

Regional System Plan

Transmission Projects and Asset Condition

June 2021 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 March and June 2021 Project List**
 - (MA) Build a new Seafood Way 115 kV Substation – cost reduction of \$14.6M to reflect the approved PTF costs
 - (NH) Seacoast New Hampshire Solution – cost reduction of \$12.0M to reflect the most up-to-date PTF costs
 - (RI) Eastern CT 2029 – cost reduction of \$8.9M to reflect the removal of asset condition costs from the total estimated costs
- **No new projects**
- **One upgrade has been placed in-service since the March 2021 update**
 - (MA) Greater Boston – Central
- **One project cancelled since the March 2021 update**
 - (MA) Install a 115 kV breaker at the North Oxford substation and segment the V-174 line. The project was cancelled as it is no longer needed. Cost reduction is \$3.0M



June 2021 RSP Project List Update

- **No New Projects**



June 2021 RSP Project List Update, cont.

- One Project Placed In-Service and Corresponding Needs

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Improvement/Need
1355	Split existing 110-522/240-510 DCT from Baker St. Station to Needham for a portion of the way and then install a new underground 115 kV line for the remainder of the way (Massachusetts) Greater Boston - Central	45.7	Resolve thermal overloads



June 2021 RSP Project List Update, cont.

- **Cost Estimate Comparisons of Reliability Projects October 2020 vs. March 2021 Update***

	As of Mar 2021 Plan Update (in millions \$)	As of Jun 2021 Plan Update (in millions \$)	Change in Plan Estimate (in millions \$)
MAJOR PROJECTS			
Southeast Massachusetts/Rhode Island Reliability (SEMA/RI)	359	359	0
Greater Boston - North, South, Central, and Western Suburbs	1043	1043	0
New Hampshire Solution - Southern, Central, Seacoast, Northern	369	357	-12
Eastern CT 2029	230	221	-9
Boston Area Optimized Solution (BAOS)	49	47	-2
SUBTOTAL **	2049	2026	-23
OTHER PROJECTS			
	10772	10754	-18
NEW PROJECTS			
	0	0	0
TOTAL **	12821	12780	-41
Minus 'in-service'	-11653	-11672	-19
Aggregate estimate of active projects in the Plan **	1168	1108	-60

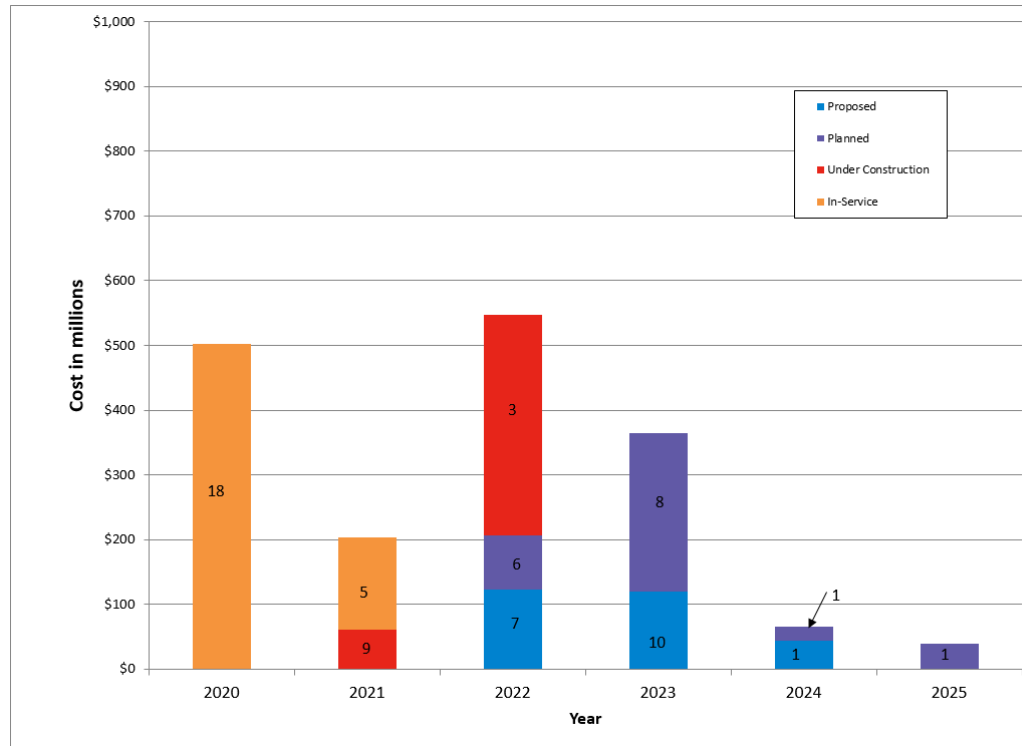
* Transmission Owners provided all estimated costs, which may not meet the guidelines described in Planning Procedure 4, Attachment D.

** 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.

June 2021 RSP Project List Update, cont.

- Investment of New England Transmission Reliability Projects by Status through 2025



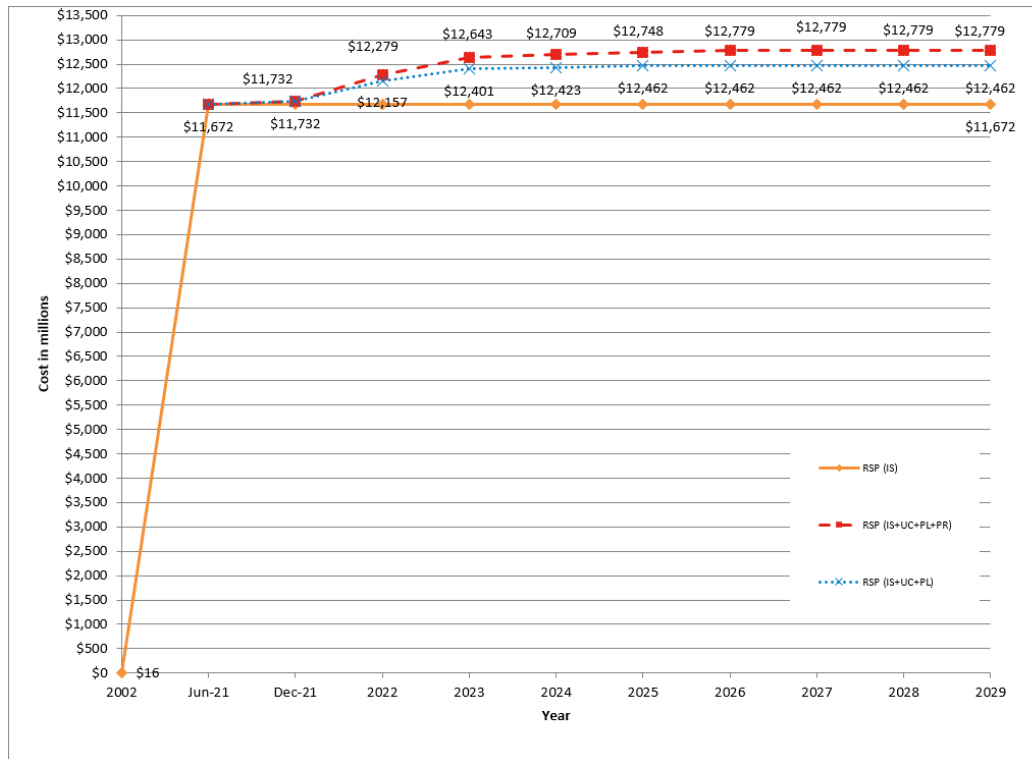
* Numbers shown represent project quantities.

** 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.



June 2021 RSP Project List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects through 2029



* 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.

June 2021 RSP Project List Update, cont.

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

Project Stage (Status)	Component /	Estimate Range		Estimated	Range	
	Project / Plan	Minimum	Maximum	Costs	Minimum	Maximum
	Count **			(\$millions)	(\$millions)	
Proposed	19	-25%	25%***	317	238	396
Planned	16	-25%	25%	390	292	487
Under Construction	12	-10%	10%	400	360	440
Total Plan	47			**** 1107	890	1324
In-Service	1	-10%	10%	46	41	50
Cancelled	1	-25%	25%	3	2	4

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

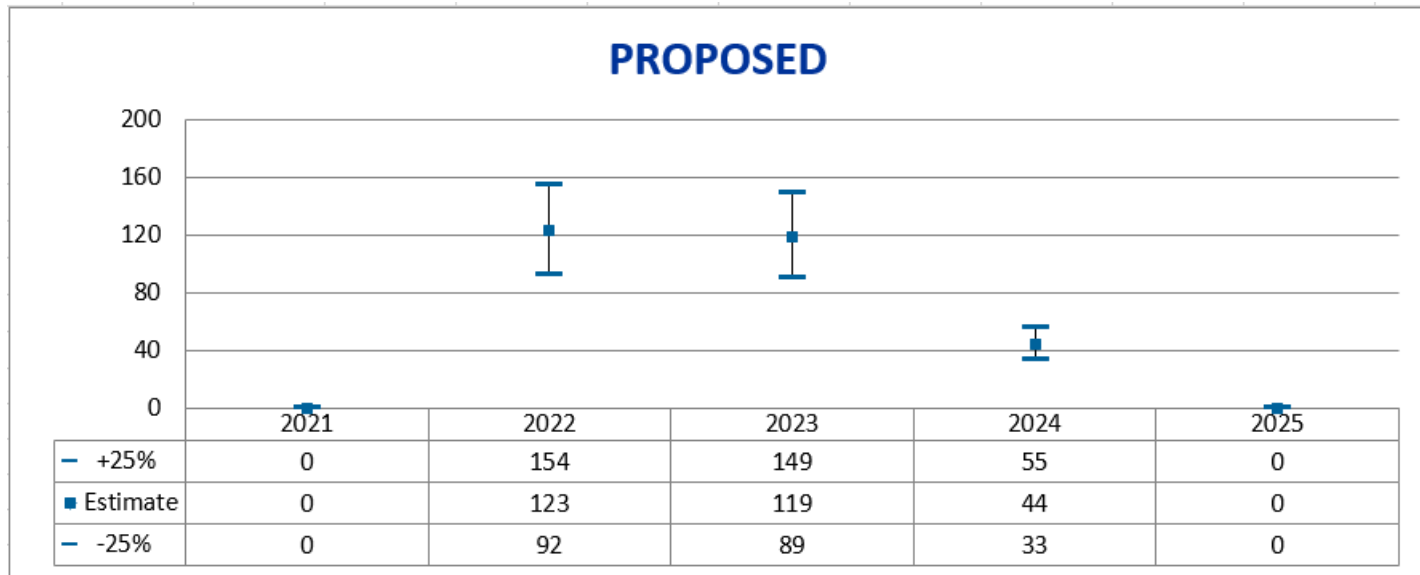
** Efforts need to be made to describe projects on a more consistent basis.

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

**** May not add up due to rounding.

June 2021 RSP Project List Update, cont.

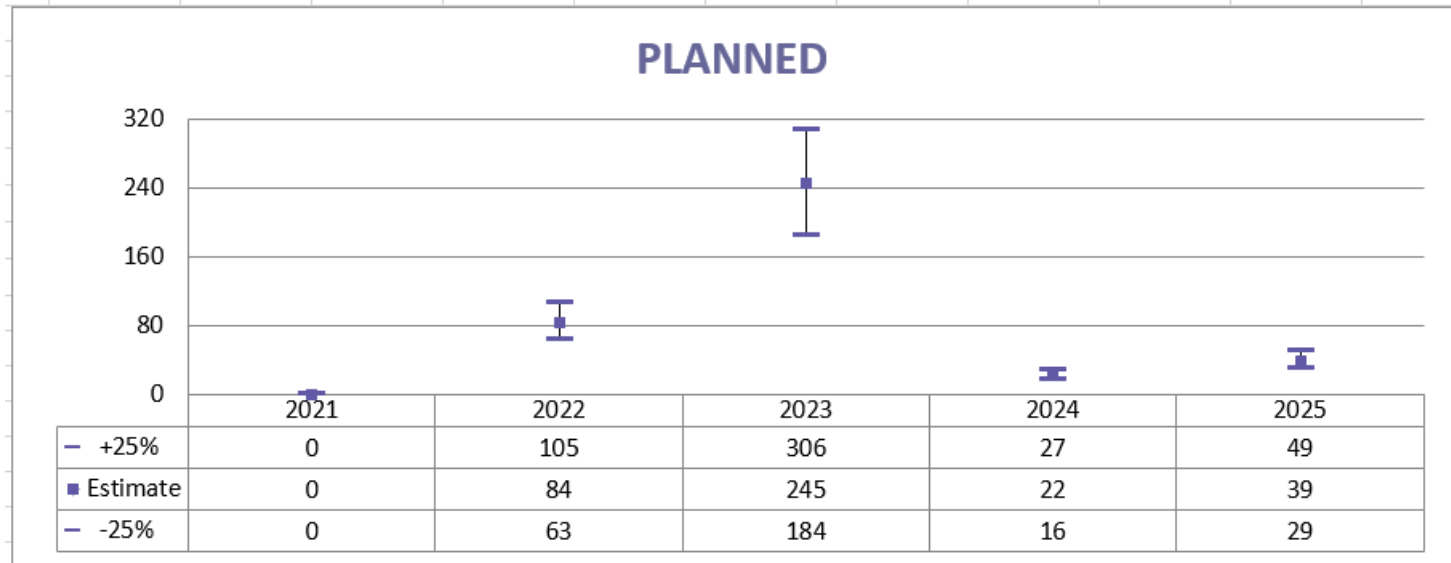
- Project Cost Estimate Tolerances by Status and Year in Millions \$



* 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.

June 2021 RSP Project List Update, cont.

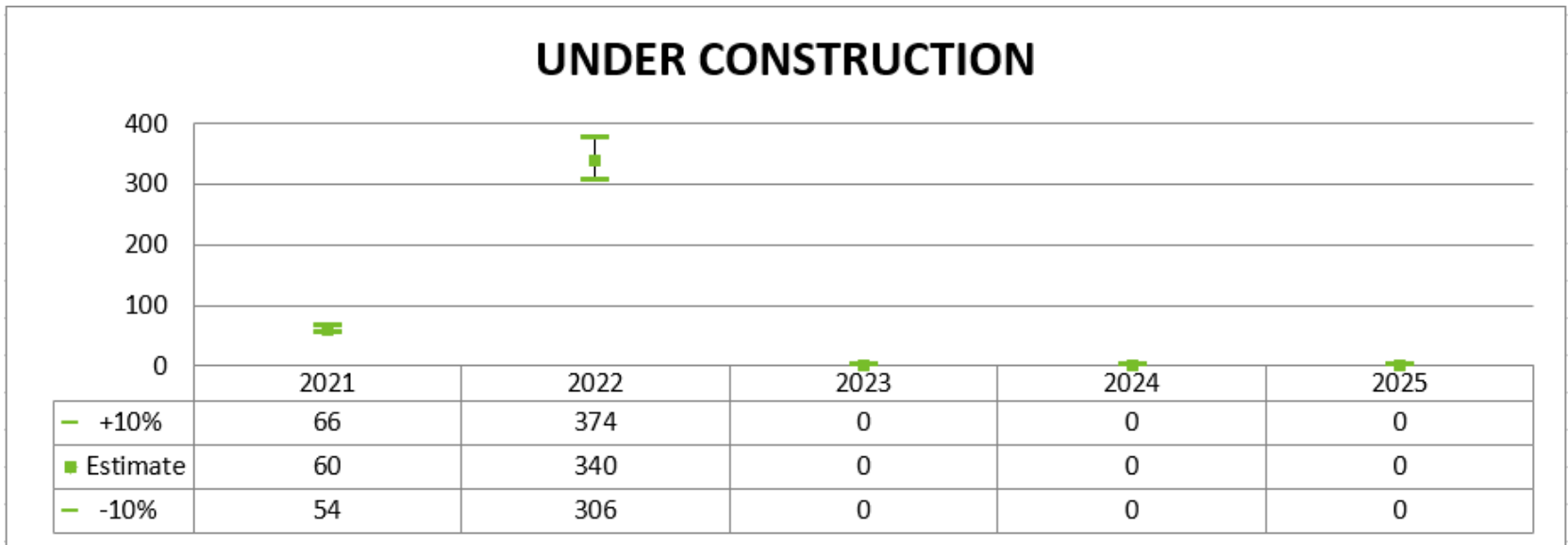
- Project Cost Estimate Tolerances by Status and Year in Millions \$



* 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.

June 2021 RSP Project List Update, cont.

- Project Cost Estimate Tolerances by Status and Year in Millions \$



* 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 5/17, 4/18	TCA Submitted	Project completion 2017-2025
Greater Boston – North, South, Central and Western Suburbs	Approved 4/15, 5/15, 6/16	TCA Submitted	Project completion 2013-2023
New Hampshire – Western, Central, Southern and Seacoast	Approved 3/13	Seacoast 11/5/15 Southern 1/7/16 Western 12/17/15 Central 11/25/15	Project completion 2013-2022
Eastern CT 2029	Not Submitted	Not Submitted	Project completion 2021-2026
Boston Area Optimized Solution (BAOS)	Approved 5/21	Not Submitted	Project completion 2023

June 2021 Asset Condition List Update

- **Eight New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions \$)
286	Eddy Substation Control House Relocation and Rebuild (New Hampshire)	6.1
287	NH 115 kV Laminated Wood Structure Replacement Program Phase I - G128 Line (New Hampshire)	12.6
288	NH 115 kV Laminated Wood Structure Replacement Program Phase I - L175 Line (New Hampshire)	19.3
289	NH 115 kV Laminated Wood Structure Replacement Program Phase I - K105 Line (New Hampshire)	14.7
290	NH 115 kV Laminated Wood Structure Replacement Program Phase I - X116 Line (New Hampshire)	26.0
291	NH 115 kV Laminated Wood Structure Replacement Program Phase I - Z119 Line (New Hampshire)	25.4
292	Branford 11J A3 Bus Replacement Project (Connecticut)	10.3
293	Ludlow 19S 345 kV Full BPS Separation and Asset Condition Project (Massachusetts)	42.9

June 2021 Asset Condition List Update, cont.

- **Thirteen Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions \$)
187	345 kV Structure Replacement Projects - Line 367 (New Hampshire)	13.6
214	115 kV Wood Pole Replacement - 1042 (Connecticut)	8.3
228	115 kV Wood Pole and Shield Wire Replacement - 1765 (Connecticut)	3.8
79	345 kV Structure Replacement Project - Line 398 (Connecticut)	9.6
82	Laminated Structure Replacement Project - Line 1505/1607 (Connecticut)	52.5
127	115 kV Structure Replacement Project - Line 1635 (Connecticut)	5.6
134	115 kV Structure Replacement Project - Line 1765 (Connecticut)	13.1
122	115 kV Structure Replacement Project - Line 1310 (Connecticut)	8.3

June 2021 Asset Condition List Update, cont.

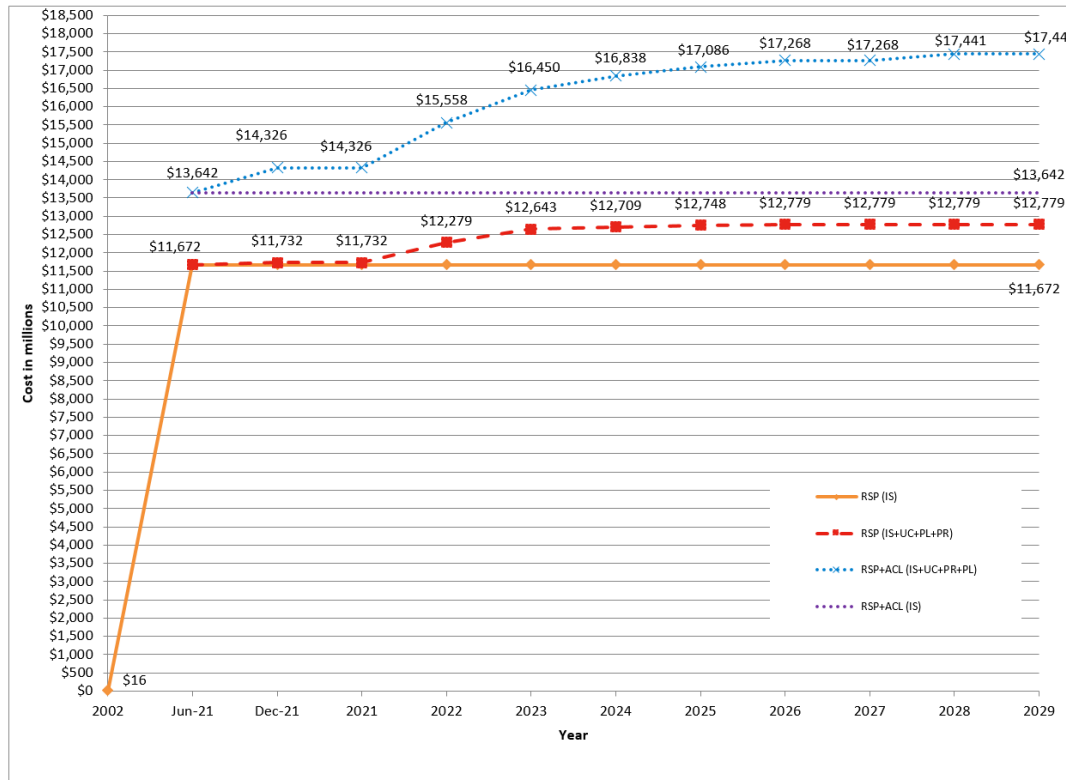
- **Thirteen Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions \$)
210	115 kV Wood Pole and Shield Wire Replacement - 1394 (Massachusetts)	8.9
212	115 kV Wood Pole and Shield Wire Replacement - 1976 (Massachusetts)	9.7
254	115 kV Wood Pole Asset Condition Project - Line 455-507 (Massachusetts)	5.2
64	345 kV Structure Replacement Project - Line 393 (Massachusetts)	17.2
184	345 kV Structure Replacement Project - Line 393 (Massachusetts)	9.8



June 2021 Asset Condition List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects and Asset Condition through 2029



* 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.

APPENDIX



Summary: Project Listing Definitions

- **Major ISO New England Inc. Transmission, Markets and Services Tariff Section II Attachment K, Regional System Planning Process Project Listing Subcategories***
 - **Proposed:** The project will include a regulated transmission solution that has been proposed in response to a specific Needs Assessment or the RSP and has been evaluated or further defined and developed in a Solutions Study or in the competitive solutions process and communicated to PAC. (Project well-defined, cost estimate quality sufficient for comparison of alternatives)
 - **Planned:** The project will include a Transmission upgrade that has been approved by the ISO, pursuant to Section I.3.9 (presumes Needs Assessment and Solutions Study/competitive solution process have been completed). (Still subject to Schedule 12C review for Transmission Cost Allocation)

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

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 or Under Construction
 - » 1b Proposed
 - Part 2: these projects are Generator Interconnection Upgrades
 - » 2a Planned (I.3.9 approval with Generator 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 Generator Interconnection Agreement)
 - Part 3: these projects are Market Efficiency Upgrades
 - » 3a Planned or Under Construction
 - » 3b Proposed
 - 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 or Under Construction
 - » 4b Proposed

* 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
 - The project will include a Transmission upgrade that has been approved by the ISO pursuant to Section I.3.9 of the Tariff
- Proposed
 - A regulated transmission solution that has been selected by the ISO in response to a Needs Assessment and communicated to PAC
- Cancelled
 - Project has been cancelled

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%)