

Offshore wind supports clean, affordable, and reliable power

In New England, offshore wind is critical for meeting future winter peak demand, stabilizing energy costs, and reducing emissions



Offshore wind is needed to achieve a least cost energy resource mix

- Even without carbon pricing and clean energy targets, offshore wind is a critical resource in a least cost energy resource mix because it can meet future winter peak demand needs and is cost-competitive with other generation technologies¹
- Uncertainty in the availability of natural gas and nuclear resources, along with constraints on land-based wind and solar, make offshore wind an increasingly important resource in New England²

An energy mix with significant **offshore wind** saves ratepayers **\$60/year** by 2050 compared to an all-gas future



Offshore wind delivers reliable, zero-emission electricity at costs comparable to natural gas

- Up-to-date cost assumptions reflecting current market conditions show that offshore wind is economically competitive with natural gas (see p.2 for breakdown of costs)
- Compared to natural gas, each megawatt-hour of offshore wind avoids CO₂ equivalent to driving nearly 1,000 miles in a gasoline-powered vehicle

Updated Offshore Wind and Natural Gas Costs³

Offshore Wind	\$104/MWh	~0 kg CO ₂ /MWh
Natural Gas	\$104 - \$116/MWh	~ 390 kg CO ₂ /MWh

Offshore wind stabilizes energy costs over time

- **Electricity rates in New England are driven by natural gas**; 55% of electricity within ISO-NE is generated from natural gas
- Because **offshore wind does not require an input fuel, generation costs are low** (see p.2 for additional details), which adds stability to the overall cost of electricity

¹ To demonstrate that OSW is cost competitive regardless of state climate policies, the support those policies might offer for OSW or clean energy was not included. The study period for this analysis was 2035 – 2050.

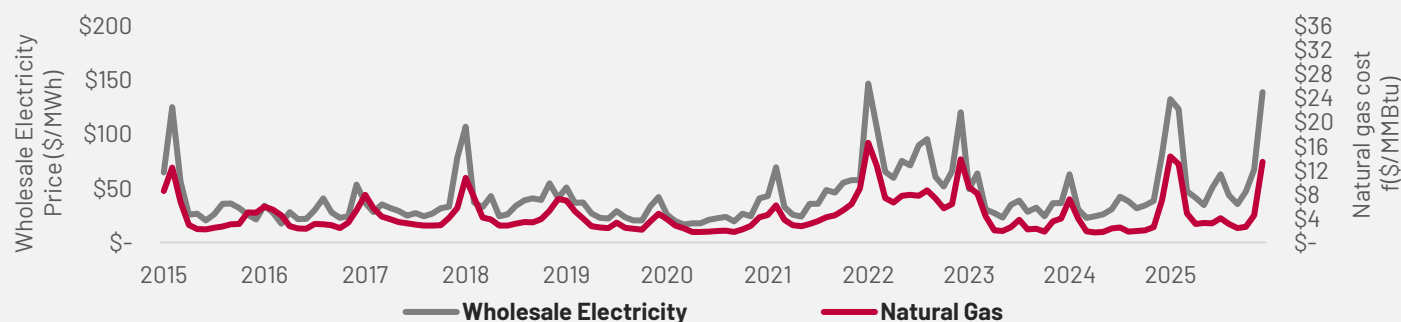
² In New England, natural gas infrastructure constraints may limit the availability of new combined cycle gas turbine (CCGT) capacity. Land based wind faces siting limitations, and solar provides limited contribution during winter peak demand periods.

³ Costs reflected in this graph is the Levelized Cost of Energy (LCOE), which helps provide an apples-to-apples comparison of resources on a \$/MWh basis. LCOE of gas depends on the price of gas assumed. For this graph, a range from \$5 - \$7/MMBTu was used.

Offshore wind offers greater long-term cost certainty than natural gas because costs are driven by upfront investments, not fuel prices

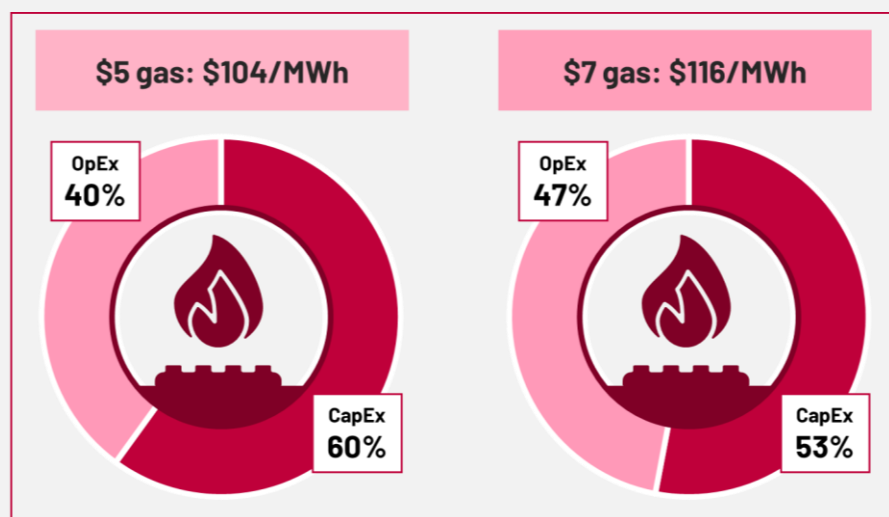
► While the levelized cost of energy (LCOE) of these two resources is comparable, the cost structure is fundamentally different: offshore wind is capital-intensive on the front end with relatively low operating costs, while gas plants have higher operating costs that are exposed to changes in fuel prices

Natural gas prices have fluctuated significantly over the last decade, contributing to electricity price increases⁴



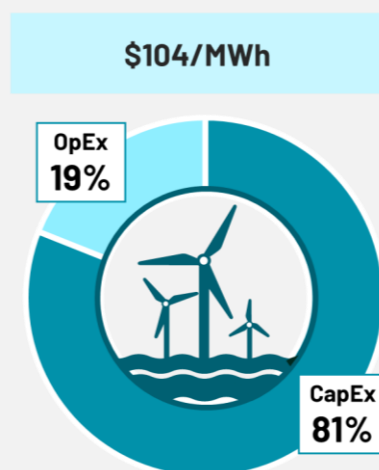
Natural Gas LCOE depends on fuel prices

► Increasing fuel price increases the LCOE and share of LCOE related to OpEx⁵



Offshore wind LCOE

► Driven by upfront CapEx, rather than OpEx



Several other factors increase the cost of natural gas beyond fuel price volatility

- **Costs for new gas plants are rising:** Limited availability of gas turbines through at least 2030 is increasing equipment prices and project costs
- **Real-world utilization has been lower than expected:** Gas plants in ISO-NE have operated fewer hours than many planning assumptions suggest, which can increase the cost of power from new plants

Offshore wind costs are largely upfront, which increases long-term cost certainty

- **Capital intensive cost structure:** More than 80% of offshore wind project costs are upfront investments, with relatively low operating expenses
- **No fuel price exposure:** Offshore wind has zero fuel costs, avoiding the price volatility seen in natural gas and enables more predictable electricity prices

⁴Wholesale electricity data from [ISO-NE](#). Natural gas data from [U.S. EIA](#), represents the average cost of natural gas delivered for electricity generation.

⁵OpEx refers to operational expenses and includes variable and fixed operation and maintenance costs and fuel expenses. CapEx refers to capital costs and includes upfront capital requirements, financing costs, etc.