An Analysis of the Economic Impact of the Proposed 1,200MW Expansion of Maryland's Offshore Wind Program

Submitted by:

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Commissioned by:

The BlueGreen Alliance

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Executive Summary

The BlueGreen Alliance commissioned Sage Policy Group, Inc. (Sage) to assess the economic and fiscal impacts of a prospective 1,200 MW expansion of Maryland's offshore wind (OSW) capacity as established in the proposed Clean Energy Jobs Act ("CEJA"). Sage began its analysis by evaluating two OSW projects previously approved by the Maryland Public Service Commission (MD PSC). These two projects will jointly generate 368 MWs of renewable energy generation capacity in Maryland.

Together with the capacity authorized under CEJA, Maryland will ultimately be home to 1,568 MWs of offshore wind capacity if requisite approvals are garnered. This study provides economic and fiscal impact estimates associated with the construction and operational phases of OSW developments in Maryland; developments that have the potential to position the Free State at the forefront of renewable energy in the nation's Mid-Atlantic region.

Key Analytical Findings

- Construction associated with the provision of 1,200 MW of OSW capacity in Maryland as authorized by the CEJA will support an estimated 25,000 jobs (where a job is defined as one position lasting for one year), $1.5 billion in associated labor and proprietor income, and $3.6 billion in augmented economic activity;
- Once construction of the additional 1,200 MW of OSW capacity authorized by the CEJA is complete, operation and maintenance of the facilities will support approximately 1,500 jobs and more than $100 million in labor income per annum;
- Once the 1,200 MWs are online, State tax revenues will be augmented by nearly $23 million per annum. Local tax revenues throughout Maryland will be bolstered by nearly $13 million per annum;
- Jobs supported by these projects are associated with skilled positions in manufacturing, construction, installation, operations, and maintenance. Accordingly, average annual income per worker approaches $60,000 during construction and $70,000 during operations;
- Capital expenditure-related benefits of this additional 1,200 MW are additive to those supported by the two initial OSW developments (368 MW) already approved by the MD PSC:
    - Construction of the initial 368 MW will support approximately 7,100 jobs, $421.7 million in associated labor income, and almost $1 billion in augmented economic activity statewide;
    - Construction of these initial two OSW facilities will augment State tax revenues by approximately $23 million and local tax revenues by approximately $15 million;
    - Once operational, the initial two OSW facilities will support nearly 360 ongoing annual jobs associated with $25 million in income per annum.

I. Introduction

The BlueGreen Alliance commissioned Sage Policy Group, Inc. (Sage) to assess the prospective economic and fiscal impacts of the 1,200 MW proposed expansion of Maryland's offshore wind (OSW) procurement as established in the proposed Clean Energy Jobs Act (CEJA). Impacts associated with the 1,200 MW expansion will be additive to the economic and fiscal impacts associated with an initial 368 MW of OSW capacity supply in Maryland.[1]

The BlueGreen Alliance

The BlueGreen Alliance links America's largest labor unions and its most influential environmental organizations to help solve today's environmental challenges in ways that create and maintain quality jobs and build a stronger, fairer economy. The organization is guided by the principle that there should be simultaneous commitment to good jobs and a clean environment rather than perceived tradeoffs between the two. The current period represents a time of enormous promise from the perspective of the BlueGreen Alliance. Offshore wind produces clean, renewable energy while creating quality jobs that rely heavily on advanced manufacturing in supply chain and skilled labor for construction, installation, operations, and maintenance. Offshore wind development is occurring along much of the East Coast, including in Connecticut, Massachusetts, Virginia, Rhode Island, New York, New Jersey, and Maryland.

Background: Offshore Wind Energy Act of 2013

In 2013, the Maryland legislature enacted the Maryland Offshore Wind Energy Act of 2013 (OWEA), which positioned Maryland to emerge as the first U.S. state with a ready market for power generated via OSW. The OWEA established Offshore Wind Renewable Energy Credits (ORECs) as a mechanism to incentivize development of OSW projects. OWEA also supplies $10 million to Maryland's small businesses to ensure that they are prepared to participate in OSW's supply chain, which is vast, complex, and expanding rapidly across the globe.

Among other things, OWEA: 1) requires that electricity suppliers purchase ORECs; 2) creates a carve-out for offshore wind energy of up to 2.5 percent of total retail electricity sales in Maryland; and 3) implements the following pricing limitations:

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[1] Regarding offshore wind turbines, in a July 2017 Sage report based on a literature review of global breadth, we concluded that there is "Little evidence of negative impact on property values, though there is also scant evidence of positive impacts." We further concluded that, "The majority of visitor survey-based studies of wind farm impacts have found that they have little to no impact on tourism or that the impact had been too small to be discernible." Accordingly, we have not seen fit to address the potential impact of wind turbines on tourism in this report.

1. Projected net rate impacts for residential electricity customers cannot not exceed $1.50 per month in 2012 dollars ($1.67 in 2019 dollars);
2. Projected net rate impacts for all nonresidential customers cannot exceed 1.5 percent of nonresidential customers' total annual electric bills; and
3. The price of electricity cannot exceed $131/Megawatt hour (MWh) in 2012 dollars (about $146 in 2019 dollars).

Passage of the law triggered a process by which Maryland would be positioned to comply. Compliance requires the provision of new sources of OSW electricity generation.

Background: Clean Energy Jobs Act of 2019

The Clean Energy Jobs Act of 2019 increases the State's Renewable Energy Portfolio Standard (RPS) from 25 percent by 2020 to 50 percent by 2030 and, among other things, expands the State's offshore wind program by 1,200 MW with three new application periods. If approved, the bill would require the MD PSC to open application windows for at least 400 MW to come online by 2026, an additional 400 MW by 2028, and yet another 400 MW by 2030. It is certainly possible that these 1,200 MW would come online prior to 2030, which means that associated economic and fiscal impacts would be realized sooner. This additional 1,200 MW of capacity would increase the State's total OSW capacity to 1,568 MW.

Background: Initial Projects

Based on the authority granted it under OWEA, on May 11th, 2017, the Maryland Public Service Commission (PSC) awarded orders for two separate projects to be developed by U.S. Wind, Inc. and Skipjack Offshore Energy, LLC, respectively. Those two distinct developments, which represent the nation's first large-scale OSW projects, will jointly support 368 megawatts (MW) of OSW capacity once operational.

Per requirements set forth in PSC orders, both projects are subject to approximately 30 conditions, many of which pertain to economic benefits ultimately to inure to Marylanders. For instance, OSW developers are required to use specific ports in the Baltimore and Ocean City regions, create a specified minimum number of jobs, invest in local steel fabrication plants, and fund certain upgrades at regional ports.

In part to reduce any threat to tourism activities and property values, developers are also required to locate offshore wind turbines as far to the east and away from Maryland's ocean shoreline as possible. Developers are also required to use the best commercially available technology to minimize OSW turbine visibility from the shore.

II. Methods and How to Interpret Results

Sage used IMPLAN economic modeling software, an industry-standard input-output modeling platform, to estimate economic impacts. The model translates inputs characterizing the types and magnitudes of economic activity required to develop and operate OSW developments into outputs that characterize associated economic and fiscal implications. Importantly, the model embodies economic multipliers and tax rates specific to Maryland's economy.

Economic impact estimates encompass augmented employment, associated income, and economic activity. Investments of this type can produce employment and associated income opportunities both directly and via multiplier effects. Augmented economic activity is often measured in terms of stimulated business sales. Fiscal impact estimates encompass augmented taxes and fees, including property, corporate income and personal income taxes. Below is an abbreviated glossary of terms.[2]

- **Employment**

As defined by IMPLAN, a job that lasts twelve months equals one job, two jobs that last six months equal one job, three jobs that last four months equal one job, etc. Accordingly, the concept of job-years is useful. For instance, an endeavor that supports 200 jobs for a six-month period would be considered to support 100 jobs as measured in job-years.

For construction or capital investment events for which economic or fiscal impacts occur only once, the stated number of jobs is the total number of job-years that will be supported during construction or installation. For operational (ongoing) impacts, job figures are annual and will occur every year so long as operations persist.

Note that IMPLAN jobs aren't quite the same thing as full time equivalents (FTEs). Each of IMPLAN's 536 unique industries has a different conversion rate between jobs and FTEs, although for almost every industry one job is equal to less than one FTE. On average, one IMPLAN job is equal to roughly 0.95 FTEs.

- **Labor Income**

Labor income is comprised of wages, benefits, and proprietor income (money accruing to owners of businesses).

Labor income = all forms of employee compensation (wages & benefits) + proprietor income

[2] These definitions are largely attributable to IMPLAN user Phil Cheney, who, as of this writing, has contributed over 300 articles to the IMPLAN Knowledge Base.

- **Output (Business Activity, Economic Activity)**

Output equals the value of industry production. It might be easier to conceptualize this as total business sales or economic activity. For retail industries, it is the gross margin (not gross sales). For manufacturing, output is the quantity of total sales plus/minus the change in inventories. For the service sector, output is directly equal to sales. This can be visualized by the following equation:

Output = (Manufacturing sales +/- change in inventories) + (service sector sales) + (gross margin for wholesale and retail trade)

These figures are based on annual production estimates for the year of the dataset. In this instance, the year is 2016, the most recent year for which data are available.

- **Direct Effects**

Direct effects are impacts tightly aligned with the endeavor under consideration. In this instance, construction spending and operational spending to maintain wind turbines and other capital stock support direct effects.

- **Indirect Effects**

Indirect effects stem from business-to-business spending activity within the study area that occurs as a result of direct effects. These can be considered broader supply chain effects and form part of the projects' multiplier effects.

- **Induced Effects**

Induced effects relate to household spending that occurs due to an expanded economy. For instance, if one were modeling a construction project, associated construction worker income spent at local restaurants or gift shops would be included in the induced effects category.

III. Additional 1,200 MW of Capacity

If approved, the CEJA will authorize the MD PSC to increase Maryland's offshore wind supply by 400 MW in 2026, by another 400MW in 2028, and yet another 400 MW in 2030. This sequence of events will expand total procurable OSW-generated electricity in Maryland to 768 MW, 1,168 MW, and 1,568 MW, respectively. These figures encompass the 368 MW previously approved in Maryland and described more fully in Appendix I of this report. This section of the report summarizes Sage's analysis of the economic and fiscal benefits associated with the additional 1,200 MW of OSW capacity authorized by the CEJA.

Over time, OSW construction costs per wind turbine are expected to decline as the industry presumably moves down an average cost curve. However, as investment in Maryland's OSW program increases, as is proposed by the CEJA, a more sizeable proportion of construction spending is expected to remain in-state as Maryland's supply chain bulks up.

While much has been written regarding the degree to which OSW construction costs will decline and specialty components and services will become available in the Mid-Atlantic region over coming years due to supply chain development, existing literature supplies little in the way of specifics regarding the likely trajectory of Maryland's supply chain development. Accordingly, this report relies heavily upon Mid-Atlantic supply chain parameters outlined in reports supplied by the National Renewable Energy Laboratory and the United States Department of Energy.

Based on available research, we conclude that were Maryland positioned for the supply of 1,568 MWs of OSW capacity, there would be significant supply chain-related investment in the Free State. The aforementioned NREL study identified companies in each Mid-Atlantic state "that have the potential to support the offshore wind supply chain." Of the 223 companies identified in that report, nearly a quarter were located in Maryland[3].

In order to avoid exaggerating likely economic and fiscal impacts, this report assumes that Maryland's OSW supporting supply chain will expand in line with projections available for the Mid-Atlantic region set forth in a report supplied by the U.S. Department of Energy.[4] But if Maryland is able to emerge as the regional leader in OSW, the greater likelihood is that the state's supply chain would expand more rapidly than regional averages would suggest. Accordingly, impact estimates in

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[3] S. Tegen, D. Keyser, and F. Flores-Espino. Offshore Wind Jobs and Economic Development Impacts in the Unites States: Four Regional Scenarios. Page 13. National Renewable Energy Library. 2015.
[4] Potential Economic Impacts from Offshore Wind in the Mid-Atlantic Region. U.S. Department of Energy, Energy Efficiency & Renewable Energy. Table 1. January 2014.

this report can be considered conservative. Likely Maryland supply chain effects represent a worthwhile subject for future study.

As a mechanism by which to further ensure the conservative nature of impact estimates, Sage used the lowest supply chain investment scenario and the mid-level construction cost reduction scenario set forth in the Department of Energy report as a proxy for Maryland's prospective supply chain development. Accordingly, this study assumes that by 2030 42.0 percent of capital expenditures related to OSW projects will remain in Maryland.[5] That is up from an estimated 36.8 percent as of 2026. Exhibit 1 presents the estimated cost per KW of construction and percentage of in-state expenditures for each of the three 400 MW step increases in OSW electricity generating capacity.

Exhibit 1: Estimated In-state Capital Expenditures, 2026, 2028, and 2030

Year	Cost/KW	In-state Expenditures	Additional MW	Total Construction Cost (Millions $2019)	In-state Construction Expenditures (Millions $2019)
2026	$5,175.19	36.8%	400	$2,070.1	$761.8
2028	$5,002.61	39.4%	400	$2,001.0	$788.4
2030	$4,830.00	42.0%	400	$1,932.0	$811.4

Source: Sage, U.S. Department of Energy, NREL

Based on Sage's model, this analysis concludes that in-state construction expenditures for prospective OSW capacity increases will expand from a bit more than $760 million related to by-2026 capacity increases to approximately $811 million related to by-2030 capacity increases.

Construction Impacts

In total, construction of the additional 1,200 MW will support more than 25,000 jobs during the construction phase.[6] Those jobs will be associated with nearly $1.5 billion in worker and business owner income and more than $3.6 billion in augmented Maryland economic activity. Estimates of impact are summarized in Exhibit 2. Note that the number of jobs supported in Maryland during each successive phase of 400 MW installation increases as the local supply chain becomes larger and more capable.

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[5] According to the initial order from the MD PSC, 19% of the initial 248 MW facility's construction costs and 34% of the second 120 MW facility's construction costs are required to be with firms based in Maryland. This comes to a blended rate of 24.2%

[6] Think of these as job years, meaning that each job is equal to one position that persists for one year. These units are roughly equivalent to one FTE. Page 6 of this report supplies a more complete definition of how to interpret these results

Exhibit 2: Construction Phase Economic Impacts, Additional 1,200 MW of Capacity

	Jobs	Labor Income (Millions $2019)	Economic Output (Millions $2019)
2026: initial 400 MW addition			
Direct effects	5,384	$328.0	$717.5
Indirect effects	830	$58.9	$157.2
Induced effects	2,045	$102.4	$299.7
Sub-Total*	**8,259**	**$489.4**	**$1,174.3**
2028: second 400 MW addition			
Direct effects	5,503	$335.3	$733.3
Indirect effects	849	$60.2	$160.6
Induced effects	2,090	$104.7	$306.3
Sub-Total*	**8,442**	**$500.2**	**$1,200.3**
2030: third 4000 MW addition			
Direct effects	5,594	$340.8	$745.4
Indirect effects	863	$61.2	$163.3
Induced effects	2,124	$106.4	$311.4
Sub-Total*	**8,581**	**$508.4**	**$1,220.0**
Total from additional 1,200 MW	**25,282**	**$1,498.0**	**$3,594.7**

Source: IMPLAN, Sage *Totals may not add due to rounding

Each phase of investment will generate fiscal impacts. These fiscal impacts are not ongoing and are associated only with one-time construction events. Construction related to the proposed additional 1,200 MW of capacity will support more than $84 million in augmented tax revenues for the State and more than $54 million for Maryland's local governments collectively. Exhibit 3 supplies relevant summary detail.

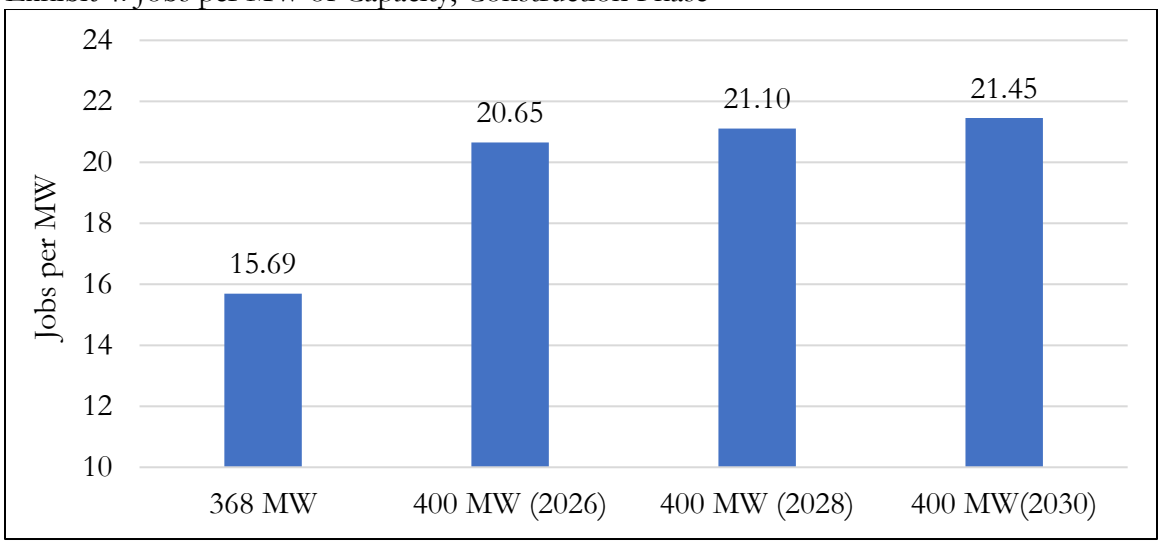
Exhibit 3: Construction Phase Fiscal Impacts (Millions $2019), Additional 1,200 MW of Capacity

Type of Tax	768 MW (2026)	1,168 MW (2028)	1,568 MW (2030)	Total Additional 1,200 MW
State				
Income	$10.3	$10.5	$10.7	**$31.5**
Sales	$13.0	$13.3	$13.5	**$39.8**
Corporate	$1.9	$1.9	$2.0	**$5.8**
Property	$1.0	$1.0	$1.0	**$3.0**
Other	$1.4	$1.4	$1.5	**$4.3**
State Total	**$27.6**	**$28.2**	**$28.7**	**$84.5**
Local				
Income	$6.1	$6.3	$6.4	**$18.8**
Property	$11.7	$12.0	$12.2	**$35.9**
Local Total	**$17.8**	**$18.2**	**$18.5**	**$54.5**

Source: Sage, IMPLAN, Office of the Maryland Comptroller *Totals may not add due to rounding

Because the share of construction labor and materials that are available in-state will be greater in future years, the associated fiscal impacts per MW are also greater. Exhibit 4 indicates jobs per MW pertaining to the construction of the initial 368 MW of capacity and each of the three respective 400 MW increases that serve as this report's central focus. Economic and fiscal impacts pertaining to the initial 368 MW of installed capacity are supplied in Appendix I of this report.

Exhibit 4: Jobs per MW of Capacity, Construction Phase



Source: Sage, IMPLAN

Operational Impacts

Once the additional 1,200 MW of capacity becomes operational by 2030, there will be a set of ongoing, annual impacts supported by facility operations and maintenance. One of the requirements set forth in PSC orders for the initial two OSW facilities mandates that U.S. Wind and Skipjack "locate a permanent operations center for the Qualified Offshore Wind Project within the State of Maryland for the life of the project." Sage presumes that future orders will contain the same provision and that most if not all operational jobs will be located in-state.

This portion of the analysis further presumes that each OSW farm will sell the maximum number of ORECs per annum at the level of the established price ceiling under the Order ($131.93 in 2012 Dollars). The actual price of OSW energy will likely be below this threshold and will almost certainly decrease over time as industry participants innovate and continue to move down the average cost curve.[7] This logic also applies to the original 368 MWs of installed OSW capacity.

[7] The NREL estimates that the price of OSW energy will decrease between 6.5% and 21% between 2020 and 2030. Offshore Wind Jobs and Economic Development Impacts in the Unites States: Four Regional Scenarios. Page 14. National Renewable Energy Library. 2015.

Once one accounts for the additional 1,200 MW of capacity, operation of the State's OSW facilities will support more than 500 direct jobs per annum.[8] Once multiplier effects are considered, the industry will support an estimated 1,475 jobs per annum associated with more than $100 million in annual labor income. Note that this figure encompasses impacts associated with the initial 368 MWs of capacity slated to be in place by 2022. Exhibit 5 provides relevant summary detail.

Exhibit 5: Operating Economic Impacts, Initial 368 MW + Additional 1,200 MW of Capacity

	Jobs	Labor Income (Millions $2019)	Economic Output (Millions $2019)
Annual Impacts by 2026 (768 MW of Capacity)			
Direct effects	261	$24.1	$400.5
Indirect effects	260	$15.8	$40.4
Induced effects	213	$10.7	$31.2
Total*	**734**	**$50.6**	**$472.2**
Annual Impacts by 2028 (1,168 MW of Capacity)			
Direct effects	397	$36.2	$601.6
Indirect effects	391	$23.7	$60.7
Induced effects	319	$16.0	$46.9
Total*	**1,107**	**$76.0**	**$709.2**
Annual Impacts by 2030 (1,568 MW of Capacity)			
Direct effects	533	$48.1	$797.6
Indirect effects	518	$31.5	$80.5
Induced effects	**423**	**$21.2**	**$62.1**
Total*	**1,475**	**$100.7**	**$940.3**

Source: IMPLAN, Sage *Totals may not add due to rounding

These are largely technical positions. Accordingly, directly-supported positions are associated with more than $90,000 in annual worker compensation and all positions (direct and secondary) average nearly $70,000 in annual compensation. These compensation figures compare favorably with statewide per capita income of $39,070 (2017).[9]

Operation of OSW facilities will generate annual fiscal impacts at both State and local levels. By 2030, we estimate that OSW will augment State-level tax collections by $22.6 million and local government tax collections by $12.8 million per annum. Exhibit 6 details related analytical findings.

[8] Direct jobs are those at or pertaining to the OSW facilities themselves. See page 6 for a more detailed definition.
[9] United States Census Bureau 2017 per capita income.

Exhibit 6: Operational Fiscal Impacts (Millions $2019), Initial 368 MW + Additional 1,200 MW Capacity

Type of Tax	768 MW (2026)	1,168 MW (2028)	1,568 MW (2030)
State			
Income	$1.1	$1.6	$2.1
Sales	$6.5	$9.8	$13.0
Corporate	$3.0	$4.6	$6.0
Property	$0.5	$0.7	$1.0
Other	$0.3	$0.4	$0.5
State Total	**$11.4**	**$17.1**	**$22.6**
Local			
Income	$0.6	$0.9	$1.2
Property	$5.8	$8.7	$11.6
Local Total	**$6.4**	**$9.7**	**$12.8**

Source: Sage, IMPLAN, Office of the Maryland Comptroller *Totals may not add due to rounding

Conclusion

Today, Maryland depends heavily upon imported, fossil fuel-generated energy. Offshore wind has the potential to alter this by creating considerably more local, renewable supply. OSW also stands to support a significant amount of economic activity in the Free State, which retains the potential to emerge as the Mid-Atlantic leader in OSW, but only if policymakers remain committed to clean energy and OSW as a solution.

Our analysis estimates that more than 25,000 construction-related jobs will be supported cumulatively as 1,200 MWs of OSW-generating capacity are installed in Maryland. Once OSW facilities are fully online and supporting 1,568 MW of capacity, nearly 1,500 permanent jobs will be supported. These positions will be associated with more than $100 million in annual worker compensation. Total statewide economic activity will be augmented by an estimated $940 million/annum ($2019).

Appendix I: Economic & Fiscal Impacts of the Approved 368 MW of Capacity

Exhibit A1 summarizes primary inputs entering into the study team's economic and fiscal impact models for the initial 368 MWs of capacity. Several of these inputs are taken directly from requirements embodied within the Public Service Commission's order for OSW developments. This includes parameters related to direct construction jobs, direct ongoing jobs, ORECs sold per year, and maximum price per OREC. As indicated, U.S. Wind and Skipjack developments will be associated with capital expenditures estimated at $1.38 billion and $720 million, respectively, or more than $2 billion in total. Note that the in-state capital expenditure requirements apply only to overnight construction costs.

Exhibit A1: Development Phases Modeled in this Report, Initial 368 MWs

	U.S. Wind	Skipjack
Investment in Steel Fabrication Plant	$51,000,000	$25,000,000
Investment in Upgrades at Port Facility	$26,400,000	$13,200,000
Construction Costs	$1,375,000,000	$720,000,000
In-state Capital Expenditure	19%	34%
Direct Construction Jobs (required by order)	1,298	913
Direct Ongoing Jobs (required by order)	2,282	484
ORECs sold per year (up to - required)	913,845	455,482
Maximum Price per OREC ($2012 - required)	$131.93	$131.93
Capacity	248 MW	120 MW
Operational by	Q1 2020	Q4 2022

Source: The Public Service Commission of Maryland, Order No. 88192

Importantly, the relevant order requires the share of in-state capital expenditures exceed 19 percent and 34 percent of U.S. Wind and Skipjack's total capital expenditures, respectively. This is important since the greater the share of inputs supplied by Maryland enterprises and workers, the larger will be accompanying economic and fiscal impacts.

According to a 2015 report from the National Renewable Energy Laboratory (NREL) with support from the U.S. Department of Energy, Maryland is home to a large number of companies and manufacturers that have the potential to support offshore wind supply chains.[10] That state-specific supply chain-review sorted companies into five broad categories: 1) electronics; 2) manufacturing and assembly; 3) installation/constructions/materials; 4) maintenance/ logistics/transportation; and 5) services. Maryland is home to at least one enterprise in each of these categories.

Still, OSW farms require specialty components and services like blades and towers, nacelles and drivetrains, erection installation services, and converters and substations to name a few. While

[10] "Offshore Wind Jobs and Economic Development Impacts in the Unites States: Four Regional Scenarios." NREL.

projections assume a significant percentage of these components could be locally available by 2030,[11] nearly all of these specialized components and services will be imported from beyond Maryland for the initial developments.

Accordingly, this study models construction of the OSW farms under the assumption that they will precisely meet the respective 19 percent and 34 percent in-state construction expenditure requirements. To the extent that they exceed these requirements, economic and fiscal impacts in Maryland will be greater than the estimates presented in this report.

Construction Impacts

Based on Sage's IMPLAN-supported model, construction of the two wind farms will create approximately 5,800 jobs in Maryland. These positions are measured in jobs-years, meaning that a job that lasts for one year counts as one job (e.g., a job that lasts for five years would count as five jobs). Note that construction impacts will be supported only over the duration of the development and do not persist into perpetuity. Labor income associated with the supported jobs will exceed $340 million while the augmentation of total statewide economic activity will approach $814 million. Exhibit A2 supplies summary statistical detail.

Exhibit A2: Economic Impacts from Construction of Initial two OSW Farms (one-time only impacts)

	Jobs	Labor Income (Millions $2019)	Economic Output (Millions $2019)
Maryland			
Direct effects	3,779	$228.2	$496.7
Indirect effects	575	$40.8	$108.8
Induced effects	1,421	$71.2	$208.3
Total*	**5,775**	**$340.2**	**$813.8**

Source: IMPLAN, Sage *Totals may not add due to rounding

Once one accounts for required investments in steel fabrication and port upgrades, more than 7,100 net new jobs will be supported statewide. These positions are associated with approximately $420 million in income for workers and business owners. Total statewide activity will be augmented by nearly $1 billion during the construction period.

The bulk of these jobs will be directly supported by construction activities. There are secondary impacts as well, which encompass indirect and induced effects. Indirect effects stem from business-to-business transactions. For instance, a construction firm delivering services to the project may

[11] Potential Economic Impacts from Offshore Wind in the Mid-Atlantic Region. U.S. Department of Energy, Energy Efficiency & Renewable Energy. January 2014.

have the financial wherewithal once compensated to purchase additional equipment that can be used on other projects. This would be captured as an indirect effect. However, because of Maryland's supply chain limitations, indirect effects are small relative to direct effects. Still, these indirect effects translate into more than 660 net new jobs during the period of construction. These positions are associated with more than $47 million in associated labor and proprietor income.

Induced effects pertain to household spending effects. Jobs supported directly and indirectly support higher incomes and spending power. Induced effects are estimated as the equivalent of 1,764 net new jobs supporting more than $88 million in income.

Exhibit A3: Economic Impacts from Construction of OSW Farms, Port Upgrades, and Steel Fabrication Plant (one-time only)

	Jobs	Labor Income (Millions $2019)	Economic Output (Millions $2019)
Maryland			
Direct effects	4,684	$286.0	$610.5
Indirect effects	664	$47.3	$127.0
Induced effects	1,764	$88.4	$258.6
Total*	**7,112**	**$421.7**	**$996.1**

Source: IMPLAN, Sage *Totals may not add due to rounding

The construction phase will produce a set of one-time fiscal impacts. Construction related to supply of the initial 368 MWs of capacity will bolster State-level tax revenues by an estimated $23.4 million, while local government revenues in Maryland will be augmented by approximately $15 million. Note that these impacts will occur over the course of the initial two developments.

Exhibit A4: Construction Phase Fiscal Impacts, Initial 368 MW of Capacity

Type of Tax	Augmented Tax Revenues (Millions $2019)
State	
Income	$8.9
Sales	$11.0
Corporate	$1.6
Property	$0.8
Other	$1.2
State Total	**$23.4**
Local	
Income	$5.3
Property	$9.9
Local Total	**$15.1**

Source: IMPLAN, Sage

Operational Impacts

Once the U.S. Wind and Skipjack OSW farms are operational (estimated in first quarter 2020 and fourth quarter 2022, respectively), there will be a set of ongoing, annual impacts supported by operations and maintenance of the facilities. One of the requirements set forth in the PSC orders mandates that U.S. Wind and Skipjack "locate a permanent operations center for the Qualified Offshore Wind Project within the State of Maryland for the life of the project." Accordingly, it is safe to presume that most if not all operational jobs will be located in-state. This portion of the analysis further presumes that each OSW farm will sell the maximum number of ORECs per annum at the level of the established price ceiling under the Order ($131.93 in 2012 Dollars). The actual price of OSW energy will likely be below this threshold and will almost certainly decrease over time as industry participants innovate and continue to move down the average cost curve.

Once operational, the initial two OSW developments will support more than 358 jobs per annum. Those jobs will be associated with nearly $25 million in labor income and in excess of $230 million in augmented economic activity. The facilities will support annual fiscal impacts of $5.6 million at the state level and $3.2 million at the local level. Exhibit A5 and A6 supplies relevant summary detail.

Exhibit A5: Operational Economic Impacts, Initial 368 MW of Capacity

	Jobs	Labor Income (Millions $2019)	Economic Output (Millions $2019)
Annual Impacts at 368 MW			
Direct effects	125	$11.9	$196.8
Indirect effects	128	$7.8	$19.9
Induced effects	104	$5.2	$15.3
Total*	**358**	**$24.9**	**$232.0**

Source: IMPLAN, Sage *Totals may not add due to rounding

Exhibit A6: Operational Phase Fiscal Impacts, Initial 368 MW of Capacity

Type of Tax	Augmented Tax Revenues (Millions $2019)
State	
Income	$0.5
Sales	$3.2
Corporate	$1.5
Property	$0.2
Other	$0.1
State Total	**$5.6**
Local	
Income	$0.3
Property	$2.9
Local Total	**$3.2**

Source: IMPLAN, Sage

Appendix II: List of Conditions Required for Approval of Qualified Offshore Wind Projects

APPENDIX A – U.S. Wind, Inc.: List of Conditions Required for Approval of the Qualified Offshore Wind Project

IV. A. Opportunities for Representatives of the United States Department of Defense and the Maritime Industry to Express Concerns Regarding Project Siting

1. U.S. Wind, Inc. shall, within 30 days of reaching a decision regarding any changes to the project siting and turbine model selection contemplated in the November 30, 2016 Application, consult with representatives of the United States Department of Defense and the Maritime.

IV. B. Opportunities for Minority Business Enterprise Participation and Minority Investors; Workforce Diversity Initiatives

For purposes of the following conditions, "minority" means an individual who is a member of any of the groups listed in § 14-301(k)(1)(i) of the State Finance and Procurement Article.

2. U.S. Wind, Inc. shall, within 90 days of the issuance of this Order, sign a memorandum of understanding with the Commission that requires U.S. Wind, Inc. to make serious, good-faith efforts to interview minority investors in any future attempts to raise venture capital or attract new investors to the offshore wind project. U.S. Wind, Inc. shall coordinate with the Director of the Commission's Office of External Relations in developing the memorandum of understanding, which shall not contain any limitations or conditions beyond those contemplated specifically by PUA § 7-704.1(d)(4).
3. U.S. Wind, Inc. shall, within 6 months of the issuance of this Order, engage in good-faith efforts to consult with the Governor's Office of Minority Affairs and the Office of the Attorney General for purposes of establishing a clear plan for setting reasonable and appropriate minority business enterprise ("MBE") participation goals and procedures for each phase of the Qualified Offshore Wind Project (the "Plan").
    a. U.S. Wind, Inc. shall file with the Commission the Plan developed in consultation with the Governor's Office of Minority Affairs and the Office of the Attorney General. The filing shall articulate any substantive differences between the Plan and the applicable MBE commitments described in U.S. Wind, Inc.'s November 30, 2016 Application.
    b. Every 6 months following the issuance of this Order, U.S. Wind, Inc. shall submit a report to the Commission on its progress establishing and implementing MBE goals and procedures. U.S. Wind, Inc. shall, within 90 days of the issuance of this Order, coordinate with the Director of the Commission's Office of External Relations to develop the appropriate reporting template, which shall, at a minimum, compare and contrast the available data using monthly intervals.

4. U.S. Wind, Inc. shall make serious, good-faith efforts to implement the MBE goals and procedures stipulated in U.S. Wind, Inc.'s November 30, 2016 Application. Information regarding the attainment of the MBE goals, accompanied by an explanation and remediation plan for any shortfalls, shall be included in the semi-annual reporting required by Condition 3.b.

5. U.S. Wind, Inc. shall, within 90 days of the issuance of this Order, develop workforce diversity metrics and an associated reporting template in coordination with the Director of the Commission's Office of External Relations. The workforce diversity metrics shall be included in the semi-annual reporting required by Condition 3.b.

IV. G. Siting and Project Feasibility

6. U.S. Wind, Inc. shall file its Site Assessment Plan ("SAP"), Construction and Operations Plan ("COP"), and National Environmental Policy Act ("NEPA") documents with the Commission contemporaneous with any submission to the United States Department of the Interior's Bureau of Ocean Energy Management ("BOEM") and/or other relevant federal agency. The OREC award is contingent on the positive review and/or approval of the SAP, COP, and NEPA documents by BOEM or the relevant federal agency. To the extent that the relevant federal agency directs U.S. Wind, Inc. to alter any aspect of its SAP or COP to comply with federal or state requirements, U.S. Wind, Inc. is directed to file with the Commission within 60 days of receiving such notice an explanation and description of any required modifications. Any more restrictive remediation or mitigation measure imposed by the relevant federal agency during these subsequent permitting and review processes is hereby incorporated as a condition to the OREC award.

7. U.S. Wind, Inc. shall use best commercially-reasonable efforts to minimize the daytime and nighttime viewshed impacts of its Qualified Offshore Wind Project, including through the reliance on best commercially-available technology at the time of deployment.

    a. U.S. Wind, Inc. shall locate its Qualified Offshore Wind Project in the eastern-most portion of the Maryland Wind Energy Area that can reasonably and practicably accommodate its Qualified Offshore Wind Project.

8. U.S. Wind, Inc. shall use best commercially-reasonable efforts to minimize the sounds produced during the construction and operation phases of the Qualified Offshore Wind Project, both in-air and underwater. Any noise-related remediation or mitigation measure imposed by a state or federal agency during subsequent permitting and review processes is hereby incorporated as a condition to the OREC award.

9. U.S. Wind, Inc. shall abide by all applicable local laws and regulations pertaining to noise restrictions during the construction phase of its Qualified Offshore Wind Project.

10. U.S. Wind, Inc. shall restrict pile driving that occurs during the development and construction phases of its Qualified Offshore Wind Project to daytime hours only.

IV. J. Any Other Criteria that the Commission Determines to be Appropriate

11. U.S. Wind, Inc. must file contemporaneously with the Commission any modifications to its decommissioning plan, including any revisions to its decommissioning cost estimate, at the time of making any such required filing with BOEM.

V. A. 1. Positive Net Economic Benefits to the State

12. Pursuant to PUA § 7-704.1(g) and COMAR 20.61.06.05, U.S. Wind, Inc. shall make the following contributions to the Maryland Offshore Wind Business Development Fund (the "Fund") established under State Gov't § 9-20C-03:

    a. Within 60 days after the issuance of this Order, U.S. Wind, Inc. shall deposit $2,000,000 into the Fund.

    b. Within 1 year after the initial deposit under paragraph (a) of this condition, U.S. Wind, Inc. shall deposit an additional $2,000,000 into the Fund.

    c. Within 2 years after the initial deposit under paragraph (a) of this condition, U.S. Wind, Inc. shall deposit an additional $2,000,000 into the Fund.

    d. Pursuant to COMAR 20.61.06.05, U.S. Wind, Inc. shall notify the Commission within 30 calendar days after each deposit due date whether timely and full payment has been made or not, and if not, an explanation for failure to make the payment.

13. Upon the commencement of commercial operations, U.S. Wind, Inc. shall demonstrate that a certain minimum level of direct in-State expenditures occurred during the development and construction phases of the Qualified Offshore Wind Project.

    a. The metric shall be the percentage of in-State direct expenditures compared to total capital expenditures for the Qualified Offshore Wind Project, and the threshold for compliance shall be a demonstration of percent in-State expenditures equivalent to or in excess of the following amount: 19%.

    b. U.S. Wind, Inc. shall contract with an independent expert to conduct the measurement of actual investment in the State of Maryland and the total capital budget for the Qualified Offshore Wind Project.

c. The report prepared by the independent consultant shall be filed with the Commission within 6 months of commencing commercial operations for the Qualified Offshore Wind Project.

d. In the event that the independent report submitted to the Commission does not demonstrate compliance with the required in-State spending threshold, then U.S. Wind, Inc. shall deposit the balance due within 6 months into the Maryland Offshore Wind Business Development Fund established under State Gov't § 9-20C-03.

14. U.S. Wind, Inc. shall cause directly the creation of the following minimum level of new in-State jobs, measured in full-time equivalents: 1,298 direct development/construction period jobs, and 2,282 direct operating period jobs.

    a. U.S. Wind, Inc. shall contract with an independent expert to conduct the verification of the direct jobs required by this condition.

    b. U.S. Wind, Inc. shall file reports with the Commission demonstrating its progress in fulfilling this condition on the following schedule: (1) within 6 months of completion of the development/construction period; (2) within 18 months of commencing commercial operations of the Qualified Offshore Wind Project; and (3) within 6 months of commencing decommissioning activities for the Qualified Offshore Wind Project.

15. U.S. Wind, Inc. shall use a port facility located in the greater Baltimore region to serve as the marshaling port, defined as the facility from which the components are transported, loaded onto the installation vessel, and taken to the Qualified Offshore Wind Project.

16. U.S. Wind, Inc. shall use a port facility located in the Ocean City, Maryland region to serve as the operations and maintenance port.

17. U.S. Wind, Inc. shall locate a permanent operations center for the Qualified Offshore Wind Project within the State of Maryland for the life of the project.

18. U.S. Wind, Inc. shall invest in a Maryland steel fabrication plant in the minimum amount of $51 million.

19. U.S. Wind, Inc. shall invest in upgrades at the Tradepoint Atlantic shipyard, or a comparable Maryland port facility, in the minimum amount of $26.4 million.

V. A. 2. Positive Net Environmental Benefits to the State

20. U.S. Wind, Inc. shall adopt all appropriate precautionary measures designed to ensure that marine mammals are protected from harm during the development, construction, and operation of the Qualified Offshore Wind Project.

21. U.S. Wind, Inc. shall abide by all environmental remediation and mitigation measures imposed through subsequent state or federal agency review and permitting processes, and shall strive to utilize the best commercially available technologies to implement any required measures.

V. B. Projected Net Ratepayer Impacts and OREC Price Schedule

22. The OREC price schedule for the Qualified Offshore Wind Project is approved as follows:

    a. US Wind is authorized to sell up to 913,845 ORECs per year produced by its Qualified Offshore Wind Project, for a duration of 20 years beginning on January 1, 2021. The approved OREC price schedule shall not exceed a levelized OREC price of $131.93 (2012$), using a price escalator of 1.0%.

23. U.S. Wind, Inc. shall implement a mechanism for sharing savings if the engineering, procurement, and construction costs ("EPC Costs") for the Qualified Offshore Wind Project are less than the EPC Costs reflected in Section 4-4 of U.S. Wind, Inc.'s November 30, 2016 Application, pursuant to the following conditions:

    a. U.S. Wind, Inc. may discount the baseline used for comparison in the implementation of this mechanism (*i.e.* the EPC Costs outlined in its November 30, 2016 Application) by up to 7.0% (the "Adjusted EPC Costs Baseline").

    b. For purposes of implementing the mechanism, EPC Costs shall mean, the costs identified in the Application with respect to the development and installation of the Qualified Offshore Wind Project, including: (i) costs incurred in connection with the acquisition of the lease area; (ii) costs incurred in connection with Development and Project Management (including meteorology studies, geological and geophysical studies, preliminary design and engineering, permitting, transmission interconnection, and commercial and legal activities); (iii) costs incurred for engineering, design, procurement, fabrication, marshalling, logistics, installation and construction (including project management and inspection, detailed engineering and design, labor, supervision, tools, construction equipment, materials, components, supplies, transportation, services and subcontracts); (iv) costs incurred in procuring the WTGs, monopile foundations, export cable, interarray cable, port upgrades; (v) costs incurred to re-perform defective work; (vi) costs incurred to perform warranty work; (vii) sales and use taxes on goods and equipment purchased in connection with the work; (viii) costs of insurance; (ix) taxes or other fees; (x) costs to interconnect to the delivery point; and (xi) any capitalized costs of the facility as determined in accordance with U.S. GAAP and the Internal Revenue Code, including all regulations promulgated thereto.

    c. The mechanism for sharing savings will be implemented following the commencement of commercial operations of the Qualified Offshore Wind Project, as follows:

i. U.S. Wind, Inc. will retain a certified public accountant to prepare a report on the EPC Costs. The report shall verify the documented EPC Costs associated with the Qualified Offshore Wind Project. The report prepared by the certified public accountant shall be filed with the Commission within 6 months of commencing commercial operations for the Qualified Offshore Wind Project.

ii. Realized savings equal to the positive amount, if any, resulting from the formula: "Adjusted EPC Costs Baseline" minus documented EPC Costs.

iii. U.S. Wind, Inc. shall pay within 6 months after issuance of the report 80% of any realized savings into the escrow account established in connection with its Qualified Offshore Wind Project, to be refunded to ratepayers subject to the mechanism established in COMAR 20.61.06.14.

24. U.S. Wind, Inc. shall use best efforts to apply for all eligible State and federal grants, rebates, tax credits, loan guarantees, or other similar benefits as those benefits become available. U.S. Wind, Inc. shall pass along to ratepayers, without the need for any subsequent Commission approval, 80% of the value of any State or federal grants, rebates, tax credits, loan guarantees, or other similar benefits received by the Qualified Offshore Wind Project and not included in the November 30, 2016 Application. U.S. Wind, Inc. shall file a report with the Commission within 30 days of passing along to ratepayers any savings stemming from application of this condition.

VI. COMMISSION DECISION REGARDING FINDINGS REQUIRED BY PUBLIC UTILITIES ARTICLE § 7-704.2(a)

25. No payment may be made for an OREC until electricity supply is generated by the Qualified Offshore Wind Project.

26. Ratepayers, purchasers of ORECs, and the State shall be held harmless for any cost overruns associated with the Qualified Offshore Wind Project.

27. Any debt instrument issued in connection with the Qualified Offshore Wind Project must include language specifying that the debt instrument does not establish a debt, obligation, or liability of the State.

APPENDIX B – Skipjack Offshore Energy, LLC: List of Conditions Required for Approval of the Qualified Offshore Wind Project

IV. A. Opportunities for Representatives of the United States Department of Defense and the Maritime Industry to Express Concerns Regarding Project Siting

1. Skipjack Offshore Energy, LLC shall, within 30 days of reaching a decision regarding any changes to the project siting and turbine model selection contemplated in the November 30, 2016 Application, consult with representatives of the United States Department of Defense and the Maritime.

IV. B. Opportunities for Minority Business Enterprise Participation and Minority Investors; Workforce Diversity Initiatives

For purposes of the following conditions, "minority" means an individual who is a member of any of the groups listed in § 14-301(k)(1)(i) of the State Finance and Procurement Article.

2. Skipjack Offshore Energy, LLC shall, within 90 days of the issuance of this Order, sign a memorandum of understanding with the Commission that requires Skipjack Offshore Energy, LLC to make serious, good-faith efforts to interview minority investors in any future attempts to raise venture capital or attract new investors to the offshore wind project. Skipjack Offshore Energy, LLC shall coordinate with the Director of the Commission's Office of External Relations in developing the memorandum of understanding, which shall not contain any limitations or conditions beyond those contemplated specifically by PUA § 7-704.1(d)(4).
3. Skipjack Offshore Energy, LLC shall, within 6 months of the issuance of this Order, engage in good-faith efforts to consult with the Governor's Office of Minority Affairs and the Office of the Attorney General for purposes of establishing a clear plan for setting reasonable and appropriate minority business enterprise ("MBE") participation goals and procedures for each phase of the Qualified Offshore Wind Project (the "Plan").
    a. Skipjack Offshore Energy, LLC shall file with the Commission the Plan developed in consultation with the Governor's Office of Minority Affairs and the Office of the Attorney General. The filing shall articulate any substantive differences between the Plan and the applicable MBE commitments described in Skipjack Offshore Energy, LLC's November 30, 2016 Application.
    b. Every 6 months following the issuance of this Order, Skipjack Offshore Energy, LLC shall submit a report to the Commission on its progress establishing and implementing MBE goals and procedures. Skipjack Offshore Energy, LLC shall, within 90 days of the issuance of this Order, coordinate with the Director of the Commission's Office of External Relations to develop the appropriate reporting template,

which shall, at a minimum, compare and contrast the available data using monthly intervals.

4. Skipjack Offshore Energy, LLC shall make serious, good-faith efforts to implement the MBE goals and procedures stipulated in Skipjack Offshore Energy, LLC's November 30, 2016 Application. Information regarding the attainment of the MBE goals, accompanied by an explanation and remediation plan for any shortfalls, shall be included in the semi-annual reporting required by Condition 3.b.

5. Skipjack Offshore Energy, LLC shall, within 90 days of the issuance of this Order, develop workforce diversity metrics and an associated reporting template in coordination with the Director of the Commission's Office of External Relations. The workforce diversity metrics shall be included in the semi-annual reporting required by Condition 3.b.

IV. G. Siting and Project Feasibility

6. Skipjack Offshore Energy, LLC shall file its Site Assessment Plan ("SAP"), Construction and Operations Plan ("COP"), and National Environmental Policy Act ("NEPA") documents with the Commission contemporaneous with any submission to the United States Department of the Interior's Bureau of Ocean Energy Management ("BOEM") and/or other relevant federal agency. The OREC award is contingent on the positive review and/or approval of the SAP, COP, and NEPA documents by BOEM or the relevant federal agency. To the extent that the relevant federal agency directs Skipjack Offshore Energy, LLC to alter any aspect of its SAP or COP to comply with federal or state requirements, Skipjack Offshore Energy, LLC is directed to file with the Commission within 60 days of receiving such notice an explanation and description of any required modifications. Any more restrictive remediation or mitigation measure imposed by the relevant federal agency during these subsequent permitting and review processes is hereby incorporated as a condition to the OREC award.

7. Skipjack Offshore Energy, LLC shall use best commercially-reasonable efforts to minimize the daytime and nighttime viewshed impacts of its Qualified Offshore Wind Project, including through the reliance on best commercially-available technology at the time of deployment.

8. Skipjack Offshore Energy, LLC shall use best commercially-reasonable efforts to minimize the sounds produced during the construction and operation phases of the Qualified Offshore Wind Project, both in-air and underwater. Any noise-related remediation or mitigation measure imposed by a state or federal agency during subsequent permitting and review processes is hereby incorporated as a condition to the OREC award.

9. Skipjack Offshore Energy, LLC shall abide by all applicable local laws and regulations pertaining to noise restrictions during the construction phase of its Qualified Offshore Wind Project.

10. Skipjack Offshore Energy, LLC shall restrict pile driving that occurs during the development and construction phases of its Qualified Offshore Wind Project to daytime hours only.

11. Skipjack Offshore Energy, LLC shall conduct comprehensive and timely outreach with Maryland and Delaware local, state, and federal officials and agencies, particularly involving, but not limited to, the siting of its Qualified Offshore Wind Project. Skipjack Offshore Energy, LLC shall file a report summarizing these outreach efforts within 6 months of the issuance of this Order. Any mitigation or remediation measures voluntarily accepted by Skipjack Offshore Energy, LLC in response to the outreach efforts shall also be detailed at a minimum in the 6-month report; although, pursuant to COMAR 20.61.06.18.B, any material change to its November 30, 2016 Application must be reported to the Commission within 30 days of the date of that decision.

IV. J. Any Other Criteria that the Commission Determines to be Appropriate

12. Skipjack Offshore Energy, LLC must file contemporaneously with the Commission any modifications to its decommissioning plan, including any revisions to its decommissioning cost estimate, at the time of making any such required filing with BOEM.

V. A. 1. Positive Net Economic Benefits to the State

13. Pursuant to PUA § 7-704.1(g) and COMAR 20.61.06.05, Skipjack Offshore Energy, LLC shall make the following contributions to the Maryland Offshore Wind Business Development Fund (the "Fund") established under State Gov't § 9-20C-03:

    a. Within 60 days after the issuance of this Order, Skipjack Offshore Energy, LLC shall deposit $2,000,000 into the Fund.

    b. Within 1 year after the initial deposit under paragraph (a) of this condition, Skipjack Offshore Energy, LLC shall deposit an additional $2,000,000 into the Fund.

    c. Within 2 years after the initial deposit under paragraph (a) of this condition, Skipjack Offshore Energy, LLC shall deposit an additional $2,000,000 into the Fund.

    d. Pursuant to COMAR 20.61.06.05, Skipjack Offshore Energy, LLC shall notify the Commission within 30 calendar days after each deposit due date whether timely and full payment has been made or not, and if not, an explanation for failure to make the payment.

14. Upon the commencement of commercial operations, Skipjack Offshore Energy, LLC shall demonstrate that a certain minimum level of direct in-State

expenditures occurred during the development and construction phases of the Qualified Offshore Wind Project.

a. The metric shall be the percentage of in-State direct expenditures compared to total capital expenditures for the Qualified Offshore Wind Project, and the threshold for compliance shall be a demonstration of percent in-State expenditures equivalent to or in excess of the following amount: 34%.

b. Skipjack Offshore Energy, LLC shall contract with an independent expert to conduct the measurement of actual investment in the State of Maryland and the total capital budget for the Qualified Offshore Wind Project.

c. The report prepared by the independent consultant shall be filed with the Commission within 6 months of commencing commercial operations for the Qualified Offshore Wind Project.

d. In the event that the independent report submitted to the Commission does not demonstrate compliance with the required in-State spending threshold, then Skipjack Offshore Energy, LLC shall deposit the balance due within 6 months into the Maryland Offshore Wind Business Development Fund established under State Gov't § 9-20C-03.

15. Skipjack Offshore Energy, LLC shall cause directly the creation of the following minimum level of new in-State jobs, measured in full-time equivalents: 913 direct development/construction period jobs, and 484 direct operating period jobs.

    a. Skipjack Offshore Energy, LLC shall contract with an independent expert to conduct the verification of the direct jobs required by this condition.

    b. Skipjack Offshore Energy, LLC shall file reports with the Commission demonstrating its progress in fulfilling this condition on the following schedule: (1) within 6 months of completion of the development/construction period; (2) within 18 months of commencing commercial operations of the Qualified Offshore Wind Project; and (3) within 6 months of commencing decommissioning activities for the Qualified Offshore Wind Project.

16. Skipjack Offshore Energy, LLC shall use a port facility located in the greater Baltimore region to serve as the marshaling port, defined as the facility from which the components are transported, loaded onto the installation vessel, and taken to the Qualified Offshore Wind Project.

17. Skipjack Offshore Energy, LLC shall use a port facility located in the Ocean City, Maryland region to serve as the operations and maintenance port.

18. Skipjack Offshore Energy, LLC shall locate a permanent operations center for the Qualified Offshore Wind Project within the State of Maryland for the life of the project.

19. Skipjack Offshore Energy, LLC shall invest in a Maryland steel fabrication plant, in the minimum amount of $25 million.

20. Skipjack Offshore Energy, LLC shall invest in upgrades at the Tradepoint Atlantic shipyard, or a comparable Maryland port facility, in the minimum amount of $13.2 million.

V. A. 2. Positive Net Environmental Benefits to the State

21. Skipjack Offshore Energy, LLC shall adopt all appropriate precautionary measures designed to ensure that marine mammals are protected from harm during the development, construction, and operation of the Qualified Offshore Wind Project.

22. Skipjack Offshore Energy, LLC shall abide by all environmental remediation and mitigation measures imposed through subsequent state or federal agency review and permitting processes, and shall strive to utilize the best commercially available technologies to implement any required measures.

V. B. Projected Net Ratepayer Impacts and OREC Price Schedule

23. The OREC price schedule for the Qualified Offshore Wind Project is approved as follows:

    a. Skipjack is authorized to sell up to 455,482 ORECs per year produced by its Qualified Offshore Wind Project, for a duration of 20 years beginning on January 1, 2023. The approved OREC price schedule shall not exceed a levelized OREC price of $131.93 (2012$), using a price escalator of 1.0%.

24. Skipjack Offshore Energy, LLC shall implement a mechanism for sharing savings if the engineering, procurement, and construction costs ("EPC Costs") for the Qualified Offshore Wind Project are less than the EPC Costs reflected in Attachment 4-3 to Skipjack Offshore Energy, LLC's November 30, 2016 Application, pursuant to the following conditions:

    a. Skipjack Offshore Energy, LLC may discount the baseline used for comparison in the implementation of this mechanism (*i.e.* the EPC Costs outlined in its November 30, 2016 Application) by up to 7.0% (the "Adjusted EPC Costs Baseline").

    b. For purposes of implementing the mechanism, EPC Costs shall mean, the costs identified in the Application with respect to the development and installation of the Qualified Offshore Wind Project, including: (i) costs incurred in connection with the acquisition of the lease area; (ii) costs incurred in connection with Development and Project Management (including meteorology studies, geological and geophysical studies, preliminary design and engineering, permitting, transmission interconnection, and commercial and legal activities); (iii) costs incurred for engineering, design, procurement, fabrication, marshalling, logistics, installation and construction (including project management and

inspection, detailed engineering and design, labor, supervision, tools, construction equipment, materials, components, supplies, transportation, services and subcontracts); (iv) costs incurred in procuring the WTGs, monopile foundations, export cable, interarray cable, port upgrades; (v) costs incurred to re-perform defective work; (vi) costs incurred to perform warranty work; (vii) sales and use taxes on goods and equipment purchased in connection with the work; (viii) costs of insurance; (ix) taxes or other fees; (x) costs to interconnect to the delivery point; and (xi) any capitalized costs of the facility as determined in accordance with U.S. GAAP and the Internal Revenue Code, including all regulations promulgated thereto.

c. The mechanism for sharing savings will be implemented following the commencement of commercial operations of the Qualified Offshore Wind Project, as follows:

   i. Skipjack Offshore Energy, LLC will retain a certified public accountant to prepare a report on the EPC Costs. The report shall verify the documented EPC Costs associated with the Qualified Offshore Wind Project. The report prepared by the certified public accountant shall be filed with the Commission within 6 months of commencing commercial operations for the Qualified Offshore Wind Project.

   ii. Realized savings equal to the positive amount, if any, resulting from the formula: "Adjusted EPC Costs Baseline" minus documented EPC Costs.

   iii. Skipjack Offshore Energy, LLC shall pay within 6 months after issuance of the report 80% of any realized savings into the escrow account established in connection with its Qualified Offshore Wind Project, to be refunded to ratepayers subject to the mechanism established in COMAR 20.61.06.14.

25. Skipjack Offshore Energy, LLC shall use best efforts to apply for all eligible State and federal grants, rebates, tax credits, loan guarantees, or other similar benefits as those benefits become available. Skipjack Offshore Energy, LLC shall pass along to ratepayers, without the need for any subsequent Commission approval, 80% of the value of any State or federal grants, rebates, tax credits, loan guarantees, or other similar benefits received by the Qualified Offshore Wind Project and not included in the November 30, 2016 Application. Skipjack Offshore Energy, LLC shall file a report with the Commission within 30 days of passing along to ratepayers any savings stemming from application of this condition.

VI. COMMISSION DECISION REGARDING FINDINGS REQUIRED BY PUBLIC UTILITIES ARTICLE § 7-704.2(a)

26. No payment may be made for an OREC until electricity supply is generated by the Qualified Offshore Wind Project.
27. Ratepayers, purchasers of ORECs, and the State shall be held harmless for any cost overruns associated with the Qualified Offshore Wind Project.
28. Any debt instrument issued in connection with the Qualified Offshore Wind Project must include language specifying that the debt instrument does not establish a debt, obligation, or liability of the State.