# Estimated Ratepayer Impact of a 40% MD RPS by 2025

Prepared for the Maryland Climate Coalition, by Sustainable Energy Advantage, LLC

## Executive Summary

Sustainable Energy Advantage, LLC (SEA), an independent renewable energy consulting and advisory firm, found that **the ratepayer impact of increasing Maryland's Renewable Portfolio Standard (RPS) to 40% by 2025 will likely be just under $2 per month per residential ratepayer (in 2014 dollars) in 2025.**

**Who is SEA:** SEA has been a national leader on renewable energy policy analysis and program design for over 15 years. In that time, SEA has supported the decision-making of more than 100 clients—including more than 20 governmental entities— through the analysis of renewable energy policy, strategy, finance, projects and markets. SEA has contributed to the design, implementation, evolution and/or evaluation of RPS's, or proposals to create such standards, in states including – but not limited to – California, Connecticut, Illinois, Massachusetts, New York, North Carolina, Ohio, Rhode Island, Wisconsin and Vermont. In a number of these states, SEA has performed RPS cost evaluations.

**Regional Analysis:** This study provides an independent, objective analysis of the potential ratepayer impact of increasing Maryland's Tier 1 RPS target (inclusive of solar and offshore wind carve-outs) from 20% to 40% by 2025. Specifically, SEA estimated the *incremental* cost impact on residential, commercial, and industrial ratepayers – expressed in dollars per month and percentage increase for a typical customer. This analysis recognizes that Maryland's RPS is implemented within the context of a broader (PJM) marketplace that includes other states with similar RPS mandates. These states have overlapping geographic eligibility criteria for renewable resources, so they compete with one another for adequate renewable energy supplies to meet their respective demands. This regional approach is taken into account in the analysis of supply, demand, renewable energy credit (REC) price and rate impact.

**Non-solar:** SEA assumed that *incremental* Tier 1 non-solar RPS compliance will be met by land-based wind. Due to pricing and historical RPS compliance trends, land-based wind is expected to be a cost-competitive marginal resource. To estimate future costs, SEA constructed a *supply curve* of wind projects that could be located in, or directly interconnected to, the PJM Interconnection to satisfy Maryland – and regional – RPS obligations. The projects assumed to be successfully developed represent about 25% of the region's technical potential, as identified by the National Renewable Energy Laboratory. The only modeled land-based wind not located in, or directly interconnected to, the PJM territory was 1,000 MW assumed to be delivered through new cost-effective transmission capacity expected to come online by 2025.

**Solar:** Cost of compliance with the solar carve-out program is based on Exeter Associates' *Avoided Energy Costs in Maryland* Report issued in April 2014. This report was prepared for the Maryland Department of Natural Resources' Power Plant Research Program as part of the EmPOWER Maryland Planning process. A solar supply curve was not constructed or relied upon for this analysis. Increased demand for solar – through a carve-out increase of 2% to 4% – may cause solar REC prices to rise in some years relative to the Exeter Report. On the other hand, economies of scale and efficiency gains are expected to continue to exert downward pressure on the delivered cost of solar electricity. This analysis assumes that the market maintains a solar supply and demand balance similar to that assumed in the *Avoided Energy Costs in Maryland* Report. Like the Exeter report, solar REC prices are constrained by the "alternative compliance payment" where applicable.

**Results.** The table below provides ratepayer impact results for the "base case" scenario, in 2014 dollars.

| Residential | | Commercial | | Industrial | |
|---|---|---|---|---|---|
| $/Cust/Mo | % Increase | $/Cust/Mo | % Increase | $/Cust/Mo | % Increase |
| **$1.94** | **1.5%** | **$18.79** | **1.4%** | **$209.16** | **1.7%** |

**The ratepayer impact of increasing Maryland's RPS to 40% by 2025 is estimated to be just under $2 per month per residential ratepayer (2014$) in 2025.**

**"Base Case" Assumptions:** In addition to those described above, several key additional policy assumptions were made in the base case scenario. First, federal support for wind energy through the "production tax credit" (PTC) was assumed to be extended at 100% of its current face value through the end of 2015, and then phased down to 60% by 2019, before expiring permanently in 2020. We understand that this policy is not currently in place and would need to be enabled by federal legislation. This report assumes that Congress will enact a sensible phase-down before terminating federal tax support for renewable energy.

Second, the EPA's new carbon regulations for new and existing power plants are expected to affect electricity prices. Starting in 2018, estimated price adjustments based on federal carbon regulations were modeled using Synapse Energy Economics, Inc.'s low-case $CO_2$ price forecast from spring 2014. This is intended to represent a reasonable estimate of the future price of $CO_2$ emissions for electric utilities and other stakeholders with long-term planning horizons.

Third, future energy efficiency gains by Maryland investor-owned utilities were assumed to align with their historic 2014 performance under *EmPOWER Maryland*. This assumption is reasonable given that Maryland's Public Service Commission has already held hearings to set efficiency targets beyond the EmPOWER 2015 timeline.

Finally, this analysis assumes that beginning in 2017, 50% of incremental RPS obligations will be secured through long-term contracts with local distribution utilities, and the other 50% will be secured through REC purchases on the "spot market." As a result, an increasingly larger share of the REC market is assumed to be secured through long term contracts from 2017-2025, at a significant discount to spot market purchases. To this end, this report assumes that a long-term contracting policy is developed as a part of, or in parallel to, an expanded RPS policy between now and 2017. The availability of long-term, creditworthy offtake contracts has a material impact on the ability to finance new renewable energy facilities and the resulting Levelized Cost of Energy (LCOE), REC premium and ratepayer impact. Several New England states have implemented long-term contracting programs through their distribution utilities in order to capture these benefits. Numerous utilities in the central United States (including states with no RPS) enter long-term contracts with wind generators based on economics alone. While such opportunities for long-term contracting have not been widely available in PJM in the past, experiences like these in other RPS markets have shown an increasing appetite among policymakers to support – through competitive solicitations by local utilities – the stable and competitive long-term prices offered by many renewable energy resources. To the extent that long-term contracts are utilized to comply with RPS obligations, they place downward pressure on consumer electricity prices and the ratepayer impact of the RPS.

**More Information:** More information on the assumed base case scenario as well as additional details on each of the input assumptions can be found in the remainder of this report. In addition to the base case scenario, the body of this report also contains a "high rate impact sensitivity" scenario, which varies the $CO_2$ price forecast to assume that the existing RGGI program will meet EPA 111(d) standards, no future changes will be made to the RGGI program rules, and that federal tax support through the PTC or any other mechanism will expire permanently after December 31, 2014. The report also details some of the study's limitations, as well as factors not included in this analysis.