hamper the effectiveness of the program post-review

Alternative #4: Budget- Limited

- **How it Works**
  - Project incentives (in excess of minimum compensation rates) are limited, either annually or on aggregate to a total budgetary value
- **Examples**
  - NY-Sun Incentives (Exclusive of Value Stack): Though value stack compensation is not limited by aggregate capacity or budget, added incentives for policy-preferred projects (e.g. LMI) are subject to budgetary limits
  - *(Expired) CT LREC/ZREC*: Programs (prior to expiry) had an annual and overall budget limit for incentive dollars to pay for REC purchases
- **Potential Upside**
  - Defined budget for incentives can provide certainty as to ratepayers' exposure for values paid in excess of minimum compensation rates
- **Potential Drawbacks (and Potential Mitigations)**
  - Budgetary values are non-transparent and often difficult to estimate, particularly as part of a program without specific procurements
  - ***Potential Mitigation:*** Budgetary limits can be translated into approximate MW limits

Questions?

Alternatives to 5 MW Maximum Eligible System Size

- Reducing the Maximum System Size from 5 MW
- Increasing the Maximum System Size from 5 MW

Maximum Shared Solar Project Size Caps (by Program/State)

State	Affected Sector/Program	Proj. Size Cap (MW)
New Jersey	Administratively-Determined Incentive (ADI) Program	5 MW_{AC}
New Jersey	Competitive Solar Incentive (CSI) Program	Unclear (4/2022 Straw ProposalIncludes "Non-Residential Net Metering >5 MW")
Maryland	Community Solar Pilot Program	2 MW_{AC}
North Carolina	Duke Energy Shared Solar Rider	5 MW (program capacity currently exhausted)
New York	Community Distributed Generation (CDG)	5 MW_{AC}
Massachusetts	Solar Massachusetts Renewable Target (SMART) program	5 MW_{AC}
Connecticut	Shared Clean Energy Facility (SCEF) Program	5 MW_{AC}
Rhode Island	Community Remote Net Metering (CRNM)	10 MW_{AC} (but only open to municipalities)
Rhode Island	Community Remote Distributed Generation (CRDG)	5 MW_{DC}
Maine	Maine Net Energy Billing	5 MW (no AC/DC specified in law or rule)
New Hampshire	Group Net Metering (Municipal Hosts Only)	5 MW_{AC} (not yet adopted in rule)

Alternative #1: Reducing the Maximum System Size from 5 MW

- **How it Works**
  - Maximum system size could be reduced from 5 MW to 2 MW (or other value, relative to Dominion rule set)
- **Examples**
  - See prior slide (e.g. Maryland seven -year shared solar pilot)
- **Potential Upside**
  - Lower maximum system size could effectively result in clearing prices that are high enough to accommodate projects with smaller footprints
- **Potential Drawbacks (and Potential Mitigations)**
  - Lowering the maximum size from 5 MW (a threshold at which certain economies of scale in solar PV project development are optimized) could potentially increase the cost of the project to ratepayers, without necessarily increasing the financial benefits to ratepayers and society of developing such projects
  - ***Potential Mitigation:*** Maximum size can be limited for certain project types, particularly those that might not be ideally sited on a greenfield parcel of land

Alternative #2: Increasing the Maximum System Size from 5 MW

- **How it Works**
  - Increase maximum eligible project size to 10 MW (relative to Dominion rule set)
- **Examples**
  - RI CRNM (limited to state and municipal offtakers)
  - May be approved in NJ as part of CSI program (see previous slide)
- **Potential Upside**
  - Larger system size could provide for economies of scale in terms of a number of different hard and soft costs, thereby increasing ratepayer benefit
- **Potential Drawbacks (and Potential Mitigations)**
  - Requiring larger projects to be open to residential (and low-income residential) off-takers can increase the cost and risk of managing project turnover and initial customer signups
  - ***Potential Mitigation:*** Allow larger-scale projects to qualify only if they are serving a smaller number of credit-worthy offtakers, or if they might be allowed to serve a smaller share of residential customers

Questions?

Stakeholder Discussion of Dominion Rule Set & Alternatives

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Mid-Afternoon Break (Will Return at 3:30 pm ET)

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Continuation of Stakeholder Discussion

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Next Steps/Concluding Remarks

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Meeting #2

Schedule for Meeting #2

- **9:00-10:00:** Period for stakeholder comments on prior Meeting's discussion
- **10:00-10:30:** Session #3: Program Eligibility, Enrollment and Mechanics
- **10:30-11:00:** Mid-Morning Break
- **11:00-12:30:** Continuation of Session #3: Program Eligibility, Enrollment and Mechanics
- **12:30-1:30:** Lunch Break
- **1:30-3:00:** Session #4: Marketing and Customer Enrollment
- **3:00-3:30:** Mid-Afternoon Break
- **3:30-4:45:** Continuation of Session #4: Marketing and Customer Enrollment
- **4:45-5:00:** Next Steps/Concluding Remarks

Lead Participants for Meeting #2

- Brandon Smithwood, Dimension Energy
- Mike Hornung (AM) Rich Savage (PM), LGE-KU
- Peter Anderson, Appalachian Voices
- Charlie Coggeshall, Coalition for Community Solar Access (CCSA)
- Carrie Hearne (AM) and Larry Corkey (PM), Virginia Department of Energy
- Olivia Nedd, Vote Solar
- Jon Amores, Appalachian Power
- Will Giese, Solar Energy Industries Association (SEIA)
- Carmen Bingham, Virginia Poverty Law Center
- Connor Kish, Sierra Club
- Nitzan Goldberger, Chesapeake Solar and Storage Association (CHESSA)/New Leaf Energy
- Olivia Wein, National Consumer Law Center
- Mike Dowd, Virginia Department of Environmental Quality (DEQ)
- Trieste Lockwood, Lockwood Strategies (on behalf of Arcadia)
- Jennifer Perkins, Virginia Department of Agriculture and Consumer Services (DACS)
- Josephus Allmond, Southern Environmental Law Center (SELC)
- Lou Ann Wallace, Russell County Board of Supervisors
- Andy Wyatt, GRID Alternatives
- Will Lattea, City of Blacksburg, VA
- Cliona Robb, Thompson McMullan (on behalf of Secure Futures)
- Ruth McElroy Amundsen, Norfolk Solar QOZ Fund
- Annie Wagner, OneEnergy Renewables
- Leslie Elder, Summit Ridge Energy
- Tyler Jones, Pivot Energy
- Justin Biltz, Cypress Creek Renewables
- Laura Merten, Apex Clean Energy
- Laura Gonzales, Clean Virginia
- Abbe Ramanan, Clean Energy Group/Clean Energy States Alliance
- Liz Veazey, Solar United Neighbors

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Stakeholder Comments on Prior Meeting's Discussion

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Session #3: Program Eligibility, Enrollment and Mechanics

Review of Existing Dominion Shared Solar Program Rule Set and Alternatives

Summary of 20VAC5-340-40 (1)- LMI Provisions

- **Minimum LMI thresholds**
  - 20VAC5-340-10 Subpart B states that at least 30% of the 150 MW shared solar program must be comprised of low-income customers
  - The 20VAC5-340-20 definition of "Shared Solar Facility" does not include a requirement that individual facilities meet the 30% goal, but defines a facility which meets the 30% threshold as a "Low-income shared solar facility"
    - Dominion's Subscriber Organization Registration Agreement asks whether the subscription organization is choosing to offer its facility as a Low-Income facility
    - To date, every shared solar projects accepted into Dominion's program has allocated 30% capacity to low-income customers, per Dominion's website
  - 20VAC5-340-40 Subpart D states that when a subscriber organization registers its facility, the subscriber organization must state the amount of capacity "meeting or exceeding the minimum of 30%, that will be subscribed by low-income subscribers"

Summary of 20VAC5-340-40 (2)- LMI Provisions

- **LMI trigger threshold**
  - 20VAC5-340-40 Subpart M states that once 45 MW of capacity is committed to low-income subscribers, the utility shall submit a request to the commission for an additional 50 MW of capacity for the program
    - Capacity committed to low-income subscribers is demonstrated by approved low-income subscription plans of projects that have secured capacity in the program
    - The additional 50 MW of capacity will be allocated first to projects on the wait list

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Alternatives to Minimum LMI Threshold Achievement (1)

- Higher/Lower LMI thresholds?
  - **Oregon** community solar requires LMI participation of 10%
  - **MD Community Solar pilot** has a carveout capacity block for LMI, with at least 10% of energy provided to low income, and an additional 20% subscribed to a mix of low and/or moderate-income subscribers
  - **NM community solar** requires 30% of facilities serve low-income customers

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Alternatives to Minimum LMI Threshold Achievement (2)

- Creating a capacity block for projects sited in specific, individual LMI communities or serving LMI communities rather than requiring a single subscription percentage across the entire program
  - **CA** has specific solar programs for low-income residents in Disadvantaged Communities
  - **CT SCEF** currently discussing bid preferences for siting projects in environmental justice communities
  - **The Inflation Reduction Act** provides additional ITC value for projects located in a low-income community
- **Potential Upside**: Increased economic development in LMI communities; reduced administrative cost to acquire LMI subscribers for non-LMI projects
- **Potential Downside**: Challenges defining geographic areas

Alternatives to Minimum LMI Threshold Achievement (3)

- Providing financial adders to incentivize increased LMI enrollment instead of, or in addition to, a minimum threshold for all projects
  - MA SMART provides an adder for community solar serving at least 50% low-income customers
  - NY Inclusive Community Solar provides additional incentives for projects serving LMI customers
- **Potential Upside**: Incentivizes developers to go beyond the minimum LMI enrollment
- **Potential Downside**: Increased program costs

Clarifying Questions/Comments?

Questions Regarding LMI Trigger Threshold

- Should the shared solar program include a trigger at all?
  - Is the trigger working as an incentive?
- Possible tiered trigger to incentivize higher LMI subscriptions?
  - Illustrative example:
    - 30% LMI capacity target reached: 50 MW additionally available
    - 40% LMI subscribed capacity: 10 MW more additional capacity available
- Suggested other triggers or structures from stakeholders?

Mid-Morning Break (Will Return at 11:00 am ET)

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Stakeholder Discussion of Dominion Rule Set & Alternatives

On Minimum LMI thresholds and LMI Trigger Thresholds

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Summary of 20VAC5-340-40 (2)

- **Financial security/security deposits**
  - Subpart I states that upon a subscriber organization (SO) being awarded capacity in the program queue, the SO pays a $\$50/kW_{AC}$ security deposit within 10 days.
    - Held in interest-bearing account and returned to SO upon commercial operation.
    - Bona fide nonprofits are exempt from SO deposit requirement
  - Subpart H states that the utility may "require reasonable financial security" from a SO to guard against risk of non-performance. The amount of such security is commensurate with risk to the utility. Type of security may be:
    - Letter of credit,
    - Deposit in an escrow account,
    - Prepayment arrangement,
    - Surety bond, or
    - Other mutually agreed upon arrangement(s)

Alternatives to Financial Security/Security Deposits

- Various methods of ensuring what might be called "skin in the game" from project developers:
  - **NY SUN** program does not have Financial Security per se but requires developers to have paid 50% of their expected interconnection costs to lock in incentive rates
  - **CT SCEF** requires Security Deposit of $\$25/kW_{AC}$ at the time of bid submission, but NRES and LREC/ZREC did not and saw higher attrition rates partly as a result (but more bids)
  - **MA SMART** requires both executed interconnection agreement and $25/kW performance guarantee deposit
  - **Solar*Rewards in MN** requires a $100/kW deposit for a community solar project application to be deemed complete

Alternatives to Financial Security/Security Deposits (2)

- **Potential Upside:** Can help to ensure applications are not speculative and incent developers to reach milestones.
- **Potential Downside:** Too large a deposit can be a barrier to entry, especially for smaller (and potentially more local) solar developers.
  - **Potential Mitigation:** Right-sizing the required money down, setting the right period during development/application at which deposit is required

Summary of 20VAC5-340-40 (3)

- **Mechanical completion timelines**
- Projects have 24 months from being awarded program capacity to reach mechanical completion.
- If the first 24 months elapses without mechanical completion, projects **can post an additional security deposit of $25/kW$_{AC}$ to secure another 12 months in the queue** to reach mechanical completion,
- If mechanical completion not achieved after 36 months, project is removed from the queue.

Alternatives to Mechanical Completion Timelines

- Process for milestone extensions is more or less standard across jurisdictions, with a few differences. Generally, project developers can request extension from either the Program Administrator (utility), or the regulatory body (SCC equivalent), as in MA SMART and CT DG programs.
- Extensions, as in Dominion Rules, require additional Performance Assurance. Timeline for extensions can vary, from the developer requesting a specific timetable, as in MA SMART, to precedent that 6-month extensions are standard, like in CT DG programs.

Alternatives to Mechanical Completion Timelines (2)

- **Potential Upside:** allows projects that are delayed to still reach completion and provide benefits to subscribers, especially when delays are beyond developer control (supply chain, dist. or Tx interconnection delays).
- **Potential Downside:** Too permissive a structure can provide lax incentives for on-time delivery.
  - **Potential Mitigation:** show-cause exemptions rather than blanket, and level of additional Performance Assurance payment.

Clarifying Questions/Comments?

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Stakeholder Discussion of Dominion Rule Set & Alternatives

On Financial Security/Deposits and Mechanical Completion Deadlines

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Lunch Break
(Will Return at 1:30 pm ET)

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Session #4: Marketing and Customer Enrollment

Review of Existing Dominion Shared Solar Program Rule Set & Alternatives

Summary of 20VAC5-340-50, 20VAC5-340-60 and 20VAC5-340-100 (1)

- **Interconnection agreement/license thresholds for customer enrollment**
  - Each entity that seeks to be a SO must obtain a license from the SCC, or receive a waiver or otherwise be exempt, and must also have begun the process of registering with the utility prior to engaging in marketing.
  - A SO must comply with any special interconnection arrangements with the utility, provide a copy to the executed interconnection agreement in order to register with the utility, and may not enroll customers until:
    - The utility's customer information system is operational (or July 1, 2023 at the latest)
    - The project received the executed interconnection agreement, and
    - Any applicable local and state permits for the facility in question

Please note there will be a separate consumer protection discussion as part of Meeting #4, including enrollment and marketing

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Alternatives to Interconnection Agreement/License Thresholds for Customer Enrollment (1)

- Depending on where a state is in its DG/DER market development, there are widely varying degrees of interconnection (IC) congestion, queue lengths, and costs across different regions, service territories, and even individual circuits.
- To potentially accommodate Virginia's more nascent stage of shared solar market development, there are several less advanced milestone options, including:
- **IC can be applied for and processed after program application**
  - ME NEB does not require interconnection application to reserve capacity, but as noted in Meeting #1, most projects in NEB queue will not be built because of IC cost constraints.
  - New Mexico's nascent rules only require the utility to consider interconnection applications for community solar after projects have been allocated program capacity.
- **Require IC application, but not executed IC agreement**
  - Utility can give ballpark figure for IC costs vis-à-vis project viability without delaying application for program. See RI REG program.
  - As noted above, NY-Sun requires an IC application and 50% of the estimated IC costs paid to reserve program capacity.
  - Minnesota' Solar*Rewards program by Xcel requires a signed IC agreement, but not executed.

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Alternatives to Interconnection Agreement/License Thresholds for Customer Enrollment (2)

- **Potential Upside of project eligibility earlier in the IC process-** Projects could reserve capacity and begin marketing sooner
- **Potential Downside of project eligibility earlier in the IC process-** potential for project delays and attrition, and/or unanticipated costs given IC unknowns
- All programs reviewed required registration prior to customer enrollment, likely as a consumer protection matter.

Clarifying Questions/Comments?

Stakeholder Discussion of Dominion Rule Set & Alternatives

On interconnection and registration milestones for customer enrollment

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Mid-Afternoon Break (Will Return at 3:30 pm ET)

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Summary of 20VAC5-340-50, 20VAC5-340-60 and 20VAC5-340-100 (2)

- **Utility/subscriber organization data transfer**
- The rules state that "Data transfer protocols for exchange of data between the subscriber organization and the utility shall be established to include:
  - Data components;
  - Data format;
  - Timing of monthly data exchanges;
  - Encryption level; and
  - Channel of data submission."
- SOs provide subscriber list with kWh generated applicable to each subscriber to utility, and may offer either separate or consolidated billing.
- Utility provides SO a report on value of bill credits from each facility and applied to each subscriber.
- SO is responsible for keeping customer data and not disclosing without permission, except as required by law.

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Questions in Lieu of Alternatives to Utility/Subscriber Organization Data Transfer

- Data transfer is both a sensitive topic (involving customer's billing information) and can be very technical.
- Additionally, overly prescriptive data transfer requirements can be burdensome without corresponding benefits, such as requiring significant IT investments from smaller utilities.
- In lieu of review of alternatives that may or may not be useful in this case, SEA would like to pose questions for stakeholder reactions (either now or prior to the next meeting):
  - What data transfer systems and capabilities do the utilities currently have, and are additional investments needed? Same or different as Dominion?
  - What data transfer system and capabilities have the solar developers used before, and what has worked or not worked about them?
    - Who should own the data? Who should store the data? What kind of security measures should be required?
    - What kind of data should be required, same or different than Dominion Rules? How often should data transfers occur?
    - How should the payment information be distributed, and who gets paid first?
  - Might the New York Electronic Data Interchange standards (requires specific information and processes, as well as training and certification by energy suppliers) be a model, or are Dominion's protocols a better fit?

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Clarifying Questions/Comments?

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Stakeholder Discussion of Dominion Rule Set & questions

On data transfer

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Summary of 20VAC5-340-50, 20VAC5-340-60 and 20VAC5-340-100 (3)

- **Means to enhance enrollment of low-income customers**
  - 20VAC5-340-100 states that the SCC shall initiate a stakeholder process to facilitate low-income customer and low-income service organization participation in the program
    - Definition of "low-income customer": Person or household whose income is no more than 80% of median locality income, determined by U.S Department of Housing and Urban Development
  - 20VAC5-340-60 allows for consolidated billing/"net crediting"
  - 20VAC5-340-90 Subpart A states that subscriber organizations shall provide a report to the SCC regarding the organization's achievement of contracting with low-income customers prior to commercial operation of any facility, and update the report semi-annually
    - If the subscriber organization did not meet its low-income customer target for the previous year, it will provide a detailed plan on how it will meet the target in the upcoming year
  - 20VAC5-340-90 Subpart C states that affordable housing providers that subscribe on behalf of their low-income tenants shall annually submit a report describing how bill savings were provided to tenants

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A Note on LMI reporting SCC proceeding

- SCC has proceeding that is currently ongoing on this subject:
  - Whether LMI resources have to provide certification to PJM GATS
  - If so how often?
  - Staff report due at end of Sept. will be opportunity for comment on staff report once it is released

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Questions and Alternatives to Enhance Enrollment of Low Income Customers

- Broadly, entities that could be responsible for low-income customer acquisition and retention include:
  - Subscriber organizations/developers
  - Utilities
    - CT SCEF: EDCs identify and enroll LMI customers, required to promote SCEF, fuel assistance non-profit facilitates enrollment
  - Third party administrator
    - Oregon community solar program includes a competitively-selected Low-Income Facilitator to serve as a liaison between low-income customers and developers to meet capacity requirements
  - Affordable housing/non-profit organization
    - Should there be a certified list of eligible entities? Application process?
    - In MA, DPU maintains a list of approved public entities

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Questions and Alternatives to Enhance Enrollment of Low Income Customers

- Could an alternative definition of low-income enhance enrollment?
  - Definition could be based on:
    - Income (AMI vs State median Income vs Fed. Poverty Level %)
    - Participation in an existing program, such as SNAP, Medicaid, LIHEAP, or utility bill assistance program (if applicable)
      - Possibly easier to verify than income
    - Location
    - Consistent definitions across programs can aid in identification and administration

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Clarifying Questions/Comments?

Stakeholder Discussion of Dominion Rule Set & questions

On LMI customer enhancement

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Next Steps/Concluding Remarks

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Thank you for your participation!

Next meeting TBD, based upon Doodle poll results

Meeting #3

Schedule for Meeting #3

- **9:00-10:00:** Period for stakeholder comments on prior Meeting's discussion
- **10:00-10:30:** Session #5: Bill Crediting Mechanics and Metering
- **10:30-11:00:** Mid-Morning Break
- **11:00-12:30:** Continuation of Session #5: Bill Crediting Mechanics and Metering
- **12:30-1:30:** Lunch Break
- **1:30-3:00:** Session #6: Bill Crediting and Project Compensation
- **3:00-3:30:** Mid-Afternoon Break
- **3:30-4:45:** Continuation of Session #6: Bill Crediting and Project Compensation
- **4:45-5:00:** Next Steps/Concluding Remarks

Lead Participants for Meeting #3

- Brandon Smithwood, Dimension Energy
- Mike Hornung (AM) Rich Savage (PM), LGE-KU
- Peter Anderson, Appalachian Voices
- Charlie Coggeshall, Coalition for Community Solar Access (CCSA)
- Carrie Hearne (AM) and Larry Corkey (PM), Virginia Department of Energy
- Olivia Nedd, Vote Solar
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- Connor Kish, Sierra Club
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- Leslie Elder, Summit Ridge Energy
- Tyler Jones, Pivot Energy
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- Laura Merten, Apex Clean Energy
- Laura Gonzales, Clean Virginia
- Abbe Ramanan, Clean Energy Group/Clean Energy States Alliance
- Liz Veazey, Solar United Neighbors
- Jeremy Karpf, OYA Renewables
- Jake Springer, Nexamp

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Stakeholder Comments on Prior Meeting's Discussion

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Session #5: Bill Crediting Mechanics and Metering

Review of Existing Dominion Shared Solar Program Rule Set and Alternatives

Summary of 20VAC5-340-60-Consolidated billing/Net crediting

- 20VAC5-340-60 Subsection B states that a subscriber organization may offer separate billing or consolidated billing service
  - Consolidated billing: Utility includes the subscription fee on the customer's utility bill and provides a net credit equal to the total bill credit value minus the subscription fee
- 20VAC5-340-60 Subsection H-2 states that the fee that utilities charge for net crediting shall not exceed 1% of the bill credit value
- 20VAC5-340-60 Subsection H-1 requires that net crediting functionality shall be part of any new customer information plan approved by the SCC

Alternatives to Dominion Rules on Consolidated billing/Net crediting

- There are three general options for bill crediting processes:
  - Require consolidated billing
  - Require only separate billing
  - Provide option of separate billing or consolidated billing (current Dominion practice, at discretion of Subscriber Organization)
- Examples from other states
  - In CO Community Solar Gardens, subscribers receive separate bills
  - In NY Community Distributed Generation, PSC approved switch to consolidated billing (net crediting) in 2019
    - While supportive of consolidated billing, some developers raised concerns regarding the presentation of customer savings on customer's bills and whether developers could include a message on the bill
  - NM Community Solar rules did not include a requirement for consolidated billing, utilities expressed opposition to the responsibility of billing subscriber fees
- How much of consolidated billing processes should be left to utility discretion versus instructed in rules?
  - If included in rules, what guidelines should there be for utilities to implement consolidated billing?
    - How should the utility present savings on bill?
    - Who writes the explanation of savings on the bill?

Clarifying Questions/Comments?

Stakeholder Discussion of Dominion Rule Set & Alternatives

On Consolidated Billing/Net Crediting & Dual Billing

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Mid-Morning Break (Will Return at 10:55 am ET)

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Summary of 20VAC5-340-60 (1)-Speed of crediting to customer bills

- While, as discussed in the last module, billing to the customer occurs on the utility's normal billing cycles, the credits do not follow the same rules
- Subpart C- Subscriber bill credits must be applied within two billing cycles following the cycle in which the energy was generated
  - Utility provides SO with value of bill credits on monthly basis
- Subpart F 1 – "Bill credits shall be for a particular calendar month, regardless of the billing period or billing cycle of the individual customer's account"

Alternatives to Speed of Crediting

- **Billing cycle calculation-** All crediting could be aligned with utility billing cycles for customer in question, or all customers subscribed to a given project
  - ME NEB program permits the utility to "place net energy billing accounts on the same billing cycle" and allocate generation from a shared solar facility during the billing period to customer accounts, plus any credits remaining from prior billing periods
  - NM community solar bill credits are applied to subscriber bills within one billing cycle following the cycle during which the energy was generated
- **Upside and Drawbacks:** Crediting timelines are ultimately arbitrary, but a mismatch between production, crediting, and billing could create customer confusion, add to administrative costs, and potentially present cash flow issues

Summary of 20VAC5-340-60 -project metering requirements

- **Shared Solar facilities** must have a utility-provided meter with 30-minutes interval measurement capabilities
- **Shared Solar facility** may not be located behind another utility customer's account (i.e., must be Front-of-the-Meter [FTM])
- **Subscriber organization** pays for the costs of installation, maintenance, and meter reading as billed by utility

Alternatives to Metering Requirements Questions

- **What type of meter?**
  - Kilowatt-hour meter vs demand meter if paired with ESS ("smart meters")?
  - Bypass vs non-bypass meter sockets?
  - Production-grade meter vs revenue-grade meter?
  - Production model or inverter data as rough justice for backup?
  - Different configurations for different sizes / for different utilities?
- **Who procures and owns meter?**
  - In all jurisdictions surveyed, developer procures meter socket, utility installs and owns actual meter. ANSI C12.1-2008 is most common accuracy requirement.
- **Potential customer choice of metering**
  - CT has "buy-all" and "netting" choice that necessitates different types of configurations- has led to customer choice but also some programmatic issues (e.g., buy-all must export directly to the grid)
- **What needs to be "future-proofed"?**
  - Supply chain (meter socket shortage?) or IT issues (3G sunset)?
  - Is internet hardwiring required or recommended, and should meters be LTE or 5G enabled?
- **Upside:** Ensure accurate billing and telemetry for all stakeholders
- **Downside:** Too stringent of a requirement can burden developers, too lax can lead to inaccurate billing or safety issues for utility staff

Clarifying Questions/Comments?

Stakeholder Discussion of Dominion Rule Set & Alternatives

On Speed of Crediting and Metering Requirements

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Lunch Break
(Will Return at 1:10 pm ET)

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Session #6: Bill Crediting and Project Compensation

Review of Existing Dominion Shared Solar Program Rule Set and Alternatives

Summary of 20VAC5-340-60 and 20VAC5-340-80 (1)

- **Credit Values-** § 56-594.3 of the Code of Virginia subpart C states that "Each subscriber… shall receive an applicable bill credit based on the subscriber's customer class of residential, commercial, or industrial. 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)"
  - Credit value left up to SCC adjudicatory process, determined that FERC Form 1 (which is less of taxes, as opposed to EIA data w/ taxes), as was used in the Multi-Family Shared Solar Order, was the more appropriate methodology,
    - Yielded Residential bill credit rate of 11.765¢/kWh, Commercial credit of 7.120¢/kWh, and Industrial credit of 5.901¢/kWh for the first year

Summary of 20VAC5-340-60 and 20VAC5-340-80 (2)

- **Carryover-** Subpart F 2 of section 60 states that bill credits for a given subscriber in excess of the subscriber's monthly bill, less the minimum bill, are to be carried over from month to month until either the credit is satisfied or "up to 12 months"
  - The SO can accrue bill credits if not all production is allocated, and allocate its accrued excess bill credits to subscribers annually
- **Term of Credits-** The utility must provide bill credits for the subscribers for no less than 25 years from the shared solar facility's commercial operation date

Alternatives for Credit Value (1)

- Structural questions:
  - What is being procured (Energy, Capacity, RECs?)
  - Fixed vs variable compensation?
  - Retail or derivative thereof, Procurement, Feed-in-Tariff?
  - Added compensation for potential beneficial attributes (e.g., siting on previously disturbed land)

DER Incentive Program	Fixed $/kWh Components	Variable $/kWh Components	Comment
CT Net Metering	n/a	NM Rate & Class I RECs	
CT ZREC	Class I RECs	Retail, NM or Wholesale Rate	
DE Community Solar	n/a	Retail Rate	Distribution + Supply Service only
IL Adjustable Block	RECs	Retail energy and transmission only for Community Solar	RECs valued at the modeled "missing money" rate
MA SMART Stand-alone	Sum of Incentive + Value of Energy Rates	Generally, n/a, but exceptions exist	Declining Block program; RECs claimed by EDC.
MA SMART BTM	Incentive Rate	Retail, NM or Wholesale Rate	Declining Block program; RECs claimed by EDC
MA SREC	n/a	SRECs & Retail, NM or Wholesale Rate	
ME DG Procurement	Value of Energy	Class I RECs	Declining Block program
ME Net Energy Billing 1.0	n/a	NEB Rate & Class I RECs	Offers NEB kWh Credit and NEB Tariff Rate variants
ME Net Energy Billing 2.0	NEB Tariff Rate	Class I RECs; NEB kWh Credit	
NY VDER	E, DRV, LSRV & MTC / Community Credit	LBMP & Capacity	DRV only fixed for first 10 years
NY Net Metering (On-site BTM)	n/a	Retail Rate, non-tradable RECs	Restricted to ≤ 750 kW
NH Net Metering	n/a	NM Rate & Class I/II RECs	
NJ SREC-II ADI	SREC-IIs	Retail, NM or Wholesale Rate	SREC-IIs fixed for 15 years
NM Community Solar	n/a	Retail Rate & RECs	Only generation, FPPCAC, and transmission components of retail rate
RI REG Program	Incentive Rate	n/a	Incentive rate fixed for 15-20 years; RECs claimed by EDC
RI Net Metering	n/a	NM Rate & Class I RECs	
VT Standard Offer	Incentive Rate	n/a	Incentive rate fixed for 15-25 years; RECs claimed by EDC
VT Net Metering	n/a	NM Rate & Class II RECs	RECs retained or claimed by EDC

Alternatives for Credit Value (2)

- **VDER-** Credit value based on avoided costs (i.e., value) associated with DG
  - Used to follow cost-causation principles and incent most beneficial siting of projects
  - However, methodology for VDER study to set prices is pivotal
  - NY currently employs this method, NH just finished VDER study
- **Credit based on retail billing determinants-** Credit value could, e.g., include elements like energy and transmission but not include some or all of the distribution charges, customer charge, and demand charge from credit value
  - DE Community Solar program credit is distribution + supply service portions of retail rate
  - NM community solar program compensation is Generation, Fuel & Purchased Power, and Transmission portions of retail rate
- **Credits based on retail billing determinants, with added incentive-** retail rate components as above, plus added value for other attributes
  - MA SMART AOBCs value of energy plus incentive rate for RECs to meet assumed project revenue requirement

Alternatives for Credit Value (3)

- **Buy-All, Sell-All:** customer purchases power from the grid at full retail rate, solar project is compensated for generation from shared solar facility at a certain export rate and credit is applied to subscriber bill
  - RI REG program Community Remote Distributed Generation projects
  - CT SCEF program and some CT NRES projects
- **Administratively set:** Regulatory body picks a price for resources to be compensated, normally subject to annual review
  - More common in Europe, or for smaller resources, but MA SMART BTM resources are an example for the credit value
- **Potential upsides:** Price-locked programs can provide certainty once capacity reserved, variable programs can move in tandem with the larger energy market, mix of billing determinants or VDER can reflect value to grid
- **Potential Downsides:** Fixed prices sometimes don't reflect changing conditions, retail prices not always reflective of project costs, difficult to strike right mix of billing determinants or value DERs
  - **Potential mitigations:** Adjudicatory process of SCC proceedings is intended to balance issues of fairness, market development, and public policy goals

Alternatives to Carryover

- Excess credits rolled forward indefinitely until end of term
  - CT NRES (but with clawbacks for systems oversized to expected load growth from electrification)
  - NM Community solar program
- Excess credits at end of a year cashed out at avoided cost (PURPA QF) rate
  - MA SMART AOBC rules (March 31 of each year)
- Excess credits past 12-month rolling period applied towards utility arrearage accounts
  - ME NEB program

Alternatives to Credits Term

- 20 years +/- 5 is general industry range
  - MA SMART, RI REG shared solar, ME NEB are all 20 years
  - NM Community Solar is 25 years
  - Smaller projects (like residential) generally have shorter terms
- Question of what happens to project after tariff term?
  - Payment at Qualifying Facility (QF) "avoided cost" rate, as in CT (APCO and ODP)?
  - After procurement tariff term RI REG facilities can net meter
  - Wholesale participant for Old Dominion, wheeling for APCO?
  - Possibility of bi-lateral deal?
  - Leave it up to the market?

Clarifying Questions/Comments?

Stakeholder Discussion of Dominion Rule Set & Alternatives

On bill credit values, carryover, term of credits provided and other rules

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A Note on Minimum Bill in SCC proceeding

- There is a pending Motion for reconsideration and clarification before the SCC
- Commentary from SCC staff on this topic is therefore limited
- Similar to the case with LMI reporting in PJM GATS

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Summary of 20VAC5-340-60 and 20VAC5-340-80 – Minimum Bill Value and Cost Composition and LMI Minimum Bill exemption

- The minimum bill is a minimum monthly fee that subscribers must pay after accounting for any bill credits
  - 20VAC5-340-60 Subsection G states that low-income customers shall be exempt from the minimum bill
    - 20VAC5-340-80 Subsection A states that the SCC shall consider how the utility will recover minimum bill charges for low-income customers. The SCC decided to recover these costs using Dominion's fuel factor rate
  - The SCC may modify the minimum bill over time
- 20VAC5-340-80 states that when the SCC establishes the minimum bill, it must:
  - Consider costs to ensure subscribers pay a "fair share" of costs of providing electric services to subscribers; and
  - Minimize costs shifted to customers not in a shared solar program
- 20VAC5-340-80 states that the minimum bill components shall be limited to such costs the SCC finds just and reasonable and reflect incremental costs of the shared solar program not otherwise recovered by the utility

Summary of Minimum Bill Value and Cost Composition Continued

- The SCC must consider the following factors to determine "whether costs proposed by the utility are incremental to the shared solar program and eligible for inclusion in the minimum bill:"
  - The extent that the costs are utility infrastructure and services providing electric service for the program
  - The extent that the costs are program administrative costs
  - Whether including the cost is necessary to ensure subscribers pay a fair share of costs of providing electric services to the subscribers
  - Whether including the cost will minimize costs shifted to customers not in the program
  - Whether including the costs is otherwise consistent with the shared solar law
- Following a regulatory proceeding, the SCC determined that the minimum bill shall be composed of:
  - Fixed Customer and Administrative charges
  - Volumetric transmission, distribution and non-bypassable generation charges

Alternatives to Minimum Bill and LMI Exemption

- How do other jurisdictions treat program costs and possible cost shifting?
  - In most jurisdictions utilities treat program costs as net lost revenue to be recovered in a rate case
  - Including costs in the calculation of bill credit
    - CO Community Solar Garden net metering credit calculation subtracts a charge that reflects utility's delivery, integration and administration costs
  - Recovering costs from all customers
    - ME NEB recovers administrative costs and lost revenue in its stranded cost recovery process, allocated to all statewide customers, regardless of service territory
    - MA utilities recover net metering and SMART costs through line-item charges to all customers
  - Legislative provisions to reduce cost-subsidization
    - NM community solar legislation requires that non-subscribers shall not be charged more than 3% of their aggregate retail rate to subsidize subscribers

Alternatives to Minimum Bill and LMI exemption cont.

- If there is a minimum bill for subscribers, what costs should be included in its calculation?
- If there is an LMI exemption, how should utilities recover those costs?
  - Separate line item on bills? MA does this for SMART with annual reconciliation filing as a $/kWh charge, although shared solar is only one part of the SMART program net costs
  - Base rates
- Revenue decoupling mechanism (essentially a true-up between the expected kWh sales and actual kWh sales to ensure utility meets revenue requirement) can make the utility financially agnostic of volumetric kWh through-put

Clarifying Questions/Comments?

Stakeholder Discussion of Dominion Rule Set & Alternatives

On Minimum Bill & LMI Exception

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Mid-Afternoon Break (Will Return at 3:25 pm ET)

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Continuation of Stakeholder Discussion of Dominion Rule Set & Alternatives

On Minimum Bill & LMI Exception

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Thank you for Attending

Next Stakeholder session October 6

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Meeting #4

Schedule for Meeting #4

- **9:00–10:30:** Stakeholder comments on previous meeting topics & discussion
- **10:30–11:00:** Presentation by NREL
- **11:00–12:30:** Session #7: Consumer Protection and Program Administration
- **12:30–1:30:** Lunch Break
- **1:30–3:00:** Continuation of Session #7: Consumer Protection and Program Administration
- **3:00–3:30:** Mid-Afternoon Break
- **3:30–5:00:** Review of Outcomes of Sessions/Concluding Remarks

Lead Participants for Meeting #4

- Brandon Smithwood, Dimension Energy
- Mike Hornung, LGE-KU
- Peter Anderson, Appalachian Voices
- Charlie Coggeshall, Coalition for Community Solar Access (CCSA)
- Carrie Hearne, Virginia Department of Energy
- Olivia Nedd, Vote Solar
- Jon Amores, Appalachian Power
- Will Giese, Solar Energy Industries Association (SEIA)
- Carmen Bingham, Virginia Poverty Law Center
- Connor Kish, Sierra Club
- Nitzan Goldberger, Chesapeake Solar and Storage Association (CHESSA)/New Leaf Energy
- Jen Bosco, National Consumer Law Center
- Mike Dowd, Virginia Department of Environmental Quality (DEQ)
- Trieste Lockwood, Lockwood Strategies (on behalf of Arcadia)
- Jennifer Perkins, Virginia Department of Agriculture and Consumer Services (DACS)
- Josephus Allmond, Southern Environmental Law Center (SELC)
- Lou Ann Wallace, Russell County Board of Supervisors
- Andy Wyatt, GRID Alternatives
- Will Lattea, City of Blacksburg, VA
- Cliona Robb, Thompson McMullan (on behalf of Secure Futures)
- Ruth McElroy Amundsen, Norfolk Solar QOZ Fund
- Annie Wagner, OneEnergy Renewables
- Leslie Elder, Summit Ridge Energy
- Tyler Jones, Pivot Energy
- Justin Biltz, Cypress Creek Renewables
- Laura Merten, Apex Clean Energy
- Laura Gonzales, Clean Virginia
- Abbe Ramanan, Clean Energy Group/Clean Energy States Alliance
- Liz Veazey, Solar United Neighbors
- Jeremy Karpf, OYA Renewables
- Jake Springer, Nexamp

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Stakeholder Comments on Prior Meeting's Discussion

Continuation of Session #6: Bill Crediting and Project Compensation

Presentation on Shared Solar by NREL: 10:30-11:00 am

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Session #7: Consumer Protection and Program Administration

Review of Existing Dominion Shared Solar Program Rule Set and Alternatives

Summary of 20VAC5-340-50, 20VAC5-340-60, and 20VAC5-340-70

- Minimum customer disclosure and protection requirements
  - SO cannot conduct marketing until after it receives a license, exemption or waiver from the SCC & also has begun registering with the utility
  - SO cannot enroll customers until the earlier of the utility's customer information system is operational, or July 1, 2023, and the project receives an executed interconnection agreement and all non-ministerial permits
  - SO cannot use credit checks as an eligibility criteria for residential subscribers
  - SO must maintain a copy of customer's contract until at least one year after contract expiration, providable to the customer, utility, or SCC upon request

Minimum customer disclosure and protection requirements (2)

- Outreach materials from a SO must be "accurate and understandable" and state "in a manner that is not misleading" that the "price for the subscription does not include charges to be billed by the utility"
- SOs must describe how the shared solar program functions and provide customer disclosure information prior to executing a contract, including the roles of the SO and the utility, and how the customer will be billed
- At a subscriber request the SO may transfer the subscription to a new address under the existing contract, so long as the new address is also within the same utility service territory; the SO would then provide the utility with updated billing information
- A subscriber may also transfer the subscription to a new subscriber so long as the new subscriber meets the eligibility requirements of the utility and SO

Minimum customer disclosure and protection requirements (3)

- Contracts between the SO and subscriber must include:
  - The price of the contract in $/kWh, or explaining how the price will be calculated if not $/kWh
  - Size of the subscription (in kW), including modification of the subscription if the solar project underperforms
  - Length of the contract, location and size of the facility, and approximate effective date of the enrollment
  - Billing terms and conditions, and any applicable fees
  - A description of the responsibilities of the SO and the utility
  - A toll-free number and address for complaints and questions
  - A statement that the size of the subscription may not exceed the annual estimated usage, each customer, may only participate in one shared solar or multi-family solar facility, and that net metering customers may not participate in the shared solar program
  - Confirmation that the utility and SO may exchange information about the subscriber, including utility account number, and details of the subscription

Minimum customer disclosure and protection requirements (4)

- The SO must provide to the utility an initial list of subscribers and their subscription information at least 60 days prior to the shared solar facility providing service to any customer
- The SO must provide notice to customers, the utility and the SCC at least 60 days prior to the termination or abandonment of a shared solar facility
- If multiple enrollment requests are submitted for the same customer, the utility shall process the request with the earliest contract date and notify the customer of receipt of request for enrollment withing five business days
- The utility shall only terminate enrollment "with sufficient proof" from either the SO or the subscriber of termination

Minimum customer disclosure and protection requirements (5)

- As previously noted, any shared solar subscription fee under net crediting (but not dual billing), "shall be set to ensure that subscribers do not pay more in subscription fees than they receive in bill credits."
- In net crediting, the utility may charge a net crediting fee not to exceed 1% of the bill credit value, which must be clearly identified on SO's marketing materials
- Failure by a subscriber to pay any **regulated** charges have the same credit consequences as in the SCC-approved terms and conditions of service, but a subscriber may not be disconnected for nonpayment of **unregulated** service (i.e., service from an SO)
- The SO has responsibility for safeguarding customer information and not disclosing unless permitted by subscriber or required by law, unless such information is already in the public domain

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Dispute resolution procedures (1)

- The SO must establish a dispute resolution procedure identifying the process to be followed with customer disputes, and furnish a copy to the subscriber or SCC upon request
- If that process does not resolve the dispute, the SO or subscriber may file a formal complaint with the SCC, or exercise rights and remedies under equity or law
- SOs must provide a 24-hour toll-free number for customer questions and complaints related to services provided by the SO
  - During business hours the number must provide the customer with the opportunity to speak with a customer service representative, outside of business hours it may be a recorded message

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Dispute resolution procedures (2)

- If a customer has been referred to the utility by the SO, or vice versa, for an inquiry or complaint, the second party contacted shall either resolve the issue or contact the other party to determine responsibility
- SOs must direct a customer to the utility if the issue is a service emergency
- If an SO and subscriber cannot resolve a dispute, the SO must provide the toll-free number and address of the SCC
- SO must retain customer bill, compliant, and account records for at least three years, providable to the customer or SCC upon request

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Alternative Consumer Protection Options

- Guaranteed savings for all participants in the program, not just Net Crediting customers
  - Question of how this would be verified for dual billing customers
- Guardrails around entry and exit fees?
  - ME NEB states that a customer may rescind authorization to SO within five days of first bill or invoice, customer must pay invoice but not be charged any fees
- Limit SO Collections to actual costs
  - i.e. not in excess of actual out-of-pocket expenses, including attorney and court fees, as in ME NEB?
- Ban SO from stating or implying it is from the utility
- Penalties for unfair trade practices
  - Rescission of license
  - Restitution
  - Penalty fees

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Alternative Consumer Protection Options

- In many states the Attorney General is the consumer protection enforcement body, issues guidance and warnings
- Dedicated ombudsperson to settle disputes? Either SCC staff or third-party?
- Mandated arbitration/mediation between SO and Utility?
  - MA & ME have this for interconnection disputes, ME NEB shared solar program states the "utility, a customer or a project sponsor must engage in good faith efforts to the resolve the dispute before a Notice of Dispute is filed"
- Ensuring public access to complaints can increase transparency
  - IL has a "Solar for All" complaint database (example)

Other Considerations

- **Green Claims:**
  - Many participants may assume that because energy from a solar array is being credited to their bill, they are procuring "green" or "clean" power
  - In fact, the REC is the title to the environmental attributes of the solar energy generated (REC life of 5 years, SO's retain RECs currently)
  - Specifically, only when one retires a REC is the "clean-ness" ascribed to the REC holder; just having a REC and then selling the REC does not convey the environmental attributes to the seller (but does convey those attributes to the buyer of the REC)
  - How to make this clear to consumers?
    - ME NEB states that "By participating in this program, you are supporting renewable energy development but are not purchasing renewable energy. The energy generated by the project does not go directly to subscribers' homes, but instead is fed into the power grid"

Resources to Consider

- Clean Energy States Alliance Consumer Protection Report (see Appendix B for state-specific examples)
- IREC Solar Consumer Resources
- SEIA Consumer Protection Resources & specific to Complaint Process
- IL Consumer Protection Handbook
- RI Solar Disclosure Form

Clarifying Questions/Comments?

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Stakeholder Discussion

RE: Consumer Protection and Alternative Options

Lunch Break
(Will Return at 1:30 pm ET)

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Continuation of Session #7

Consumer Protection and Program Administration

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Summary of 20VAC5-340-30 and 20VAC5-340-110, Subscriber organization licensing/affiliate transaction limitation

- 20VAC5-340-30 states that prospective subscriber organizations shall obtain a license from the SCC prior to commencing business operations
  - Prospective SOs file an application with the SCC clerk and provide a copy to the utility
  - Applications shall be filed by the entity that controls or will control the solar projects, instead of separate applications for each project
- Among the required materials in an application, applicants must disclose if they are an affiliate of the incumbent utility
  - If so, applicants must describe internal controls to prevent the exchange of information from the utility that would give the affiliate SO an undue advantage over nonaffiliated SOs

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Continued summary of 20VAC5-340-30 and 20VAC5-340-110, Subscriber Organization licensing/affiliate transaction limitation

Information that prospective SOs must provide in their application:

- General identification information, including a description of business structure and contact information
- Information to demonstrate financial fitness, such as a bond rating and balance sheet
- Information to demonstrate technical fitness, including a description of experience developing solar, billing capabilities and employee experience
- A copy of the applicant's dispute resolution procedure
- A copy of the applicant's proposed standard agreement it plans to use with prospective subscribers
- A $250 registration fee
- Disclosure of any civil, criminal penalties within the last five years
- Disclosure if the prospective SO has ever applied to conduct a similar type of business and been denied or if the prospective SO has ever had a license suspended or revoked
- A copy of the applicant's low-income subscription plan

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Continued summary of 20VAC5-340-30 and 20VAC5-340-110, Subscriber Organization licensing/affiliate transaction limitation

- Subscriber organizations may be granted exemption certificates instead of licenses if they provide less than 500 kW_{AC} at any location or multiple locations
  - 20VAC5-340-110 outlines the licensing exemption process, which allows smaller projects to provide notice to the SCC rather than apply for a license
  - Exempt SOs do not need to prove "financial" and "technical" fitness, but must provide "Sufficient information to demonstrate viability to provide said service to its subscribers"

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Alternatives to 20VAC5-340-30 and 20VAC5-340-110, Subscriber Organization licensing/affiliate transaction limitation

- Questions regarding registration requirements
  - Would stakeholders prefer the addition/elimination of any requirements for registration?
  - Opinions on the exemption for smaller projects?
    - We note that to date, all shared solar projects on the Dominion website are greater than 3 MW
- Example of rules related to utility-affiliates
  - In NM Community Solar rules, no utility may use information to which the utility has "superior access" to gain an advantage for any utility-affiliated bidder in the project selection process
    - A third-party administrator selects projects
  - Should the Dominion rules regarding affiliates be applicable to the Virginia Phase 1 utilities?
- List of registered SOs?
  - In NJ, subscriber organizations must register with the NJ Board of Public Utilities, which maintains a list of currently registered subscriber organizations
  - Customers can check the list to see if they are interacting with a legitimate SO

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Summary of 20VAC5-340-90, Reporting Requirements

- 20VAC5-340-90 states that prior to commercial operation, each SO must provide a report to the SCC on its low-income contracting and file the report semi-annually. The report shall include:
  - Total subscribers and amount of kW subscribed by each subscriber
  - Total low-income subscribers and kW subscribed by each
  - A plan to meet the SO's low-income customer target if it is not meeting that target
  - Certification that no subscriber's subscription size in bill credits exceeds the subscriber's average annual bill over the past 12 months
- Affordable housing providers subscribing on behalf of their low-income tenants must submit a written report to SCC staff describing how bill savings or other tangible benefits were provided for tenants in the last year

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Alternatives to 20VAC5-340-90, Reporting Requirements

Examples of reporting requirements in other jurisdictions

- In NM, each SO must report monthly on its progress to reach the 30% low-income subscription minimum
  - Once the SO reaches the goal it will file reports on a quarterly basis to verify that it continues to meet the requirement
- In ME Net Energy Billing, utilities provide quarterly reports to the Public Utilities Commission including the list of all NEB facilities in the utility territory, revenue loss from NEB kWh credit arrangements and the administrative costs incurred by the utility to implement the NEB program
- In OR, commission staff are required to "periodically" conduct public workshops to solicit comment on the Community Solar Program and report to the Oregon PUC with the results

Questions for the stakeholder group:

- Is the annual low-income report in the Dominion rules frequent enough?
- Is there information stakeholders would like to see in reports from the utilities?
- Is there a desire for program-wide evaluation reports?
  - If so, what topics should be included in such reports?

Clarifying Questions/Comments?

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Stakeholder Discussion

RE: Licensing and Reporting Requirements and Alternatives

Mid-Afternoon Break (Will Return at 3:30 pm ET)

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Review of Outcomes of Sessions/Concluding Remarks

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Review of Outcomes of Sessions/Concluding Remarks

- **Next Steps:**
  - SEA to draft legislative report based upon input provided during these stakeholder sessions (as required by statute)
  - SEA intends to request stakeholder group comments/clarifications on the draft (but not new content or re-litigation)
  - Draft due to Stakeholder Group **by November 1, 2022**
    - Comments **due November 4**
  - SEA will incorporate comments or clarifications as appropriate
  - SCC to send report to General Assembly by statutory deadline of **November 30, 2022**

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A Word From SCC Staff

- Shepelle would like to provide notice of another upcoming Working Group

Review of Outcomes of Sessions/Concluding Remarks

- **Last Call:**
  - For any materials not already sent to SEA that stakeholders wish to be considered in the report, for example
    - Studies substantiating stakeholder points
    - Program designs from other jurisdictions
    - Illustrative examples (e.g., sample bills, sample customer disclosure statements, etc.)
    - Recommendations from stakeholders on the record for next steps the General Assembly may consider (like utility-specific or subject matter-specific working groups)
  - Please send any additional material to SEA staff Jim Kennerly (jkennerly@seadvantage.com) and Cal Brown (cbrown@seadvantage.com), CC'ing Shepelle Watkins-White (Shepelle.Watkins-White@scc.virginia.gov) at the SCC, by close of business on **Thursday October 13** at the latest

Thank you for Attending

This concludes the last stakeholder meeting

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Inflation Reduction Act Slides

DISCLAIMER

- The provisions and implications of **P.L. 117-169 - Inflation Reduction Act of 2022** (enacted August 16, 2022) remain subject to substantial and ongoing interpretation.
- Furthermore, over the next several years, the provisions of the Act will be subject of thousands of pages of implementing regulations issued by the U.S. Department of the Treasury, Internal Revenue Service (IRS) and other federal agencies.
- Sustainable Energy Advantage, LLC (SEA) is a public policy and market consulting/advisory firm. As such, SEA does not provide tax or legal advice, and this presentation is not intended to constitute, or serve as, as tax or legal advice regarding this legislation (or other elements of federal law).
- ***SEA recommends that anyone seeking such advice should consult with qualified tax and legal advisors.***

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- ***SEA recommends that anyone seeking such advice should consult with qualified tax and legal advisors.***

Changes to Existing Renewable/Clean Energy Tax Credits for Corporate Taxpayers

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Investment Tax Credit (ITC) Extensions for Existing and New Resources Through 2024: How it Works

- **Credit Amount/Applicability to Eligible Resources:** Increases maximum 2023 credit rate ***from 22% to 30%*** if project fulfills prevailing wage/apprenticeship requirements (with ***6% base credit***).
- **Expansion to New Resources:** Expands eligibility to include:
  - Energy storage >5 kWh;
  - Linear generators (which can be used to generate electricity on-site by industrial customers, using hydrogen or natural gas);
  - Microgrid controllers; and
  - Biogas property that "converts…(or condenses)…biomass into a gas which consists of not less than 52% methane by volume"
- **Bonus Credit Eligibility:** Eligible for ***domestic content, "energy communities" and ITC-specific environmental justice (EJ) bonuses*** only for solar, wind and paired energy storage <5 MW

Investment Tax Credit (ITC) Extensions for Existing and New Resources Through 2024: How it Works

- **Transmission/Distribution Interconnection Property for Resources <=5 MW:** Projects can now include interconnection property (***regardless of if utility owns it***) in the basis for calculating ITC's value;
- **Phase-Out Approaches/Effective Dates:**
  - Extension is available for projects starting construction by end of year (EOY) 2024.
  - Base/full credit structure will take effect no earlier than ***60 days following Treasury/IRS labor guideline issuance***
    - **NOTE:** It is our understanding this date will likely be in ***2023, not 2022***.
  - Ability to claim bonus credits (as well as interconnection property in ITC basis) open to projects ***placed in service in 2023 and thereafter***, but limited to those ***starting construction by EOY 2024***.
  - ***Statutory placed-in-service deadline (EOY 2025) eliminated***, subjecting eligible resources to existing rules requiring ***4-6 years of "continuous construction"***.

New Bonus Credits for ITC-Eligible Solar/Wind Projects for Low-Income/Disadvantaged Communities: The Basics

- **Eligible Projects:** ITC-eligible solar and wind projects ***<5 MW*** (which appears to include ***both ITC-eligible solar and paired storage ILoPTC-eligible wind***
  - **NOTE:** It is unclear if ITC-eligible storage paired with ILoPTC-eligible wind would qualify
- **Available Capacity Limitations & Project Selection:** Added credits would be:
  - Limited to ***1.8 GW per year nationwide*** (with carry-over of unused capacity permitted); and
  - Subject to ***an "efficient process" (yet to be designed)*** by EPA and Treasury
- **Phase-Out Approach/Effective Date:** Same as core ITC (***placed in service 2023 and after***, but ***starting construction by EOY 2024***)

New Bonus Credits for ITC-Eligible Solar/Wind Projects for Low-Income/Disadvantaged Communities: Applicable Percentages

- 10 percentage point (not percent) additional ITC value, based upon the otherwise applicable credit value, ***for solar projects that are in a low-income community***, as defined in §45D (the New Markets Tax Credit program); or
- 20 percentage point (also not percent) additional ITC value for solar projects that are:
  - Part of a ***low-income residential building project***; or
  - ***A low-income economic benefit project*** where **half the benefits** go to recipients with income at 200% of the federal poverty line or below 80% of area median income (***for which shared solar projects qualify***)
- Additional credits ***do not appear to be subject to prevailing wage/apprenticeship requirements*** for receiving the additional bonus credit (unlike the "energy communities" and domestic content bonuses)

Successor Clean Electricity Production & Investment Credits (2025-??)

Sustainable Energy Advantage, LLC

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Successor Clean Energy Production Credit (CEPC) and Clean Energy Investment Credit (CEIC): How They Work (1)

- ***Eligible Resources & Minimum Emission Requirements:*** Any new resource with an emission rate "at or below zero" (net of carbon capture) is eligible (which functionally includes all non-biomass renewable energy)
- **Credit Amount/Applicability:**
  - ***For CEIC:*** Base credit rate of 6%, with full rate of 30% subject to meeting prevailing wage/apprenticeship requirements
  - ***For CEPC:*** Base credit rate of 0.3¢/kWh and full rate of 1.5¢/kWh (both subject to an inflation adjustment) subject to meeting labor requirements
  - ***For All Projects <=1 MW:*** The taxpayer would receive the full rate regardless of the prevailing wage and apprenticeship practices of the taxpayer (same as for ITC/PTC)
- **Phase-Out Schedule:** For projects placed in service, the later of 1) the end of 2032 or 2) the year in which electric power sector emissions are 75% below 2022 levels (as calculated on a national basis), whichever is later
  - CEIC and CEPC eligibility for new credits would then phase down to ***75% of full value (year 1 after emissions threshold reached), 50% (year 2 after)***, and ***0% (year 3 after)***

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Successor Clean Energy Production Credit (CEPC) and Clean Energy Investment Credit (CEIC): How They Work (2)

- **Election of Production or Investment Credits:** Taxpayers can elect either the CEIC or CEPC (rather than having eligibility determined by resource type).
- **Bonus Credit Eligibility:** CEIC/CEPC projects are eligible for same bonus credits, including energy communities, domestic content, and projects <=5 MW serving low-income/disadvantaged beneficiaries
- **5-Year MACRS Eligibility:** Allows all CEIC and CEPC-eligible projects to utilize 5-year MACRS depreciation (but unclear if it allows bonus depreciation, or at what level bonus will be available).
- **CEIC Allowances for Transmission/Interconnection Property for Projects <=5 MW:** Same eligibility as for ITC and ILoPTC.

Core Structural Changes to Renewable/Clean Energy Credits

Sustainable Energy Advantage, LLC

Introduction of Base Credit Rate/Full Credit Rate Structure: How it Works (1)

- **Base/Full Rate Structure for Various Credits:** The full historical credit rates for the existing ITC and ITC in Lieu of PTC (30%) and PTC (2.5¢/kWh, plus inflation adjustment) are restored, but subject to fulfilling minimum prevailing wage/apprenticeship requirements for projects >1 MW
  - ***Projects <=1 MW*:** All projects eligible for the full credit rate applicable to each credit, regardless of prevailing wage/apprenticeship practices
  - ***Projects >1 MW*:** Projects fulfilling prevailing wage/apprenticeship requirements eligible for full credit rate, but projects not fulfilling requirements only eligible for 20% of full credit rate
- **Prevailing Wage Requirements for Full Credit Rate (>1 MW):** Eligible taxpayers must pay Davis-Bacon prevailing wages for the given region and trade, or will be subject to substantial penalties for noncompliance (particularly willful noncompliance)

Introduction of Base Credit Rate/Full Credit Rate Structure: How it Works (2)

- **Apprenticeship Requirements for Full Credit Rate (>1 MW):** Eligible taxpayers must employ certified apprentices to complete
  - 10% of total project labor hours for projects that commence construction in 2022;
  - 12.5% of total project labor hours for projects that commence construction in 2023; and
  - 15% of total project labor for any project that commence construction thereafter.
  - **NOTE:** Requirements can be waived if taxpayer makes a "good faith effort" to seek apprentice labor (and cannot)
- **Stated (vs. Functional) Effective Date:** Projects commencing construction 1/1/2022 and after, ***or projects commencing construction prior to 60 days following issuance of Treasury/IRS guidance*** are exempt (our understanding: IRS guidance not expected for ~4-6 months)

"Energy Communities" Bonus Credit: How it Works (1)

- **Bonus Credit Amount:**
  - +2 percentage point (not %) bonus for base credit, +10 percentage point (not %) bonus for investment credits if meeting labor requirements
  - +2% (not percentage point) +10% (not percentage point) for production credits if meeting labor requirements
- **Eligibility Terms:** "Energy community" is defined as
  - Any brownfield site,
  - Areas with "significant fossil fuel employment"; or
  - Census tracts or "immediately adjacent" census tracts where:
    - A coal mine has closed during the 2000s; or
    - A coal-fired power plant has close during the 2010s.

"Energy Communities" Bonus Credit: How it Works (2)

- **Applicable Credits:** Credits able to monetize this bonus value include:
  - ***Investment Tax Credit (ITC)*** (Existing §48 Authority, through 2024)
  - ***(Successor) Clean Energy Investment Credit*** (New §48E Authority, from 2025-??)
  - ***Production Tax Credit (PTC)*** (Existing §45 Authority, through 2024)
  - ***ITC in Lieu of the PTC (ILoPTC)*** (Existing §48 Authority, through 2024)
  - ***(Successor) Clean Energy Production Credit (CEPC)*** (New §45Y Authority, from 2025-??)
- **Effective Date:** Applies to projects placed in service in 2023 and thereafter

Greenhouse Gas Reduction Fund: How it Works

- **"National Climate Investment Institutions" Investments/Eligibility:** Provides EPA with $20 billion to spend, no later than September 30, 2024, in the following manner:
  - $12 billion to invest in "National Climate Investment Institutions" (NCIIs) (which must be not-for-profit institutions, including ***public sector "green banks"***) in projects that reduce emissions
  - $8 billion specifically set aside to invest in the same NCIIs, but in projects that ***benefit low-income and disadvantaged communities***
- **State, Local and Nonprofit Low-Income/Disadvantaged Community Investments/Eligibility:** Provides EPA with a further $7 billion to invest in state, local and non-profit programs to advance zero-emission projects in low income and disadvantaged communities no later than September 30, 2024.

Appendix B- Stakeholder provided material

Statement of Appalachian Power on Potential Shared Solar Program Principles

Appalachian Power Statement on Shared Solar Program Implementation

As a participant in the Stakeholder Workgroup to Evaluate Shared Solar Programs for Phase I Utilities and Electric Cooperatives in the Commonwealth, Appalachian Power welcomes the opportunity to discuss the issue. It also believes that it is important to have the discussion in the context of company's service territory challenges, and its existing legal and regulatory obligations.

In particular, Appalachian Power's service area is markedly different than Dominion Energy, which is attempting to enact a shared solar program. Population density is lower, which will affect the allocation of transmission and distribution costs. Most importantly, APCo faces population loss, declining load, and struggling economic development in its Southwest Virginia territory. While the company continues to work diligently with its partners on ways to attract new business and industry, the fact remains that more than 50% of Southwest Virginia households in 2018 lived in poverty or earned less than the basic cost of living, a number substantially higher than other regions of the state.

Against this backdrop, Appalachian Power is currently exceeding the renewable energy goals set forth in the Virginia Clean Economy Act, and is seeking additional economical solar and wind projects to meet subsequent year's goals. To date, Appalachian Power customers are already enjoying the benefit of over 1,400MW of utility-grade renewable energy sources at a reasonable cost, as approved by the SCC. Because of these resources, Appalachian Power can offer their Virginia customers the option of enrolling in green energy programs such as the Wind Water Sunlight program that allows them to purchase their entire energy needs from renewable sources, or the Renewable Energy Credits program that allows them to purchase RECs at a low cost to support renewable energy. Appalachian Power believes these economical utility assets and programs offer customers the lowest cost means of accessing and benefiting from renewable energy.

While utility-grade renewable energy continues to be the most efficient and lowest cost option, shared solar programs are being suggested as a means for customers to have a more individualized connection with a particular solar project. Given the company's overarching obligation to ensure grid reliability and energy affordability, and the existing economic challenges its customers face, Appalachian Power believes that for a shared solar program to work in its service area it must not threaten energy reliability, and any cost burdens associated with a program, as a matter of equity, must not be shifted to nonparticipating customers. In keeping with these imperatives, Appalachian Power believes that a responsible shared solar program should include the following principles:

- A shared solar bill credit should be calculated as an energy for energy transaction. Other costs associated with providing the customer's electricity needs should be borne by the customer including energy delivery, administration, and capacity charges from the utility.

- Costs associated with administering special programs should be paid by the participants of the special program, rather than other non-participating utility customers. These costs should include any subsidies given to certain groups within the special program such as LMI customers' avoidance of minimum bills.
- Appalachian Power's billing system is complex and not easily manipulated. Costs associated with manipulating the existing customer billing system to accommodate special programs should be borne by the participants of the program rather than all utility customers.
- There are many items already on an electric bill in Virginia. Appalachian Power prefers dual billing to reduce complexity. Additionally, dual billing eliminates concerns around disconnection of service for non-payment of subscription charges.
- A low/moderate income component of the program should be avoided given the demographics of the Appalachian Power footprint.
- Subscribers should not be allowed to enroll/cancel on a month-by-month basis due to the additional administrative effort required.
- The subscribing organization should retire REC's as energy is sold.
- 10MW program limit in the Appalachian Power service territory as a starting point.

We understand that there may be honest differences on resolving the various issues surrounding this complex subject, and Appalachian Power stands ready to consider any additional facts as it continues to evaluate the implementation of a shared solar program. However, the above items reflect long-standing operational principles at the company, predating the shared solar issue, and our commitment to them is essential to effectively serving our customers. Thank you for giving us the opportunity to provide stakeholder comment.

Southern Environmental Law Center Proposed Minimum Bill Adjustment

Table 3: Staff Alternative Option B Minimum Bill[52]

Charge Type	Charge Name	Charge Amount($)	$/1,000 kWh Res. Customer*
Cust. Chg.	Basic Cust. Chg.	$6.58/Fixed	$6.58
Non-Bypassable Charges	Rider RPS	$0.000182/kWh	$0.18
	Rider CE	$0.00019/kWh	$0.19
	Rider PIPP	$0.000027/kWh	$0.03
	Rider CCR[53]	$0.002944/kWh	$2.94
	Rider RBB[54]	$0.000027/kWh	$0.03
~~Base Distribution Charges~~	~~Base Distribution, First 800 kWh~~	~~$0.021086/kWh~~	~~$16.87~~
	~~Base Distribution, Usage> 800 kWh~~	~~$0.011943/kWh~~	~~$2.39~~
Distribution RAC Charges	Rider ClA	$0.000025/kWh	$0.03
	RiderC2A	$0.000036/kWh	$0.04
	RiderC3A	($0.00018)/kWb	($0.18)
	Rider C4A	$0.001417/kWh	$1.42
	Rider GT[55]	$0.01169/kWh	$1.17
	RiderU	$0.002136/kWh	$2.14
~~Base Trans. Chgs.~~	~~Base Transmission~~	~~$0.0097/kWh~~	~~$9.70~~
Trans. RAC Chgs.	Rider Tl	$0.010591/kWh	$10.59
Admin. Chg.	Admin. Charge	$1.00/Fixed	$1.00
	~~Total:**~~		~~$55.10~~
	Total		**$26.14**

* Values are rounded to the nearest whole cent.
** Values may not sum exactly due to rounding.

Eliminates the base distribution and transmission charges but keeps the distribution and transmission RAC charges. By keeping these charges in the minimum bill, any "cost shifting" will be minimized through the annual true ups for the RACs, and shared solar subscribers will continue to pay the updated charges for these RACs. Any reduction to the utility's base rate revenues can be addressed in their triennial rate cases.

Secure Futures Cost Shifting & Minimum Bill Presentation

Issues with minimum bill charges

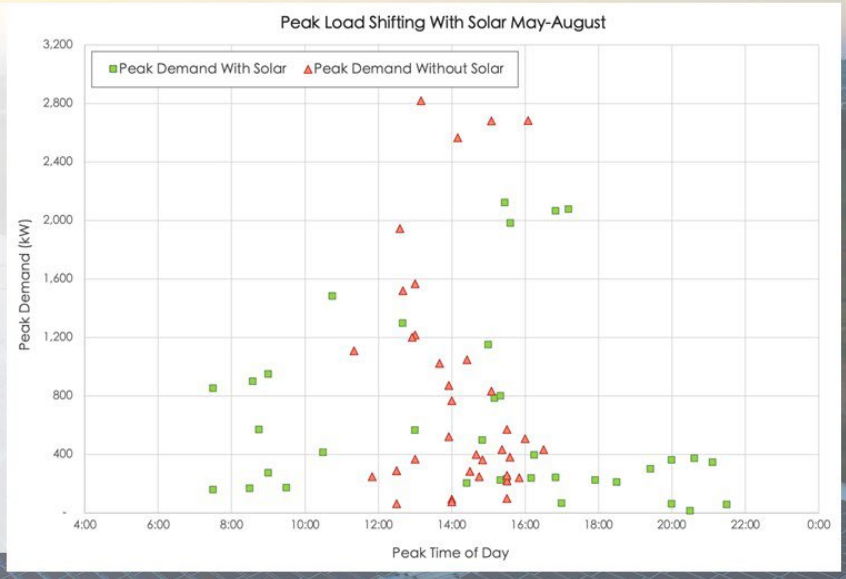
- Methodology is based on unfounded assumptions that solar imposes a net cost rather than net benefit to non-participating customers.
- In reality, solar's capacity to offset a significant portion of generation costs and (with DS) reduce grid strain should be grounds enough for a reduction to applicable charges. Current assumptions that underly the minimum bill are a distraction and must be based on evidence of cross-subsidies.
- Customers already pay a basic customer charge to remain connected to the grid. High fixed costs on top of this pose a serious barrier to entry and require a sound rationale rather than mere assertions about cross-subsidies.

Solar programs in APCo territory

- While utilities like Duke (NC) and Dominion (VA) are summer-peaking and, in the case of Duke, have acknowledged solar's cheap and sizable reduction in peaker plant generation, APCo is unique as a winter-peaking utility.
- However, APCo still has a similar day-to-day demand profile as Duke and Dominion, with a clear mid-day peak in summer months and more of a duck curve in non-summer months.
- All this means is that the benefits of solar in APCo territory may be marginally lesser than other utilities, but solar still poses a net benefit. APCo could also choose to incentivize winter peak load shifting towards mid-day periods.

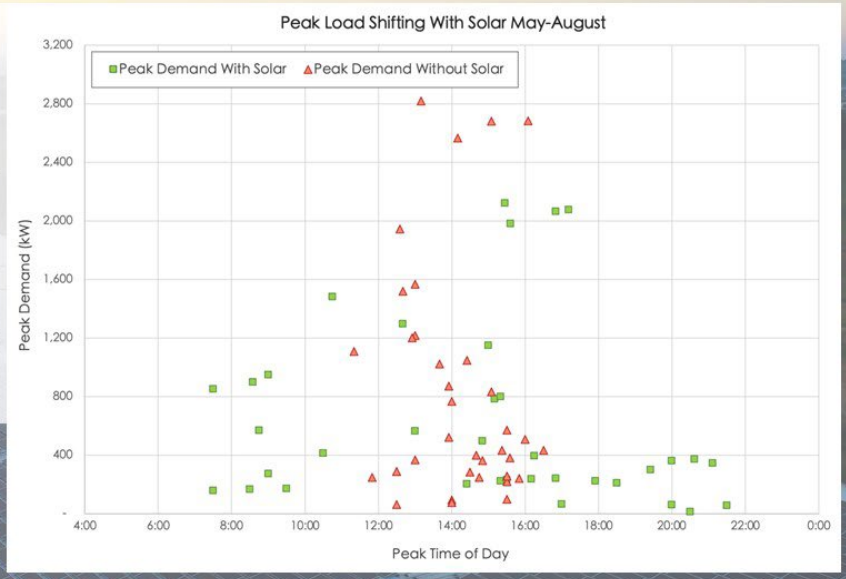
Solar lowers and shifts peak demand

For the grid, both DS and USS can incentivize customer peak load to shift more towards mid-day and away from shoulder periods, which reduces expensive peaker plant generation and levels out the need for all non-solar generation.



Solar lowers and shifts peak demand

For individual customers, behind-the-meter solar is shown to lower their peak demand on the grid and shift it from mid-day to early morning and/or evening.



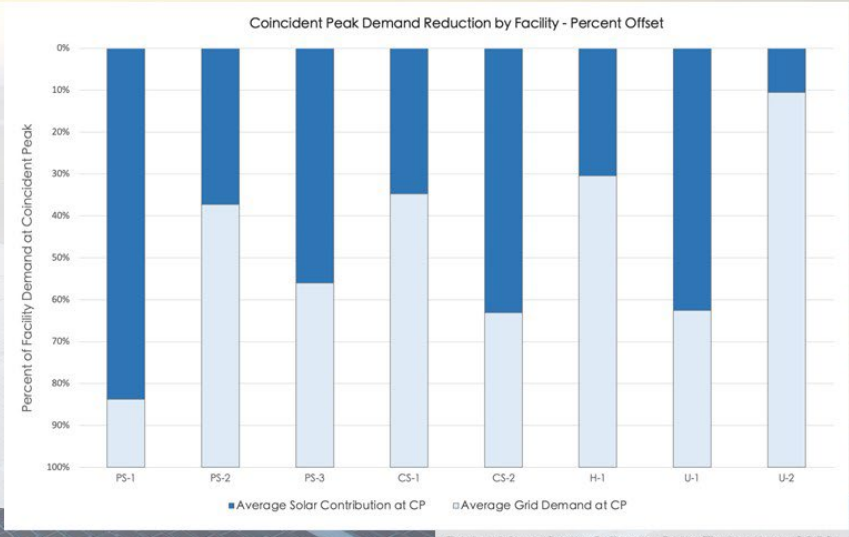
Front-of-the-meter solar offsets and cost-shifting

- While utility-scale (USS) and community (CS) solar do not reduce T&D the same as DS, it can similarly offset peak generation very cost-effectively.
- Utilities such as Duke Energy have acknowledged (since they have more control over USS) that solar reduces summer daytime peak load and can even satisfy a large portion of mid-day load during non-summer months.
- Duke is proposing three time-of-use tariffs* that would offer reduced rates during non-summer mid-day periods. This could incentivize demand to shift and align more with peak solar generation throughout the year.

*Critical Peak Pricing Schedules for standard residential, all-electric residential, and small general service customers

Distributed solar offsets and cost-shifting

Historically, these impose additional costs for utilities due to T&D strain and peaker plant generation, while some customers can also incur extra charges if on a CP tariff. DS can reduce costs on all of those fronts.



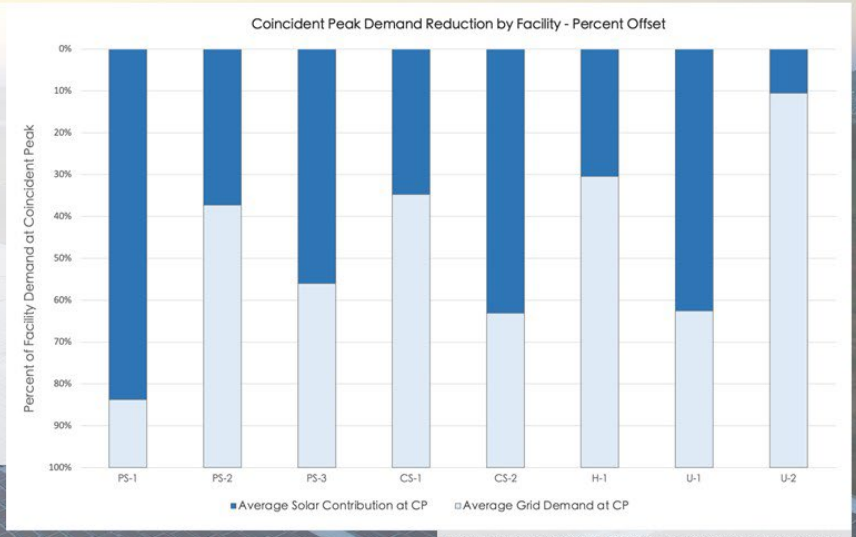
Derived from Smith & Eanes, *Solar Today* (June 2022)

PS – public school; CS – cold storage
H – hospital; U – university

With eight facilities analyzed, the above chart shows the average demand reduction across each hour-long 5CP period for all years with available data. High variability in % offset between sites is almost entirely due to system sizing limitations relative to facility demand.

Distributed solar offsets and cost-shifting

Solar poses significant reduction during coincident peak (CP) times, which are periods of especially high demand on the grid during each year. Within PJM, these are known as 5CP periods.



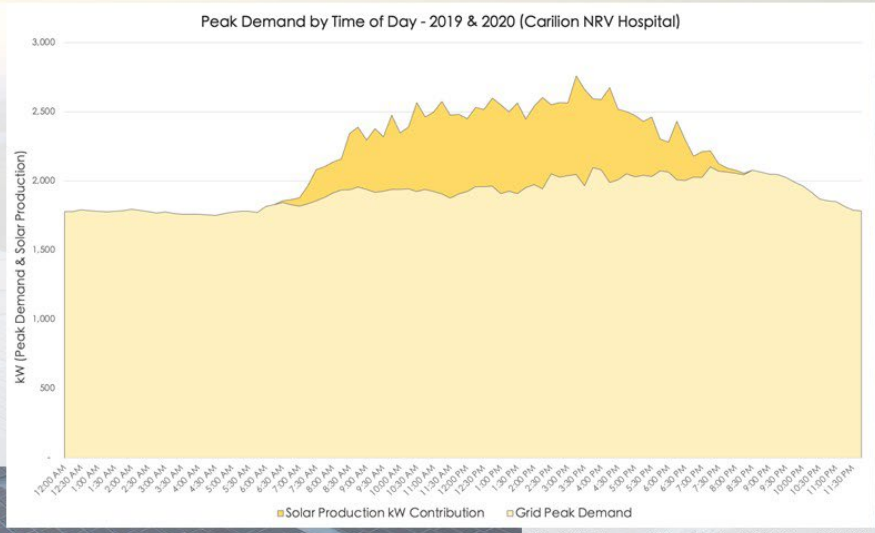
Derived from Smith & Eanes, *Solar Today* (June 2022)

With eight facilities analyzed, the above chart shows the average demand reduction across each hour-long 5CP period for all years with available data. High variability in % offset between sites is almost entirely due to system sizing limitations relative to facility demand.

PS – public school; CS – cold storage
H – hospital; U – university

Distributed solar offsets and cost-shifting

Secure Futures and NREL have both produced research showing that DS can consistently offset mid-day peak demand, lowering costs for solar customers and utilities.

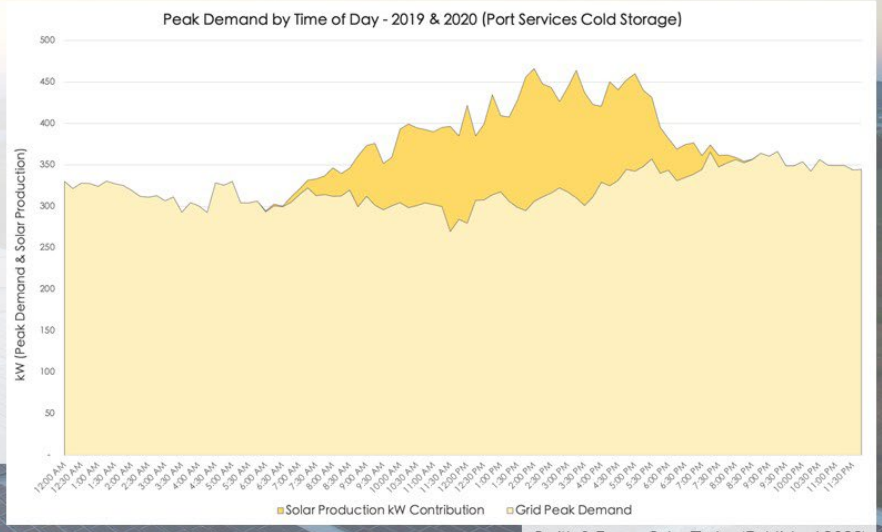


Smith & Eanes, *Solar Today* (Published 2022)

The above graph shows the peak demand profile for a hospital in Christiansburg, VA (Carilion New River Valley Medical Ctr). Peak demand from the grid and corresponding solar production (kW) are shown as the maximum of every 15-minute period of the day during the years of 2019-2020. This shows how solar both reduces peak demand on the grid and shifts its occurrence away from mid-day to early morning or evening.

Distributed solar offsets and cost-shifting

Secure Futures and NREL have both produced research showing that DS can consistently offset mid-day peak demand, lowering costs for solar customers and utilities.



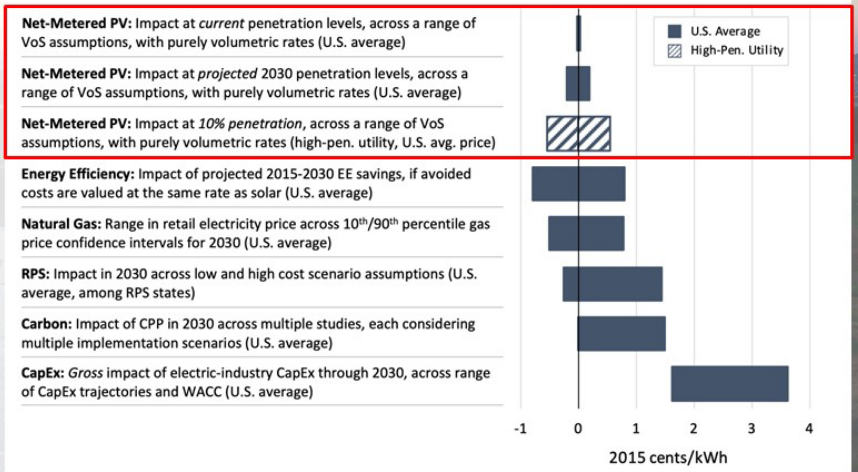
Smith & Eanes, *Solar Today* (Published 2022)

The above graph shows the peak demand profile for a cold storage warehouse in Winchester, VA (Interchange Port Services). Peak demand from the grid and corresponding solar production (kW) are shown as the maximum of every 15-minute period of the day during the years of 2019-2020. This shows how solar both reduces peak demand on the grid and shifts its occurrence away from mid-day to early morning or evening.

Distributed solar offsets and cost-shifting

DOE research demonstrates that at minimum, distributed solar (DS) does not pose a significant rate increase for customers in the short- to mid-term (2017).

Since 2017, the cost gap between solar and natural gas/petroleum has widened.



Notes: Current net-metered PV penetration equal to 0.4% of total U.S. retail electricity sales, as of year-end 2015. Projected 2030 net-metered PV penetration is 3.4%, based on Cole et al. (2016). VoS assumptions range from 50% to 150% of average cost-of-service. Please refer to the main body of the report for further details on how the ranges shown here were derived.

Figure 20. Indicative ranges for potential effects on average retail electricity prices

DOE LBNL 2017

Key points

- The Dominion minimum bill is premised on the **myth** that solar poses a cross-subsidy from non-participants.
- Empirical data suggests that solar is **undervalued** and may in fact more than offset costs to all ratepayers and utility companies in PJM through reduced peak generation.
- Distributed solar has the **added benefit** of offsetting transmission and distribution (T&D) costs.

Conclusions

- The value of solar to utilities has historically been underestimated, the benefits of which should be passed onto ratepayers rather than saddling shared solar participants with additional costs.
- While APCo is a winter-peaking utility, this only means that the potential market cap for solar (with no storage) is marginally lower relative to neighboring summer-peaking utilities, rather than being non-existent.
- We recommend that the Virginia DOE conduct a study to estimate the full value of front-of-the-meter and behind-the-meter solar to all ratepayers across Virginia.

Various Solar Interests Letter on Potential Shared Solar Program Design

October 13, 2022

Mr. Kennerly, Mr. Brown, Ms. Craddock McKee, and Ms. Watkins-White,

Thank you for facilitating the stakeholder group pursuant to Chapter 591 - An Act to Convene Stakeholder Workgroups to Evaluate Shared Solar Programs for Phase I Utilities and Electric Cooperatives in the Commonwealth.

We have participated throughout the last few weeks and are sharing more information below for inclusion in your final report. Workable and successful shared solar programs allow customers to subscribe to solar energy and lower their bills. These programs provide energy choice, stimulate the economy, create solar jobs, and keep energy prices low. Our ideal Virginia shared solar program for APCO and ODP should include the following characteristics:

Reasonable and fixed minimum bill: A working program could have a minimum bill that is low and fixed while delivering savings from solar energy to the subscriber. If a minimum bill is included in the program, the minimum bill should be low and fixed to provide certainty to businesses and customers. The ordered Phase II utility minimum bill is dramatically high, is tethered to the subscription size rather than usage and is wholly inconsistent with other markets. The minimum bill is unworkable for those subscribers required to pay one. The fee structure will punish shared solar users by needlessly overcharging them and will discourage solar subscriptions in the future. That's why other states, like South Carolina, took steps to oppose Dominion's $50 monthly bill and set a more reasonable monthly minimum bill of $13.50, which protected rooftop solar customers from this price gouging.

Economic benefits: A strong APCO and ODP shared solar program will create economic and job benefits in Virginia. We need a program to come online this coming year in order to fully reap the benefits of shared solar and capture and leverage available federal dollars. According to a 2020 study conducted by VCU's Center for Urban and Regional Analysis, including shared solar would support over 46,000 direct and indirect local jobs in Virginia and would have more than $7 billion in economic impact.

Cost-benefit analysis: A cost-benefit analysis should occur no earlier than the 5th year of an APCO and ODP program. This will allow market maturation to occur and fully capture both the costs and the benefits of a program. Right now, Virginians need help with energy costs, and shared solar provides savings, grid and ratepayer benefits in states with mature markets. We urge the creation of a program that brings economic benefits to Virginia while providing customers with energy choice.

Program size large enough to create a meaningful market: The shared solar program size should be no less than 500MW in order to create a market and grid benefits. There does not need to be a market cap, and uncapped markets do not mean the market will continue to grow. To attract serious, long-term investment in shared solar, the market should determine the program's capacity. States such as Minnesota have seen long-term success through an uncapped program. The Minnesota program opened in 2015 with no market cap and it has over 800MW to date. Capped markets unnecessarily restrict consumer choice, which goes against the priorities of Virginia's 2022 Energy Plan.

Virginia Clean Economy Act (VCEA) compliance: APCO stated they will continue to comply with the VCEA. It is in Virginia's best interest for APCO and ODP to ensure that the state realizes jobs, tax revenues, and economic development from a shared solar program, instead of purchasing RECs and building solar out of state. RECs from the shared solar facilities could count towards APCO's compliance with the VCEA's RPS requirement.

Net crediting: Net crediting is a consumer option that simplifies the customer experience and is particularly important for low income customers who may not have access to banking services. Net crediting should be included in the shared solar program

Customer disclosures and protections: Strong customer protection requirements are important to include. Maine and Maryland both have good disclosure requirements that can be applied to Virginia. The program rules should also be clear that low income customers must be guaranteed to have a subscription rate lower than the bill credit rate, thereby resulting in savings for their subscriptions.

Sincerely,

Karla Loeb, Arcadia Power

Brandon Smithwood, Dimension Renewable Energy

Josephus Allmond, Southern Environmental Law Center

Charlie Coggeshall, Coalition for Community Solar Access

Laura Merten, Apex Clean Energy

Aaron Sutch, Solar United Neighbors of Virginia

Tyler Jones, Pivot Energy

Jeremy Karpf, OYA Renewables

Will Giese, Solar Energy Industries Association

National Consumer Law Center and Virginia Poverty Law Center letter on Consumer Protections

National Consumer Law Center

VPLC
Virginia Poverty Law Center

NATIONAL HEADQUARTERS
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WASHINGTON OFFICE
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1001 Connecticut Avenue, NW, Suite 510
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NCLC.ORG

Additional Comments on Virginia State Corporation Commission Phase 1 Utilities Shared Solar Workgroup
October 13, 2022

Thank you for including our consumer advocacy organizations in the Virginia SCC Phase 1 Utilities Shared Solar Workgroup ("Workgroup") meetings. These additional comments are submitted by the National Consumer Law Center and the Virginia Poverty Law Center.

The four workgroup meetings were conducted during September and October 2022 pursuant to Chapter 591 of the Acts of 2022, An Act to convene stakeholder workgroups to evaluate shared solar programs for Phase I Utilities and electric cooperatives in the Commonwealth. We submit the following comments in support of protections for all consumers, with particular consideration for low-income consumers who already struggle with energy insecurity and who should be able to take advantage of the benefits of a shared solar program without being exposed to greater financial burdens or risks.

Consumer Protections

The consumer protections in the "Dominion Rules" discussed in the workgroup sessions (at 20VAC5-340-50, 20VAC5-60, and 20VAC5-340-70) should be carried over to the Phase I Utility rules, and should be strengthened in several respects. We strongly recommend that consumer protections be formalized, and that protections not be limited to disclosure statements. While disclosures are important, they do not adequately protect consumers without additional guardrails, transparency and enforcement mechanisms.

Guaranteed financial savings

Strong consumer protections include guaranteed financial savings to all residential consumers regardless of billing method. The current Dominion program rule only provides guaranteed savings for participating consumers who have net billing (see e.g., 20 VAC5-340-60(B)(2)).

No credit reporting

For any customer who falls behind on a bill for shared solar, there should be no credit reporting of late payments.

SO responsibility for unlawful acts of agents

Subscriber organizations must be liable for any fraudulent, deceptive or other unlawful marketing performed by any third-party contractor such as a sales agent or subscription coordinator. For example, Maryland regulations contain a similar protection, see, MD COMAR 20.62.05.15(B). This protection is needed because experience in both the competitive retail energy supply market and the residential Property-Assessed Clean Energy markets in other states has revealed that third-party marketers, contractors, and other agents are frequently the parties who engage in deceptive marketing practices or other unfair business practices.

Needed protections in contracts

Contract terms should be clear and straightforward for average consumers to understand. To resolve disputes, arbitration could be a voluntary option for consumers but should not be mandatory. A three-day rescission clause, stating the deadline for rescission, should be included and prominently noted on the contract, with a requirement that the consumer separately initial that clause.

The rules should require that the consumer to have the option of being released from the contract if a solar development underperforms, and that this right be included in the contract and be separately dated and signed by the customer and the developer or the developer's agent, i.e., the subscribing organization.

Information privacy

Before the SCC or other entity provides residential consumer information to a SO or its agent, the customer must give express permission for the information to be released for a limited use. If the SCC is providing a customer's information to a third party, the customer should be provided notice of the information release and purpose. When the SCC does release the information, any use of that information requires the direct permission of the customer.

Disclosures

Consumer disclosures should be included in both the marketing materials and the contracts themselves. Subscribing organizations should be required to provide translated documents and contracts in the customer's proficient language.

Disclosures should include a statement that is at least as clear as the following statement (provided as an example during Workshop #4, from the state of Maine), to be initialed and dated at the time of contract signing:

> "By participating in this program, you are supporting renewable energy development but are **not** purchasing renewable energy. The electricity generated by the project does

not go directly to subscribers' homes but is fed into the power grid."

Complaint database and reporting

The SCC or other authority should consider creating an accessible online database that provides the name of all approved subscribing organizations, the development company and/or project associated with said subscribing organization, and contact information. There should also be an indication whether the subscribing organization has had a complaint filed with the SCC against it. At the SCC's discretion, complaints against subscriber organizations should be publicly accessible either digitally or physically, so long as indication is made in the online database of whether a complaint was filed and how to access further information about those complaints.
Any information that could identify the customer should be removed from the public complaint database. The complaint information should be included in regular public reports.

Other Low-Income Consumer Issues

Workgroup participants discussed how to identify low-income consumers. More work remains to be done to identify methods for doing so.

Bill affordability protections for low-income eligible consumers are needed as well. If a minimum bill is required and established, all low-income eligible customers should be exempt from the minimum bill, whether they receive a consolidated bill or separate billing. To avoid penalizing low-income consumers who encounter financial hardships, low-income customers should also be exempt from any early termination fees or other fees required for participation in a shared solar program.

Low-income eligible consumers who receive assistance through the Low Income Home Energy Assistance Program (LIHEAP), the forthcoming Percentage of Income Payment Program (PIPP), or other assistance programs should receive the full benefit of these assistance programs while also having access to financial benefits associated with participating in a shared solar program.

We note that the U.S. Department of Energy and Department of Health and Human Services are currently exploring methods of connecting LIHEAP recipients with community solar programs (information available at https://www.energy.gov/communitysolar/community-solar- subscription-platform). This process could provide useful information for Virginia as the shared solar program is developed and refined.

Process Recommendations

Next steps should include an opportunity for all participants to provide summary statements of their recommendations to be included in the report to the General Assembly. If legislation is created, it is our additional recommendation that the same or an expanded list of stakeholder representatives that were required for the development of the Dominion Shared Solar Program also be used to create a workgroup to develop a shared solar program

for each of the other investor owned utilities and their customers.

Additional Materials

ACEEE Virginia Energy Burden Fact Sheet

Lawrence Berkeley National Laboratories, *Advancing Equity in Electric Regulation* (2021)

Abell Foundation, *Maryland Dysfunctional Residential Third Party Energy Suppliers* (2018)

Massachusetts Office of the Attorney General, *Are Consumers Benefiting From Competition? An Analysis of the Individual Residential Electric Supply Market in Massachusetts: 2021 Update*

Thank you for the opportunity to participate in the Workgroup and to provide these comments.

Respectfully

submitted, Olivia

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Virginia Department of Energy Solar Siting Correspondence

From: Hearne, Carrie <carrie.hearne@energy.virginia.gov>
Sent: Monday, October 3, 2022 11:43 AM

Subject: Siting & Land Use (Community Solar)

Following up on the discussion from last week's Phase 1 utility shared solar workgroup about low impact development practices with respect to shared solar.

This 1A podcast/article highlights a case in Maine with a small 10 acre community solar project facing community pushback due to the nature of the land conversion. Similar cases are popping up in Virginia where the scale of the project and the community benefits do not necessarily outweigh the local concern about loss of trees, prime farmland, or the like.

I'm excited about incentives via the IRA and IIJA that could help encourage siting on previously disturbed lands or areas that require less impactful development tactics. To the extent additional state-based financial incentives would be helpful to get ahead of these challenges, I encourage us to explore this topic within this report to the General Assembly holistically. e.g. funding the Virginia Brownfield and Coal Mine Renewable Energy Grant Fund, easier permitting requirements or interconnection mechanisms, or other meaningful incentives.

I recognize this may not be through the billing mechanism as discussed last week. However, we know there are real engineering and financial barriers that make developing on brownfields more challenging. Perhaps the IRA options are sufficient; I just think this needs to be examined further for the sake of the report.

Thank you,

Carrie

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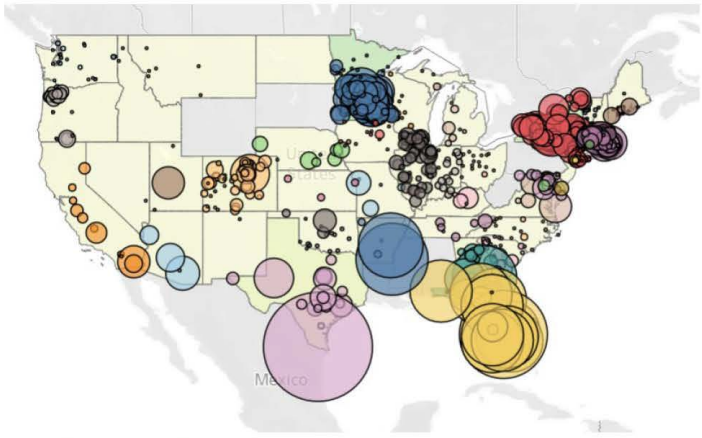
National Renewable Energy Laboratories 2022 Community Solar Market Update Slides

Community Solar Market Update

Jenny Heeter
Manager, Modeling & Analysis Group

Presentation to the VA SCC - Shared Solar Stakeholder Meeting

October 6, 2022



Source: Sharing the Sun Database Release

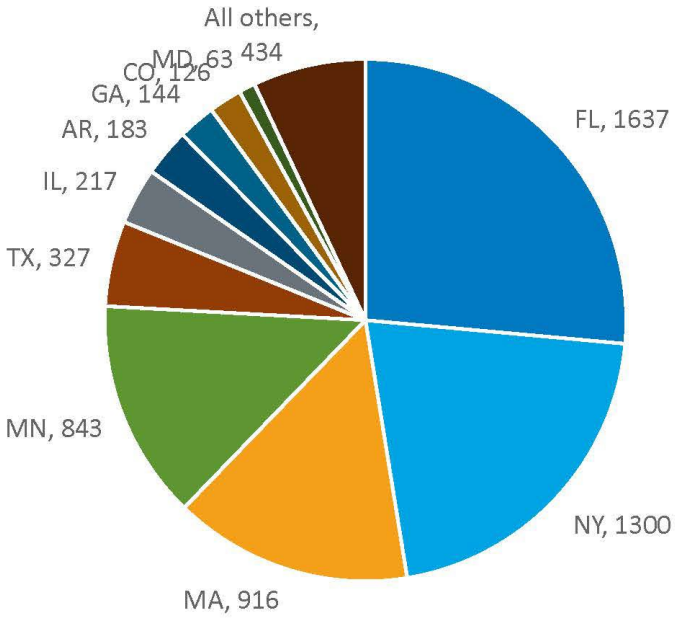
- 30 states have ≥ 5MW of installed community solar
  - New Jersey is the latest state to break 5 MW of installed capacity, moving from 0 to 9 MW installed capacity
  - Fastest growing states in 2021 (based on % capacity) included Texas, Florida, Rhode Island, Maine, and Illinois.
- 10 states and Washington, DC have <5MW of installed community solar
- Some states have no installed community solar

30 states have more than 5 MW of installed community solar

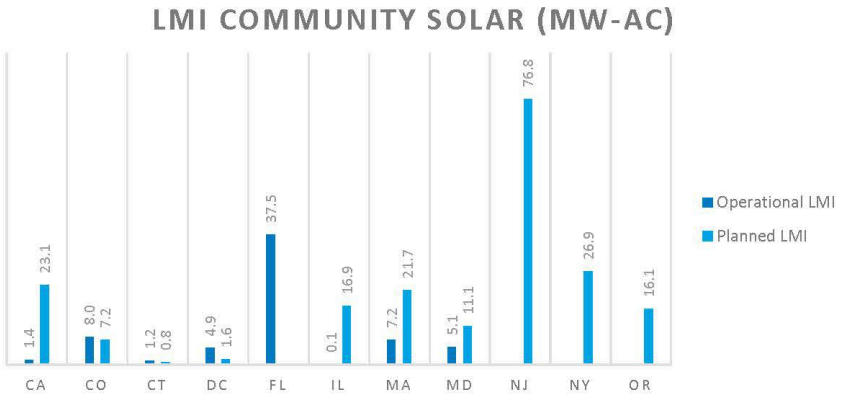
Distribution of Projects Across States

Currently, community solar capacity continues to be concentrated in just a few states.

Continued growth in Florida (Florida Power & Light) as well as New York. Texas has also emerged as a leader with the development of Green Mountain Power's Go Solar offer.



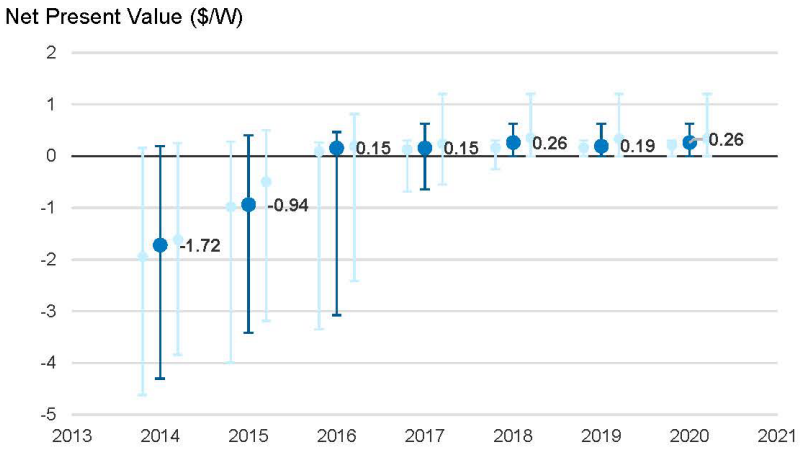
At least 65 MW-AC of installed capacity dedicated to LMI subscribers.
An additional 202 MW-AC are in planning stages.



Source: NREL, unpublished

- Using a 4 kW subscription size, we estimate installed LMI community solar programs are benefiting more than 16,000 LMI households (65 MW/4 kW)
- When all 202 MW of pending LMI capacity comes online, then there would be 267 MW, serving 66,750 estimated LMI households.

The NPV of residential subscriptions has been positive, on average, since 2016



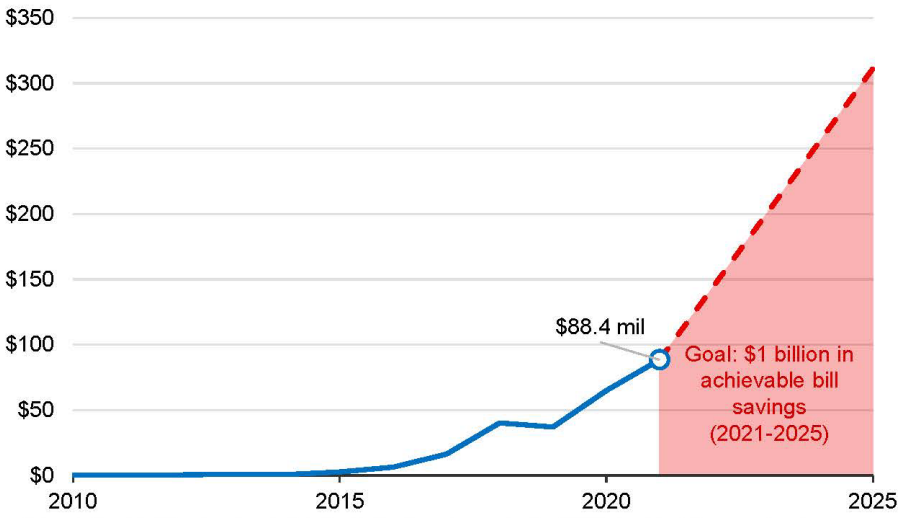
Error bars show p10 and p90. Light blue bars show high and low sensitivities to rate escalation, inflation, and discount rates

- The median project-level NPV is about +$0.26/W as of December 2020 (sensitivity range: +$0.21/W to +$0.34/W).
- About 76% (sensitivity range: 75 - 79%) of projects yield a positive NPV, meaning that most projects result in positive net benefits to customers over the course of the subscription

Source: Heeter, Xu, and Chan (forthcoming)

Estimated Savings are ~$88M in 2021; Savings will Need to Continue to Scale with the Market through 2025 to meet DOE's Target

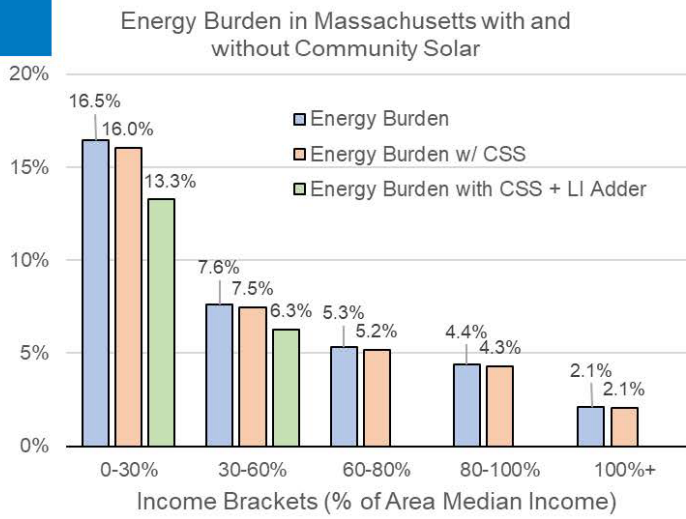
Estimated Annual Achievable Savings of Deployed Community Solar Capacity ($mil per year)



Notes: Achievable bill savings is calculated by finding the net present value (NPV) of residential community solar subscription contracts based on the assumptions and methodology developed in NREL's *Sharing the Sun* project. NPV of subscipriptions are averaged for each utility, and where insufficient data is available, the state average NPV is used. Average NPV's are then converted to an annuity equivalent over 20 years (the constant revenue that would produce the

Net Present Value of Community Solar in Massachusetts

- The average community shared solar subscription in Massachusetts has a net present value (NPV) of $0.15/W
- Translated to an annuity equivalent, the average subscription yields a benefit of ~$14/kw·yr
- To cover 100% of average electric load, the average community solar subscription reduced energy burden by ~0.5 percentage points for the lowest income bracket
- Including the MA $0.06/kWh low-income adder to the average subscription, community solar reduces energy burden for the lowest income bracket by ~3.2 percentage points

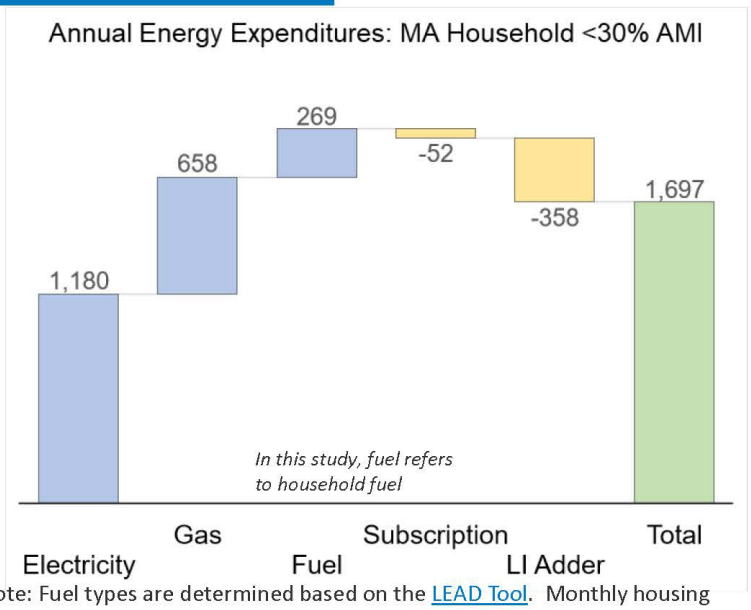


Note: Energy burden is defined as the percentage of gross household income spent on energy costs, inclusive of electricity, natural gas, and delivered fuels and exclusive of transportation

Additional data sources: DOE LEAD tool, EIA-861. Energy burden is shown for the first-year of a subscription with community solar benefits shown as an annuity equivalent with a 7% discount rate. The MA low-income adder is available to projects with >50% of offtake to subscribers below 65% state median income

2.2 Example: Impact of Adder on Low-Income Bills in Massachusetts

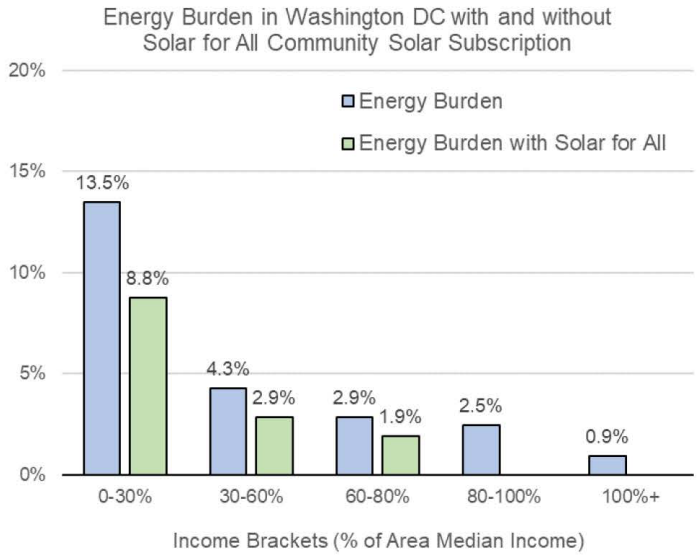
- MA households below 30% of area median income (AMI) have average annual energy expenditures of $2,107, including $1,180 in electricity expenditures
- The average community solar subscription that covers 100% of electricity usage reduces ~$52/year for low-income subscribers
- If subscriptions are from a project eligible for the $0.06/kWh low-income adder, there is an additional average benefit of ~$358/year
- The average subscription with the LI adder reduces average energy costs for low-income customers to $1,697 (~19% reduction) and average electricity costs to $770 (~35% reduction)



Note: Fuel types are determined based on the LEAD Tool. Monthly housing energy costs are based on household monthly expenditures for electricity, gas (utility and bottled), and other fuels (including fuel oil, wood, etc.)

Impact of Solar for All in Washington, D.C.

- Washington, D.C.'s Solar for All Program offers free community solar subscriptions to households below 80% of AMI
- Subscriptions are set to offset approximately 50% of electricity bills
- Solar for All subscriptions reduce energy burden for the lowest income households from 13.5% to 8.8%



Value of subscriptions assumes subscriptions reduce 50% of annual electricity costs

Green Pricing Program Sales and Participation Rates

- In addition to community solar, NREL tracks green pricing programs across the country. Green pricing programs are "adder" programs where customers pay the same electricity bill ***plus*** the cost of the green power product. They do not get any bill credits.
- Utilities, on average, see sales or and participation rates closer to 1%; with top 10 performing utilities saving sales rates of ~4%-22% and participation rates of ~4%-26%.

Green Power Sales Rate (as of December 2021)

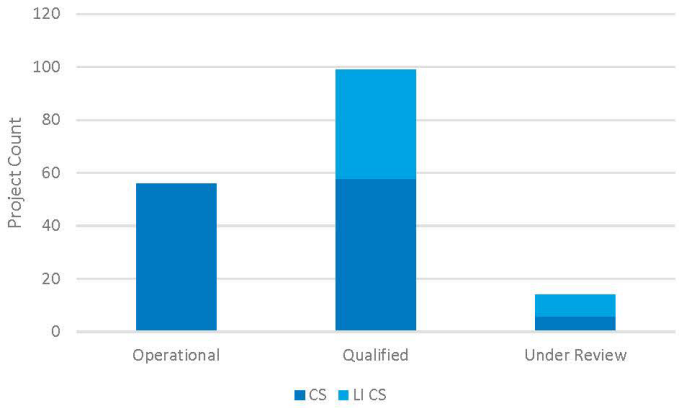
Rank	Utility	Green Power Sales Rate
1	Portland General Electric (Green Future Choice)	21.9%
2	Waterloo Utilities	18.16%
3	Springfield Electric	16.13%
4	Oak Ridge Electric Department	7.9%
5	PacifiCorp (Blue Sky Usage & Habitat)	7.71%
6	Portland General Electric (Green Future Enterprise)	6.74%
7	River Falls Municipal Utilities	6.28%
8	Austin Energy (GreenChoice)	5.80%
9	PacifiCorp (Blue Sky Block – Bulk Purchase Option)	4.9%
10	Tippah Electric Power Association	3.9%

Green Power Participation Rate (as of December 2021)

Rank	Utility	Green Power Participation Rate
1	Portland General Electric	26%
2	River Falls Municipal Utilities	14.58%
3	PacifiCorp (Blue Sky Usage & Habitat)	10.02%
4	Puget Sound Energy (Green Power & Solar Choice)	6.84%
5	Naperville Public Utilities- Electric	5.96%
6	Muscoda Utilities	5.28%
7	Austin Energies (GreenChoice)	5.26%
8	Stoughton Utilities	4.8%
9	PacifiCorp (Blue Sky Block)	4.3%
10	Holy Cross Energy (Wind Renewable Energy Purchase Program)	4.28%

https://www.nrel.gov/analysis/green-power.html

- Under the Massachusetts SMART program:
  - 56 community solar + storage projects were **operational** as of March 2022; 23 of those projects came online in 2021 alone (none in 2022 yet)
  - An additional 99 community solar + storage projects have **qualified** for the SMART incentive
    - 41 of those projects are qualifying for the low-income adder (LI CS)
- 50 community solar and storage projects are expected to come online in New York; the first project came online in September 2020.



Source: https://www.mass.gov/doc/smart-qualified-units-0

Massachusetts and New York are incentivizing paired community solar and storage