

RSP Project List and Asset Condition List March 2024 Update



Planning Advisory Committee Meeting

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Highlights of the RSP Project List Update

- **Major cost estimate changes greater than \$5M that occurred between the October 2023 and March 2024 Project List**
 - None
- **Three new projects**
 - (MA) Total of one project
 - Western and Central MA 2028 Short Circuit Solutions – one project
 - (ME) Total of one project
 - UME 2029 Solutions – one project
 - (RI) Total of one project
 - RI 2028 Short Circuit Solutions – one project
- **Four upgrades have been placed in-service since the October 2023 update**
 - (NH) Total of one project
 - NH 2029 Solutions – one project
 - (CT) Total of three projects
 - Eastern CT 2029 Solutions – three projects
- **One cancelled project since the October 2023 update**
 - (ME) UME 2029 Solutions
 - Install three remotely monitored and controlled switches to split the existing Orrington reactors between the two Orrington 345/115 kV autotransformers
 - This project was replaced with the new project (discussed on the next slide)
 - [The UME 2029 Solutions Addendum](#) was published in January 2024



March 2024 RSP Project List Update

- **Three New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner	Improvement/Need
1914	Install a new 80 MVAR reactor, reconfigure the existing two reactors at the 345 kV Orrington substation (Maine) UME 2029 Solutions	3.5	Versant Power	Resolve high voltage violations
1915	Replace three 115 kV circuit breakers at the Woonsocket substation (Rhode Island) RI 2028 Short Circuit Solutions	1.5	Rhode Island Energy	Resolve short circuit issues
1916	Replace two 115 kV circuit breakers at the Millbury substation (Massachusetts) Western and Central MA 2028 Short Circuit Solutions	0.8	National Grid, USA	Resolve short circuit issues



March 2024 RSP Project List Update, cont.

- **Four Projects Placed In-Service and Corresponding Needs**

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner	Improvement/Need
1853	Convert Gales Ferry substation from 69 kV to 115 kV (Connecticut) Eastern CT 2029 Solutions	17.3	Eversource	Resolve thermal overloads
1862	Install a +55/-29 MVAR synchronous condenser with two 115 kV breakers at Shunock (Connecticut) Eastern CT 2029 Solutions	40.5	Eversource	Resolve high and low voltage violations
1881	Install two 50 MVAR capacitors on Line 363 near Seabrook station with three 345 kV breakers (New Hampshire) NH 2029 Solutions	26.6	New Hampshire Transmission	Resolve low voltage violations
1904	Convert 69 kV equipment at Buddington to 115 kV to facilitate the conversion of the 400-2 line to 115 kV (Connecticut) Eastern CT 2029 Solutions	6.3	CMEEC	Resolve thermal overloads



March 2024 RSP Project List Update, cont.

- **Cost Estimate Comparisons of Reliability Projects October 2023 vs. March 2024 Update***

	As of October 2023 Plan Update (in millions \$)	As of March 2024 Plan Update (in millions \$)	Change in Plan Estimate (in millions \$)
MAJOR PROJECTS ***			
Southeast Massachusetts/Rhode Island Reliability (SEMA/RI)	435	436	0
Greater Boston - North, South, Central, and Western Suburbs	1200	1200	0
Eastern CT 2029 Solutions	260	260	0
New Hampshire (NH) 2029 Solutions	159	159	0
Upper Maine (UME) 2029 Solutions	164	167	3
SUBTOTAL **	2218	2222	3
OTHER PROJECTS	11139	11138	-1
NEW PROJECTS ****	0	2	2
TOTAL **	13358	13362	4
Minus 'in-service'	-11989	-12080	-91
Aggregate estimate of active projects in the Plan **	1369	1282	-87

* Transmission Owners provided all estimated costs, which may not meet the guidelines described in Planning Procedure 4, Attachment D.

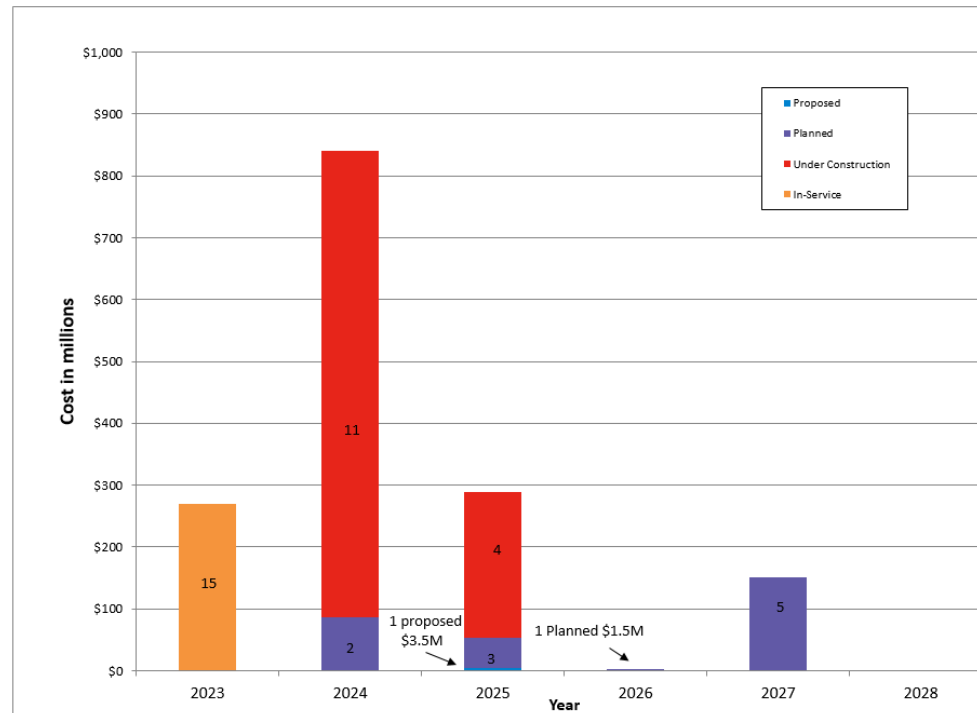
** May not sum exactly due to rounding.

*** The cost estimates for projects in the "Major Projects" category are moved to the "Other Projects" category once they are fully completed.

**** The cost estimates for "New Projects" do not include the estimated costs of the new project (Project 1914) which is part of the UME 2029 Solutions.

March 2024 RSP Project List Update, cont.

- Investment of New England Transmission Reliability Projects by Status through 2028

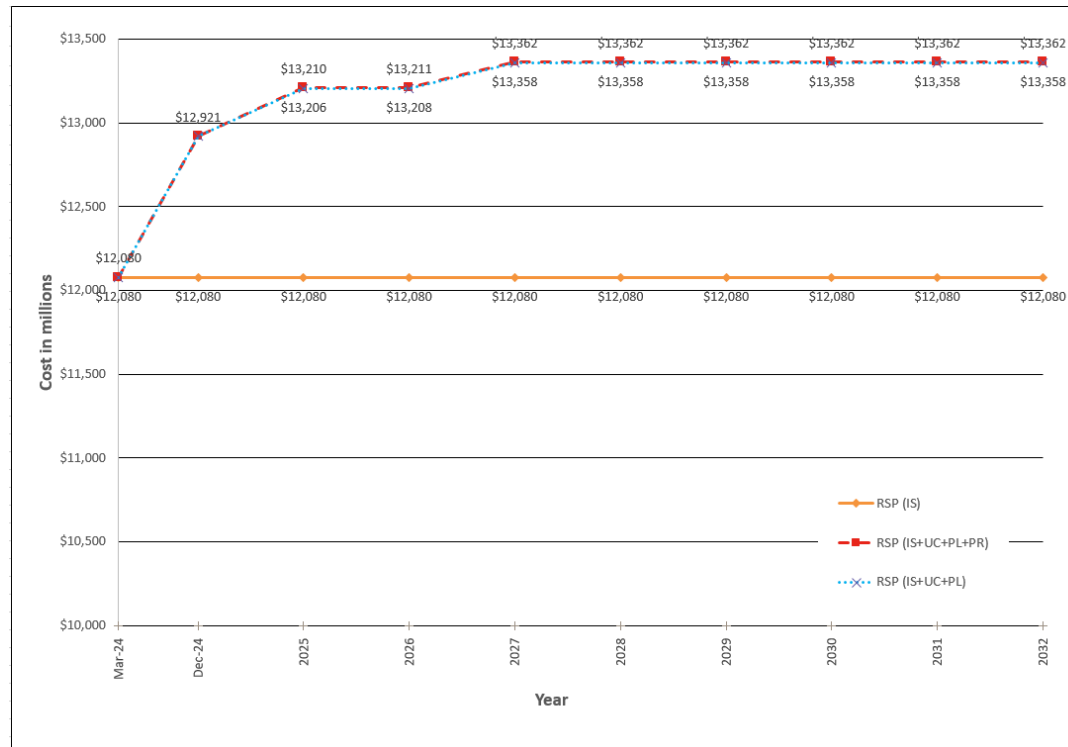


* Numbers shown represent project quantities.

** Future total \$ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

March 2024 RSP Project List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects through 2032



* IS – In Service, UC – Under Construction, PL – Planned, PR – Proposed

** Future total \$ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

March 2024 RSP Project List Update, cont.

- Reliability Project Counts and Aggregated Cost Estimates by Project Stage with Applied Accuracy Ranges*

Project Stage (Status)	Component / Project / Plan Count	Estimate Range		Estimated Costs (\$millions)		Range	
		Minimum	Maximum			Minimum (\$millions)	Maximum
Proposed	1	-25%	25%**		4	3	4
Planned	11	-25%	25%		287	215	358
Under Construction	15	-10%	10%		992	893	1091
Total Plan	27			***	1282	1110	1454
In-Service	4	-10%	10%		91	82	100
Cancelled	1	-25%	25%		1	1	1

* All costs are provided by Transmission Owners. The costs in the table reflect all projected in-service dates.

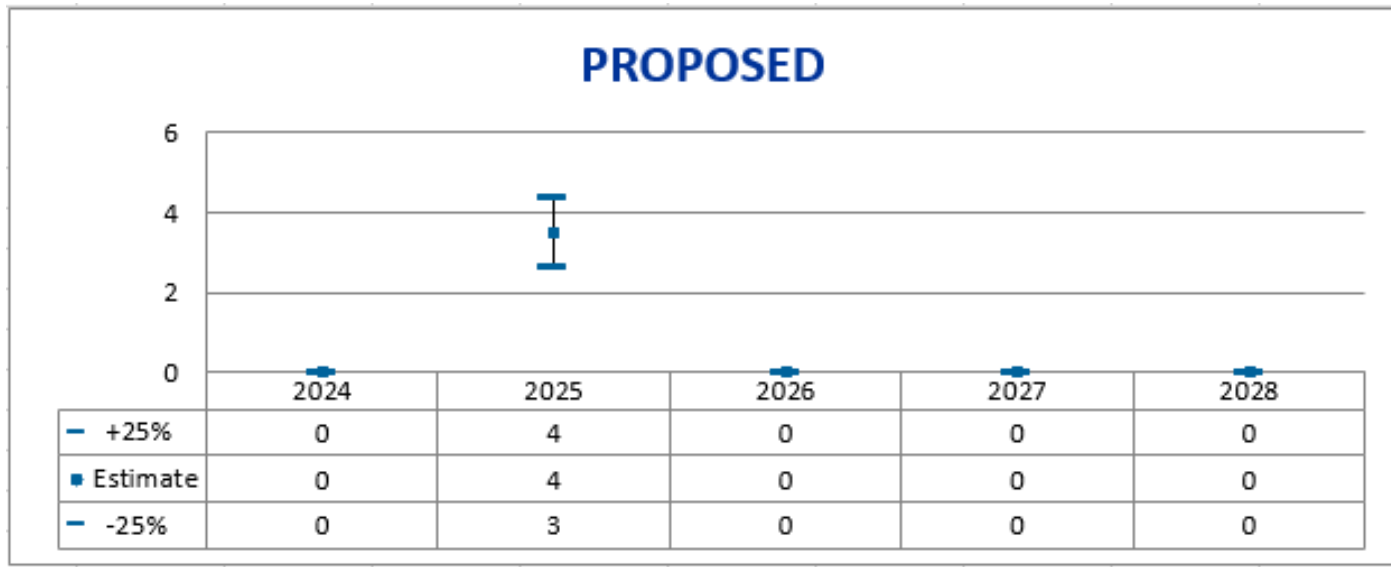
** All estimates may not yet be at this level of accuracy; many estimates may be -25%/+50%.

*** May not add up due to rounding.

**** In-Service projects are those projects that went into service since the last update.

March 2024 RSP Project List Update, cont.

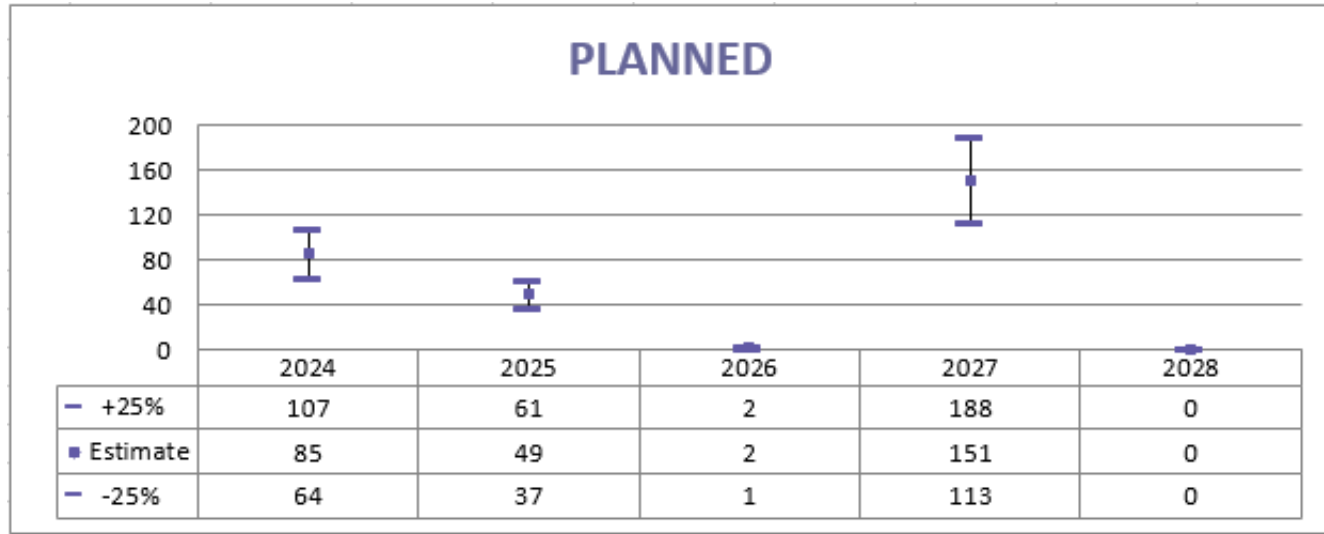
- Project Cost Estimate Tolerances by Status and Year in Millions \$ for the next five years



* Future total \$ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

March 2024 RSP Project List Update, cont.

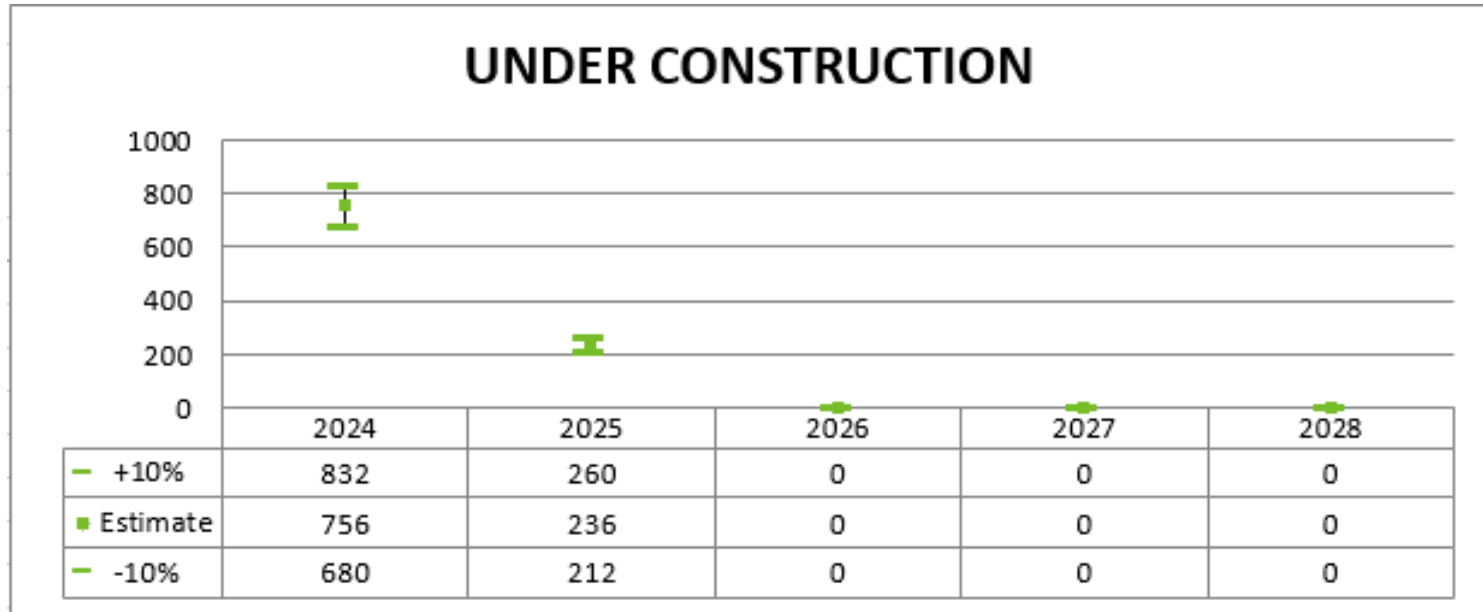
- Project Cost Estimate Tolerances by Status and Year in Millions \$ for the next five years



* Future total \$ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

March 2024 RSP Project List Update, cont.

- Project Cost Estimate Tolerances by Status and Year in Millions \$ for the next five years



* Future total \$ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

Status of Major Transmission Projects

	PPA	TCA	Construction
Southeast MA/RI Reliability (SEMA/RI)	Approved 5/2017, 4/2018	Submitted	Project completion 2018-2027
Greater Boston – North, South, Central and Western Suburbs	Approved 4/2015, 5/2015, 6/2016, 7/2019, 10/2020	Submitted	Project completion 2010-2025
Eastern CT 2029 Solutions	Approved 6/2021	Submitted	Project completion 2021-2024
New Hampshire (NH) 2029 Solutions	Approved 1/2022, 6/2022	Submitted	Project completion 2023 - 2024
Upper Maine (UME) 2029 Solutions	Approved 2/2022 (Versant Power) Approved 5/2022, 8/2023 (Avangrid)	Not Submitted	Project completion 2024-2027

ASSET CONDITION LIST UPDATE

March 2024 Asset Condition List Update

- **11 New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
424	A152 Structure Replacement Project (New Hampshire)	5.9	Eversource
425	M127 Structure Replacement Project (New Hampshire)	9.8	Eversource
426	T-172N Woonsocket-Hartford Ave-West Farnum 115 kV Line Reconductoring (Rhode Island)	10.4	Rhode Island Energy
427	S-171N Woonsocket-Hartford Ave-West Farnum 115 kV Line Reconductoring (Rhode Island)	10.4	Rhode Island Energy
428	M13 Dexter-MA/RI Border and EMI Tiverton-Tiverton Power 115 kV Line Rebuild (Rhode Island)	27.3	Rhode Island Energy
429	L14 Dexter-MA/RI Border and EMI Tiverton-Tiverton Power 115 kV Line Rebuild (Rhode Island)	27.3	Rhode Island Energy
430	E183W Franklin Sq – Wampanoag 115 kV Line Rebuild (Rhode Island)	10.6	Rhode Island Energy
431	Hurd State Park and CT River Crossing Rebuild Project - Lines 362, 376, 1772 (Connecticut)	43.6	Eversource



March 2024 Asset Condition List Update, cont.

- **11 New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
432	Reconductoring East of Hurd State Park to Haddam Neck - Lines 362, 376, 1772 (Connecticut)	13.3	Eversource
433	A-201 & B-202 230kV Line Asset Condition Project (New Hampshire)	*	National Grid, USA
434	Targeted Refurbishment to Replace deteriorated structures and install OPGW on M-165 line (~5 miles) (New Hampshire)	15.2	National Grid, USA

* No cost is required for project with a Concept status.



March 2024 Asset Condition List Update, cont.

- **14 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
26	Rebuild Bourne Substation as a breaker and one half scheme (Massachusetts)	69.8	Eversource
27	Kingston Substation #735 Asset Condition Replacement (Massachusetts)	10.4	Eversource
43	K Street #385 115 kV Control House (Massachusetts)	18.4	Eversource
63	Lexington Station #320 Asset Condition Upgrade Project (Massachusetts)	16.6	Eversource
213	115 kV Wood Pole Replacement – 1000 Line (Connecticut)	13.7	Eversource
280	Webster-Beebe River 115 kV Corridor Asset Condition and OPGW Project - E115 Line (New Hampshire)	64.1	Eversource
281	Webster-Beebe River 115 kV Corridor Asset Condition and OPGW Project - Z180 Line (New Hampshire)	14.5	Eversource
361	115 kV Lattice Tower and Shield Wire Replacements - 1261/1598 Line (Connecticut)	7.3	Eversource



March 2024 Asset Condition List Update, cont.

- **14 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
371	South Naugatuck to Devon Rebuild - Segment 1 (Stevenson substation - Pootatuck substation) (Connecticut)	87.3	Eversource
392	NH Wood Structure Replacements and OPGW Installation - S153 Line (New Hampshire)	5.0	Eversource
394	NH Wood Structure Replacements and OPGW Installation - E194 Line (Connecticut)	8.7	Eversource
395	NH Wood Structure Replacements and OPGW Installation - U181 Line (New Hampshire)	8.5	Eversource
397	NH Wood Structure Replacements and OPGW Installation - 307 Line (New Hampshire)	9.4	Eversource
415	Structure Replacements & OPGW Installations - 1726 Line (Connecticut)	8.9	Eversource



March 2024 Asset Condition List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects and Asset Condition through 2032



* IS – In Service, UC – Under Construction, PL – Planned, PR – Proposed

** Future total \$ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

Questions



APPENDIX



Project Listing

- **Project Listing Column Definitions for**
 - Reliability Projects
 - Interconnection Projects
 - Market Efficiency Upgrades
 - Elective Projects

Project Listing – Column Definitions, cont.

- **Part Number (Part #)**

- The Part #'s designate the 'need' category of the project*
 - Part 1: these projects are Reliability Upgrades
 - » 1a Planned (must be the preferred solution to solve the needs and have I.3.9 approval) or Under Construction
 - » 1b Proposed (is supported by a Solutions Study or a Competitive Solution Process)
 - Part 2: these projects are Generator Interconnection Upgrades
 - » 2a Planned (I.3.9 approval with Interconnection Agreement including FCM related transmission upgrades to meet the Capacity Capability Interconnection Standard), or Under Construction
 - » 2b Proposed (at a minimum, a completed System Impact Study and I.3.9 approval but no Interconnection Agreement)
 - Part 3: these projects are Market Efficiency Upgrades
 - » 3a Planned (must be the preferred solution to solve the needs and have I.3.9 approval) or Under Construction
 - » 3b Proposed (is supported by a Competitive Solution Process)
 - Part 4: these projects may be promoted by any entity electing to support the cost of transmission changes. The entity sponsoring the changes will have their own justification for their actions
 - » 4a Planned (I.3.9 approval with Interconnection Agreement) or Under Construction
 - » 4b Proposed (I.3.9 approval but without Interconnection Agreement)

* Original categories are not changed when a project is placed 'In-Service' or 'Cancelled'.

Project Listing – Column Definitions, cont.

- **Project ID**
 - The Project ID is generated by ISO-NE System Planning
- **Primary Equipment Owner**
 - The company listed here is the responsible equipment owner/provider designated to design and implement the project
- **Other Equipment Owner**
 - For projects that involve multiple Transmission Owners, the company listed here is also a responsible equipment owner/provider designated to design and implement the project
- **Projected Month/Year of In-Service**
 - The month/year entered is the date the project is expected to be placed in service
- **Major Project**
 - Name is given to a project that consists of smaller subprojects
- **Project/Project Component**
 - The month/year entered is the date the project is expected to be placed in service
 - A brief, high-level description of the project is entered here
 - Includes major pieces of substation equipment and/or types of line work to be performed

Project Listing – Column Definitions, cont.

- **Status**

- In Service
 - The project has been placed in operation
- Under Construction
 - The project has received necessary approvals and a significant level of engineering or construction is underway
- Planned
 - A regulated transmission solution upgrade that has been approved by the ISO pursuant to Section I.3.9 of the Tariff, or
 - An interconnection related transmission upgrade that has been approved by the ISO pursuant to Section I.3.9 of the Tariff with Interconnection Agreement
- Proposed
 - A regulated transmission solution that has been selected by the ISO in response to a Needs Assessment and communicated to PAC, or
 - An interconnection related transmission upgrade that has been approved by the ISO pursuant to Section I.3.9 of the Tariff, but without Interconnection Agreement
- Cancelled
 - Project has been cancelled

* On December 10, 2019, FERC accepted Tariff changes that removed the 'Concept' category.

Project Listing – Column Definitions, cont.

- **PPA Approval (Review of Market Participant’s Proposed Plans)**
 - A date in this column signifies when the project received approval pursuant to Section I.3.9 of the ISO-New England Tariff. This approval indicates that the project will have no adverse impact on the stability, reliability, or operating characteristics of the system.
 - A ‘no’ indicates that an approval is required, but has not been received yet
 - An ‘NR’ indicates that an I.3.9 approval is not required
- **TCA Approval (Transmission Cost Allocation)**
 - A date in this column signifies when the project PTF costs were reviewed and approved. This approval indicates that it has been agreed whether, and by how much, the scope of the project and associated costs exceed regional needs
 - An ‘NR’ indicates that a TCA approval is not applicable because the project has been cancelled, has no/minimal PTF cost, or is associated with the interconnection of a resource or Elective Transmission Upgrade
- **Estimated Costs**
 - The PTF project cost estimate presented here should be the best estimate available. It is understood that the estimate accuracy may vary dependent on the maturity of the project. Accuracy tolerances for these estimates are targeted as follows:
 - Proposed Project that has been reviewed and approved to proceed by ISO-NE (+50%/-25%)
 - I.3.9-Approved Project (+/-25%), and
 - TCA-Approved Project (+/-10%)
 - An “NR” indicates that the project cost is not eligible for regionalization