RSP Project List and Asset Condition List June 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 March and June 2024 Project List**
  - None
- **Two new projects**
  - (MA) SEMA 2028 Short Circuit Solutions – one project
  - (ME) ME 2028 Short Circuit Solutions – one project
- **Three upgrades have been placed in-service since the March 2024 update**
  - (MA) Greater Boston – three projects
- **No cancelled project since the March 2024 update**

June 2024 RSP Project List Update

- **Two New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner	Improvement/Need
1917	Replace six 115 kV circuit breakers at Larrabee Road substation (Maine) ME 2028 Short Circuit Solutions	5.5	Central Maine Power Company	Resolve short circuit issues
1918	Replace six 115 kV circuit breakers at Barnstable substation (Massachusetts) SEMA 2028 Short Circuit Solutions	13.3	Eversource	Resolve short circuit issues

June 2024 RSP Project List Update, cont.

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

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner	Improvement/Need
1356	Add a 2nd Mystic-Woburn 115 kV cable to create a bifurcated 211-514 Mystic-Woburn 115 kV circuit (Massachusetts) Greater Boston - Central	233.1	Eversource	Resolve thermal overloads
1551	Cable and terminal work at Wakefield 345 kV substation for the new 345 kV cable between Woburn and Wakefield including the addition of a 160 MVAR variable shunt reactor (Massachusetts) Greater Boston - North	89.4	National Grid, USA	Increase load serving capabilities in Greater Boston
1552	Add a new 345 kV cable from Woburn substation to the Wakefield substation and terminal equipment at Woburn including a 160 MVAR 345 kV reactor (Massachusetts) Greater Boston - North	152.6	Eversource	Increase load serving capabilities in Greater Boston

June 2024 RSP Project List Update, cont.

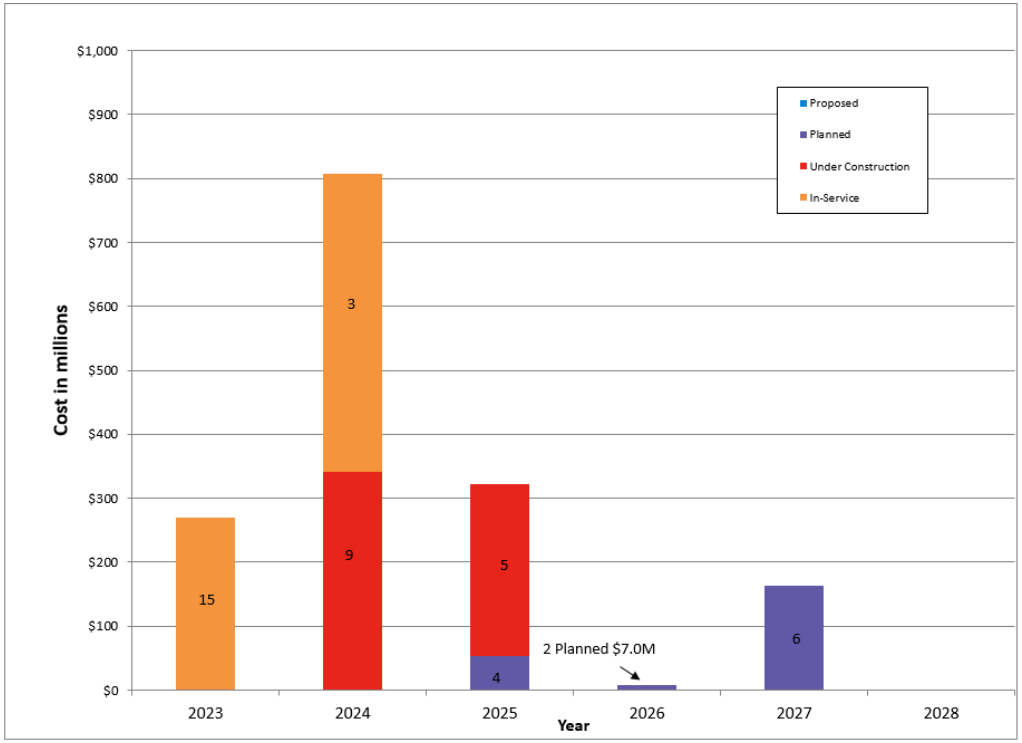
- **Cost Estimate Comparisons of Reliability Projects March vs. June 2024 Update***

	As of March 2024 Plan Update (in millions $)	As of June 2024 Plan Update (in millions $)	Change in Plan Estimate (in millions $)
MAJOR PROJECTS ***			
Southeast Massachusetts/Rhode Island Reliability (SEMA/RI)	436	437	1
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	167	165	-2
SUBTOTAL**	2222	2221	-1
OTHER PROJECTS	11138	11140	2
NEW PROJECTS	2	19	17
TOTAL**	**13362**	**13380**	**18**
Minus 'in-service'	-12080	-12546	-467
**Aggregate estimate of active projects in the Plan ** **	**1282**	**834**	**-448**

* 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 2024 RSP Project List Update, cont.

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

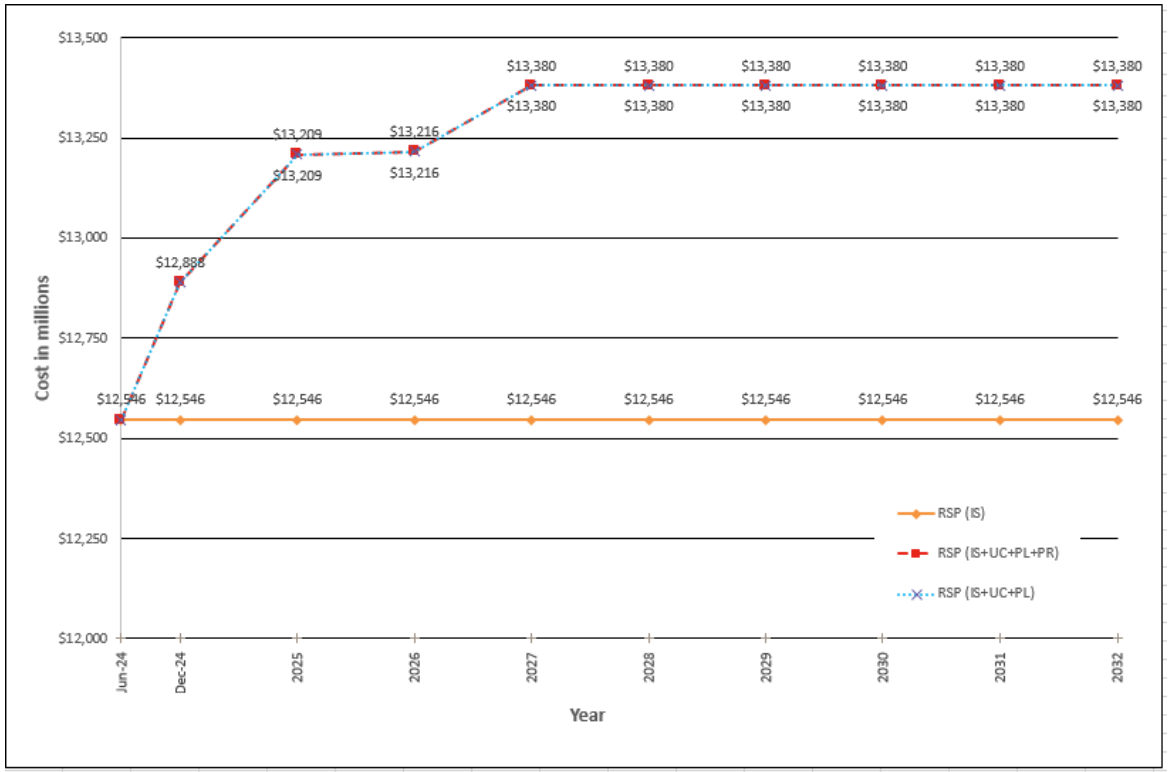


* Numbers shown represent project quantities.

** 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.

June 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.

June 2024 RSP Project List Update, cont.

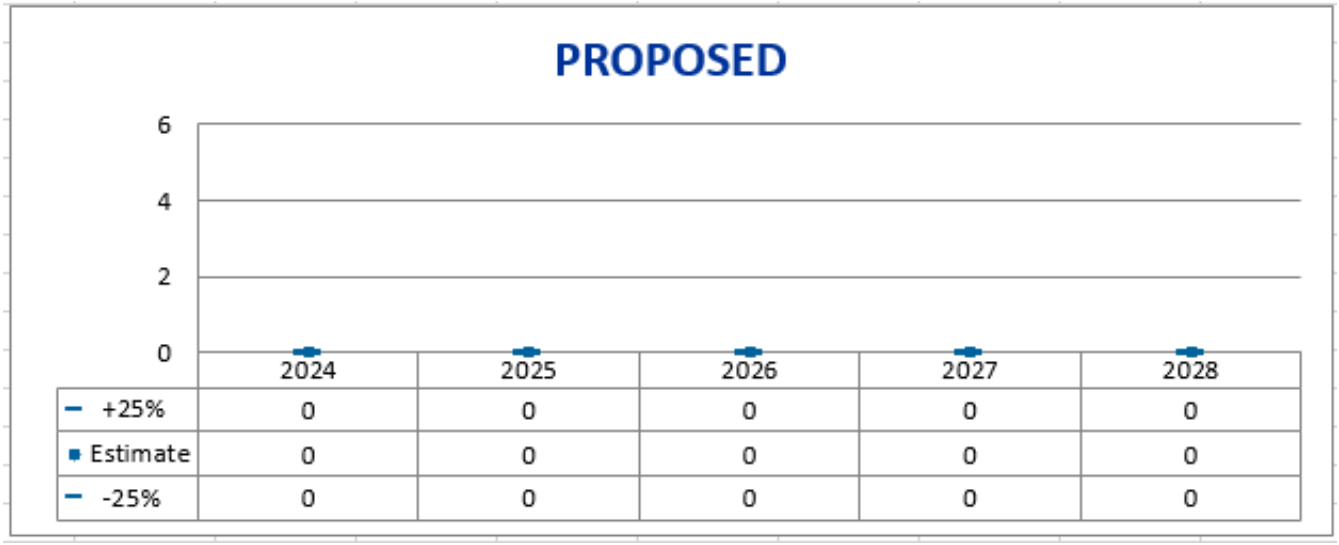
- **Reliability Project Counts and Aggregated Cost Estimates by Project Stage with Applied Accuracy Ranges***

Project Stage (Status)	Component / Project / Plan Count	Estimate Range Minimum	Estimate Range Maximum	Estimated Costs ($millions)	Range Minimum ($millions)	Range Maximum
Proposed	0	-25%	25%**	0	0	0
Planned	12	-25%	25%	223	168	279
Under Construction	14	-10%	10%	610	549	671
Total Plan	**26**			*** **834**	**717**	**951**
In-Service ****	3	-10%	10%	465	419	512
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.

June 2024 RSP Project List Update, cont.

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



	2024	2025	2026	2027	2028
+25%	0	0	0	0	0
Estimate	0	0	0	0	0
-25%	0	0	0	0	0

* 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 2024 RSP Project List Update, cont.

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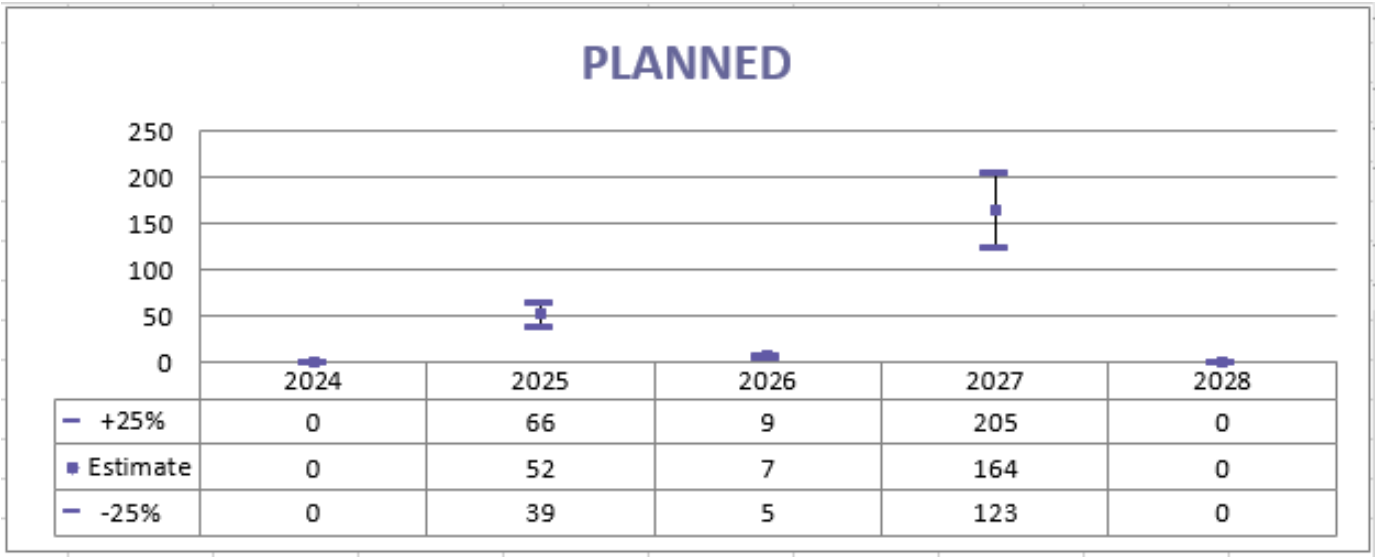

	2024	2025	2026	2027	2028
+25%	0	66	9	205	0
Estimate	0	52	7	164	0
-25%	0	39	5	123	0

* 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 2024 RSP Project List Update, cont.

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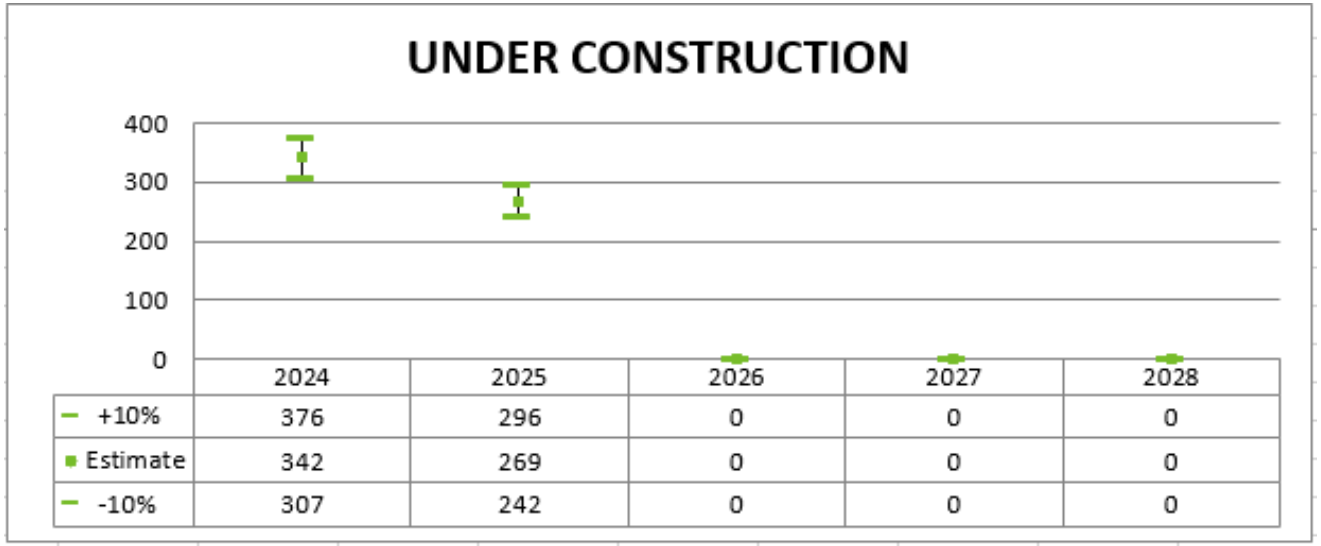


	2024	2025	2026	2027	2028
+10%	376	296	0	0	0
Estimate	342	269	0	0	0
-10%	307	242	0	0	0

* 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 - 2025
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

Changes to the Asset Condition List Update

- **In response to stakeholder comments received during the March presentation, a new Asset Condition only graph (slide 20) was added to the June presentation and will be continued in future presentations**

June 2024 Asset Condition List Update

- **Six New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
435	NERC CIP-014 - Physical Security Upgrades - Round2/Site 1 (Connecticut)	2.3	Eversource
436	Sand Bar phase shifter life extension with SmartValve (Vermont)	47.7	Vermont Electric Power Company
437	339 and 349 345 kV Line Asset Condition Refurbishment (Massachusetts)	72.6	National Grid, USA
438	E-205E and E-205W 230 kV Line Asset Condition Refurbishment (Massachusetts)	*	National Grid, USA
439	O-141/P-142 115 kV Line Asset Condition Refurbishment (Massachusetts)	46.7	National Grid, USA
440	W-149 115 kV Line Asset Condition Refurbishment (Vermont)	491.2	National Grid, USA

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

June 2024 Asset Condition List Update, cont.

- **17 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
53	NPCC Directory #1 Protection Modifications - Phase 2 (Massachusetts)	17.7	National Grid, USA
146	327 Line Asset Condition Refurbishments (Massachusetts)	87.9	National Grid, USA
194	110-510 & 110-511 lines 115 kV HPFF refurbishment (Massachusetts)	98.0	Eversource
216	115 kV Wood Pole Replacement – 1080 (Connecticut)	23.6	Eversource
260	Copper Conductor and Shield Wire Replacement - Line 1825 (Connecticut)	10.6	Eversource
378	CT Asset Condition Project - Line 1620 (Connecticut)	8.8	Eversource
379	CT Asset Condition Project - Lines 1132 and 1505 (Connecticut)	13.4	Eversource
380	NH Asset Condition Project - H123 Line (New Hampshire)	5.8	Eversource

June 2024 Asset Condition List Update, cont.

- **17 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
390	NH Wood Structure Replacements - 373 Line (New Hampshire)	10.3	Eversource
393	NH Wood Structure Replacements - A126 Line (New Hampshire)	8.4	Eversource
396	NH Wood Structure Replacements - D121 Line (New Hampshire)	5.0	Eversource
398	NH Wood Structure Replacements and OPGW Installation - B143 Line (New Hampshire)	17.3	Eversource
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
418	308 345 kV Line Asset Condition Refurbishment (Massachusetts)	15.8	National Grid, USA

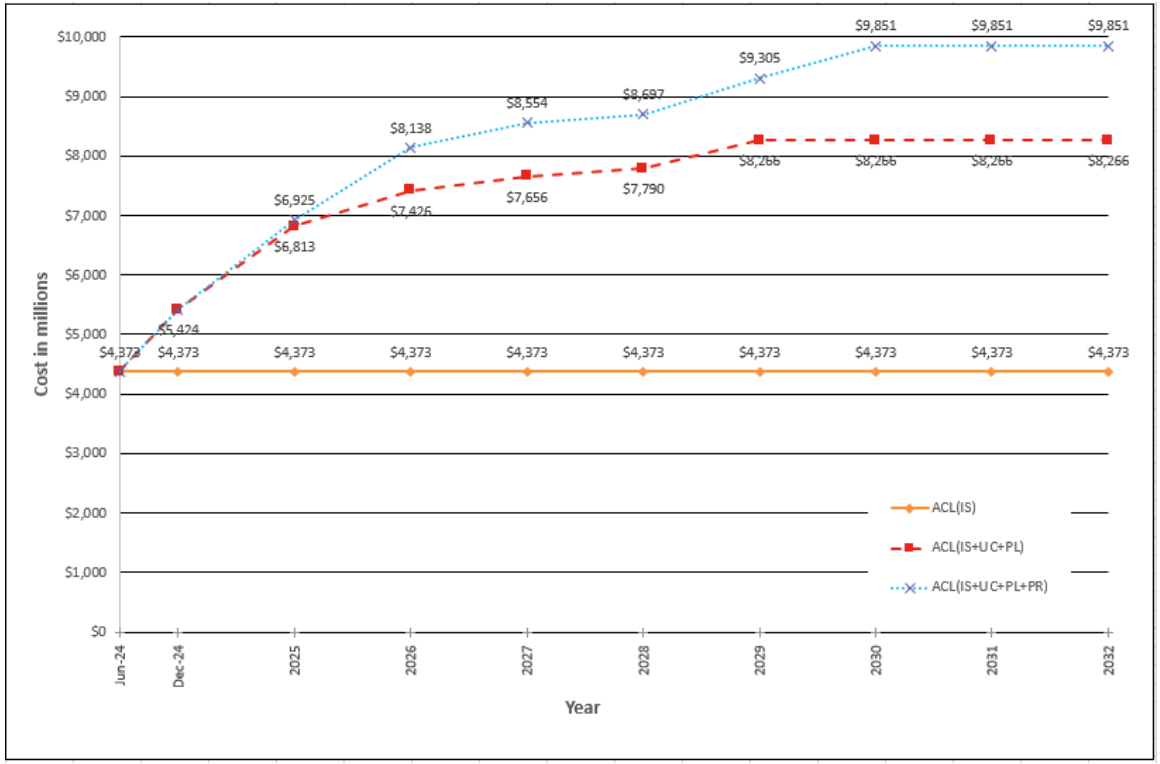
June 2024 Asset Condition List Update, cont.

- **17 Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions $)	Primary Equipment Owner
424	A152 Structure Replacement Project (New Hampshire)	5.9	Eversource

June 2024 Update, cont.

- **Cumulative Investment of New England Asset Condition Projects through 2032**



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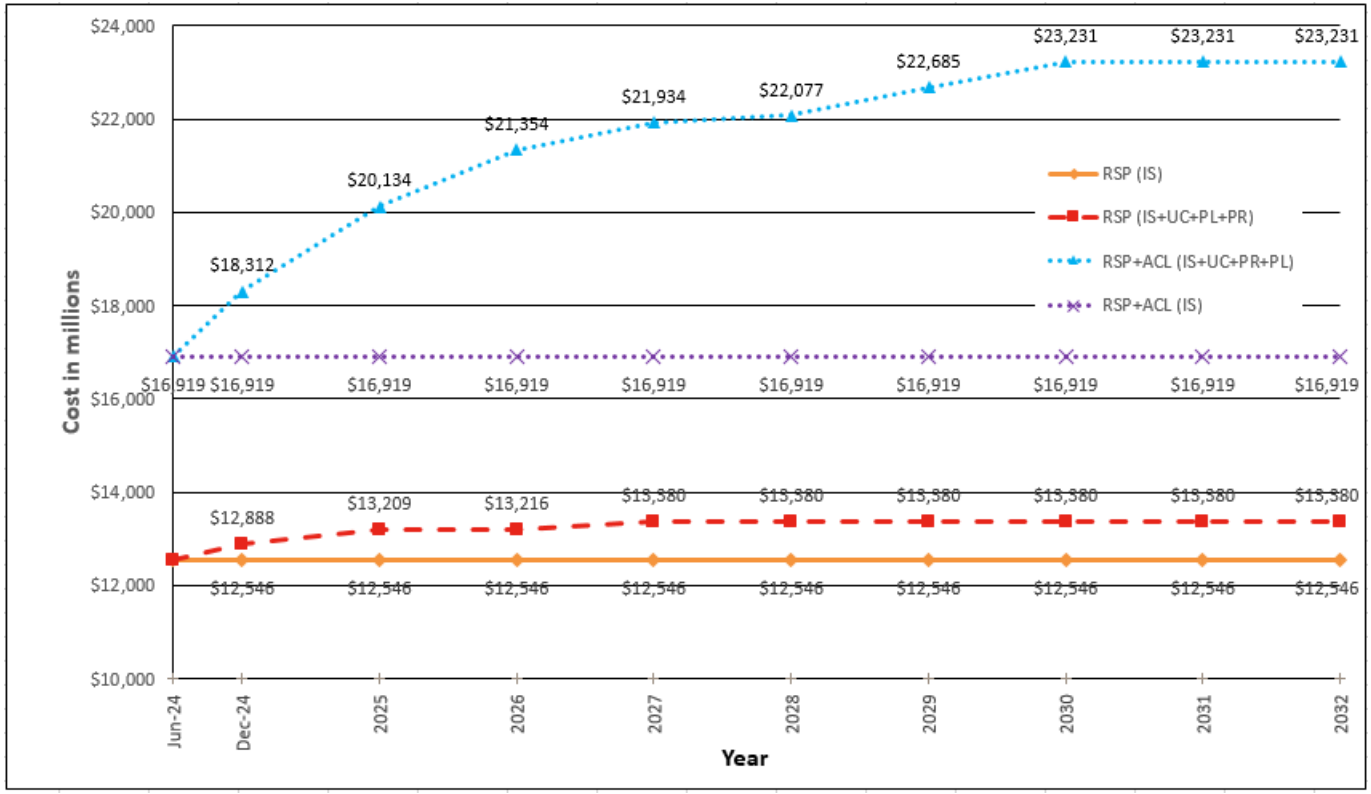
** Future total $ are shown at the end of the project. Totals do not reflect or show phasing in over time or the depreciation of prior projects. Total costs are associated with the year projects are placed in-service as reported in the Project List.

June 2024 Asset Condition List Update, cont.

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



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Next Steps

- The ISO proposes to remove Proposed, Planned and Under Construction project cost estimate slides (slides 10-12) in future updates, as the information is presented multiple times in the RSP section
- Please provide comments related to the proposed changes and the project lists to pacmatters@iso-ne.com by July 5, 2024
- 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

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 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'.

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 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.

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