New England Power Grid 2016–2017 Profile

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

Sources of Electricity Production

Major shift from oil and coal to natural gas over the past 16 years

View the real-time fuel mix at **iso-ne.com**	Natural Gas	Nuclear	Renewables	Hydro	Coal	Oil
2000	**15%**	31%	8%	7%	**18%**	**22%**
2016	**49%**	31%	10%	7%	**2%**	**1%**

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

Reliability

Existing natural gas pipelines are inadequate to serve growing peak demand for heating and power generation needs in winter.

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

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

Pricing

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

Low natural gas prices in 2016 resulted in record low wholesale electricity prices in New England.

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

Wholesale Energy Market Value

$12 BILLION 2008	$7 BILLION 2010	$5 BILLION 2012	$9 BILLION 2014	$4 BILLION 2016

Environmental

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

NO_x	SO_2	CO_2
68%	95%	24%

Kilotons 2001–2015

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

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 $6.6 billion on EE between 2020 and 2025.

Forecasted annual growth rates for New England through 2025		Without EE & PV	With EE & PV
	PEAK DEMAND:	1.1%	0.3%
	OVERALL DEMAND:	1.0%	-0.2%

- Increased penetration of plug-in electric vehicles will increase demand for electricity

Demand Resources

In 2016, energy-efficiency projects provided 1,900 MW, and active demand response (load management, distributed generation) provided 600 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 **30,500 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.

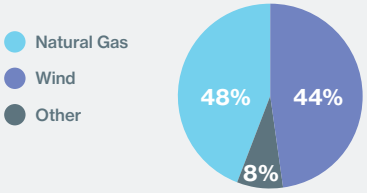
Generation Retirements

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 4,200 MW of primarily coal, oil, and nuclear generating capacity have retired or announced retirement by mid-2020
- Another 6,000 MW of coal- and oil-fired generators are at risk for retirement in coming years

Proposed Generation

Developers have proposed 13,250 MW of new generating resources as of January 2017.



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 690 projects have been put into service; more than 150 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 that serves New England's annual electricity demand

2013	2014	2015	2016
15%	16%	16%	17%

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.

Wind Power

More than 1,100 MW of wind power is operational in New England.

Developers are proposing nearly 6,000 MW of additional wind power, primarily in northern New England and offshore in southern New England.

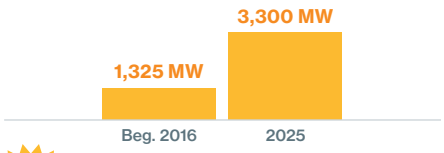
Additional transmission will be needed to successfully integrate large-scale wind resources in New England.

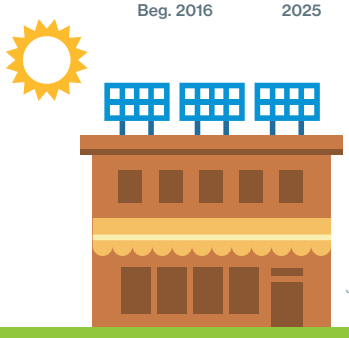
Solar Power

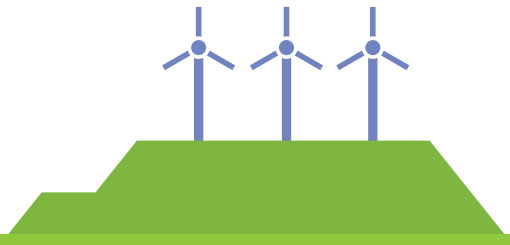
State policies are promoting development of behind-the-meter distributed resources, specifically solar PV resources.

ISO-NE 2016 Solar PV Forecast

AC NAMEPLATE CAPACITY







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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.

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