

2019 Summer Outlook

SUMMER READINESS

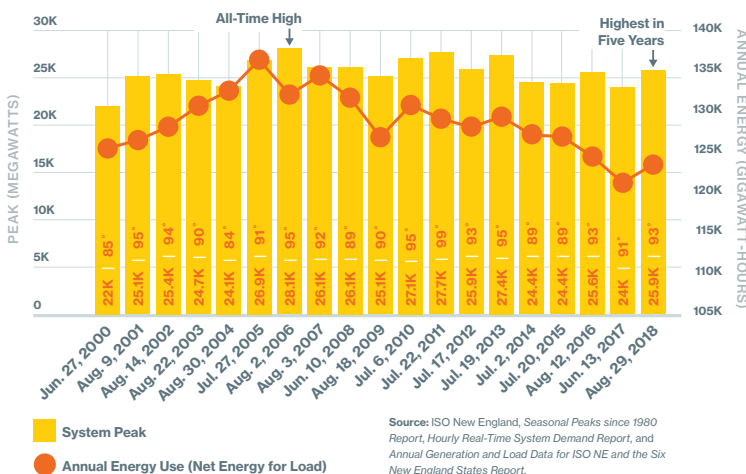
- Adequate electricity supplies are expected to meet peak consumer demand this summer under both typical and extreme weather conditions.
- 1,200 megawatts (MW) of new generation are expected: 1,050 MW of natural gas (dual-fuel) and 140 MW of grid-scale solar and wind.
- Pilgrim Station, a 680 MW nuclear power station in Plymouth, Mass., retires May 31, 2019.

Should unexpected generator or transmission line outages occur, the ISO can call on resources held in reserve, import emergency power from neighboring regions, ask businesses and residents to voluntarily conserve electricity, or implement emergency procedures to stabilize the grid.

Hot, Humid Summer Days Can Still Cause Spikes in Electricity Demand

Despite overall declines in grid energy use on an annual basis, spikes in electricity demand still occur, and New England's power system is planned and operated to meet those peaks even if they aren't historically high.

Peak Demand vs. Annual Energy Use on New England Power System



Learn more at www.iso-ne.com/electricity-use.

SUMMER STATS

WEATHER FORECAST:

Warmer than average

<p>TYPICAL SUMMER PEAK DEMAND FORECAST:</p> <h2>25,323 MW</h2>	<p>EXTREME SUMMER PEAK DEMAND FORECAST:</p> <h2>27,212 MW</h2>
<p>AVAILABLE CAPACITY EXPECTED:</p> <h2>32,000 MW</h2>	<p>ALL-TIME HIGHEST SUMMER PEAK DEMAND:</p> <h2>28,130 MW</h2> <p>(set on August 2, 2006)</p>

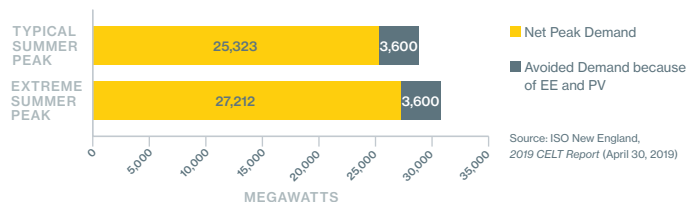
With High Levels of Solar PV Systems, the Summer Peak Moves to Early Evening Hours When Daylight Fades

New England currently has roughly 160,000 photovoltaic (PV) installations, totaling about 3,000 MW (nameplate), with most connected behind the meter (BTM). These systems produce their highest output in the early afternoon hours.



The Summer Peak Forecasts Incorporate the Demand-Reducing Effects of EE and BTM PV

Energy efficiency (EE) measures and BTM PV are forecasted to reduce the 2019 summer peaks by 2,900 MW and 700 MW respectively.



Learn more at www.iso-ne.com/solar-impact.

ISO-NE Public Communications During Operating Procedure No. 4: Action During a Capacity Deficiency (OP 4)

Operating Reserves Are Essential to a Reliable Power System

ISO New England must carry a reserve of electricity supply that can be called on to produce electricity should a contingency occur on the power system, such as:

- ▶ Unexpected high demand due to extreme weather
- ▶ A generator goes out of service for mechanical problems
- ▶ A transmission line or circuit breaker trips due to lightning strike or other issue or becomes overloaded
- ▶ A neighboring grid requests assistance
- ▶ A serious threat is made to the power system

The ISO maintains two categories of reserves: resources that can provide energy within **10 minutes** and resources that can provide energy within **30 minutes**. Typically, the ISO maintains an operating reserve of between 1,560 MW and 2,250 MW in 10-minute reserves, plus an additional 625 MW or so in 30-minute reserves.

The ISO implements OP 4 when available resources are insufficient to meet anticipated electricity demand plus required operating reserves – called a “capacity deficiency” – so that we can ensure a continuous, reliable flow of electricity.

The Scope and Sequence of OP 4's 11 Actions

- ▶ The ISO can implement OP 4 actions New England-wide, by local control center area, by state, or targeted to a specific area
- ▶ Actions can be implemented in any order; some actions can be implemented in advance of an anticipated capacity deficiency
- ▶ The ISO can skip OP 4 actions and move immediately to emergency actions such as controlled power outages (under OP 7) if necessary

Four Types of Public Notifications During OP 4



OP 4 Actions 1-3 and 5-9:
No public appeal for conservation



OP 4 Action 4:
Public appeal for voluntary conservation, issued only if conditions warrant



OP 4 Action 10:
Urgent public appeal for voluntary conservation



OP 4 Action 11:
Governors' appeal

The ISO Uses OP 4 Actions to Increase Supply or Reduce Demand to Maintain Operating Reserves

1.  Implement **Power Caution** and begin to allow depletion of 30-minute reserves
2. Declare Energy Emergency Alert (EEA) Level 1**
3. Request voluntary load curtailment of market participants' facilities
4.  Implement **Power Watch**, a notification that additional OP 4 Actions may be taken; if conditions warrant, issue a public appeal for voluntary conservation
5. Schedule Emergency Energy Transactions and arrange to purchase energy and capacity from other control areas
6. Implement voltage reductions of 5% of normal operating voltage requiring more than 10 minutes
Declare Energy Emergency Alert (EEA) Level 2**
7. Request resources without a capacity supply obligation to provide energy for reliability purposes
8. Implement a voltage reduction of 5% of normal operating voltage requiring 10 minutes or less
9. Request activation of transmission customer generation not contractually available to market participants during a capacity deficiency, and request voluntary load curtailment by large industrial and commercial customers
10.  Implement **Power Warning** and issue urgent public appeal for voluntary conservation
11.  Request state governors' support for ISO appeals for conservation

Ways to Monitor Power System Conditions

- ▶ Data portal: www.iso-ne.com/isoexpress
- ▶ Mobile app: iso-ne.com/isotogo
- ▶ Twitter: @isonewengland