New England Power Grid
2021–2022 Profile

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

A Major Energy Transformation Is Underway

New England has shifted away from older coal- and oil-fired generation to cleaner burning natural gas. Most of today’s electricity comes from lower-emitting energy resources. The region is transitioning to large-scale clean and renewable energy.

YESTERDAY VS. TODAY

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal</th>
<th>Oil</th>
<th>Natural Gas</th>
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</thead>
<tbody>
<tr>
<td>2000</td>
<td>18%</td>
<td>0.5%</td>
<td>30%</td>
</tr>
<tr>
<td>2021</td>
<td>22%</td>
<td>0.2%</td>
<td>46%</td>
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2021 ENERGY RESOURCES

- Natural Gas: 46%
- Nuclear: 23%
- Renewables: 10%
- Net Imports: 16%
- Oil: 0.2%
- Coal: 0.5%

LOOKING TO THE FUTURE

- Wind power dominates new resource proposals: more than 18,000 MW
- Solar power is growing rapidly: ISO-NE forecasts more than 10,000 MW within a decade
- Battery storage technologies are emerging at the customer and grid level: more than 6,500 MW
- New transmission proposals would provide access to additional clean or renewable energy in New England or Eastern Canada

Major Emissions Reductions

CO₂ emissions declined with shift from coal and oil to natural gas generation.

Increase in Wholesale Prices After Historic Low

* The Hub is a collection of 32 locations in New England used to represent an uncongested price for electric energy.
** 2021 data are subject to adjustments.

Note: Higher prices in 2013 and 2014 were largely due to spikes in natural gas prices during wintertime fuel-delivery constraints.
Electrification Will Drive Electricity Demand

In New England, 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.

While state-sponsored energy-efficiency (EE) and behind-the-meter solar photovoltaic (PV) programs are slowing growth, the ISO forecasts that both energy usage and peak demand will increase slightly in New England over the next 10 years. The primary factors for this increase are the new electrification forecasts for electric vehicles and air-source heat pumps.

<table>
<thead>
<tr>
<th>Forecasted annual growth rates for New England through 2030</th>
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<tbody>
<tr>
<td>Without EE &amp; PV</td>
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<tr>
<td>PEAK DEMAND (50/50 SUMMER PEAK):</td>
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<td>OVERALL DEMAND:</td>
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New England has more than **31,000 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 almost 25% of the region’s electricity generating capacity, but tend to be used only during peak demand periods and are retiring.

- Since 2013, more than 7,000 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.

**Imported Power**

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

**Percentage of net energy from imports**

<table>
<thead>
<tr>
<th>17%</th>
<th>19%</th>
<th>21%</th>
<th>16%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>2019</td>
<td>2020</td>
<td>2021</td>
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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, totaling approximately 5,800 MW.

**Wind Power**

Roughly 1,400 MW of wind power is operational in the region. Developers are proposing more than 18,000 MW of additional wind power, primarily offshore in southern New England.

Adding renewable resources will displace fossil-fueled resources and help achieve state policy objectives. This will require fast-responding resources like grid-scale energy storage to help balance the variability of renewables.

**Solar Power**

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

ISO-NE Draft 2022 Solar PV Forecast

AC NAMEPLATE CAPACITY

| 4,767 MW | 11,298 MW |
| Dec. 2021 | 2031 |

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.