



Regional System Plan

Transmission Projects and Asset Condition

June 2020 Update

Planning Advisory Committee Meeting

Dan Schwarting

SUPERVISOR, TRANSMISSION PLANNING



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Highlights of the RSP Project List Update

- **Major cost estimate changes that occurred between the March and June 2020 Project List**
 - (MA) Southeast Massachusetts/Rhode Island Reliability Project (SEMA/RI) – cost increase of \$24.0M for four projects due to scope clarification, increased material and labor cost estimates
 - (MA) Central/Western MA Reinforcements – net cost reduction of \$19.2M
 - Cost reduction of \$19.6M for cancellation of four projects
 - Cost increase of \$0.4M for one project to reflect final project costs
 - (CT) Greater Hartford & Central Connecticut Project (GHCC) – cost increase of \$14.2M for three projects due to delayed Amtrak approval, rock found along the underground portion, construction bids higher than anticipated costs, and cost of unanticipated wetlands matting
- **No New Projects**
- **Two Upgrades have been placed in-service since the March 2020 update**
 - (ME) Total of one project
 - Local System Plan County Road Substation
 - (CT) Total of one project
 - GHCC – one project



June 2020 RSP Project List Update

- **No New Projects**



June 2020 RSP Project List Update, cont.

- Two Projects Placed In-Service and Corresponding Needs

Project ID #	Transmission System Upgrades	Cost (in millions \$)	Improvement/Need
1514	Local System Plan County Road Substation (Maine)	32.3	Increase load serving capability
1594	Reconductor the 115 kV line between Newington and Newington Tap (1783) (Connecticut) GHCC	2.5	Resolve thermal overloads



June 2020 RSP Project List Update, cont.

- **Cost Estimate Comparisons of Reliability Projects March vs. June 2020 Update ⁽¹⁾**

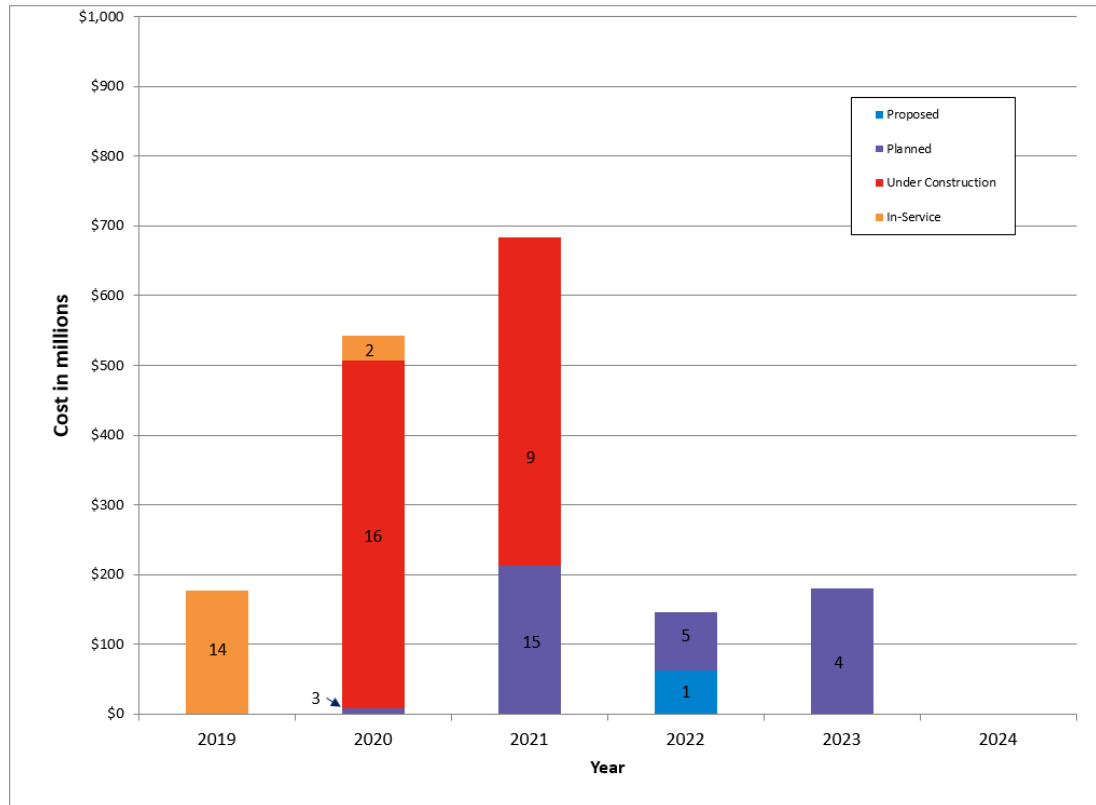
	As of Mar 2020 Plan Update (in millions \$)	As of Jun 2020 Plan Update (in millions \$)	Change in Plan Estimate (in millions \$)
MAJOR PROJECTS			
Greater Hartford & Central Connecticut (GHCC)	307	321	14
Southeast Massachusetts/Rhode Island Reliability (SEMA/RI)	386	410	24
Pittsfield/Greenfield Project	179	179	0
Greater Boston - North, South, Central, and Western Suburbs	1041	1041	0
New Hampshire Solution - Southern, Central, Seacoast, Northern	369	369	0
Southwest Connecticut (SWCT)	399	399	0
SUBTOTAL ⁽²⁾	2682	2720	38
OTHER PROJECTS	9909	9885	-24
NEW PROJECTS	0	0	0
TOTAL ⁽²⁾	12590	12605	15
Minus 'in-service'	-11055	-11086	-31
Aggregate estimate of active projects in the Plan ⁽²⁾	1535	1519	-16

Notes:

- (1) Transmission Owners provided all estimated costs, which may not meet the guidelines described in Planning Procedure 4, Attachment D.
- (2) May not sum exactly due to rounding.
- (3) The cost estimates for projects in the "Major Projects" category are moved to the "Other Projects" category once they are fully completed.

June 2020 RSP Project List Update, cont.

- Investment of New England Transmission Reliability Projects by Status through 2024

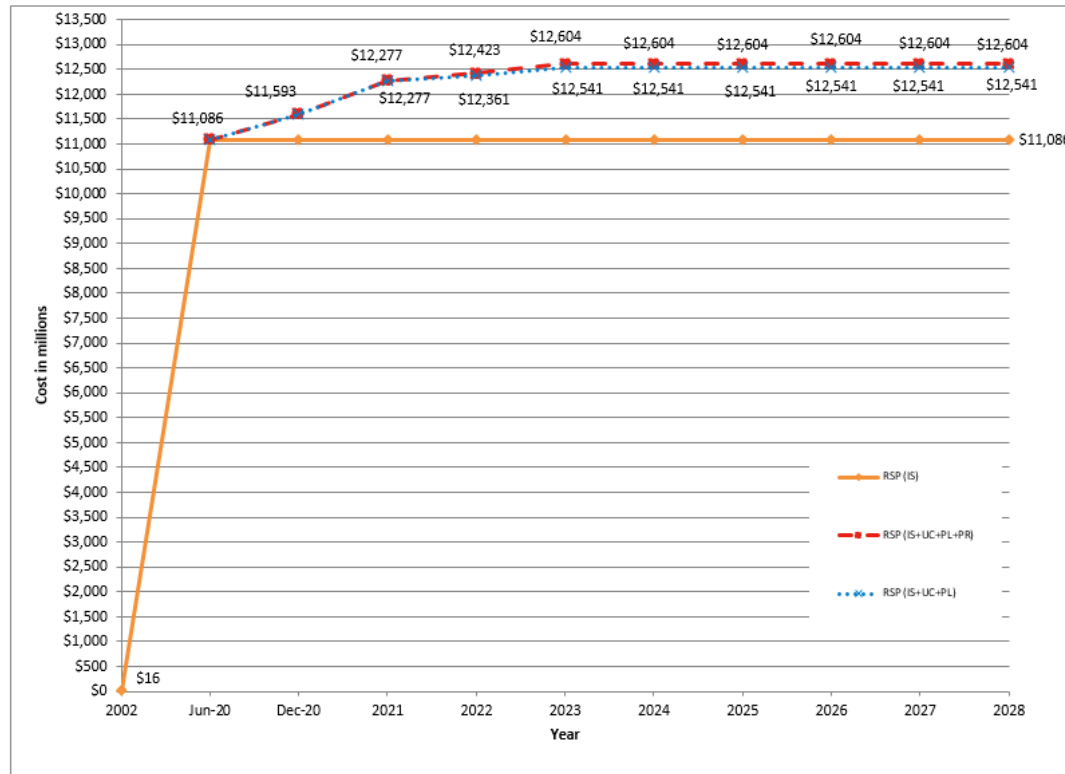


Notes:

- 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 2020 RSP Project List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects through 2028



Notes:

1. IS – In Service, UC – Under Construction, PL – Planned, PR – Proposed
2. 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 2020 RSP Project List Update, cont.

- Reliability Project Counts and Aggregated Cost Estimates by Project Stage with Applied Accuracy Ranges ⁽¹⁾

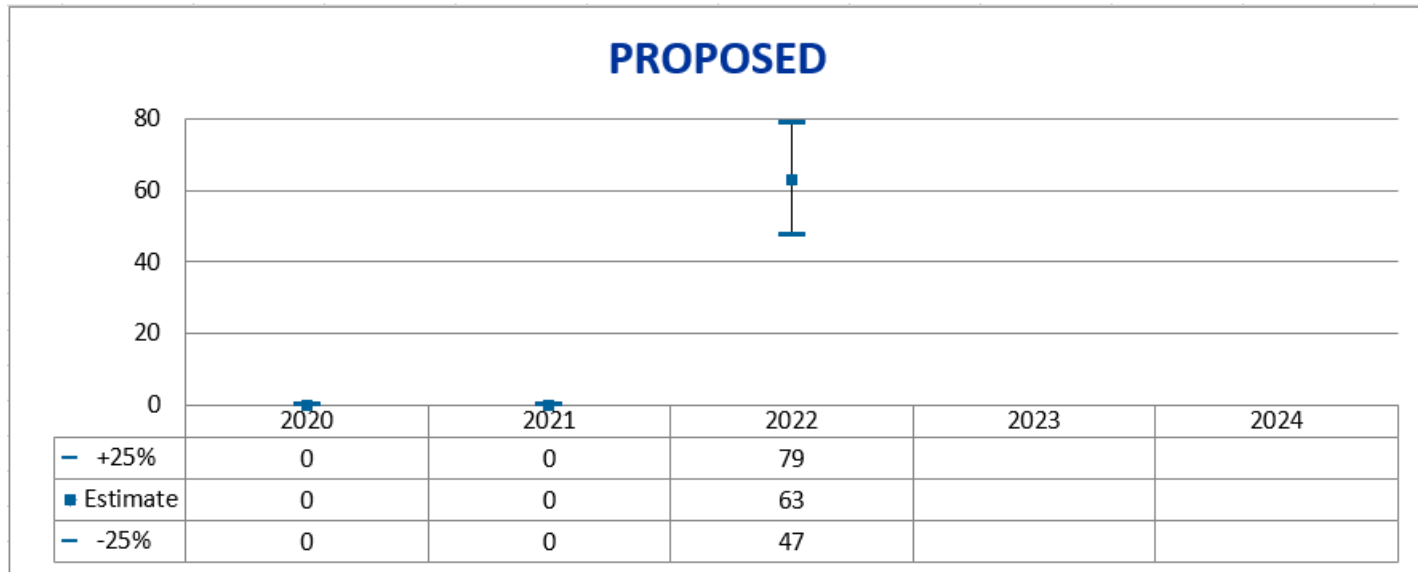
Project Stage (Status)	Component /	Estimate Range		Estimated	Range	
	Project / Plan	Minimum	Maximum	Costs	Minimum	Maximum
	Count ⁽²⁾			(\$millions)	(\$millions)	
Proposed	1	-25%	25% ⁽³⁾	63	47	78
Planned	27	-25%	25%	485	364	607
Under Construction	25	-10%	10%	970	873	1067
Total Plan	53			⁽⁴⁾ 1518	1284	1752
In-Service	2	-10%	10%	35	31	38
Cancelled	4	-25%	25%	20	15	25

Notes:

- (1) All costs are provided by Transmission Owners. The costs in the table reflect all projected in-service dates.
- (2) Efforts need to be made to describe projects on a more consistent basis.
- (3) All estimates may not yet be at this level of accuracy; many estimates may be -25%/+50%.
- (4) May not add up due to rounding.

June 2020 RSP Project List Update, cont.

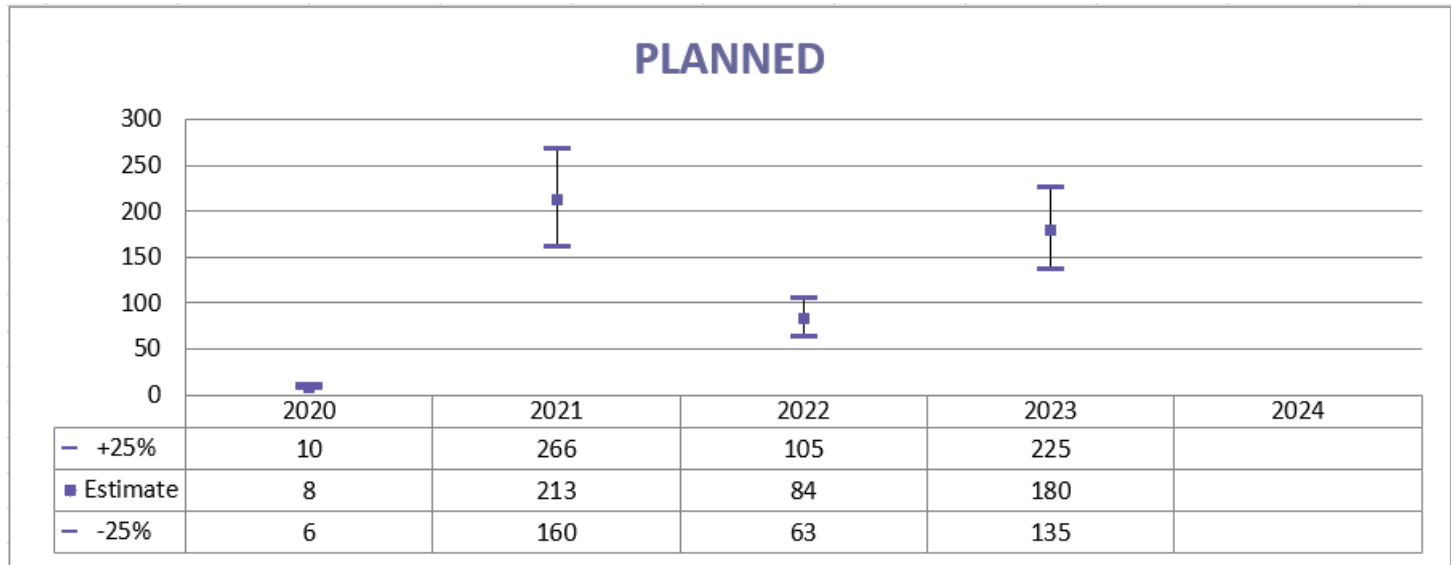
- Project Cost Estimate Tolerances by Status and Year in Millions \$



Note: 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 2020 RSP Project List Update, cont.

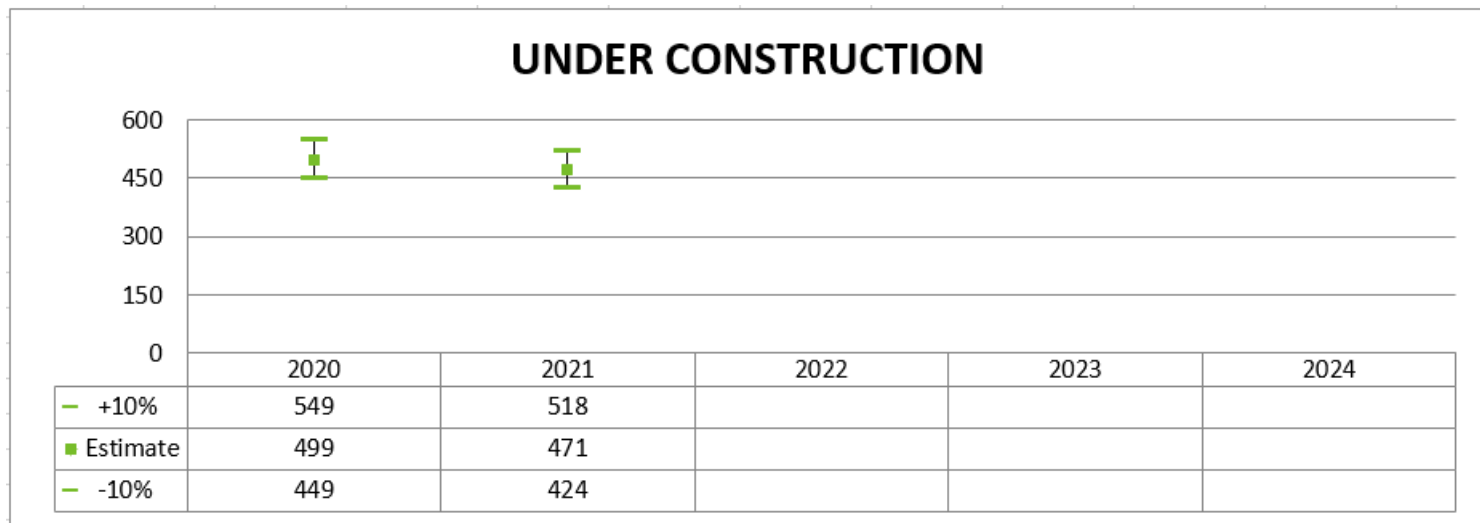
- Project Cost Estimate Tolerances by Status and Year in Millions \$



Note: 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 2020 RSP Project List Update, cont.

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



Note: 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
Pittsfield/Greenfield Project	Approved 12/12, 01/16, 05/16	2/11/16, 7/17/17, 2/15/19	Project completion 2014-2020
Southwest Connecticut (SWCT)	Approved 4/15	Complete 7/16/15, 4/15/16, 5/13/16, 1/3/18, 2/15/19	Project completion 2013-2021
Southeast MA/RI Reliability (SEMA/RI)	Approved 5/17, 4/18	TCA Submitted	Project completion 2017-2023
Central/Western MA Reinforcements	Approved 12/07, 3/11	Group 1 2/29/2012	Project completion 2009-2022
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 2013-2020
Greater Hartford & Central Connecticut (GHCC)	Approved 4/15	TCA Submitted	Project completion 2015-2020

June 2020 Asset Condition List Update

- **Eight New Projects**

Project ID #	Transmission System Upgrades	Cost (in millions \$)
232	Line 340 Asset Condition Structure Refurbishment (Vermont)	37.2
233	Line K41 Asset Condition Structure Refurbishment (Vermont)	9.3
234	Chestnut Hill #702 Substation Asset Replacements (Massachusetts)	N/A ¹
235	Vernon #13 Substation Asset Replacements (Massachusetts)	N/A ¹
236	Deerfield #4 Substation Asset Replacements (Massachusetts)	N/A ¹
237	A-1 & B-2 69kV Line Asset Condition Project (Massachusetts)	N/A ¹
238	115 kV Granville Junction to Atwater 1853 line (formerly 1512) OPGW Project (Massachusetts)	5.0
239	Derby Junction to Ansonia Corridor 115 kV Transmission Upgrades (Connecticut)	22.4

1. No cost was provided for project in 'Concept' status.



June 2020 Asset Condition List Update, cont.

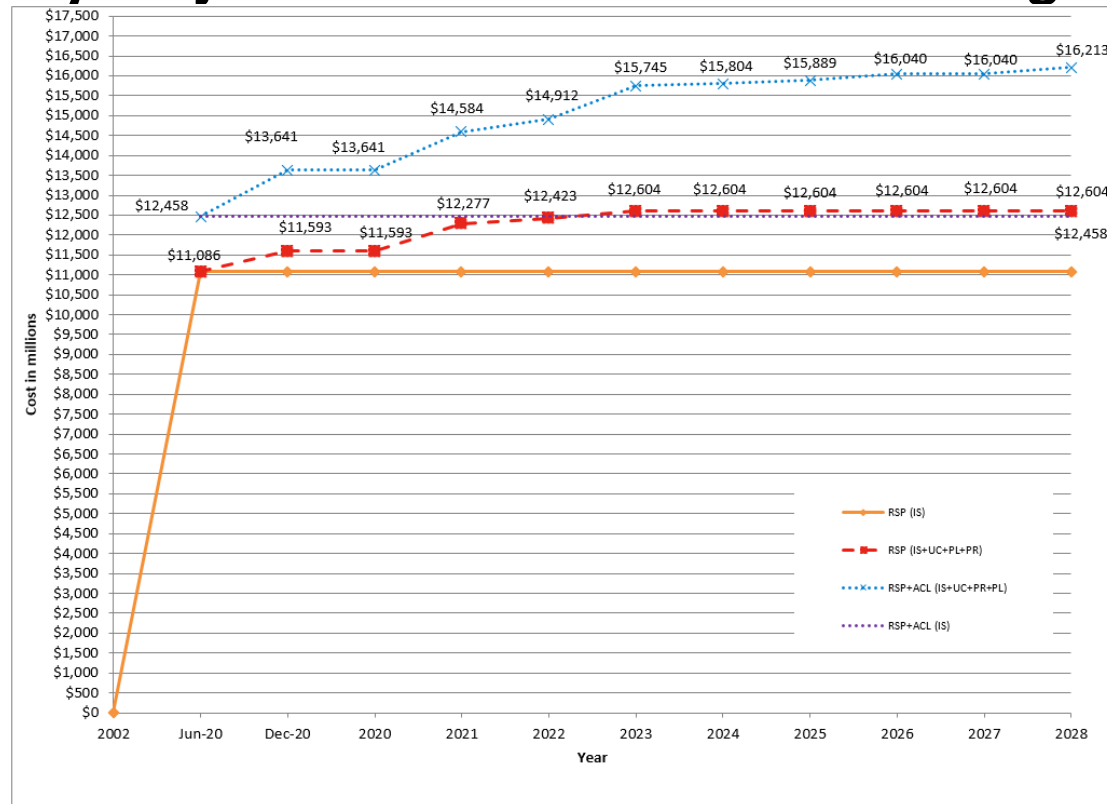
- **Five Projects Placed In-Service**

Project ID #	Transmission System Upgrades	Cost (in millions \$)
17	East Shore 345 kV circuit switcher replacement project. Replace 345 kV circuit switchers with dead tank breakers (Connecticut)	11.2
18	East Shore - Raising Impacted 115 kV Equipment (Connecticut)	0.3
70	Oil Circuit Breaker Replacement Project at the Plumtree Substation (Connecticut)	5.9
180	345 kV Structure Replacement Projects - Line 3361 (Massachusetts)	5.0
185	345 kV Structure Replacement Projects - Line 3419 (Massachusetts)	26.2



June 2020 Asset Condition List Update, cont.

- Cumulative Investment of New England Transmission Reliability Projects and Asset Condition through 2028



Notes:

1. IS – In Service, UC – Under Construction, PL – Planned, PR – Proposed
2. 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)

Note: 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 project¹
 - 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

Note:

¹ 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 pool-supported 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%)