APPALACHIAN POWER'S 2018 REPORT ON RENEWABLE ENERGY ISSUES

APPALACHIAN POWER℠

An AEP Company

November 1, 2018

INTRODUCTION

The 2018 General Assembly approved important legislation to strengthen the distribution grid operated by investor-owned utilities in the Commonwealth. The Grid Transformation and Security Act (GTSA) signified the importance in grid modernization to support delivering more efficient and reliable energy to the consumer and to incorporate the use of more clean energy. Included in the legislation were a number of enactment clauses requiring reports on various topics. This report addresses the requirements in Enactment Clause 17, which directs Appalachian Power Company and other investor-owned utilities to submit a report by November 1, 2018, addressing issues relating to the advancement of renewable energy in the Commonwealth. The legislation requires:

> *"That each Phase I Utility and each Phase II Utility, as such terms are defined in subdivision A 1 of § 56-585.1 of the Code of Virginia, shall investigate potential improvements to the net energy metering programs as provided under § 56-594 of the Code of Virginia, potential improvements to the pilot programs for community solar development as provided under § 56-585.1:3 of the Code of Virginia, expansion of options for customers with corporate clean energy procurement targets, and impediments to the siting of new renewable energy projects. Each such utility shall include interested stakeholders in the investigation of such issues and the development of proposed legislation and shall issue a report of its findings to the Governor, the State Corporation Commission, and the Chairmen of the House and Senate Committees on Commerce and Labor by November 1, 2018."*

In preparation of this report, Appalachian Power joined Dominion Energy in conducting a comprehensive stakeholder process conducted by the Meridian Institute. The process included two large public forums and 13 smaller meetings with stakeholders that included all classes of energy consumers, renewable energy advocates and members of environmental organizations. Stakeholders were also given the opportunity to provided written comments through Meridian's on-line survey. Meridian's final report is included at the end of this document.

Appalachian Power has a remarkably long history in renewable power. The Company, which currently serves more than 1 million customers, began investing in renewable power in 1912 when the Buck and Byllesby hydroelectric facilities began producing electricity on the New River in Southwest Virginia. Since that initial investment, Appalachian Power has grown its hydro generating portfolio to six facilities in Virginia, including the Smith Mountain pump storage project, and three facilities in West Virginia totaling 787.6MWs of capacity. The Company also entered into a power purchase agreement for an additional 80MW of hydro capacity from the Summersville project located in Summersville, WV. See Table 1.

TABLE 1. CURRENT HYDRO RESOURCES [1]

Unit Name	Location	Unit Type	Commercial Opperation Date	Nameplate Capacity (MW)
Buck 1-3	Ivanhoe, VA	Hydro	1912	8.5
Byllesby 1-4	Byllesby, VA	Hydro	1912	21.8
Niagara 1-2	Roanoke, VA	Hydro	1924	2.4
London 1-3	Montgomery, WV	Hydro	1935	14.4
Marmet 1-3	Marmet, WV	Hydro	1935	14.4
Winfield 1-3	Winfield, WV	Hydro	1938	14.8
Claytor 1-4	Radford, VA	Hydro	1939	75.5
Leesville 102	Leesville, VA	Hydro	1964	50
Smith Mountain 1-5	Sandy Level, VA	Pump Storage	1965	586
Summersville 1-2	Summersville, WV	Hydro	2001	80 [A]
			TOTAL	**867.6**

[A] Represents capacity from Power Purchase Agreement (PPA)

1. *Appalachian Power Co.'s Integrated Resource Plan filing pursuant to Va. Code § 56-597 Case No. PUR-2018-00051*

Appalachian Power continued to expand its renewable portfolio in 2008 by entering into a power purchase agreement for 75MWs of wind capacity from the Camp Grove project located in Marshall County, IL. The Company has subsequently entered into six PPAs for wind generation totaling 497MWs of wind capacity. See Table 2.

TABLE 2. CURRENT WIND RESOURCES [2]

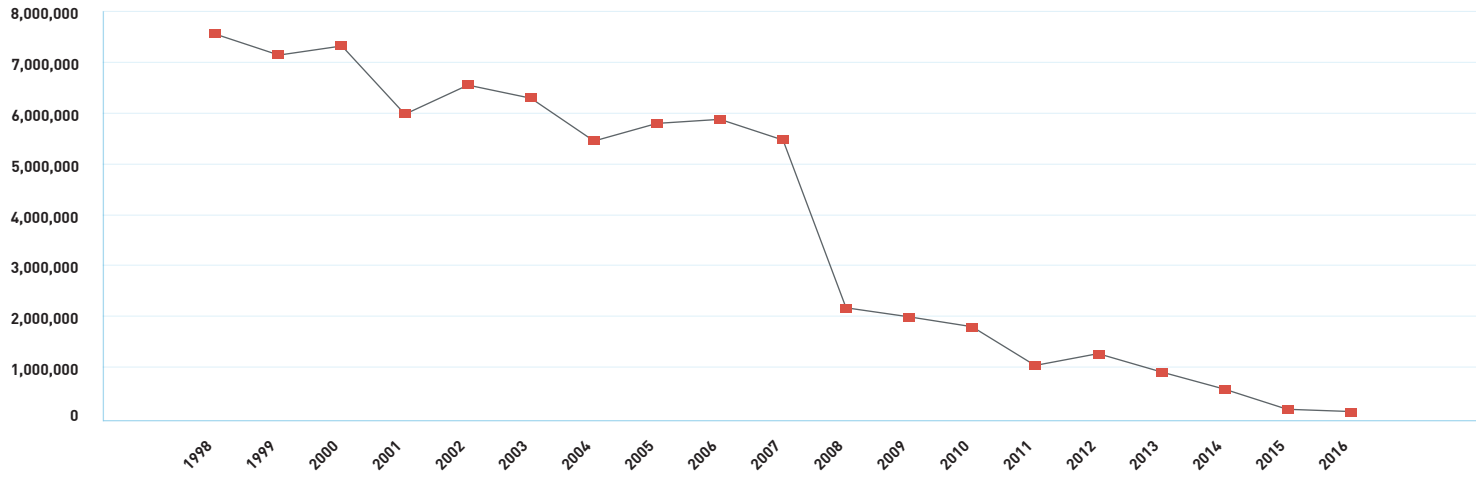
Unit Name	Location	Unit Type	Commercial Opperation Date	Nameplate Capacity (MW)
Fowler Ridge 3	Fowler, IN	Wind	2008	100
Camp Grove	Marshall County, IL	Wind	2008	75
Grand Ridge 2	Marseilles, IL	Wind	2009	51
Grand Ridge 3	Marseilles, IL	Wind	2009	50
Beech Ridge	Rupert, WV	Wind	2010	101
Bluff Point	Randolph County, IN	Wind	2018	120
			TOTAL	**497**

Currently, Appalachian Power's total renewable generating capacity is approximately 1,365MWs.

Appalachian Power has made considerable progress in carbon reductions over the past decade and expects to continue its transition to clean energy sources over the coming decades. Within Virginia, Appalachian Power recently retired three coal units, Glen Lyn Units 5 & 6 and Clinch River Unit 3. Additionally, the Company converted the remaining Clinch River Units 1 and 2 to run on natural gas, which results in approximately 40% less CO_2 per megawatt hour than prior operation on coal.

Appalachian Power's other generating and capacity resources located in Virginia are a mix of hydroelectric and pumped storage, which generate electricity with zero carbon emissions. As such, the Company's Virginia carbon footprint is only a small fraction of what it was just a few years ago. In 2017, Appalachian Power's Virginia-domiciled CO_2 emissions were approximately 3% of 2005 levels. To put the Company's current emissions in appropriate context, that reduction is equivalent to removing from the road nearly 1.2 million of 7.5 million vehicles registered in the Commonwealth of Virginia.

TABLE 3. APPALACHIAN POWER VIRGINIA CO2 TONS [3]



2. Appalachian Power Co.'s Integrated Resource Plan filing pursuant to Va. Code § 56-597 Case No. PUR-2018-00051

3. Appalachian Power Co.'s emissions as reported under Title IV of the 1990 Clean Air Act Amendments to US EPA.

THE REPORT

POTENTIAL IMPROVEMENTS TO THE NET ENERGY METERING PROGRAMS AS PROVIDED UNDER § 56-594 OF THE CODE OF VIRGINIA

Appalachian Power currently has 985 net metering customers in its Virginia territory, totaling 7.95MW and accounting for 24% of the net metering cap. Net metering is capped at one percent of each electric distribution company's adjusted Virginia peak-load forecast for the previous year.

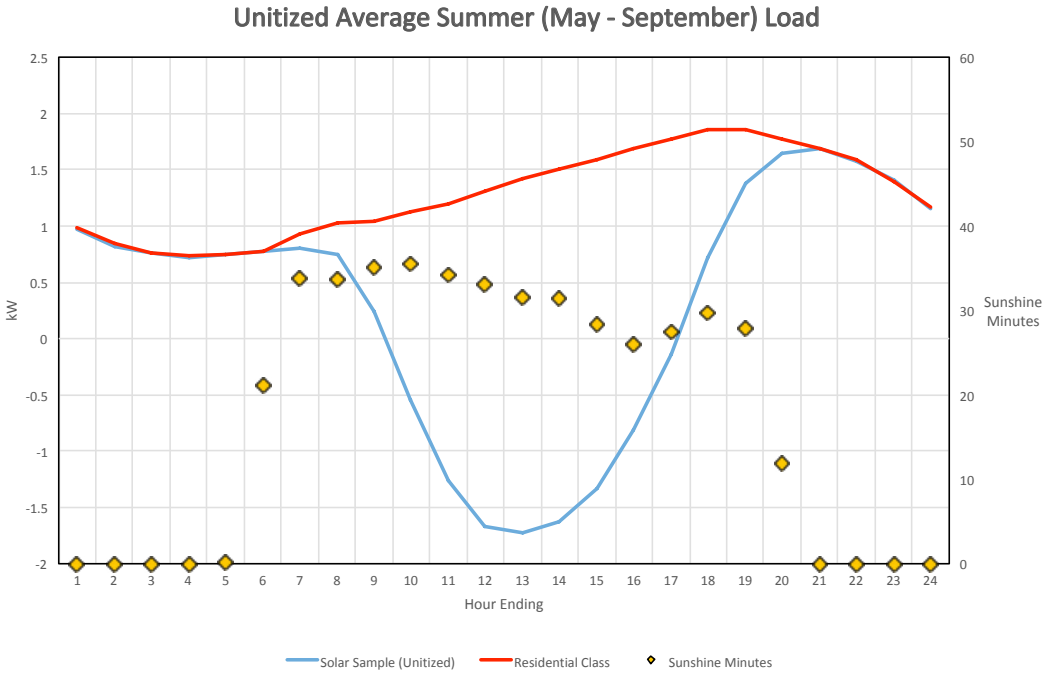
The Company has initiated a study of distributed generation to examine the load characteristics of net metering customers and the impacts to the grid that result from their generation systems. Our recent analysis of Appalachian Power-Virginia residential customers with solar systems installed, when compared to the residential class, included the following observations:

1. The average residential solar distributed generation customer would experience maximum production at hour ending 13 in both the summer and winter.

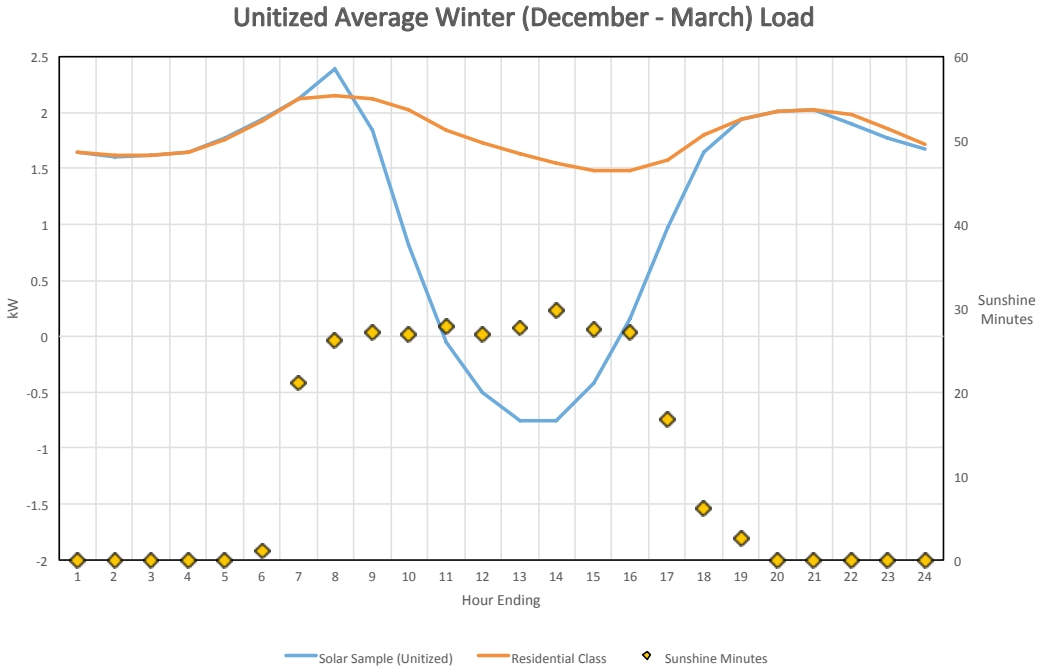
2. The average residential solar distributed generation customer would experience a reduced summer peak that is shifted to later in the day. For winter peaks, solar distributed generation systems have no impact on peak usage.

3. The impact of cloud coverage and sunshine levels has a noticeable effect on predictability of solar distributed generation production.

The graph below illustrates the average summer load profile for a representative customer with rooftop solar (blue line) and without rooftop solar (red line).



The graph below illustrates the average winter load profile for a representative customer with rooftop solar (blue line) and without rooftop solar (red line).



The study is ongoing, and additional analysis could uncover solar distributed generation performance issues and provide an opportunity to expand customer service.

Improvements to net metering programs require actionable and reliable data so that accurate pricing signals can be developed to ensure distributed generation benefits all customers, and not only those who install systems. To more fully understand the operational impacts that such systems impose on the grid, the Company recommends a review of specific areas of the Virginia Administrative Code (such as 20VAC5-315-40 and 20VAC5-315-50). Such a review should consider changes to metering and interconnection requirements for distributed generation systems to determine if safety, efficiency and transparency might be achieved through an improved net metering interconnection and billing process.

Participants in the stakeholder process identified several ways to increase solar development in the Commonwealth. Through cost of service rates established by the State Corporation Commission, known as the retail rate, each class of customers is assigned a cost to maintain the electric grid. This cost includes both fixed and variable costs that are largely recovered through variable rates. As legislative improvements to net metering are considered, it is imperative that future net metering policies send accurate pricing signals so net metering customers can be properly compensated and so non-participating customers aren't penalized by carrying more of the fixed cost of maintaining the grid.

POTENTIAL IMPROVEMENTS TO THE PILOT PROGRAMS FOR COMMUNITY SOLAR DEVELOPMENT AS PROVIDED UNDER § 56-585.1:3 OF THE CODE OF VIRGINIA

In October 2017, Appalachian Power contracted for the output of a 15MW solar project in Rustburg, Virginia, with the intention of dedicating 500 kW of the output for purposes of developing a community solar program. As the in-service date has been delayed, the Company is investigating alternative options in order to make a community solar project available sooner.

Community solar allows customers, who wish to participate, to support the development of solar in their surrounding area. By subscribing to a community solar program, a customer can claim to use solar energy to power some of their needs, as well as fix a portion of their monthly bill.

Solar and wind generation are intermittent renewable resources that only provide energy to customers at sporadic times in a 24-hour period. Yet customers who wish to participate in programs that offer intermittent renewable resources have

full access to the distribution grid and continue to have a need for energy even when those resources are not producing energy. Whatever the compensation method for customers participating in a community solar program, it should consider the utility's requirement to provide access to the distribution and transmission grid, energy from the grid when the intermittent resource is not producing, as well as the administrative functions of customer support.

EXPANSION OF OPTIONS FOR CUSTOMERS WITH CORPORATE CLEAN ENERGY PROCUREMENT TARGETS

Appalachian Power has several renewable programs available to residential, commercial, and industrial customers. As a regulated utility, Appalachian Power takes seriously its responsibility to provide reliable, affordable power to its customers in a safe manner. The Company's objective is to engage customers and provide them with options that support their needs and that are appropriate in a regulated environment.

CURRENT RENEWABLE ENERGY OPTIONS	CUSTOMER GROUP				SIZE LIMITATIONS	
	Residential	Small Commercial	Large Commercial	Industrial	Individual	Additional
Renewable Energy Credit Rider	●	●	●	●	None	None
Renewable Power Rider	●	●	●	●	None	Limited to 10% of Virginia share of annual Summersville production
Third Party Power Purchase Agreement Pilot*		●	●		50 kW - 1 MW	7 MW Cap
Net Metering	●	●	●		Res: 20 kW Non-res: 1 MW	Cap of 1 % of Adjusted Peak Load Forecast for Prior Year
Agricultural Net Metering		●	●		500 kW	Within Net Metering Cap
Schedule VWS (Voluntary Wind)			●	●	≥ 500 kW per account	Limited to Virginia allocated output of certain wind facility agreements.

*Limited to nonprofit, private institutions of higher education being served generation by Appalachian Power.

PROPOSED RENEWABLE ENERGY OPTIONS	CUSTOMER GROUP				SIZE LIMITATIONS	
	Residential	Small Commercial	Large Commercial	Industrial	Individual	Additional
Community Solar Pilot**	●	●	●		Participation Options and Limits will vary by Customer Group	Initial cap: 500kw
Rider WWS- 100% Renewable Option	●	●	●	●	None	None

**Not yet filed with the Commission

From an economic development standpoint, the emergence of corporate-directed procurement targets requires that utilities in fully regulated states have multiple options available to attract and keep large customers. More than 10 percent of Fortune 500 companies have a renewable energy sourcing goal, with 23 companies seeking to source fully 100% of their energy from renewables.[4] Motivations to make such a commitment may include a desire to reduce greenhouse gas emissions, take actions consistent with their brand image, reduce exposure to more volatile sources of energy, and hedge against future uncertainty in energy costs.

There are multiple ways to meet a renewable sourcing target with varying levels of complexity in a regulated state like Virginia. Renewable generators place energy onto the grid. On the grid, this energy is indistinguishable from energy produced by other sources, including coal, natural gas, and nuclear. There is only "grid energy." Renewable Energy Certificates or "RECs" distinguish energy produced by renewable generators from those produced by non-renewable generators. A renewable generator receives one REC for each megawatt-hour of energy produced. A consumer of electricity who wishes to claim the use of renewable energy must purchase and then "retire" RECs sufficient to cover their consumption.

Customers' views on what constitutes consumption of renewable energy can vary considerably. For some customers, meeting a renewable procurement target is as simple as purchasing and retiring enough RECs to meet their consumption. Appalachian Power has developed a low cost REC program, Rider R.E.C., available to all retail customers. Utilizing hydro RECs, which meet the definition of renewable in Virginia, customers can claim to use renewable energy for some or all of their load inexpensively. The cost of a REC in Rider R.E.C. is $1/MWh or $0.001/kWh. This is less than

4. Ceres, World Wildlife Fund, 2017.

a 1% premium to standard service and is among the lowest cost programs in the nation.

Customers seeking to claim the renewable attributes for a specific generator can participate in Appalachian Power's Renewable Power Rider that allows customers to purchase the RECs produced exclusively from the Summersville Hydroelectric facility.

Other customers may wish to purchase not only the RECs but also the energy from a facility. While the energy is simply grid energy, a financial arrangement can be made that allows a customer to exclusively pay the renewable energy costs, even though their consumption is a mix of renewable and non-renewable energy or grid energy. They may do this to "lock-in" the price that is paid for energy for some term, partially insulating themselves from volatility in energy market prices. Appalachian Power's Voluntary Wind Service Rider allows an interested customer to contract, at negotiated cost and terms, with the Company for some or all of its energy requirements to be sourced from the Grand Ridge and Beech Ridge wind farms.

Finally, some customers may wish to know that the renewable energy they have purchased was produced coincident with their consumption. Given the intermittent nature of renewable energy in general, and solar energy's daylight-only operations, this requires a portfolio of diversified renewable resources. Appalachian Power's Wind, Water, Solar Rider currently before the Commission, if approved, will allow a customer to purchase their full requirements, capacity and energy, from the Company's renewable portfolio. Unlike a REC or energy program, an enrolled customer is assured they are purchasing renewable energy at all hours of the day, month, and year from a portfolio of wind, hydro, and solar resources.

IMPEDIMENTS TO THE SITING OF NEW RENEWABLE ENERGY PROJECTS

Appalachian Power has limited knowledge of siting wind or solar projects in the Commonwealth because it relies on developers to make site selections through the request for proposal (RFP) process. Stakeholders that participated in the Meridian Institute meetings identified some impediments to siting solar and made recommendations to siting locations that would be less impactful to the environment. In addition to sites identified in the report, consideration could also be given to land that is used as buffer areas at industrial facilities and land in industrial parks that is not suited for industrial development.

CONCLUSION

Appalachian Power is committed to a cleaner energy future. As reported in its 2018 Integrated Resource Plan currently before the State Corporation Commission, the Company estimates closing its remaining carbon emitting gas generation facility in the Commonwealth within the next eight years. The Company plans to replace the capacity and energy with renewable energy, making all its Virginia-domiciled energy resources carbon-free.

The Grid Transformation and Security Act of 2018 sets forth important policies needed to advance new grid technologies that will shape the way energy is produced and consumed in future years. The Act implements policies that support modernizing the grid to accommodate the advancement of decentralized renewable generation; promote new, efficient ways for the utility to communicate with its customers; and create a more reliable, efficient and safe electric grid.

APPENDIX

Final Report
Virginia Solar and Wind Energy Stakeholder Feedback Summary

September 20, 2018

Meridian Institute
Connecting People to Solve Problems

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Overview of the Stakeholder Engagement Process

Dominion Energy contracted with Meridian Institute to design and facilitate a stakeholder engagement process that focused on four specific topics set forth in the Grid Transformation and Security Act (SB 966) which was signed into law by Governor Northam on March 9, 2018. As set forth in the Grid Transformation and Security Act SB966, these topics included:

- Potential improvements to net metering programs as provided under § 56-594 of the Code of Virginia;
- Potential improvement to the pilot programs for community solar development as provided under § 56-585.1:3 of the Code of Virginia;
- Expansion of options for customers with corporate clean energy procurement targets; and
- Impediments to the siting of new renewable energy projects.

The process was executed in close collaboration with the Virginia Governor's Office, and the findings in this report will serve as input into development of the 2018 Virginia Energy Plan. In addition, the topics addressed in the stakeholder engagement process are a subset of the topics that Dominion Energy is required to report on under SB966. This report will be incorporated into the public report that Dominion Energy will issue by November 1, 2018, the deadline for reporting under the Grid Transformation and Security Act.

The stakeholder engagement process had four primary components: 1) a Public Kickoff Meeting on July 10, 2018; 2) a series of stakeholder group meetings over the course of August 2018; 3) an online survey to collect written comment; and 4) a Public Forum on August 28.

Public Kickoff Meeting

On July 10, 2018 Meridian convened a Public Kickoff Meeting for the Solar and Wind Energy Stakeholder Engagement Process that approximately 90 people attended. At this meeting, Meridian presented and gathered feedback on the planned approach to the process and the questions that would serve as the focus for collecting stakeholder perspectives on the four topics articulated in the Grid Transforming and Security Act. The draft list of questions presented during the Stakeholder Group Meetings is located in Appendix A, and the participants list from the July 10 meeting is located in Appendix B. At this meeting, Meridian also gathered feedback on the types of stakeholder groupings that could serve as a means of organizing the process. Based on input received at the July 10 meeting, as well as through other sources, Meridian identified the following nine stakeholder categories which served as the basis for structuring the process:

- Solar energy industry and advocacy organizations
- Wind energy industry and advocacy organizations
- Organizations representing other energy sources
- Environmental and environmental justice organizations
- Business associations and large customers
- Historic preservation and land use organizations
- Advocacy Groups for energy affordability for residential customers
- Local governments
- Virginia electricity providers

Stakeholder Group Meetings

Throughout August 2018, Meridian held Stakeholder Group Meetings with approximately 160 participants excluding Meridian, Dominion Energy and APCO Government staff who self-identified with the categories listed above. The purpose of these meetings was to provide an opportunity for input from all participants. Participants were afforded an opportunity to participate in-person or virtually through an online webinar-type platform.

Meridian conferred with representatives from Dominion Energy and the Governor's office to identify and recruit a co-convener organization for each stakeholder meeting and, through a joint effort, all of the stakeholder groupings listed above had one or more organizations agree to serve as the co-convener. For most of the groupings, there was one co-convener. The solar energy industry and advocacy organizations had two co-conveners and two separate meetings, and the business associations and large customers had three co-conveners and three separate meetings. In the case of the local governments and organizations representing other energy sources groups, there were two co-conveners for each of those groupings but only one meeting. In the case of the environmental and environmental justice organizations group, there was one co-convener and two meetings. In total Meridian conducted 13 stakeholder meetings between August 3 and 23.

A summary from each of these 13 meetings is included in this report. As stated at the start of each meeting and as stated in the introduction to the meeting summaries, no effort was made to ascertain whether points of view expressed at the meeting were agreed to by all participants. Rather, the intent was to provide all participants with an opportunity to express their views in response to the questions (Appendix A). Meridian produced a draft summary of each meeting and shared the draft with everyone who participated in-person or virtually in that meeting. Meridian provided all participants with an opportunity to suggest comments and revisions to the draft to improve the accuracy and completeness of the draft summary. Meridian shared the final version of the summary with participants and included the final summary in this report as explained below.

Survey to collect written feedback

For a variety of reasons, not all interested stakeholders were able to attend a stakeholder group meeting. To provide an additional avenue for input, Meridian developed an online survey to collect written comments. The survey asked respondents to indicate which of the stakeholder groups they were affiliated with. The questions posed in the survey were the same questions that were posed in the stakeholder group meetings (Appendix A).

Five stakeholders provided written comment. The vast majority of comments provided through the written form were reflected in the summaries for relevant stakeholder group meetings. There were a couple of comments from solar energy industry and advocacy organization stakeholders that were not reflected in the existing solar energy and advocacy organization meeting summaries. As such, at the end of the summary of August 7 Solar Energy Industry and Advocacy Organizations Stakeholder Group Meeting, Meridian created a section titled "Additional Input from Online Survey" where this feedback was summarized.

Concluding Public Forum

On August 28, 2018, Meridian convened a Public Forum to provide a final opportunity for input from those participants who did not attend a stakeholder group meeting, review all the stakeholder input collected to date, and provide an opportunity for feedback on a verbal summary of stakeholder input collected to date. Appendix C contains a list of the 45 participants who attended the Public Forum.

Overview of this Final Report

Following the public forum, Meridian synthesized all feedback collected from the initial Public Kickoff Meeting, the 13 Stakeholder Group Meetings, the online survey, and the concluding Public Forum as the basis for this report. The High-Level Summary of Stakeholder Feedback contained in the section that follows identifies the overarching themes that emerged from the stakeholder group meetings. It builds upon the verbal presentation Meridian presented at the concluding Public Forum, and incorporates feedback received from stakeholders who participated in that final public forum. The final versions of the summaries of each of the 13 stakeholder group meetings will be posted on the project website which is located here.

High-Level Summary of Stakeholder Feedback

Overarching themes

Expansion of renewable energy in Virginia – Most stakeholders who expressed a general opinion about the expansion of renewable energy in Virginia indicated that they support such expansion. Others indicated that their support for renewable energy was dependent upon a variety of factors. Some stakeholders did not express a general opinion about the expansion of renewable energy in Virginia. Some solar energy industry and advocacy organization and environmental and environmental justice organization participants emphasized that expansion of renewable energy in Virginia means expanding the choices that Virginia have for their energy procurement. Participants from the other energy sources stakeholder group and some business association and large customer participants indicated they support renewable energy development in Virginia in the context of an all-of-the-above energy policy for Virginia that recognizes the important contribution to energy security, reliability, and resilience that results from a diverse supply of energy. Additionally, at the Public Forum, a number of participants emphasized that expansion of renewable energy should be accomplished in a manner that is cost effective, equitable, context sensitive, competitive, transparent, and ensures grid reliability and resilience.

Piecemeal and Outdated Policy – Many participants expressed the view that some of Virginia's laws and regulations regarding renewable energy are outdated and that there currently is a patchwork policy landscape. This can create challenges for accessing renewable energy because a) engaging in renewable energy in Virginia can require a steep learning curve; and b) this patchwork landscape at times creates legal uncertainties that can create barriers to the expansion of renewable energy in Virginia.

It's not just solar – It was repeatedly highlighted that renewable energy policy should not be equated with solar energy policy. Several participants highlighted that wind and other energy sources, including natural gas, hydropower, and biogas, should receive more attention in both formal and informal policy settings.

Education – Many participants echoed that they see a need for education regarding challenges and opportunities for expanding renewable energy in Virginia.

Federal Tax Incentives – Numerous stakeholders urged that Virginia policy consider how to best take advantage of federal tax incentives related to renewable energy before they are reduced and/or eliminated. Some business associations participants also emphasized that uncertainty on the longevity of the federal tax credit creates uncertainty that may make it difficult for businesses to plan out long-term energy development and/or procurement strategies.

Smart grids, meters, and storage – Throughout the process, stakeholders commented that grid modernization, including smart meters, along with advances in renewable energy storage will

provide important opportunities for improving renewable energy policies in Virginia based on factual evidence rather basing policy on anecdotal evidence and assertions.

Economic development and workforce development – It was frequently emphasized that expansion of renewable energy in Virginia provides significant economic development opportunities. These opportunities can come in the form of jobs and activities surrounding construction and maintenance of new renewable energy projects (whether they be small-scale distributed generation (DG) systems, medium-scale community systems, or large, utility-scale systems), as well as in the form of jobs and activities associated with the arrival of very large corporate entities with renewable energy procurement targets. Participants urged that as Virginia sees more economic develop opportunities, it should prioritize training and hiring Virginians to fill the jobs that these opportunities generate.

Key themes regarding net metering

Restrictions on Net Metering in Virginia – Participants had diverse and, in some cases, polar opposite perspectives on current restrictions on net metering in Virginia, including the 1% cap of a utilities' previous year peak load, system size limitations for residential customers based on energy use during the previous year, the 1 MW system size limitations for non-residential customers, standby charges for residential systems between 10-20 KW, and restrictions on whether and how net metering customers can engage in purchase power agreements (PPAs) with third parties. For each of the limitations listed above, some participants supported current limitations while participants offered a variety of suggested alternatives.

The 1% cap of a utilities' previous year peak load – Some electricity provider and business associations and large customer participants supported the 1% cap on net metering because it helps ensure that DG penetration levels do not create grid reliability issues or cost shifting issues. Some solar energy and advocacy organizations, wind energy and advocacy organization, local governments, and environmental and environmental justice participants did not support the 1% cap because they found the 1% number to be arbitrary and not based on data, and because they do not believe that there are any negative impacts on the grid or any cost-shifting occurring as a result increased DG penetration until a much higher percentage of DG penetration is achieved. Some suggested that such impacts would not occur until there is 30% or more DG penetration in the Virginia market. Some of those participants who did not support the 1% cap recommended that the cap be adjusted to 2%, 2.5%, 3%, or 10%. Other participants recommended that rather than relying on a market cap, Virginia could consider using a percentage penetration to trigger the completion of well-designed study of the impacts of expanding DG in Virginia. This study could examine both the level of DG penetration that results in cost shifting, the level that creates grid reliability issues, as well as other issues that could inform policymaker's decisions relating to whether to keep or modify the 1% cap.

System size limitations for residential customers based on energy use during the previous year – Several electricity providers participants supported systems size limitations for residential customers because, in their view, these restrictions prevent customers from oversizing their system which can lead to engineering challenges with the grid. Some solar energy and advocacy organizations and environmental and environmental justice organizations participants noted that this residential system size restriction prevents customers from sizing their DG systems with future energy needs in mind, such as a new electric vehicle or the addition of a family member. Still other environmental and environmental justice participants opposed this limitation on principle, articulating their belief that citizens have a right to choose their preferred source of energy, and that system size limitation infringe on that right. Specific suggestions for appropriate limits to system size included suggestions to leave them as they are, increase the size limitation to 150% of the previous year's peak load, generally increase the size limit, and remove the limit entirely.

The 1 MW system size limitations for non-residential customers – Some solar energy industry and advocacy organizations and local governments participants raised concerns with the current 1 MW

system size limitation for non-residential customers because they are aware of non-residential customers who cannot meet their full energy load with DG energy due to this limitation. Specific suggestions for appropriate modifications to the size limit included adjusting the system-size cap for individual, non-residential net metering systems from 1 MW to between 2 to 5 MW.

Standby charges for residential systems between 10-20 KW – Several electricity providers and business associations and large customers participants supported standby charges for residential customers with systems between 10-20 KW because the revenue from these charges help utilities recover the cost of service to DG customers. Many participants from the solar energy industry and advocacy organizations, wind energy industry and advocacy organizations, historic preservation and land use organizations, local governments, and environmental and environmental justice organizations did not support standby charges for residential customers. A few of these participants expressed that they opposed standby charges because they do not think that a) it has been proven scientifically that DG customers have disproportionate negative impacts on the grid and b) the costs of those hypothetical impacts do not equate to the costs of current standby charges.

Restrictions on whether and how net metering customers can engage in PPAs with third parties – Some solar energy industry and advocacy organizations and environmental and environmental justice organizations participants did not support current restrictions on whether and how net metering customers can engage in PPAs with third parties. Many of these participants reflected that generally, third-party PPA financing options for net metering customers should be expanded so that all customers can access DG from third parties if they wish. Specific recommendations included generally expanding the Dominion pilot, expanding the Dominion pilot from 50 MW to 500 MW, and expanding the Appalachian Power Company (APCO) pilot to all customer classes.

Fair Compensation – Many participants across stakeholder groups articulated the need to compensate DG customers and the utility fairly. They disagreed on whether the current system provides fair compensation.

Cost recovery – Participants generally agreed utilities should be able to recover the costs of infrastructure upgrades associated with expanding DG. However, they disagreed over what are the costs and benefits of DG, as well as what constitutes appropriate and adequate cost recovery. Several solar energy industry and advocacy organization and environmental and environmental justice organization participants emphasized the necessity for utilities to generate demonstrable and clear evidence of cost impositions associated with DG. Many participants across stakeholder groups noted that wide-spread availability of smart meters could help create a data set to help all stakeholder evaluate the costs and benefits of DG.

Who bears the costs? – Participants disagreed over equity issues regarding the ways in which the transmission, distribution, and system administration costs are borne by different utility customers. There is no agreement on whether there is "cost shifting" or "cross subsidization," nor which customers are subsidizing other customers. Most electricity providers and many but not all business associations and large customers participants expressed a belief that DG customers are or will soon be shifting the costs of service to non-DG customers. Most, if not all, environmental and environmental justice organizations, local governments, and solar energy industry and advocacy organizations participants articulated that they are not aware of any evidence that the cost of service to DG customers is being subsidized by other customers. Several participants noted that there is a myriad of costs to establishing and maintaining the grid, and there are numerous, complex and diverse ways in which different customers both contribute to and pay for those costs. From this perspective, all customers are subsidizing each other to one degree or another because it is not possible to directly calculate the impact one customer has on the costs of the system level distribution, transmission, and administrative costs.

Meter Aggregation – Most stakeholders expressed the view that more flexible approaches to aggregating meters is needed in Virginia to increase the deployment of DG. Electricity provider stakeholders emphasized the fact that utilities will need to cover the costs of expanding meter

aggregation which may include additional administrative costs and technology investments. Several advocacy groups for energy affordability for residential customers, environmental and environmental justice organizations, local governments, and solar energy industry and advocacy organizations participants noted that limits on meter aggregations are a strong barrier for further DG penetration in Virginia, especially for low- and moderate-income (LMI) customers.

Additionally, some business associations and large customers and local governments participants indicated that a wider variety of options for aggregating loads across facilities is essential for helping government entities and private companies meet corporate clean energy procurement targets.

Access & Equity – Many participants urged Virginia to explore how net metering and complementary policies and programs can be designed to work better for low and moderate income (LMI) customers who typically are renters living in multi-family housing.

Grid Resilience and Reliability – Many participants across stakeholder groups noted that as the number of net metering customers expands, Virginia policy should ensure grid resilience and reliability is maintained and enhanced.

Explore Alternatives – Across stakeholder groups there was interest in exploring alternative methods to compensate DG customers other than through net metering. Several participants observed that alternative frameworks could fairly compensate DG customers while also ensuring that utilities can recuperate necessary costs. Specifically, some participants suggested a buy-all-sell-all model, a value-stack approach, net billing in which excess generation is compensated at a non-retail rate that is closer to wholesale rates at the time the energy is generated, and the development of a unique rate class for DG customers.

Key themes for community solar pilot programs

Support for Senate Bill 1393 – Several participants from the environmental and environmental justice organizations, business associations and large customers, and solar energy industry and advocacy organizations groups expressed support for SB 1393, the 2017 bill that created the current framework for community solar pilot programs. Many participants explicitly supported the program because it allows a wider range of Virginians to access solar energy. Several business association stakeholders appreciated that subscriptions to the pilot program will be voluntary and the costs of the pilot program can only be borne by the subscribers. They noted that this approach ensures there is not cost-shifting between participants and non-participants.

Geographic independence – Some historic preservation and land use participants noted that the feature of the current program that allows the solar facilities to be developed in locations that are geographically separate from the community solar customers could be helpful in siting projects in a way that is sensitive to the preservation of historic, cultural, and natural resources. Other historic preservation and land use participants and a few business association participants noted that if siting of community solar projects occurs in a piecemeal fashion, it could lead to land fragmentation. Some participants expressed the view that it would be better if community solar projects were sited close to the communities they serve to avoid environmental justice issues pertaining to wealthy communities siting community solar facilities in poor rural communities.

Concerns Over Pricing – Some environmental and environmental justice organizations and advocacy groups for energy affordability for residential customers participants noted that the proposal from Dominion Energy submitted in the summer of 2018 for implementing SB 1393 will not be affordable for all customers. Additionally, they noted that due to current limits on meter aggregation, community pilot programs could be a very effective way to make solar available to those who live in multi-family residential buildings. However, if price concerns are not addressed, many LMI customers will likely not be able to afford to subscribe to a community solar offering.

Concerns over System Size Restrictions – Individual projects within the 10-40 MW Dominion Energy program may not exceed 2 MW. Several participants from different stakeholder groups commented that both size caps should be increased or removed entirely. Other stakeholders expressed support for these restrictions or did not comment on the restrictions.

Definition of Community Solar in Virginia – Many participants across stakeholder groups highlighted that the current definition of community solar under the Code of Virginia is not the only definition of community solar and urged Virginia to allow for programs that provide more flexibility for third party developers and administrators of "bottom-up" approaches to community solar. These participants noted that labeling a utility-administered program as a "community solar pilot program," as is the case under § 56-585.1:3 of the Code of Virginia, is confusing because these programs differ from community solar projects in which community members collaborate to develop and administer their own renewable energy generation capacity. Some of these participants suggested that the pilot programs for community solar are similar to green tariff programs.

Development of Community Wind – Many wind energy industry and advocacy participants urged Virginia policy makers to consider how to enable development of community wind.

Linkages between community solar pilot programs and siting new utility-scale renewable energy projects – Several participants noted that much of the discussion relating to siting new utility-scale renewable energy projects should also be considered in siting community solar projects.

Key themes for expanding options for corporate clean energy procurement targets

Definition of clean energy – While there is a statutory definition of renewable energy**,** there is no statutory definition of clean energy in Virginia. Participants had significantly different definitions of clean energy, with some noting that clean energy is synonymous with renewable energy. Other stakeholders expressed the view that clean energy is anything that generates lower carbon emissions than coal fired power plants. Still others identified specific energy sources they believe should be included as clean energy. For example, some business associations and large customer participants commented that clean energy should include energy from biomass, energy from manufacturing waste products such as black liquor from forest products, and the use of methane gas recovered from landfill emissions.

Unclear Legal Definition of 100% Renewable Energy Program – Some participants from environmental and environmental justice organizations and large companies with renewable energy targets noted that there is significant uncertainty over the legal definition of what constitutes a 100% renewable program. Specifically, if a utility administered 100% renewable program is approved, it is unclear whether Virginia-based businesses can continue to pursue 100% renewable energy offerings from third-party providers. Some participants expressed the view that this uncertainty creates unacceptably high risks for both the third-party provider and the customer.

Options for large customers that do not have heavy energy loads – Many participants commented that Dominion Energy's offerings seem to be well-suited to large customers with high and consistent energy loads but there are not adequate renewable energy offerings to large companies that do not have heavy energy loads. These participants offered suggestions for expanding options to better meet the needs of large customers with variable energy demands, and medium and small businesses with clean energy procurement targets including:

- *Expanding ways that customers can interact with third party PPAs* – There are various limitations on third-party involvement in providing renewable energy to help companies meet procurement targets. Participants from solar energy industry and advocacy organizations, wind energy industry and advocacy organizations, environmental and environmental justice organizations, and businesses with renewable energy targets shared their experience that

these limitations prevent corporate customers from engaging in a wide array of procurement options. Additionally, these limitations may hamper competition in procurement processes for renewable energy.

- *Modifying policies surrounding aggregation* – Some business association and large customers participants expressed the view that limits on meter and load aggregation reduce companies' ability to procure renewable energy. They noted that the ability to aggregate energy load can be critical to reaching the 5 MW minimum for engaging with a third-party energy provider. Moreover, it would be a key first step in enabling customers to aggregate loads across the PJM market enabling the procurement of a larger amount of competitively priced renewable energy.
- *Advanced notification requirement* **–** A few participants from the environmental and environmental justice organizations and solar energy industry and advocacy organizations suggested that Virginia alter the requirement that customers with loads above 5 MW who contract with a third-party energy provider for any type of power must provide 5 years advance notice prior to returning to their incumbent utility. These participants recommended that this time frame can and should be reduced.

Wholesale energy contracts – Some electricity provider stakeholders noted that it can be difficult for municipal utilities and electric cooperatives to meet corporate clean energy procurement targets because they often procure energy through long-term wholesale energy procurement contracts with larger investor-owned utilities. As such, it may be difficult for them to modify their energy supply to meet corporate clean energy procurement targets.

Linkages between corporate clean energy goals and siting new utility-scale renewable energy projects – Some participants across stakeholder groups highlighted a link between efforts to assist companies with clean energy procurement targets and the siting and development of new utility-scale renewable energy projects and the environmental justice issues regarding utility-scale renewable energy projects described above.

Key themes for siting of new renewable energy projects

Permit by Rule (PBR) – Many participants across stakeholder groups commented on the PBR process, noting both effective and challenging components of the process. Several solar energy industry and advocacy organizations and wind energy industry and advocacy organizations participants expressed support for the process. However, several historic preservation and land use organizations, solar energy industry and advocacy organizes, and wind energy industry and advocacy organizations elevated the need to increase staff resources and financial resources at the Department of Environment Quality (DEQ) and the Department of Historic Resources (DHR).

Need for guidelines – Numerous participants across stakeholder groups highlighted that many localities may not have the expertise required to make informed siting decisions. Several of these participants, particularly from historic preservation and land use organizations, suggested the creation of best practice guidelines for siting renewable energy projects in Virginia. While guidelines such as this do exist, and are identified in later sections of this report, there is no one central resource for siting of renewable energy projects in Virginia.

Need to identify most appropriate land for siting – Many participants noted the current siting process does not effectively enable developers to identify the best places to site renewable energy projects. Several participants noted that renewable energy developers often do not identify the most ideal location for siting due to the lack of relevant and sufficiently detailed information regarding several competing considerations including: proximity to and impact on existing grid infrastructure; potential impacts on existing historic, cultural, or natural resources; how the project fits in the context existing local land use plans; and other potential environmental impacts such potential storm water impacts from large solar facilities. Several participants expressed the view that potential

storm water impacts from utility-scale solar need to be thoroughly assessed during siting stage of project develop, not just during the PBR process.

Varying perspectives about on-site and off-site solar – Some local governments and business associations participants suggested that Virginia policy should incentivize development of on-site solar rather than off-site solar because on-site solar can reduce impacts on communities that are not utilizing the energy and helps to ensure that the community using the energy bears the potential negative impacts of such facilities. Other participants from diverse stakeholder groups noted that off-site solar is an important option for expansion of renewable energy in Virginia because it is often cheaper to develop larger solar installations than smaller installations and installation size can be greater at off-site locations. As such, on-site solar may be less economically competitive for certain customers than offsite solar.

Utilize existing impervious surfaces – Some participants from the environmental and environmental justice organizations and local governments groups recommended that Virginia develop incentives to site solar installations on existing impervious surfaces such as large rooftops, reclaimed mine lands, etc., to help reduce pressure to site projects in prime agricultural or forested land.

Utilize reclaimed mine lands – Some participants from the environmental and environmental justice organizations, business associations and large customers, solar energy industry and advocacy organization, other energy sources, and local governments groups suggested that Virginia consider developing incentives for renewable energy developers to build renewable energy facilities on post-industrial "brownfields" and/or reclaimed mine land.

Need to consider transmission lines in siting renewable energy facilities – Several participants from the business associations and large customers, historic preservation and land use organizations, advocacy groups for energy affordability for residential customers, local governments, and electricity providers groups noted that Virginia should consider the potential need to expand transmission lines to connect new utility-scale renewable energy facilities to the grid.

Concerns surrounding local taxes – Participants across diverse stakeholder groups highlighted that it is difficult to assess the local tax implications of siting new renewable energy projects. Between variations in the tax codes between localities, the complex patchwork of policies relating to renewable energy in Virginia, and lack of clarity regarding recent changes to the Machinery and Tools (M&T) tax, it can be difficult to develop a comprehensive and accurate assessment of the local tax implications to siting of a new renewable project.

Recommendations to expedite permitting – Some solar energy industry and advocacy organization, wind energy industry and advocacy organization, and business association and large customer stakeholders noted that it could be helpful for Virginia to develop additional methods for expediting permitting for development of new renewable energy projects for specific types of projects. For example, it was suggested that industrial sites, including industrial parks developed with public funding, could be pre-permitted to include renewable energy such that the developer of the site would have an incentive to include renewable energy facilities in conjunction with the development of the industrial site.

Concerns about the Stakeholder Engagement Process

Over the course of the stakeholder engagement process, many participants expressed gratitude for Meridian's efforts to complete an intensive and inclusive process in a short time frame. However, a few participants expressed frustrations over the timeliness of email communications they received from Meridian regarding the planning and preparation of the stakeholder meetings. In addition, one participant expressed frustration that stakeholders who were not able to participate in daytime meetings were excluded from the process, thereby making the process less inclusive and less

representative of the full breadth and scope of stakeholder interests from the millions of Virginians who are ordinary rate payers.

Glossary of Terms

- **Cross-subsidization** – A situation in which customers of one class or category do not pay for the full cost of the energy services they receive from their utility and those costs are born by others who are in a different class or category of customers or based on some other distinguishing characteristic within the same class or category.
- **Distributed generation (DG) –** Small power generators installed on the distribution network at lower voltages, often owned and operated by a utility customer at the customer's premises.
- **Electrical cooperative** – Any utility consumer services cooperative.
- **Investor owned utility (IOU)** – As defined by the Code of Virginia, an investor owned utility is an electric utility that is a Phase I Utility or a Phase II Utility.
- **Meter Aggregation –** A process by which a utility combines multiple meters to one account for the purposes of billing. Each utility may have different applicability requirements for meter aggregation.
- **Municipal Utility** – Waterworks, sewerage, gas works (natural or manufactured), electric power plants and distribution systems, public mass transportation systems, storm water management systems and other public utilities acquired, established, or otherwise controlled by a locality.
- **Net-metering** – Measuring the difference, over the net metering period, between electricity supplied to an eligible customer-generator or eligible agricultural customer-generator from the electric grid and the electricity generated and fed back to the electric grid by the eligible customer-generator or eligible agricultural customer-generator.
- **Pilot Program for Community Solar** – As defined in § 56-585.1:3 of the Code of Virginia, pilot program for community solar means a program conducted by a participating utility pursuant to this section following approval by the Commission, under which the participating utility sells electric power to subscribing customers under a voluntary companion rate schedule and the participating utility generates or purchases electric power from participating generation facilities selected by the participating utility.
- **PJM Market –** Refers to PJM Interconnection LLC, a regional transmission organization that serves all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia.
- **Standby charges** – Charges applicable to certain customer-generators who participate in net metering utilizing an electric generation facility with an alternating current capacity that exceeds 10 kilowatts.
- **Utility Scale Solar** – A term of art that refers to large solar projects as opposed to small solar projects or solar distributed generation projects. Depending on the source, utility scale solar is defined differently in terms of size.

Appendices

Appendix A: Questions to Guide Discussion During at Stakeholder Group Meetings

The following questions were revised based on feedback provided at the July 10, 2018 Public Kick-off Meeting for the Solar and Wind Energy Stakeholder Engagement process being conducted by Meridian Institute for Dominion Energy Services, Inc. and the Commonwealth of

Virginia. The definition of key terms used in this document are the same definitions as those set forth in SB 966[1] and, for net metering, § 56-594 of the Code of Virginia[2]. For the questions pertaining to pilot programs for community solar, the definitions are those used in Section § 56-585.1:3 of the Code of Virginia[3].

Net Metering

SB 966 requires Phase I and II utilities to "investigate potential improvements to the net energy metering programs as provided under § 56-594 of the Code of Virginia."

1. How are you/your organization affected by net metering in Virginia? (participant, provider of distributed generation, ratepayer, etc.)
2. What aspects of net metering work well in Virginia, why do they work well, and how can they be improved and/or expanded?
3. What aspects of net metering do not work well in Virginia, why do they not work well, and what suggestions do you have for improving net metering?

Community Solar

SB 966 requires Phase I and II utilities to "investigate potential improvements to pilot programs for community solar development as provided under § 56-585.1:3 of the Code of Virginia."

1. How are you/your organization impacted by the pilot programs for community solar development authorized under § 56-585?
2. What aspects of the community solar pilot programs under § 56-585 do you anticipate will work well and why, and how can they be improved and/or expanded?
3. What aspects of the community solar pilot programs under § 56-585 do you anticipate will not work well and why, and how can they be improved?

Expanding options for customers with corporate clean energy procurement targets

SB 966 requires Phase I and II utilities to "investigate expansion of options for customers with corporate clean energy procurement targets."

1. How are you/your organization affected by corporate clean energy procurement targets?
2. What aspects of the approach Virginia takes to providing corporate customers ways to meet their clean energy procurement targets are working well, why are they working well, and how can these positive aspects be improved and/or expanded?
3. What aspects of the approach Virginia is taking to providing corporate customers ways to meet their clean energy procurement targets are not working well, why are they not working well, and what suggestions do you have for how negative aspects can be improved?

Siting of new renewable energy projects

SB 966 requires Phase I and II utilities to "investigate impediments to the siting of renewable energy projects."

[1] To view the relevant definitions, please view the SB 966 text.
[2] To view the relevant definitions, please view § 56-594 of the Code of Virginia.
[3] To view the relevant definitions, please view § 56-585.1:3 of the Code of Virginia.

1. How are you/your organization affected by the siting of renewable energy projects in Virginia?
2. What aspects of Virginia laws and programs are working well regarding the siting of renewable energy projects, why are they working well, and how can they be improved and/or expanded?
3. What aspects of Virginia laws and programs are not working well regarding the siting of renewable energy projects, why are they not working well, and how can they be improved?

Appendix B: July 10 Public Kickoff Meeting Participant List

Peter Anderson, Appalachian Voices

James Bacon, Bacon's Rebellion

Jonathan Baker, EDF Renewables

Richard Ball, Sierra Club Virginia Chapter

Corrina Beall, Sierra Club Virginia Chapter

Glen Besa, Sierra Club

Carmen Bingham, VPLC

Katharine Bond, Dominion Energy

Jessica Bull, Mothers Out Front

Bruce Burcat, Mid-Atlantic Renewable Energy Coalition

Becky Campbell, First Solar

Keith Cannady, HRPDC

Tom Carlson, EDF Renewables

Steven Carter-Lovejoy, Sierra Club

Ethan Case, Cypress Creek Renewables

Caroline Cirrincione, Solar Energy Industries Association

Hannah Coman, Southern Environmental Law Center

Mark Coombs, American Battlefield Trust

Sarah Cosby, Dominion Energy

Kendyl Crawford, Virginia Interfaith Power & Light

Bishop Dansby, Climate Change Advocate

Mary Doswell, Doswell Strategic Consulting Services, LLC

Nicole Duimstra, Secure Futures

Judy Dunscomb, The Nature Conservancy

Todd Edgerton, The Oak Hill Fund

Bill Eger, City of Alexandria

David Eichenlamb, VA SCC

Christopher Ercoli, Brookfield Renewable

Brianna Esteves, Ceres

Matt Faulconer, Rappahannock Electric Cooperative

Adam Forrer, Southeastern Wind Coalition

Hayes Framme, Orsted

Ryan Gilchrist, Coronal Energy

Adam Gillenwater, American Battlefield Trust

Harrison Godfrey, Virginia AEE

Lydia Graves, Appalachian Voices

Andrew Grigsby, Virginia Renewable Energy Alliance

Morgan Guthridge, Guthridge Associates

Rhea Hale, WestRock

Terry Hill, PHIUS

Francis Hodsoll, SolUnesco, MDV-SEIA Board

Dan Holmes, Piedmont Environmental Council

Ben Hoyne, Virginia Clinicians for Climate Action

Eric Hurlocker, Greene Hurlocker

Ronald Jefferson, Appalachian Power

Robert Jorz, Suntribe Solar

Joshua Kaplan, World Wildlife Fund

Karla Loeb. Sigora Solar

Joy Loving, Climate Action Alliance of the Valley

Tucker Martin, McGuireWoods Consulting

Chris McDonald, Virginia Association of Counties

Matthew Meares, Virginia Solar

Jonathan Miles, James Madison University

Susan Miller. VCCA

Lisa Moerner, Dominion Energy

John Morrill, Arlington County

David Murray, MDV-SEIA

Angela Navarro, Governer Northham

Eleanor Nowak, Appalachian Power Company

Tommy Oliver, SCC

Jennifer Palestrant, Tidewater Community College

Albert Pollard, Independent Consultant

Drew Price, Hexagon Energy

Beth Roach, Mothers Out Front

Dawone Robinson, Natural Resources Defense Council

Kaitlin Savage, Sol Vis

Walton Shepherd, NRDC

Brian Smith, WGL Energy

Kristie Smith, Virginia Conservation Network

Brianna Smith, Sierra Club intern

Tony Smith, Secure Futures Solar

Matt Smith, Hampton Roads Planning District Commission

Rachel Smucker, Secure Futures Solar

Howard Spinner, NOVEC

Tim Stevens, Falls Church City Planning Commission

Susan Stillman, Vienna's Community Enhancement Commission

Aaron Sutch, Solar United Neighbors of Virginia

Sarah Taylor, City of Alexandria

Malesia Taylor, Dominion Energy

Maron Taylor, US Green Building Council

Adam Thompson, Urban Grid Solar

David Toscano, House of Delegates

Tyson Utt, Apex Clean Energy

Adam Ventre Hexagon Energy

John Warren, VA Dept Mines, Minerals & Energy

Devin Welch, Sun Tribe Solar

Matthew Wells, WestRock

Connor Woodrich, Columbia Gas of Virginia

Andie Wyatt, Grid Alternatives

Appendix C: August 28 Public Forum Participant List

Jessica Ackerman, Virginia Municipal League

Kate Baker, Virginia Retail Federation

Corrina Beall, Sierra Club Virginia Chapter

Al Christopher, VA Dept. of Mines Minerals and Energy

David Clarke, Eckert Seamans Cherin & Mellott

Mark Coombs, American Battlefield Trust

Sarah Crosby, Dominion Energy

Walid Daniel, VA Dept. of Mines Minerals and Energy

Thomas Dick, MEPAV

Daryl Downing, Sierra Club

Bill Eger, City of Alexandria

Brianna Esteves, Ceres

Sheri Givens, Givens Energy

Harrison Godfrey, Virginia AEE

Rhea Hale, WestRock

Karen Harrison, Office of Delegate Jennifer Boysko

Mark Hickman, CSG

Terry Hill, PHIUS

Ronald Jefferson, Appalachian Power

Ron Jenkins, Virginia Loggers Association

Nannette Jenkins, Virginia Loggers Association

Petrina Jones Wrobleski, Virginia Retail Merchants Association

Ken Jurman, VA Dept. of Mines Minerals and Energy

Joshua Kaplan, World Wildlife Fund

Frank Krawczel, Commonwealth Power

Joe Lerch, Virginia Association of Counties

Karla Loeb, Sigora Solar

Christina Luman Bailey, GoGreen VML

Jonathan Miles, James Madison University

David Murray, MDV-SEIA

Eleanor Nowak, Appalachian Power Company

Guy Rohling, Powered by Facts

Ben Rowe, Virginia Farm Bureau Federation

Aimee Seibert, CSG

Brian Smith, WGL Energy

Howard Spinner, NOVEC

Adam Thompson, Urban Grid Solar Projects, LLC

Tyson Utt, Apex Clean Energy

Brett Vassey, Virgina Manufacturers Association

Andrew Vehorn, VMDAEC

Michael Whatley, Consumer Energy Alliance (CEA)

Alison Williams, Edison Electric Institute

Alice Wolfe, Blue Ridge Power Agency

Connor Woodrich, Columbia Gas

Michael Woods, Troutman Sanders

About Meridian

Meridian Institute is a not-for-profit organization that helps people solve complex and controversial problems, make informed decisions, and implement solutions that improve lives, the economy, and the environment. We design and manage collaboration, providing services such as facilitation, mediation, convening power, and strategic planning. Drawing from over two decades of experience, we help people develop and implement solutions across a wide range of issue areas, including climate change and energy, agriculture and food systems, oceans and freshwater, forests, and health. As a neutral third-party, we bring people together to listen to one another, build trusted working relationships, and forge consensus.

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