

New England Power Grid 2017–2018 Profile

The region's wholesale electricity marketplace is securing reliable electricity at competitive prices and helping usher in a cleaner, greener grid.

ISO new england

Sources of Electricity Production

Major shift from oil and coal to natural gas over the past 17 years



Region's growing reliance on natural gas has multiple impacts:

Reliability

The timely availability of fuel is critical to reliability, but existing natural gas pipelines are inadequate to serve growing peak demand for heating and power generation needs in winter.

Gas-fired generators may become increasingly dependent on liquefied natural gas (LNG), but LNG deliveries vary, regional LNG storage is limited, and prices are tied to global markets.

Gas-fired generators that can switch to oil (dual-fuel) may also be key to ensuring reliability, but permitting for both construction and emissions is challenging.

Coal, oil, and nuclear resources are essential during the winter, but the rapid retirement of these resources will increase the region's dependence on natural gas.

Fuel security is the foremost challenge to a reliable power grid in New England. The ISO has quantified these risks in its 2018 *Operational Fuel-Security Analysis*, see www.iso-ne.com/fuel-security.

Environmental

The transition from coal and oil to natural gas has reduced emissions.

However, when natural gas supply is constrained, oil- and coal-fired electricity production rises, driving up emissions.

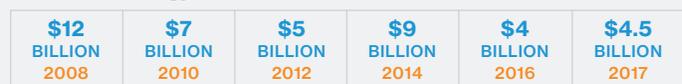


Pricing

Wholesale electricity prices track the price of power plant fuel, which in New England is typically natural gas.

Natural gas pipeline constraints in the winter tend to increase natural gas prices and, in turn, wholesale electricity prices.

Wholesale Energy Market Value



Electricity Demand

Demand for electricity peaks in the summer; a smaller peak occurs in the winter. Records: 28,100 MW in summer and 22,800 MW in winter.

State-sponsored energy-efficiency (EE) and behind-the-meter solar photovoltaic (PV) programs are slowing growth in peak demand, and overall demand growth is flat; states are projected to spend \$7.2 billion on EE between 2021 and 2026.

Forecasted annual growth rates for New England through 2026 →	PEAK DEMAND:	1%	0.1%
	OVERALL DEMAND:	0.9%	-0.6%
		Without EE & PV	With EE & PV

Demand Resources

In 2017, energy-efficiency projects provided 2,300 MW, and active demand response (load management, distributed generation) provided 400 MW of the region's total capacity needs.

New England's demand resources have the largest peak demand impact – 10% reduction capability – among all US ISOs and RTOs.

New England has approximately 29,200 megawatts (MW) of installed electricity generating capacity

The power generation resource mix is transitioning from coal, oil, and nuclear power to natural gas and renewable energy.

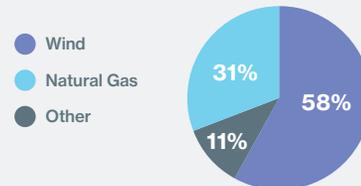
Generation Retirements

Coal- and oil-fired power plants make up nearly 30% of the region's electricity generating capacity but tend to be used only during peak demand periods and are retiring rapidly.

- Since 2013, more than 4,600 MW of primarily coal, oil, and nuclear generating capacity have retired or announced retirement by mid-2020
- Another 5,000 MW of coal- and oil-fired generators are at risk for retirement in coming years

Proposed Generation

Developers have proposed 14,800 MW of new generating resources as of January 2018.



About 9,000 miles of high-voltage transmission lines span the six states. Transmission projects completed and underway are strengthening the grid and enabling its transformation. Since 2002, about 750 projects have been put into service; roughly 120 additional projects are anticipated over the next 10 years that will ensure electricity continues to move reliably and efficiently across the region.

Imported Power

On an annual basis, New England is generally a net importer of electricity via interconnections to neighboring power systems in New York, Quebec, and New Brunswick.

Percentage of net energy from imports

16% 2014	16% 2015	17% 2016	17% 2017
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Merchant transmission companies, electric utilities, and renewable energy developers are proposing several projects to deliver low- or non-carbon-emitting resources into the New England market, which would help mitigate fuel security risk.

Wind Power

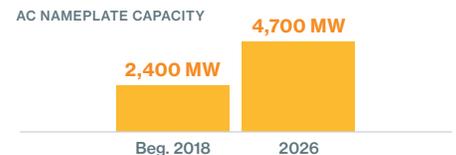
More than 1,300 MW of wind power is operational in the region. Developers are proposing nearly 8,600 MW of additional wind power, primarily in northern New England and offshore in southern New England.

Additional transmission will be needed to integrate these large-scale wind resources.

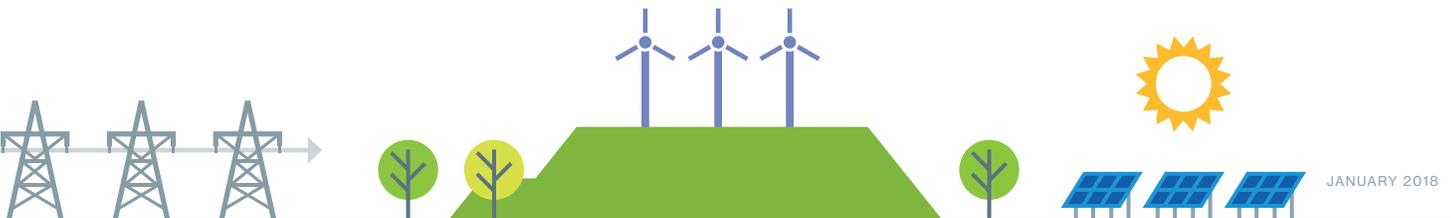
Solar Power

State policies are promoting development of behind-the-meter distributed resources, specifically solar PV resources.

ISO-NE 2017 Solar PV Forecast



More renewable resources would enhance fuel security but would not eliminate reliance on LNG and would likely lead to more non-gas-fired resource retirements.



About ISO New England

Created in 1997, ISO New England is the independent, not-for-profit corporation responsible for the reliable operation of New England's electric power generation and transmission system, overseeing and ensuring the fair administration of the region's wholesale electricity markets, and managing comprehensive regional electric power planning.

