

RSP Project List and Asset Condition List October 2023 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 June and October 2023 Project List**
 - None
- **No new projects**
- **Six upgrades have been placed in-service since the June 2023 update**
 - (MA) Total of four projects
 - SEMA/RI – three projects
 - BAOS – one project
 - (CT) Total of two projects
 - Eastern CT 2029 – two projects
- **No cancelled projects since the June 2023 update**



October 2023 RSP Project List Update

- No New Projects



October 2023 RSP Project List Update, cont.

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

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner	Improvement/Need
1721	Reconfigure Bell Rock to breaker and a half station, and upgrade to BPS standards (Massachusetts) SEMA/RI	36.2	National Grid, USA	Resolve thermal overloads and avoid voltage collapse
1728	Build a new Carver to Kingston 115 kV line and Carver terminal (Massachusetts) SEMA/RI	29.7	Eversource	Resolve thermal overloads
1729	Install a new bay position at Kingston for Carver line (Massachusetts) SEMA/RI	3.4	Eversource	Required to terminate new line from Carver to Kingston that resolves thermal overloads
1854	Rebuild the 100 Line from Montville to Gales Ferry to allow operation at 115 kV (Connecticut) Eastern CT 2029	7.0	Eversource	Resolve thermal overloads
1855	Reterminate the 100 Line at Montville station and associated work. Energize the 100 Line at 115 kV (Connecticut) Eastern CT 2029	8.4	Eversource	Resolve thermal overloads
1876	Install one +/- 167 MVAR STATCOM at Tewksbury 345 kV substation (Massachusetts) BAOS	32.9	National Grid, USA	System restoration in the Boston area



October 2023 RSP Project List Update, cont.

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

	As of June 2023 Plan Update (in millions \$)	As of October 2023 Plan Update (in millions \$)	Change in Plan Estimate (in millions \$)
MAJOR PROJECTS ***			
Southeast Massachusetts/Rhode Island Reliability (SEMA/RI)	435	435	0
Greater Boston - North, South, Central, and Western Suburbs	1200	1200	0
Eastern CT 2029	260	260	0
New Hampshire (NH) 2029	156	159	4
Upper Maine (UME) 2029	164	164	0
SUBTOTAL **	2215	2218	4
OTHER PROJECTS	11139	11139	0
NEW PROJECTS	0	0	0
TOTAL **	13354	13358	4
Minus 'in-service'	-11871	-11989	-118
Aggregate estimate of active projects in the Plan **	1483	1369	-114

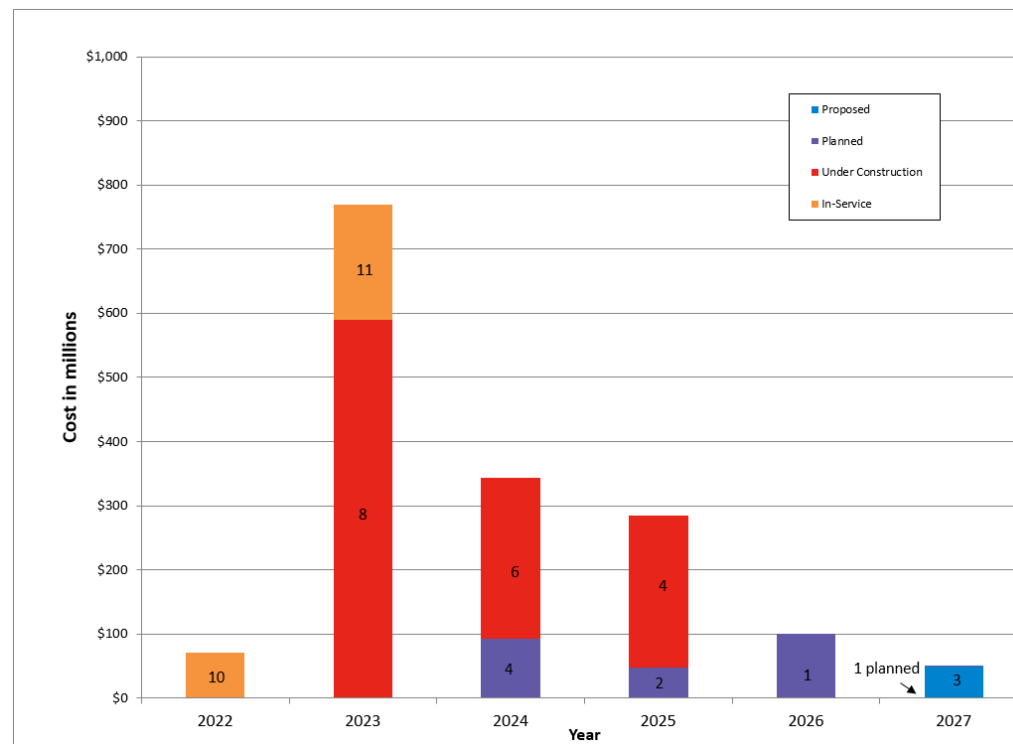
* Transmission Owners provided all estimated costs, which may not meet the guidelines described in Planning Procedure 4, Attachment D.

** 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.

October 2023 RSP Project List Update, cont.

- Investment of New England Transmission Reliability Projects by Status through 2027



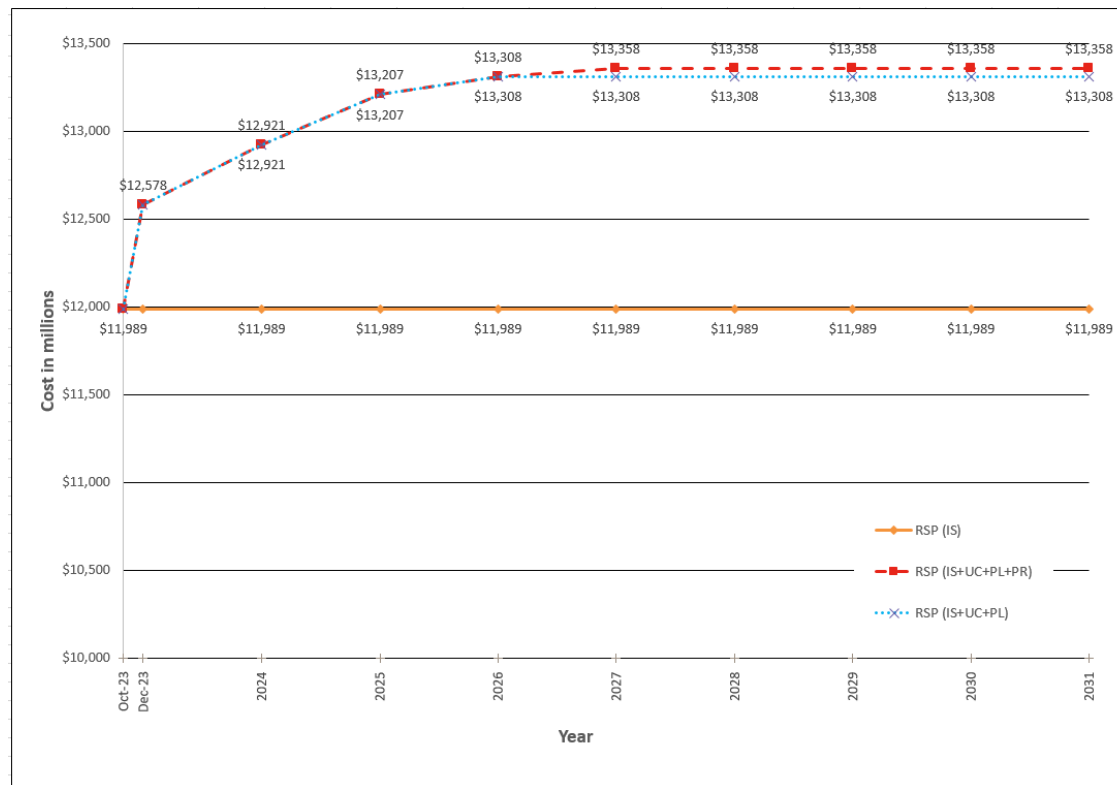
* Numbers shown represent project quantities.

** 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.



October 2023 RSP Project List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects through 2031



* 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.

October 2023 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		Range	
		Minimum	Maximum	(\$millions)		Minimum	Maximum
						(\$millions)	
Proposed	3	-25%	25%**	49		37	61
Planned	8	-25%	25%	243		182	304
Under Construction	18	-10%	10%	1077		969	1184
Total Plan	29			*** 1369		1188	1549
In-Service	*** 6	-10%	10%	118		106	129
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.

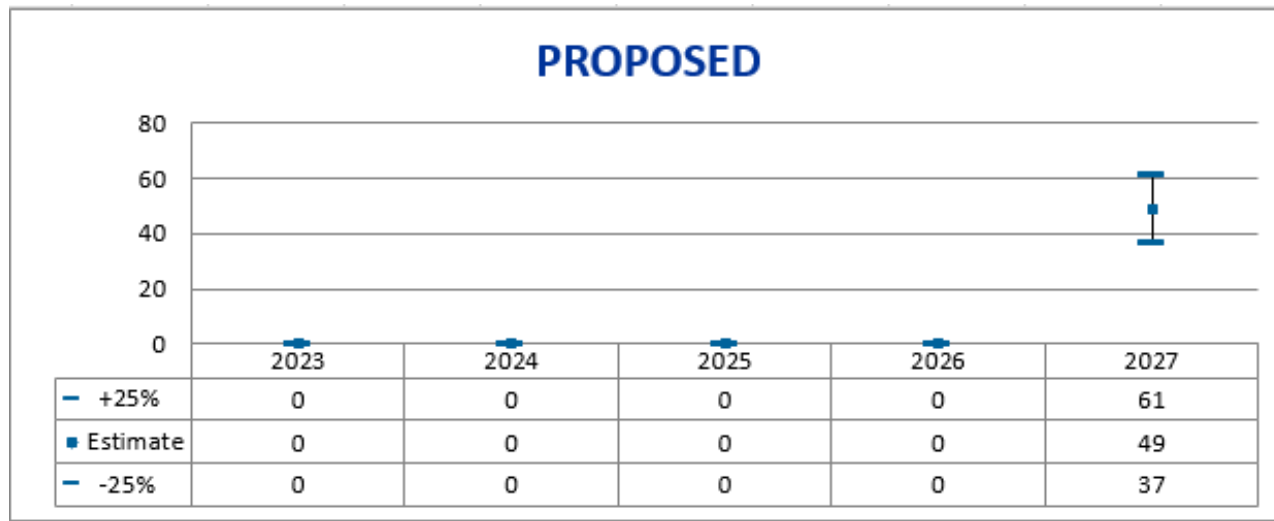
** All estimates may not yet be at this level of accuracy; many estimates may be -25%/+50%.

*** May not add up due to rounding.

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

October 2023 RSP Project List Update, cont.

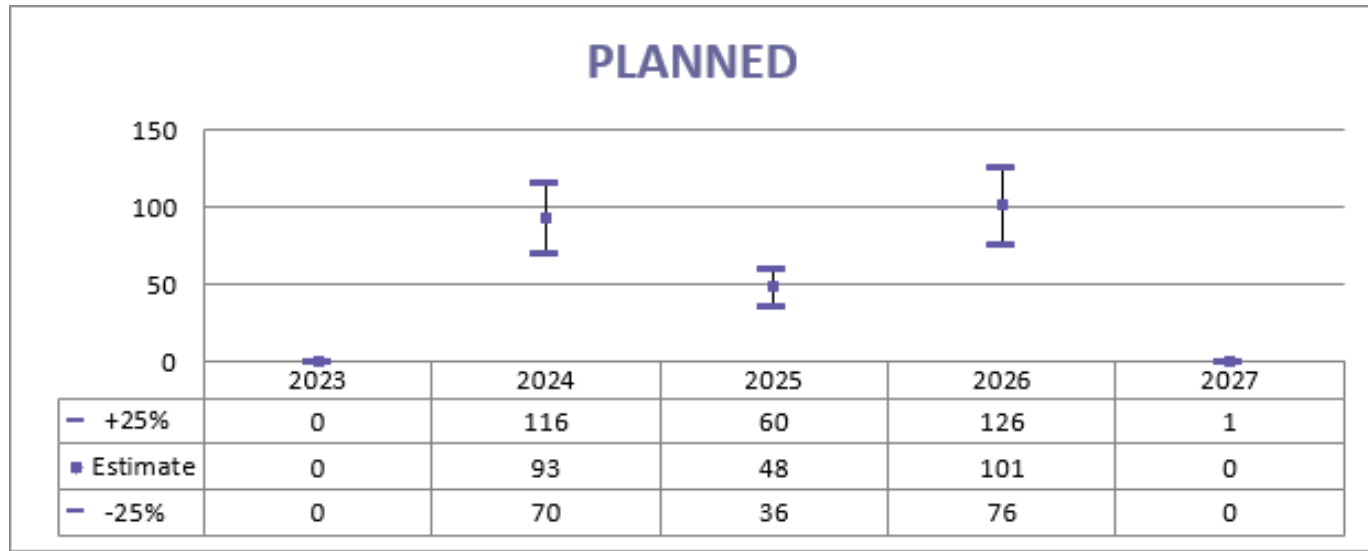
- Project Cost Estimate Tolerances by Status and Year in Millions \$ for the next five years



* 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.

October 2023 RSP Project List Update, cont.

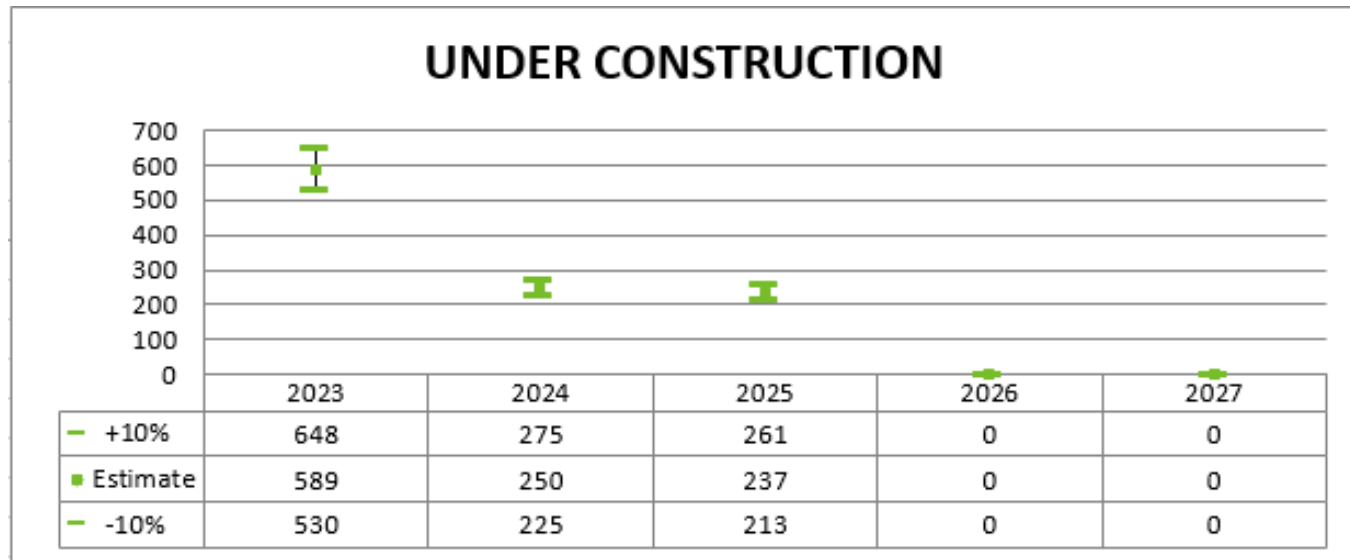
- Project Cost Estimate Tolerances by Status and Year in Millions \$ for the next five years



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October 2023 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 2018-2026
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	Approved 6/2021	Submitted	Project completion 2021-2024
New Hampshire (NH) 2029 Solution	Approved 1/2022, 6/2022	Submitted	Project completion 2023 - 2024
Upper Maine (UME) 2029 Solution	Approved 2/2022 (Versant Power) Approved 5/2022, 8/2023 (Avangrid)	Not Submitted	Project completion 2024-2027



ASSET CONDITION LIST UPDATE

October 2023 Asset Condition List Update

- 23 New Projects

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
401	Laminated Wood Structure Replacement Program Phase III - C189 (New Hampshire)	12.8	Eversource
402	Laminated Wood Structure Replacement Program Phase III - H137 (New Hampshire)	7.8	Eversource
403	Laminated Wood Structure Replacement Program Phase III - M108 (New Hampshire)	13.4	Eversource
404	Laminated Wood Structure Replacement Program Phase III - V182 (New Hampshire)	32.9	Eversource
405	Laminated Wood Structure Replacement Program Phase III and OPGW - H141 (New Hampshire)	18.8	Eversource
406	Laminated Wood Structure Replacement Program Phase III and OPGW - A164 (New Hampshire)	67.0	Eversource
407	Laminated Wood Structure Replacement Program Phase III and OPGW - R169 (New Hampshire)	8.4	Eversource
408	Laminated Wood Structure Replacement Program Phase III and OPGW - F162 (New Hampshire)	21.8	Eversource



October 2023 Asset Condition List Update, cont.

- 23 New Projects

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
409	Laminated Wood Structure Replacement Program Phase III and OPGW - G146 (New Hampshire)	58.4	Eversource
410	Laminated Wood Structure Replacement Program Phase III and OPGW - I158 (New Hampshire)	28.6	Eversource
411	Deerfield 345/115 kV Relay Upgrades (New Hampshire)	5.8	Eversource
412	1704 Underground Cable Rebuild Project (Connecticut)	169.3	Eversource
413	Structure Replacements & OPGW Installations - 364 Line (Connecticut)	12.6	Eversource
414	Structure Replacements & OPGW Installations - 348 Line (Connecticut)	9.7	Eversource
415	Structure Replacements & OPGW Installations - 1726 Line (Connecticut)	8.9	Eversource
416	Southington 115 kV Relay Upgrades (Connecticut)	13.9	Eversource



October 2023 Asset Condition List Update, cont.

- 23 New Projects

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
417	Northboro Road Substation Breaker Replacements (Massachusetts)	5.2	National Grid, USA
418	308 345 kV Line Asset Condition Refurbishment (Massachusetts)	15.8	National Grid, USA
419	S8 115 kV Line Asset Condition Project (Massachusetts)	88.2	National Grid, USA
420	V5/U6 115 kV Line Asset Condition Project (Massachusetts)	132.0	National Grid, USA
421	NERC CIP-014 - Physical Security Upgrades - Round 1 (Massachusetts)	121.1	Eversource
422	NERC CIP-014 - Physical Security Upgrades - Round 1 (Connecticut)	53.5	Eversource
423	1722 Underground Cable Rebuild Project (Connecticut)	132.3	Eversource



October 2023 Asset Condition List Update, cont.

- 14 Projects Placed In-Service

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
28	115 kV GIS breaker replacement at Kingston Street #514 Substation (Massachusetts)	46.8	Eversource
220	115 kV Wood Pole and Shield Wire Replacement – Line 1280 (Connecticut)	19.7	Eversource
268	345 kV Line Structure and PINCO insulator Replacement – Line 3424 (Connecticut)	14.9	Eversource
309	Southwest Connecticut (SWCT) Substation Relay Upgrades - Glenbrook 115 kV (Connecticut)	10.0	Eversource
310	Southwest Connecticut (SWCT) Substation Relay Upgrades - Plumtree 115 kV and 345 kV (Connecticut)	19.3	Eversource
311	Southwest Connecticut (SWCT) Substation Relay Upgrades - Norwalk 115 kV and 345 kV (Connecticut)	16.4	Eversource
321	Laminated Wood Structure Replacement Program Phase II - A152 115 kV Line (New Hampshire)	17.5	Eversource
324	Asset Condition and OPGW - P145 Line Rebuild (New Hampshire)	52.1	Eversource



October 2023 Asset Condition List Update, cont.

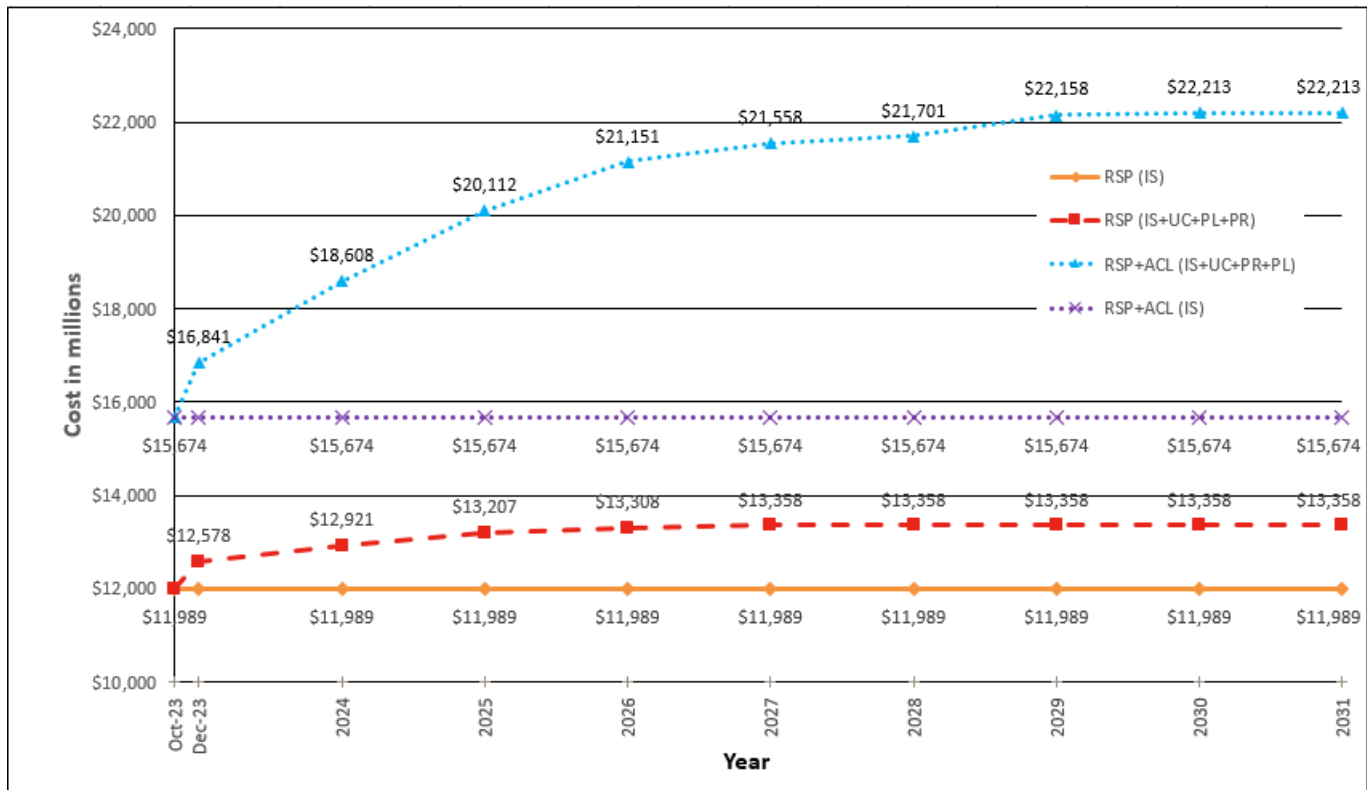
- 14 Projects Placed In-Service

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Primary Equipment Owner
341	Deerfield Station 345 kV Breaker Replacements (New Hampshire)	5.2	Eversource
348	Asset Condition Wood Structure Replacements - C196 Line (New Hampshire)	11.7	Eversource
355	115 kV Structure Replacements and OPGW Installation - 1783 Line (Connecticut)	6.3	Eversource
369	Asset Condition Wood Structure Replacements - C196 Line (New Hampshire)	6.2	Eversource
381	NH Asset Condition Project - M183 Line (New Hampshire)	6.0	Eversource
422	NERC CIP-014 - Physical Security Upgrades - Round 1 (Connecticut)	53.5	Eversource



October 2023 Asset Condition List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects and Asset Condition through 2031



* 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.

A circular arrangement of blue icons representing various energy sources and infrastructure. The icons include solar panels, wind turbines, factories with smokestacks, power lines, a large central battery icon, and a car. The icons are arranged in a circular pattern, with the battery icon at the bottom center.

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