RSP Project List and Asset Condition List March 2025 Update

Planning Advisory Committee Meeting

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EXECUTIVE DIRECTOR, TRANSMISSION PLANNING

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Highlights of the RSP Project List Update

- **Major cost estimate changes greater than $5M that occurred between the October 2024 and March 2025 Project List**
  - (MA) SEMA/RI
    - Cost increase of $8.7M for the 115 kV line extension between Dartmouth town line (Eversource- NGRID border) to Bell Rock (~4.2 miles) due to schedule delays and post-pandemic inflationary pressures. The project was presented at the February 2025 PAC
- **No new projects**
- **Five upgrades have been placed in-service since the October 2024 update**
  - (RI) Eastern CT 2029 Solutions – one project
  - (NH) NH 2029 Solutions – two projects
  - (MA) Greater Boston – one project
  - (ME) UME 2029 Solutions – one project
- **No cancelled projects since the October 2024 update**

March 2025 RSP Project List Update

- **No new projects**

March 2025 RSP Project List Update, cont.

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

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner	Improvement/Need
1335	Build a new 115 kV line from Sudbury Station 342 substation to Hudson substation and add a 30 MVAR shunt reactor at the Sudbury station (MA) Greater Boston - Western Suburbs	128.5	Eversource	Resolve thermal overloads and avoid voltage collapse
1815	Reconductor the L190-4 and L190-5 line sections (RI) Eastern CT 2029 Solutions	54.7	Rhode Island Energy	Resolve thermal overloads
1879	Install a +55/-32.2 MVAR synchronous condenser at Huckins Hill 115 kV Substation with a 115 kV breaker and a 13.8 kV breaker (NH) NH 2029 Solutions	33.4	Eversource	Resolve voltage issues in the area
1880	Install a +127/-50 MVAR synchronous condenser at Amherst 345 kV Substation with three 345 kV circuit breakers and a 13.8 kV circuit breaker (NH) NH 2029 Solutions	67.0	Eversource	Resolve voltage issues in the area
1887	Install a 25 MVAR reactor at Boggy Brook 115 kV substation (ME) UME 2029 Solutions	4.0	Versant Power	Resolve voltage issues in the area

March 2025 RSP Project List Update, cont.

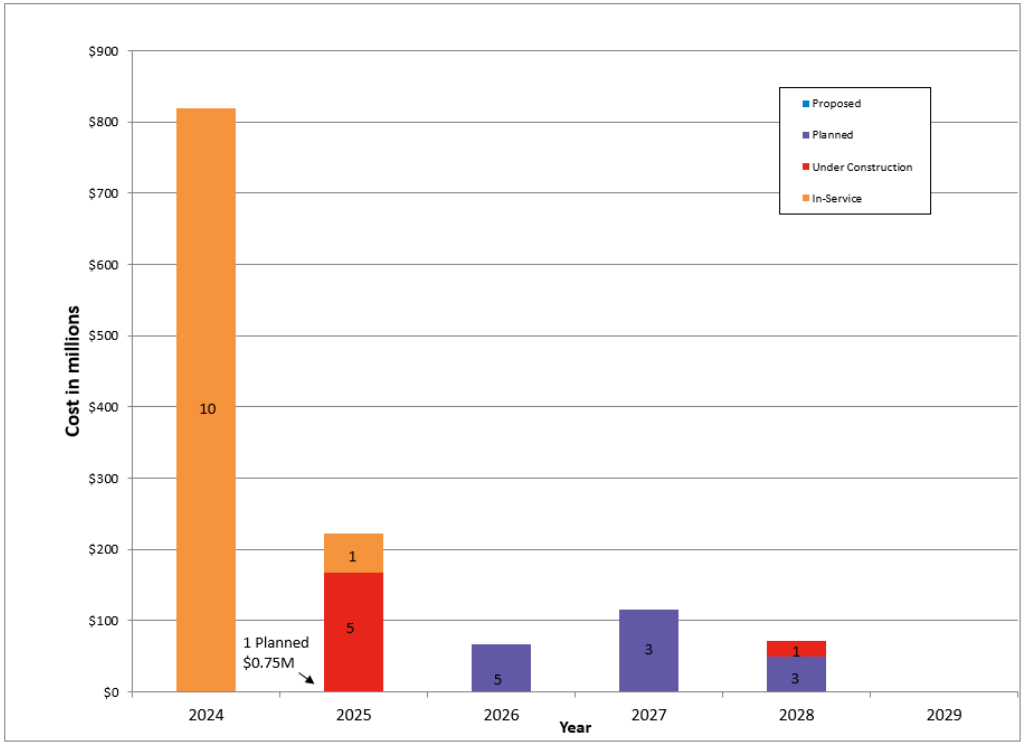
- **Cost Estimate Comparisons of Reliability Projects October 2024 vs. March 2025 Update***

	As of October 2024 Plan Update (in millions $)	As of March 2025 Plan Update (in millions $)	Change in Plan Estimate (in millions $)
MAJOR PROJECTS ***			
Southeast Massachusetts/Rhode Island Reliability (SEMA/RI)	437	445	9
Greater Boston - North, South, Central, and Western Suburbs	1200	1201	1
Eastern CT 2029 Solutions	260	260	0
New Hampshire (NH) 2029 Solutions	161	161	0
Upper Maine (UME) 2029 Solutions	151	151	0
SUBTOTAL**	2208	2218	9
OTHER PROJECTS	11159	11159	0
NEW PROJECTS	0	0	0
TOTAL**	**13368**	**13377**	**9**
Minus 'in-service'	-12669	-12956	-288
**Aggregate estimate of active projects in the Plan ** **	**699**	**421**	**-278**

* 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.

March 2025 RSP Project List Update, cont.

- **Investment of New England Transmission Reliability Projects by Status through 2029**

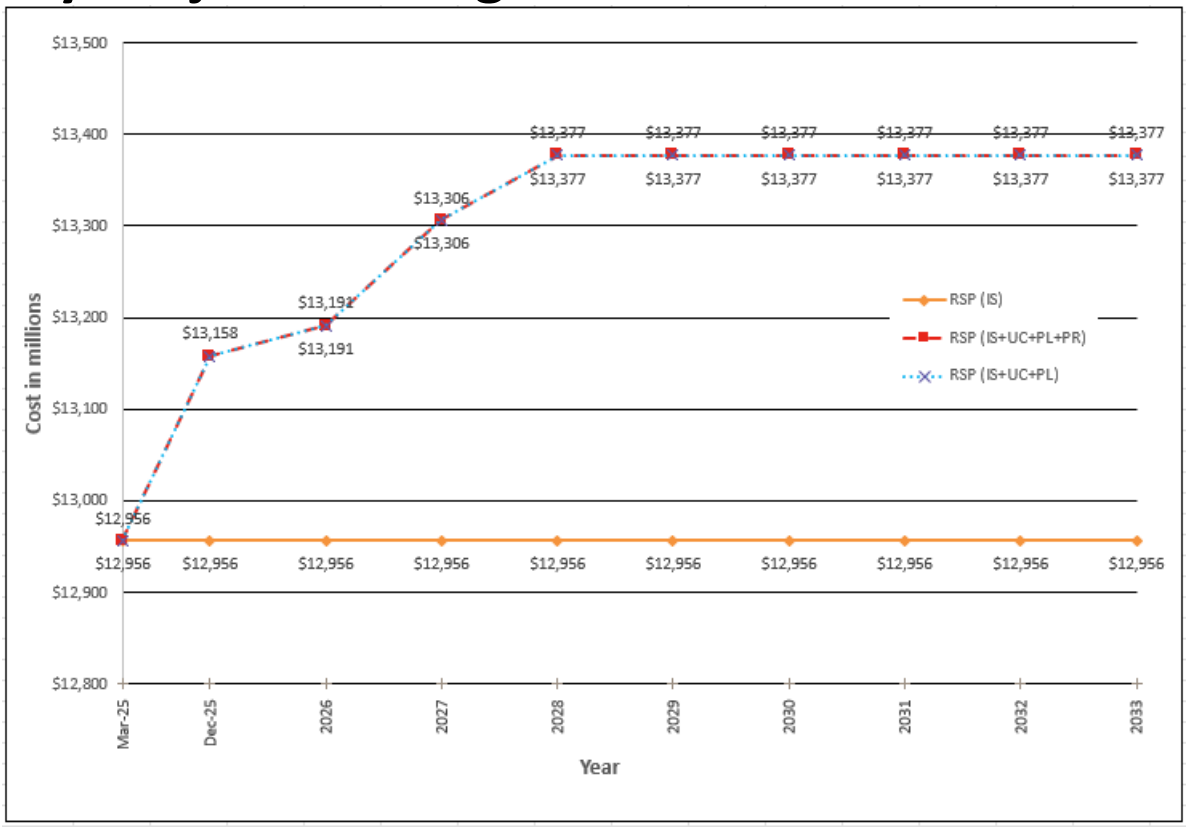


* Numbers shown represent project quantities.

** 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 2025 RSP Project List Update, cont.

- **Cumulative Investment of New England Transmission Reliability Projects through 2033**



* 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 2025 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 Minimum	Estimate Range Maximum	Estimated Costs ($millions)	Range Minimum ($millions)	Range Maximum
Proposed	0	-25%	25%**	0	0	0
Planned	12	-25%	25%	232	174	290
Under Construction	6	-10%	10%	189	170	207
Total Plan	**18**			*** **421**	**344**	**497**
In-Service ****	5	-10%	10%	288	259	316
Cancelled	0	-25%	25%	0	0	0

* 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.

Status of Major Transmission Projects

	PPA	TCA	Construction
Southeast MA/RI Reliability (SEMA/RI)	Approved 5/2017, 4/2018	Submitted	2018-2027
Greater Boston – North, South, Central and Western Suburbs	Approved 4/2015, 5/2015, 6/2016, 7/2019, 10/2020	Submitted	2010-2025
Eastern CT 2029 Solutions	Approved 6/2021	Submitted	Project complete 2021-2024
New Hampshire (NH) 2029 Solutions	Approved 1/2022, 6/2022	7/16/2024	2023 - 2025
Upper Maine (UME) 2029 Solutions	Approved 2/2022 (Versant Power) Approved 5/2022, 8/2023 (Avangrid)	Submitted (Versant Power) Not Submitted (Avangrid)	2024-2028

ASSET CONDITION LIST UPDATE

Highlights of the Asset Condition List Update

- **Major cost estimate changes greater than $5M that occurred between the October 2024 and March 2025 Asset Condition List**
  - (MA) 327 Line Asset Condition Refurbishments (ACL 146)
    - Cost increase of $7.0M due to COVID-19 related steel structures cost increase, and labor cost increase to accommodate schedule acceleration for outage windows. The project was presented at the February 2019 PAC
  - (MA) 315 Line Asset Condition Refurbishments - MA Portion (ACL 149)
    - Cost increase of $15.5M due to COVID-19 related steel structures cost increase, and labor cost increase to accommodate schedule acceleration for outage windows. The project was presented at at the February 2019 PAC
  - (RI) 315 Line Asset Condition Refurbishments - RI Portion (ACL 150)
    - Cost increase of $5.0M due to factors like material costs, new ownership, and COVID-19 related issues. The project was presented at the February 2019 PAC
  - (NH) Northern New Hampshire 115 kV Line Rebuilds - U199 Line (ACL 388)
    - Cost increase of $19.8M is driven primarily by bid construction costs exceeding the original estimated construction and removal lines in the estimate, as well as increased AFUDC and Overheads/Indirects. The higher than anticipated costs received during the bid reflect current market demand and live line construction resource limitations being experienced in New Hampshire. The project was presented at the May 2023 PAC
  - (NH) W-149 115 kV Line Asset Condition Refurbishment - NH portion (ACL 447)
    - Cost increase of $6.0M based on adjustment in forecasted costs. The project was presented at the May 2024 PAC

Highlights of the Asset Condition List Update, cont.

- **10 new projects totaling $730.6M**
  - Details on the next few slides
- **21 upgrades have been placed in-service since the October 2024 update totaling $670.0M**
  - Details on the next few slides
- **No cancelled projects since the October 2024 update**

March 2025 Asset Condition List Update

- **10 New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
455	Westminster Switch Tower Rebuild and East Westminster Switch Replacement (Massachusetts)	7.9	National Grid, USA
456	K19 Line Asset Condition Structure Replacement (Vermont)	5.8	Vermont Electric Power Company
457	Sections 396 and 3001 End of Life Strategy (Maine)	344.0	MEPCO
458	1356 115 kV Line Asset Condition Structure Replacements Project (Massachusetts)	5.3	Eversource
459	387 345 kV Line Asset Condition Structure Replacements Project (Connecticut)	9.8	Eversource
460	B-154N / C-155N – King Street Tap Asset Condition Refurbishment (Massachusetts)	46.7	National Grid, USA
461	338 345 kV Line Asset Condition Refurbishment (Massachusetts)	53.5	National Grid, USA
462	337 345 kV Line Asset Condition Refurbishment (Massachusetts)	217.4	National Grid, USA

March 2025 Asset Condition List Update, cont.

- **10 New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
463	Sandy Pond 237 Asset Replacement (Massachusetts)	16.2	National Grid, USA
464	NERC CIP-014 - Physical Security Upgrade (Rhode Island)	24.0	Rhode Island Energy

March 2025 Asset Condition List Update, cont.

- **21 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
95	Nashua St #25 – Substation Asset Condition Refurbishment (Massachusetts)	5.9	National Grid, USA
149	315 Line Asset Condition Refurbishments - MA Portion (Massachusetts)	114.6	National Grid, USA
150	315 Line Asset Condition Refurbishments - RI Portion (Rhode Island)	30.1	Rhode Island Energy
161	Rebuild 88003A-2 Line (Elmwest - West River) (Connecticut)	25.9	Eversource
162	Rebuild 88003B-2 Line (Elmwest - West River) (Connecticut)	25.9	United Illuminating Company
178	345 kV Structure Replacement Projects - Line 3754 (Connecticut)	10.4	Eversource
232	Line 340 Asset Condition Structure Refurbishment (Vermont)	39.0	Vermont Electric Power Company
258	Copper Conductor and Shield Wire Replacement - Line 1268/1485/1622/1887 (Connecticut)	49.5	Eversource

March 2025 Asset Condition List Update, cont.

- **21 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
269	345 kV Line Structure and PINCO insulator Replacement - Line 3754 (Connecticut)	5.5	Eversource
315	115 kV Structure Replacements and Shield Wire - 191 Line (Massachusetts)	27.8	Eversource
340	Holbrook Station 345/115 kV Autotransformer Replacement (Massachusetts)	10.2	Eversource
362	115 kV Lattice Tower, Shield Wire, and Conductor Replacements - 1355/1610 Line (Connecticut)	50.4	Eversource
363	Asset Condition Wood Structure Replacements - 1208 115 kV Line (Connecticut)	9.4	Eversource
365	Asset Condition Wood Structure Replacements - 389 345 kV Line (Massachusetts)	6.6	Eversource
374	South Naugatuck to Devon Rebuild - Segment 4 (Christian Street Jct. - Stevenson substation) (Connecticut)	45.7	Eversource
382	NH Asset Condition Project - F139 Line (New Hampshire)	46.6	Eversource

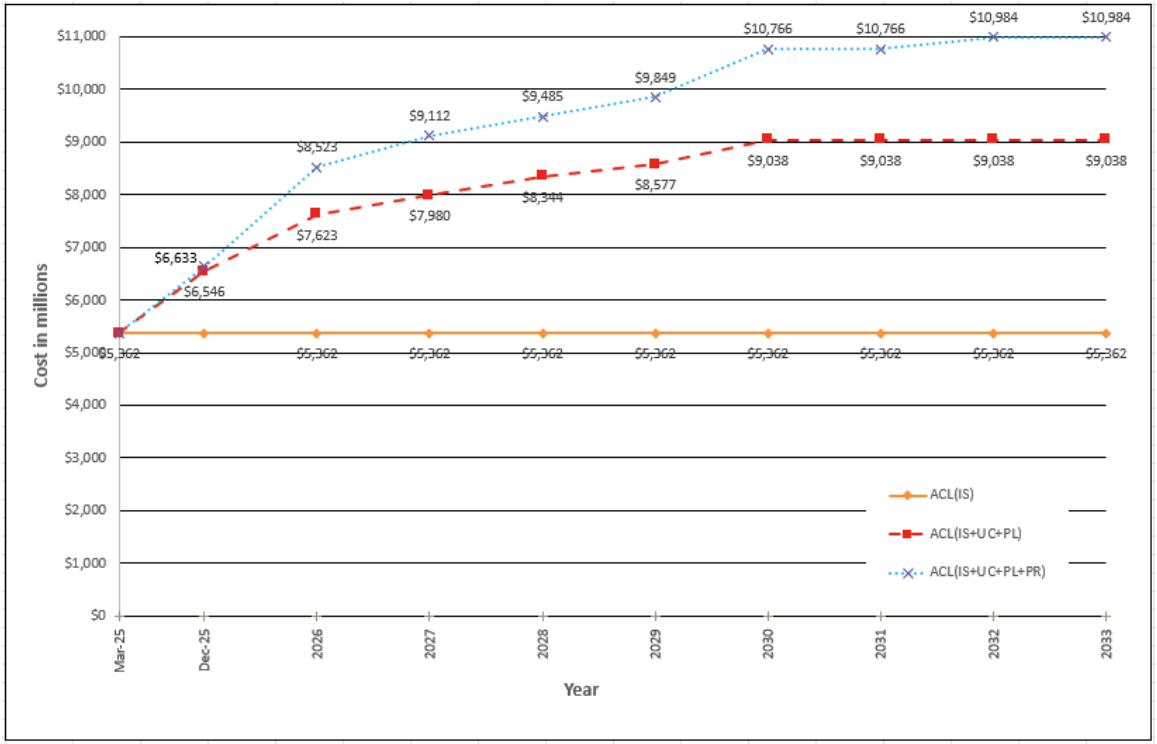
March 2025 Asset Condition List Update, cont.

- **21 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
386	Northern New Hampshire 115kV Line Rebuilds - B112 Line (New Hampshire)	105.4	Eversource
404	Laminated Wood Structure Replacement Program Phase III - V182 (New Hampshire)	32.9	Eversource
434	Targeted Refurbishment to Replace deteriorated structures and install OPGW on M-165 line (~5 miles) (Massachusetts)	15.2	National Grid, USA
443	Line N133 Structure Replacement Project (New Hampshire)	5.5	Eversource
446	345 kV Line Structure Replacements Project - Line 3754 (Connecticut)	7.4	Eversource

March 2025 Update, cont.

- **Cumulative Investment of New England Asset Condition Projects through 2033**



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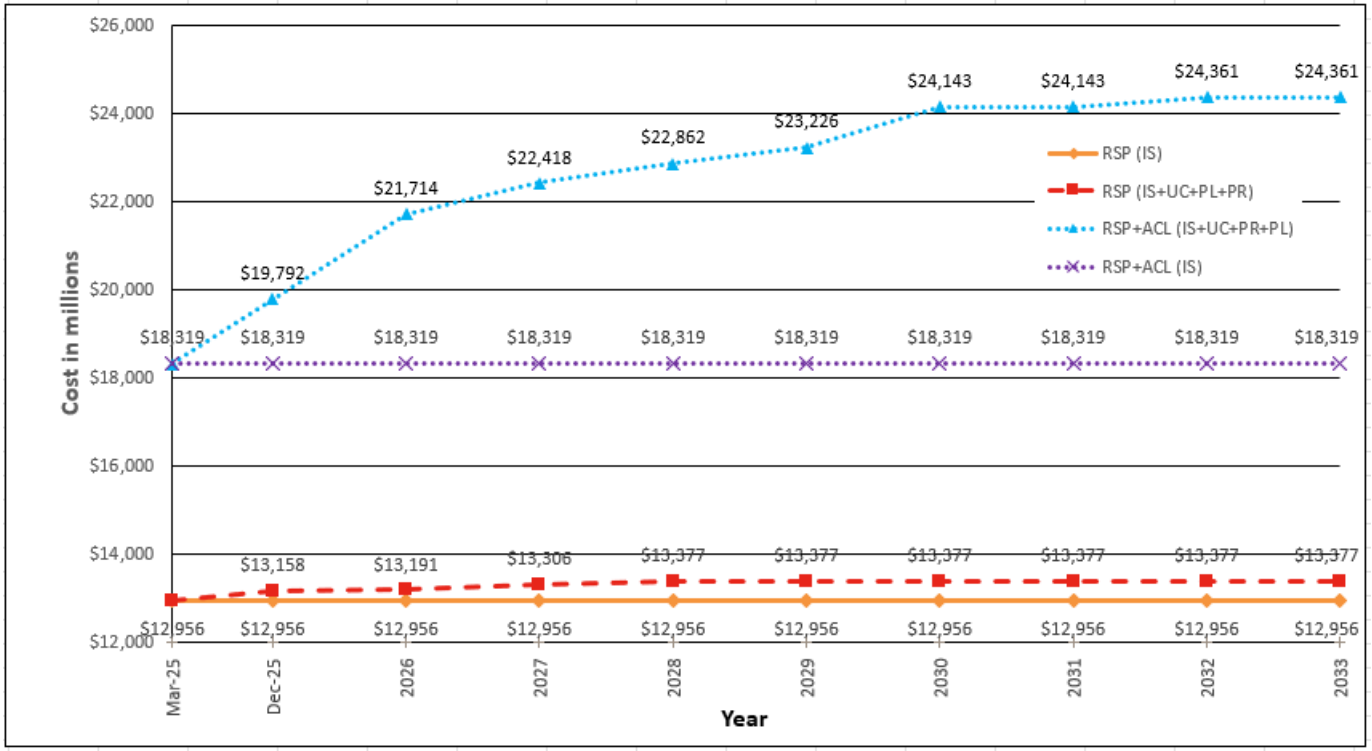
** Future total $ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

March 2025 Asset Condition List Update, cont.

- **Cumulative Investment of New England Transmission Reliability Projects and Asset Condition through 2033**



* 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.

Next Steps

- Please provide comments related to the project lists to pacmatters@iso-ne.com by April 3, 2025
- The final version of the RSP Project list, Asset Condition list, and the presentation will be posted on the RSP Project List and the Asset Condition List website, along with responses to any written stakeholder feedback received, following the comment period

Questions

APPENDIX

RSP Project List

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

RSP Project List – 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 if required, 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'.

RSP Project List – 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

RSP Project List – 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 if required, 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.

RSP Project List – 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