Impact of New Jersey Offshore Wind Program on State Electric Rates

by

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Executive Summary

The New Jersey Energy Master Plan (EMP) has set a goal of achieving 100 percent clean energy by 2050. Development of offshore wind energy has been adopted as an important element of de-carbonizing the electric energy sector in support of that goal. Towards that end, Governor Murphy has directed that 11,000 MW be operational by 2040 with direction to the NJ Board of Public Utilities (BPU) to study the feasibility of increasing that target further.

Offshore wind is not economically viable without major subsidies in the form of Federal tax credits and guaranteed above market prices for the power generated. The former is passed on the US taxpayers while the latter is a cost borne by NJ electric rate payers. In addition, accommodating the transmission of large amounts of offshore wind power into and through NJ requires major investments in upgrading and expanding the state transmission system.

The purpose of this study is to provide an estimate of the impact of the higher generation and transmission costs on the rates paid by customers on their electric bills. The following are the main findings of this study.

Generation Costs

The difference between the subsidized prices for offshore wind power and market prices for power increases from $42/MWH (4.2 cents/kwh) in 2030 to $144/MWH (14.4 cents/kwh) in 2047.

Transmission Costs

The added transmission system upgrade cost to ratepayers related to offshore wind progressively increases from $1/MWH (0.1 cents/kwh) in 2030 to about $40/MWH (4 cents/kwh) in 2047.

Ratepayers Impacts

The extra costs for offshore wind generation and transmission will increase retail rates for all customer classes, by over 55% for residential, 70% for commercial and over 80% for industrial users by 2047.

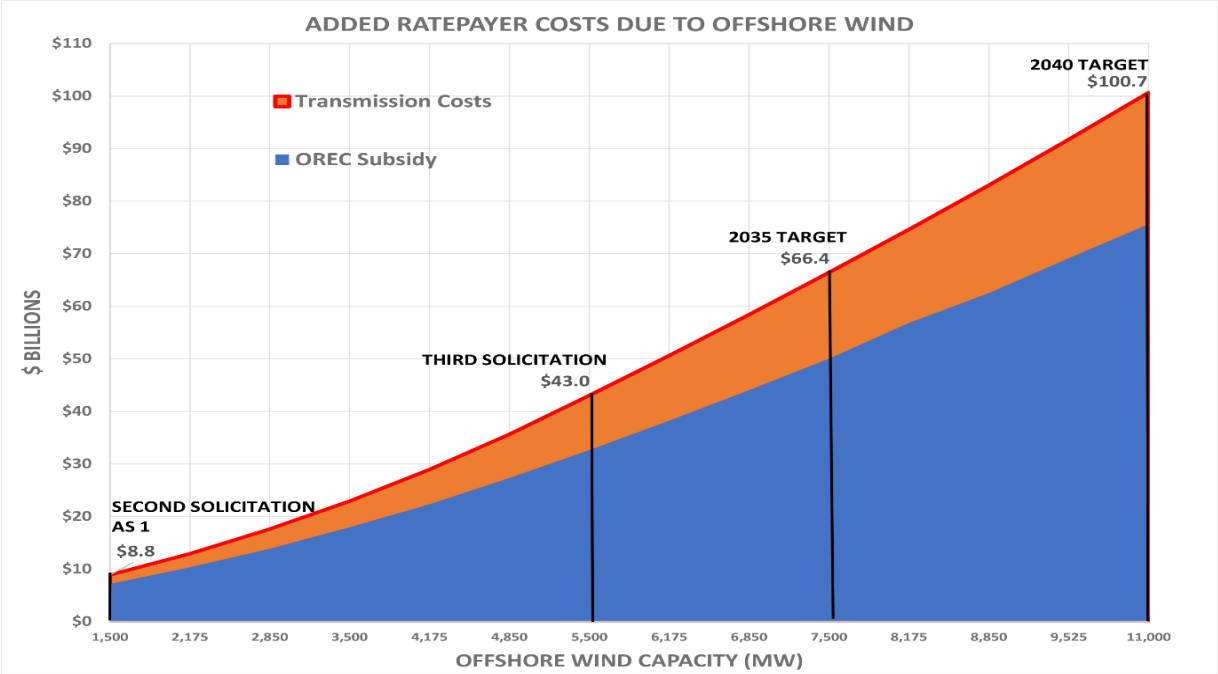
Residential customers who currently pay about 16 cents/kwhr will see that price double to over 32 cents/kwr, increasing their annual bill by $1000 in 2047. As a result of these price increases, the average household will pay $11,000 more for power over twenty years.

For commercial ratepayers, including most small businesses, offshore wind related costs will add almost $8400/yr to the average annual bill and, over twenty years, the average commercial customer will pay $95,000 extra due to offshore wind.

Industrial electric users will see their bills go up by $70,000/yr more by 2047 than if there were no offshore wind in NJ. They will pay an additional $796,000 for power over twenty years.

Total Cost

As shown on the chart below, the aggregate cost to all ratepayers if the NJ offshore wind program is implemented as planned will be $101 billion over the period 2028-2047. The total $101 billion represents a present value cost of over $63 billion in 2023$.



As indicated, the initial cost for the 1510MW of the Atlantic Shore 1 project will add almost $9 billion at its currently approved OREC price. If an additional 4,000MW is added with the BPU Third Solicitation the total cost will increase to over $40 billion. Reaching the 7,500MW goal will raise this to $66 billion and achieving the full 11,000MW will, as noted, cost $101 billion. As shown, the largest component of these ratepayer impacts is due to the subsidies built into the above market OREC awards, which comprise 75% of the cost, the remainder due to associated offshore wind transmission costs.

Conclusions

The official NJ offshore wind policy goal envisions having 7,500 MW of offshore wind in service by 2035 and 11,000 by 2040. Offshore wind is economically not viable without major subsidies in the form of Federal tax credits and guaranteed above market power prices.

The Federal investment tax subsidies will total more than $20 billion for 11,000 MW of offshore wind capacity. As detailed in this report, even that large number is dwarfed by the extra cost to NJ ratepayers of generation and transmission system expansion needed to accommodate moving 11,000 MW of generation from off the coastline to the PJM grid.

These added ratepayer costs will exceed $100 billion over 20 years and raise electric customer rates by 55%, 70% and 80% respectively for residential, commercial and industrial customers. It is important for all stakeholders to understand what the full cost of this program is before decisions are taken that will be irrevocable and commit the residents of the state to paying for a large portion of these costs or incurring charges for cancelation of projects which prove even more expensive than currently estimated.

Impact of New Jersey Offshore Wind Program on State Electric Rates

1.0 Introduction

The New Jersey Energy Master Plan (EMP)[1] has set a goal of achieving 100 percent clean energy by 2050. Development of offshore wind energy has been adopted as an important element of de-carbonizing the electric energy sector in support of that goal. Towards that end, Governor Murphy has periodically increased the amount of offshore wind generating capacity to be installed along the NJ coastline. An initial goal of 3,500 MW by 2030 was increased to 7,500 MW by 2035 and to then to 11,000 MW by 2040 with direction to the NJ Board of Public Utilities (BPU) to study the feasibility of increasing the target even further.

The implementation of these targets was set forth in the Offshore Wind Economic Development Act (OWEDA)[2] which directed and empowered the BPU to conduct solicitations for developers to bid for the right to construct and operate offshore wind projects on Federal offshore wind lease areas. To date, under its initial two solicitations, the BPU selected three projects with a total of 3,762 MW and is currently conducting a third solicitation for an additional 1,200-4,000 MW of offshore wind capacity.

In enacting OWEDA, the NJ legislature recognized that the financial risk of offshore wind projects must be limited in order to attract developers to bid on such projects. A key feature of this risk mitigation is the guarantee of revenue for power delivered through the establishment of above market prices for Offshore Renewable Energy Certificates (OREC) produced throughout the operating life of the facility.

The BPU approved OREC prices represent a ratepayer subsidy for offshore wind energy since they are set above the wholesale market prices for power that is available for purchase by utilities on the PJM[3] grid. Concerns have been raised by the NJ Rate Counsel, a number of key legislators and others about the impact of the Governor's offshore wind plan on electric rates in the state.

The BPU has acknowledged that the guaranteed above market power prices awarded to developers of these projects will result in increased costs for all classes

[1] Energy Master Plan (nj.gov)

[2] Offshore Wind Economic Development Act, P.L. 2010, as amended 2023.

[3] PJM is the regional transmission organization (RTO) that coordinates the movement of wholesale electricity in New Jersey and all of parts of 12 other states and the District of Columbia.

of ratepayers in the years ahead and has made estimates of how individual projects will raise rates. However, BPU has not made known the full impact of the complete program which envisions 11,000 MW of offshore wind in operation by 2040. In addition, they have not revealed how much the additional transmission upgrades required to transfer all that power from offshore through the PJM grid to the end use customers will add to rates.

Given that the magnitude of the costs involved both with installing offshore wind turbines and transmitting the energy produced is substantial, it is expected that the total impact on rates will be significant. In the absence of any official information on this, it is the purpose of this report to provide an estimate of the full extent to which the offshore wind program, if realized as projected, will impact NJ rates to all classes of ratepayers.

2.0 Methodology

In this study, we have used publicly available information from state and Federal agencies, from PJM and independent consultants wherever possible and deemed reasonable. These sources are identified throughout the report and independent assumptions provided where necessary to ensure that the basis for our findings and conclusions are clearly stated and supported. The following sections describe in more detail the projections of generation and transmission costs and the resulting impact on electric rates and present our conclusions regarding those projections.

3.0 Baseline Electric Power Usage and Rates

The Federal Energy Information Agency (EIA) annually publishes information on electric energy consumption and cost by state. In this study, we have used the most recent EIA report[4] for 2021. This establishes the pre-offshore wind baseline for electric energy usage and rates for each retail customer class. The relevant parameters for this baseline are shown in Table 1 below.

Table 1 - EIA 2021 NJ Retail Electric Energy Usage and Price

	Residential	Commercial	Industrial
No. Customers	3,648,914	529,178	11,503
Total Usage (MWH)	30,081,647	36,138,624	6,593,428
Avg Annual Customer Usage (MWH)	8.24	68.29	573.19
Price ($/MWH)	$163.50	$126.90	$107.00

[4] EIA Report 2021 Electric Power Annual (eia.gov)

Thus, the total electric energy consumption for 2021 was 72.8 GWHs. PJM provides annual updates to its peak demand and net energy forecasts going out 15 years. In its most recent 2023 report[5], based on input from member utilities, PJM projects that total energy usage in NJ will actually *decline* over that period to 71 GWHs in 2038, even with the equivalent of a million electric vehicles on the road in NJ by 2038.

While that seems a surprising result, given the public policy desire for increased electricity usage in transportation, heating and other applications, we have no basis for questioning the utility forecasts. However, instead of projecting a decline in total retail consumption, we have maintained the 2021 baseline for usage by customer class through the period 2047 which is our horizon for projecting rate impacts from offshore wind generation.

Once offshore wind projects begin producing power, they will provide an increasing share of the energy usage paid for NJ as their output must be taken by PJM if available, thereby displacing other generating sources which must compete on price in the PJM energy market. The Ocean Wind 1 project (1104 MW) was projected to begin operation in 2026, followed by Atlantic Shores 1 (1510 MW) in 2028 and Ocean Wind 2 (1148 MW) in 2029.

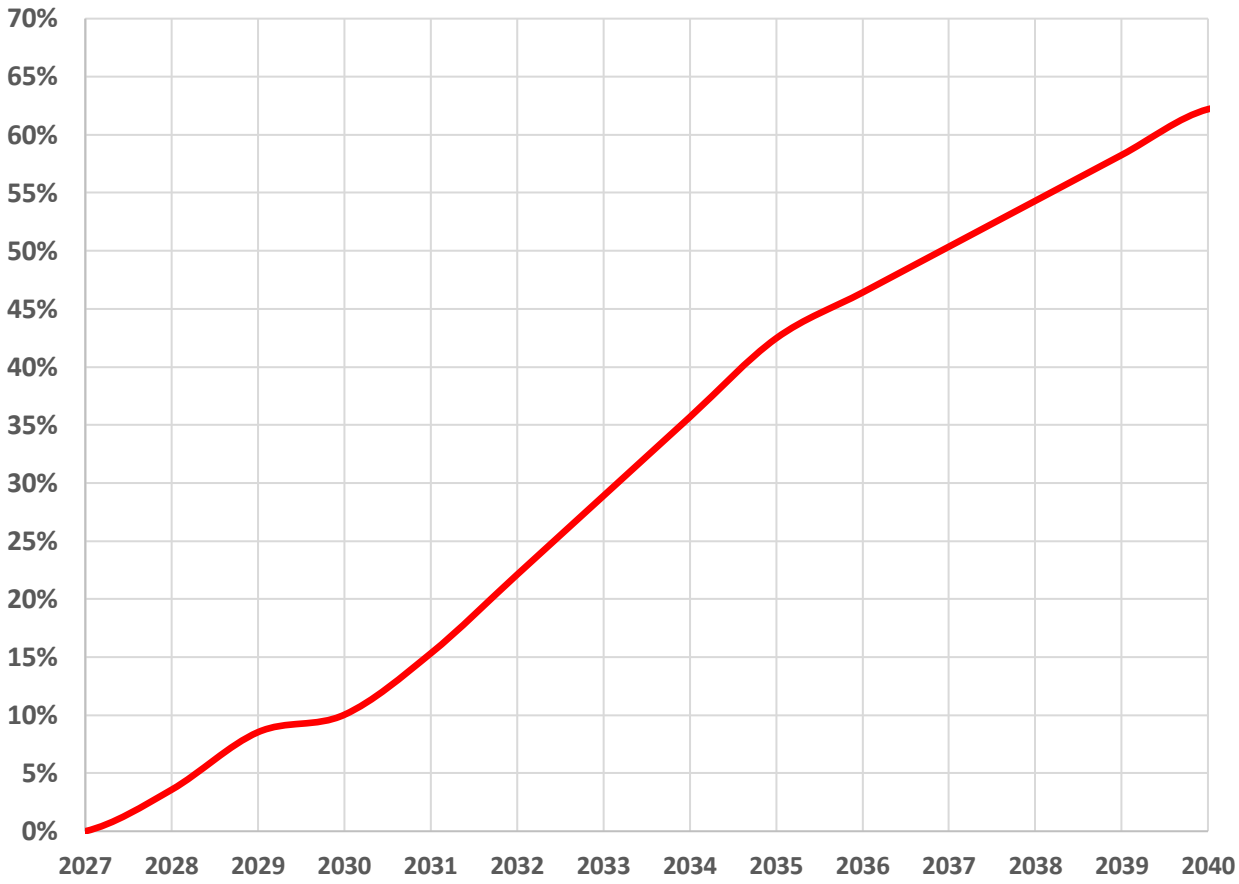
On October 31, 2023 Orsted, the developer for the Ocean Wind projects announced[6] that they were cancelling further work due to adverse supply chain, inflation and interest rate factors which have increased their capital costs for the projects such that they are no longer economically viable at those OREC prices. The cancellation of the Ocean Winds projects makes it highly unlikely that the goal of 3,500MW by 2030 in service will be met. In this analysis, we are assuming that target will not be met now until 2032.

Thereafter we assume that additional offshore wind capacity will be added in accordance with the NJ plan to have 7,500 MW in operation by 2035 and 11,000 MW by 2040. Based on those projections, and assuming an average 47% capacity factor for wind generation, as projected by the developers, Figure 1 below shows that the share of total NJ energy generation in user bills from offshore wind will increase steadily from about 2.6% in 2028 to 63.4% or almost two-thirds in 2040. For purposes of this analysis, we have assumed no further offshore capacity additions past 2040.

[5] PJM Load Forecast Report, January 2023

[6] Orsted Ceases Development of Ocean Wind 1 and Ocean Wind 2, press release, October 31, 2023

Figure 1. Percent NJ Generation Usage from Offshore Wind



The 2040 projection assumes the full 11,000 MW of offshore wind operates at the claimed 47% capacity factor resulting in 45.3 GWHs out of 72.8 GWHs consumed in the state.

4.0 Generation Costs

The steadily increasing share of energy usage provided by offshore wind has obvious implications for the average costs of generation and associated rates given that BPU has been directed to award above-market OREC prices for that energy. As an offset to those higher prices, BPU has required offshore wind producers to return market revenue received from PJM for energy, capacity and Renewable Energy Credit (REC) payments for each MWH produced and sent to the PJM grid. The degree to which OREC prices exceed the PJM market offsets amounts to a subsidy for offshore wind that increases costs and electric bills for all classes of ratepayer.

We have projected the value of PJM market prices for energy, capacity and RECs using the projections provided by Levitan Associates Inc. (LAI) BPU's consultant in its evaluation report[7] of bids in connection with the BPU's Second Offshore Wind Solicitation.

The has BPU approved prices for the first three projects (OW1, AS1 and OW2) as presented in the relevant BPU orders[8] and in the associated LAI evaluation reports. For those projects the Levelized Cost of Energy (LCOE)[9] as determined by their OREC prices are as follows:

Ocean Wind 1 (1104 MW) - $116.75/MWH
Atlantic Shores 1 (1510 MW) - $106.18/MWH
Ocean Wind 2 (1148 MW) - $98.40/MWH

As noted, the developer for the Ocean Wind projects has announced that they are cancelling further work due to adverse supply chain, inflation and interest rate factors which have increased their capital costs for the projects such that they are no longer economically viable at those OREC prices.

Other developers have also indicated that the same issues have dramatically increased the costs of building offshore wind projects by about 40%[10] and have indicated that OREC price adjustments or other financial support may be needed to keep them economically viable. The governors of six northeast states, including

[7] Evaluation Report New Jersey Offshore Wind Solicitation #2, May 25. 2021, Levitan and Associated Inc.
[8] BPU Order of June 21, 2019 Docket Nos. QO17121289 and BPU Order of June 30, 2021 Docket Nos. QO20080555 and QO21050824
[9] LCOE is calculated based on the Net Present Value (NPV) of the OREC revenues over the 20 year term of the order divided by the NPV of the ORECs generated over the same period.
[10] Offshore Wind Runs Into Rising Costs and Delays, NY Times, August 7, 2023.

NJ, have recently petitioned the Biden administration for increased Federal subsidies to avoid failure to achieve their offshore wind goals due to potential economic unviability without it[11].

Besides Ocean Wind, elsewhere in the northeast US and Europe, other developers have also cancelled projects[12] with approved OREC prices at or higher than those cited above. In New York state developers for three approved projects recently requested adjustments in approved OREC prices which would raise them to $160-190/MWH for projects coming on line in 2026-2028. These adjustments were denied[13] and it remains questionable whether these projects will proceed under the approved OREC pricing.

Recently NY awarded three new projects for 4,000 MW of offshore wind to come online by 2030 at an average price of $145/MWH[14]. That price is subject to adjustment which could increase the price substantially based on labor and material inflation over the next few years.

While these developments call into question the viability of the AS1 project as currently approved, in our analysis we have assumed no increase in their approved OREC pricing for the initial 1510 MW of offshore wind capacity in NJ and we are also assuming that the project will be in service in late 2028 as scheduled. The cancellation of the Ocean Winds projects make it highly unlikely that the goal of 3,500MW in service by 2030 will be met. We are assuming that target will not be met now until 2032, but that the goal of 7,500MW by 2035 will be met.

Bids for the BPU Third Offshore Wind Solicitation for an additional 1,200-4,000 MW have been submitted and are under review for award in Jan/Feb 2024. While we have no direct knowledge of the bids, it is reasonable to assume that they will be comparable to the most recent OREC prices awarded in NY. In addition, BPU has for the first time included a similar inflation adjustment but has placed a cap of 15% on this added adjustment[15].

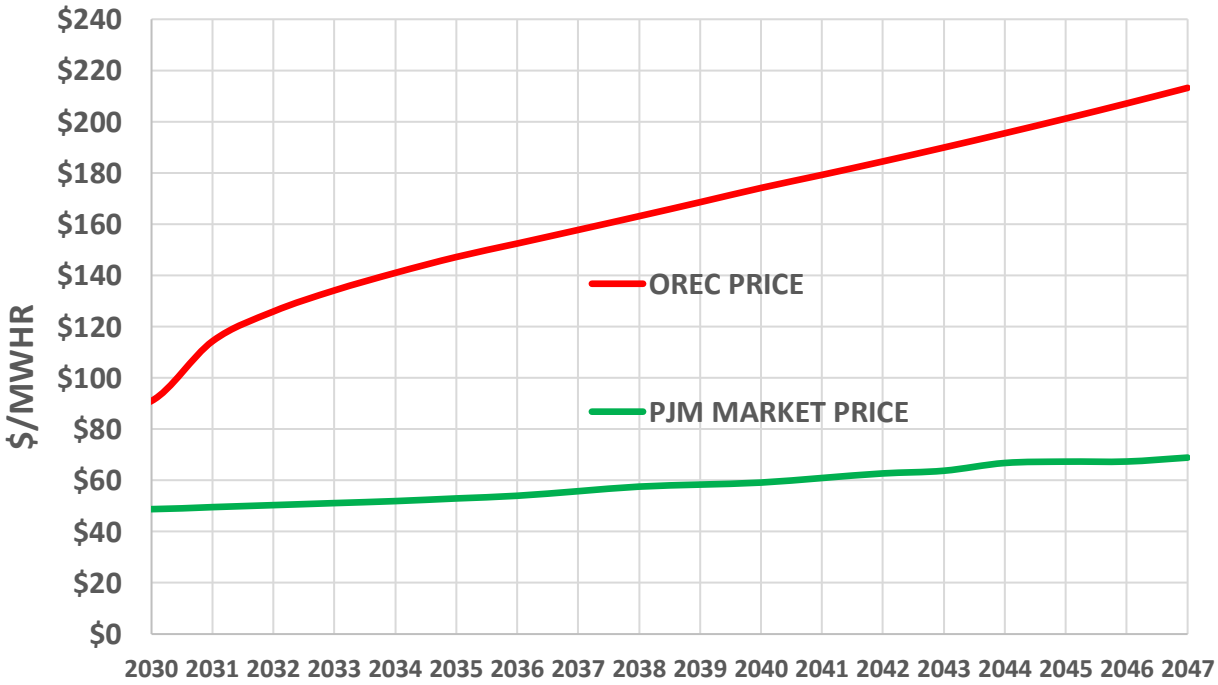
The inflation adjustment is based on recognized official Federal inflation indices for labor, fabrication, steel and fuel prices and allow the base OREC price to be adjusted up or down depending on how much they deviate from the prices at time of OREC award and the Federal Board of Ocean Energy Management (BOEM)

[11] Joint Governors' Letter to the Biden Administration, September 15, 2023
[12] Commonwealth Wind, Southcoast Wind (MA), Park City Wind (CT), Revolution Wind 2 (RI), Norfolk Boreas (UK)
[13] PSC Order October 12, 2023.
[14] NYSERDA factsheet OSW-2022-Offshore-Wind-Solicitation-Awards (2).pdf
[15] NJ Third Solicitation Guidance Document, March 6, 2023.

approval of the Construction and Operating Plan (COP) for the project. This time period is estimated to be 2-4 years. If the BPU approved inflation adjustment formula was calculated over the most recent three years (2020-2023) the resulting inflation adjustment would be in excess of 35%. Given the recent and long term historical trends in these indices, it is highly likely that the adjustment calculated over such a period will exceed 15%, so we assume that will be the result.

Using the NY average award price of $145, and applying the 15% cap, for purposes of this analysis, we assume that this next 4,000 MW of offshore wind will have an OREC LCOE price of $167/MWH for power to begin delivery in 2030. For additional awards beyond 2030 we are assuming an annual price annual escalation of 2.5%, resulting in OREC LCOE prices of $189/MWH in 2035 and $213/MWH in 2040. These are of course levelized prices over 20 years, not actual prices in those years. These nominal year OREC prices are shown on Figure 2 and compared with the PJM market prices for power throughout the 2030-2047 period.

Figure 2 – Average OREC Price vs PJM Market Price



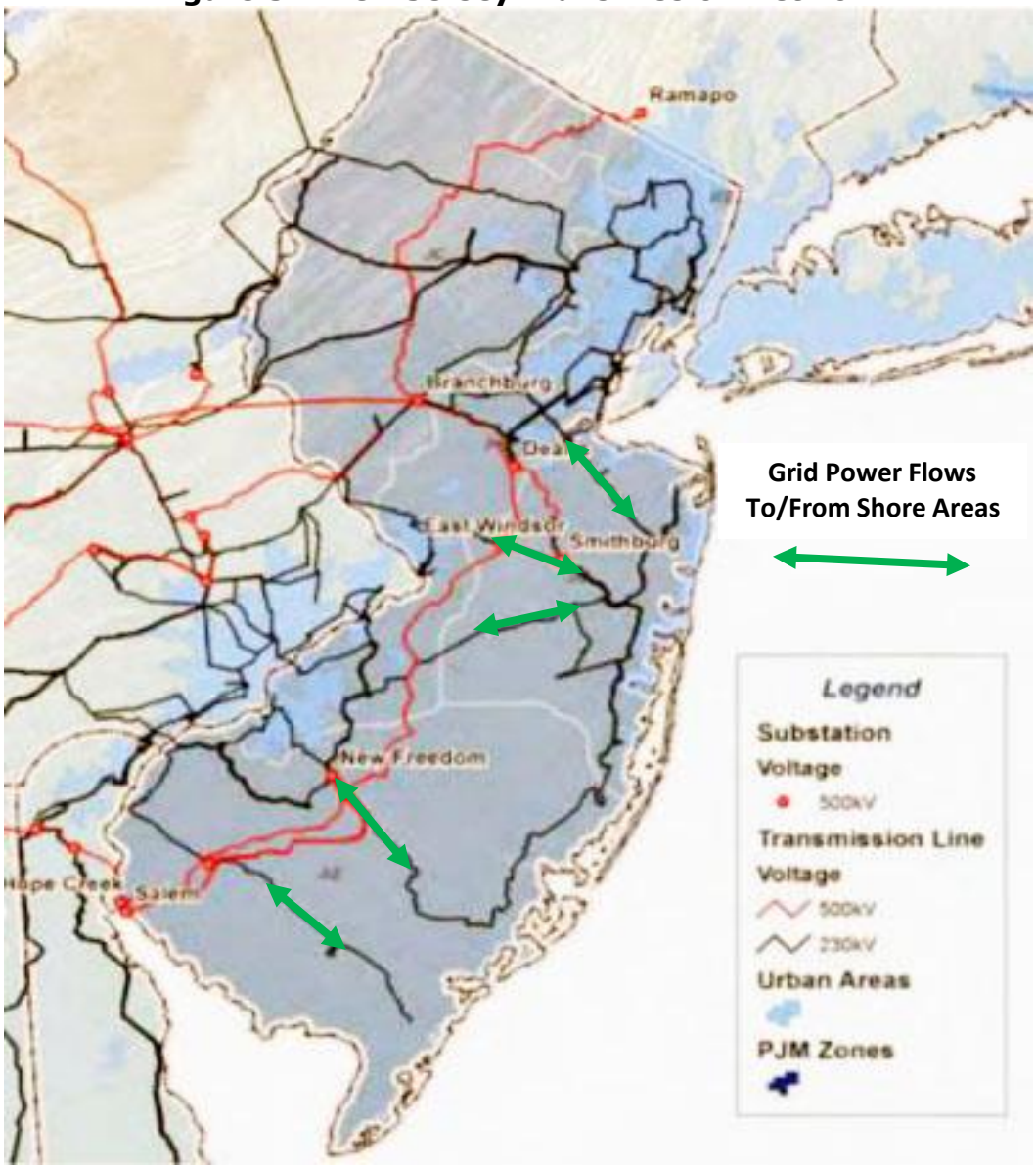
The difference between the OREC prices and the PJM prices represent the above market subsidy for energy usage that will be borne by all customer classes. As indicated, this added cost increases from $42/MWH in 2030 to $144/MWH in 2047. The contribution of these added OREC costs to consumer bills is discussed further in Section 6.0.

5.0 Transmission Costs

The existing transmission network or grid in NJ is not compatible with the Governor's offshore wind plan. The bulk of the State's electric transmission infrastructure runs through central or western NJ where the major load centers and generating resources are located with lower-voltage connections to New Jersey's less populated coastline.

Figure 3 below depicts the major pathways of the system which include both 500KV and 230KV transmission lines and substations.

Figure 3 – New Jersey Transmission Network



The grid as shown is the result of transmission planning over the last century which has generally assumed predominantly west-to-east flows of power. As a result, the near-shore electric transmission grid in New Jersey is less robust than inland areas, with facilities not designed to facilitate power flows westward from the shoreline. New Jersey's 500KV high voltage and high capacity transmission backbone generally runs in a north-south line, about 40 miles inland from the shoreline.

The existing transmission network is currently not designed to accommodate the energy injections at its eastern most edge associated with a large amount of offshore wind power. As indicated on Figure 3, there are five existing 230KV lines capable of moving power to or away from the shore area. Currently they can transmit a total of about 6,000 MW of power in either direction and, on a peak summer day, they move up to 5,500 MW towards the shore[16]. So, to add the capability to transmit an additional 11,000 MW of offshore wind energy onto the grid, a minimum of 5,000 MW of additional capacity must be added by upgrading these lines or adding new ones. If that offshore power is intended to serve PJM loads elsewhere, an additional 11,000 MW of transmission capacity would be needed by 2040 with further expansion if additional offshore capacity is added beyond that.

To get that power from 10-40 miles offshore to the shore and then across the state to the 500KV backbone and beyond requires large investments in offshore substations and undersea cable runs to landfall locations and to onshore substations through underground or overhead transmission corridors spanning many miles through existing or new rights of way across the state. To the extent existing transmission line infrastructure is used for this additional capacity, upgrades to relays, switches, transformers, cables and other equipment will be required.

The state EMP has recognized that the grid will require major investment to upgrade and expand the network to support the renewable energy and offshore wind programs. BPU has been directed to oversee planning for the expansion and to conduct periodic solicitations for transmission system upgrades and additions.

As part of its transmission related responsibility in 2020 BPU conducted a technical conference[17] of stakeholders to seek solutions to the offshore wind transmission program. The options considered range from a strictly radial

[16] PJM Load Forecast Report January 2023.

[17] BPU Offshore Wind Transmission Risk Technical Conference, February 26, 2020

connection approach in which each offshore wind facility connects with one or more onshore Points of Injection (POIs) to a totally integrated offshore grid or "backbone" which interconnects all offshore wind projects and then transmits power onshore at one or more collector stations for transmission across the state to the PJM grid. Each of these approaches has advantages and disadvantages in terms of cost, environmental impact and grid reliability.

BPU has not determined an overall optimal transmission strategy but is instead seeking to address the issue with each increment of new offshore wind capacity solicited in a manner that minimizes cost and risk of failure to achieve the goals of the program to have the desired MW capacity on line by the target date.

For the first two capacity solicitations, BPU has adopted the radial connection approach with each of the first three projects being responsible for selecting POIs and obtaining PJM approval for the costs and timing of interconnections and necessary upgrades to the transmission grid. The added costs would be handled through a Transmission System Upgrade Cost (TSUC) adder to the approved OREC price for the project. Thus, these costs will be passed through to ratepayers via higher OREC payments on customer bills.

The TSUC adder would be trued up based on actual costs but has been estimated to be about $8/MWHR on a levelized cost basis for the AS1 project. If fully implemented, this would apply to the first 1510 MW of offshore wind to be in service by 2028. For purposes of this analysis, we are considering this as a transmission cost and not as an OREC cost.

In pursuit of a more efficient approach than the radial connection strategy for the next capacity increment to 7,500MW by 2035, the BPU has undertaken a solicitation for transmission upgrades under the State Agreement Approach (SAA) in collaboration with PJM. As a result of this solicitation, in October 2022 BPU selected bidders to develop the Larabee Tri-Collector (LTC) Solution which would create a single onshore POI for 6,400MW of offshore wind power.

Now that the Ocean Wind 1 project has been cancelled, we are assuming the 1510 MW of capacity from the AS1 project will not go to LTC but use the POI already approved for the project. Additional projects would tie into the LTC solution which involves cables making landfall is at Sea Girt, NJ[18]. This would permit another 6,400 MW of capacity to use the LTC, providing sufficient

[18] In the Third Offshore Wind Solicitation, BPU requested bids for an additional 1200-4000 MW with instructions to utilize the Larabee Tr-Collector solution as the POI.

capacity along with AS1 to satisfy the 7,500MW goal by 2035. Additional transmission solutions will be needed to fulfill the 11,000 MW goal by 2040.

The total costs of the LTC solution or any additional transmission expansion are not known but are likely to be substantial. In approving the LTC scheme, the BPU approved a cost of about $1 billion for various upgrades to existing onshore circuits involved in moving offshore power to the PJM grid from that point westward. This does not include the onshore duct banks or cable vaults to bring the offshore cables from Sea Girt to Larabee.

It also does not include the onshore or offshore substations required to convert the wind turbine output from AC to High Voltage DC (HVDC) for transmittal ashore and then back to High Voltage AC (HVAC) for transmittal over the 230KV lines from Larabee to the PJM grid.

Based on bids submitted[19] for the cost of such a HVDC system comprising both offshore and onshore elements would be about $1.3 million/MW in 2021$. Thus, accommodating 6,400MW of offshore wind capacity would cost about $8.7 billion in 2023.

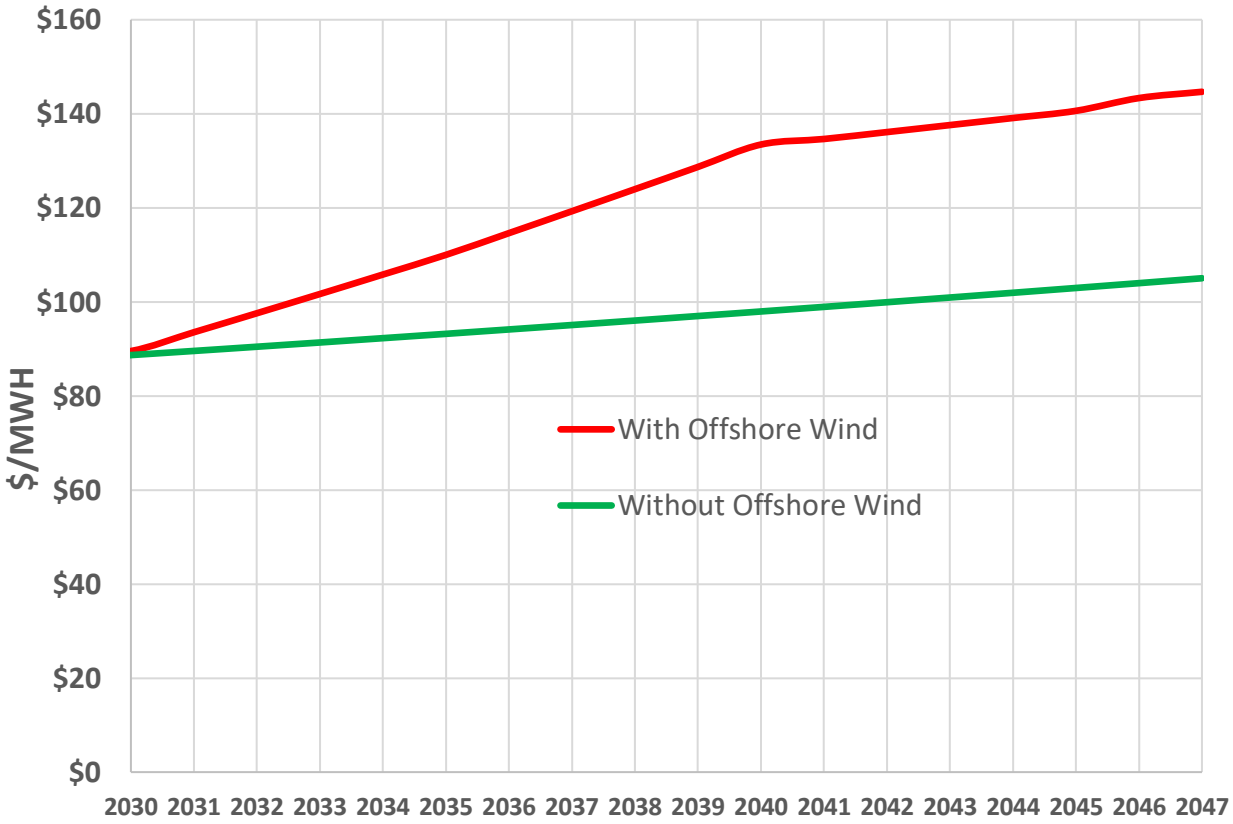
With the AS1 capacity, the LTC solution would provide about 7,900 MW of transmission headroom for offshore wind by 2035. Further transmission upgrade and expansion is required to satisfy the 11,000 MW goal and beyond. It is assumed that a more integrated and flexible solution would be implemented to permit even further expansion of NJ offshore wind and interconnection with other states systems north and south of our coast. This may also involve construction of a new 500KV high voltage line across the state.

Construction of such a regional and state offshore wind transmission system would be very expensive but would be compatible with recommendations for long term plans for offshore wind in order to maintain regional grid reliability and flexibility. In the Netherlands such an offshore transmission network for 21,000 MW has been estimated to cost $37.5 billion or $1.8 million/MW[20]. If we apply that value to 11,000 MW, the cost of such a network to NJ would be about $20 billion. If we assume the cost of the LTC would be included in this upgrade, an additional $11.3 billion would be required.

[19] New Jersey State Agreement Approach for Offshore Wind Transmission: Evaluation Report, Bratelle Group, October 26, 2023.
[20] Oil Price article, October 17, 2023.

If the cost of capital and operating costs of these offshore wind related transmission expansions are recovered through electric rates, the resultant costs are as shown on Figure 4 below.

Figure 4 – Average Transmission Cost[21]



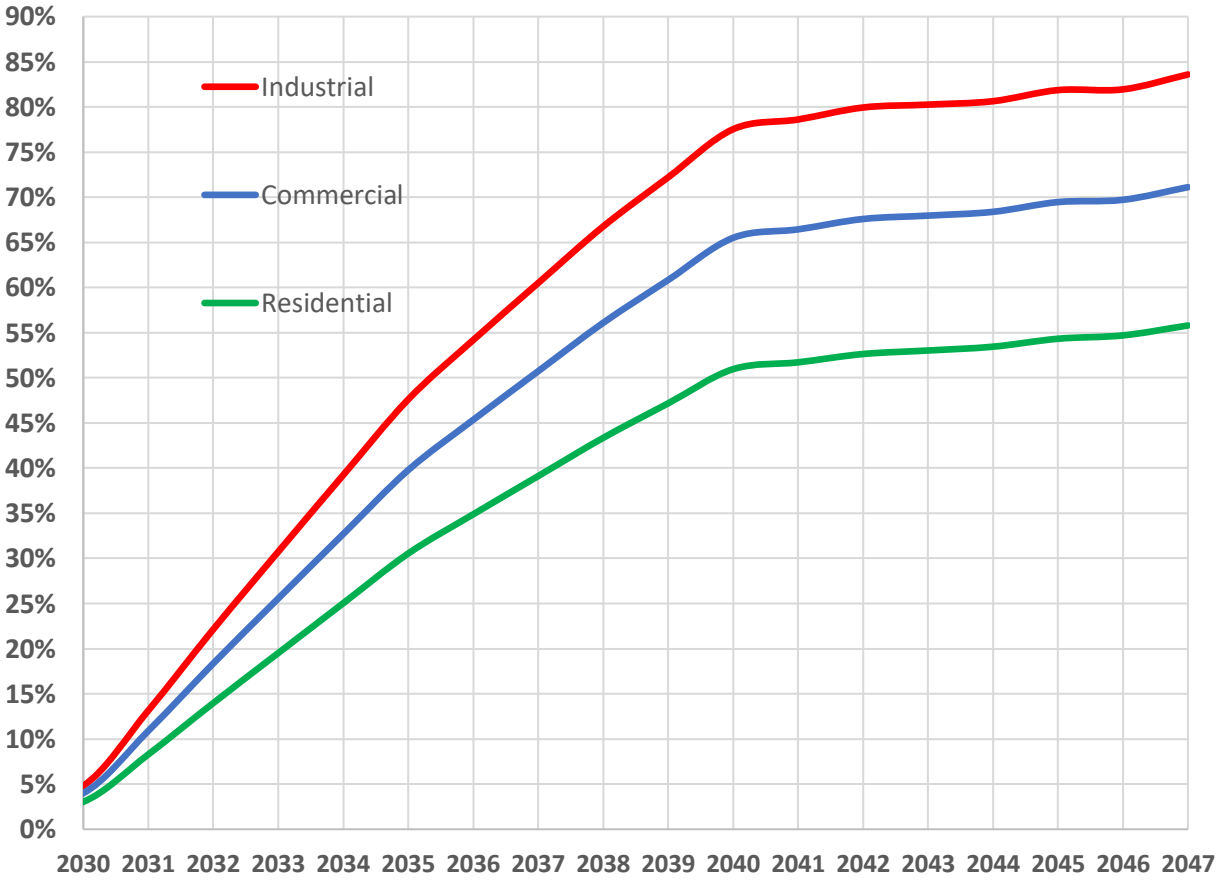
As indicated this added cost progressively increases to about $40/MWH in 2047. The contribution of these added transmission costs to consumer bills is discussed further in Section 6.0.

[21] The cost/mwhr values shown includes local distribution and other non-generation charges which are included in both wind and non-wind graphs, so the difference shown is due solely to transmission upgrade costs due to offshore wind.

6.0 Rate Impacts

The forgoing increases in generation and transmission costs will have a significant impact on electric rates as they are passed through to all customers as the offshore wind contribution to rates increases in accordance with the NJ plan to add 11,000 MW by 2040. Figure 5 below shows the percentage increase in rates for each customer class due to offshore wind costs over the twenty year period beginning with operation of the AS1 project in 2028.

Figure 5 – Percentage NJ Electric Rate Increase Due to Offshore Wind

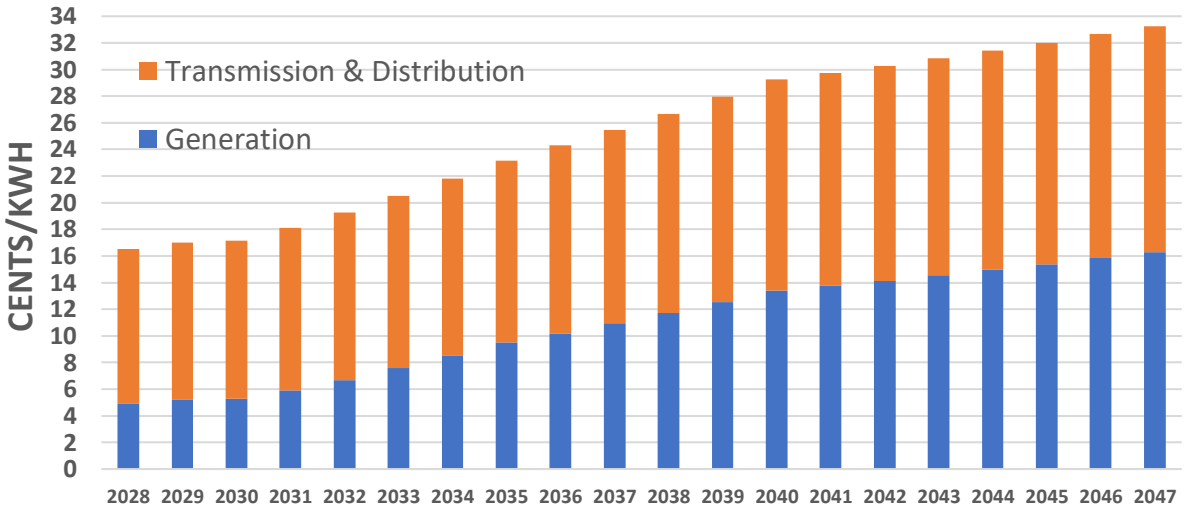


As can be seen, offshore wind will cause retail rates to progressively increase for all classes, reaching over 55% for residential, 70% for commercial and over 80% for industrial users.

Such increases will result in higher bills across the board, in both generation charges and fees for transmission and distribution reflecting above market OREC prices and added transmission costs being passed through to customers. Figure 6 below displays how the average residential bill will reflect these

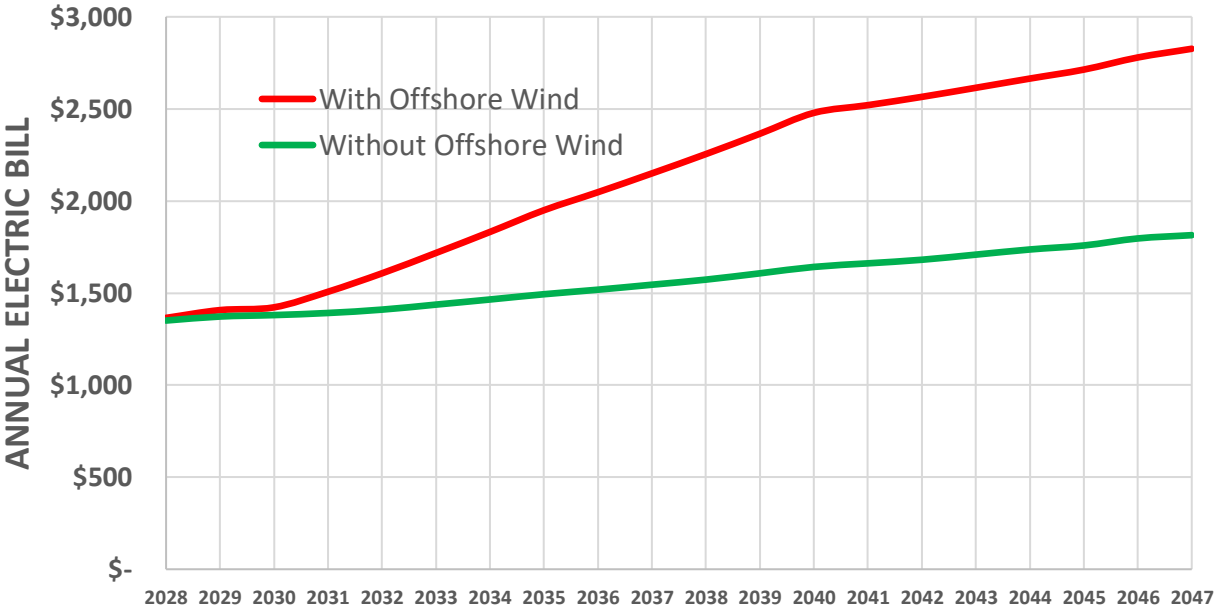
charges as increasing amounts of offshore wind dominates the bill for an average residential customer.

Figure 6 – Breakdown of Charges on Residential Customer Bill



In 2022 the average NJ residential customer paid 16.4 cents/kwh for electricity. This was ninth highest in the US and 20% higher than the national average[22]. As indicated above, if the NJ offshore wind program is executed as planned, these rates will rise to over 32 cents/kwh by 2047. The impact of such an increase on the amount paid for electricity per year is dramatic as shown on Figure 7 below.

Figure 7 – Change in Average Residential Electric Bill

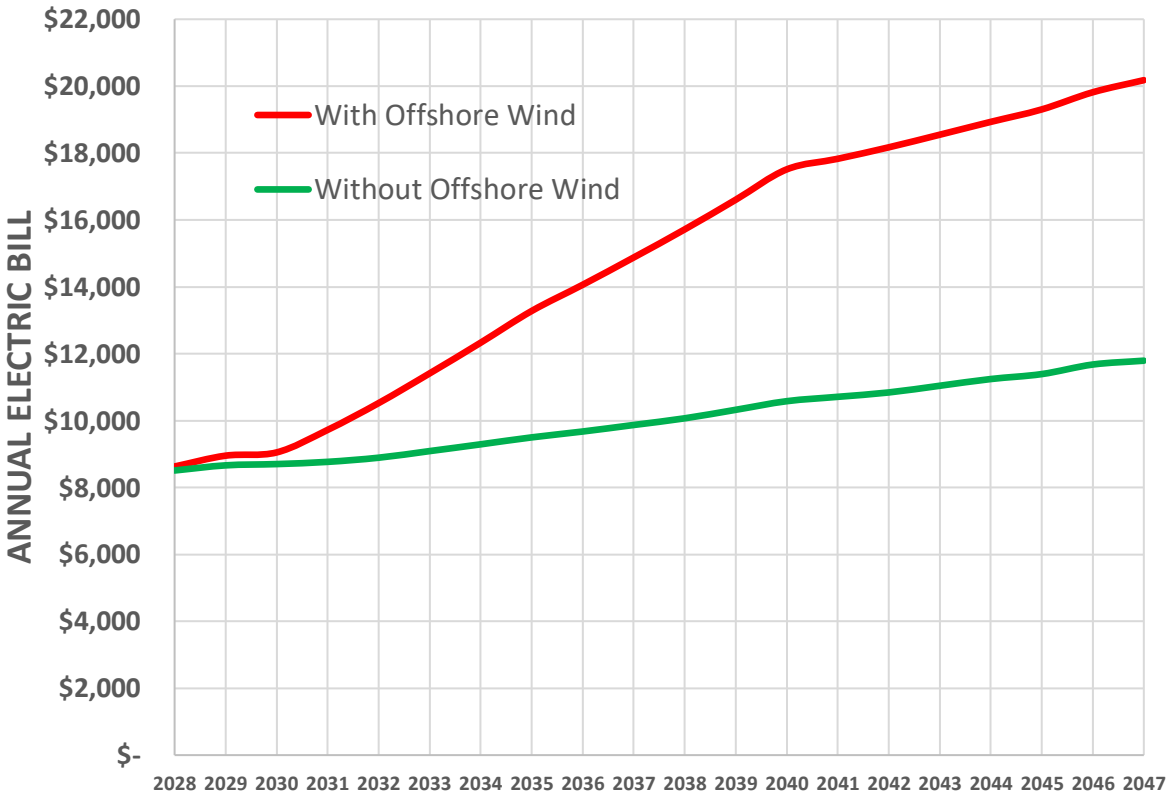


[22] Electric Power Annual, US Energy Information Administration, October 19, 2023.

As shown, offshore wind related costs will add over $1000/yr to the average residential bill when the offshore wind program is fully realized. Over the twenty year period, the average household will pay over $11,000 more due to offshore wind.

A similar increase in bills will be seen by commercial ratepayers as shown here.

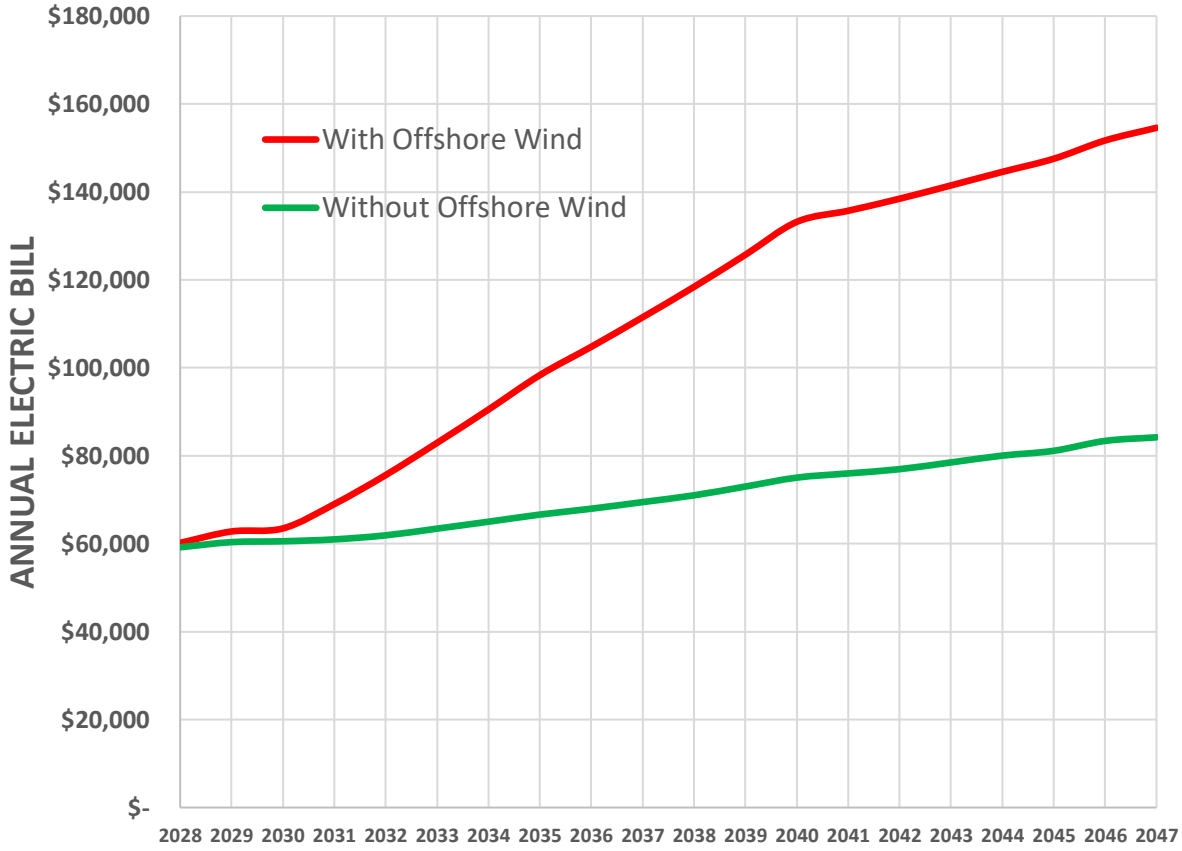
Figure 8 – Change in Average Commercial Electric Bill



For commercial ratepayers, including most small businesses, offshore wind related will add over $8300/yr to the average annual bill and twenty years, the customer will pay almost $95,000 more due to offshore wind.

The state's 11,000 industrial ratepayers will be hit hardest by offshore wind costs as shown below.

Figure 9 – Change in Average Industrial Electric Bill

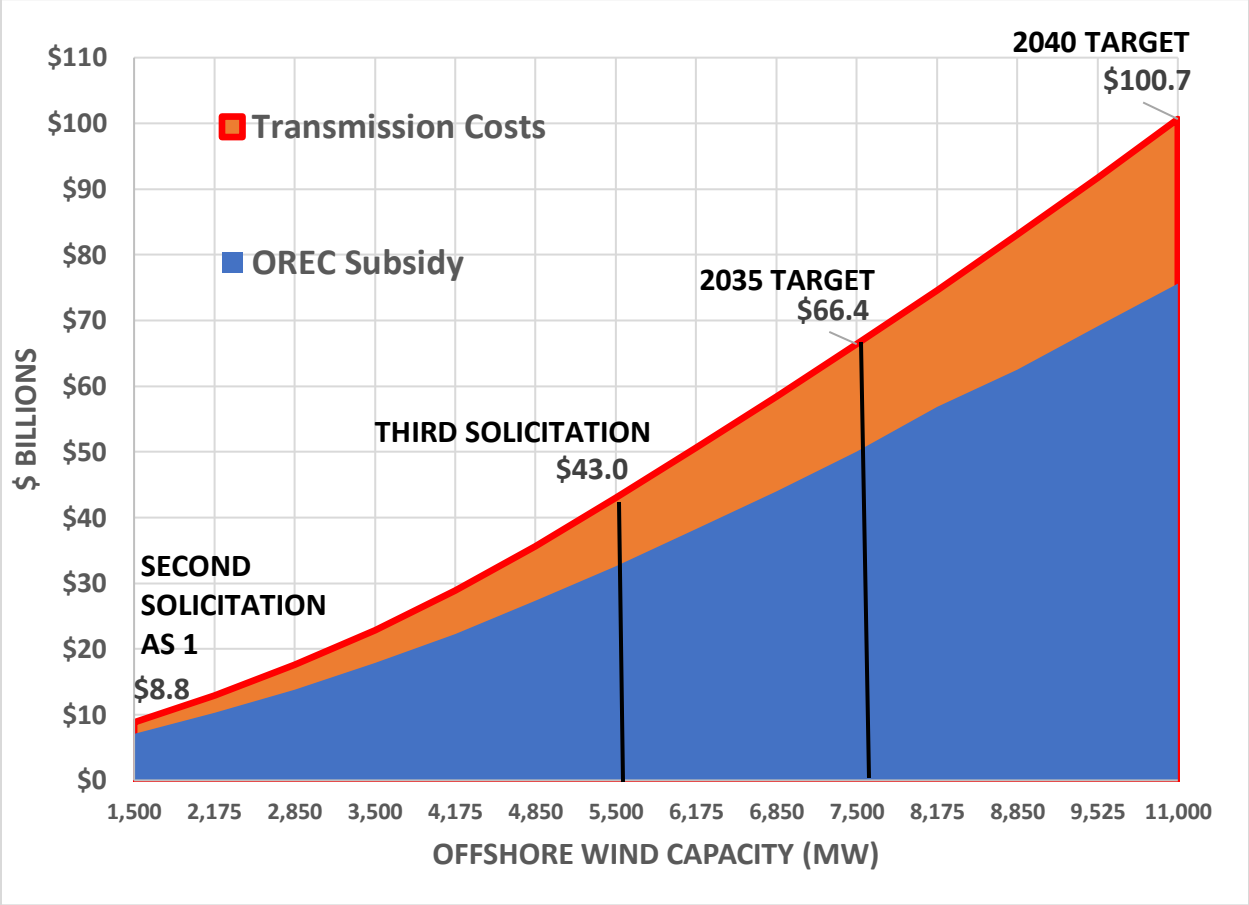


Industrial customers will see an annual increase of over $70,000 and pay $796,000 for twenty years of offshore wind power.

The aggregate cost to all NU ratepayers if the NJ offshore wind program is implemented as planned will be $101 billion over the period 2026-2047. Of this amount $76 billion represents the above market subsidy paid to the developers through the OREC prices. The remaining $25 billion is the cost of transmission system upgrades to accommodate 11,000 MW of offshore wind. The total $101 billion represents a present value cost of over $63 billion in 2023$.

Figure 10 below shows how the total cost of the NJ offshore wind program will increase as more capacity is added and is reflected in ratepayer bill over 20 years.

Figure 10 – Added Ratepayer Costs Due to Offshore Wind



As indicated, the initial cost for the 1510MW of the Atlantic Shore 1 project will add almost $9 billion at its currently approved OREC price. If an additional 4,000MW is added with the BPU Third Solicitation the total cost will increase to over $40 billion. Reaching the 7,500MW goal will raise this to $66 billion and achieving the full 11,000MW will, as noted, cost $101 billion. As shown, the largest component of these ratepayer impacts is due to the subsidies built into the above market OREC awards, which comprise 75% of the cost, the remainder due to associated offshore wind transmission costs.

7.0 Conclusions

The official NJ offshore wind policy goal envisions having 7,500 MW of offshore wind in service by 2035 and 11,000 by 2040. Offshore wind is economically not viable without major subsidies in the form of Federal tax credits and guaranteed above market power prices. The former is passed on the US taxpayers while the latter is a cost borne by NJ electric rate payers.

The Federal investment tax subsidies will total more than $20 billion for 11,000 MW of offshore wind capacity. As detailed in this report, that large number is dwarfed by the extra cost to NJ ratepayers of generation and transmission system expansion needed to accommodate moving 11,000 MW of generation from off the coastline to the PJM grid.

These ratepayer subsidies will exceed $100 billion over 20 years and raise electric customer rates by 55%, 70% and 85% for residential, commercial and industrial customers. It is important for all stakeholders to understand what the full cost of this program is before decisions are taken that will be irrevocable and commit the residents of the state to paying for a large portion of these costs or incurring charges for cancelation of projects which prove even more expensive than estimated.

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The Author

Edward P. O'Donnell is a principal in Whitestrand Consulting LLC. He has spent 35 years in the nuclear power industry as an engineer, manager and executive with responsibilities for design and licensing of numerous plants in the US and abroad. He was also responsible for corporate planning and rate matters for a NJ nuclear utility and has testified in utility rate proceedings before the NJ BPU.

He was responsible for managing the successful sale of nuclear units in NJ and PA and as a consultant for advising clients on the sale and purchase of nuclear plants. In this role he forecasted future costs and performance of plants for re-financing as merchant power suppliers in a de-regulated electrical energy market and performed analyses of the economic viability of nuclear plants in comparison with alternative fossil and renewable energy facilities.

Mr. O'Donnell holds an M.S. in Nuclear Engineering from Columbia University and has been a licensed Professional Engineer in NJ. He is also a registered Enrolled Agent, authorized to represent individual and business entities before the IRS on tax matters.