Regional System Plan Transmission Projects
April 2007 – July 2007 Update

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Note: See Page 15 for graph of investment for projects placed in service under the Regional System Plan (RSP)

Highlights

Summary of Changes of Reliability Projects
April 2007 versus July 2007 Update

New Projects (total projects now in the Plan = 363)	63
Cancelled Projects	5
Projects Advancing to 'Planned' Status (Review of Market Participant's Proposed Plans (I.3.9) - Approved)	1
Projects Commencing Construction	16
Projects Placed In Service	15
System Plan Cost Estimate Change from April 2007 Update (RSP06 total estimate: $3.7 billion)	+ $1093 million

July 2007 Changes

Cost Estimate Comparisons of Reliability Projects
April 2007 vs. July 2007 Update (1)

	As of April 2007 Plan Update (in millions $)	As of July 2007 Plan Update (in millions $)	Change in Plan Estimate (in millions $)
MAJOR 345 kV PROJECTS			
Northwest Vermont Reliability Project	210.1	210.1	0
Southwest Connecticut Reliability Project (Phase I)	343.2 (2)	343.2 (2)	0
Southwest Connecticut Reliability Project (Phase II)	1303	1384	81
NSTAR 345 kV Transmission Reliability Project	225.6	283.1	57.5
Northeast Reliability Interconnect Project	109.9	144.0	34.1
New England East - West Solution (NEEWS)	TBD	272.7 (3)	272.7
Greater Rhode Island Transmission Reinforcements	195	182	-13
Springfield 115 kV Reinforcements	TBD	TBD	0
Merrimack Valley / North Shore Reliability Project	134	152	18
Vermont Southern Loop Project	72	200	128
SUBTOTAL	**2593**	**3171**	**578**
OTHER PROJECTS	1666	1734	68
NEW PROJECTS		388	388
TO BE DETERMINED (TBD) PROJECTS WITH COST ESTIMATES		59	59
TOTAL	**4259**	**5352**	**1093**
minus 'in-service'	-900	-974	
(Aggregate estimate of active projects in the Plan.)	**3359**	**4378**	

(1) All costs provided by Transmission Owners

(2) Includes $117.4 million of Localized Costs

(3) Reported costs for the Rhode Island portion of NEEWS

July 2007 Changes, *Con't.*

Make-up of Cost Estimate Change of Reliability Projects April 2007 vs. July 2007 Update (1)

Project	July 2007 ($ millions)	Change ($ millions)	Cause of Change
NEEWS (Rhode Island portion only)	272.7	272.7	First reported cost estimates for components of the project
Central/Western Massachusetts Upgrades	144.7	144.7	New project added to the RSP Project Listing
Vermont Southern Loop Project	200	128	Updated cost estimate based on a scope of work involving new 345 kV line
Southwest Connecticut (SWCT) Reliability Project (Phase II)	1384	81	Detailed project estimate resulting from executed project contracts and higher AFUDC(2) estimates
NSTAR 345 kV Transmission Reliability Project	283.1	57.5	Revised cost estimate reflecting cost over-runs in labor and materials associated with Stage 1
Naugatuck Valley 115 kV Improvement Project	75	50	United Illuminating 10-Year Plan identified voltage and thermal issues. Prior alternatives addressed only the voltage issues

(1) All costs provided by Transmission Owners

(2) Allowance for Funds Used During Construction

July 2007 Changes, *Con't.*

Make-up of Cost Estimate Change of Reliability Projects April 2007 vs. July 2007 Update (1)

Project	July 2007 ($ millions)	Change ($ millions)	Cause of Change
Northeast Reliability Interconnect Project	144.0	34.1	Revised cost estimate due to cost over-runs in materials and engineering/design changes
New projects (excluding Central/Western Massachusetts Upgrades) (nineteen of thirty projects)	242.9	242.9	New projects added to the RSP Project Listing
Short Term Lower SEMA(2) Upgrades	33.3	27.8	Updated cost estimate
Merrimack Valley / North Shore Reliability Project	151.6	17.7	Updated cost estimate
Other (aggregate) (sixty projects)	433.4	36.6	Various (i.e. cancelled, new/updated estimates)
		+ $1093	

(1) All costs provided by Transmission Owners

(2) SEMA – Southeastern Massachusetts

July 2007 Changes, *Con't.*

Sixty-three New Projects and Corresponding Needs

Transmission System Upgrades	Need
Central Maine Power Reliability Program (Maine) – 5 projects	Improve post-contingency voltage and thermal performance in Maine
Central/Western Massachusetts Upgrades (Central/Western Massachusetts) – 33 projects	Improve post-contingency voltage and thermal performance in MA
Marlboro Area Upgrades (Central Massachusetts)	Improve thermal capability of 69 kV circuits in the area
Installation of new 115 kV underground circuit from Mystic to E. Cambridge (Boston)	Improve post-contingency thermal performance in the area
Chelsea Substation – add a 54 MVAR[1] 115 kV capacitor bank (Boston)	Improve post-contingency voltage performance
Reconductor N. Woburn to Reading Tap (211-503/504) 115 kV lines (Northeastern Massachusetts)	Increase thermal capability of the circuits

(1) MVAR – megavolt-ampere reactive

July 2007 Changes, *Con't.*

Sixty-three New Projects and Corresponding Needs

Transmission System Upgrades (Con't)	Need
Installation of new 345 kV circuit from Lexington to Waltham (Northeastern Massachusetts)	Improve post-contingency thermal performance in the area
Waltham Substation – add new 345/230 kV autotransformer and switching facilities (Northeastern Massachusetts)	Mitigate overloads on underground circuits in area due to DCT[1] and breaker failure contingencies
Sudbury Substation – add new 230/115 kV autotransformer and sectionalizing breakers (Northeastern Massachusetts)	Improve post-contingency voltage performance and eliminate 230 kV DCT contingency
W. Walpole Substation – add one 115 kV series circuit breaker (Southeastern Massachusetts)	Eliminate breaker failure contingency
Reconductor W. Walpole to Walpole (447-508/509) 115 kV lines (Southeastern Massachusetts)	Increase thermal capability of the circuits

(1) DCT – double circuit tower

July 2007 Changes, *Con't.*

Sixty-three New Projects and Corresponding Needs

Transmission System Upgrades (Con't)	Need
Installation of third 115 kV circuit from West Walpole to Holbrook (Southeastern Massachusetts)	Improve thermal performance for 447-508/509 115 kV DCT contingency
Holbrook Substation – add one 115 kV series circuit breaker (Southeastern Massachusetts)	Eliminate breaker failure contingency
Read St Substation – 115 kV capacitor bank additions (Rhode Island)	Address post-contingency low voltage issues
Split 345 kV DCT out of Millstone Station (Connecticut)	Eliminate 345 kV DCT contingency
Devon Tie, Elmwest, Ash Creek Substations – control house expansions (Southwest Connecticut)	Physical limitations for additional control room equipment

July 2007 Changes, *Con't.*

Sixty-three New Projects and Corresponding Needs

Transmission System Upgrades (Con't)	Need
East Shore Substation – replace 115 kV Oil Circuit Breakers and disconnect switches (Southwest Connecticut)	Equipment reliability, maintenance, and fault duty margin
Pequonnock 115 kV Fault Duty Mitigation (Southwest Connecticut)	Eliminate short circuit issues
New Haven area 115 kV Low Pressure Oil Filled underground cable replacements (Southwest Connecticut)	Improve thermal capability of the circuits and address maintenance concerns
New Haven area 115 kV High Pressure Fluid Filled underground cable upgrades (Southwest Connecticut)	Improve thermal capability of the circuits
Grand Avenue Substation – rebuild 115 kV switching station (Southwest Connecticut)	Address voltage supply, short circuit, and equipment reliability and maintenance issues
Sackett Substation – rebuild 115 kV substation (Southwest Connecticut)	Address thermal and voltage supply issues

July 2007 Changes, *Con't.*

Sixty-three New Projects and Corresponding Needs

Distribution Substation Work [1]	Need
Belfast Substation – add one new 115 kV circuit breaker on Section 86 115 kV line (Maine)	Improve reliability to supply load in Belfast/Searsport area
Anson Substation – add 115 kV circuit breakers and transformer (Maine)	Improve reliability to supply load in Skowhegan area
Wareham St Substation – close E1 to M1 115 kV loop (Southeastern Massachusetts)	Improve reliability to supply load in Middleborough area
Orange Substation – new 115/13.8 kV substation (Southwest Connecticut)	Improve reliability to supply load
Hamden Substation – new 115/13.8 kV substation (Southwest Connecticut)	Improve reliability to supply load

[1] Projects may contain Pool Transmission Facilities (PTF) components (115 kV switchgear)

July 2007 Changes, *Con't.*

Fifteen Projects Placed In-Service and Corresponding Needs

Transmission System Upgrades	Cost (in millions)	Improvement/Need
Baird Substation – replace two 115 kV Oil Circuit Breakers (Norwalk/Stamford)	0.7	Increase short circuit interrupting capability
Cos Cob Substation – replace two 115 kV circuit breakers (Norwalk/Stamford) – part of Norwalk-Glenbrook Cable Project	0.5	Increase short circuit interrupting capability
Rebuild Manchester to Hopewell (1767) 115 kV line (Connecticut) – part of Haddam/Middletown Reliability Project	8.0	Increase thermal capability of the line
Lake Road Substation – modification of generation Special Protection System (SPS) (Connecticut) – part of Killingly Project	*(1)	Modified to sense status of two 345 kV lines
Millstone Substation – redesign of Millstone Single Line Outage Detection (SLOD) (Connecticut)	1.6	Existing equipment is obsolete with unavailable replacement parts

(1) Cost is reflected in the Killingly Project cost estimate of $28.6 million

July 2007 Changes, *Con't.*

Fifteen Projects Placed In-Service and Corresponding Needs

Transmission System Upgrades (Con't)	Cost (in millions)	Improvement/Need
Barnstable Substation – upgrade 115 kV capacitor bank to 35.3 MVAR (Southeastern Massachusetts)	0.03	Improve voltage control in the Cape Cod area
Falmouth Substation – upgrade 115 kV capacitor bank to 35.3 MVAR (Southeastern Massachusetts)	0.03	Improve voltage control in the Cape Cod area
Orleans Substation – upgrade 115 kV capacitor bank to 13.5 MVAR (Southeastern Massachusetts)	0.02	Improve voltage control in the Cape Cod area
Wachusett Substation – new station with two 345/115 kV autotransformers (Central Massachusetts) – part of Central Massachusetts Reinforcements	49.0	Improve post-contingency voltage and thermal performance in the area
Installation of Scobie to Hudson overhead 115 kV line (New Hampshire) – part of Scobie Pond-Hudson Reinforcement Project	*(1)	Improve post-contingency voltage and thermal performance in the area

(1) Cost is reflected in the Scobie Pond – Hudson Reinforcement Project cost estimate of $31.5 million

July 2007 Changes, *Con't.*

Fifteen Projects Placed In-Service and Corresponding Needs

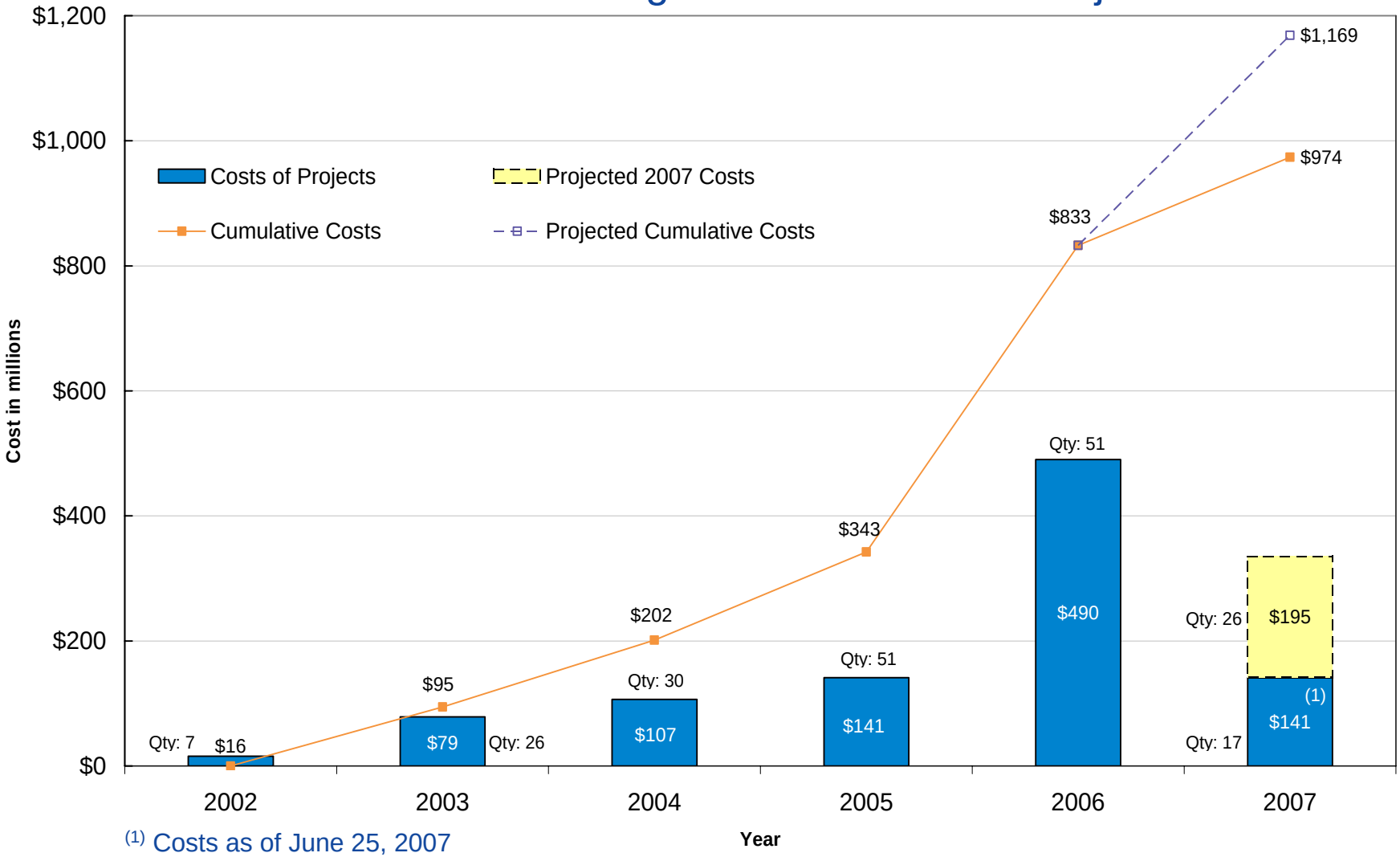
Transmission System Upgrades (Con't)	Cost (in millions)	Improvement/Need
Two components of the NSTAR 345 kV Transmission Reliability Project involving: installation of Stoughton to K Street underground 345 kV line along with two 345 kV circuit breakers (Boston)	*(1)	Improve post-contingency voltage and thermal performance in the area
Bennington Substation – replace 115/69 kV transformer (Vermont)	2.5	Eliminate post-contingency overload
Distribution Substation Work (2)		**Improvement/Need**
Timber Swamp Substation – add second 345/34.5 kV transformer and ring bus (New Hampshire)	9.0	Improve capacity to supply load
Oak Hill Substation – add 115/34.5 kV transformer and 115 kV circuit breaker (New Hampshire)	2.7	Improve capacity to supply load

(1) Cost is reflected in the NSTAR 345 kV Project cost estimate of $283.3 million

(2) Projects may contain PTF components (115 kV switchgear)

July 2007 Changes, *Con't.*

Investment of In-Service New England Transmission Projects



(1) Costs as of June 25, 2007

Status of Major Transmission Projects

Northeast Reliability Interconnect Project

- I.3.9 Approval – March 2003
- Transmission Cost Allocation (TCA) Approval – Reliability Committee (RC) recommended approval of revised TCA application on July 10, 2007 for additional $34.1M
- Siting approved for Canadian section of line
- Maine Public Utilities Commission (PUC) Siting approval – July 2005
- Maine Department of Environmental Protection (DEP) Permit received October 2005
- Department of Energy (DOE) Presidential Permit approved and received in December 2005
- Army Corps of Engineers Clean Water Act Permit received January 2006
- Right-Of-Way complete. Line construction 85% complete
- Orrington Substation work 80% complete. Series capacitor 85% complete
- Completion of work on Canadian section of the line on target – 85% complete
- Estimated in-service date – December 2007

Status of Major Transmission Projects, *Con't.*

Northwest Vermont Reliability Project

- I.3.9 Approval – January 2003
- TCA Approval – Vermont Electric Power Company to develop amended TCA application expected Fall 2007
- Vermont Supreme Court upholds Vermont Public Service Board's (VT PSB) approval of project
- Blissville Substation 115 kV Phase Angle Regulator (PAR) placed in-service December 2006
- West Rutland – New Haven 345 kV line placed in-service January 2007
- First Granite autotransformer received May 2007.
- Second Granite autotransformer expected September 2007. Two PARs expected in early fall 2007
- Permits for Vergennes and Queen City 115 kV substations received and construction has begun
- VT PSB approved New Haven – Queen City 115 kV final line design and landscape plans on June 25, 2007
- Estimated in-service date – December 2008 (for remainder of project)

Status of Major Transmission Projects, *Con't.*

NSTAR 345 kV Transmission Reliability Project

- I.3.9 Approval – February 2005
- TCA Approval – RC recommended approval of revised TCA application on May 30, 2007 for additional $57.5M due to increases in labor and materials associated with Stage 1
- Energy Facilities Siting Board (EFSB) and Massachusetts Department of Telecommunications and Energy (MA DTE) approval received on December 23, 2004
- Pipe installation complete
- Cable pulls for Stage 1 completed
- Substation equipment installation completed
- Stoughton Substation energized May 6, 2006
- Stoughton – Hyde Park (3164) 345 kV cable fully operational November 2006
- Stoughton – K Street (3162) 345 kV cable fully operational April 2007
- Estimated in-service date – October 2008 (Stage 2)

Status of Major Transmission Projects, *Con't.*

Lower SEMA (Southeastern Massachusetts) Upgrades

- I.3.9 Approval – Application for Short-Term upgrades expected summer 2007
- TCA Approval – TBD
- Short-Term alternatives defined
- Long-Term needs analysis underway
- Estimated in-service date – December 2008 (Short-Term) / 2010 (Long-Term)

Status of Major Transmission Projects, *Con't.*

Merrimack Valley / North Shore Reliability Project

- I.3.9 Approval – TBD
- TCA Approval – TBD
- Project involves multiple steps over a ten year horizon
- 2007 – 115 kV line reconductoring (Level 1 Proposed Plan Application)
- 2008 – new 345 kV Wakefield Junction Substation, circuit breaker additions at Sandy Pond 345 kV Substation, and capacitor bank addition at Revere Substation
- 2009, 2010, 2017 – 115 kV line replacement and reconductorings
- Task force approvals have been received
- Estimated in-service date – 2007 through 2017

Status of Major Transmission Projects, *Con't.*

Southwest Connecticut Reliability Project

Phase I: Bethel (Plumtree Substation) – Norwalk (Norwalk Substation)

- I.3.9 Approval – February 2004
- TCA Approval – ISO Final Determination Letter issued September 2006, which finds $117.4 million of the total estimated cost constitutes Localized Costs
- Placed in-service – October 2006

Phase II: Middletown (Scovill / Beseck Substations) - Norwalk

- I.3.9 Approval – January 2006
- TCA Approval – Application expected August 2007
- Siting approved April 2005
- Construction is in progress
- Estimated in-service date – December 2009

Status of Major Transmission Projects, *Con't.*

New England East – West Solution (NEEWS)

- Comprised of the Interstate, Greater Springfield, Rhode Island, and Central Connecticut Reliability Projects
- I.3.9 Approval – expected winter 2007/2008
- TCA Approval – initial applications expected spring 2008
- Determination of final transmission alternatives completed June 2006
- Selection of final plan expected in summer 2007
- Tentative start for siting processes is 2008
- Estimated in-service date – 2011 - 2013

Status of Major Transmission Projects, *Con't.*

Springfield 115 kV Reinforcements

- I.3.9 Approval – expected winter 2007/2008
- TCA Approval – expected spring 2008
- Estimated in-service date – 2010

Greater Rhode Island Transmission Reinforcements

- I.3.9 Approval – expected winter 2007/2008
- TCA Approval – expected spring 2008
- Estimated in-service date – 2009 - 2012

APPENDIX

July 2007 Changes

Project Count Update and Reconciliation – April 2007 to July 2007 Update

299	Reliability projects: as of April 2007 Update
+21	Projects added as a result of further study and scope definition of previously identified projects
+63	New projects
383	
-15	Projects placed in service
-5	Projects cancelled
363	Projects as of July 2007 Update

July 2007 Changes, *Con't.*

Project Status Changes – April 2007 vs. July 2007 Update

April 2007 Status		July 2007 Status	Total Projects Changing Status
Conceptual	→	Cancelled	2
Conceptual	→	Proposed	5
Conceptual	→	Planned	0
Conceptual	→	Under Construction	0
Conceptual	→	In-Service	0
Proposed	→	Cancelled	2
Proposed	→	Planned	1
Proposed	→	Under Construction	5
Proposed	→	In-Service	4
Planned	→	Cancelled	1
Planned	→	Under Construction	11
Planned	→	In-Service	4
Under Construction	→	In-Service	7
		Total	**42**

July 2007 Changes, *Con't.*

Reliability Project Status of Active Projects – July 2007 Update

Project Status	Reliability Projects in the Plan	New Reliability Projects Added	Total Projects in the Plan
Conceptual	66	22	88
Proposed	127	40	167 (1)
Planned	63	1	64
Under Construction	44	0	44
Total	**300**	**63**	**363**

(1) 128 projects are in advanced stages of studies. (NEEWS, Greater Rhode Island Transmission Reinforcements, Springfield 115 kV Reinforcements, New Hampshire Seacoast Area Reliability, Merrimack Valley/North Shore, Lower SEMA (Short Term), Rumford-Woodstock-Kimball Road Corridor, Auburn Area, and Central/Western Massachusetts Projects)

July 2007 Changes, *Con't.*

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

Project Stage (Status)	Project Count	Estimate Range Minimum	Estimate Range Maximum	Estimated Costs ($millions)	Range Minimum ($millions)	Range Maximum ($millions)
Concept	88	-50%	200%	493	246	1478
Proposed	167	-25%	50%	1221	916	1831
Planned	64	-25%	25%	574	430	717
Under Construction	44	-10%	10%	2090	1881	2299
Total July 2007 Plan	**363**			(2) **4378**	**3473**	**6325**
In-Service	15	-10%	10%	74	67	81
Cancelled	5			7.2		

(1) All costs provided by Transmission Owners

(2) Not included here is the cost of 120 reliability projects for which no estimates have been provided. Estimates for these projects are noted as TBD in the Project Listing

Project Listing

Project Listing Column Definitions for:

- Reliability Projects
- Interconnection Projects
- Economic Projects
- Elective Projects
- Merchant Projects
- Projects In-Service
- Cancelled Projects

July 2007 Project Listing – Column Definitions

Part Number (Part #)

The Part #'s designate the 'need' category of the project. Original categories are not changed when a project is placed 'In-Service' or 'Cancelled".

Part 1 – These projects are reliability upgrades.

- 1a: Planned or Under Construction
- 1b: Conceptual or Proposed

Part 2 – These projects are generator interconnection upgrades.

- 2a: Proposed (I.3.9 approval but without Generator Interconnection Agreement), Planned (I.3.9 approval with Generator Interconnection Agreement), or Under Construction
- 2b: Conceptual or Proposed

Part 3 – These projects are economic upgrades.

- 3a: Planned or Under Construction
- 3b: Conceptual or Proposed

Part 4,5 – 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.

- 4,5a: Planned or Under Construction
- 4,5b: Conceptual or Proposed

Project ID

This number is generated from ISO-NE System Planning Information Tracking System. It may change in the future as the tracking system evolves.

Primary Equipment Owner

The company listed here is the responsible equipment owner / provider designated to design and implement the project

July 2007 Project Listing–Column Definitions, *Con't.*

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 given to a project that consists of smaller subprojects.

Project Description

A brief, high-level description of the project is entered here. It will either include major pieces of substation equipment and/or types of line work to be performed.

Status (April 2007 / July 2007)

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 has received I.3.9 approval (if required), but may or may not have received TCA approval. The TCA approval may be applied for at a later date at the project owner's risk. Generator Interconnection projects are considered 'planned' when they have interconnection agreements filed with and accepted by the Federal Energy Regulatory Commission (FERC).

Proposed: A significant degree of analysis is available to show potential need for the project, but I.3.9 approval has not been received yet. ISO New England has been provided with a copy of the analysis associated with the project.

Concept: There is little or no analysis available to support a specific project, but there is sufficient information to suggest a pending need for future study work and a remedial project.

Cancelled: Project has been cancelled.

July 2007 Project Listing–Column Definitions, *Con't.*

Right-Of-Way (ROW – Substation/Transmission)

These columns provide information on ROW.

Substation:
a. Expand existing; own property
b. Expanding existing; purchase required
c. New Station; own property
d. New Station; purchase required
e. No ROW required

Transmission:
a. Expansion of existing ROW required
b. New ROW required
c. No new or expanded ROW required

I.3.9 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.

July 2007 Project Listing–Column Definitions, *Con't.*

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 either because the project has been cancelled or no/very minimal PTF costs are involved.

TCA Category (Transmission Cost Allocation)

This entry represents the most likely category for cost allocation, prior to TCA approval, and the actual category, post TCA approval.

'GI' – Generator Interconnection Related Upgrade
'EL' – Elective Transmission Upgrade
'NM' – NEMA Upgrade
'02' – Regional Transmission Expansion Plan (RTEP) 02 Upgrade
'RBU' – Regional Benefit Upgrade
'ECO' – Economic Upgrade

Estimated Costs (April 2007 / July 2007)

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:

Concept Project (-50%, +200%),
Proposed Project that has been reviewed and approved to proceed by ISO-NE (-25%, +50%),
I.3.9-Approved Project (+/-25%), and
TCA-Approved Project (+/-10%)