



# NPCC 2019 Summer Reliability Assessment Summary Report

## *Adequate Summer Electricity Supplies Projected*

### **Summer 2019 Reliability Assessment Overview**

The comprehensive reliability assessment conducted by the Northeast Power Coordinating Council, Inc. (NPCC) projects that the Region (consisting of the six New England states, the State of New York, Ontario, Québec and the Canadian Maritime Provinces of New Brunswick and Nova Scotia) will have an adequate supply of electricity this summer, even during periods of extreme weather.

A wide range of assumptions were analyzed, including extreme weather conditions derived through over 40 years of experience, unexpected generating plant outages, transmission constraints between and within Regions, implementation of operating procedures and estimated impact of demand response programs.

The assessment considered severe system conditions that included the impact of: 1) extended unit maintenance; 2) reductions in demand-response programs; 3) reductions in the ability to import power from neighboring Regions; 4) transmission constraints; and, 5) extreme weather characterized by widespread and prolonged heat waves with high humidity and near-record temperatures.

Established operating procedures are available to maintain reliability and keep electricity supplies and demand in balance if severe system conditions and extreme weather occurs.

### **Summary of Key Findings**

Approximately 2,855 MW of new capacity<sup>1</sup> has been installed since last summer, which includes projects expected to be in service over the course of this summer period (June through September).

For New York City and throughout New York State, an adequate supply of electricity is forecast this summer. From the summer of 2018 through this upcoming summer, several changes to generation in New York have occurred including 158 MW of wind additions, 167 MW of coal generation retirements and 446 MW of the rescinded announced retirement of Selkirk 1 and 2. The resultant net change (considering other adjustments) for New York is 127 MW.

New England expects to have a sufficient supply of electricity this summer. From summer 2018 through this upcoming summer, 1,185 MW of new generating capacity is being added

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<sup>1</sup> Based on summer nameplate ratings.



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to the New England system, including the dual-fuel Bridgeport Harbor Expansion (510 MW), Canal 3 (333 MW) and Medway Peaker (208 MW). There are also various wind and solar generation additions, totalling 135 MW. The Pilgrim nuclear generation unit (680 MW) is being retired and there are 63 MW of other adjustments. With these additions, retirements, and adjustments, the net change is a 568 MW increase in overall New England capacity.

Ontario is projected to have a sufficient supply of electricity this summer. From the summer 2018 through this upcoming summer, capacity additions total 1,474 MW, consisting of Napanee gas-fired generation (985 MW), wind generation (375 MW), solar (98 MW) and hydro (16.4 MW). Considering 56 MW of gas generation retirements, the resultant net change for Ontario generation (from summer 2018 through this summer) is 1,418 MW.

Québec and the Canadian Maritime Provinces have more than an adequate supply of electricity forecast for the summer period. Both of these areas are winter peaking and normal hydro conditions are expected for this summer. Since the summer of 2018 and through this summer, Quebec has added 38 MW of biomass and considering -8 MW of other adjustments, the resultant net change for Québec generation (from summer 2018 through this summer) is 30 MW.

### **Projected NPCC Load**

The non-coincident (sum of the individual NPCC area) forecast peak demand for NPCC during the 2019 summer is 104,070 MW (June – September period).

More importantly, the coincident NPCC 2019 summer peak demand forecast of 103,548 MW is expected to occur during July. This forecast is 589 MW lower than last year's forecast coincident NPCC peak demand of 104,137 MW. Several factors can influence the load projection, including the economic outlook as well as the on-going effects of behind-the-meter generation, conservation measures, efficiency improvements, and demand response programs.

Nevertheless, ambient weather conditions remain the most important variable in forecasting peak demand during the summer months. Historically, the peak loads and temperatures between New England and New York have a high correlation due to the relative locations of their respective load centers. Depending upon the extent and duration of a summer weather system, there is some potential for the Ontario summer peak demand to be coincident with New England and New York.



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## **New York**

The New York Independent System Operator (New York ISO) forecast peak load for summer 2019 is 32,382 MW, which is 522 MW lower than the summer 2018 forecast of 32,904 MW. The lower forecast is largely attributed to the projected impact of existing statewide energy efficiency programs and the growing impact of distributed “behind-the-meter” energy resources. These resources include retail photovoltaic, combined heat and power, anaerobic digester gas, fuel cells, and energy storage.

## **New England**

The Independent System Operator of New England’s (ISO-New England) forecast summer 2019 peak demand is 25,323 MW, assuming historically based expected summer peak weather conditions. The 2019 forecast of peak demand is 406 MW lower than the corresponding 2018 forecast of 25,729 MW; the forecast takes into account the demand reductions associated with energy efficiency, load management, passive demand response initiatives, distributed generation and forecasted “behind-the-meter” photovoltaic resources located on the distribution system.

## **Ontario**

The Ontario Independent Electricity System Operator 2019 summer peak demand forecast for ‘weather normal’ conditions is 22,105 MW, and includes reductions due to conservation measures, growth in embedded solar and wind generation, and pricing factors. The forecast is 103 MW higher than last summer’s forecast ‘weather normal’ peak demand of 22,002 MW. The combined effects of conservation savings and distribution-connected generation are expected to offset increased electricity demand from economic and population growth.

## **Québec**

The forecast 2019 summer peak load for Québec is 21,005 MW. The 2019 forecast is 471 MW higher than the last summer forecast of 20,534 MW. The Hydro-Québec system is winter peaking.

## **Maritime Provinces**

A 2019 summer peak load of 3,255 MW is forecast for the Maritime Provinces. The Maritime Provinces are winter peaking; forecast peaks for the shoulder months are normally much higher than the summer period. The 2019 forecast peak is 20 MW higher than last year’s corresponding forecast summer peak of 3,235 MW.



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## Transmission and Resource Adequacy Summary

### NPCC 2019 Summary

During the NPCC forecast coincident peak load week (beginning July 28, 2019), the overall spare operable capacity (capacity over and above reserve requirements) for NPCC is estimated to be 19,884 MW. A portion of this spare operable capacity is in the Québec and Maritime Provinces. The transfer capability between the Québec and the Maritimes Provinces to the remainder of NPCC will not permit the usage of all this forecast spare operable capacity. As a result, the spare operable capacity is reduced to 14,954 MW.

The week beginning June 23, 2019 represents the week with the lowest forecast operable capacity margin (spare operable capacity less transfer capability limitations); 12,545 MW (12.2%) is estimated to be available. This is not the same week as the forecasted NPCC coincident peak demand (July 28, 2019).

The sizeable forecast NPCC operable capacity margins will help to counteract any adverse reliability impacts that project delays could have on overall NPCC reliability this summer.

### New York

The New York ISO forecasts installed capacity of 39,452 MW for the peak week demand forecast of 32,382 MW. Accounting for purchases, sales, required operating reserve, planned and unplanned outages results in an operable spare capacity margin of 2,260 MW for the peak week.

### Supply-Side Resources

From the summer of 2018 through this upcoming summer, relatively small changes to generation in New York have occurred or are anticipated. Considering all changes and other capacity adjustments (158 MW of wind generation additions, 167 MW of coal generation unavailability, the 446 MW rescinded announced retirement of the Selkirk 1 and 2 generation), the resultant net change (considering other adjustments) for New York generation (from summer 2018 through this upcoming summer) is 127 MW.

New York currently has 1,985 MW of installed nameplate wind capacity. Of that, it is assumed that the available contribution is 324 MW based on historical performance.

### Demand Response Resources

The following demand response programs support system reliability in New York: the Emergency Demand Response Program (EDRP) and the Installed Capacity Special Case Resource (SCR) program.



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For this summer, the New York ISO projects to have approximately 1,309 MW of SCR and 6 MW of EDRP resources available, representing a total of 1,315 MW of available demand response resources.

## **Transmission**

The New York ISO does not anticipate any transmission related reliability issues for this summer. Notable changes to the New York transmission system since the previous summer include: The addition of the Cricket Valley 345 kV Substation, installed on the Pleasant Valley-Long Mountain 345 kV tie line with New England will facilitate the new Cricket Valley combined cycle generating station expected operation after the summer period.

## **New England**

ISO-New England forecasts installed capacity of 31,329 MW for the peak week demand forecast of 25,323 MW. Accounting for purchases, sales, required operating reserve, planned and unplanned outages results in an operable spare capacity margin of 3,249 MW for the peak week.

## **Supply-Side Resources**

From the summer of 2018 through this upcoming summer, 1,185 MW of new generating capacity is being added to the New England system, including the dual-fuel Bridgeport Harbor Expansion (510 MW), Canal 3 (333 MW) and Medway Peaker (208 MW) generation units. In addition, there are various wind and solar generation additions that total 135 MW. The Pilgrim nuclear unit (680 MW) is being retired and there are 63 MW of other adjustments. With these additions, retirements and adjustments, the net change is a 568 MW increase in overall New England capacity.

With natural gas as the predominant fuel source for power generation in New England, ISO-New England monitors the factors affecting the natural gas fuel deliverability for the area. For the 2019 summer period, ISO-New England expects limited amounts of natural gas pipeline maintenance and construction to occur for select areas and does not forecast major deliverability issues that would affect the installed capacity.

ISO-New England's total wind capacity for this summer is 1,420 MW, with 192 MW of that amount counted toward installed capacity.

## **Demand Response Resources**

For this summer, ISO-New England has 340 MW of active demand resources expected to be available on peak.



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## **Transmission**

The existing New England transmission system is projected to be sufficient for the 2019 summer period. Numerous transmission upgrades continue to be commissioned to address New England's reliability needs. These transmission improvements have reinforced the overall reliability of the electric power system and reduced congestion, enabling power to flow more easily around the entire region. The improvements support decreased energy costs and increased power system flexibility.

## **Ontario**

The Ontario Independent Electricity System Operator is anticipating a spare operable capacity margin of 3,145 MW during the peak week.

## **Supply-Side Resources**

From the summer of 2018 through this summer, capacity additions total 1,474 MW, consisting of Napanee gas-fired generation (985 MW), wind generation (375 MW), solar (98 MW) and hydro (16 MW). Considering 56 MW of gas generation retirements, the resultant net change for Ontario's generation (from summer 2018 through this summer) is 1,418 MW.

Ontario's total wind generation capacity for this summer is 4,786 MW, with 651 MW of that amount counted toward installed capacity.

## **Demand Response Resources**

For this summer, Ontario has 790 MW of active demand resources expected to be available on peak. The capacity of the demand response program consists of 737 MW of Demand Response auction participants with the balance of 53 MW being made up by dispatchable loads.

## **Transmission**

For this summer, Ontario's transmission system is expected to be adequate with planned transmission system enhancements and scheduled transmissions outages.

## **Québec**

The Province of Québec is winter peaking. Adequate resources are forecast to be available to serve summer peak demand and meet operating reserve requirements this summer. Québec is projecting weekly operable capacity margins in the range of approximately 7,400 MW to 10,100 MW for this summer.



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## **Supply-Side Resources**

Québec has added 38 MW of biomass and considering -8 MW of other adjustments, the resultant net change for Québec generation (from summer 2018 through this summer) is 30 MW.

For the purposes of this assessment, Québec assumed that its entire wind generation capacity of 3,880 MW is 100% derated.

## **Demand Response Resources**

The demand response programs in Québec are available only during the winter period; they are neither required nor available for the summer.

## **Transmission**

Most transmission line, transformer and generating unit maintenance is done during the summer period. The maintenance outages are being planned so that all exports can be maintained.

Known maintenance and derates vary between 11,700 to 14,400 MW. During the summer period, some maintenance outages are scheduled on the interconnections. Maintenance is coordinated with neighboring Area Reliability Coordinators to provide for maximum capability to summer peaking areas.

## **Maritimes**

The Maritime Provinces are also winter peaking. Adequate resources are forecast to be available to serve summer peak demand and meet operating reserve requirements. The Maritimes forecast spare operable capacity margins range from approximately 800 MW to about 2,000 MW over this summer.

## **Supply-Side Resources**

Since the summer of 2018 and through this summer, the Maritimes added no new capacity resources.

The Maritimes currently have approximately 1,152 MW of nameplate installed wind generation. After applying derates, the wind capacity for the summer period is assumed to be 319 MW.

## **Demand Response Resources**

Interruptible and dispatchable loads are forecast on a weekly basis and range between 276 MW and 369 MW, and are available for use if or when corrective action is required.



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## Transmission

The Maritimes transmission system is projected to be adequate to supply the demand requirements for this summer.

## Estimated Need for Operating Procedures

A wide range of assumptions were analyzed, including extreme weather conditions derived through over 40 years of experience, unexpected plant outages, transmission constraints between and within Regions, implementation of operating procedures and estimated impact of demand response programs.

There is no significant likelihood of implementing operating procedures designed to mitigate resource shortages (reducing 30-minute reserve, voltage reduction, and reducing 10-minute reserve) during the 2019 summer period for the Base Case conditions assuming the expected peak load forecast. The expected peak load level results were based on the probability-weighted average of the seven load levels simulated.

The overall NPCC forecast for electricity demand has decreased compared to last summer's forecast, due ongoing energy efficiency and conservation initiatives, along with increases of distributed energy resources, such as "behind-the meter" solar facilities.

Additional resources and improved transmission capacity resulting from transmission projects available this summer are additional factors that act to minimize the expected need for the use of these operating procedures.

Established operating procedures are available to maintain reliability and keep electricity supplies and demand in balance if system conditions (such as reductions in anticipated transfers, maintenance extending into the summer period and/or additional constraints) occur with higher than expected electricity demands resulting from a wide spread, prolonged heat wave with high humidity.

## Operational Readiness

The Resource and Transmission Reliability Adequacy Assessments are key elements in determining NPCC's ability to meet the forecast demands of the summer period. To be prepared to deal with the constantly changing operating conditions on the power system, as well as contingencies, NPCC routinely conducts daily and week-ahead planning calls between system operators and neighboring regions to coordinate short-term system operations.



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NPCC continues to refine and expand its situational awareness capability to include wide-area visual displays of NPCC and its adjacent Regional Entities to further enable NPCC system operators and neighboring regions to communicate current operating conditions and facilitate the procurement of assistance under emergency conditions.

## **Geomagnetic Storms**

Past experiences have shown the serious effect that geomagnetic disturbances can have on the NPCC bulk power system. These effects can include transformer failures and unintentional tripping of transmission lines (outages) due to geomagnetically induced currents (GICs).

Since 1989, NPCC has operating procedures in-place to mitigate the effects of GICs resulting from geomagnetic storms. NPCC system operators receive, on a continual twenty-four hour by seven-day basis, the status of solar activity and geomagnetic storm alerts.

After reviewing the available data, the system operator evaluates the situation and enacts appropriate measures designed to protect system elements such as transformers, transmission lines, generators, and other critical facilities.

For the 2019 summer period, solar activity is expected to remain at quiet levels. The solar coronal regions are stabilizing as the next solar minimum approaches, with fewer coronal holes and fewer extensions to lower solar latitudes that can sweep higher velocity solar winds toward the Earth. The occurrence, significance, and magnitude of sunspot formations are difficult to predict. It is important to understand that these rogue events can and do occur. The odds of such an event during any particular week of the coming summer are very low.

## **NPCC Region**

NPCC is one of seven Regional Entities located throughout the United States, Canada and portions of Mexico. The NPCC geographic region includes the State of New York and the six New England states as well as the Canadian provinces of Ontario, Québec and the Maritime provinces of New Brunswick and Nova Scotia. Overall, NPCC covers an area of nearly 1.2 million square miles, populated by more than 56 million people. In total, from a net energy for load perspective, NPCC is approximately 46% U.S. and 54% Canadian. With regard to Canada, approximately 70% of Canadian net energy for load is within the NPCC Region.

NPCC coordinates international electric power grid reliability for Northeastern North America. NPCC annually performs comprehensive seasonal assessments of electricity



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supply and demand reliability for eastern Canada, New England and the City and State of New York. These assessments require months of detailed preparation and are performed with the participation of regional electricity power grid operators and planners.

Additional information regarding NPCC is available at: [www.npcc.org](http://www.npcc.org).