



Governor's Task Force on Renewable Energy Development and Siting

Final Report

Prepared for:
Governor Larry Hogan

August 14, 2020



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EXECUTIVE SUMMARY

The Governor's Task Force on Renewable Energy Development and Siting was established by Governor Larry Hogan under Executive Order 01.01.2019.09 in August 2019 to examine renewable energy siting issues, and in particular, siting of utility-scale solar on farmland. Solar is of particular interest because of the large number of proposed utility-scale solar projects in Maryland, utility-scale solar's increasing cost-competitiveness and the need to meet the solar carve-out of the Maryland Renewable Portfolio Standard (RPS). Therefore, a focus of the Task Force was to explore other development opportunities besides utility-scale solar such as development on brownfields or parking canopies, as well as to consider streamlining of state permitting processes under certain conditions that could benefit all forms of generation sources.

The state seeks to increase the contribution of renewable energy to the electricity mix through Maryland's RPS, which requires 50% of overall electricity generation sales in Maryland to be met by renewable energy resources by 2030. As part of the RPS, Maryland has the largest solar carve-out in the country, at 14.5% by 2028, and a separate carve-out for 1,200 megawatts (MW) of new offshore wind, also by 2030, on top of the 368 MW of offshore wind authorized by the Maryland Public Service Commission (PSC) in 2017.

The availability of large tracts of open land in rural communities, which generally does not require extensive site work (e.g., clearing or grading), is ideal for utility-scale solar generation development, particularly if located within proximity to a power substation. Of the 30 solar generation facilities currently under construction or review by the state, a majority are located on agricultural lands. That, in turn, has raised concerns about whether the development of multiple large, utility-scale solar projects may consume prime farmland, which is important to the state's agricultural communities, culture and industry, and that existing state policy aims to preserve. Furthermore, farmers may benefit from leasing agricultural or rural land for utility-scale solar development, primarily as a source of predictable income, even though there are potential remediation issues to manage after a facility has outlived its useful life.

Using a variety of assumptions outlined in the main body of the report and in an Appendix, the Task Force estimates between 7,750 and 33,000 acres of farmland could be devoted to utility-scale solar, or between 0.4 and 1.7% of available farmland, and between 0.7 and 2.9% of available prime farmland, in Maryland. While small in aggregate, the encroachment of utility solar on prime agricultural and farmland remains a serious concern to rural communities, policymakers and stakeholders.

The Task Force submits the following 14 recommendations for consideration:

- Develop Additional Incentive Programs
- Consider Options for Updating and Streamlining the CPCN Process
- Expand Rooftop Solar and Other Preferred Applications by Increasing the Net Energy Metering Cap
- Accelerate Residential Rooftop Solar Permitting



- Evaluate New and Existing State and Local Government Facilities and Land for Solar Potential
- Establish an Offset Requirement for Farmland Development Similar to Maryland's Existing Forest Offset
- Degraded Lands with Photovoltaic (PV) Potential
- SmartDG+ Improvements
- Address Transmission and Distribution Constraints
- Assess Environmental Justice (EJ) Siting Impacts
- Develop Streamlined Standard to Review and Approve Energy Storage Projects
- Expand Efforts to Develop Microgrids in Maryland by Leveraging Solar in the Built Environment
- Expansion of Maryland Green Registry
- Promote Complementary Practices Like Agrovoltaics and Pollinator Habitat

Meeting Maryland's energy and environmental goals and requirements are challenging, but achievable. In developing its recommendations, the Task Force focused on strategies to preserve and protect farmland and property rights in Maryland while at the same time not suppressing the growth of clean and renewable energy. The 14 recommendations put forth in this final report are meant as a way to explore new and better approaches to siting, and to determine other enabling actions that can be taken in order to achieve Maryland's goals. The recommendations are informed and supported by models or examples from other states or countries and can be implemented through the Task Force's recommended actions and next steps.

The Task Force was supported through the collaborative efforts of key state agencies, representatives of the Maryland agricultural community and local governments, as well as those from the solar and wind industries. The Task Force met or had conference calls on nine different occasions and heard presentations on a number of topics.



LETTER FROM THE CHAIR

Dear Governor Hogan,

Thank you for the opportunity to chair the Task Force On Renewable Energy Development and Siting over the past year.

I am pleased to present our consensus-based recommendations that will help the State of Maryland move forward and meet our future energy and environmental goals and requirements.

The task force worked well together over the past year to make several recommendations for your consideration. I would like to thank your staff for their support on this project.

Sincerely,

Gregory I. Snook
President and CEO of CHIEF
1 South Potomac Street
Hagerstown, MD 21740



11. Develop Streamlined Standard to Review and Approve Energy Storage Projects

Background:

Energy storage is important for integrating renewable energy resources into the energy grid. Storage can be used to smooth out intermittency or absorb excess production from wind and solar resources. It can help transform a renewable facility into a “firm,” meaning more predictable, source of generation by supplying stored power whenever the renewable energy resource experiences an interruption; for instance, when the wind stops blowing or clouds block the sun. And, it can minimize the curtailment of renewable energy generation, especially during negative price periods, which can occur when supply exceeds demand.⁶³

Decreases in the prices of storage devices, particularly lithium ion battery storage which has benefited from research and development related to plug-in EVs, have been significant in recent years and prices are generally expected to continue to decline over time. Maryland has been a leader in facilitating greater adoption of energy storage, being the first state to adopt tax credits for energy storage. Additionally, Maryland enacted legislation that required PPRP to study regulatory reforms and market incentives that may be needed or may benefit energy storage in Maryland. The final report, released January 22, 2019, provides a review of the energy storage technologies, their applications, efforts by other states to promote storage, the current state of storage in Maryland and the barriers that discourage widespread implementation.⁶⁴ Legislation enacted in 2019 directing the PSC to establish an energy storage pilot program for the state’s four investor-owned utilities of up to 10 MW state-wide to be put in-service by February 2022. In April 2020, the Exelon utilities (BGE, Delmarva Power & Light, and Pepco) and Potomac Edison collectively submitted eight energy storage projects to the PSC for review and consideration. Additionally, in March 2020, the PSC adopted new standards resulting from a stakeholder driven process initiated by the Commission, which resulted in energy storage facilities being conditionally required to: (1) have limits on inadvertent export and (2) project evaluation utilizing net system capacity and proposed-use concepts.

The Task Force Interim Report stated that “the state needs to develop a streamlined standard to review and approve [energy storage] projects.” The eight projects filed as part of the energy storage pilot required by state legislation are among the first commercial-scale energy storage projects proposed in Maryland to date, and as such, there is a limited experience and history to draw upon in terms of experience with licensing energy storage projects through the CPCN process. In addition, all but one of the eight projects are below the 2 MW threshold for having to obtain a CPCN, meaning the majority of these projects will not need to seek a CPCN. Finally, some of the energy storage projects may be targeted for utility distribution systems, which would not be subject to CPCN siting requirements.

⁶³ Maryland Department of Natural Resources, “Energy Storage in Maryland: Policy and regulatory options for promoting energy storage and its benefits,” 2018, Maryland Department of Natural Resources. dnr.maryland.gov/pprp/Documents/Energy-Storage-In-Maryland.pdf.

⁶⁴ Id.



While it may be too early to consider a streamlined standard to review energy storage projects, there is a great deal to be gained by closely monitoring the pilot program currently underway. This may generate new best practices or inform changes to current processes. It is anticipated these energy storage pilot projects will contribute to discussions about the regulatory reforms needed to facilitate wider deployment in Maryland.

Specific Actions:

- Monitor the storage pilot program in order to develop Maryland-specific best practices for reviewing new storage projects.



APPENDIX B: TASK FORCE MEMBERS AND STAFF

MEMBERS

Members	Names
Maryland Department of Agriculture	Joe Bartenfelder
Maryland Department of Commerce	Ewing McDowell
Maryland Department of the Environment	Ben Grumbles
Maryland Department of Natural Resources	Jeannie Haddaway-Riccio
Maryland Department of Planning	Sandy Schrader
Maryland Department of Transportation	Earl Lewis
Maryland Energy Administration	Mary Beth Tung
Maryland Environmental Service	Charles Glass
Public Service Commission	Joey Chen
Maryland Farm Bureau Representative	Billy Bishoff
Maryland Farm Bureau Representative	Janet Christensen-Lewis
MACo Representative	Alex Butler
MML Representative	Terry McGean
Solar Energy Industry	John Finnerty
Wind Energy Industry	Andrew Gohn

STAFF

Governor's Office	Andrew Cassilly
Governor's Office	Hannah Schaeffer
Governor's Office	Stephen Schatz
Maryland Energy Administration	Ryan Opsal
Power Plant Research Program, Maryland Department of Natural Resources	Helen Stewart

ENERGY STORAGE IN MARYLAND [PPSE-ES-2018-01, DNR Publication No. DNR 12-102218-100]

Battery safety – *Updating building and fire codes* to address the siting of large-scale batteries will help to avoid site-specific reviews and unnecessary confusion. Though these codes fall under the purview of local authorities throughout the state, *they could benefit from state guidance*. The General Assembly could designate a state agency to assist local authorities by gathering suitable boilerplate language from storage project developers and manufacturers. The same agency could also provide boilerplate language for the responsible decommissioning of battery projects. [ES-16,]

Permitting – *Building and fire codes* do not currently address storage and permitting staff are not always familiar with storage projects. [3-12]

System Planning – Presently, Maryland utilities conduct distribution planning as a standard course of business; their distribution system investments, including investments in storage, are subject to review during a PSC rate case proceeding. This means *there is no process in place for the PSC and the public to understand how the state’s utilities are evaluating storage projects in the pre-investment stage*. [3-12]

Battery safety – Updating building and fire codes to address the siting of large-scale batteries will help to avoid site-specific reviews and unnecessary confusion. Though these codes fall under the purview of local authorities throughout the state, they could benefit from state guidance. The General Assembly could designate a state agency to assist local authorities by gathering suitable boilerplate language from storage project developers and manufacturers. The same agency could also provide boilerplate language for the responsible decommissioning of battery projects.

Safety - To avoid site-specific reviews and unnecessary confusion, building and fire codes could address the siting of batteries that are commonly used for bill management, resiliency, or (with PV) self-supply of energy. *The General Assembly could designate a state agency to assist with these efforts by coordinating with storage manufacturers and developers to provide boilerplate safety information and standards for local authorities to adopt as they update codes*. This resource could include standards for the decommissioning of batteries, which is a source of concern to some stakeholders. [5-9]

ENERGY STORAGE IN MARYLAND

*Policy and regulatory options for promoting
energy storage and its benefits*

2018

PPRP

A Publication of the Maryland
Power Plant Research Program



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The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin or physical or mental disability. This document is available in alternative format upon request from a qualified individual with disability.

- 3. Multi-use protocols** – Enabling customers to use BTM storage, not only for their own benefit but also to provide services to utilities and PJM, will maximize the value of these systems to their owners and the grid. Together with the state’s utilities and PJM, the PSC could develop standard protocols for how such systems should be metered, controlled, and serviced. As best practices and protocols for storage O&M emerge, utilities could create a set of guidelines for government agencies and other customers to use with third-party storage providers. The PSC and the state’s utilities could develop protocols for communicating with and dispatching BTM systems, via a third-party aggregator, to provide utility services. Such protocols could likely be adapted for individual BTM storage devices.
- 4. TOU electricity rates** – Promoting rate designs that reflect the time-varying costs of generating and delivering electricity will incentivize and reward storage owners for shifting their consumption patterns to benefit the grid. The PC 44 Rate Design Work Group (Rate Design WG) has proposed a two-year, time-of-use (TOU) rate design pilot project for both utility distribution and supply for residential customers. If this pilot is given a favorable evaluation, the PSC could require that customers with storage be served under TOU rates. However, it is understood that many residential customers cannot adjust their consumption to avoid peak hours. For such customers, a mandatory TOU tariff would result primarily in higher electricity costs, not grid benefits. Over the longer term, and in accordance with any evolution in distribution system planning, the PSC and utilities may work together to create more

granular time- and (perhaps) location-based rates to address specific grid needs.

- 5. Net metering** – Clarifying how net metering applies to storage will pave the way for customers with PV to adopt storage. For example, other states have specified that net metering applies to stored energy that was generated by on-site PV, but not energy that was drawn from the grid. The Rate Design WG is also planning to work on a TOU rate design pilot project specifically for net-metered customers. It may make sense to hold off on making any changes to net metering, or creating a next-generation incentive, until the results of this pilot project are known.

- 6. Battery safety** – Updating building and fire codes to address the siting of large-scale batteries will help to avoid site-specific reviews and unnecessary confusion. Though these codes fall under the purview of local authorities throughout the state, they could benefit from state guidance. The General Assembly could designate a state agency to assist local authorities by gathering suitable boilerplate language from storage project developers and manufacturers. The same agency could also provide boilerplate language for the responsible decommissioning of battery projects.

result in system-wide cost savings, but have no recognized market value. From a developer’s perspective, storage projects may not be economically justified unless more of these benefits are monetized by policymakers, regulators, and/or PJM.

Access to the Grid

- 7. Interconnection** – The interconnection process for BTM storage is evolving. Currently, questions remain about the level of utility review that is needed for storage systems that will not export power, or whether gross or net capacity should be used when an interconnection study is being conducted. The cost and time required to interconnect storage systems can significantly impact whether storage projects are able to secure financing.
- 8. Multi-use Protocols** – Regulatory and operational hurdles exist towards providing multiple services using a single system, including services at both the wholesale and retail level. There is no clear definition of the dispatch priority and protocols for storage simultaneously providing multiple services (e.g., wholesale market services vs. transmission and distribution services vs. customer benefits).

9. Permitting – Building and fire codes do not currently address storage and permitting staff are not always familiar with storage projects.

Planning

10. System Planning – Presently, Maryland utilities conduct distribution planning as a standard course of business; their distribution system investments, including

investments in storage, are subject to review during a PSC rate case proceeding. This means there is no process in place for the PSC and the public to understand how the state’s utilities are evaluating storage projects in the pre-investment stage.

11. Evaluation – Because advanced energy storage technologies and applications are relatively new, unexpected costs and benefits may result from projects. This makes it difficult to compare storage to other more traditional resources.

Knowledge

12. Awareness – Many industry and non-profit representatives believe the conversation about storage is dominated by batteries at the expense of other technologies, such as compressed air or thermal storage, and other options, such as energy efficiency.

3.6. PC 44 Activities

Energy Storage Work Group

Ironing out questions related to utility ownership of storage is crucial to the overall success of storage in Maryland. It has been the primary focus of the PC 44 Energy Storage Work Group (Storage WG), whose leader created a memorandum for PPRP summarizing viewpoints on the appropriate legal interpretation of the Code of Maryland Regulations (COMAR) with respect to FOM storage. This memo is a working document that evolves over time. The most recent version is attached as Appendix A and summarized here.

The roots of this discussion date back to the Electric Customer Choice and Competition Act of 1999, which barred Maryland’s utilities from

sense to hold off on making any changes to net metering, or creating a next-generation incentive, until the results of this pilot project are known.

6. Battery safety – Updating building and fire codes to address the siting of large-scale batteries will help to avoid site-specific reviews and unnecessary confusion. Though these codes fall under the purview of local authorities throughout the state, they could benefit from state guidance. The General Assembly could designate a state agency to assist local authorities by gathering suitable boilerplate language from storage project developers and manufacturers. The same agency could also provide boilerplate language for the responsible decommissioning of battery projects.

to promote storage. (Note that the General Assembly might need to authorize specific changes to programs to include storage.) Pairing incentives with price signals (such as TOU rates) can help to encourage customers to modify their consumption patterns in ways that benefit the grid.

9. Financing – Lowering the cost of financing may help advanced energy storage compete with more mature technologies. Maryland can help to attract third-party financing indirectly by providing enough revenue streams to reduce the risk of innovative storage investments. In addition, independent or state-led loan programs could be created or expanded to provide funding at favorable interest rates or with better terms than standard loans with market-based interest rates and terms.

Policy Options

7. Targets – Setting a storage-related target may prompt market creation and enable a wide range of market participants to “learn by doing.” Cost-benefit modeling can be used to identify a “no regrets” target level, or smaller targets can be set on the assumption that costs would be minimal and the results would inform future policy choices. Questions of utility ownership would need to be addressed in conjunction with setting a target or explored further within the context of a target.

8. “Bridge” incentives – Offering rebates, grants, and/or tax incentives may provide temporary support for storage, assuming that costs continue to fall and some combination of new rates, regulations and policy initiatives take effect. Several current or previously proposed programs run by the state’s utilities and MEA could be expanded, extended, or launched

Planning

10. Distribution system planning – By taking a more active role in overseeing distribution system planning, the PSC may be able to promote the consideration of storage as a grid asset and foster the growth of distributed resources, including storage. However, there are also significant operational/regulatory costs to requiring pre-investment reviews. To minimize the burden on regulators and utilities, this effort could focus on system upgrades above a specified cost threshold. For example, the PSC could require that when utilities are considering such upgrades, they make an informational filing that contains a brief project description and rationale. The filing would not require approval by the PSC, but rather give the PSC an opportunity to request more information, if desired. Alternatively, the PSC could require that utilities conduct a formal analysis of

for interested parties, including government agencies, to use with third-party storage project developers. These guidelines would cover safety considerations, maintenance best practices, and any other matters necessary to ensure that BTM systems are available to utilities when needed.

Safety

To avoid site-specific reviews and unnecessary confusion, building and fire codes could address the siting of batteries that are commonly used for bill management, resiliency, or (with PV) self-supply of energy.^v The General Assembly could designate a state agency to assist with these efforts by coordinating with storage manufacturers and developers to provide boilerplate safety information and standards for local authorities to adopt as they update codes. This resource could include standards for the decommissioning of batteries, which is a source of concern to some stakeholders.

Rate Design

TOU Rates

The Rate Design WG's has designed TOU pilot projects to convey the actual costs of generating and delivering electricity to residential ratepayers (see Chapter 3). Such rates can motivate and reward customers for shifting their consumption patterns, with or without the use of storage, to benefit the grid. If the pilot evaluations conclude that the new rates are viable and beneficial to customers and the grid, the PSC could work with utilities to encourage customers with storage use TOU rates. The PSC could also instruct the utilities to take steps to interest a wider portion of the public in TOU rates. It is understood, however, that many residential customers cannot adjust their consumption to avoid peak hours. For such customers, a mandatory TOU tariff would result

primarily in higher electricity costs, not grid benefits.

Demand Charges

The Rate Design WG considered and dismissed creating demand charges for residential customers. Their rationale was simple. If the demand charges were based on PJM-wide peaks in demand residential customers would not be able to anticipate these peaks and adjust their consumption accordingly. If the demand charges were based on the customer's peak demand, minimizing this peak would still be difficult for customers and of little value to the grid. Nevertheless, voluntary residential rates with demand charges could be attractive to customers that can use storage (or in-home energy management controls) to respond to price signals. This could be an avenue for exploration via a pilot project in the future.

Net Metering

For customers who intend to use both on-site PV and storage, net metering rates and rules come into play. Under net metering, PV customers with systems <2 MW are eligible to be paid, at the retail electricity rate, for power that they generate on site and then feed back into the grid, up to 2.5 percent of electricity load in the state, or roughly 1,500 MW.

The state could clarify whether or how storage may fit into the existing net metering paradigm. For example, California has specified that energy discharged from a storage device can only qualify for net metering if the device was charged with on-site PV, not from the grid. That said, many industry representatives pointed out that net metering creates a disincentive for storage. (If PV generation and stored PV generation are

^v On a related note, storage has yet to be incorporated into the International Green Construction Code (IGCC), which, along with Leadership in Energy and Environmental Design (LEED), guides many investments.