### TYPES OF TRANSMISSION UPGRADES

Attachment N of the OATT, “Procedures for Regional System Plan Upgrades,” defines several categories of transmission upgrades that can be developed to address various types of defined system needs, such as reliability and market efficiency.[[1]](#footnote-1) Transmission upgrades resulting from system changes proposed by individual proponents include, for example, generator-interconnection-related upgrades and elective transmission upgrades (ETUs).

#### Reliability Transmission Upgrades

*Reliability transmission upgrades* (RTUs) are necessary to ensure the continued reliability of the New England transmission system, in compliance with applicable reliability standards. An RTU also may provide market-efficiency benefits. To identify the transmission system facilities required to maintain reliability and system performance, the ISO evaluates the following factors using reasonable assumptions for forecasted load and the availability of generation and transmission facilities:

* Known changes in available supply resources and transmission facilities, such as anticipated transmission enhancements, considering elective transmission upgrades and merchant transmission facilities (see below); the addition of generators and demand resources; resource retirements; and maintenance schedules, forced outages, and other unavailability factors
* Forecasted load, which accounts for growth, reductions, and redistribution throughout the grid
* Acceptable stability response
* Acceptable short-circuit performance
* Acceptable voltage levels
* Adequate thermal capability
* Acceptable system operability and responses (e.g., automatic operations, voltage changes)

#### Market Efficiency Transmission Upgrades

*Market efficiency transmission upgrades* (METUs) are primarily designed to reduce the total net production cost to supply the system load. The ISO categorizes a proposed transmission upgrade as a METU when it determines that the net present value of the net savings in the total cost to supply system load with and without the METU is greater than the net present value of the carrying cost of the identified upgrade. Analyses can include historical information from market reports and special studies, for example, and they report on cumulative net present value annually over the study period.

#### PUBLIC POLICY TRANSMISSION UPGRADES

A *public policy transmission upgrade* (PPTU) is an addition or upgrade designed to meet transmission needs driven by public policy requirements. The ISO conducts the public policy planning process, as set out in Attachment K.[[2]](#footnote-2)

#### Generator-Interconnection-Related Upgrades

A *generator-interconnection-related upgrade* is an addition or modification to the New England transmission system for interconnecting a new or existing generating unit whose capability to provide energy or capacity is materially changing and increasing, whether or not the interconnection is for meeting the Network-Capability Interconnection Standard or the Capacity-Capability Interconnection Standard.[[3]](#footnote-3) The costs for this upgrade typically are allocated to the generator owner in accordance with the OATT.

#### Elective Transmission Upgrades

An *elective transmission upgrade* is an interconnection or upgrade to the pool transmission facilities (PTFs) that are part of the New England transmission system and subject to the ISO’s operational control pursuant to an operating agreement.[[4]](#footnote-4) ETUs are independently developed facilities funded by one or more entities that have agreed to pay for all the costs of the upgrade and thus assume the full market risk of development.

The ETU process is the mechanism available to integrate new merchant transmission facilities into the regional transmission system. The process provides an option for project sponsors to propose, develop, and fund transmission development within New England or connecting to neighboring systems.[[5]](#footnote-5) Such transmission may result in strengthening electrically weak portions of the regional transmission network, enhancing generator deliverability, or facilitating the integration of renewable resources.

The ETU interconnection procedures have requirements and obligations similar to those of generators, so that ETUs can establish and maintain a meaningful position in the ISO Interconnection Request Queue (the queue).[[6]](#footnote-6) The ETU interconnection service allows certain tie lines with neighboring areas to be designed to deliver capacity into New England and have these interconnection service rights preserved as the New England system changes over time. The market rules ensure that these resources can deliver capacity and energy into the wholesale power markets.

1. See the OATT, Section II.B, Attachment N, “Procedures for Regional System Plan Upgrades,”
<http://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_2/oatt/sect_ii.pdf>. [↑](#footnote-ref-1)
2. See the OATT, Section 4A, “Public Policy Transmission Studies; Public Policy Transmission Upgrades,” see link above. [↑](#footnote-ref-2)
3. The Network-Capability Interconnection Standard is an energy-only standard that includes the minimum criteria required to permit a generator to connect to the transmission system so that it has no adverse impacts on the reliability, stability, or operation of the system, including the degradation of transfer capability for interfaces affected by the generating facility. The Capacity-Capability Interconnection Standard is a capacity and energy standard that includes the same criteria as the Network-Capability Interconnection Standardbut also includes criteria to ensure intrazonal deliverability by avoiding the redispatch of other capacity network resources. The OATT, Section 22, defines the standards; <http://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_2/sch22/sch_22_lgip.pdf>. Also see Schedule 23 for small generator interconnections and applications for new interconnections[;](file:///C%3A%5CUsers%5Ccwendel%5CDocuments%5C2017%20Reports%5CRSP17%5CPublic%20Meeting%20Draft%5C%3B) <https://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_2/sch23/sch_23_sgip.pdf>. [↑](#footnote-ref-3)
4. *Pool transmission facilities* are the facilities rated 69 kilovolts (kV) or above owned by the participating transmission owners, over which the ISO has operating authority in accordance with the terms set forth in the Transmission Operating Agreements. Refer to the OATT, Section II.49, 109, for additional specifications, <http://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_2/oatt/sect_ii.pdf>. See Schedule 25 of the OATT for additional information on ETUs. [↑](#footnote-ref-4)
5. An *internal ETU* is a transmission facility with interconnection points located solely within the New England Control Area; it would receive a right to interconnect to the system subject to meeting all the requirements specified in an Interconnection Agreement (e.g., completing the upgrades required to accommodate the requested interconnection). An *external ETU* is a transmission facility that will interconnect the New England Control Area with another control area. If they complete all the required milestones, external ETUs can receive Capacity Network Import Interconnection Service (CNI Interconnection Service) for capacity, or Network Import Interconnection Service (NI Interconnection Service) for energy. For more information, See the OATT, Schedule 25, *Elective Transmission Upgrade Interconnection Procedures* (January 29, 2019), <https://www.iso-ne.com/static-assets/documents/2015/02/sch_25.pdf>. [↑](#footnote-ref-5)
6. The *ISO’s Interconnection Request Queue* lists the status of requests for the interconnection of new or *uprated* (i.e., increased capacity) generating facilities to the ISO New England-administered transmission system; It also includes elective transmission upgrades and transmission service requests. [↑](#footnote-ref-6)