

Department of Legislative Services
Maryland General Assembly
2013 Session

FISCAL AND POLICY NOTE

Senate Bill 275
Finance

(The President, *et al.*) (By Request - Administration)

Maryland Offshore Wind Energy Act of 2013

This Administration bill creates a “carve-out” for energy derived from offshore wind in the State Renewable Energy Portfolio Standard (RPS), beginning in 2017, and extending beyond 2022. The bill establishes an application and review process for proposed offshore wind projects by the Public Service Commission (PSC). The bill also specifies a window of maximum rate impacts for both residential and nonresidential electric customers due to the bill. The bill establishes a Maryland Offshore Wind Business Development Fund and Advisory Committee in the Maryland Energy Administration (MEA) to promote emerging businesses related to offshore wind; the bill establishes specified funding sources including transfers from the Strategic Energy Investment Fund (SEIF) and developer payments. PSC receives funding from SEIF and may implement specified special assessments on electric companies to implement the bill. The bill also makes changes to the requirement to obtain a certificate of public convenience and necessity (CPCN) for specified persons.

The bill takes effect June 1, 2013.

Fiscal Summary

State Effect: Net special fund revenues increase by \$2.8 million in FY 2014 as a result of the required transfers and assessments issued by PSC and the Office of the People’s Counsel (OPC) to offset administrative costs. Future year special fund revenue increases reflect developer payments to the new fund in FY 2015 through 2017 and ongoing transfers and assessments. Net special fund expenditures (to capitalize the new fund in MEA and for consultants and administrative costs in PSC and OPC) increase by \$5.3 million in FY 2014, \$9.3 million in FY 2015, \$4.1 million in FY 2016, \$2.1 million in FY 2017, and \$85,500 in FY 2018. The required transfers from SEIF will come from money derived from the recent Exelon-Constellation merger. Under one set of assumptions, State expenditures (all funds) increase minimally beginning in FY 2014 and significantly beginning in FY 2018 due to higher electricity prices.

(in dollars)	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
SF Revenue	\$2,830,500	\$5,774,800	\$3,078,200	\$2,081,700	\$85,500
SF Expenditure	\$5,330,500	\$9,274,800	\$4,078,200	\$2,081,700	\$85,500
GF/SF/FF Exp.	-	-	-	-	\$2,077,900
Net Effect	(\$2,500,000)	(\$3,500,000)	(\$1,000,000)	\$0	(\$2,077,900)

Note:() = decrease; GF = general funds; FF = federal funds; SF = special funds; - = indeterminate effect

Local Effect: Local expenditures increase minimally beginning in FY 2014 as electricity suppliers pass on the cost of assessments to all customer classes. Local expenditures increase significantly beginning in FY 2018 due to higher electricity prices. Revenues are not directly affected.

Small Business Effect: The Administration has determined that this bill has a meaningful impact on small business (attached). The Department of Legislative Services (DLS) concurs with this assessment.

Analysis

Bill Summary: A “qualified offshore wind project” means a wind turbine electricity generation facility, including the associated transmission-related interconnection facilities and equipment, that:

- is located on the outer continental shelf of the Atlantic Ocean in an area that is designated for leasing by the U.S. Department of the Interior after coordination and consultation with the State in accordance with the Energy Policy Act of 2005 and between 10 and 30 miles off the coast of the State (*See Appendix – Offshore Wind Development* for additional information, including a map of the current area under consideration);
- interconnects to the Pennsylvania, New Jersey, Maryland Interconnection, Inc. (PJM) Interconnection grid at a point located on the Delmarva peninsula; and
- is approved by PSC, subject to specified requirements.

RPS Changes

Under the State RPS, in 2017 and for every following year, State electricity sales must include an amount derived from offshore wind energy. The amount is set by PSC each year, based on the projected annual creation of “offshore wind renewable energy credits” (ORECs) by qualified offshore wind projects, and may not exceed 2.5% of total retail sales. The portion of RPS that represents offshore wind energy (*i.e.*, the rate increase)

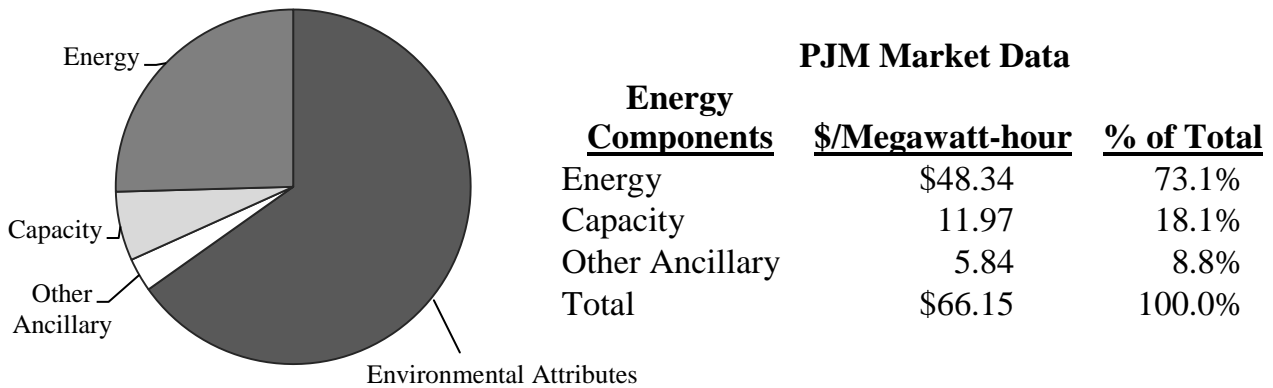
may not apply to electricity sales at retail by any electricity supplier in excess of 75,000 megawatt-hours (MWh) of *industrial* process load to a single customer in a year, or beyond the first 3,000 kilowatt-hours (kWh) of electricity in a month for a customer who is a specified owner of agricultural land.

The Tier 1 alternative compliance payment (ACP) schedule does not apply to the portion of RPS that is to be derived from offshore wind energy. For any year in which an OREC obligation exists, ACP for industrial process load declines by 50% to 0.1 cents per kWh (in 2017 and after, the industrial ACP is 0.2 cents per kWh under current law). Additionally, for any year in which the net OREC rate impact (the incremental increase in rates due to the OREC obligation) exceeds \$1.65 per MWh (in 2012 dollars), the industrial ACP is reduced to zero.

Offshore Wind Renewable Energy Credits

“OREC” means a renewable energy credit equal to the generation attributes of one MWh of electricity that is derived from offshore wind energy. **Exhibit 1** is a representation of a \$190 OREC and its components.

**Exhibit 1
Component Portions of a \$190 OREC**



Source: Maryland Energy Administration for PJM Market Data

DLS notes that an OREC differs from other Tier 1 renewable energy credits (RECs) in that the “generation attributes” of a Tier 1 nonsolar REC in Maryland generally only include the environmental attributes (*i.e.*, not the energy). ORECs are “bundled” with the energy, capacity, ancillary services, and environmental attributes, whereas other Tier 1 nonsolar RECs are generally “unbundled,” meaning the energy, capacity, and ancillary

services are not included in the price of the REC. In general, most Tier 1 RECs used for State RPS compliance are traded in a market established by PJM, unbundled from the physical energy.

Approval Process through PSC

In addition to specified siting and interconnection requirements, a proposed offshore wind project must submit an application to PSC for approval to be a qualified offshore wind project, which will also determine the OREC pricing schedule. The approval process begins with an initial application process which may begin after PSC adopts implementing regulations by July 1, 2014. On receipt of an application for approval, PSC must provide notice that it is accepting applications and must open an application period during which other interested persons may submit applications. PSC must set the closing date for the application period, which may be no less than 90 days after PSC provides notice that it is accepting applications. Upon receipt of all applications, PSC must open an evidentiary proceeding to allow open and transparent evaluation. PSC must approve, conditionally approve, or deny an application within 180 days, unless the period is extended by mutual consent of both parties. PSC may provide additional application periods at its discretion.

An application must include a detailed description and financial analysis of the project and the proposed method of financing the project, including documentation demonstrating that the applicant has applied for all current State and federal grants and other forms of cost offsets or tax advantages. The application must also contain a cost-benefit analysis, which must include, at a minimum:

- a detailed input-output analysis of the impact of the project on income, employment, wages, and taxes in the State, with an emphasis on in-state manufacturing employment;
- detailed information concerning assumed employment impacts in the State, including expected duration of employment and salaries;
- an analysis of the anticipated environmental benefits, health benefits, and environmental impacts of the project to the citizens of the State;
- an analysis of any impact on residential, commercial, and industrial ratepayers over the life of the project;
- an analysis of any long-term effect on energy and capacity markets as a result of the project; and
- other benefits, such as increased in-state construction, operations, maintenance, and equipment purchase.

The application also must include a proposed OREC pricing schedule for the project, which must set a price for the generation attributes of the offshore wind energy, including the energy, capacity, ancillary services, and environmental attributes. Further, the application must include a decommissioning plan for the project, a plan for engaging small businesses through June 2016, a commitment to abide by specified minority business requirements, and a commitment to deposit at least \$6.0 million into the Maryland Offshore Wind Business Development Fund (described in more detail below) over about two years. Further, the applicant must commit to use best efforts to apply for all current State and federal grants and other forms of cost offsets or tax advantages, and to pass on to ratepayers, without subsequent PSC approval, 80% of the value of any future State and federal grants and other benefits received that are not included in the application. Finally, PSC may require any other additional information.

PSC must evaluate the project on the following criteria:

- lowest cost impact on ratepayers of the price set under a proposed OREC pricing schedule;
- potential reductions in both transmission congestion prices within the State and locational marginal pricing;
- potential changes in capacity prices within the State;
- the extent to which the cost-benefit analysis submitted by the applicant demonstrates positive net economic, environmental, and health benefits to the State;
- the extent to which an applicant's plans for engaging small businesses meets specified goals as established in statute;
- the extent to which an applicant's plan provides for (1) the use of skilled labor; (2) the use of an agreement designed to ensure the use of skilled labor; and (3) compensation to its workers consistent with State prevailing wage laws;
- siting and project feasibility;
- estimated ability to assist in meeting the State's RPS; and
- any other criteria that PSC determines to be appropriate.

PSC may not approve an application unless (1) the proposed project demonstrates positive net economic, environmental, and health benefits to the State; (2) the projected net rate impact, combined with the rate impact of other qualified projects, does not exceed \$1.50 per month for an average residential customer (1,000 kWh per month) in 2012 dollars, *and* does not exceed 1.5% of nonresidential customers' total annual electric bills, over the duration of the proposed OREC pricing schedule; and (3) the price set in the proposed OREC pricing schedule does not exceed \$190 per MWh in 2012 dollars.

In addition, PSC may not approve an application until the Governor's Office of Minority Affairs, in consultation with the Office of the Attorney General (OAG), and the applicant, has established a clear plan for setting minority business goals and related procedures. The Governor's Office of Minority Affairs, in consultation with OAG, must provide assistance to all potential applicants and potential minority investors.

PSC must contract the services of independent consultants and experts when calculating the net benefits to the State and in evaluating and comparing applicants' proposed projects, and PSC must apply the same net OREC cost per MWh to residential and nonresidential customers.

An order issued by PSC approving a proposed project must (1) specify the OREC price schedule, which may not authorize an OREC price greater than \$190 per MWh in 2012 dollars; (2) specify the duration of the OREC pricing schedule, which cannot exceed 20 years; (3) specify the number of ORECs the project may sell each year; and (4) provide that payment may not be made for an OREC until electricity supply is generated by the project, and that ratepayers and the State are held harmless for any cost overruns associated with the project. The order vests the owner of the qualified project with the right to receive payments for ORECs according to the terms established in the order.

In addition, the bill establishes conditions and procedures for PSC approval of an extension of the original OREC pricing schedule in increments of five years.

PSC must adopt implementing regulations by July 1, 2014.

Compliance Process with RPS

PSC must adopt regulations to establish an escrow account to ensure the transparent transfer of ORECs and revenues between an offshore wind generator and electric suppliers. The process established by the bill is as follows:

- The offshore wind generator delivers ORECs to an escrow agent associated with the actual output of the facility and is paid the established OREC price for the number of ORECs in the pricing schedule.
- Electricity suppliers buy ORECs from the escrow agent to meet their offshore wind RPS obligation. The OREC cost is recovered through customer energy charges.
- The offshore wind generator sells all of the energy, capacity, and ancillary services associated with the creation of ORECs directly into PJM markets.

- The offshore wind generator delivers to the escrow agent all revenues associated with energy, capacity, and ancillary service sales.
- The escrow agent refunds the revenue associated with the offshore wind generator's sale of its energy, capacity, and ancillary services to the electric companies, who in turn refund the revenue through a credit to ratepayers subject to RPS.
- The electricity suppliers apply the ORECs toward their annual RPS compliance, as established by PSC.

PSC must establish regulations regarding the transfer and expiration of ORECs created in excess of the OREC pricing schedule.

Certificate of Public Convenience and Necessity

Any person constructing a qualified submerged renewable energy line must obtain a CPCN. A "qualified submerged renewable energy line" means a line (1) carrying electricity supply and connecting a qualified offshore wind project to the transmission system and (2) in which the portions of the line crossing any submerged lands or any part of a beach erosion control district are buried or submerged. MEA is added to the list of State agencies PSC must provide notice to in the event of a CPCN application.

Atlantic Coastal Beaches and Environmental Review

Qualified submerged renewable energy lines are exempt from the existing prohibition on building permanent structures within the Beach Erosion Control District as long as the project does not result in significant permanent environmental damage as determined by the Department of Natural Resources (DNR). An application for a CPCN to construct a submerged renewable energy line is subject to environmental review by DNR and the Maryland Department of the Environment. PSC may not approve an application for a qualified submerged renewable energy line to be constructed or installed within the Assateague National Seashore Park or the Assateague State Park.

Maryland Offshore Wind Business Development Fund and Advisory Committee

The bill establishes a Maryland Offshore Wind Business Development Fund and a Maryland Offshore Wind Business Development Advisory Committee within MEA. The stated purposes of the fund are to (1) provide financial assistance, business development assistance, and employee training opportunities to emerging businesses in the State, including minority-owned businesses, to prepare them to participate in the emerging offshore wind industry and (2) encourage emerging businesses in the State to participate in the emerging offshore wind industry.

MEA is authorized to use the fund to carry out the purposes of the fund and for implementation costs. The fund consists of money appropriated by the State, money paid by a qualified offshore wind project, money from federal programs or private contributions, loan repayments, specified proceeds, investment earnings, and any other sources. The bill specifies that the fund receives \$1.5 million from SEIF in both fiscal 2014 and 2015 and \$1.0 million in fiscal 2016. The fund also receives \$6.0 million, spread over about two years, from each approved offshore wind project. MEA may contract with specified entities to carry out the purposes of the fund, which is not subject to specified State procurement laws.

The advisory committee, which is staffed by MEA, must provide written recommendations by December 31, 2013, and updated recommendations by December 31, 2014, to MEA on the most effective use of the money in the fund, and must include specified information relating to emerging businesses and business activities in the State. Members of the advisory committee may not receive compensation but are entitled to reimbursement under the standard State travel regulations. The advisory committee terminates upon submission of the updated recommendations required by December 31, 2014.

PSC Transfers and Special Assessments

The bill requires a transfer from SEIF to PSC of \$1.0 million in fiscal 2014 and \$2.0 million in fiscal 2015 from money derived from the recent Exelon-Constellation merger for PSC to contract with consultants and experts as necessary to carry out the bill's provisions. The funds may be carried forward from year to year, but any amount not encumbered by June 30, 2019, reverts back to SEIF. PSC may implement a special assessment (for the same purpose) on specified electric companies of up to \$3.0 million total, less all merger money transferred to PSC from SEIF under the bill.

PSC may also implement a special assessment during any fiscal year in which an OREC obligation exists in order to employ staff and recover administrative costs necessary to carry out the bill's provisions. Neither assessment is subject to the cumulative cost-recovery limit established in statute for PSC's annual assessment.

Current Law:

Maryland's Renewable Energy Portfolio Standard

Maryland's RPS requires that renewable sources generate specified percentages of Maryland's electricity supply each year, increasing to 20%, including 2% from solar power, by 2022. Electricity suppliers must submit RECs equal to the percentage mandated by statute each year, or pay an ACP equivalent to the supplier's shortfall.

RECs are classified as Tier 1, Tier 1 Solar, or Tier 2. Examples of Tier 1 sources include wind; qualifying biomass; methane from anaerobic decomposition of organic materials in a landfill or wastewater treatment plant; geothermal; ocean, including energy from waves, tides, currents, and thermal differences; a fuel cell that produces electricity from a Tier 1 renewable source; a small hydroelectric plant of less than 30 megawatts (MW); poultry litter-to-energy; and waste-to-energy. Tier 1 Solar sources include photovoltaic cells and residential solar water heating systems commissioned in fiscal 2012 or later.

CPCN Requirement

State law specifies that an individual must be granted a CPCN from PSC before beginning construction of an overhead transmission line that is designed to carry a voltage in excess of 69,000 volts, or exercise a right of condemnation with the construction. A person that seeks to construct or modify a generating facility with at least 70 MW must also obtain a CPCN from PSC.

An application for a CPCN is reviewed before a hearing examiner in a formal adjudicatory process that includes written and oral testimony, cross examination, and the opportunity for full public participation. The CPCN process constitutes permission to construct the facility and incorporates several required permits, including air quality and water appropriation. The CPCN licensing process provides an opportunity for the State to examine all the significant aspects and impacts of a proposed generation facility or transmission line, including the interrelations between various impacts and cumulative effects.

PSC – Assessments

The costs and expenses of PSC and OPC are paid by the public service companies (electric companies, gas companies, and others) that are subject to PSC jurisdiction through an annual assessment. Each public service company is charged an assessment based on the ratio of the annual gross operating revenues for the public service company derived from intrastate utility and electricity supplier services and the annual gross operating revenues of all public service companies for those services. Expenses of PSC must be approved through the annual budget process. Any unspent funds must be deducted from the appropriation for the next fiscal year before PSC determines the amount to be paid by each public service company for the next fiscal year. The total assessment charged to a public service company in a fiscal year may not exceed 0.17% of the company's gross operating revenues derived from intrastate utility and electricity supplier operations for expenses incurred by PSC and 0.05% for expenses incurred by OPC.

Atlantic Coastal Beaches

For the purposes of maintaining the Atlantic Coast beaches of the State and the Beach Erosion Control District, permanent structures within the Beach Erosion Control District are prohibited. Certain purposes, such as the placement of public utility pipelines carrying treated sewage effluent, are exempt from this prohibition.

Background: Additional information related to the development of offshore wind energy in the State, including a map of the area under consideration, can be found in the Appendix – Offshore Wind Development.

Exelon-Constellation Merger

PSC conditionally approved the merger of Exelon Corporation and Constellation Energy Group in March 2012. One condition of the merger required Exelon, within 90 days of the close of the merger, to contribute \$30.0 million for use by the State in efforts to realize an offshore wind project, including the development of a construction and operations plan. The condition did not specify how those funds would specifically be used or where in the State budget the funds would be appropriated.

Due to the uncertainty surrounding how these funds (and other required contributions included as conditions of the merger) would be used, Section 17 of the Budget Reconciliation and Financing Act of 2012 (Chapter 1 of the 2012 first special session, SB 1301) requires that funds from the merger be expended only as authorized through the General Assembly or through the State budget bill, except that, for fiscal 2013 only, funds could be transferred by budget amendment with review and approval of the Legislative Policy Committee and budget committees. To date, the merger money related to offshore wind has been deposited in and budgeted from MEA's SEIF.

State Fiscal Effect: Net special fund revenues increase by \$2.8 million in fiscal 2014 as a result of the required transfers and assessments issued by PSC and OPC to offset administrative costs. Net future year special fund revenue increases, which total \$5.8 million in fiscal 2015, \$3.1 million in fiscal 2016, \$2.1 million in fiscal 2017, and \$85,501 in fiscal 2018, reflect developer payments to the new fund in fiscal 2015 through 2017 and ongoing transfers and assessments.

Net special fund expenditures (to capitalize the new fund in MEA and for consultants and administrative costs in PSC and OPC) increase by \$5.3 million in fiscal 2014, \$9.3 million in fiscal 2015, \$4.1 million in fiscal 2016, \$2.1 million in fiscal 2017, and \$85,501 in fiscal 2018.

MEA's Strategic Energy Investment Fund

The bill requires the following transfers from SEIF:

- \$2.5 million in fiscal 2014 (\$1.5 million to the new Maryland Offshore Wind Business Development Fund, also administered by MEA, and \$1.0 million to PSC to hire independent consultants and experts);
- \$3.5 million in fiscal 2015 (\$1.5 million to the new fund and \$2.0 million to PSC for independent consultants and experts); and
- \$1.0 million in fiscal 2016 to the new fund.

While the Governor's proposed fiscal 2014 budget includes \$5.5 million for SEIF for offshore wind development activities, it does not include funds to implement the transfers required by this bill. However, the required transfers will come from money derived from the recent Exelon-Constellation merger.

The bill's reduction of industrial process ACP is not expected to affect SEIF revenue from ACPs.

MEA's Maryland Offshore Wind Business Development Fund

Special fund revenues to the new fund in MEA increase by \$1.5 million in fiscal 2014, \$3.5 million in fiscal 2015, \$3.0 million in fiscal 2016, and \$2.0 million in fiscal 2017 from required SEIF transfers and contributions from an approved offshore wind project. Specifically, the fund receives \$1.5 million from SEIF in fiscal 2014 and 2015 and \$1.0 million in fiscal 2016, as discussed above. The fund also receives \$2.0 million annually in fiscal 2015 through 2017 from a qualified offshore wind project; this assumes that a project is approved in late fiscal 2015. Special fund revenues may increase further from appropriations in the State budget or any other sources.

Special fund expenditures from the new fund increase correspondingly as MEA, in consultation with the Maryland Offshore Wind Business Development Advisory Committee, uses the money to provide financial and business development assistance to specified emerging businesses in the State.

Public Service Commission and the Office of People's Counsel

Overall, special fund revenues to PSC and OPC increase by \$1.3 million in fiscal 2014 from the required SEIF transfer (\$1.0 million) and from an increase in the annual assessments issued by PSC (\$80,502) and OPC (\$250,000) in order to cover their administrative costs to implement the bill, as discussed below. It is assumed that PSC receives the SEIF funds required to be transferred under the bill and that PSC, therefore,

does not issue a special assessment to offset its costs to hire independent consultants and experts. Future year special fund revenues reflect the required SEIF transfer of \$2.0 million to PSC in fiscal 2015 and additional increases in the annual assessments to cover the ongoing administrative costs of PSC and OPC.

PSC’s special fund expenditures increase by \$1,080,502 in fiscal 2014, which accounts for a 30-day start-up delay. This estimate reflects the cost of hiring one accountant *half time* and one regulatory economist *half time* to design and implement the regulations associated with ORECs, establish OREC requirements, and reconcile account balances. It includes salaries, fringe benefits, one-time start-up costs, and ongoing operating expenses. The estimate also includes costs to hire independent consultants and experts, as required by the bill.

Position	1
Salaries and Fringe Benefits	69,204
Equipment and Operating Expenses	11,298
Independent Consultant Expenses	<u>1,000,000</u>
Total FY 2014 PSC Expenditures	\$1,080,502

Future year PSC expenditures reflect full salaries with annual increases and employee turnover as well as annual increases in ongoing operating expenses. Fiscal 2015 PSC expenditures include \$2.0 million for independent consultants to review the cost-benefit analysis and ratepayer impact calculations included within offshore wind developer applications.

OPC’s special fund expenditures increase by \$250,000 in fiscal 2014 and by \$200,000 in fiscal 2015 to hire additional expert witnesses to assist in the evaluation of project applications.

As noted above, the ongoing administrative costs borne by PSC and OPC are offset by an increase in the annual assessments issued by those agencies.

State Electricity Expenditures

The incremental cost associated with an offshore wind energy carve-out will be absorbed by all electric customers and allocated to different rate classes by PSC. As an electric customer, State agencies and the University System of Maryland (USM) used approximately 1.56 million MWh of electricity in 2012, at a cost of \$138.5 million. A rate increase of 1.5% – the maximum projected increase for commercial customers under the bill – increases electricity expenditures by \$2.1 million across all State agencies and USM in fiscal 2018.

State expenditures on electricity also increase minimally beginning in fiscal 2014, as PSC and OPC administrative costs (\$851,000 over a five-year period) are recovered through assessments charged to electric companies and gas companies, which are passed on to electric customers, including the State.

Local Fiscal Effect: Counties and municipalities use electricity for street lighting, wastewater treatment plants, office facilities, and recreational facilities. Local school systems are also large consumers of electricity. Thus, local government expenditures on electricity also increase minimally beginning in fiscal 2014, due to PSC and OPC assessments charged to electric companies and gas companies. Local government expenditures for electricity increase significantly beginning in fiscal 2018.

Additional Comments: The **Appendix – Key Variables in the Cost of Offshore Wind** summarizes some of the factors that influence estimates of the costs of an offshore wind generation facility. PSC has calculated many potential residential and commercial and industrial (C&I) rate impacts, using energy forecasts from the U.S. Energy Information Administration’s Annual Energy Outlook (AEO). **Exhibit 2** shows the findings for the baseline AEO. The maximum size for a project under baseline assumptions is 211 MW.

Exhibit 2
Ratepayer Impacts – \$190/MWh OREC
AEO Baseline Scenario – 20-year Project Life
(In 2012 Dollars)

Baseline Energy Forecast	<u>AEO</u>
Project Nameplate Capacity (MW)	211
Base Case Market Values	
Total Payments to Wind Project	\$2.76 billion
Total Market Value of Wind Production	\$1.04 billion
Total Net Cost for Wind Project To Be Recovered From Ratepayers	\$1.73 billion
Average Rate Impact (Over Life of Wind Project) to All Customers (C&I and Residential) cents/kWh	0.1230
C&I Average Bill Impact %	1.4%
Residential Average Bill Impact %	1.0%
Residential First Year Monthly Bill Impact \$/Bill	\$1.50
Residential Maximum Monthly Bill Impact \$/Bill	\$1.50
Residential Average Monthly Bill Impact \$/Bill	\$1.32

Source: Public Service Commission

DLS notes that the rate increase due to the bill is on a per-kWh basis, where the projected net rate impact, combined with the rate impact of other qualified projects, does not exceed \$1.50 per month for an average residential customer. In the bill, an “average residential customer” uses 1,000 kWh of electricity per month. For that usage level, a customer’s bill cannot increase by more than \$1.50 per month. However, a particular customer’s monthly bill *can* increase by more than \$1.50 per month if the customer uses more than 1,000 kWh. Holding other factors constant, a customer that uses 1,500 kWh per month (a 50% increase in usage) pays \$2.25 per month (a 50% increase in the bill impact). Similarly, customers who use less than 1,000 kWh are charged less than \$1.50 per month.

DLS Sensitivity Analysis of Rate Impacts

For illustrative purposes only, as shown in **Exhibits 3** and **4**, DLS has calculated the potential residential and C&I impacts, by nameplate capacity of an offshore wind generation facility, and the incremental cost between a \$190 OREC and conventional electricity and capacity. Similarly, **Exhibits 5** and **6** calculate the potential residential and C&I impacts by capacity factor and total State energy sales. DLS assumes the same generation, prices, capacity factor, number of residential ratepayers, and energy consumption profiles as PSC in its “AEO Baseline \$190 OREC Scenario” in year 2018. A detailed breakdown of the various costs under PSC assumptions, calculated by DLS, is included in **Exhibit 7**. DLS notes that the primary drivers of ratepayer impacts are the size of the project, the incremental cost per OREC, and total State energy sales.

OREC Obligation Exclusions

The bill limits the exposure to the OREC obligation for large industrial customers by reducing ACPs, and for agricultural customers by limiting the OREC obligation to the first 3,000 kWh per month. PSC advises that the majority of RPS compliance is met with RECs, including industrial process load. It is unlikely that either of these provisions will materially affect State or local finances. DLS notes that the total annual obligation that must be borne by ratepayers remains unchanged, and that therefore the net OREC rate impact must increase slightly for all customers, though the amount is anticipated to be minimal, and therefore rate impacts do not reflect these exclusions.

Other Considerations

Finally, DLS advises that the above scenarios are provided as an example of how the underlying assumptions used to evaluate a potential offshore wind project can affect the estimated impacts. Actual impacts may vary significantly depending on the bids submitted and ultimately approved. Total costs will also be impacted by any additional federal or State subsidies made available to offshore wind developers.

Exhibit 3
Monthly Household Bill Increase by Nameplate Capacity and
Incremental Cost Per OREC (\$/MWh) – 2018
(In 2012 Dollars)

		Nameplate Capacity (MW)				
		150	175	200	225	250
Incremental Cost Per OREC (\$/MWh)	100	\$0.81	\$0.94	\$1.08	\$1.21	\$1.35
	105	0.85	0.99	1.13	1.27	1.42
	110	0.89	1.04	1.19	1.33	1.48
	115	0.93	1.09	1.24	1.40	1.55
	120	0.97	1.13	1.29	1.46	1.62
	125	1.01	1.18	1.35	1.52	1.69
	130	1.05	1.23	1.40	1.58	1.75
	135	1.09	1.27	1.46	1.64	1.82
	140	1.13	1.32	1.51	1.70	1.89
	145	1.17	1.37	1.56	1.76	1.96
	150	1.21	1.42	1.62	1.82	2.02

Note: Shaded areas represent ratepayer impacts in excess of those authorized by the bill.
Source: Department of Legislative Services

Exhibit 4
Percentage Increase in C&I Rates by Nameplate Capacity and
Incremental Cost Per OREC (\$/MWh) – 2018

		Nameplate Capacity (MW)				
		150	175	200	225	250
Incremental Cost Per OREC (\$/MWh)	100	0.83%	0.96%	1.10%	1.24%	1.38%
	105	0.87%	1.01%	1.16%	1.30%	1.44%
	110	0.91%	1.06%	1.21%	1.36%	1.51%
	115	0.95%	1.11%	1.27%	1.42%	1.58%
	120	0.99%	1.16%	1.32%	1.49%	1.65%
	125	1.03%	1.20%	1.38%	1.55%	1.72%
	130	1.07%	1.25%	1.43%	1.61%	1.79%
	135	1.11%	1.30%	1.49%	1.67%	1.86%
	140	1.16%	1.35%	1.54%	1.73%	1.93%
	145	1.20%	1.40%	1.60%	1.80%	2.00%
	150	1.24%	1.44%	1.65%	1.86%	2.06%

Note: Shaded areas represent ratepayer impacts in excess of those authorized by the bill.
Source: Department of Legislative Services

Exhibit 5
Monthly Household Bill Increase by Nameplate Capacity and
Total State Energy Sales – 2018
(In 2012 Dollars)

		Nameplate Capacity (MW)				
		150	175	200	225	250
Total MD Energy Sales (Gigawatt Hour)	80,000	\$0.85	\$0.99	\$1.13	\$1.28	\$1.42
	78,000	0.87	1.02	1.16	1.31	1.45
	76,000	0.90	1.04	1.19	1.34	1.49
	74,000	0.92	1.07	1.23	1.38	1.53
	72,000	0.95	1.10	1.26	1.42	1.58
	70,000	0.97	1.13	1.30	1.46	1.62
	68,000	1.00	1.17	1.33	1.51	1.67
	66,000	1.03	1.20	1.37	1.55	1.72
	64,000	1.06	1.24	1.42	1.60	1.77
	62,000	1.10	1.28	1.46	1.65	1.83
	60,000	1.13	1.32	1.51	1.70	1.89

Note: Shaded areas represent ratepayer impacts in excess of those authorized by the bill.
Source: Department of Legislative Services

Exhibit 6
Percentage Increase in C&I Rates by Nameplate Capacity and
Total State Energy Sales – 2018

		Nameplate Capacity (MW)				
		150	175	200	225	250
Total MD Energy Sales (Gigawatt Hour)	80,000	0.87%	1.01%	1.16%	1.30%	1.45%
	78,000	0.89%	1.04%	1.19%	1.34%	1.49%
	76,000	0.92%	1.07%	1.22%	1.37%	1.53%
	74,000	0.94%	1.10%	1.25%	1.41%	1.57%
	72,000	0.97%	1.13%	1.29%	1.45%	1.61%
	70,000	0.99%	1.16%	1.33%	1.49%	1.66%
	68,000	1.02%	1.19%	1.36%	1.54%	1.71%
	66,000	1.05%	1.23%	1.41%	1.58%	1.76%
	64,000	1.09%	1.27%	1.45%	1.63%	1.81%
	62,000	1.12%	1.31%	1.51%	1.68%	1.87%
	60,000	1.16%	1.35%	1.55%	1.74%	1.93%

Note: Shaded areas represent ratepayer impacts in excess of those authorized by the bill.
Source: Department of Legislative Services

Exhibit 7
Detailed Breakdown – Costs Associated with a \$190/MWh OREC – AEO Baseline
(In 2012 Dollars)

Total Compliance Cost	<u>2018</u>
Nameplate Capacity (MW)	211
Capacity Factor	0.393
Annual Generation (MWh)	726,405
Incremental Cost Per OREC (\$/MWh)	\$142
Total Annual Compliance Cost (Res. + C&I)	\$95.7 million
Rate Increase – All Categories (\$/kWh)	\$0.0015
 Residential Impact	
Total Maryland Usage (GWh)	63,825
Residential Usage (GWh)	27,317
Residential Share	42.8%
Annual Total Residential Cost (\$)	\$41 million
Monthly Residential Impact (\$)	\$1.50
 C&I Residential Impact	
Annual C&I Usage (GWh)	36,508
C&I Share	57.2%
Annual Total C&I Cost (\$)	\$54.8 million
EIA C&I Retail Rate (\$/MWh)	\$98
Annual C&I Cost of Conventional Energy (\$)	\$3.57 billion
Annual C&I Cost Percentage Increase	1.53%

GWh: Gigawatt Hour

Source: Public Service Commission; Department of Legislative Services

Additional Information

Prior Introductions: A similar bill, HB 441 of 2012, passed the House with amendments and was referred to the Senate Finance Committee. Its cross file, SB 237, was heard by the Senate Finance Committee. No further action was taken on either bill. A similar bill, SB 861 of 2011, was heard by the Senate Finance Committee. Its

cross file, HB 1054, was heard by the House Economic Matters Committee. No further action was taken on either bill.

Cross File: HB 226 (The Speaker, *et al.*) (By Request – Administration) – Economic Matters.

Information Source(s): Public Service Commission; Maryland Energy Administration; Office of People’s Counsel; Department of General Services; Maryland Department of Planning; Office of the Attorney General; Governor’s Office; Maryland Department of Transportation; Maryland Department of the Environment; Department of Natural Resources; New Jersey Board of Public Utilities; U.S. Department of Energy; Energy Information Administration; Bureau of Ocean Energy Management, Regulation, and Enforcement; 2010 Wind Technologies Market Report; National Renewable Energy Laboratory; Department of Legislative Services

Fiscal Note History: First Reader - February 1, 2013
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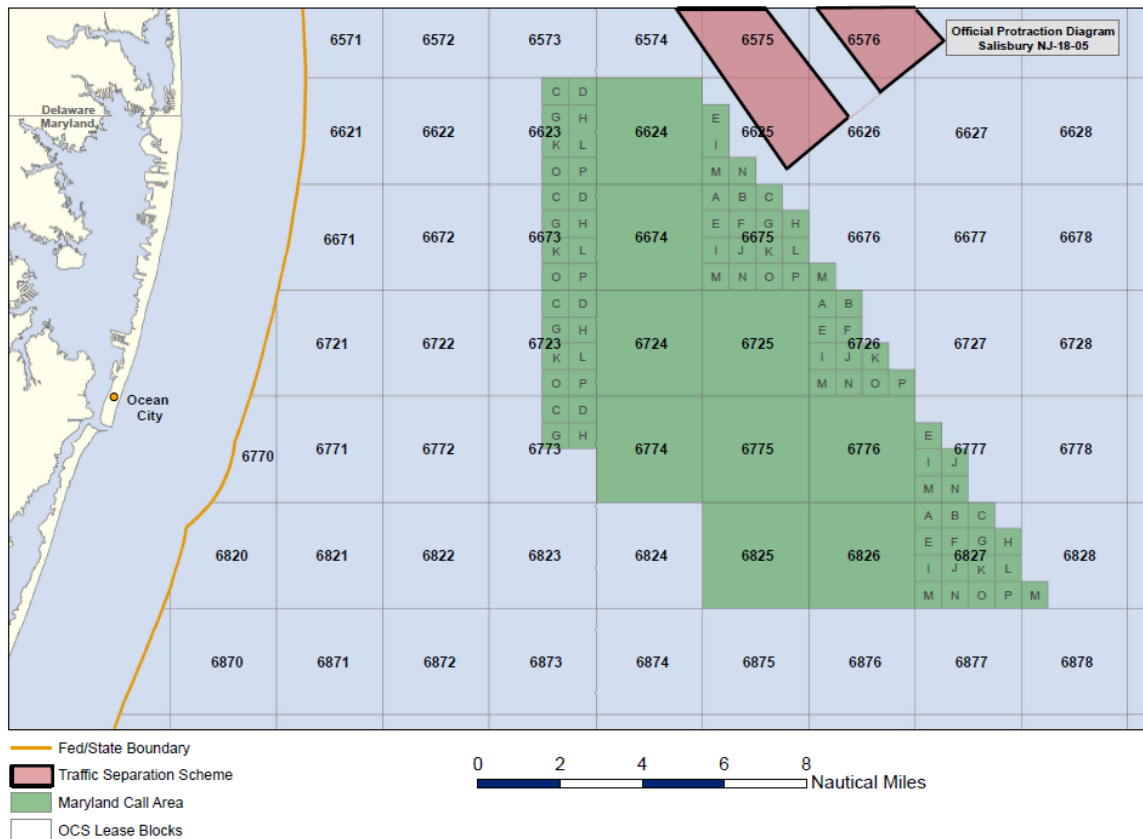
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Appendix – Offshore Wind Development

Recent changes in federal regulations established the U.S. Department of the Interior’s Bureau of Ocean Energy Management (BOEM) as the federal agency responsible for overseeing the safe and environmentally responsible development of energy and mineral resources on the Outer Continental Shelf. The bureau has relied on intergovernmental task forces in several states, including Maryland, to prepare for granting leases, easements, and rights-of-way for offshore renewable energy development activities, such as the siting and construction of offshore wind facilities. In February 2012, the bureau designated 80,000 acres of water off the coast of Maryland as suitable for wind facilities. The area under consideration as of January 2013 is shown in **Exhibit 1** below.

Exhibit 1
BOEM Maryland Call for Information and Nominations Area



Note: OCS = Outer Continental Shelf
Source: U.S. Department of Interior

New Jersey's Offshore Wind Carve-out

In 2010, New Jersey became the first state to establish an offshore wind carve-out in its Renewable Energy Portfolio Standard (RPS). The carve-out is for at least 1,100 megawatts of capacity, and uses an Offshore Wind Renewable Energy Credit (OREC) model similar to that proposed by the 2012 Maryland legislation. The program allows for tax credits and financial assistance to qualified offshore wind projects and related manufacturing and assembling facilities. The New Jersey Board of Public Utilities adopted regulations for the program in February 2011, and announced it was seeking applications for offshore wind projects in May 2011. The board received only one application, from Fisherman's Atlantic City Wind Farm, LLC, to build a 25-megawatt offshore wind facility approximately 2.8 miles from the coast of Atlantic City. Other project details, such as projected subsidies and capital costs, are not publicly available at this time. As of January 2013, the board is conducting stakeholder meetings on the OREC funding mechanism and its implementation.

Power Purchase Agreement

The OREC model is just one way for a state to develop offshore wind energy generation. A previously more prevalent model, and the proposed model in the Maryland Offshore Wind Energy Act of 2011 (SB 861/HB 1054), is the long-term power purchase agreement (PPA). Under that legislation, State investor-owned utilities would have been contractually obligated to pay for the energy, capacity, ancillary services, and environmental attributes generated from a qualified offshore wind facility. The investor-owned utilities would then have been required to sell the energy and other products into the available markets. The Public Service Commission (PSC) would have established a nonbypassable charge or other mechanism to ensure that any costs or savings associated with the obligation to purchase energy or other products from a qualifying offshore wind facility were shared among all customers and distribution territories.

As of January 2012, two U.S. offshore wind projects had PPAs with utilities. **Exhibit 2** shows the prices and terms of these PPAs, which include the electricity and environmental attributes. The Department of Legislative Services notes that the developer NRG Bluewater Wind put active development of the Mid-Atlantic Wind Park off the coast of Delaware on hold, citing Bluewater's inability to find an investment partner. Bluewater cancelled its PPA with Delmarva Power & Light in December 2011.

Exhibit 2
Announced PPA Prices for U.S. Projects under Development

<u>Project Name</u>	<u>Developer Name</u>	<u>Power Purchaser</u>	<u>Capacity Contracted</u>	<u>PPA Price (¢ per kWh)</u>	<u>PPA Base Year</u>	<u>Escalator (%)</u>	<u>Term (Years)</u>
Cape Wind	Cape Wind Associates	National Grid	50% of Output	18.70	2013	3.5	15
Cape Wind	Cape Wind Associates	NSTAR	27.5% of Output	18.70	2013	3.5	15
Block Island Wind Farm	Deepwater Wind	National Grid	28.8 megawatts	24.4	2013	3.5	20

kWh: kilowatt-hour

Source: U.S. Department of Energy, National Renewable Energy Laboratory

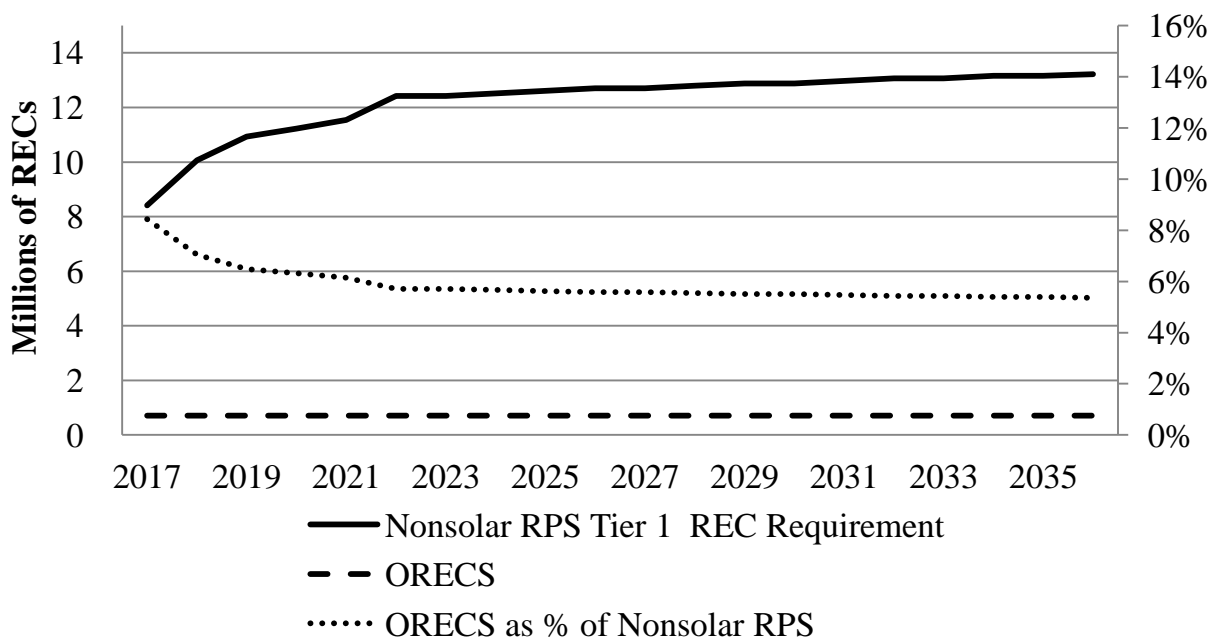
Federal Tax Credits

Two important federal tax credits available for wind facilities are the Investment Tax Credit and the Production Tax Credit. The Investment Tax Credit for wind energy is equal to 30% of the basis of the property (*i.e.*, the cost of project), while the Production Tax Credit is a \$22 per megawatt-hour (2.2 cents per kilowatt-hour) credit for energy produced by qualifying renewable energy technologies, and applies for the first 10 years of a generation facility's operation. Both credits were extended as part of the American Taxpayer Relief Act of 2012 and are available to wind facilities that begin construction or are placed in service before the end of 2013. The credits allow renewable energy facilities to sell electricity below their production costs and thus compete with conventional sources. Therefore, the credits remain important determinants to the decision to construct a wind facility – either onshore or offshore.

Maryland's Renewable Energy Portfolio Standard

To date, electricity suppliers generally have been able to meet their nonsolar RPS obligations through the submission of renewable energy credits (RECs). However, the Department of Legislative Services notes that nearly all of the Tier 1 RECs generated in the State in 2010 (the most recent year for which data is available) are from black liquor (a byproduct of paper manufacturing), landfill gas, and hydroelectric at 58.2%, 20.6%, and 9.6%, respectively. Wind accounted for 6.3% and solar accounted for 5.2%. An offshore wind facility of a size consistent with the rate-cost caps in the bill has the potential to produce between 5% and 8.5% of the Tier 1 RECs necessary for compliance. **Exhibit 3** shows the nonsolar RPS requirement, the potential generation from a 200-megawatt offshore wind facility (the approximate maximum size of a project), and the percentage of the Tier 1 nonsolar RPS requirement the ORECs would satisfy.

Exhibit 3
Annual Tier 1 Nonsolar RPS Requirement Versus
Annual ORECs from 200-megawatt Offshore Wind Facility



Source: Public Service Commission, Annual Energy Outlook Data

The Economics of Offshore Wind

Offshore wind facilities have higher installation costs per unit of generation capacity than onshore wind facilities, largely due to turbine upgrades needed for operation at sea; turbine foundations; and nonturbine components, including interconnection and installation. The resulting lifecycle costs of offshore wind facilities cause the energy produced to be more expensive than that of conventional sources. The U.S. Department of Energy’s National Renewable Energy Laboratory estimates the future weighted-average capital cost for proposed offshore wind facilities at approximately \$5,000 per kilowatt. Further, the costs show significant variation, ranging from under \$3,000 per kilowatt to over \$6,000 per kilowatt. As an example, the capital cost for the 400-megawatt Cape Wind project in Massachusetts has been estimated at \$6,500 per kilowatt, though exact figures have not been released to the public. Further, capital costs for future offshore wind facilities are over 50% higher than capital costs for those installed between 1991 and 2006, due to increased demand for turbines, supply chain bottlenecks, increased project complexity, and higher commodity prices.

Appendix – Key Variables in the Cost of Offshore Wind

Total Project Costs – The total cost of an offshore wind project includes the cost of turbines, foundations, integration, maintenance, financing, and other inputs. Total costs may be estimated in a variety of ways, such as averaging the costs of existing facilities. They may also be estimated based on the experience of specific purchase agreements. Actual project costs are generally proprietary information and may vary greatly depending on project size, siting characteristics, and financing methods.

Discount Rate – The discount rate reflects the cost of capital, comparable to the interest rate, for financing a major offshore wind project. The discount rate the U.S. Energy Information Administration uses for its levelized cost of energy estimates is 7.4%. However, in some analyses where projects are financed by equity investments, the true cost of capital and, therefore, the discount rate, may exceed 20%. With a hard cap existing in the bill of \$190 per Offshore Wind Renewable Energy Credit, the discount rate is unlikely to affect ratepayers, but certainly impacts the financial viability of a proposed offshore wind project. The Department of Legislative Services believes any project will likely apply for the maximum credit.

Capacity Factor – A wind turbine does not generate electricity at 100% of its nameplate capacity. The expected generation from a wind turbine is calculated by applying a capacity factor to the nameplate capacity (expected annual generation = nameplate capacity \times hours in a year \times capacity factor). Depending on wind conditions and facility location, the capacity factor of offshore wind facilities is estimated to be between 30% and 40%. Most U.S. estimates are close to 38%, although since no offshore facilities are operating on the Atlantic Coast, this assumption has not been tested.

Other Market Factors – Installing an offshore wind facility of sufficient size could have a significant impact on capacity markets, locational marginal prices, the value of existing renewable energy incentives, and market-clearing prices.

Cost for Conventional Resources – To calculate the increased cost of energy purchased from an offshore wind facility, a baseline of projected energy prices is needed. The assumptions made to project the baseline prices have a significant impact on the calculation of increased costs. If an estimate assumes that the cost of conventional electricity increases over time, the incremental cost of a project is decreased. If an estimate assumes that the cost of conventional electricity decreases over time, the incremental cost of an offshore wind project is increased. Additionally, when considering options for new generation, costs may be compared between projects, instead of against a baseline.

ANALYSIS OF ECONOMIC IMPACT ON SMALL BUSINESSES

TITLE OF BILL: Maryland Offshore Wind Energy Act of 2013

BILL NUMBER: SB 275/ HB 226

PREPARED BY: MEA

PART A. ECONOMIC IMPACT RATING

This agency estimates that the proposed bill:

WILL HAVE MINIMAL OR NO ECONOMIC IMPACT ON MARYLAND SMALL BUSINESS

OR

WILL HAVE MEANINGFUL ECONOMIC IMPACT ON MARYLAND SMALL BUSINESSES

PART B. ECONOMIC IMPACT ANALYSIS

These bills require electricity suppliers to include electricity from offshore wind generation within the renewable portfolio standard in the year 2017 and beyond. To the extent that electricity suppliers increase electricity prices as a result, small businesses in Maryland will be impacted. Under this bill, the Public Service Commission will reject any proposals which it projects will increase non-residential rates by more than 1.5%. As non-residential ratepayers, small businesses will be protected by this threshold test.

The bill may also have beneficial effects on small businesses in Maryland. It requires that the Public Service Commission, before approving a proposal for certification of Offshore Wind Renewable Energy Credits (ORECs), find that the proposal demonstrates positive net benefits based on enumerated criteria, including (1) the project's effect on "income, employment, wages and taxes in the state" as well as (2) "jobs to be created by the offshore wind project." Proposals for offshore wind projects will be evaluated using certain criteria, including the extent to which the applicant's "plan for engaging small businesses meets the goals specified in Title 14, Subtitle 3 of the State Finance and Procurement Article." Also, the bill establishes a Maryland Offshore Wind Business Development Fund to provide financial assistance, business development assistance and employee training opportunities for the benefit of small businesses in the State to prepare those businesses to participate in the offshore wind industry.