

**SELECTED PORTION OF THE *REQUEST FOR PROPOSALS FOR A  
TECHNICAL CONSULTANT TO ANALYZE THE BENEFITS AND  
COSTS OF DISTRIBUTED SOLAR ENERGY RESOURCES IN  
MARYLAND***

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The Successful Offeror shall prepare a formal and comprehensive written report for the Commission, and, if feasible, develop a set of tools that calculate the benefits and costs of distributed solar energy in the parts of Maryland served by investor-owned utilities that the Commission and interested parties could consider in PC44 and future proceedings (the “Report”). The Report shall include sufficient objective data to support and substantiate all of the findings, calculations, tools, and analyses contained in the Report. The Report should contain tables, graphs, charts or appendices, as appropriate. The Report may offer recommendations about how to incorporate its findings into a potential pilot program.

In completing its analysis on the benefits and costs of distributed solar energy resources in the parts of Maryland served by investor-owned utilities, the Successful Offeror shall consider and address the following topics<sup>1</sup>:

- The amount of solar energy resources in Maryland and the potential for growth in the future.
- The impact of the State’s statutory requirements, including the Greenhouse Gas Reduction Act<sup>2</sup> and Renewable Portfolio Standard.<sup>3</sup>
- Trends and forecasts in energy use and system peak loads.
- The benefits and costs to Maryland electric customers and residents, and to the investor-owned utilities, of distributed solar energy resources for the generation, transmission, and distribution systems. The analysis should consider each of these three systems separately in identifying benefits and costs.

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<sup>1</sup> In the categories stated below, the successful Offeror shall analyze benefits and costs both in the short and long term, and enumerate them as specifically as possible.

<sup>2</sup> Maryland must reduce statewide greenhouse gas emissions by 40% from 2006 levels by 2030. Maryland Code, Environment Article, § 2-1204.1.

<sup>3</sup> Maryland Code, Public Utilities Article (PUA), § 7-703.

- The benefits and costs to Maryland electric customers and residents, and to the investor-owned utilities, that distributed solar energy resources provide to the electric grid, including the grid benefits of load-offsetting generation.
- The manner in which the grid location of the distributed solar resource installation affects the calculation of grid-related benefits and costs.
- The benefits and costs to Maryland electric customers and residents of distributed solar energy resources in the relevant wholesale markets. This component shall include analysis of energy and capacity value of solar generation at hourly or sub-hourly increments compared to the wholesale price at peak seasons and peak hourly or sub-hourly periods to assess whether the energy is generated during the highest usage hours of the year (such as the highest 20 hours, or another period as proposed by the Offeror) and whether solar generation can reduce capacity market payments including Maryland's share of the PJM allocations in comparison to other PJM jurisdictions.
- The impact of additional distributed solar energy generation on wholesale energy market prices and the corresponding benefit to Maryland customers and residents.
- The impact of distributed solar energy resources on requirements for ancillary services, including but not limited to the inability to perfectly forecast energy output.
- The health and environmental benefits of distributed solar energy resources, including but not limited to mitigation of carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) sulfur oxides (SO<sub>x</sub>) and particulate matter emissions.
- Other benefits provided by distributed solar energy resources, including but not limited to: avoided land needed for transmission & distribution assets; avoided outages; congestion cost relief; deferred expansion of transmission & distribution assets; displaced capacity requirements; fuel diversity; fuel hedging; fuel security; grid security; job creation; limiting line losses; local economic development; market price effects; mitigating inflation risk; reduced price volatility; reduced peak loads; reduced wear & tear on distribution and transmission assets; and roof shading (and corresponding reduction in air conditioner-related load).
- The impact of solar energy resources, both individually and in the aggregate, on the loss of open space and on agricultural and ecological services.
- The impact of the development of solar energy resources on local comprehensive plans, zoning, and planning requirements.
- The impacts to distribution systems, including known and specific additional investments needed to control voltage, manage two-way power flows, address the complexities of operating the system in a safe and reliable manner, and relieve increased stress on switches and substation equipment. This section shall examine

the ability of smart inverters to address impacts to the distribution system, including providing support for distribution systems if the distribution system operators are provided with visibility (through smart grid investments or use of existing AMI infrastructure) or some degree of control of smart inverter functions. The Successful Offeror should conduct an appropriate literature review and any other analysis as proposed by the Successful Offeror.

- The value of distributed and grid scale storage on solar deployment and how storage resources can modify the benefits and costs of distributed solar resources, specifically identifying how distributed storage with smart grid visibility and perhaps aggregator or utility-signals may limit costs and/or enhance benefits to the distribution grid. The Successful Offeror should conduct an appropriate literature review and any other analysis as proposed by the Successful Offeror .
- The impact that an advance in energy storage technology or cost-effectiveness could have on the benefits and costs of distributed solar resources.
- Within each category of benefits and costs, the proposal shall, as appropriate, distinguish between different types and sizes of distributed solar energy resources, including: residential rooftop solar resources; mid-size distributed installations in size of approximately 500 kilowatts to 2 megawatts (or similar mid-size classification as the Successful Offeror proposes); and grid-scale solar farms larger than 5 megawatts (or similar size classification as the Successful Offeror proposes).
- The impact of available federal, state, local, and utility rebates and tax credits on the benefits and costs of distributed solar energy resources.
- The impact of low, middle and high electricity price scenarios, based on Energy Information Administration or other comparable data for high and low natural gas prices.
- Any other societal benefits or costs that could be relevant for the Commission's consideration.

The above list is non-exhaustive, and the Successful Offeror may address other topics in its analysis that it deems appropriate.