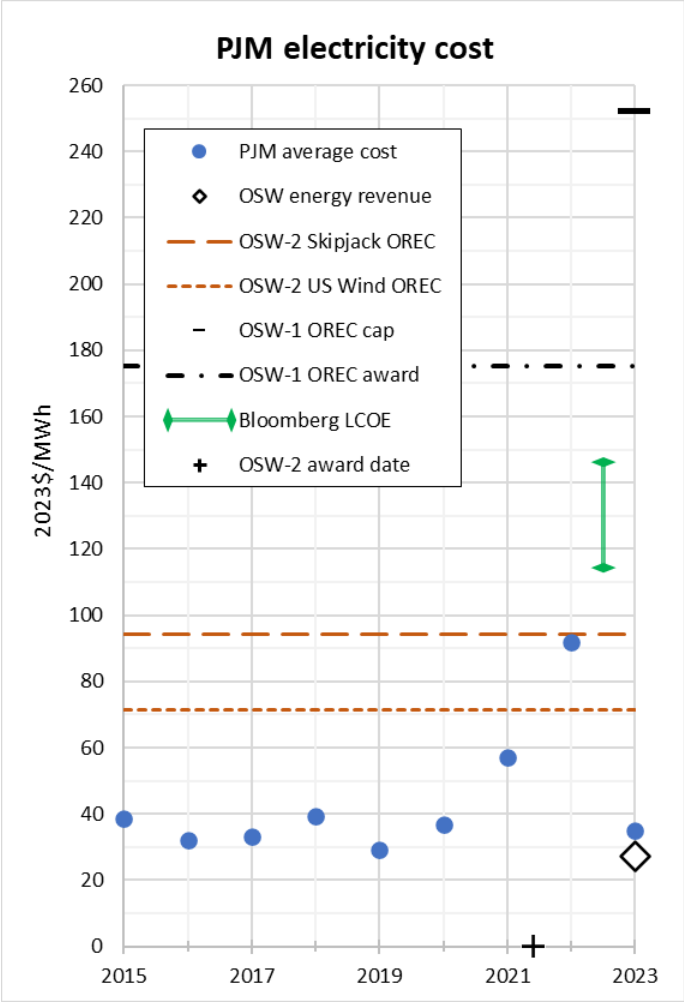
March 21, 2024

HB1296T Offshore Wind Projects - Alterations Unfavorable

- *HB1296 ignores system level risk, that OSW intermittency is incompatible with minimum cost clean PJM systems and only a fraction of the electricity generated by OSW will be dispatched by PJM.*
- *HB1296 should produce the same result as the OSW-2 competition: Bids too high, the required MW minimums are incompatible with ratepayer $/month ratepayer caps. Ratepayer protection analysis should be independent and scrupulous. No award if ratepayer cap is not satisfied.*
- *Do nothing. Building OSW-1 for the purpose of data acquisition is not unreasonable.*

OSW electricity cost in perspective

The vertical axis is the PJM cost of electricity. It is how much the PJM market pays to generators for electricity. The units are $/MWh, dollars per million watt-hours. For laymen thinking of ¢/kWh on their electric bill, slip the decimal one digit to the left. $35/MWh is the same as 3.5 ¢/kWh. PJM electricity cost is marked up for transmission, distribution, admin, social costs, and other services and retailed to Maryland households at 12-16 ¢/kWh.



The blue dots are the annual average of what the PJM market paid to generators for electricity (Table 10, v1, of the PJM som) inflated to 2023$. It is the annual average of PJM energy + capacity market prices. Costs started to rise in 2021 before the OSW-2 award, peaked in 2022 with the Ukrainian disruption of global natural gas supplies. In 2023 costs have reverted to the norm ~$35/MWh.

The open diamond is the PJM market monitor's estimate ($27/MWh) of what PJM's energy market would have paid an OSW developer to deliver electrical energy to the Delaware grid in 2023. It is based on PJM historical economic dispatch (Table 7.11 of the 3Q, 2022 PJM som). It remains unclear what if any capacity value would be credited to OSW.

The horizontal dashed lines are the two Maryland 2021 OREC-2 award prices in 2023$. The blended average OREC price is

Dr. Alex Pavlak; Future of Energy Initiative; www.pavlak.net; www.FutureOfEnergyInitiative.org
315 Dunham Ct., Severna Park, MD 21146; (410) 647-7334; (443) 603-3279(c); alex@pavlak.net

$84/MWh guaranteed by the State of Maryland. This is offset by electricity sales at $27/MWh. The difference, $57/MWh, is Maryland's OSW-2 subsidy commitment. OSW-2 awarded 5,792,959 ORECs/yr. The discounted present value of the Maryland OSW-2 subsidy is $5.7 billion. The OREC-1 cap is $190/MWh (2012$) or $252/MWh 2023$. This price is the short bar at the top of the chart. *It is 10 times PJM wholesale market value.*

The awarded OSW-2 OREC prices proved inadequate. The vertical green line shows Bloomberg's current estimate of today's OSW cost, both with and without federal tax incentives (bottom/top). Since the cost to build OSW-2 with federal incentives is greater than both OREC awards, both contractors would lose money. On January 25th Skipjack joined other east coast OSW developers announcing that it was withdrawing from its Maryland contract.

The 2021 OSW-2 award exceeded monthly ratepayer cap by 4x

A 2022 Washington Post OpEd complained that the OSW-2 OREC awards exceeded Maryland's statutory ratepayer cap by a factor of 4. OSW was good politics. My judgment is that for the next two decades, PJM electricity costs will remain flat and low. This is supported by 1) historical cost in the preceding chart shows no upward trend; and 2) cost reverted to $35/MWh in 2023; and 3) PJM electricity cost is largely determined by natural gas prices and EIA reference scenario forecasts natural gas prices to remain almost constant (Figure 25 of its 2022 Annual Energy Outlook); and 4) the concurrent judgment during the OSW-2 evaluation of the ICF (MPSC's independent consultant), the Maryland Office of People's counsel, and one of the contractors consultants.

System level risk

The best evidence of system level risk is the Canadian Province of Ontario. Grid decarbonization was completed in 2017 using a combination of nuclear, wind, and hydro. But this transformation was not without incident.

After Ontario's nuclear plants were brought online, they suffered from periods of overgeneration. There were hours when everything was throttled back as far as it could go, yet there was still too much generation. The law said they were to dispatch wind first, so they did and shut down a nuclear plant. Shutting down nuclear was expensive and it took 3 days to get back online. Meanwhile the wind died after a few hours, and they had to fire up the fossil fuel plants to keep the lights on. Recognizing this as a high-cost high-emission strategy, the utility chose to operate the nuclear plants at baseload and shut down the wind, which they did. Today, wind generates enough electricity to power 10% of average load yet only 50% of the generated wind is dispatched, ¼ curtailed and 1/4 sold to Americans a discount prices.

Mature fair markets that align component price with total system cost will not reward intermittent generators as much as dependale generators. How this resolves in PJM is uncleaer because PJM has no hydro backup.