

2020 Integrated Resources Plan Glossary

Term	Definition	Explanation
ACⁱ	Alternating current	A type of electric current that reverses direction many times per second at regular intervals; used by most electric utilities in the United States
ACPⁱ	Alternative Compliance Payment	A state-established payment a retail electricity supplier makes to a state when its qualified renewable resources fall short of providing sufficient Renewable Energy Credits for meeting the state's Renewable Portfolio Standards.
AESC Price	Avoided Energy Supply Component Price	Price taken from 2018 Avoided Energy Supply Components in New England study
ASHP	Air source heat pump	An electric heating and cooling system that uses the differential between indoor and outdoor air temperatures to heat and cool a conditioned space.
BOEMⁱⁱ	Bureau of Ocean Energy Management	The Bureau with the federal Department of the Interior that manages the responsible development of America's offshore energy and mineral resources
BTM	Behind-the-meter	Energy demand or supply that occurs at the utility customer level.
BTU	British Thermal Unit	A unit of energy defined as the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit; natural gas is usually measured in MMBTU (million British Thermal Units)
C&I	Commercial and industrial	Acronym commonly used to describe programs specifically designed for large energy users.
C&LM	Conservation and Load Management	The plans, programs, and funding for energy efficiency and demand response in Connecticut authorized by CGS § 16-245m.
CASPRⁱ	Competitive Auctions with Sponsored Policy Resources	A market-based mechanism for accommodating the entry of New England state-sponsored new resources into the Forward Capacity Market; introduces a substitution auction to be held annually after the primary FCA that will enable new resources unable to acquire a capacity supply obligation (CSO) in the primary auction to obtain one from an existing resource that acquired one in the primary auction but is willing to permanently retire from all markets
CCISⁱ	Capacity Commitment Interconnection Service	An ISO capacity and energy requirement to ensure intra-zonal deliverability by avoiding the redispatch of other capacity network resources
CCPⁱ	Capacity Commitment Period	The one-year period from June 1 through May 31 of the following year for which Forward Capacity Market capacity supply obligations are assumed and payments are made
CES	Comprehensive Energy Strategy	A planning document prepared every three years by the Connecticut Department of Energy Environmental Protection, as required by CGS § 16a-3d, to provide any analysis and recommendations necessary to guide the

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		state's energy policy to meet greenhouse gas emission reduction requirements, as established in section 22a-200a, in the most cost-effective manner.
CMMS	Connecticut Comprehensive Materials Management Strategy	A roadmap to achieving the State's goal of 60 percent diversion of materials from disposal by 2024. It constitutes the revised statewide Solid Waste Management Plan called for by Public Act 14-94.
Cost-of-serviceⁱ		The amount of revenue a utility needs to operate and maintain facilities, cover capital expenses, and earn a profit.
CSOⁱ	Capacity supply obligation	A requirement for a resource to provide capacity, or a portion of capacity, to satisfy a portion of the ISO's Installed Capacity Requirement acquired through a Forward Capacity Auction, a reconfiguration auction, or a CSO bilateral contract through which a market participant may transfer all or part of its obligation to another entity
DC	Direct current	The flow of electric charge in a single direction.
DEEP	Department of Energy and Environmental Protection	The Connecticut Department of Energy and Environmental Protection (DEEP) is charged with conserving, improving and protecting the natural resources and the environment of the state of Connecticut as well as making cheaper, cleaner and more reliable energy available for the people and businesses of the state. The agency is also committed to playing a positive role in rebuilding Connecticut's economy and creating jobs – and to fostering a sustainable and prosperous economic future for the state.
DERⁱⁱⁱ	Distributed energy resource	Electricity resources that are located on the distribution system, a distribution subsystem or behind a customer meter. They range from electric storage and intermittent generation to distributed generation, demand response, energy efficiency, thermal storage and electric vehicles and their charging equipment.
DGⁱ	Distributed generation	Generation provided by relatively small, on-site installations directly connected to distribution facilities or retail customer facilities and not the regional power system, which reduces the amount of energy the regional power system consumes and can alleviate or prevent regional power system transmission or distribution constraints or reduce or eliminate the need to install new transmission or distribution facilities.
DOER^{iv}	Massachusetts Department of Energy Resources	The Massachusetts Department of Energy Resources (DOER) develops and implements policies and programs aimed at ensuring the adequacy, security, diversity, and

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		cost-effectiveness of the Commonwealth's energy supply to create a clean, affordable and resilient energy future for all residents, businesses, communities, and institutions.
DRⁱ	Demand response	When a market participant reduces its consumption of electric energy from the network when instructed in exchange for compensation based on wholesale market prices. The ISO has operated three types of demand-response programs: those activated by price, those activated for reliability, and those that reduce on-peak consumption.
EDC	Electric distribution company	Regulated electric utilities that own the transmission and distribution network, but not generation resources. In Connecticut, this term refers to Eversource Energy and United Illuminating.
EFMP	Environmental and Fisheries Mitigation Plan	In accordance with Public Act 19-71, all offshore wind project bids must include a plan that describes how the proposal will avoid, minimize or mitigate any impacts to wildlife, natural resources, ecosystems, and traditional or existing water-dependent uses, such as fishing.
EJ^v	Environmental justice (community)	A U.S. census block group, as determined in accordance with the most recent census, for which 30% or more of the population consists of low income persons who are not institutionalized and have an income below 200% of the federal poverty level, or a distressed municipality, as defined in CGS § 32-9p(b).
EO3	Executive Order 3	This Order was issued Connecticut Governor Lamont in 2019. It expands the responsibilities of the Governor's Council on Climate Change, increases its membership, and directs the Department of Energy and Environmental Protection to evaluate pathways to transition to a 100 percent clean energy grid by 2040.
ESI	Energy Security Improvements	Market-based revisions implemented by ISO-NE at the direction of FERC to address and improve regional fuel security concerns.
ETU^{vi}	Elective transmission upgrade	When a transmission owner agrees to pay the full cost of any additions or modifications to the transmissions system in order to accommodate an upgrade.
EV	Electric vehicle	A vehicle that uses electricity to power the motor for propulsion.
E&AS	Energy and ancillary services	Two of ISO-New England's three wholesale electricity markets. The energy market is for trading electric energy.

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		The ancillary services market procures short-term reliability services.
FCAⁱ	Forward Capacity Auction	The annual auction of the Forward Capacity Market during which capacity resources compete to obtain a commitment to supply capacity in exchange for a market-priced capacity payment.
FCMⁱ	Forward Capacity Market	In the New England Balancing Authority Area, a locational capacity market whereby the ISO projects the needs of the power system three years in advance and then holds an annual auction to purchase power resources to satisfy the region's future needs.
FERCⁱ	Federal Energy Regulatory Commission	An independent federal agency that regulates the interstate transmission of natural gas, oil, and electricity to ultimately assist consumers in obtaining reliable, efficient, and sustainable energy services at a reasonable cost through appropriate regulatory and market means.
FPAⁱ	Federal Power Act	A law first enacted in 1920 and subsequently amended a number of times to, in part, (1) establish a five-member commission (now the Federal Energy Regulatory Commission) with authority over both the interstate transmission of electricity and the sale of hydropower at the wholesale level to ensure that rates are reasonable, nondiscriminatory, and just to the consumer; (2) coordinate hydroelectric projects in the United States and encourage the development of dams, reservoirs, and other types of hydro projects; and (3) broaden the commission's authority to incorporate fish and wildlife concerns regarding licensing, relicensing, and exemption procedures; regulate nonfederal hydropower projects; and support the comprehensive development of rivers for energy generation and other uses.
FPL^{vii}	Federal Poverty Level	A term referring to the measure of income level by household size issued every year by the Department of Health and Human Services (HHS). These measures provide are based on a simplification of the poverty thresholds issued each year by the Census Bureau and are used for administrative purposes such as determining financial eligibility for government programs.
GC3	Governor's Council on Climate Change	The GC3, originally established in 2015 by Governor Dannel P. Malloy's Executive Order No. 46, was formally tasked with examining the effectiveness of existing policies and regulations designed to reduce greenhouse gas emissions and identify new strategies to meet the state's

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		greenhouse gas emissions reduction target of 80% below 2001 levels by 2050. The Council was also tasked with developing a mid-term greenhouse gas reduction and to identify strategies to achieve the chosen target.
GHGⁱ	Greenhouse gas	Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include carbon dioxide, methane, nitrogen oxides, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
GW	Gigawatt	A unit of power equivalent to one million kilowatts.
GWSA	Global Warming Solutions Act	Connecticut Public Act 08-98 from 2008 which sets mandatory GHG reduction targets of 10% below 1990 levels by 2020 and 80% below 2001 levels by 2050.
HVDC	High-voltage direct current	Transmission cables that can efficiently transmit large amounts of power over long distances.
ICRⁱ	Installed capacity requirement	The minimum amount of resources (level of capacity) a balancing authority area needs in a particular year to meet its resource adequacy planning criterion, according to the Northeast Power Coordinating Council Reliability Reference Directory #1, <i>Design and Operation of the Bulk Power System</i> . This criterion states that the probability of disconnecting any firm load because of resource deficiencies must be, on average, less than once in 10 years.
IRP	Integrated Resources Plan	A planning document prepared by the Connecticut Department of Energy and Environmental Protection every two years according to Connecticut General Statute Section 16a-3a that is comprised of an assessment of the future electric needs and a plan to meet those future needs. It is “integrated” in that it looks at both demand side (conservation, energy efficiency, etc.) resources as well as the more traditional supply side (generation/power plants, transmission lines, etc.) resources in making its recommendations on how best to meet future electric energy needs in the state.
ISO(-NE)ⁱ	Independent System Operator (of New England)	An independent, federally regulated organization formed at the recommendation of the Federal Energy Regulatory Commission to impartially coordinate, control, and monitor the operation of a regional electric power system, including the dispatch of electric energy over the system and the monitoring of the electricity markets, for ensuring the safety and reliability of the system. ISO-NE is the Independent System Operator for the six New England states.

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LAI	Levitan Associates, Inc.	The consultant contracted by DEEP to prepare the modeling used in this IRP
LBW	Land-based wind	Electricity generated by wind turbines located on land.
LMG	Landfill methane gas	Electricity generated from burning the naturally occurring gas byproduct produced by decomposing organic material in landfills.
LMPⁱ	Locational marginal price	The calculated price of electric energy at a pricing node, load zone, reliability region, or the Hub based on the patterns of load, generation, and the physical limits of the transmission system.
LNGⁱ	Liquefied natural gas	Odorless, colorless, toxic, and noncorrosive natural gas (i.e., predominately methane with some ethane) that has been converted to liquid and approximately 1/600th of its volume for ease of storage and transport.
LRECⁱ	Low-carbon renewable energy credit	A tradable, nontangible commodity representing the eligible renewable generation attributes of 1 megawatt-hour of actual generation from a grid-connected, low-emitting renewable resource
LSEⁱ	Load-serving entity	An entity that secures and sells electric energy, transmission service, and related services to serve the demand of its end-use customers at the distribution level.
METUⁱ	Market Efficiency Transmission Upgrade	A type of transmission upgrade in ISO New England primarily designed to reduce the total net production cost to supply the system load, including the costs for electric energy, capacity, reserves, and losses and those associated with bilateral prices for electricity.
MIRA^{viii}	Materials Innovation and Recycling Authority	Connecticut's quasi-public organization responsible for the development and operation of systems and facilities that turn municipal solid waste into useful material to help meet the goals of the current Solid Waste Management Plan.
MOPRⁱ	Minimum Offer Price Rule	A Forward Capacity Market rule establishing a benchmark price called an offer-review trigger price, which forms the lower limit on offer prices the internal market monitor will review to prevent new resources from entering the FCM at prices below their costs, presuming that new supply offers below the threshold are not attempts to suppress the clearing price.
MR1^{ix}	Market Rule 1	Section III of the ISO Tariff that governs the operation of New England's wholesale electricity markets.
MSWⁱ	Municipal solid waste	Nonhazardous garbage generated and collected by municipalities that contains biogenic materials, such as paper, cardboard, food and yard waste, wood, and leather

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		products, and non-biomass materials, including plastics and other synthetics. Some MSW is burned at "waste-to-energy" combustion plants to produce steam or electricity; at landfills, methane gas released from MSW can be recovered, converted, and used as an energy source.
MWa	Average Megawatt	Equivalent to 1 MW delivered continuously for an entire year.
MWhⁱ	Megawatt hour	A unit for measuring electric power or the rate at which energy is produced or consumed; equal to 1,000 kilowatts of electricity used for one hour.
(NB)FMCC^x	(Non-bypassable) federally mandated congestion charge	By law, NBFMCCs are collected on electricity bills to cover certain costs approved by the Federal Energy Regulatory Commission (FERC) and various costs approved by the Public Utility Regulatory Authority.
NEPAⁱ	National Environmental Policy Act	US law requiring all branches of the federal government to properly assess the likelihood of significant effects on the environment of a potential major federal action and possible alternative actions before undertaking the action.
NEPOOLⁱ	New England Power Pool	A group formed in 1971 by the region's private and municipal utilities to foster cooperation and coordination among the utilities in the six-state region for ensuring a dependable supply of electricity.
NEPOOL GISⁱ	New England Power Pool (Generation Information System)	The New England Power Pool (NEPOOL) system for registering and tracking renewable energy generation and compliance with state and regional renewable energy requirements.
NESCOEⁱ	New England State Committee on Electricity	A not-for-profit entity organized under various state and federal laws and recognized by the Federal Energy Regulatory Commission; representing the collective perspective of the six New England governors in regional electricity matters and advancing the New England states' common interest in the provision of electricity to consumers at the lowest possible price over the long-term, consistent with maintaining reliable service and environmental quality.
NO_x^{xi}	Nitrogen oxides	A type of reactive gas released primarily from the burning of fuel.
NREL^{xii}	National Renewable Energy Laboratory	One of the U.S. Department of Energy's 17 national research laboratories. It is solely dedicated to securing America's energy future through renewable energy and energy efficiency.

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NYSERDA ^{xiii}	New York State Energy Research and Development Authority	Offers objective information and analysis, innovative programs, technical expertise, and funding to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce reliance on fossil fuels.
OATT ⁱ	Open Access Transmission Tariff	Section II of the ISO New England Transmission, Markets, and Services Tariff that aims to ensure that all transmission owners and transmission customers have fair and open access to transmission service in New England.
OFSA ^{xiv}	Operation Fuel Security Analysis	A study published by ISO New England in January 2018 that examines how anticipated generating resource and fuel-mix combinations in the future could affect reliable operation of the regional bulk power system during an entire winter period (December 1 through February 28).
OSW	Offshore wind	Power generated by wind turbines located in designated areas in the ocean.
PPF ⁱ	Pay-for-Performance	A Forward Capacity Market project to create strong financial incentives for all capacity suppliers, without exception , to maximize performance and availability during scarcity conditions (i.e., during operating-reserve deficiencies)—for ensuring that supply resources face appropriate market-based incentives and have the financial capability to undertake cost-effective investments that improve resource performance and power system reliability.
PPA ⁱ	Power Purchase Agreement	A contract between an entity that generates electricity (the seller) and one looking to purchase electricity (the buyer).
PPTU ⁱ	Public policy transmission upgrade	Improvements or additions to the regional transmission system designed to meet state, federal, and local (i.e., municipal and county) public policy requirements identified as driving transmission needs.
PTF ⁱ	Pool transmission facility	A facility rated 69 KV or above owned by a participating transmission owner over which the ISO has operating authority in accordance with the terms set forth in the Transmission Operating Agreements.
PURA	Public Utility Regulatory Authority	The state agency that is statutorily charged with regulating the rates and services of Connecticut's investor owned electricity, natural gas, water and telecommunication companies and is the franchising authority for the state's cable television companies. PURA replaces the former Department of Public Utility Control.
PV	Photovoltaic	An electronic process that produces electricity using sunlight and semiconductors.

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RECⁱ	Renewable energy credit	A tradable, nontangible commodity representing the eligible attributes of 1 MWh of actual generation from a grid-connected renewable resource.
Reliabilityⁱ		The assurance that electric power is available even under adverse conditions, such as storms or outages of generation or transmission lines.
RFP	Request for proposal	A process used to solicit multiple bids, projects, or services.
RMRⁱ	Reliability must-run	An agreement made between the ISO and a generator owner whereby an approved generator continues to operate, even when it is not economical to do so, to ensure system reliability, and whereby the generation owner recovers the fixed costs for this operation
RNSⁱ	Regional network service	The transmission service over the pool transmission facilities (PTFs), including services used for network resources or regional network load not physically interconnected with a PTF.
ROEⁱ	Return on equity	A measure of how much income (i.e., profit) a company generates with the equity available to it from shareholders, equal to net income divided by shareholders' equity.
RSIP	Residential Solar Incentive Program	A program defined by Connecticut General Statutes Section 16-245ff and administered by the Connecticut Green Bank that provides financial incentives for residential customers to install solar photovoltaic systems on their property.
RTOⁱ	Regional Transmission Organization	An independent regional transmission operator and service provider established by the US Federal Energy Regulatory Commission (FERC) and that meets FERC's RTO criteria, including those related to independence and market size. The RTO controls and manages the high-voltage flow of electricity over an area generally larger than the typical power company's service territory for its distribution system.
RTR	Renewable technology resource	Generating capacity resources that were exempt from offer review trigger price mitigation in Forward Capacity Auctions 9 through 12, and satisfy the requirements of ISO Tariff Section III.13.1.1.1.7.
RTUⁱ	Reliability Transmission Upgrade	A transmission addition or upgrade necessary to ensure the system's continued reliability and not necessary to support a generator interconnection.
SCC Price	Social Cost of Carbon Price	

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SEA	Sustainable Energy Advantage	Consultant contracted by DEEP to prepare the modeling of a biomass RPS eligibility phase-down.
SO_x (SO₂)	Sulphur oxides (sulphur dioxide)	
Spinning reserveⁱ		On-line operating reserve capability in excess of load and synchronized to the system, which a generator can fully convert into electric energy within 10 minutes after receiving a request from the ISO to do so.
TOⁱ	Transmission owner	An entity that owns and maintains transmission facilities.
(T-)RPSⁱ	(Thermal) renewable portfolio standard	A state policy target for load-serving entities (LSEs) in that state to meet the future demand for electric energy using new or existing renewable energy resources. LSEs can satisfy their RPS obligations by obtaining generation from a variety of renewable technologies, located either within New England or within adjacent balancing authority areas, and by acquiring Renewable Energy Certificates (RECs) from eligible renewable resources qualified by each state.
UI	United Illuminating	One of Connecticut's two EDCs. Its territory primarily covers New Haven County.
VDER	Value of Distributed Energy Resources in Connecticut Study	A joint study conducted by the Connecticut Department of Energy and Environmental Protection and the Public Utilities Regulatory Authority pursuant to Section 6 of Public Act 19-35 that provides a high-level analysis of distributed energy resources and quantifies the value of benefits.
VERⁱ	Variable energy resource	A resource whose output amount and availability are intermittent and not subject to the control of ISO New England or the power plant operator because of the variable source of fuel (e.g., wind, solar, run-of-river hydro) that the resource uses or the contractual obligations (e.g. qualifying facilities). IPRs can be resources having less than 5 MW operating within the distribution system.
VNM	Virtual net metering	A compensation structure that allows customers who operate behind-the-meter generation to assign surplus generation to other metered accounts that are not physically connected to the generator.
WTE	Waste-to-energy	A power generation plant that municipal solid waste to produce steam in a boiler that is used to generate electricity.
WTG^{xv}	Wind turbine generator	Power generator equipment that relies on propeller-like blades which rotate around a rotor to spin a generator and create electricity.

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ZREC ⁱ	Zero-emission renewable energy certificate	A market-priced product in Connecticut representing the positive environmental attributes associated with each megawatt-hour of electricity produced by a zero-emission form of generation, such as solar photovoltaics, wind, and some small hydroelectric facilities, which the system owner can sell to its local utility, earning a financial benefit in addition to selling the energy the facility produced. The utilities use the resulting ZRECs for compliance with the state’s Renewable Portfolio Standards.

ⁱ ISO New England. Glossary and Acronyms. <https://www.iso-ne.com/participate/support/glossary-acronyms>

ⁱⁱ Bureau of Ocean Energy Management. About BOEM Fact Sheet. January 2021.

<https://www.boem.gov/sites/default/files/documents/newsroom/fact-sheets/BOEM-FactSheet-About.pdf>

ⁱⁱⁱ FERC. Order 2222. *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*. September 17, 2020.

https://www.ferc.gov/sites/default/files/2020-09/E-1_0.pdf

^{iv} Massachusetts Department of Energy Resources. <https://www.mass.gov/orgs/massachusetts-department-of-energy-resources>

^v Conn. Gen. Stat. § 22a-20a

^{vi} ISO New England. Open Access Transmission Tariff- Schedule 25. *Elective Transmission Upgrade Interconnection Procedures*. https://www.iso-ne.com/static-assets/documents/2015/02/sch_25.pdf

^{vii} U.S. Department of Health & Human Services. Poverty Guidelines. January 15, 2021.

<https://aspe.hhs.gov/poverty-guidelines>

^{viii} Materials Innovation and Recycling Authority. <https://www.ctmira.org/>

^{ix} ISO New England. Market Rule 1. <https://www.iso-ne.com/participate/rules-procedures/tariff/market-rule-1>

^x Office of the Consumer Council. Electricity Bill/Rate Components.

[https://portal.ct.gov/OCC/Electricity/Electricity/Electricity#:~:text=Non%2DBypassable%20Federally%20Mandated%20Congestion,16%2D%201\(35\)\)](https://portal.ct.gov/OCC/Electricity/Electricity/Electricity#:~:text=Non%2DBypassable%20Federally%20Mandated%20Congestion,16%2D%201(35)))

^{xi} U.S. Environmental Protection Agency. Basic Information About NO₂. <https://www.epa.gov/no2-pollution/basic-information-about-no2#What%20is%20NO2>

^{xii} National Renewable Energy Laboratory. <https://www.nrel.gov/>

^{xiii} NYSERDA. History of NYSERDA. <https://www.nyserdan.ny.gov/About/History-of-NYSERDA>

^{xiv} ISO New England. Operational Fuel-Security Analysis Key Project. <https://www.iso-ne.com/committees/key-projects/implemented/operational-fuel-security-analysis>

^{xv} U.S. Department of Energy. How Do Wind Turbines Work? <https://www.energy.gov/eere/wind/how-do-wind-turbines-work>