The following glossary offers definitions and explanations of phrases used in Power Trends 2019, as well as terms generally used in discussions of electric power systems and energy policy.

**Ancillary Services:** Services that support the reliable operation of the power system, which can include voltage support, frequency regulation, operating reserves, and blackstart capabilities.

**Behind-the-Meter Generation:** A generation unit that supplies electric energy to an end user onsite without connecting to the bulk power system or local electric distribution facilities. An example is a rooftop solar photovoltaic system that only supplies electricity to the facility on which it is located.

**Bulk Power System:** The transmission network over which electricity flows from suppliers to local distribution systems that serve end-users. New York’s bulk power system includes electricity-generating plants, high voltage transmission lines, and interconnections with neighboring electric systems located in the New York Control Area (NYCA).

**Capability Period:** Lasting six months, the Summer Capability Period goes from May 1 through October 31. The Winter Capability Period runs November 1 through April 30 of the following year. A Capability Year begins May 1 and runs through April 30 of the following year.

**Capacity:** Capacity is the maximum electric output that a generator can produce. It is measured in megawatts (MW).

**Capacity Factor:** Capacity factor measures actual generation as a percentage of potential maximum generation. For example, a generator with a 1 megawatt capacity operating at full capacity for a year (8,760 hours) would produce 8,760 megawatt-hours (MWh) of electricity. That generator would have an annual capacity factor of 100%.

**Carbon Pricing:** A market-based approach to create incentives for reduced carbon dioxide emissions by incorporating costs associated with carbon dioxide emissions, such as damage to crops or health care costs, into energy markets.

**Clean Energy Standard (CES):** A New York State requirement that 50% of the energy consumed in the state be generated by eligible renewable energy resources by 2030. Often referred to as the “50-by-30 goal.”

**Comprehensive Reliability Plan (CRP):** A study undertaken by the NYISO that evaluates projects offered to meet New York’s future electric power needs, as identified in the Reliability Needs Assessment (RNA). The CRP may trigger electric utilities to pursue regulated solutions to meet reliability needs if market-based solutions will not be available to supply needed resources. It is the second step in NYISO’s reliability planning process.

**Comprehensive System Planning Process (CSPP):** The NYISO’s ongoing process that evaluates resource adequacy and transmission system security of the state's bulk power system over a 10-year period and evaluates solutions to meet those needs. The CSPP contains four major components: local transmission planning, reliability planning, economic planning, and public policy transmission planning. Each planning cycle begins with the Local Transmission Plans of the New York transmission owners, followed by NYISO's Reliability Needs Assessment (RNA) and Comprehensive Reliability Plan (CRP). Using the most recent reliability planning model, economic planning is conducted through the Congestion Assessment and Resource Integration Study (CARIS), and projects to meet transmission needs driven by federal, state, and local laws and regulations are analyzed through the Public Policy Transmission Planning process.

**Congestion Analysis and Resource Integration Study (CARIS):** Part of the NYISO’s comprehensive System Planning Process, CARIS evaluates the
economic impact of proposed system changes. It consists of congestion studies developed with market participant input, as well as additional studies that individual market participants may request and fund. CARIS is based on the most recently approved CRP.

Critical Infrastructure Protection (CIP) Standards: A set of requirements designed to secure the assets required for operating the bulk power system. CIP requirements include the security of electronic perimeters, protection of critical cyber assets, personnel training, security management, and disaster recovery planning. CIP standards are developed by NERC, and approved by FERC.

Curtailment: In the context of intermittent sources of generation, refers to signals from the NYISO directing an intermittent resource to reduce its output. Sometimes referred to as economic curtailment, the NYISO’s signal is based on the intermittent resources’ price offers in the energy market, whereby transmission constraints induce prices that make the continued operation of certain intermittent resources uneconomic, prompting a reduction in output to alleviate the transmission constraint.

Day-Ahead Market (DAM): A NYISO-administered wholesale electricity market in which electricity and ancillary services are auctioned and scheduled one day prior to use.

Demand Response (DR) Programs: A series of programs designed to facilitate economic- and reliability-based load reduction measures by compensating electricity users that reduce consumption at the direction of the NYISO, either by economic dispatch or in response to a reliability condition. The NYISO demand response programs include Day-Ahead Demand Response Program (DADRP), Demand Side Ancillary Services Program (DSASP), Emergency Demand Response Program (EDRP), and Special Case Resources (SCR) program.

Distributed Generation: A generator — typically 10 MW or smaller — attached to the distribution grid. Distributed generation can serve as a primary or backup energy source and can use various technologies, including wind generators, combustion turbines, reciprocating engines, and fuel cells.

Distributed Energy Resource (DER): A broad category of resources that includes distributed generation, energy storage technologies, combined heat and power systems, and microgrids. A DER is generally customer-sited to serve the customer’s power needs, but may, in some instances, sell excess energy production or ancillary services to the power system.

Eastern Interconnection: The Eastern Interconnection is one of the three electric grid networks in North America. It includes electric systems serving most of the United States and Canada, from the Rocky Mountains to the Atlantic coast. The other major interconnections are the Western Interconnection and the Texas Interconnection.

Electric Grid: An interconnected network for delivering electricity from suppliers to consumers. It consists of generators that produce power, transmission lines that carry power to demand centers, and distribution lines that connect individual customers.

Electricity Market: In economic terms, electricity is a commodity capable of being bought, sold, and traded. An electricity market is a system enabling purchases. The NYISO stewards the wholesale electricity markets in New York, enabling competing generators to offer their output to retailers. These markets include the Day-Ahead Market (DAM) and others.

Emergency Demand Response Program (EDRP): A NYISO reliability-based demand response program designed to reduce power usage through voluntary electricity consumption reduction by
businesses and large power users. Program participant are compensated for reducing energy consumption upon activation of the program by the NYISO.

**Energy:** Energy is the amount of electricity a generator produces over a specific period of time. It is measured in megawatt-hours (MWh). For example, a generating unit with a 1 megawatt capacity operating at full capacity for one hour will produce 1 megawatt-hour of electricity.

**Energy Storage Resources (ESRs):** Energy storage resources are devices used to capture energy produced at one time for use at a later time. ESRs include technologies like batteries and pumped hydro storage.

**Federal Energy Regulatory Commission (FERC):** The federal agency responsible for regulatory oversight of the NYISO's operation of the bulk power system, wholesale power markets, and planning and interconnection processes. The NYISO's tariffs and foundational agreements are overseen and approved by FERC.

**Gigawatt (GW):** A unit of power or capacity equal to one billion watts.

**Gigawatt-Hour (GWh):** A gigawatt-hour is equal to one gigawatt of energy produced or consumed continuously for one hour.

**Installed Capacity (ICAP):** A qualifying generator or load facility that can supply and/or reduce demand as directed by the NYISO.

**Installed Reserve Margin (IRM):** The amount of installed electric generation capacity above 100% of the forecasted peak electricity consumption that is required to meet New York State Reliability Council (NYSRC) resource adequacy criteria.

**Interconnection Queue:** A queue of merchant transmission and generation projects that have submitted an Interconnection Request to the NYISO to be interconnected to the state's electric system. Depending on the level of proposed capacity, most projects must undergo three studies before interconnecting to the grid: a **Feasibility Study** (unless parties agree to forgo it), a **System Reliability Impact Study** (SRIS), and a **Facilities Study**.

**Intermittent Resource:** An electric energy source whose output varies due to the fluctuating nature of its fuel source. Examples include solar energy which is dependent upon sunlight intensity, or wind turbines where output is dependent on wind speeds.

**Intertie:** A transmission line that links two or more regional electric power systems.

**Load:** A consumer of energy, or the amount of energy consumed. Load can also be referred to as demand.

**Load Serving Entity (LSE):** An entity, such as an investor-owned utility, public power authority, municipal electric system, or electric cooperative that procures energy, capacity, and/or ancillary services from the NYISO's wholesale markets on behalf of retail electricity customers.

**Locational Capacity Requirement (LCR):** A portion of the statewide installed capacity that must be physically located within a locality to meet reliability standards. Locational Installed Capacity Requirements have been established for the New York City (zone J), Long Island (zone K), and lower Hudson Valley (zones G-J) capacity zones.

**Loss of Load Expectation (LOLE):** The amount of generation and demand-side resources needed to minimize the probability of an involuntary loss of firm electric load on the bulk power system. The state's bulk power system, is designed to meet a LOLE that is not greater than one occurrence of an involuntary load disconnection in 10 years (expressed mathematically as 0.1 days per year).
Market-Based Solutions: Investor-proposed projects that are driven by market needs to meet future reliability requirements of the bulk power system as outlined in the Reliability Needs Assessment (RNA). Those solutions can include generation, transmission, and demand response programs. Market-based solutions are preferred by the NYISO’s planning process. The NYISO is responsible for evaluating all solutions to determine if they will meet the identified reliability needs in a timely manner.

Megawatt (MW): A measure of electricity that is the equivalent of 1 million watts. It is generally estimated that a megawatt provides enough electricity to supply the power needs of 800 to 1,000 homes.

Megawatt-Hour (MWh): A megawatt-hour is equal to one megawatt of energy produced or consumed continuously for one hour.

New York Independent System Operator (NYISO): Formed in 1997 and commencing operations in 1999, the NYISO is a not-for-profit organization that manages New York’s bulk power system, administers the state’s competitive wholesale electricity markets, provides system and resource planning for the state’s bulk power system, and works to advance the technology serving the power system. The organization is governed by an independent Board of Directors and a governance structure made up of committees, with market participants and stakeholders as members.

New York Control Area (NYCA): The area under the electrical control of the NYISO. It includes the entire state of New York, divided into 11 load zones.

New York Power Pool (NYPP): Established in 1966 in response to the Northeast Blackout of 1965, a voluntary collaboration of the state’s six investor-owned utilities plus New York’s two power authorities, created to coordinate the operations of the New York State power grid. The NYISO assumed this responsibility in 1999.

North American Electric Reliability Corporation (NERC): The not-for-profit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid. NERC’s jurisdiction includes users, owners, and operators of the bulk power system.

Peak Load: The maximum power demand on the electric grid measured in megawatts (MW). Peak load, also known as peak demand, reflects the highest average hourly demand experienced on the system.

Peakers: Peaking power plants, also known as peaker plants or just “peakers”, are power plants that generally run only when there is a high demand — known as peak demand — for electricity.

Public Policy Transmission Planning: Part of the NYISO’s Comprehensive System Planning Process. Public Policy Transmission Planning consists of two steps: (1) identification of transmission needs driven by Public Policy Requirements that should be evaluated by the NYISO; and (2) requests for specific proposed transmission solutions to address those needs, and the evaluation of those specific solutions. The New York State Public Service Commission identifies transmission needs driven by Public Policy Requirements and warranting evaluation, and the NYISO requests and evaluates specific proposed transmission solutions to address such needs.

Real-Time Markets: A NYISO-administered wholesale electricity market in which electricity and ancillary services are settled every five minutes. The Real-Time Market addresses changes in operating conditions relative to what was anticipated in the Day-Ahead Market. For instance, changes to load or anticipated generator
output are accounted for in the Real-Time Market through a competitive auction process.

**Regional Greenhouse Gas Initiative (RGGI):** The first market-based regulatory program in the United States to reduce greenhouse gas emissions. RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.

**Regulated Backstop Solutions:** Proposals required of certain Transmission Owners to meet reliability needs as outlined in the Reliability Needs Assessment. Those solutions can include generation, transmission, or demand response. Non-Transmission Owner developers may also submit regulated solutions. The NYISO may call for a gap solution if neither market-based nor regulated backstop solutions meet reliability needs in a timely manner. To the extent possible, the gap solution should be temporary and strive to ensure that market-based solutions will not be economically harmed. The NYISO is responsible for evaluating all solutions to determine if they will meet identified reliability needs in a timely manner.


**Reliability Needs Assessment (RNA):** A report that evaluates resource adequacy and transmission system security over a 10-year planning horizon, and identifies future needs of the New York electricity grid. It is the first step in the NYISO’s reliability planning process.

**Renewable Energy Credit (REC):** A mechanism to link the environmental attributes associated with certain forms of renewable energy generators with the energy produced by those generators. One REC equates to one MWh of energy generated from eligible renewable energy resources. In New York State, NYSERDA procures REC from eligible resources to incentivize development of renewable resources and measure compliance with the renewable energy goals of the state’s Clean Energy Standard (CES).

**Resource Adequacy:** The ability of the electric system to supply electrical demand and energy requirements at all times, taking into account scheduled and unscheduled outages of system elements. A system is considered adequate if the probability of having sufficient resources to meet expected demand is greater than the minimum standards to avoid a blackout.

**Special Case Resources (SCR):** A NYISO reliability-based demand response program designed to reduce power usage by businesses and large power users qualified to participate in the NYISO’s installed capacity (ICAP) market. SCRs are awarded capacity payments for agreeing to reduce their load on the system upon NYISO request.

**Thermal Line Limits:** The maximum amount of electrical energy that can flow on a transmission line without overheating the line.

**Transfer Capability:** The amount of electricity that can flow on a transmission line at any given instant, respecting facility rating and reliability rules.

**Transmission Constraints:** Limitations on the ability of a transmission facility to transfer electricity.

**Transmission Security:** The ability of the electric system to withstand disturbances, such as electric short-circuits or unanticipated loss of system elements.

**Zero-Emission Credit (ZEC):** A mechanism to link the environmental attributes associated with the energy produced by certain eligible zero-emission generators. In New York, one ZEC equates to one MWh of energy generated by eligible nuclear generators. NYSERDA procures ZECs to measure compliance with the obligations under the State’s Clean Energy Standard.