

**October 2016 ISO-NEW ENGLAND ASSET Condition Update**

Primary Driver	Section #	Asset Condition ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Footnote Number	Projected In-Service Month/Year	Asset Condition Grouping	Description	Mar-16 Status	Jun-16 Status	Oct-16 Status	Is the project Grandfathered on May 18, 2015	PPA (I.3.9) Approval	TCA Approval	Mar-16 Estimated PTF Costs	Jun-16 Estimated PTF Costs	Oct-16 Estimated PTF Costs	Difference	DELTA
<b>Asset Condition</b>																				
<b>Table A</b>																				
<b>Maine</b>																				
<b>New Hampshire</b>																				
Asset Condition	1a	4	NH	New Hampshire Transmission			11/2016	Seabrook 345 KV GIS Breaker Removal and Bus Upgrade	Phase 1 - Remove Breaker 22, remove Bus 4 and upgrade sections of Bus 2	Proposed	Planned	Planned	Not Applicable	2/23/2016	No	\$5,140,351	\$5,140,351	\$5,140,351	\$5,140,351	\$0
Asset Condition	1a	5	NH	New Hampshire Transmission			11/2017	Seabrook 345 KV GIS Breaker Removal and Bus Upgrade	Phase 2 - Remove Breaker 11 and upgrade sections of Bus 1	Proposed	Planned	Planned	Not Applicable	2/23/2016	No	\$4,271,787	\$4,271,787	\$4,271,787	\$4,271,787	\$0
<b>Vermont</b>																				
Asset Condition	1b	3	VT	Vermont Electric Power Company			09/2017	Essex STATCOM Refurbishment	Replace Essex STATCOM power electronics and controls	Proposed	Proposed	Proposed	Not Applicable	No	No	\$27,850,000	\$27,850,000	\$27,850,000	\$27,850,000	\$0
Asset Condition	1a	11	VT	Vermont Electric Power Company			12/2019	Structure Condition Improvement	Replacement of 115 kv, 230 kv and 345 kv structures as part of the VELCO asset maintenance activities addressing our aging and degrading transmission line infrastructure. 100 to 300 structures will be replaced every year based on outage availability.		Under Construction	Under Construction	Not Applicable	NR	No		\$185,000,000	\$185,000,000	\$185,000,000	\$0
<b>Massachusetts</b>																				
Asset Condition	1a	2	MA	National Grid, USA			10/2016	Crystal Lake Substation Upgrades	Crystal Lake Substation Upgrades	Under Construction	Under Construction	Under Construction	Not Applicable	5/5/2016	No	\$6,950,000	\$6,950,000	\$6,950,000	\$6,950,000	\$0
Asset Condition	1a	15	MA	Eversource			06/2019		Install a new Medway control house which is to be built to BPS standards in a location within the existing station footprint.			Under Construction	Not Applicable	No	No			\$11,800,000	\$11,800,000	\$11,800,000
<b>Connecticut</b>																				
Asset Condition	1a	17	CT	United Illuminating Company			12/2018		East Shore 345 kv circuit switcher replacement project. Replace 345 kv circuit switchers with dead tank breakers			Planned	Not Applicable	7/19/2016	No			\$10,931,000	\$10,931,000	\$10,931,000
<b>Rhode Island</b>																				
<b>Table B</b>																				
<b>Maine</b>																				
<b>New Hampshire</b>																				
<b>Vermont</b>																				
<b>Massachusetts</b>																				
Asset Condition	1b	12	MA	Eversource			07/2017		Doreen-Oswald Jct. 1211 115 kv Line Structure Replacement		Proposed	Proposed	Not Applicable	NR	No		\$14,800,000	\$14,800,000	\$14,800,000	\$0
Asset Condition	1b	13	MA	Eversource			02/2017		Ludlow-Thordike-Palmer (WMECO portion) of the X176 115 kv Line Rebuild		Proposed	Proposed	Not Applicable	NR	No		\$14,900,000	\$8,928,000	\$8,928,000	-\$5,972,000
<b>Connecticut</b>																				
<b>In-service</b>																				
<b>Connecticut</b>																				
Asset Condition	1a	16	CT	Eversource			06/2016		3419 line (portion in Connecticut) asset condition and storm hardening. Asset condition - replace 24 wood poles H-frame with direct embed steel wood pole equivalent or wood located in MA & CT.			In-service	Not Applicable	NR	No			Part of Asset Condition #1	Part of Asset Condition #1	
Asset Condition		6	CT	Eversource			09/2014		1570 line clearance remediation. Devon S/S to Beacon Falls S/S. 31 conductor span locations were found to have NESC clearance discrepancies.		In-service	In-service	In-service	Not Applicable	NR	No	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000
																			<b>\$251,943,138</b>	<b>\$22,731,000</b>

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<b>Massachusetts</b>																				
Asset Condition	1a	1	MA	Eversource			06/2016		3419 line (portion in Massachusetts) asset condition and storm hardening. Asset condition - replace 24 wood poles H-frame with direct embed steel wood pole equivalent or wood located in MA & CT.	Under Construction	Under Construction	In-service	Not Applicable	NR	No	\$14,500,000	\$14,500,000	\$11,014,000	\$11,014,000	-\$3,486,000
Asset Condition	1a	14	MA	Eversource			12/2015		1231/1242 Line Clearance remediation Project			In-service	Not Applicable	NR	No			\$13,804,000	\$13,804,000	\$13,804,000
Asset Condition		7	MA	Eversource			12/2015		115 KV line 136 Falmouth Tap - West Barnstable Complete structure replacements	In-service	In-service	In-service	Not Applicable	NR	11/25/2015	\$20,270,000	\$20,270,000	\$20,270,000	\$20,270,000	\$0
Asset Condition		8	MA	Eversource			05/2015		381 Line Structure Replacements	In-service	In-service	In-service	Not Applicable	NR	11/25/2015	\$14,150,000	\$14,150,000	\$14,150,000	\$14,150,000	\$0
Asset Condition		9	MA	Eversource			12/2015		354 Line Structure Replacements	In-service	In-service	In-service	Not Applicable	NR	11/25/2015	\$13,517,000	\$13,517,000	\$13,517,000	\$13,517,000	\$0
Asset Condition		10	MA	Eversource			07/2014		312 Line Structure Replacements	In-service	In-service	In-service	Not Applicable	NR	11/25/2015	\$8,125,000	\$8,125,000	\$8,125,000	\$8,125,000	\$0

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
<b>TABLE A</b>															Column T - Column S
<b>MAINE</b>															
Reliability Upgrade	1a	144	Bangor Hydro-Electric Company		12/2010	Keene Rd Autotransformer	Installation of a 345/115 kV autotransformer at Keene Rd Substation.	Under Construction	Under Construction	No	No	\$29,000,000	\$29,000,000	\$29,000,000	\$0
Reliability Upgrade	1a	625	Central Maine Power Company		04/2010	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Rumford Industrial Park capacitor bank.	Under Construction	Under Construction	11/30/2007	No	\$5,400,000	\$5,400,000	\$5,400,000	\$0
Reliability Upgrade	1a	1128	Central Maine Power Company		07/2010	CMP-LSP Hotel Road Substation	Add 115/34kV transformer with 115kV breaker at Hotel Rd.	Planned	Planned	8/20/2008	NR	\$800,000	\$800,000	\$800,000	\$0
Reliability Upgrade	1a	624	Central Maine Power Company		2010	Rumford-Woodstock-Kimball Road Corridor Project	Install 115 kV line (New Page - Rumford Industrial Park)	Planned	Planned	11/30/2007	No	Part of project 625	Part of project 625	Part of project 625	
Reliability Upgrade	1a	905	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Orrington-Albion Rd-Coopers Mills, Coopers Mills-Larrabee Road, Larrabee Road-Surowiec).	Planned	Planned	7/31/2008	1/29/2010	\$1,510,000,000	\$1,510,000,000	\$1,510,000,000	\$0
Reliability Upgrade	1a	906	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 115kV line construction (Orrington-Coopers Mills, Coopers Mills-Highland, Larrabee Road-Lewiston Lower, Larrabee Road-Livermore Falls, Livermore Falls-Rumford IP)	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	907	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Rebuild Existing 115kV lines: Sections 86 (Bucksport-Belfast), Section 84 (Albion Road-Coopers Mills), Section 203 (Detroit-Orrington), Section 80 (Coopers Mills-Highland), Sections 60 & 212 (Coopers Mills-Bowman St-Larrabee Road), Sections 89 & 229 (Livermore Falls-Riley-Rumford IP)	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	908	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Albion Road, Larrabee Road)	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	909	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Add 2-115kV breakers & rebuild 86A, new .25 mile transmission at Belfast	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	1025	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Separation of Double Circuit Towers (345kV Kennebec River Crossing 375/377 & Maine Yankee 375/392, 115kV Bucksport 65/205) and Maine Yankee 345 kV re-termination	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	1026	Central Maine Power Company	Northeast Utilities	12/2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Surowiec-Raven Farm, South Gorham-Maguire Road, Maguire Road-Three Rivers)	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Portion of CMP \$1.51B and portion of NU is \$35.1M	Portion of CMP \$1.51B and portion of NU is \$36.0M	\$36,000,000	\$900,000
Reliability Upgrade	1a	1027	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 115kV Line Construction (Elm Street-East Deering, East Deering -Cape)	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	1028	Central Maine Power Company	Northeast Utilities	12/2012	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV Line (Section 250, Maguire Rd-Three Rivers)	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Portion of CMP \$1.51B and portion of NU is TBD	Portion of CMP \$1.51B and portion of NU is TBD	Portion of CMP \$1.51B and portion of NU is TBD	
Reliability Upgrade	1a	1029	Central Maine Power Company		11/2010	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformer at South Gorham	Under Construction	Under Construction	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	1158	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Two 40 MVAR reactors at Albion Road, two 40 MVAR reactors at Larabee Road, two 40 MVAR at Coopers Mills	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	1030	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Raven Farm, Maguire Road)	Planned	Planned	7/31/2008 & 2/26/09	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	
Reliability Upgrade	1a	143	Bangor Hydro-Electric Company		12/2012	Down East Reliability Improvement	Contract 115 kV from Trenton tap (part of Hancock Reliability Project) to new Tunk Lake Substation to Harrington Substation.	Planned	Planned	5/10/2006	6/13/2008	\$66,100,000	\$66,100,000	\$66,100,000	\$0
Reliability Upgrade	1a	1129	Central Maine Power Company		05/2012		New 115kV line between Wyman Hydro and Heywood Rd. parallel to exiting Section 83. Install a 115kV circuit breaker at Wyman Hydro termination	Planned	Planned	1/26/2009	No	\$19,500,000	\$32,800,000	\$32,800,000	\$13,300,000
Reliability Upgrade	1a	1144	Central Maine Power Company		09/2010	Heywood Road Project	Circuit switcher replacements at Detroit, Lakewood, Rice Rips and Winslow	Under Construction	Under Construction	3/20/2009	7/20/2009	Part of Heywood Road Project	Part of Heywood Road Project	Part of the Heywood Road Project	
Generator Interconnection Upgrade	2a	770	Central Maine Power Company		12/2010	Queue Position 137	Installation of New Page Substation (aka Railroad Street Substation) with (3) circuit breakers tapping Section 218 115kV.	Proposed	Proposed	3/18/2007	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1159	Central Maine Power Company		07/2010	Queue Position 197	Add a new 115kV breaker and new 115kV line termination at the former T2 position at Rumford 115kV substation		Planned	9/29/2009	NR		NR	NR	
<b>NEW HAMPSHIRE</b>															

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
Reliability Upgrade	1a	277	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Add 2nd 345/115 kV autotransformer and 3-345kV breakers at Deerfield substation.	Planned	Planned	6/29/2009	No	\$56,600,000	\$56,000,000	\$56,000,000	-\$600,000
Reliability Upgrade	1a	1137	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Replace 5-115kV breakers and add 1-115kV breaker at Deerfield Substation	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	
Reliability Upgrade	1a	1138	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Rebuild 115kV L175 line	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	
Reliability Upgrade	1a	1139	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV M183 Line	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	
Reliability Upgrade	1a	1140	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV C129 Line	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	
Reliability Upgrade	1a	1141	Northeast Utilities		2015	2nd Deerfield 345/115kV Autotransformer Project	Rochester Substation Upgrades	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	
Reliability Upgrade	1a	680	National Grid, USA		03/2013		Rebuild Bellows Falls Substation and install 115 kV capacitor bank.	Planned	Planned	1/28/2008	No	\$7,393,000	\$7,393,000	\$7,393,000	\$0
Reliability Upgrade	1a	674	National Grid, USA		12/2013		Replace Comerford 230 kV breakers and add (1) 230 kV bus tie breaker.	Planned	Planned	4/1/2008	No	\$7,720,000	\$22,115,000	\$22,115,000	\$14,395,000
Elective	4a	1142	FPL New England Division		04/2011		Seabrook Station Reconfiguration and Circuit Breaker addition Stage s 1 & 2	Planned	Planned	11/20/2008	NR	NR	TBD	TBD	
Generator Interconnection Upgrade	2a	724	National Grid, USA		TBD	NGRID Comerford Substation	NGRID Comerford Substation.	Planned	Planned	6/12/2007	NR	NR	NR	NR	
<b>VERMONT</b>															
Reliability Upgrade	1a	139	Vermont Electric Power Company		12/2015	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 2: synchronous condensers expanded to +200/- 100 MVAR and two 25 MVAR capacitor banks.	Planned	Planned	01/10/2003	03/31/2003	\$20,000,000	\$20,000,000	\$20,000,000	\$0
Reliability Upgrade	1a	1145	Vermont Electric Power Company		12/2010	Burlington Gorge Project	Installation of a 3-breaker 115kV ring substation and 115/34.5kV transformer on the East Ave. - Tafts Coners 115kV line	Planned	Planned	10/24/2006	No	\$14,000,000	\$14,000,000	\$14,000,000	\$0
Reliability Upgrade	1a	323	Vermont Electric Power Company		12/2010	Vermont Southern Loop Project	New VY - Newfane - Coolidge 345 kV line with requisite station upgrades.	Under Construction	Under Construction	10/1/2008	No	\$136,368,000	\$136,368,000	\$136,368,000	\$0
Reliability Upgrade	1a	1032	Vermont Electric Power Company		09/2010	Vermont Southern Loop Project	Installation of a new 345/115kV substation called Vernon including a new 345/115kV autotransformer	Under Construction	Under Construction	10/1/2008	No	\$69,815,000	\$69,815,000	\$69,815,000	\$0
Reliability Upgrade	1a	1033	Vermont Electric Power Company		12/2010	Vermont Southern Loop Project (VELCO LSP - Newfane Substation)	Installation of a new 345/115kV substation called Newfane	Under Construction	Under Construction	10/1/2008	No	\$16,664,000	\$16,664,000	\$16,664,000	\$0
Reliability Upgrade	1a	1034	Vermont Electric Power Company		12/2010	Vermont Southern Loop Project	Loop new 345kV Line into Newfane Substation.	Under Construction	Under Construction	10/1/2008	No	Part of project 323	Part of project 323	Part of project 323	
Reliability Upgrade	1a	1035	Vermont Electric Power Company		12/2010	Vermont Southern Loop Project	Expansion of Coolidge 345kV substation	Under Construction	Under Construction	10/1/2008	No	\$20,117,000	\$20,117,000	\$20,117,000	\$0
Reliability Upgrade	1a	1146	Vermont Electric Power Company		02/2011	Lyndonville Project	Installation of a 4-breaker ring 115 kV substation consisting of two 115kV 12.5 MVAR capacitor banks and 115/34.5 kV transformer interconnecting to the Irasburg - St. Johnsbury 115kV line	Planned	Planned	6/1/2009	No	\$9,000,000	\$9,000,000	\$9,000,000	\$0
Generator Interconnection Upgrade	2a	1036	Vermont Electric Power Company		10/2010	Queue Position 172	Installation of 3-breaker 115kV ring bus interconnection of the St. Johnsbury-Irasburg 115kV K39 line.	Planned	Planned	08/16/2007	NR	NR	NR	NR	
<b>MASSACHUSETTS</b>															
Reliability Upgrade	1a	1152	National Grid, USA		8/2010		Bear Swamp - Pratts Junction 230kV Line Refurbishment Project (E205E)	Planned	Planned	NR	NR	\$43,596,000	\$43,596,000	\$43,596,000	\$0
Reliability Upgrade	1a	887	National Grid, USA		09/2012	Auburn Area Transmission System Upgrades	Expand Auburn St Substation to include 2nd 345/115 kV autotransformer and 345 kV ring bus.	Planned	Planned	1/28/2008	No	\$30,000,000	\$76,000,000	\$76,000,000	\$46,000,000
Reliability Upgrade	1a	921	National Grid, USA		06/2012	Auburn Area Transmission System Upgrades	Bridgewater substation - Upgrade Bus work and convert to BPS substation.	Planned	Planned	1/28/2008	No	\$12,100,000	\$40,000,000	\$40,000,000	\$27,900,000
Reliability Upgrade	1a	919	National Grid, USA		12/2012	Auburn Area Transmission System Upgrades	Dupont substation - Upgrade Buswork and convert to BPS substation.	Planned	Planned	1/28/2008	No	\$4,600,000	\$4,600,000	\$4,600,000	\$0

Notes  
 - Black shading indicates change from July '09 Update.  
 - All costs provided by Transmission Owners.

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
Reliability Upgrade	1a	59	National Grid, USA		06/2012	Auburn Reliability Transmission System Upgrades	G18, F19 line terminals 115kV upgrades at Bridgewater sub	Planned	Planned	11/1/2007	1/31/2003	\$400,000	Part of RSP 921	Part of RSP 921	
Reliability Upgrade	1a	783	National Grid, USA		03/2011	Merrimack Valley/North Shore Reliability Project	Extend the 115kV by addition of 115kV Breaker and K-153 line from King St. to W. Amesbury 115kV station. (W. Amesbury 345/115kV Station becomes PTF)	Planned	Planned	4/1/2008	No	\$30,349,000	\$30,349,000	\$30,349,000	\$0
Reliability Upgrade	1a	779	National Grid, USA		04/2010	Merrimack Valley/North Shore Reliability Project	Bypass and remove Golden Hills 345 kV substation.	Under Construction	Under Construction	4/1/2008	No	\$5,132,609	\$5,507,195	\$5,507,195	\$374,586
Reliability Upgrade	1a	840	NSTAR Electric Company		06/2012	Merrimack Valley/North Shore Reliability Project	Upgrade the 115 kV line (Line 423-515) from Mystic-Everett by adding a new parallel cable to the existing 115 kV cable. (NSTAR portion only)	Planned	Planned	4/1/2008	No	\$7,300,000	\$7,300,000	\$7,300,000	\$0
Reliability Upgrade	1a	775	National Grid, USA		06/2012	Merrimack Valley/North Shore Reliability Project	Addition of 4 breakers and relocation of T1 and T2 into new bays at Sandy Pond.	Planned	Planned	6/27/2008	No	\$20,100,000	\$20,100,000	\$20,100,000	\$0
Reliability Upgrade	1a	776	National Grid, USA		09/2012	Merrimack Valley/North Shore Reliability Project	Re-conductor O-167 (NGRID portion of Mystic - Everett) 115 kV line.	Planned	Planned	6/27/2008	No	\$2,865,876	\$3,125,000	\$3,125,000	\$259,124
Reliability Upgrade	1a	782	National Grid, USA		10/2014	Merrimack Valley/North Shore Reliability Project	Replace existing S145/T146 UG cables with higher capacity cables between Salem Harbor n Railyard.	Planned	Planned	6/27/2008	No	\$38,100,000	\$43,912,000	\$43,912,000	\$5,812,000
Reliability Upgrade	1a	1165	NSTAR Electric Company		12/2011	Mystic Breaker Additions Project	Move Transformer 110B Connection at Mystic		Planned	3/10/2008	No		\$1,700,000	\$1,700,000	\$1,700,000
Reliability Upgrade	1a	904	NSTAR Electric Company		12/2010	Mystic IPT Breaker Project	Upgrade (5) 115 kV breakers #1, #7, #15 #19 and #20 at Mystic to IPT.	Planned	Under Construction	NR	NR	\$990,000	\$1,500,000	\$1,500,000	\$510,000
Reliability Upgrade	1a	1119	NSTAR Electric Company		06/2010	Greater Boston Reliability Project	Upgrade West Medway-West Walpole 345kV line #325	Proposed	Under Construction	NR	NR	\$2,200,000	\$2,200,000	\$2,200,000	\$0
Reliability Upgrade	1a	842	NSTAR Electric Company		06/2010	Boston Area 115 kV Enhancements	Add 115 kV 54 MVAR capacitor bank at W. Framingham.	Proposed	Planned	12/28/2009	NR	\$3,700,000	\$2,650,000	\$2,650,000	-\$1,050,000
Reliability Upgrade	1a	1120	NSTAR Electric Company		06/2010		Install 345kV 160 MVAR shunt reactor at W. Walpole	Proposed	Under Construction	1/19/2010	No	\$7,200,000	\$7,200,000	\$7,200,000	\$0
Reliability Upgrade	1a	1113	NSTAR Electric Company		12/2010		Install 115kV Breaker #31 at K St.	Proposed	Planned	12/15/2009	No	\$2,960,000	\$2,800,000	\$2,800,000	-\$160,000
Reliability Upgrade	1a	1068	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Install a new 345kV line from Carver to vicinity of Bourne and connect to existing #120 line and install a 345KV - 115kV auto-transformer at new substation about 3 miles west of the Barnstable Substation <sup>7</sup>	Proposed	Planned	11/2009	No	\$110,000,000	\$110,000,000	\$110,000,000	\$0
Reliability Upgrade	1a	592	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Separate existing 345kV double circuit Cape Cod Canal crossing	Proposed	Planned	11/2009	No	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA	
Reliability Upgrade	1a	1118	NSTAR Electric Company	National Grid, USA	12/2012	Long Term Lower SEMA Upgrades	Upgrade 115kV line D21	Proposed	Planned	11/2009	No	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA	
Reliability Upgrade	1a	929	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Searsburg - install in-line 69 kV breaker for operational flexibility.	Planned	Planned	12/17/2007	No	\$1,381,849	\$1,381,849	\$1,381,849	\$0
Reliability Upgrade	1a	931	National Grid, USA		01/2013	Central/Western Massachusetts Upgrades	Park St. - incremental cost of designing for 115 kV instead of 69 kV.	Planned	Planned	12/17/2007	No	\$531,481	\$531,481	\$531,481	\$0
Reliability Upgrade	1a	928	National Grid, USA		12/2010	Central/Western Massachusetts Upgrades	Millbury -upgrade terminal equipment for O-141, P-142, B-128, A-127 circuit breakers.	Planned	Planned	12/17/2007	No	\$2,300,000	\$2,300,000	\$2,300,000	\$0
Reliability Upgrade	1a	934	National Grid, USA		09/2011	Central/Western Massachusetts Upgrades	Reconductor #2 Tap from Tower 510 - Webster St. 115 kV circuit.	Planned	Under Construction	12/17/2007	No	\$818,480	Part of RSP 935	Part of RSP 935	
Reliability Upgrade	1a	935	National Grid, USA		09/2011	Central/Western Massachusetts Upgrades	Reconductor from (A-127E/B-128E) Millbury - Tower 510 115 kV line.	Planned	Under Construction	12/17/2007	No	\$5,208,509	\$10,200,000	\$10,200,000	\$4,991,491
Reliability Upgrade	1a	938	National Grid, USA		05/2012	Central/Western Massachusetts Upgrades	Deerfield - install a new 115/69kV autotransformer and a 69kV breaker and disconnect switches.	Planned	Planned	12/17/2007	No	\$3,068,556	\$3,068,556	\$3,068,556	\$0
Reliability Upgrade	1a	939	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Reconductor and retension (E205W) Harriman - Bear Swamp Tap 230 kV circuit.	Planned	Planned	12/17/2007	No	\$3,389,658	\$3,389,658	\$3,389,658	\$0
Reliability Upgrade	1a	940	National Grid, USA		04/2011	Central/Western Massachusetts Upgrades	Reconductor sections of A127W line w/795 ACSS.	Planned	Planned	12/17/2007	No	\$6,235,744	\$6,235,744	\$6,235,744	\$0
Reliability Upgrade	1a	942	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Webster St. - add two 115 kV circuit breakers.	Planned	Planned	12/17/2007	No	\$2,767,180	\$3,650,000	\$3,650,000	\$882,820
Reliability Upgrade	1a	927	National Grid, USA		07/2010	Central/Western Massachusetts Upgrades	Greendale - replace 115 kV breaker and upgrade to 2000A.	Planned	Planned	12/17/2007	No	\$584,629	\$680,000	\$680,000	\$95,371

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Reliability Upgrade	1a	925	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - supply 13 kV from T3 and T4.	Planned	Planned	12/17/2007	No	\$318,888	\$318,888	\$318,888	\$0
Reliability Upgrade	1a	926	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - replace T8 autotransformer with 230 kV 333 mVA, upgrade breaker and bus to 115 kV. Install high side 230 kV breaker.	Planned	Planned	12/17/2007	No	\$6,027,520	\$6,027,520	\$6,027,520	\$0
Reliability Upgrade	1a	932	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - increase thermal rating of I-135 and J-136 buswork.	Planned	Planned	12/17/2007	No	\$372,036	\$372,036	\$372,036	\$0
Reliability Upgrade	1a	924	National Grid, USA		12/2010	Central/Western Massachusetts Upgrades	Replace five 115 kV-25 kA breakers with 115 kV-50 kA breakers and upgrade disconnect switch (175-3) to 2000A.	Planned	Planned	12/17/2007	No	\$2,147,181	\$2,147,181	\$2,147,181	\$0
Reliability Upgrade	1a	941	National Grid, USA		06/2012	Central/Western Massachusetts Upgrades	Install new Z126 Millbury - Tower #510 115 kV line.	Planned	Planned	12/17/2007	No	\$7,909,203	\$13,748,000	\$13,748,000	\$5,838,797
Reliability Upgrade	1a	943	National Grid, USA		01/2011	Central/Western Massachusetts Upgrades	Millbury - new 115 kV breaker position for new line to Twr 510.	Planned	Planned	12/17/2007	No	\$1,073,995	\$1,073,995	\$1,073,995	\$0
Reliability Upgrade	1a	944	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Wachusett - install one 345 kV, 448 mVA transformer, one 345 kV breaker, and one 115 kV breaker.	Planned	Planned	12/17/2007	No	\$11,411,849	\$16,530,000	\$16,530,000	\$5,118,151
Reliability Upgrade	1a	950	National Grid, USA		12/2013	Central/Western Massachusetts Upgrades	E Winchendon - install 115 kV breaker and 115 kV disconnect switch.	Planned	Planned	12/17/2007	No	\$1,016,897	\$1,016,897	\$1,016,897	\$0
Reliability Upgrade	1a	953	National Grid, USA		12/2013	Central/Western Massachusetts Upgrades	Otter River - expand substation into 6-breaker ring bus with four 115 kV breakers and install two transformers.	Planned	Planned	12/17/2007	No	\$10,248,067	\$10,248,067	\$10,248,067	\$0
Reliability Upgrade	1a	954	National Grid, USA		12/2013	Central/Western Massachusetts Upgrades	E Westminster - install new 115 kV breaker, including disconnect switches. Assumes no new control house.	Planned	Planned	12/17/2007	No	\$903,909	\$903,909	\$903,909	\$0
Reliability Upgrade	1a	945	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Adams - install third 115 kV breaker to complete ring bus.	Planned	Planned	12/17/2007	No	\$1,584,841	\$1,584,841	\$1,584,841	\$0
Reliability Upgrade	1a	946	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Convert 69 kV (O-15S) Palmer - E Longmeadow - Shaker Rd line to 115 kV.	Planned	Planned	12/17/2007	No	\$9,604,032	\$9,962,060	\$9,962,060	\$358,028
Reliability Upgrade	1a	947	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Reconductor 115 kV line from Palmer to new Hampden Substation.	Planned	Planned	12/17/2007	No	\$2,632,635	\$2,632,635	\$2,632,635	\$0
Reliability Upgrade	1a	948	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Hampden - build new 115 kV substation at 1515/O-15S intersection (4 breaker ring).	Planned	Planned	12/17/2007	No	\$5,649,430	\$5,649,430	\$5,649,430	\$0
Reliability Upgrade	1a	949	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Palmer - add 115 kV breaker position for O15S conversion, includes thermal upgrade of W-175 bay.	Planned	Planned	12/17/2007	No	\$1,500,000	\$1,500,000	\$1,500,000	\$0
Reliability Upgrade	1a	952	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Reconductor E Winchendon - J136 Tap within I135/J136 ROW w/795 ACSR.	Planned	Planned	12/17/2007	No	\$932,156	\$932,156	\$932,156	\$0
Reliability Upgrade	1a	937	National Grid, USA		05/2012	Central/Western Massachusetts Upgrades	Bear Swamp - install one 230-115 kV 333 mVA auto, one 115 kV breaker and upgrade various terminal equipment.	Planned	Planned	12/17/2007	No	\$6,602,875	\$6,602,875	\$6,602,875	\$0
Reliability Upgrade	1a	955	National Grid, USA		11/2011	Central/Western Massachusetts Upgrades	Reconductor (W175) W Charlton - Little Rest - Palmer w/1590 ACSR.	Planned	Planned	12/17/2007	No	\$10,779,113	\$12,213,934	\$12,213,934	\$1,434,821
Reliability Upgrade	1a	162	National Grid, USA		04/2011		Q-169 Golden Hills to Lynn 115 kV line upgrade.	Under Construction	Under Construction	9/2/2005	4/25/2008	\$12,390,000	\$12,390,000	\$12,390,000	\$0
Reliability Upgrade	1a	902	National Grid, USA		10/2010	Middleboro Municipal	Close the E1-M1 loop at Middleboro's Wareham St Sub.	Under Construction	Under Construction	12/01/2006	NR	\$715,000	\$715,000	\$715,000	\$0
Reliability Upgrade	1a	1000	Northeast Utilities		12/2011	Agawam-West Springfield Project	Separate and reconductor the 1311 and 1412 (West Springfield - Agawam) 115 kV double circuit.	Planned	Planned	6/27/2008	No	\$22,000,000	\$22,000,000	\$22,000,000	\$0
Reliability Upgrade	1a	951	National Grid, USA		02/2013	Central/Western Massachusetts Upgrades	Install new Otter River - E Winchendon 115 kV line.	Planned	Planned	12/17/2007	No	\$7,455,440	\$7,455,440	\$7,455,440	\$0
Reliability Upgrade	1a	687	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Fairmont 16H Substation Expansion	Planned	Planned	9/24/2008	No	\$714,000,000	\$714,000,000	\$714,000,000	\$0
Reliability Upgrade	1a	826	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	South Agawam 42E Substation Reconfigure	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	196	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line (3216), Agawam (MA) - North Bloomfield (CT)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	818	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reconstruct a new 115kV line South Agawam to Southwick (1768)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	

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Reliability Upgrade	1a	819	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line Ludlow - Agawam (3196)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	820	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Expansion of Agawam 16C 115 kV Substation to include new 345 kV station with two 345/115-kV autotransformers.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	823	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Ludlow 19S 345 kV Substation Expansion, two 345/115kV Autotransformers replacements. Add two 345kV 120 MVAR Capacitor additions	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	828	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Breckwood 115kV circuit 1322 Reactor Bypass and Open Breckwood Substation 1T breaker and maintain breaker in the normally open position	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	829	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Piper (1230) 115 kV line.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1010	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build 115-kV Cadwell switching 50F station.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	259	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to Orchard (1426) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	688	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Cadwell (1481) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1100	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Chicopee (1314) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1101	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Orchard (1552) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1102	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Piper (1601) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1103	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Chicopee (1602) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1104	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Cadwell (1603) 115kV line and add 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1105	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Shawinigan (1604) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1070	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1781) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1071	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1782) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1072	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Shawinigan (1845) 115kV line and add 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1073	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5001) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1074	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5002) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1075	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add 2nd high speed protection scheme to Agawam to Elm (1007) 115kV line if the Russell Biomass Plant, queue position #135 is constructed	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	

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Reliability Upgrade	1a	1078	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Pineshed (1327) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1079	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Mt. Tom (1428) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1080	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Replace 4T and 6T 115kV circuit breaker to Shawinigan substation	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1076	Northeast Utilities		12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1311) 115kV line	Planned	Planned	9/24/2008	No	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project	
Reliability Upgrade	1a	1077	Northeast Utilities		12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1412) 115kV line	Planned	Planned	9/24/2008	No	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project	
Reliability Upgrade	1a	673	National Grid, USA		12/2012	Worcester Area Reinforcements	Add new 115kV bay to separate the M-165 & E-157 terminal at Millbury #2 Substation	Planned	Planned	2/27/2009	No	\$2,200,000	\$2,200,000	\$2,200,000	\$0
Reliability Upgrade	1a	676	National Grid, USA		12/2012	Worcester Area Reinforcements	New Bloomingdale to Vernon Hill 115 kV (UG Cable-3.6 mi.) new 115kV breaker at Bloomingdale & Vernon Hill	Planned	Planned	2/27/2009	No	\$30,000,000	\$30,000,000	\$30,000,000	\$0
Reliability Upgrade	1a	1067	NSTAR Electric Company		12/2010	NPCC BPS Compliance	Tremont Station	Proposed	Planned	NR	No	\$12,800,000	\$12,370,000	\$12,370,000	-\$430,000
Reliability Upgrade	1a	1066	NSTAR Electric Company		09/2011	NPCC BPS Compliance	Needham Station	Concept	Planned	NR	No	\$9,300,000	\$10,531,000	\$10,531,000	\$1,231,000
Reliability Upgrade	1a	1065	NSTAR Electric Company		07/2012	NPCC BPS Compliance	Waltham Station	Proposed	Planned	NR	No	\$26,600,000	\$23,190,000	\$23,190,000	-\$3,410,000
Generator Interconnection Upgrade	2a	1045	National Grid, USA		06/2010	Lowell Power	Upgrade 137T and K-137W 115 kV circuit breakers at Sandy Pond.	Planned	Planned	7/25/2006	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	505	National Grid, USA		12/2010	Hoosac Wind Farm	Tap Y-25S line between Harriman and Deerfield 5. Construct 69/34.5 kV substation and 34.5 kV line connecting 30 MW generating facility with the 69 kV system.	Planned	Planned	02/01/2005	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	595	NSTAR Electric Company		01/2012	Cape Wind	Expansion of Barnstable 115 kV substation to include 5th bay and (2) circuit breakers, addition of a 3rd breaker in the planned 4th bay, and (2) 35MVAR shunt reactors.	Planned	Planned	10/6/2005	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	596	NSTAR Electric Company		01/2012	Cape Wind	Installation of (2) 115 kV circuits out of Barnstable substation to interconnect Cape Wind.	Planned	Planned	10/6/2005	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	598	NSTAR Electric Company		01/2012	Cape Wind	At Canal 345 kV substation, install a redundant breaker in series with breaker #312.	Planned	Planned	10/6/2005	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	599	NSTAR Electric Company		01/2012	Cape Wind	Upgrade the Bourne 115 kV breaker #12272 with an IPT breaker.	Planned	Planned	10/6/2005	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	600	NSTAR Electric Company		01/2012	Cape Wind	Installation of differential insulation and additional grounding at each tower that is common for the 342 and 322 345 kV lines.	Planned	Planned	10/6/2005	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1048	NSTAR Electric Company		01/2012	Cape Wind	Convert Canal 345 kV SPS to include tripping of Cape Wind for the simultaneous loss of 342 and 322 345 kV lines.	Planned	Planned	10/6/2005	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1046	National Grid, USA		06/2011	Queue Position 178	Reconductor 115 kV F19 Line (Auburn - Brockton Tap).	Proposed	Proposed	3/10/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1047	National Grid, USA		06/2011	Queue Position 178	Replace Bridgewater 115 kV 1631 circuit breaker with 63 kA breaker.	Proposed	Proposed	3/10/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	622	Northeast Utilities		06/2011	Queue Position 135	Interconnection to WMECO's 115-kV 1512 line through a new Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1043	Northeast Utilities		06/2011	Queue Position 135	Upgrade the 1768 line terminal equipment at Southwick Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1044	Northeast Utilities		06/2011	Queue Position 135	Upgrade the 1512 line terminal equipment at Southwick Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1058	National Grid, USA		06/2011	Billerica Power	Interconnection to Tewksbury 115 kV Substation via O-193 Line and refurbish section of J-162 line.	Planned	Planned	7/8/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1059	National Grid, USA		06/2011	Billerica Power	Re-terminate line tap section (Perry Street) of J-162 Line to new bay position at Tewksbury.	Planned	Planned	7/8/2008	NR	NR	NR	NR	

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## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

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Generator Interconnection Upgrade	2a	1060	National Grid, USA		06/2011	Billerica Power	Reconductor 2.8 mi. of the M-139 115 kV line.	Planned	Planned	7/8/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1061	National Grid, USA		06/2011	Billerica Power	Replace (16) 115 kV circuit breakers at Tewksbury 22 w/ IPT capability if all generators w/ higher Queue Position are constructed. The quantity of breaker upgrades subject to Queued generators constructed.	Planned	Planned	7/8/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1062	National Grid, USA		06/2011	Billerica Power	Upgrade #137T and #K-137W 115 kV circuit breakers at Sandy Pond (if not completed as part of Merrimack Valley/North Shore Project).	Planned	Planned	7/8/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1014	Northeast Utilities		2014	Queue Position 196	Northfield Mountain 345 kV replace generator step-up transformer (3X) and associated generator equipment. This project also consists of upgrading four existing turbine generators one per year.	Concept	Under Construction	6/29/2009	NR	NR	NR	NR	
Elective	4a	1057	Braintree Electric Light Department		06/2010		Upgrade 115-10-16 underground 115 kV cable.	Planned	Planned	4/17/2008	No	NR	TBD	TBD	
<b>RHODE ISLAND</b>														\$0	\$0
Reliability Upgrade	1a	484	National Grid, USA		11/2010	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Add (1) new 115 kV breaker at Woonsocket.	Planned	Planned	4/25/2008	No	\$690,000	\$580,000	\$580,000	-\$110,000
Reliability Upgrade	1a	791	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New 115 kV circuit between Somerset and Brayton Point.	Planned	Planned	4/25/2008	No	\$11,560,000	\$11,560,000	\$11,560,000	\$0
Reliability Upgrade	1a	913	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Brayton Point substation reinforcements to accommodate the new 115 kV line.	Planned	Planned	4/25/2008	No	\$3,250,000	\$3,250,000	\$3,250,000	\$0
Reliability Upgrade	1a	914	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New third circuit between Somerset and Bell Rock.	Planned	Planned	4/25/2008	No	\$28,150,000	\$28,150,000	\$28,150,000	\$0
Reliability Upgrade	1a	915	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Reconductor M13 and L14 between Bell Rock and Dexter + Reconductor 69 kV lines 61 and 62.	Planned	Planned	4/25/2008	No	\$19,450,000	\$19,450,000	\$19,450,000	\$0
Reliability Upgrade	1a	916	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Conversion of Jepson 69 kV substation to 115 kV substation.	Planned	Planned	4/25/2008	No	\$11,800,000	\$11,800,000	\$11,800,000	\$0
Reliability Upgrade	1a	917	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Bell Rock substation expansion.	Planned	Planned	4/25/2008	No	\$7,000,000	\$7,000,000	\$7,000,000	\$0
Reliability Upgrade	1a	918	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Dexter substation changes.	Planned	Planned	4/25/2008	No	\$3,180,000	\$3,180,000	\$3,180,000	\$0
Reliability Upgrade	1a	792	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Admiral St-Franklin Square (Q143 and R144) 115 kV UG recabling.	Planned	Planned	4/25/2008	No	\$39,200,000	\$39,200,000	\$39,200,000	\$0
Reliability Upgrade	1a	793	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Somerset substation reinforcements.	Planned	Planned	4/25/2008	No	\$6,400,000	\$6,400,000	\$6,400,000	\$0
Reliability Upgrade	1a	786	National Grid, USA		11/2010	Greater Rhode Island Transmission Reinforcements <b>(Advanced NEEWS)</b>	Terminal upgrades at Drumrock, Chartley Pond, and Brayton Point.	Planned	Under Construction	4/25/2008	No	\$1,000,000	\$1,000,000	\$1,000,000	\$0
Reliability Upgrade	1a	787	National Grid, USA		06/2010	Greater Rhode Island Transmission Reinforcements <b>(Advanced NEEWS)</b>	West Farnum breaker replacements.	Planned	Under Construction	4/25/2008	No	\$7,631,000	\$7,631,000	\$7,631,000	\$0
Reliability Upgrade	1a	788	National Grid, USA		06/2011	Greater Rhode Island Transmission Reinforcements <b>(Advanced NEEWS)</b>	Kent County substation expansion.	Planned	Under Construction	4/25/2008	No	\$42,300,000	\$42,300,000	\$42,300,000	\$0
Reliability Upgrade	1a	790	National Grid, USA		12/2011	Greater Rhode Island Transmission Reinforcements <b>(Advanced NEEWS)</b>	Berry Street 345/115 kV substation.	Planned	Under Construction	4/25/2008	No	\$50,600,000	\$50,600,000	\$50,600,000	\$0
Reliability Upgrade	1a	1098	National Grid, USA		12/2011	Greater Rhode Island Transmission Reinforcements <b>(Advanced NEEWS)</b>	345/115kV line interconnections at Berry Street	Planned	Under Construction	4/25/2008	No	\$37,529,000	\$37,529,000	\$37,529,000	\$0
Reliability Upgrade	1a	190	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	New Millbury to West Farnum (366) 345kV line.	Planned	Planned	9/24/2008	No	\$69,600,000	\$69,600,000	\$69,600,000	\$0
Reliability Upgrade	1a	1094	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV Millbury Substation equipment	Planned	Planned	9/24/2008	No	\$25,000,000	\$25,000,000	\$25,000,000	\$0
Reliability Upgrade	1a	1095	National Grid, USA		06/2012	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV West Farnum Substation Equipment	Planned	Planned	9/24/2008	No	\$73,800,000	\$73,800,000	\$73,800,000	\$0

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Reliability Upgrade	1a	794	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	New West Farnum to Connecticut/Rhode Island border (341) 345kV line (to Lake Road).	Planned	Planned	9/24/2008	No	\$55,800,000	\$55,800,000	\$55,800,000	\$0
Reliability Upgrade	1a	796	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	347 Reconductor from Sherman Road to CT/RI Border.	Planned	Planned	9/24/2008	No	\$16,400,000	\$16,400,000	\$16,400,000	\$0
Reliability Upgrade	1a	797	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	3361 Upgrade 345kV terminal equipment at Sherman Road.	Planned	Planned	9/24/2008	No	\$8,300,000	\$8,300,000	\$8,300,000	\$0
Reliability Upgrade	1a	795	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	New Kent County to West Farnum 345kV line.	Planned	Planned	9/24/2008	No	\$99,900,000	\$99,900,000	\$99,900,000	\$0
Reliability Upgrade	1a	1106	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Installation of third 345/115kV autotransformer at Kent County.	Planned	Planned	9/24/2008	No	Part of \$99,900,000 above	Part of \$99,900,000 above	Part of \$99,900,000 above	
Reliability Upgrade	1a	798	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Upgrade of 115kV terminal equipment at Franklin Square.	Planned	Planned	9/24/2008	No	\$4,900,000	\$4,900,000	\$4,900,000	\$0
Reliability Upgrade	1a	799	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	G-185N (Kent County-Drumrock) 115 kV reconductor.	Planned	Planned	9/24/2008	No	\$4,500,000	\$4,500,000	\$4,500,000	\$0
Reliability Upgrade	1a	1096	National Grid, USA		05/2012	NEEWS (Rhode Island Reliability Project)	Drumrock substation: Terminal equipment upgrades, Protection modifications and upgrades to meet BPS standards	Planned	Planned	9/24/2008	No	\$12,000,000	\$12,000,000	\$12,000,000	\$0
Reliability Upgrade	1a	800	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Reconductoring of short segments of S-171S, T-172N and T-172S with associated terminal equipment upgrades.	Planned	Planned	11/5/2009	No	\$10,000,000	\$10,000,000	\$10,000,000	\$0
Reliability Upgrade	1a	1097	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Relocate and Rebuild 115kV lines in the same ROW associated with new 345kV line from W. Farnum to Kent County	Planned	Planned	9/24/2008	No	\$129,800,000	\$129,800,000	\$129,800,000	\$0
Reliability Upgrade	1a	1099	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Hartford Ave 115kV terminal equipment upgrades	Planned	Planned	9/24/2008	No	\$6,000,000	\$6,000,000	\$6,000,000	\$0
Reliability Upgrade	1a	1109	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	South Wrentham 115kV terminal equipment upgrades	Planned	Planned	9/24/2008	No	\$1,000,000	\$1,000,000	\$1,000,000	\$0
<b>CONNECTICUT</b>															
Reliability Upgrade	1a	1055	Northeast Utilities		2010	CT LSP - Waterside Substation	Waterside Substation - add a 115/13.2-kV transformer and a 115-kV circuit breaker.	Concept	Planned	9/29/2009	NR	\$4,107,000	\$2,619,000	\$2,619,000	-\$1,488,000
Reliability Upgrade	1a	1049	United Illuminating Company		12/2010		East Shore 115 kV Capacitor Bank Transient Recovery	Planned	Planned	NR	NR	\$3,000,000	\$4,050,000	\$4,050,000	\$1,050,000
Reliability Upgrade	1a	582	Northeast Utilities		12/2010		Separate 310 and 368 345-kV lines and create 368/1767 DCT	Planned	Planned	7/18/2008	No	\$16,000,000	\$16,000,000	\$16,000,000	\$0
Reliability Upgrade	1a	1112	United Illuminating Company		12/2010		Water Street 115kV circuit breaker and switch replacements.	Planned	Planned	NR	NR	\$1,000,000	\$2,840,000	\$2,840,000	\$1,840,000
Reliability Upgrade	1a	809	Northeast Utilities		12/2010		Upgrade terminal equipment at Bunker Hill 115 kV substation.	Proposed	Under Construction	NR	NR	\$1,000,000	\$516,000	\$516,000	-\$484,000
Reliability Upgrade	1a	1147	Northeast Utilities		2011		Waterside Substation - install a three-breaker 115kV ring bus	Proposed	Planned	9/29/2009	NR	\$4,000,000	\$5,055,000	\$5,055,000	\$1,055,000
Reliability Upgrade	1a	1148	Northeast Utilities		2011		Add a 2nd high speed relay on the Glennbrook to Waterside 115kV 1440	Proposed	Planned	9/29/2009	NR	\$600,000	Part of Project #1147	Part of Project #1147	
Reliability Upgrade	1a	974	United Illuminating Company		04/2013		East Shore 115 kV Oil Circuit Breaker & Disconnect Replacements.	Planned	Planned	NR	No	\$6,700,000	\$6,700,000	\$6,700,000	\$0
Reliability Upgrade	1a	816	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	North Bloomfield 2A Substation Expansion - add a second 345/115-kV autotransformer	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	
Reliability Upgrade	1a	1054	Northeast Utilities		12/2013	NEEWS (Ancillary Greater Springfield Reliability Project)	Manchester - Meekville Jct. line (395/1448) separation.	Planned	Planned	9/24/2008	No	\$14,000,000	\$14,000,000	\$14,000,000	\$0
Reliability Upgrade	1a	576	Northeast Utilities		12/2013	NEEWS (Central Connecticut Reliability Project)	Build new 345kV line (3208) North Bloomfield to Frost Bridge.	Planned	Planned	9/24/2008	No	\$313,000,000	\$313,000,000	\$313,000,000	\$0
Reliability Upgrade	1a	1114	Northeast Utilities		12/2013	NEEWS (Central Connecticut Reliability Project)	Frost Bridge 18R substation expansion - add a 345/115kV autotransformer.	Planned	Planned	9/24/2008	No	Part of NEEWS (Central Connecticut Reliability Project)	Part of NEEWS (Central Connecticut Reliability Project)	Part of NEEWS (Central Connecticut Reliability Project)	
Reliability Upgrade	1a	814	Northeast Utilities		12/2013	NEEWS (Ancillary Central Connecticut Reliability Project)	Reconductor a portion of the Manchester to Scovill Rock 353 345-kV line and terminal work.	Planned	Planned	9/24/2008	No	\$9,000,000	\$9,000,000	\$9,000,000	\$0
Reliability Upgrade	1a	802	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Build new 345kV line (3271) Card to Lake Road	Planned	Planned	9/24/2008	No	\$251,000,000	\$251,000,000	\$251,000,000	\$0
Reliability Upgrade	1a	1084	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Loop the Millstone - Manchester (310) 345 kV line into the Card substation.	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	1085	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Card 11F substation expansion	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	

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Reliability Upgrade	1a	1086	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1704, SW Hartford to South Meadow	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	1087	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to line 115kV 1722 SW Hartford NW Hartford	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	1088	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1786, East Hartford to Riverside to South Meadow	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	1089	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Killingly 3G substation 345kV breaker addition	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	1090	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Millstone 15G substation breaker 14T upgrade 50kA	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	1091	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Southington 4C substation breaker 19T upgrade to 63kA	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	810	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Lake Road 27E 345 kV substation expansion	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	191	Northeast Utilities	National Grid, USA	12/2013	NEEWS (Interstate Reliability Project)	Build Lake Road to Connecticut/Rhode Island border (341) 345-kV line (to West Farnum).	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)	
Reliability Upgrade	1a	807	Northeast Utilities		12/2013	NEEWS (Ancillary Interstate Reliability Project)	Install 480 MVAR's of capacitors at the Montville 345 kV substation	Planned	Planned	9/24/2008	No	\$33,000,000	\$33,000,000	\$33,000,000	\$0
Reliability Upgrade	1a	1092	Northeast Utilities		12/2013	NEEWS (BPS) ²	Upgrade the Card 115 kV, East Hartford 115 kV, Agawam 115 kV, Barbour Hill 115 kV, and North Bloomfield 345 kV Substations to BPS standards.	Planned	Planned	9/24/2008	No	\$37,000,000	\$37,000,000	\$37,000,000	\$0
Reliability Upgrade	1a	1056	Northeast Utilities		12/2011	CT LSP - Sherwood Substation	Sherwood Substation - add a 115/13.8-kV substation with two transformers and a 115-kV circuit breaker.	Planned	Planned	12/12/2008	No	\$9,751,000	\$10,969,000	\$10,969,000	\$1,218,000
Reliability Upgrade	1a	1110	United Illuminating Company		12/2010		Broadway 115/13.8 kV Substation Addition	Planned	Under Construction	12/8/2008	NR	\$1,200,000	\$1,200,000	\$1,200,000	\$0
Reliability Upgrade	1a	1111	United Illuminating Company		8/2011		Metro North Union Avenue 115/26.4 kV Substation	Planned	Planned	1/7/2009	11/10/2009	\$10,543,000	\$10,543,000	\$10,543,000	\$0
Reliability Upgrade	1a	976	United Illuminating Company		05/2012		Grand Avenue 115 kV Switching Station Rebuild.	Planned	Planned	1/7/2009	No	\$48,000,000	\$66,000,000	\$66,000,000	\$18,000,000
Reliability Upgrade	1a	721	United Illuminating Company		06/2016		New Shelton 115/13.8 kV substation	Proposed	Planned	11/5/2009	No	\$11,300,000	\$19,500,000	\$19,500,000	\$8,200,000
Reliability Upgrade	1a	879		Bangor Hydro-Electric Company, New England Power Company, Northeast Utilities System Com	TBD	Dynamic Swing Reorder Project	Upgrade 7 of 8 Dynamic Swing Recorders in New England to comply with NERC, NPCC, and ISO-NE Standards.	Planned	Planned	03/01/2007	NR	\$420,000	\$420,000	\$420,000	\$0
Generator Interconnection Upgrade	2a	983	Northeast Utilities		09/2012	Queue Position 207/241	Rebuild 115 kV 1585N Line between new substation and Bunker Hill.	Proposed	Proposed	9/26/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1107	Northeast Utilities		09/2012	Queue Position 207/241	Interconnection to new 115 kV substation consisting of (14) circuit breakers in a breaker and a half configuration that sectionalizes the existing 1575, 1585, and 1990 lines.	Proposed	Proposed	9/26/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1108	Northeast Utilities		09/2012	Queue Position 207/241	Installation of a 2.5% series reactor on the 1990S Line at the new substation.	Proposed	Proposed	9/26/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	331	Northeast Utilities		TBD	Kleen Energy	Install 5-breaker ring bus interconnecting between Scovill Rock and Manchester on the 345 kV 353 Line.	Under Construction	See Note (5)	10/08/2003	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1121	Northeast Utilities		06/2010	Queue Position 161-2	Four units connected to 384 line through a new 345kV Substation: unit #4 will also connect to Substation	Planned	Planned	12/8/2008	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1149	Northeast Utilities		06/2010	Queue Position 161-1	Four units connected at Devon Substation	Under Construction	Under Construction	12/8/2007	NR	NR	NR	NR	
Generator Interconnection Upgrade	2a	1122	Northeast Utilities		11/2010	Queue Position 191	One turbine connected to #1238 Line (Frost Bridge to Carmel) via a new 3-breaker ring bus Substation	Proposed	Proposed	2/24/2009	NR	NR	NR	NR	
Reliability Upgrade	1a	1050	United Illuminating Company		12/2011		Devon Tie 115kV Switching Station BPS Compliance	Planned	Planned	NR	NR	\$2,620,000	\$3,240,000	\$3,240,000	\$620,000
<b>TABLE B</b>															

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<b>MAINE</b>															
Reliability Upgrade	1b	148	Central Maine Power Company		06/2012	CMP LSP - Saco Bay Area Reinforcement Project	Establish a new Vallee Lane 115/34.5 kV substation and 115 kV line from Loudon S/S to Vallee Lane Substation.	Proposed	Proposed	No	NR	\$100,000	\$100,000	\$100,000	\$0
Reliability Upgrade	1b	1116	Bangor Hydro-Electric Company		12/2011	Maine Power Reliability Program (MPRP)	L 64 Rebuild	Concept	Proposed	No	No	TBD	\$37,126,000	\$37,126,000	\$37,126,000
Reliability Upgrade	1b	1031	Bangor Hydro-Electric Company		12/2012	Maine Power Reliability Program (MPRP)	Rebel Hill Switching Station	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	1154	Bangor Hydro-Electric Company		12/2013	Maine Power Reliability Program (MPRP)	Rebuild Line 66		Concept	No	No		TBD	TBD	
Reliability Upgrade	1b	1155	Bangor Hydro-Electric Company		12/2013	Maine Power Reliability Program (MPRP)	Capacitor Bank Addition (10 MVAR at Trenton and Epping)		Concept	No	No		TBD	TBD	
Reliability Upgrade	1b	1156	Bangor Hydro-Electric Company		12/2011	Maine Power Reliability Program (MPRP)	Orrington Shunt Cap Reconfiguration		Concept	No	No		TBD	TBD	
Reliability Upgrade	1b	1157	Bangor Hydro-Electric Company		12/2010		Bangor Hydro Synchrophasors		Concept	No	No		\$100,000	\$100,000	\$100,000
Reliability Upgrade	1b	1130	Central Maine Power Company		12/2011	Sturtevant Improvements	Add 115kV circuit breakers & 25 MVAR capacitor bank at Sturtevant Substation; Re-rate Section 63 between Wyman Hydro & Madison Substation	Proposed	Proposed	7/28/2009	No		\$3,000,000	\$3,000,000	\$3,000,000
Reliability Upgrade	1b	1131	Central Maine Power Company		12/2011	CMP-LSP Bowman St. Substation	Add 115/34kV transformer	Proposed	Proposed	No	NR	\$600,000	\$600,000	\$600,000	\$0
Reliability Upgrade	1b	1132	Central Maine Power Company		12/2011	CMP-LSP Maxcy's Substation	Add 115/34kV transformer (coordinate with MPRP)	Proposed	Proposed	No	NR	\$600,000	\$600,000	\$600,000	\$0
Reliability Upgrade	1b	1133	Central Maine Power Company		10/2010	CMP-LSP Leeds Substation	Add 115/34kV Leeds Substation & new 34kV line from Leeds to Turner	Proposed	Proposed	No	NR	\$300,000	\$300,000	\$300,000	\$0
Reliability Upgrade	1b	1135	Central Maine Power Company		TBD	CMP-Athens Substation LSP	Add two 115kV circuit breakers on Section 66; and 115/12kV transformer	Proposed	Proposed	No	No	\$1,500,000	\$1,500,000	\$1,500,000	\$0
Elective	4b	1018	Bangor Hydro-Electric Company	NSTAR	TBD	QP-283	HVDC between Orrington, ME and Boston, MA	Concept	Concept	No	No	TBD	TBD	TBD	
Elective	4b	1160	Central Maine Power Company		TBD	QP-278	1000 MW HVDC between Maine Yankee, ME and South Boston, MA		Concept	No	No		TBD	TBD	
Elective	4b	1163	Maine Electric Power Company		TBD	QP-322	345kV Tie Line - between Houlton, ME and MEPCO Line		Concept	No	No		TBD	TBD	
Elective	4b	1164	Maine Electric Power Company		TBD	QP-324	345kV Tie Line - between Bridgewater, ME and MEPCO Line		Concept	No	No		TBD	TBD	
<b>NEW HAMPSHIRE</b>															
Reliability Upgrade	1b	1143	Northeast Utilities		TBD		Littleton 115kV breaker addition and reconfiguration	Proposed	Proposed	No	No	\$5,338,000	\$6,642,000	\$6,642,000	\$1,304,000
<b>VERMONT</b>															
Reliability Upgrade	1b	318	Vermont Electric Power Company		12/2011		Rebuild the existing Georgia substation 115 kV bus into a ring bus to address reliability problems through the 1,250 MW Vermont state load level.	Concept	Concept	No	No	\$9,000,000	\$9,000,000	\$9,000,000	\$0
Reliability Upgrade	1b	325	Vermont Electric Power Company		12/2011	VELCO LSP - Chelsea Substation	Replace (2) SCADA controlled motorized disconnect switches with 115 kV circuit breakers at the existing Chelsea substation to maintain adequate supply to the load.	Concept	Concept	No	No	\$5,000,000	\$5,000,000	\$5,000,000	\$0
Reliability Upgrade	1b	324	Vermont Electric Power Company		TBD		Granite to Middlesex 230-kV line with necessary substation upgrades to mitigate several reliability concerns, including those related to the potential Highgate contract termination.	Concept	Concept	No	No	\$100,000,000	TBD	TBD	#VALUE!
Generator Interconnection Upgrade	2b	1037	Vermont Electric Power Company	Central Vermont Public Service	12/2010	Queue Position 276	Installation of 3-breaker 115kV ring bus interconnection of the Bennington-Searsburg 69kV Y25N line.		Concept	No	NR		NR	NR	
Generator Interconnection Upgrade	4b	1162	Vermont Electric Power Company		TBD	OP-314	345/230 kV DC line between Plattsburg, NY and New Haven, CT		Concept	No	NR		NR	NR	
<b>MASSACHUSETTS</b>															
Reliability Upgrade	1b	785	National Grid, USA		07/2017	Merrimack Valley/North Shore Reliability Project	Re-conductor F-158N (Golden Hills-Maplewood-Everett) 115 kV line.	Concept	Concept	No	No	\$1,330,000	\$1,330,000	\$1,330,000	\$0
Reliability Upgrade	1b	1153	NSTAR Electric Company		12/2011	Boston Area 115 kV Enhancements	Reliability Upgrades at West Framingham Station	Concept	Concept	No	No	\$3,000,000	\$3,000,000	\$3,000,000	\$0

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Reliability Upgrade	1b	843	NSTAR Electric Company		12/2013	Boston Area 115 kV Enhancements	Install (2) new 115 kV breakers at Trapelo Road.	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	965	NSTAR Electric Company		12/2012	Boston Area 115 kV Enhancements	Add third 115kV line from W. Walpole to Holbrook	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	964	NSTAR Electric Company		06/2011	Boston Area 115 kV Enhancements	Relocate 115kV terminals at W. Walpole to mitigate breaker failure #8.	Proposed	Proposed	No	No	\$5,600,000	\$5,600,000	\$5,600,000	\$0
Reliability Upgrade	1b	969	NSTAR Electric Company		06/2015	Boston Area 115 kV Enhancements	Add a new 54 MVAR capacitor bank at Chelsea.	Concept	Concept	No	No	\$1,200,000	\$2,780,000	\$2,780,000	\$1,580,000
Reliability Upgrade	1b	301	NSTAR Electric Company		12/2011	Boston Area 115 kV Enhancements	Reconductor 115-kV circuits 320-507 and 320-508.	Concept	Concept	No	No	\$4,600,000	\$4,600,000	\$4,600,000	\$0
Reliability Upgrade	1b	593	NSTAR Electric Company		2013	Mid Cape Reliability Project	Add a new 115 kV line from Canal to Barnstable/Falmouth	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	970	NSTAR Electric Company		12/2012	Greater Boston Reliability Project	Add a new 345 kV line from Lexington to Waltham.	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	971	NSTAR Electric Company		12/2012	Greater Boston Reliability Project	Add a new 345/230 kV auto at Waltham and 230 kV switching facilities.	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	1166	NSTAR Electric Company		12/2010		Terminal upgrades at W. Walpole and W. Medway for #325 line		Proposed	NR	NR		\$1,350,000	\$1,350,000	\$1,350,000
Reliability Upgrade	1b	1167	NSTAR Electric Company		12/2010		Replace three 40kA 115kV circuit breakers at Carver with 63kV breakers		Concept	No	No		\$850,000	\$850,000	\$850,000
Reliability Upgrade	1b	956	National Grid, USA		01/2015	Central/Western Massachusetts Upgrades	Carpenter Hill - replace one 345 kV, 448 MVA autotransformer and upgrade thermal rating of bus to at least 580 MVA.	Concept	Concept	No	No	\$7,021,534	\$7,021,534	\$7,021,534	\$0
Reliability Upgrade	1b	1136	National Grid, USA		12/2012		New 115kV Switching Station at Devens Convert 69kV lines to 115kV, Reconfigure 115kV Supply at Ayer Substation	Proposed	Proposed	7/28/2009	No	\$9,200,000	\$9,200,000	\$9,200,000	\$0
Reliability Upgrade	1b	824	Northeast Utilities		TBD	Pittsfield / Greenfield Project	Reconductor the Woodland to Pleasant 1371 115-kV line and terminal work at Woodland substation.	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	1168	Holyoke Gas & Electric		TBD		Loop/extend the 1525 (Holyoke Fairmont South 115kV) line into the new Lyman Substation		Concept	No	No		TBD	TBD	
Reliability Upgrade	1b	825	Northeast Utilities		TBD	Pittsfield / Greenfield Project	Upgrade the Pleasant to Blanford 115-kV line and the Blanford to Granville Jct. portion of the 115-kV line 1512.	Concept	Concept	No	No	TBD	TBD	TBD	
Generator Interconnection Upgrade	2b	1123	Northeast Utilities		TBD	Queue Position 236	New Substation on 1302 Line; terminal upgrades at Buck Pond and Agawam	Concept	Concept	No	NR	NR	NR	NR	
Generator Interconnection Upgrade	2b	880	National Grid, USA	Northeast Utilities	06/2011	Queue Position 177	Sutton Energy - 345 kV Carpenter Hill-Millbury Line.	Concept	Concept	No	NR	NR	NR	NR	
Generator Interconnection Upgrade	2b	1042	National Grid, USA		06/2013	Queue Position 165	Replace (2) 345 kV circuit breakers at Sandy Pond	Concept	Concept	No	NR	NR	NR	NR	
<b>RHODE ISLAND</b>															
Generator Interconnection Upgrade	2b	881	National Grid, USA	Northeast Utilities	06/2012	Queue Position 201	RISEP - 345 kV RISE Substation.	Concept	Concept	No	NR	NR	NR	NR	
<b>CONNECTICUT</b>															
Reliability Upgrade	1b	1150	United Illuminating Company		12/2010		Grand Avenue - West River 115 kV Pumping Plant Replacements	Proposed	Proposed	NR	NR	\$1,200,000	\$2,900,000	\$2,900,000	\$1,700,000
Reliability Upgrade	1b	1151	United Illuminating Company		12/2011		West River 115kV Switching Station Fault Duty Migration	Proposed	Proposed	NR	NR	\$3,500,000	\$3,500,000	\$3,500,000	\$0
Reliability Upgrade	1b	975	United Illuminating Company		06/2015		Pequonock 115 kV Fault Duty Mitigation.	Concept	Concept	No	No	\$44,300,000	\$65,000,000	\$65,000,000	\$20,700,000
Reliability Upgrade	1b	699	United Illuminating Company		12/2014		Naugatuck Valley 115 kV reliability improvement.	Concept	Concept	No	No	\$10,000,000	\$11,100,000	\$11,100,000	\$1,100,000
Reliability Upgrade	1b	801	Northeast Utilities		TBD		Build Manchester to East Hartford 115-kV cable with a series reactor.	Concept	Concept	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	85	Northeast Utilities		TBD		Upgrade the South Meadow Substation to Bulk Power System standards (BPS).	Concept	Concept	08/04/2004	No	TBD	TBD	TBD	
Generator Interconnection Upgrade	2b	1124	Northeast Utilities		TBD	Queue Position 222	New Substation on Haddam Neck-Southington 345kV line	Proposed	Proposed	No	NR	NR	NR	NR	
Generator Interconnection Upgrade	2b	1125	Northeast Utilities		TBD	Queue Position 240	345kV on Montville Substation	Concept	Concept	No	NR	NR	NR	NR	

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Generator Interconnection Upgrade	4b	1161	United Illuminating Company		TBD	Queue Position 271	1000 MW HVDC between Hertel, QC or Clay NY and Singer, CT		Concept	No	NR		NR	NR	
<b>IN-SERVICE PROJECTS</b>														<b>\$5,189,345,881</b>	<b>#VALUE!</b>
Reliability Upgrade	1a	320	Vermont Electric Power Company		10/2009	Lamoille County Project	Middlesex Substation 115 kV breaker addition.	Under Construction	In-service	08/16/2007	02/07/2008	\$4,857,000	\$4,857,000	\$4,857,000	\$0
Reliability Upgrade	1a	322	Vermont Electric Power Company		10/2009	Lamoille County Project	Installation of new Duxbury Substation that involves looping in and out of the Middlesex - Essex 115 kV (K24) line.	Under Construction	In-service	08/16/2007	02/07/2008	Part of Lamoille County Project	Part of Lamoille County Project	Part of Lamoille County Project	
Reliability Upgrade	1a	321	Vermont Electric Power Company		11/2009	Burlington Project	Burlington 115kV Loop - 5 mi of new line & rebuilding 5 miles of existing line between two existing substations with expansion of the East Avenue substation.	Under Construction	In-service	10/24/2006	05/23/2007	\$25,142,000	\$25,142,000	\$25,142,000	\$0
Reliability Upgrade	1a	1063	NSTAR Electric Company		12/2009		Install (2) 115kV 40 MVAR shunt reactors at Edgar Station	Under Construction	In-service	05/2009	No	\$5,400,000	\$3,745,000	\$3,745,000	-\$1,655,000
Reliability Upgrade	1a	777	National Grid, USA		11/2009	Merrimack Valley/North Shore Reliability Project	Build Wakefield Junction station with four 345/115 kV autotransformers.	Under Construction	In-service	4/1/2008	No	\$95,000,000	\$95,000,000	\$95,000,000	\$0
Reliability Upgrade	1a	161	National Grid, USA		11/2009	Merrimack Valley/North Shore Reliability Project	Loop 345 kV 339 line and 115 kV S-145/T-146 into new Wakefield Jct. Substation.	Under Construction	In-service	4/1/2008	No	\$4,986,431	\$5,406,900	\$5,406,900	\$420,469
Reliability Upgrade	1a	961	NSTAR Electric Company		12/2009	Mystic Breaker Additions Project	Install (2) new 115 kV East Bus breakers #30 and #32 at Mystic.	Under Construction	In-service	3/10/2008	No	\$3,800,000	\$3,689,000	\$3,689,000	-\$111,000
Reliability Upgrade	1a	903	NSTAR Electric Company		12/2009	Mystic IPT Breaker Project	Upgrade (4) 115 kV breakers #2, #4, #5, and #16 at Mystic to IPT and separate controls with Boston Gen units #5 and #6.	Under Construction	In-service	NR	NR	\$1,240,000	\$1,576,000	\$1,576,000	\$336,000
Reliability Upgrade	1a	930	National Grid, USA		11/2009	Central/Western Massachusetts Upgrades	Reconductor Nashua St - Quinsigamond Jct (O141) 115 kV line w/636 ACSS.	Under Construction	In-service	12/17/2007	No	\$2,300,000	\$2,300,000	\$2,300,000	\$0
Reliability Upgrade	1a	933	National Grid, USA		01/2010	Central/Western Massachusetts Upgrades	Reconductor Pratts Jct - Flagg Pond I-135S & J-136S 115 kV lines w/795 ACSS.	Under Construction	In-service	12/17/2007	No	\$6,137,112	\$11,200,000	\$11,200,000	\$5,062,888
Reliability Upgrade	1a	211	Northeast Utilities		11/2009	NU LSP - Rood Ave Substation	New Rood Ave (formally Windsor) distribution substation with 115kV terminal modifications.	Under Construction	In-service	4/25/2008	02/15/2008	\$9,162,029	\$8,681,000	\$8,681,000	-\$481,029
Reliability Upgrade	1a	789	National Grid, USA		12/2009	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Reconductoring of T7 115 kV line.	Planned	In-service	4/25/2008	No	\$23,304,000	\$23,304,000	\$23,304,000	\$0
Reliability Upgrade	1b	963	NSTAR Electric Company		12/2009	Boston Area 115 kV Enhancements	Add a new 115kV breaker # 11 Relocate 447-509 and add control and protection at Holbrook.	Proposed	In-service	8/19/2009	NR	\$4,000,000	\$1,276,800	\$1,276,800	-\$2,723,200
Generator Interconnection Upgrade	2b	863	Northeast Utilities		2008	Queue Position 217	Northfield Mountain 345 kV replace generator step-up transformer (1X) and associated generator equipment.	Proposed	In-service	4/25/2008	NR	NR	NR	NR	
Reliability Upgrade	1a	1051	Central Maine Power Company		09/2009	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Riley 115 kV capacitor bank.	In-service	In-service	11/30/2007	No	Part of Project 625	Part of Project 625	Part of Project 625	
Generator Interconnection Upgrade	2a	1134	Central Maine Power Company		09/2009	Kibby Wind Farm	Separate Section 215 from Section 63 and terminate Section 215 at newly established breaker position in Wyman Hydro S/S, which includes re-rating of Section 215. Expand Bigelow S/S & add capacitor banks at Lakewood, Guilford, Wyman Hydro Station & Sturtevant S/S's.	In-service	In-service	6/16/2006	NR	NR	NR	NR	
Reliability Upgrade	1a	579	Central Maine Power Company		06/2008	Maguire Road Project	Addition of (4) 345 kV breakers at Buxton.			03/01/2007	No			#TBDs	\$17
Reliability Upgrade	1a	587	Northeast Utilities		5/13/2008		Install third 345/115-kV autotransformer at Scobie Substation.			07/01/2007	No				
Reliability Upgrade	1a	282	Northeast Utilities		5/26/2008	NU LSP - Weare Substation	Install new 115 kV Weare Street Substation and Jackman capacitors.			03/01/2007	05/01/2007				
Reliability Upgrade	1a	580	Northeast Utilities		5/30/2008	Scobie Pond to Hudson Reinforcement Project	Install new 115-kV Scobie - Hudson line.			07/31/2006	No				
Reliability Upgrade	1a	685	National Grid, USA		03/2008		New 345 kV gas circuit breaker at Auburn St. Substation on the 335 Line.			10/01/2006	10/01/2006				
Reliability Upgrade	1a	293	NSTAR Electric Company		04/2008		Upgrade Canal 345-kV breaker #612 to IPT.			NR	NR				
Reliability Upgrade	1a	56	Bangor Hydro-Electric Company		12/2007	Northeast Reliability Interconnect Project	Point Lepreau to Orrington - New 345 kV line as well as capacity expansion from Orrington to Maine Yankee.	In-service	In-service	03/01/2003	09/28/2007	\$144,000,000	\$144,000,000		
Reliability Upgrade	1a	154	Central Maine Power Company	Northeast Utilities	8/2008	Maguire Road Project	Rebuild Louden - Maguire Road 115 kV Line S163.	In-Service	In-Service	03/01/2007	No	\$7,000,000	\$7,000,000		
Reliability Upgrade	1a	715	Central Maine Power Company		8/2008	Maguire Road Project	Rebuild South Gorham to Louden 115 kV Line S219.	In-Service	In-Service	03/01/2007	No	\$4,900,000	\$4,900,000	#TBDs	\$17

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Reliability Upgrade	1a	716	Central Maine Power Company		8/2008	Maguire Road Project	Reconductor South Gorham to Louden 115 kV Line S220.	In-Service	In-Service	03/01/2007	No	\$2,500,000	\$2,500,000		
Reliability Upgrade	1a	149	Central Maine Power Company		8/2008	Maguire Road Project	Convert Maguire Road to a switching substation by replacing switches with breakers.	In-Service	In-Service	03/01/2007	No	\$17,700,000	\$17,700,000		
Reliability Upgrade	1a	717	Central Maine Power Company		8/2008	Maguire Road Project	Install a 115 kV 50 MVAR capacitor bank at Maguire Road.	In-Service	In-Service	03/01/2007	No	Portion of \$17,700,000 (above)	Portion of \$17,700,000 (above)		
Reliability Upgrade	1a	155	Central Maine Power Company	Northeast Utilities	01/2009	Maguire Road Project	Rebuild Three Rivers - Quaker Hill 115 kV Line K197.	In-Service	In-Service	03/01/2007	1/9/2009	\$5,500,000	\$5,500,000		
Reliability Upgrade	1a	461	Central Maine Power Company		12/2007	MEPCO SPS	Redesign/replacement of the Maxcy's Cross Trip and Bucksport Overcurrent Type 1 Special Protection Systems.	In-service	In-service	03/24/2006	No	\$4,700,000	\$4,700,000		
Reliability Upgrade	1a	147	Central Maine Power Company		02/2008	Raymond Substation Project	Add 115/34.5 kV transformer at Raymond Substation on Section 208/209 along with (2) 115 kV in-line circuit breakers.	In-service	In-service	06/01/2006	No	\$1,523,000	\$1,523,000		
Reliability Upgrade	1a	627	Central Maine Power Company		12/2007	Rumford-Woodstock-Kimball Road Corridor Project	Reterminate (3) 115 kV lines and add (2) bus-tie breakers at Kimball Road.	In-service	In-service	11/30/2007	3/31/2008	\$2,441,000	\$2,441,000		
Reliability Upgrade	1a	910	Central Maine Power Company		12/2008	Rumford-Woodstock-Kimball Road Corridor Project	Rebuild Section 211 Woodstock - Rumford.	In-Service	In-Service	11/30/2007	No	\$8,400,000	\$8,400,000		\$0
Reliability Upgrade	1a	626	Central Maine Power Company		04/2009	Rumford-Woodstock-Kimball Road Corridor Project	Addition of 115/34.5 kV transformer and six new 115 kV breakers and a half substation at Woodstock.	In-service	In-service	11/30/2007	No	\$8,000,000	\$8,000,000	\$8,000,000	\$0
Reliability Upgrade	1a	575	Central Maine Power Company		05/2009	Heywood Road Project	New Heywood Rd 115kV switchyard with (6) 115kV circuit breakers (3) 115kV line retensionings and 115kV 20 MVAR capacitor bank at Heywood Rd.	In-service	In-service	3/20/2009	7/20/2009	\$7,000,000	\$7,000,000	\$7,000,000	\$0
Reliability Upgrade	1a	1127	Central Maine Power Company		05/2009	CMP-LSP Newcastle Substation	Add 115/34kV transformer with two 115kV breakers	In-service	In-service	8/20/2008	8/20/2008	\$1,300,000	\$1,300,000	\$1,300,000	\$0
Reliability Upgrade	1a	267	Northeast Utilities	Central Maine Power Company	8/2009	Y138 Closing	White Lake - Saco Valley (Y138) Line Closing - Add PAR on Y138 at Saco Valley, retension lines, upgrade Beebe terminal, and add capacitor banks at White Lake and Beebe.	In-service	In-service	01/01/2006	No	\$27,775,000	\$27,775,000	\$27,775,000	\$0
Reliability Upgrade	1a	936	National Grid, USA		07/2009	Central/Western Massachusetts Upgrades	Reconductor (P142/P142S) Rolfe Avenue - West Bolyston 115 kV line w/1590 ACSR.	In-service	In-service	12/17/2007	No	\$3,000,000	\$3,000,000	\$3,000,000	\$0
Reliability Upgrade	1a	923	National Grid, USA		12/2008	Auburn Area Transmission System Upgrades	Reconductor 115 kV A94 line and associated substation upgrades.	In-Service	In-Service	1/28/2008	No	\$2,400,000	\$2,400,000		\$0
Reliability Upgrade	1a	922	National Grid, USA		02/2009	Auburn Area Transmission System Upgrades	Reconductor 115kV L1 line and associated substation upgrades.	In-Service	In-Service	1/28/2008	No	\$800,000	\$800,000		\$0
Reliability Upgrade	1a	543	National Grid, USA		8/2008	Greater Rhode Island Transmission Reinforcements	New Tower Hill Rd. Substation tapped off of (G185S) 115 kV line.	In-Service	In-Service	4/25/2008	No	\$2,400,000	\$2,400,000		
Reliability Upgrade	1a	774	National Grid, USA		10/2007	Merrimack Valley/North Shore Reliability Project	Reconductor G-133W 115 kV line and replace terminal equipment at West Methuen.	In-service	In-service	06/01/2007	No	\$2,600,000	\$2,600,000		
Reliability Upgrade	1a	778	National Grid, USA		07/2008	Merrimack Valley/North Shore Reliability Project	Reconductor S-145/T146 115 kV lines between Wakefield Jct. and Golden Hills Tap.	In-Service	In-Service	4/1/2008	No	\$3,220,000	\$3,220,000		
Reliability Upgrade	1a	781	National Grid, USA		10/2008	Merrimack Valley/North Shore Reliability Project	Install 115 kV 30 MVAR capacitor bank at Revere.	In-Service	In-Service	4/1/2008	No	\$1,727,000	\$1,727,000		\$0
Reliability Upgrade	1a	169	National Grid, USA		11/2007	Southwest Rhode Island Reliability Enhancements	Reconductor W. Kingston - Kenyon 115 kV 1870N line.	In-Service	In-Service	1/1/2005	03/29/2005	\$3,500,000	\$3,500,000		
Reliability Upgrade	1a	170	National Grid, USA		03/2008	Southwest Rhode Island Reliability Enhancements	Extend L-190 line to W. Kingston.	In-Service	In-Service	11/10/2004	03/29/2005	\$13,400,000	\$13,400,000		
Reliability Upgrade	1a	173	National Grid, USA		03/2008	Southwest Rhode Island Reliability Enhancements	Rebuild W. Kingston to include 115 kV ring bus.	In-Service	In-Service	11/10/2004	03/29/2005	\$4,830,000	\$4,830,000		
Reliability Upgrade	1a	168	National Grid, USA		09/2008	Southwest Rhode Island Reliability Enhancements	Reconductor Kenyon - Wood River 115 kV 1870 line.	In-Service	In-Service	1/1/2005	03/29/2005	\$2,234,232	\$2,234,232		\$0
Reliability Upgrade	1a	171	National Grid, USA		10/2008	Southwest Rhode Island Reliability Enhancements	Reconductoring L-190 between Kent Co. and Davisville.	In-Service	In-Service	11/10/2004	03/29/2005	\$2,666,291	\$2,666,291		\$0
Reliability Upgrade	1a	900	National Grid, USA		11/2008	Southwest Rhode Island Reliability Enhancements	Wood River substation upgrades.	In-Service	In-Service	04/07/2007	05/07/2007	\$130,000	\$130,000		\$0

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
Reliability Upgrade	1a	899	National Grid, USA		12/2008	Southwest Rhode Island Reliability Enhancements	Kenyon substation upgrades.	In-Service	In-Service	04/07/2007	05/07/2007	\$278,000	\$278,000		
Reliability Upgrade	1a	594	National Grid, USA		07/2008		Upgrade the Auburn 345 kV breaker #2130 with an IPT breaker.	In-Service	In-Service	10/01/2006	10/01/2006	\$720,000	\$720,000		\$0
Reliability Upgrade	1a	166	National Grid, USA		06/2009		Replace (16) 115 kV breakers at Tewksbury 22.	In-service	In-service	NR	NR	\$3,300,000	\$3,300,000	\$3,300,000	\$0
Reliability Upgrade	1a	176	Northeast Utilities		07/2009	Monadnock Area Reliability Project	New Fitzwilliam 345/115kV substation along with 345 kV breakers.	In-service	In-service	9/27/2007	No	\$76,100,000	\$76,100,000	\$76,100,000	\$0
Reliability Upgrade	1a	174	National Grid, USA		06/2009	Monadnock Area Reliability Project	Reconductor I-135 (Bellows Falls-Monadnock Tap-Flagg Pond) 115 kV line.	In-service	In-service	03/24/2006	No	\$15,778,000	\$15,778,000	\$15,778,000	\$0
Reliability Upgrade	1a	179	Northeast Utilities		02/2008	Monadnock Area Reliability Project	Rebuild 115-kV Jackman to Greggs F-162 line.	In-service	In-service	03/24/2006	No	Portion of 54,358,000 (above)	Portion of 54,358,000 (above)		
Reliability Upgrade	1a	177	Northeast Utilities		12/2008	Monadnock Area Reliability Project	Replace limiting terminal equipment at Webster Substation on line to North Road.	In-Service	In-Service	03/24/2006	No	Part of Monadnock Area Reliability Project	Part of Monadnock Area Reliability Project		
Reliability Upgrade	1a	180	Northeast Utilities		12/2008	Monadnock Area Reliability Project	Rebuild 115 kV Keene to Swanzey A-152 line.	In-Service	In-Service	03/24/2006	No	Part of Monadnock Area Reliability Project	Part of Monadnock Area Reliability Project		
Reliability Upgrade	1a	178	Northeast Utilities		02/2009	Monadnock Area Reliability Project	Rebuild 115 kV Garvins to Webster V-182 line.	In-Service	In-Service	03/24/2006	No	Part of Monadnock Area Reliability Project	Part of Monadnock Area Reliability Project		
Reliability Upgrade	1a	569	Northeast Utilities-CT		2007	Norwalk-Glenbrook Cable Project	Replace two 115-kV circuit breakers at Cos Cob.	In-Service	In-Service	08/01/2005	No	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>		-\$500,000
Reliability Upgrade	1a	243	Northeast Utilities		09/2008	Norwalk-Glenbrook Cable Project	Expand and upgrade to BPS and remove SPS at Glenbrook 115 kV substation.	In-Service	In-Service	08/01/2005	No	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>		-\$8,390,000
Reliability Upgrade	1a	570	Northeast Utilities		10/2008	Norwalk-Glenbrook Cable Project	Add second high speed relay system on the 1450 line.	In-Service	In-Service	08/01/2005	No	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>		-\$788,000
Reliability Upgrade	1a	571	Northeast Utilities		12/2008	Norwalk-Glenbrook Cable Project	Upgrade Flax Hill Substation to BPS.	In-Service	In-Service	08/01/2005	No	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>		-\$2,175,000
Reliability Upgrade	1a	248	Northeast Utilities		12/2008	Norwalk-Glenbrook Cable Project	Install two new 115 kV cables from Norwalk to Glenbrook (accommodate 345 kV class cable).	In-Service	In-Service	08/01/2005	No	249,372,000 <sup>3</sup>	249,372,000 <sup>3</sup>		-\$222,850,000
Reliability Upgrade	1a	208	Northeast Utilities		12/2008	NU LSP - Oxford Substation	Install new Oxford (previously Jack's Hill) 115 kV substation.	In-Service	In-Service	01/14/2006	06/01/2007	\$4,459,000	\$4,459,000		\$0
Reliability Upgrade	1a	201	Northeast Utilities		05/2008	NU LSP - Wilton Substation	Install new 115 kV Wilton Substation.	In-Service	In-Service	4/25/2008	08/01/2006	\$3,915,000	\$3,915,000		
Reliability Upgrade	1a	551	Northeast Utilities		10/2007	Southwest Connecticut Reliability Project PH II (M-N)	Rebuild the 1466 115-kV line from East Meriden to North Wallingford and the 1588 115-kV rebuild from North Wallingford to Colony.	In-service	In-service	04/01/2007	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		-\$805,000
Reliability Upgrade	1a	236	Northeast Utilities		3/1/2008	Southwest Connecticut Reliability Project PH II (M-N)	Rebuild 115 kV lines (1640,1685,1610) between Devon and Cook Hill Jct. (UG section of 1640 near Cook Hill).	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		
Reliability Upgrade	1a	228	Northeast Utilities		3/19/2008	Southwest Connecticut Reliability Project PH II (M-N)	Installation of new Beseck Jct. 345 kV switching station in Wallingford.	In-Service	In-Service	04/01/2007	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		
Reliability Upgrade	1a	222	Northeast Utilities		3/27/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install new 345 kV line from Scovill Rock to Chestnut Jct.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		
Reliability Upgrade	1a	223	Northeast Utilities	United Illuminating Company	3/28/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install (2) new 345 kV lines from Black Pond Jct. to Beseck Jct.	In-Service	In-Service	02/01/2007	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		
Reliability Upgrade	1a	225	Northeast Utilities		3/28/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install new 345 kV line from Oxbow Jct. to Beseck Jct.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		
Reliability Upgrade	1a	237	Northeast Utilities		4/28/2008	Southwest Connecticut Reliability Project PH II (M-N)	Rebuild 115-kV lines-1975 from Beseck to Oxbow Junction and 1655 from East Wallingford Jct. to New Haven Jct.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		
Reliability Upgrade	1a	244	Northeast Utilities		6/20/2008	Southwest Connecticut Reliability Project PH II (M-N)	Reconductor 115 kV 1570 and 1575 line taps into Beacon Falls Substation.	In-Service	In-Service	4/25/2008	No	Part of SWCT (M-N) Reliability Project <sup>4</sup>	Part of SWCT (M-N) Reliability Project <sup>4</sup>		-\$5,692,000

Notes  
 - Black shading indicates change from July '09 Update.  
 - All costs provided by Transmission Owners.

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
Reliability Upgrade	1a	239	Northeast Utilities		07/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install (1) new 115 kV circuit breaker at Devon Substation in series with 7R-2T.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		-\$5,009,000
Reliability Upgrade	1a	245	Northeast Utilities		07/2008	Southwest Connecticut Reliability Project PH II (M-N)	Disconnect Milford Power from Devon Substation and reconnect to East Devon Jct. Substation.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		
Reliability Upgrade	1a	227	Northeast Utilities		8/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install new 345 kV line from Besek Jct. to East Devon.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		
Reliability Upgrade	1a	229	Northeast Utilities	United Illuminating Company	8/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install new East Devon 345 kV substation and new East Devon 115 kV substation in Milford.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		
Reliability Upgrade	1a	232	Northeast Utilities		09/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install two 115 kV circuits between East Devon and Devon.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		
Reliability Upgrade	1a	246	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Add second 345/115 kV autotransformer at Norwalk Substation along with shunt reactors and 345 kV circuit breakers.	In-Service	In-Service	01/14/2006	No	\$978,182,000 4	\$978,182,000 4		\$0
Reliability Upgrade	1a	226	Northeast Utilities	United Illuminating Company	12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install two 345 kV underground cables from Singer(UI) to Norwalk.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		
Reliability Upgrade	1a	235	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Expand Norwalk 345-kV substation and install transfer trip relaying scheme on the 1389 115 kV line between Norwalk and Flax Hill.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		
Reliability Upgrade	1a	247	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Replace Norwalk Harbor 138/115 kV autotransformer.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		-\$8,351,000
Reliability Upgrade	1a	684	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Replace (6) 115 kV breakers (4-Glenbrook, 1-Glenbrook Statcom, 1-Southington #1) and (3) 345-kV circuit breakers at Millstone and replace (4) 345- kV breakers with 500-kV breakers at Long Mountain substation.	In-Service	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project 4	Part of SWCT (M-N) Reliability Project 4		-\$11,321,000
Reliability Upgrade	1a	202	Northeast Utilities		05/2008		Install new 345/115 kV autotransformer at Barbour Hill Substation.	In-Service	In-Service	09/30/2006	2/7/2008	\$44,153,000	\$44,153,000		
Reliability Upgrade	1a	104	Northeast Utilities		07/2008		Replace 138-kV Norwalk (CT)-Northport(NY) 1385 cable.	In-Service	In-Service	12/1/2002	6/1/2007	\$71,743,727	\$71,743,727		
Reliability Upgrade	1a	250	Northeast Utilities		12/2008		Add a 345 kV breaker at Ludlow Substation.	In-service	In-service	06/01/2007	8/1/2007	\$1,644,885	\$1,644,885		
Reliability Upgrade	1a	1009	Northeast Utilities		05/2009		Install a 2% reactor on the North Bloomfield-Canton 115kV line and also replacement fo the Frostbridge 345/115kV autotransformer	In-service	In-service	10/20/2007	10/16/2009	\$3,089,000	\$3,089,000	\$3,089,000	\$0
Reliability Upgrade	1a	203	Northeast Utilities		05/2009	NU LSP - Stepstone Substation	Install new Stepstone 115 kV substation in Guilford.	In-service	In-service	11/8/2005	4/24/2006	\$6,332,000	\$6,332,000	\$6,332,000	\$0
Reliability Upgrade	1a	841	NSTAR Electric Company		11/2008	Mystic Breaker Additions Project	Install (2) new 115 kV West Bus breakers #29 and #31 at Mystic.	In-Service	In-Service	3/10/2008	No	\$2,300,000	\$2,300,000		
Reliability Upgrade	1a	1040	NSTAR Electric Company		12/2008	Mystic IPT Breaker Project	Upgrade (4) 115 kV breakers #11, #8, #17 and #3 at Mystic to IPT	In-Service	In-Service	NR	NR	\$990,000	\$990,000		
Reliability Upgrade	1a	116	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add 2nd 345 kV UG Cables from Stoughton to Mattapan Sq.to K Street and install another new autotransformer at K. St.	In-Service	In-Service	02/10/2005	09/15/2005	\$307,900,000	\$307,900,000		
Reliability Upgrade	1a	572	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 345 kV 160 MVAR shunt reactors at Stoughton.	In-Service	In-Service	02/10/2005	09/15/2005	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project		
Reliability Upgrade	1a	573	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 345 kV 160 MVAR shunt reactors at K St.	In-Service	In-Service	02/10/2005	09/15/2005	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project		
Reliability Upgrade	1a	772	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 115 kV breaker at K St.	In-Service	In-Service	02/01/2005	09/01/2005	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project		
Reliability Upgrade	1a	574	NSTAR Electric Company		12/2007	NSTAR LSP - Colburn St Substation	Add 4th 115/14 kV transformer and (2) 115 kV breakers at Colburn St.	In-service	In-service	12/01/2004	NR	\$1,000,000	\$1,000,000		
Reliability Upgrade	1a	694	NSTAR Electric Company		06/2008	Short Term Lower SEMA Upgrades	Add new 115 kV line from Brook Street to Auburn Street.	In-Service	In-Service	08/17/2007	No	\$1,000,000	\$1,000,000		
Reliability Upgrade	1a	833	NSTAR Electric Company		06/2008	Short Term Lower SEMA Upgrades	Add (5) new 115 kV circuit breakers at Brook Street.	In-Service	In-Service	08/17/2007	No	\$7,900,000	\$7,900,000		



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Reliability Upgrade	1a	960	NSTAR Electric Company		06/2008	Short Term Lower SEMA Upgrades	Install a new 115kV line termination at Auburn St south bus.	In-Service	In-Service	08/17/2007	No	\$3,060,000	\$3,060,000		
Reliability Upgrade	1a	832	NSTAR Electric Company		07/2009	Short Term Lower SEMA Upgrades	Add(1) 115kV SVC (0-112 MVARs lagging) at Barnstable.	In-service	In-service	08/17/2007	No	\$82 M (Total NSTAR Project Cost Including Brook St. Station upgrade)	\$82 M (Total NSTAR Project Cost Including Brook St. Station upgrade)	\$82,000,000	-\$4,600,000
Reliability Upgrade	1a	695	NSTAR Electric Company		07/2009	Short Term Lower SEMA Upgrades	Loop (355) 345 kV line in and out of Carver Substation and add (5) new 345 kV circuit breakers at Carver substation.	In-service	In-service	08/17/2007	No	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA	-\$4,600,000
Reliability Upgrade	1a	830	NSTAR Electric Company		07/2009	Short Term Lower SEMA Upgrades	Add a second 345/115 kV Auto transformer at Carver substation and add (1) new 345 kV circuit breaker and (3) new 115 kV circuit breakers at Carver substation.	In-service	In-service	08/17/2007	No	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA	
Reliability Upgrade	1a	831	NSTAR Electric Company		07/2009	Short Term Lower SEMA Upgrades	Add a second 115 kV line from Carver to Tremont and add (2) new 115 kV circuit breakers at Carver substation and (1) new 115 kV circuit breaker at Tremont substation.	In-service	In-service	08/17/2007	No	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA	
Reliability Upgrade	1a	713	NSTAR Electric Company		09/2007		Add 115 kV 20 MVAR capacitor bank at Harwich/Harwich Tap.	In-service	In-service	06/01/2007	NR	\$900,000	\$900,000		
Reliability Upgrade	1a	838	NSTAR Electric Company		10/2007		Upgrade Canal 345 kV breaker #512 to IPT.	In-service	In-service	NR	NR	\$450,000	\$450,000		
Reliability Upgrade	1a	500	NSTAR Electric Company		11/2007		Install new 115 kV circuit breaker at Sandwich.	In-service	In-service	2/5/2008	NR	\$250,000	\$250,000		
Reliability Upgrade	1a	834	NSTAR Electric Company		06/2008		Upgrade Canal 345 kV breaker #112 to IPT.	In-Service	In-Service	NR	NR	\$450,000	\$450,000		
Reliability Upgrade	1a	1064	NSTAR Electric Company		04/2009		Install (1) 345kV 160 MVAR shunt reactor at Mystic Station	In-service	In-service	9/26/2008	No	\$10,400,000	\$10,400,000	\$10,400,000	\$0
Reliability Upgrade	1a	302	NSTAR Electric Company		05/2009	Boston Area 115 kV Enhancements	DCT separation of Framingham to Speen St. 433-507 circuit.	In-service	In-service	01/18/2005	03/01/2005	\$3,100,000	\$3,100,000	\$3,100,000	\$0
Reliability Upgrade	1a	238	United Illuminating Company		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Build new Singer 345 kV substation with (12) circuit breakers, (2) autos, (4) shunt reactors along with reconnecting Bridgeport Energy thru one of the new autos. Includes 115 kV connection from Singer to Pequonnock substation.	In-Service	In-Service	01/14/2006	No	\$162,264,000	\$162,264,000		
Reliability Upgrade	1a	224	United Illuminating Company	Northeast Utilities	12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install new 345 kV line from East Devon to Singer(UI).	In-Service	In-Service	01/14/2006	No	\$157,476,000	\$157,476,000		
Reliability Upgrade	1a	313	United Illuminating Company	Northeast Utilities	06/2008	UI LSP - Trumbull Substation	New Trumbull 115/13.8 kV Substation and 115 kV switching station.	In-Service	In-Service	3/13/2008	No	\$8,930,000	\$8,930,000		
Reliability Upgrade	1a	845	United Illuminating Company		05/2008		Replace Quinpiac 115 kV Oil Circuit Breaker.	In-Service	In-Service	NR	NR	\$650,000	\$650,000		
Reliability Upgrade	1a	846	United Illuminating Company		11/2008		Replace Mix Avenue 115 kV Oil Circuit Breaker & foundation.	In-Service	In-Service	NR	NR	\$450,000	\$450,000		\$0
Reliability Upgrade	1a	410	Vermont Electric Power Company		12/2004	Northwest Vermont Reliability Project	Sandbar PAR	In-Service	In-Service	01/10/2003	03/31/2003	\$6,200,000	\$6,200,000		\$0
Reliability Upgrade	1a	132	Vermont Electric Power Company		12/2005	Northwest Vermont Reliability Project	motorized SCADA controlled disconnect switch with a circuit breaker at Hartford substation on the line toward Wilder sub	In-Service	In-Service	01/10/2003	03/31/2003	\$3,200,000	\$3,200,000		\$0
Reliability Upgrade	1a	133	Vermont Electric Power Company		12/2005	Northwest Vermont Reliability Project	Essex K24 Line Breaker	In-Service	In-Service	01/10/2003	03/31/2003	\$1,000,000	\$1,000,000		\$0
Reliability Upgrade	1a	135	Vermont Electric Power Company		12/2006	Northwest Vermont Reliability Project	Blissville PAR	In-Service	In-Service	01/10/2003	12/18/2006	\$10,100,000	\$10,100,000		\$0
Reliability Upgrade	1a	137	Vermont Electric Power Company		01/2007	Northwest Vermont Reliability Project	New Haven-West Rutland 345kV line, 345/115 New Haven Sub with 115kV ring bus, and close the 345 kV ring bus at West Rutland	In-Service	In-Service	01/10/2003	12/18/2006	\$83,300,000	\$83,300,000		\$0
Reliability Upgrade	1a	134	Vermont Electric Power Company		11/2007	Northwest Vermont Reliability Project	Convert Williston into a ring bus configuration.	In-service	In-service	01/10/2003	03/31/2003	\$5,400,000	\$5,400,000		\$0
Reliability Upgrade	1a	138	Vermont Electric Power Company		12/2008	Northwest Vermont Reliability Project	N. Haven - Vergennes - Q. City 115 kV line.	In-Service	In-Service	01/10/2003	12/18/2006	\$70,200,000	\$70,200,000		\$0
Reliability Upgrade	1a	136	Vermont Electric Power Company		04/2009	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 1: two 115 kV PARs, four 25 MVAR Cap. banks, four +25/-12.5 MVAR synchronous condensers, and two 230/115 transformers.	In-Service	In-Service	01/10/2003	03/31/2003	\$62,400,000	\$62,400,000		\$0
Reliability Upgrade	1a	182	Vermont Electric Power Company		09/2009	Monadnock Area Reliability Project	Upgrade bus cable at N. Rutland and K35 115 kV breaker at Rutland.	In-service	In-service	03/24/2006	NR	\$1,000,000	\$1,000,000	\$1,000,000	\$0



## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
Generator Interconnection Upgrade	2a	847	Bangor Hydro-Electric Company		12/2008	Stetson Wind	Interconnect 60 MW of wind via 115 kV generator lead into Keene Road Substation.	In-Service	In-Service	07/01/2007	NR	NR	NR		
Generator Interconnection Upgrade	2a	621	Northeast Utilities		10/2007	AL Pierce	Interconnection to Wallingford (CMEEC) substation.	In-service	In-service	3/8/2007	NR	NR	NR		
Generator Interconnection Upgrade	2a	727	Northeast Utilities		12/2007	CL&P P&WA Aircraft Substation	CL&P P&WA Aircraft Substation.	In-service	In-service	01/01/2007	NR	NR	NR		
Generator Interconnection Upgrade	2a	728	Northeast Utilities		06/2008	Cos Cob Redevelopment	Installation of a second high-speed protection system on the 1440 115 kV line.	In-Service	In-Service	06/01/2007	NR	NR	NR		
<b>CANCELLED PROJECTS</b>															
Elective	4b	984	Central Maine Power Company	Maine Public Service	TBD	MEPCO-MPS 345 kV Interconnection	MEPCO-MPS 345 kV Interconnection.	Concept	Cancelled	No	No	TBD	TBD	TBD	
Reliability Upgrade	1b	275	Northeast Utilities		TBD		Merrimack 115-kV substation - Protection Separation Upgrade.	Concept	Cancelled	No	No	TBD	TBD	TBD	
Generator Interconnection Upgrade	2a	327	Central Maine Power Company		12/2010	Queue Position 138	Separate Section 215 from Section 63 and terminate Section 215 at newly established breaker position in Wyman Hydro S/S, which includes re-rating of Section 215. Expand Bigelow S/S and add capacitor banks at Lakewood, Guilford, and Sturtevant S/S's.	Cancelled	Cancelled	12/3/2003	NR	NR	NR	\$0	
Reliability Upgrade	1b	912	Central Maine Power Company		12/2009	CMP LSP - Anson Substation	Add 115 kV circuit breakers and transformer at Anson Section 63.	Cancelled	Cancelled	No	No	NR	NR	NR	
Reliability Upgrade	1b	106	Northeast Utilities		TBD		Upgrade the Southwest Hartford Substation to Bulk Power System standards (BPS).	Cancelled	Cancelled	08/04/2004	No	NR	NR	NR	
Reliability Upgrade	1b	1069	NSTAR Electric Company		07/2011	NPCC BPS Compliance	Bourne Station	Cancelled	Cancelled	No	No	NR	NR	NR	
Reliability Upgrade	1a	187	Vermont Electric Power Company		12/2010	Monadnock Area Reliability Project	Coolidge +/- 75 MVAR STATCOM with 50 MVARs of new capacitors at Coolidge and functional dynamic equivalent.	Cancelled	Cancelled	03/24/2006	No	NR	NR	NR	-\$50,000,000
Reliability Upgrade	1b	920	National Grid, USA		06/2010	Auburn Area Transmission System Upgrades	Belmont substation - Upgrade Bus work.	Cancelled	Cancelled	1/28/2008	No	NR	NR	NR	-\$470,000
Reliability Upgrade	1b	1117	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Install 115kV 50 MVAR capacitor bank at Falmouth	Cancelled	Cancelled	No	No	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA	
Reliability Upgrade	1b	337	NSTAR Electric Company		12/2010	Long Term Lower SEMA Upgrades	Canal to Oak Street #399 345 kV line.	Cancelled	Cancelled	No	No	NR	NR	NR	
Reliability Upgrade	1b	338	NSTAR Electric Company		12/2010	Long Term Lower SEMA Upgrades	Move Canal 345/115 Auto-transformer to Oak Street.	Cancelled	Cancelled	No	No	NR	NR	NR	
Reliability Upgrade	1b	967	NSTAR Electric Company		12/2010	Boston Area 115 kV Enhancements	Reconductor N. Woburn Tap to Reading Tap (Line 211-503 & 211-504).	Cancelled	Cancelled	No	No	NR	NR	NR	-\$2,000,000
Reliability Upgrade	1b	808	Northeast Utilities		TBD		Upgrade Scitico substation.	Cancelled	Cancelled	No	No	NR	NR	NR	-\$9,000,000
Generator Interconnection Upgrade	2b	861	Northeast Utilities		01/2010	Queue Position 190	Mount Tom - W Mass. Mt. Tom 115 kV Substation.	Cancelled	Cancelled	No	NR	NR	NR	NR	
Generator Interconnection Upgrade	2b	869	Northeast Utilities		06/2013	Queue Position 226	Rebuild 345 kV 326 Line	Cancelled	Cancelled	No	NR	NR	NR	NR	
Generator Interconnection Upgrade	2b	1041	Northeast Utilities		06/2013	Queue Position 226	Rebuild 115 kV U181 Line	Cancelled	Cancelled	No	NR	NR	NR	NR	
Reliability Upgrade	1b	258	Northeast Utilities		2010-2011	Springfield 115 kV Reinforcements	Retire low capacity Breckwood to East Springfield 115-kV cable.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	686	Northeast Utilities		2010-2011	Springfield 115 kV Reinforcements	Installation of a new 115-kV cable circuit between East Springfield and Clinton Substations.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	827	Northeast Utilities		2010-2011	Springfield 115 kV Reinforcements	Installation of two 115-kV cable circuits between East Springfield and Breckwood substations.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	496	Northeast Utilities		2011-2013	Springfield 115 kV Reinforcements	Additional uprating or rebuilding of the existing 115 kV overhead lines in the Springfield area.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	822	Massachusetts Municipal Whol	Northeast Utilities	2011-2013	NEEWS (Greater Springfield Reliability Project)	Install two new 115-kV lines from Stony Brook (MMWEC) to line tap#1113 and tap #1134.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	999	Northeast Utilities		2011-2013	NEEWS (Greater Springfield Reliability Project)	Replace West Springfield to Breckwood 115 kV cable.	Cancelled	Cancelled	No	No	NR	NR		

Notes  
 - Black shading indicates change from July '09 Update.  
 - All costs provided by Transmission Owners.

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
Reliability Upgrade	1b	821	Northeast Utilities		2011-2013	NEEWS (Greater Springfield Reliability Project)	Rebuild/Reconductor a portion of the Fairmont 1134 and 1113 115-kV lines up to where it taps the new Stony Brook lines.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	813	Northeast Utilities		2011-2013	NEEWS (Central Connecticut Reliability Project)	Add 345-kV shunt reactors at Frost Bridge, and North Bloomfield substations.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	815	Northeast Utilities		2011-2013	NEEWS (Central Connecticut Reliability Project)	Reconductor the East Hartford to the Riverside tap 1786 115-kV line.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	803	Northeast Utilities		2011-2013	NEEWS (Interstate Reliability Project)	Reconfigure the Millstone to Manchester 310 line into Card 345-kV substation.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	805	Northeast Utilities		2011-2013	NEEWS (Interstate Reliability Project)	Install new Northwest Hartford to Southwest Hartford 115kV cable.	Cancelled	Cancelled	No	No	NR	NR		
Reliability Upgrade	1b	806	Northeast Utilities		2011-2013	NEEWS (Interstate Reliability Project)	Install new Southwest Hartford to South Meadow 115 kV Cable.	Cancelled	Cancelled	No	No	NR	NR		
Generator Interconnection Upgrade	2a	1126	Northeast Utilities		TBD	Queue Position 161-4	Two units and repowering of #6 Montville 345kV Substation	Cancelled	Cancelled	6/9/2008	NR	NR	NR	NR	
Reliability Upgrade	1b	316	United Illuminating Company		06/2012		New Fairfield 115/13.8 kV substation	Cancelled	Cancelled	No	No	\$7,450,000	\$7,450,000	\$7,450,000	\$0
Reliability Upgrade	1b	977	United Illuminating Company		06/2013		New Orange 115/13.8 kV substation	Cancelled	Cancelled	No	No	\$7,550,000	\$7,550,000	\$7,550,000	\$0
Reliability Upgrade	1b	980	United Illuminating Company		06/2014		New Hamden 115/13.8 kV substation.	Cancelled	Cancelled	No	No	\$7,750,000	\$7,750,000	\$7,750,000	\$0
Reliability Upgrade	1b	317	United Illuminating Company		06/2014		New North Branford 115/13.8-kV substation.	Cancelled	Cancelled	No	No	\$7,750,000	\$7,750,000	\$7,750,000	\$0
Reliability Upgrade	1a	608	United Illuminating Company		12/2012		Upgrade Water Street, Broadway, Mill River, West River, Baird, Bridgeport RESCO, and Devon Tie substations to BPS standards.	Cancelled	Cancelled	1/20/2006	No	NR	NR		
Reliability Upgrade	1b	249	Northeast Utilities		TBD		Install new 115 kV line from Norwalk Harbor Station to Glenbrook Substation (accommodate 345 kV class cable).	Cancelled	Cancelled	No	No	NR	NR		

**Generators w/ NO Feasibility Study completed - hide from Project List for now!**

Generator Interconnection Upgrade	2b	737	Northeast Utilities		06/2010	Queue Position 161	Montville Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	1017	Northeast Utilities		09/2009	Queue Position 222	Haddam Neck-Southington 345-kV line.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	882	United Illuminating Company	Northeast Utilities	12/2009	Queue Position 193	Ansonia - UI Ansonia 115 kV substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	982	Northeast Utilities		05/2010	Queue Position 181	Lake Road #4 - tap the 345 kV line.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	1037	Vermont Electric Power Company	Central Vermont Public Service	12/2010	Queue Position 134	Installation of 3-breaker 115kV ring bus interconnection on the Bennington-Searsburg 69kV Y25N Line.			No	NR	NR	NR	NR	
Generator Interconnection Upgrade	2b	619	Northeast Utilities		07/2010	Queue Position 125	Interconnection to CL&P's Norwalk Harbor substation.			No	NR	NR	NR		

**Generators w/ NO interconnection upgrades required! (RESERVE IN SPITS and REMOVE FROM PROJECT LISTING)**

Generator Interconnection Upgrade	2b	730	Northeast Utilities		05/2008	Queue Position 160	CL&P Middletown Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	849	Northeast Utilities		12/2008	Queue Position 186	Shepaug - 115 kV substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	857	Northeast Utilities		06/2010	Queue Position 186	Shepaug - 115 kV substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	736	Northeast Utilities		01/2009	Queue Position 161	CL&P Middletown Substation or CL&P Scovill Rock Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	850	Northeast Utilities		06/2009	Queue Position 175	CL&P Stony Hill 115 kV Substation or 345 kV line # 321.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	852	Northeast Utilities		07/2009	Queue Position 191	Watertown - 115 kV line #1238 or #1191.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	853	Northeast Utilities		07/2009	Queue Position 199	CL&P Baldwin 115kV substation.			6/9/2008	NR	NR	NR		

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
Generator Interconnection Upgrade	2b	620	Northeast Utilities		12/2009	Queue Position 145	Interconnection to CL&P's 115-kV 1607 line.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	854	Northeast Utilities		01/2010	Queue Position 190	Falls Village - 69 kV Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	855	Northeast Utilities		01/2010	Queue Position 190	Stevenson - CL&P Stevenson 115 kV Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	856	Northeast Utilities		01/2010	Queue Position 190	Tunnel- CL&P Tunnel 115 kV Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	851	Northeast Utilities		06/2010	Queue Position 182	CL&P Stony Hill 115 kV Substation #175.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	858	Northeast Utilities		06/2010	Queue Position 192	CPV Danbury - CL&P Plumtree Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2b	883	United Illuminating Company		2009	Queue Position 159	Bridgeport Energy II - UI 345 kV Singer Substation.			No	NR	NR	NR		
Generator Interconnection Upgrade	2a	848	Northeast Utilities		11/2008	Queue Position 183	Millstone 3 - 345 kV Substation.			08/15/2007	NR	NR	NR		
Generator Interconnection Upgrade	2a	733	Northeast Utilities		12/2008	Plainfield Renewable Energy Project	CL&P Fry Brook Substation.			06/01/2007	NR	NR	NR		
Generator Interconnection Upgrade	2a	735	Northeast Utilities		01/2009	Middletown 11	NU Middletown Substation.			12/01/2007	NR	NR	NR		
Interconnection	2a	734	Northeast Utilities		03/2009	Devon Units	Devon Substation.			12/01/2007	NR	NR	NR		
<b>REMOVE FROM SPITS and PROJECT LISTING</b>															
Reliability Upgrade	1b	817 (merged w/ ID 816)	Northeast Utilities		2011-2013	NEEWS (Greater Springfield Reliability Project)	Reconfigure/Modify North Bloomfield, Northwest Hartford, Southwest Hartford and South Meadow 115-kV substations.			No	No	TBD	TBD		
Reliability Upgrade	1a	1081	Northeast Utilities		12/2013	NEEWS (Ancillary Greater Springfield Reliability Project)	BPS requirements for Springfield stations			9/24/2008	No	\$18,500,000	\$18,500,000	\$18,500,000	\$18,500,000
Reliability Upgrade	1a	1082	Northeast Utilities		12/2013	NEEWS (Ancillary Greater Springfield Reliability Project)	BPS Requirements for Connecticut stations			9/24/2008	No	\$6,200,000	\$6,200,000	\$6,200,000	\$6,200,000
Reliability Upgrade	1a	1083	Northeast Utilities		12/2013	NEEWS (Ancillary Central Connecticut Reliability Project)	BPS Requirements			9/24/2008	No	\$6,200,000	\$6,200,000	\$6,200,000	\$6,200,000
Reliability Upgrade	1a	1093	Northeast Utilities		2011-2013	NEEWS (Ancillary Project)	NU's BPS Requirements for NEEWS			No	No	\$39,000,000	\$39,000,000		
<b>KEEP IN SPITS and DON'T SHOW I/S for JUL-08 PROJECT LISTING</b>															
Reliability Upgrade	1a	611	Northeast Utilities		11/1/2006	Southwest Connecticut Reliability Project PH II (M-N)	Remove a portion of the 115 kV 1690 line from Devon to Cook Hill Jct.			01/14/2006	No	Part of SWCT (Middletown-Norwalk) Reliability Project	Part of SWCT (Middletown-Norwalk) Reliability Project		
Reliability Upgrade	1a	230	Northeast Utilities		12/22/2006	Southwest Connecticut Reliability Project PH II (M-N)	Expand Scovill Rock 345 kV substation.			04/01/2007	No	Part of SWCT (Middletown-Norwalk) Reliability Project	Part of SWCT (Middletown-Norwalk) Reliability Project		
Reliability Upgrade	1a	231	Northeast Utilities	United Illuminating Company	10/22/2007	Southwest Connecticut Reliability Project PH II (M-N)	Rebuild 115 kV Devon to Devon Switching Station(UI) 1780 and 1790 lines.			01/14/2006	No	Part of SWCT (Middletown-Norwalk) Reliability Project	Part of SWCT (Middletown-Norwalk) Reliability Project		
Reliability Upgrade	6a	780	National Grid, USA		8/2008	Merrimack Valley/North Shore Reliability Project	Revise Melrose supply configuration.			4/1/2008	No	\$5,100,000	\$5,100,000		-\$4,100,000
Reliability Upgrade	6a	1052	National Grid, USA		11/2010	Merrimack Valley/North Shore Reliability Project	Reconductor I-161 115 kV line from Meadowbrook to North Chelmsford.			6/27/2008	No	Part of Merrimack Valley/North Shore Project	Part of Merrimack Valley/North Shore Project		
Reliability Upgrade	6a	1053	National Grid, USA		11/2010	Merrimack Valley/North Shore Reliability Project	Reconductor A-153 115 kV line from Meadowbrook to North Chelmsford.			6/27/2008	No	Part of Merrimack Valley/North Shore Project	Part of Merrimack Valley/North Shore Project		

**Notes**

- <sup>1</sup> Project pending solution documentation for the Greater Rhode Island Transmission Reinforcements.
- <sup>2</sup> The Northeast Utilities' estimated costs for the NEEWS BPS upgrades are shared among the Greater Springfield, Central Connecticut, and Interstate portions of the NEEWS Project.
- <sup>3</sup> The total TCA (NU-07-TCA-24) PTF cost is \$234.2 million for the Norwalk - Glenbrook Project. The forecasted PTF cost is \$249.4 million.
- <sup>4</sup> The total TCA (NU-08-TCA-01) PTF cost is \$1.05 billion for Northeast Utilities portion of the Middletown-Norwalk Project. The forecasted PTF cost is \$978.2 million.
- <sup>5</sup> The project was completed in December 2009, and was energized and placed in service under the jurisdiction of CONVEX but has since been isolated and de-energized due to a significant incident at the power plant

## April '10 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver Local Project Listing Link	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-09 Status	Apr-10 Status	PPA (I.3.9) Approval	TCA Approval	Oct-09 Estimated PTF Costs	Apr-10 Estimated PTF Costs	Column T	DELTA
NSTAR:															
<a href="http://www.nstar.com/business/rates_tariffs/open_access/">http://www.nstar.com/business/rates_tariffs/open_access/</a>															
CMP:															
<a href="http://www.cmpco.com/SuppliersAndPartners/TransmissionServices/CMPTransmissionSvc/lsp.html">http://www.cmpco.com/SuppliersAndPartners/TransmissionServices/CMPTransmissionSvc/lsp.html</a>															
BHE:															
<a href="http://www.bhe.com/data/OASIS/LSP.html">http://www.bhe.com/data/OASIS/LSP.html</a>															
VELCO:															
<a href="http://www.vermontspc.com/default.aspx">http://www.vermontspc.com/default.aspx</a>															
NU:															
<a href="http://www.transmission-nu.com/business/ferc890postings.asp">http://www.transmission-nu.com/business/ferc890postings.asp</a>															
NGRID:															
<a href="http://www.nationalgridus.com/oasis/filings_studies.asp">http://www.nationalgridus.com/oasis/filings_studies.asp</a>															
UI:															
<a href="http://www.uinet.com/uinet/resources/file/ebcfda4ccb73dd/UI%20Local%20System%20Plan.pdf">http://www.uinet.com/uinet/resources/file/ebcfda4ccb73dd/UI%20Local%20System%20Plan.pdf</a>															

## October '09 ISO-NEW ENGLAND Project Listing Update

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jul-09 Status	Oct-09 Status	PPA (1.3.9) Approval	TCA Approval	Jul-09 Estimated PTF Costs	Oct-09 Estimated PTF Costs
<b>TABLE A</b>													
<b>MAINE</b>													
Reliability Upgrade	1a	144	Bangor Hydro-Electric Company		12/2010	Keene Rd Autotransformer	Installation of a 345/115 kV autotransformer at Keene Rd Substation.	Under Construction	Under Construction	No	No	\$29,000,000	\$29,000,000
Reliability Upgrade	1a	625	Central Maine Power Company		02/2010	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Rumford Industrial Park capacitor bank.	Planned	Under Construction	11/30/2007	No	\$5,400,000	\$5,400,000
Reliability Upgrade	1a	1128	Central Maine Power Company		07/2010	CMP-LSP Hotel Road Substation	Add 115/34kV transformer with 115kV breaker at Hotel Rd.	Planned	Planned	8/20/2008	NR	\$800,000	\$800,000
Reliability Upgrade	1a	624	Central Maine Power Company		2010	Rumford-Woodstock-Kimball Road Corridor Project	Install 115 kV line (New Page - Rumford Industrial Park)	Planned	Planned	11/30/2007	No	Part of project 625	Part of project 625
Reliability Upgrade	1a	905	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Orrington-Albion Rd-Coopers Mills, Coopers Mills-Larrabee Road, Larrabee Road-Surowiec).	Planned	Planned	7/31/2008	No	\$1,510,000,000	\$1,510,000,000
Reliability Upgrade	1a	906	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 115kV line construction (Orrington-Coopers Mills, Coopers Mills-Highland, Larrabee Road-Lewiston Lower, Larrabee Road-Livermore Falls, Livermore Falls-Rumford IP)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	907	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Rebuild Existing 115kV lines: Sections 86 (Bucksport-Belfast), Section 84 (Albion Road-Coopers Mills), Section 203 (Detroit-Orrington), Section 80 (Coopers Mills-Highland), Sections 60 & 212 (Coopers Mills-Bowman St-Larrabee Road), Sections 89 & 229 (Livermore Falls-Riley-Rumford IP)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	908	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Albion Road, Larrabee Road)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	909	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Add 2-115kV breakers & rebuild 86A, new .25 mile transmission at Belfast	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1025	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Separation of Double Circuit Towers (345kV Kennebec River Crossing 375/377 & Maine Yankee 375/392, 115kV Bucksport 65/205) and Maine Yankee 345 kV re-termination	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1026	Central Maine Power Company	Northeast Utilities	12/2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Surowiec-Raven Farm, South Gorham-Maguire Road, Maguire Road-Three Rivers)	Planned	Planned	7/31/2008 & 2/26/09	No	Portion of CMP \$1.51B and portion of NU is \$35.1M	Portion of CMP \$1.51B and portion of NU is \$35.1M
Reliability Upgrade	1a	1027	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 115kV Line Construction (Elm Street-East Deering, East Deering -Cape)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1028	Central Maine Power Company	Northeast Utilities	12/2012	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV Line (Section 250, Maguire Rd-Three Rivers)	Planned	Planned	7/31/2008 & 2/26/09	No	Portion of CMP \$1.51B and portion of NU is TBD	Portion of CMP \$1.51B and portion of NU is TBD
Reliability Upgrade	1a	1029	Central Maine Power Company		11/2010	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformer at South Gorham	Under Construction	Under Construction	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1030	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Raven Farm, Maguire Road)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	143	Bangor Hydro-Electric Company		12/2012	Down East Reliability Improvement	Contract 115 kV from Trenton tap (part of Hancock Reliability Project) to new Tunk Lake Substation to Harrington Substation.	Planned	Planned	5/10/2006	6/13/2008	\$66,100,000	\$66,100,000
Reliability Upgrade	1a	1129	Central Maine Power Company		05/2012		New 115kV line between Wyman Hydro and Heywood Rd. parallel to exiting Section 83. Install a 115kV circuit breaker at Wyman Hydro termination	Planned	Planned	1/26/2009	No	\$19,500,000	\$19,500,000
Reliability Upgrade	1a	1144	Central Maine Power Company		04/2010	Heywood Road Project	Circuit switcher replacements at Detroit, Lakewood, Rice Rips and Winslow	Under Construction	Under Construction	3/20/2009	7/20/2009	Part of Heywood Road Project	Part of Heywood Road Project
Generator Interconnection Upgrade	2a	770	Central Maine Power Company		12/2010	Queue Position 137	Installation of New Page Substation (aka Railroad Street Substation) with (3) circuit breakers tapping Section 218 115kV.	Proposed	Proposed	3/18/2007	NR	NR	NR
<b>NEW HAMPSHIRE</b>													
Reliability Upgrade	1a	277	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Add 2nd 345/115 kV autotransformer and 3-345kV breakers at Deerfield substation.	Planned	Planned	6/29/2009	No	\$56,600,000	\$56,600,000
Reliability Upgrade	1a	1137	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Replace 5-115kV breakers and add 1-115kV breaker at Deerfield Substation	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project

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October '09 ISO-NEW ENGLAND Project Listing Update													
Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jul-09 Status	Oct-09 Status	PPA (I.3.9) Approval	TCA Approval	Jul-09 Estimated PTF Costs	Oct-09 Estimated PTF Costs
Reliability Upgrade	1a	1138	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Rebuild 115kV L175 line	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1139	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV M183 Line	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1140	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV C129 Line	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1141	Northeast Utilities		2012	2nd Deerfield 345/115kV Autotransformer Project	Rochester Substation Upgrades	Planned	Planned	6/29/2009	No	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	680	National Grid, USA		09/2012		Rebuild Bellows Falls Substation and install 115 kV capacitor bank.	Planned	Planned	1/28/2008	No	\$11,497,000	\$7,393,000
Reliability Upgrade	1a	674	National Grid, USA		09/2013		Replace Comerford 230 kV breakers and add (1) 230 kV bus tie breaker.	Planned	Planned	4/1/2008	No	\$12,000,000	\$7,720,000
Elective	4a	1142	FPL New England Division		10/2009		Seabrook Station Reconfiguration and Circuit Breaker addition Stage s 1 & 2	Planned	Planned	11/20/2008	NR	TBD	TBD
Generator Interconnection Upgrade	2a	724	National Grid, USA		11/2009	NGRID Comerford Substation	NGRID Comerford Substation.	Planned	Planned	6/12/2007	NR	NR	NR
<b>VERMONT</b>													
Reliability Upgrade	1a	320	Vermont Electric Power Company		10/2009	Lamoille County Project	Middlesex Substation 115 kV breaker addition.	Under Construction	Under Construction	08/16/2007	02/07/2008	\$4,857,000	\$4,857,000
Reliability Upgrade	1a	322	Vermont Electric Power Company		10/2009	Lamoille County Project	Installation of new Duxbury Substation that involves looping in and out of the Middlesex - Essex 115 kV (K24) line.	Under Construction	Under Construction	08/16/2007	02/07/2008	Part of Lamoille County Project	Part of Lamoille County Project
Reliability Upgrade	1a	139	Vermont Electric Power Company		12/2010	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 2: synchronous condensers expanded to +200/- 100 MVAR and two 25 MVAR capacitor banks.	Planned	Planned	01/10/2003	03/31/2003	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	321	Vermont Electric Power Company		12/2009	Burlington Project	Burlington 115kV Loop - 5 mi of new line & rebuilding 5 miles of existing line between two existing substations with expansion of the East Avenue substation.	Under Construction	Under Construction	10/24/2006	05/23/2007	\$25,142,000	\$25,142,000
Reliability Upgrade	1a	1145	Vermont Electric Power Company		09/2011	Burlington Project	Installation of a 3-breaker 115kV ring substation and 115/34.5kV transformer on the East Ave. - Tafts Coners 115kV line		Planned	10/24/2006	No		\$14,000,000
Reliability Upgrade	1a	1032	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project	Installation of a new 345/115kV substation called Vernon including a new 345/115kV autotransformer	Under Construction	Under Construction	10/1/2008	No	\$69,815,000	\$69,815,000
Reliability Upgrade	1a	1033	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project (VELCO LSP - Newfane Substation)	Installation of a new 345/115kV substation called Newfane	Under Construction	Under Construction	10/1/2008	No	\$16,664,000	\$16,664,000
Reliability Upgrade	1a	1034	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project	Loop new 345kV Line into Newfane Substation.	Under Construction	Under Construction	10/1/2008	No	Part of project 323	Part of project 323
Reliability Upgrade	1a	1035	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project	Expansion of Coolidge 345kV substation	Under Construction	Under Construction	10/1/2008	No	\$20,117,000	\$20,117,000
Reliability Upgrade	1a	1146	Vermont Electric Power Company		12/2012	Lyndonville Project	Installation of a 3-breaker 115kV righ station consisting of two 115kV 12.5 MVAR capacitor banks and 115/34.5 kV transformer interconnecting to the Irasburg - St. Johnsbury 115kV line		Planned	6/1/2009	No		\$9,000,000
Generator Interconnection Upgrade	2a	1036	Vermont Electric Power Company		12/2009	Queue Position 172	Installation of 3-breaker 115kV ring bus interconnection of the St. Johnsbury-Irasburg 115kV K39 line.	Planned	Planned	08/16/2007	NR	NR	NR
<b>MASSACHUSETTS</b>													
Reliability Upgrade	1a	1063	NSTAR Electric Company		12/2009		Install (2) 115kV 40 MVAR shunt reactors at Edgar Station	Planned	Under Construction	05/2009	No	\$5,400,000	\$5,400,000
Reliability Upgrade	1a	1152	National Grid, USA		8/2010		Bear Swamp - Pratts Junction 230kV Line Refurbishment Project (E205E)		Planned	NR	NR		\$43,596,000
Reliability Upgrade	1a	887	National Grid, USA		09/2012	Auburn Area Transmission System Upgrades	Expand Auburn St Substation to include 2nd 345/115 kV autotransformer and 345 kV ring bus.	Planned	Planned	1/28/2008	No	\$30,000,000	\$30,000,000

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Reliability Upgrade	1a	921	National Grid, USA		01/2012	Auburn Area Transmission System Upgrades	Bridgewater substation - Upgrade Bus work and convert to BPS substation.	Planned	Planned	1/28/2008	No	\$12,100,000	\$12,100,000
Reliability Upgrade	1a	919	National Grid, USA		09/2012	Auburn Area Transmission System Upgrades	Dupont substation - Upgrade Buswork and convert to BPS substation.	Planned	Planned	1/28/2008	No	\$4,600,000	\$4,600,000
Reliability Upgrade	1a	783	National Grid, USA		03/2011	Merrimack Valley/North Shore Reliability Project	Extend the 115kV by addition of 115kV Breaker and K-153 line from King St. to W. Amesbury 115kV station. (W. Amesbury 345/115kV Station becomes PTF)	Planned	Planned	4/1/2008	No	\$30,349,000	\$30,349,000
Reliability Upgrade	1a	777	National Grid, USA		11/2009	Merrimack Valley/North Shore Reliability Project	Build Wakefield Junction station with four 345/115 kV autotransformers.	Under Construction	Under Construction	4/1/2008	No	\$95,000,000	\$95,000,000
Reliability Upgrade	1a	161	National Grid, USA		11/2009	Merrimack Valley/North Shore Reliability Project	Loop 345 kV 339 line and 115 kV S-145/T-146 into new Wakefield Jct. Substation.	Under Construction	Under Construction	4/1/2008	No	\$4,986,431	\$4,986,431
Reliability Upgrade	1a	779	National Grid, USA		04/2010	Merrimack Valley/North Shore Reliability Project	Bypass and remove Golden Hills 345 kV substation.	Under Construction	Under Construction	4/1/2008	No	\$5,132,609	\$5,132,609
Reliability Upgrade	1a	840	NSTAR Electric Company		10/2010	Merrimack Valley/North Shore Reliability Project	Upgrade the 115 kV line (Line 423-515) from Mystic-Everett by adding a new parallel cable to the existing 115 kV cable. (NSTAR portion only)	Planned	Planned	4/1/2008	No	\$7,300,000	\$7,300,000
Reliability Upgrade	1a	775	National Grid, USA		06/2012	Merrimack Valley/North Shore Reliability Project	Addition of 4 breakers and relocation of T1 and T2 into new bays at Sandy Pond.	Planned	Planned	6/27/2008	No	\$20,100,000	\$20,100,000
Reliability Upgrade	1a	776	National Grid, USA		06/2012	Merrimack Valley/North Shore Reliability Project	Re-conductor O-167 (NGRID portion of Mystic - Everett) 115 kV line.	Planned	Planned	6/27/2008	No	\$2,865,876	\$2,865,876
Reliability Upgrade	1a	782	National Grid, USA		10/2013	Merrimack Valley/North Shore Reliability Project	Replace existing S145/T146 UG cables with higher capacity cables between Salem Harbor n Railyard.	Planned	Planned	6/27/2008	No	\$38,100,000	\$38,100,000
Reliability Upgrade	1a	961	NSTAR Electric Company		11/2010	Mystic Breaker Additions Project	Install (2) new 115 kV East Bus breakers #30 and #32 at Mystic and move Transformer 110B Connection.	Planned	Under Construction	3/10/2008	No	\$3,800,000	\$3,800,000
Reliability Upgrade	1a	903	NSTAR Electric Company		12/2009	Mystic IPT Breaker Project	Upgrade (4) 115 kV breakers #2, #4, #5, and #16 at Mystic to IPT and separate controls with Boston Gen units #5 and #6.	Planned	Under Construction	NR	NR	\$1,240,000	\$1,240,000
Reliability Upgrade	1a	904	NSTAR Electric Company		12/2010	Mystic IPT Breaker Project	Upgrade (5) 115 kV breakers #1, #7, #15 #19 and #20 at Mystic to IPT and separate controls with Boston Gen #4.	Planned	Planned	NR	NR	\$990,000	\$990,000
Reliability Upgrade	1a	59	National Grid, USA		01/2012	Auburn Reliability Transmission System Upgrades	G18, F19 line terminals 115kV upgrades at Bridgewater sub	Planned	Planned	11/1/2007	1/31/2003	\$400,000	\$400,000
Reliability Upgrade	1a	929	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Searsburg - install in-line 69 kV breaker for operational flexibility.	Planned	Planned	12/17/2007	No	\$1,381,849	\$1,381,849
Reliability Upgrade	1a	931	National Grid, USA		01/2013	Central/Western Massachusetts Upgrades	Park St. - incremental cost of designing for 115 kV instead of 69 kV.	Planned	Planned	12/17/2007	No	\$531,481	\$531,481
Reliability Upgrade	1a	928	National Grid, USA		12/2010	Central/Western Massachusetts Upgrades	Millbury -upgrade terminal equipment for O-141, P-142, B-128, A-127 circuit breakers.	Planned	Planned	12/17/2007	No	\$1,945,218	\$2,300,000
Reliability Upgrade	1a	930	National Grid, USA		12/2009	Central/Western Massachusetts Upgrades	Reconductor Nashua St - Quinsigamond Jct (O141) 115 kV line w/636 ACSS.	Planned	Under Construction	12/17/2007	No	\$2,300,000	\$2,300,000
Reliability Upgrade	1a	934	National Grid, USA		10/2010	Central/Western Massachusetts Upgrades	Reconductor #2 Tap from Tower 510 - Webster St. 115 kV circuit.	Planned	Planned	12/17/2007	No	\$818,480	\$818,480
Reliability Upgrade	1a	935	National Grid, USA		07/2010	Central/Western Massachusetts Upgrades	Reconductor from (A-127E/B-128E) Millbury - Tower 510 115 kV line.	Planned	Planned	12/17/2007	No	\$5,208,509	\$5,208,509
Reliability Upgrade	1a	933	National Grid, USA		12/2009	Central/Western Massachusetts Upgrades	Reconductor Pratts Jct - Flagg Pond I-135S & J-136S 115 kV lines w/795 ACSS.	Planned	Under Construction	12/17/2007	No	\$6,137,112	\$6,137,112
Reliability Upgrade	1a	938	National Grid, USA		06/2010	Central/Western Massachusetts Upgrades	Deerfield - install a new 115/69kV autotransformer and a 69kV breaker and disconnect switches.	Planned	Planned	12/17/2007	No	\$3,068,556	\$3,068,556
Reliability Upgrade	1a	939	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Reconductor and retension (E205W) Harriman - Bear Swamp Tap 230 kV circuit.	Planned	Planned	12/17/2007	No	\$3,389,658	\$3,389,658

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Reliability Upgrade	1a	940	National Grid, USA		04/2011	Central/Western Massachusetts Upgrades	Reconductor sections of A127W line w/795 ACSR.	Planned	Planned	12/17/2007	No	\$6,235,744	\$6,235,744
Reliability Upgrade	1a	942	National Grid, USA		10/2010	Central/Western Massachusetts Upgrades	Webster St. - add two 115 kV circuit breakers.	Planned	Planned	12/17/2007	No	\$2,767,180	\$2,767,180
Reliability Upgrade	1a	927	National Grid, USA		07/2010	Central/Western Massachusetts Upgrades	Greendale - replace 115 kV breaker and upgrade to 2000A.	Planned	Planned	12/17/2007	No	\$584,629	\$584,629
Reliability Upgrade	1a	925	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - supply 13 kV from T3 and T4.	Planned	Planned	12/17/2007	No	\$318,888	\$318,888
Reliability Upgrade	1a	926	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - replace T8 autotransformer with 230 kV 333 mVA, upgrade breaker and bus to 115 kV. Install high side 230 kV breaker.	Planned	Planned	12/17/2007	No	\$6,027,520	\$6,027,520
Reliability Upgrade	1a	932	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - increase thermal rating of I-135 and J-136 buswork.	Planned	Planned	12/17/2007	No	\$372,036	\$372,036
Reliability Upgrade	1a	924	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Replace five 115 kV-25 kA breakers with 115 kV-50 kA breakers and upgrade disconnect switch (175-3) to 2000A.	Planned	Planned	12/17/2007	No	\$2,147,181	\$2,147,181
Reliability Upgrade	1a	941	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Install new Millbury - Tower #510 115 kV line.	Planned	Planned	12/17/2007	No	\$7,909,203	\$7,909,203
Reliability Upgrade	1a	943	National Grid, USA		01/2011	Central/Western Massachusetts Upgrades	Millbury - new 115 kV breaker position for new line to Twr 510.	Planned	Planned	12/17/2007	No	\$1,073,995	\$1,073,995
Reliability Upgrade	1a	944	National Grid, USA		07/2012	Central/Western Massachusetts Upgrades	Wachusett - install one 345 kV, 448 mVA transformer, one 345 kV breaker, and one 115 kV breaker.	Planned	Planned	12/17/2007	No	\$11,411,849	\$11,411,849
Reliability Upgrade	1a	950	National Grid, USA		12/2013	Central/Western Massachusetts Upgrades	E Winchendon - install 115 kV breaker and 115 kV disconnect switch.	Planned	Planned	12/17/2007	No	\$1,016,897	\$1,016,897
Reliability Upgrade	1a	953	National Grid, USA		12/2013	Central/Western Massachusetts Upgrades	Otter River - expand substation into 6-breaker ring bus with four 115 kV breakers and install two transformers.	Planned	Planned	12/17/2007	No	\$10,248,067	\$10,248,067
Reliability Upgrade	1a	954	National Grid, USA		12/2013	Central/Western Massachusetts Upgrades	E Westminster - install new 115 kV breaker, including disconnect switches. Assumes no new control house.	Planned	Planned	12/17/2007	No	\$903,909	\$903,909
Reliability Upgrade	1a	945	National Grid, USA		02/2013	Central/Western Massachusetts Upgrades	Adams - install third 115 kV breaker to complete ring bus.	Planned	Planned	12/17/2007	No	\$1,581,841	\$1,581,841
Reliability Upgrade	1a	946	National Grid, USA		04/2013	Central/Western Massachusetts Upgrades	Convert 69 kV (O-15S) Palmer - E Longmeadow - Shaker Rd line to 115 kV.	Planned	Planned	12/17/2007	No	\$9,604,032	\$9,604,032
Reliability Upgrade	1a	947	National Grid, USA		04/2013	Central/Western Massachusetts Upgrades	Reconductor 115 kV line from Palmer to new Hampden Substation.	Planned	Planned	12/17/2007	No	\$2,632,635	\$2,632,635
Reliability Upgrade	1a	948	National Grid, USA		07/2012	Central/Western Massachusetts Upgrades	Hampden - build new 115 kV substation at 1515/O-15S intersection (4 breaker ring).	Planned	Planned	12/17/2007	No	\$5,649,430	\$5,649,430
Reliability Upgrade	1a	949	National Grid, USA		07/2012	Central/Western Massachusetts Upgrades	Palmer - add 115 kV breaker position for O15S conversion, includes thermal upgrade of W-175 bay.	Planned	Planned	12/17/2007	No	\$1,694,829	\$1,500,000
Reliability Upgrade	1a	952	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Reconductor E Winchendon - J136 Tap within I135/J136 ROW w/795 ACSR.	Planned	Planned	12/17/2007	No	\$932,156	\$932,156
Reliability Upgrade	1a	937	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Bear Swamp - install one 230-115 kV 333 mVA auto, one 115 kV breaker and upgrade various terminal equipment.	Planned	Planned	12/17/2007	No	\$6,602,875	\$6,602,875
Reliability Upgrade	1a	955	National Grid, USA		11/2011	Central/Western Massachusetts Upgrades	Reconductor (W175) W Charton - Little Rest - Palmer w/1590 ACSR.	Planned	Planned	12/17/2007	No	\$10,779,113	\$10,779,113
Reliability Upgrade	1a	162	National Grid, USA		04/2011		Q-169 Golden Hills to Lynn 115 kV line upgrade.	Under Construction	Under Construction	9/2/2005	4/25/2008	\$12,390,000	\$12,390,000
Reliability Upgrade	1a	902	National Grid, USA		03/2012	Middleboro Municipal	Close the E1-M1 loop at Middleboro's Wareham St Sub.	Under Construction	Under Construction	12/01/2006	NR	\$715,000	\$715,000
Reliability Upgrade	1a	1000	Northeast Utilities		12/2011	Agawam-West Springfield Project	Separate and reconductor the 1311 and 1412 (West Springfield - Agawam) 115 kV double circuit.	Planned	Planned	6/27/2008	No	\$22,000,000	\$22,000,000
Reliability Upgrade	1a	951	National Grid, USA		02/2013	Central/Western Massachusetts Upgrades	Install new Otter River - E Winchendon 115 kV line.	Planned	Planned	12/17/2007	No	\$7,455,440	\$7,455,440
Reliability Upgrade	1a	687	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Fairmont 16H Substation Expansion	Planned	Planned	9/24/2008	No	\$714,000,000	\$714,000,000

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Reliability Upgrade	1a	826	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	South Agawam 42E Substation Reconfigure	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	196	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line (3216), Agawam (MA) - North Bloomfield (CT)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	818	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reconstruct a new 115kV line South Agawam to Southwick (1768)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	819	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line Ludlow - Agawam (3196)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	820	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Expansion of Agawam 16C 115 kV Substation to include new 345 kV station with two 345/115-kV autotransformers.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	823	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Ludlow 19S 345 kV Substation Expansion, two 345/115kV Autotransformers replacements. Add two 345kV 120 MVAR Capacitor additions	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	828	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Breckwood 115kV circuit 1322 Reactor Bypass and Open Breckwood Substation 1T breaker and maintain breaker in the normally open position	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	829	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Piper (1230) 115 kV line.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1010	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build 115-kV Cadwell switching 50F station.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	259	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to Orchard (1426) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	688	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Cadwell (1481) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1100	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Chicopee (1314) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1101	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Orchard (1552) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1102	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Piper (1601) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1103	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Chicopee (1602) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1104	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Cadwell (1603) 115kV line and add 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1105	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Shawinigan (1604) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1070	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1781) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1071	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1782) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1072	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Shawinigan (1845) 115kV line and add 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1073	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Retermine Cadwell to East Springfield (5001) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1074	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Retermine Cadwell to East Springfield (5002) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)

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Reliability Upgrade	1a	1075	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add 2nd high speed protection scheme to Agawam to Elm (1007) 115kV line if the Russell Biomass Plant, queue position #135 is constructed	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1076	Northeast Utilities		12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1311) 115kV line	Planned	Planned	9/24/2008	No	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	1077	Northeast Utilities		12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1412) 115kV line	Planned	Planned	9/24/2008	No	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	1078	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Pineshed (1327) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1079	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Mt. Tom (1428) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1080	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Replace 4T and 6T 115kV circuit breaker to Shawinigan substation	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	673	National Grid, USA		12/2012	Worcester Area Reinforcements	Add new 115kV bay to separate the M-165 & E-157 terminal at Millbury #2 Substation	Planned	Planned	2/27/2009	No	\$2,200,000	\$2,200,000
Reliability Upgrade	1a	676	National Grid, USA		12/2012	Worcester Area Reinforcements	New Bloomingdale to Vernon Hill 115 kV (UG Cable-3.6 mi.) new 115kV breaker at Bloomingdale & Vernon Hill	Planned	Planned	2/27/2009	No	\$30,000,000	\$30,000,000
Generator Interconnection Upgrade	2a	1045	National Grid, USA		06/2010	Lowell Power	Upgrade 137T and K-137W 115 kV circuit breakers at Sandy Pond.	Planned	Planned	7/25/2006	NR	NR	NR
Generator Interconnection Upgrade	2a	505	National Grid, USA		07/2010	Hoosac Wind Farm	Tap Y-25S line between Harriman and Deerfield 5. Construct 69/34.5 kV substation and 34.5 kV line connecting 30 MW generating facility with the 69 kV system.	Planned	Planned	02/01/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	595	NSTAR Electric Company		11/2010	Cape Wind	Expansion of Barnstable 115 kV substation to include 5th bay and (2) circuit breakers, addition of a 3rd breaker in the planned 4th bay, and (2) 35MVAR shunt reactors.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	596	NSTAR Electric Company		11/2010	Cape Wind	Installation of (2) 115 kV circuits out of Barnstable substation to interconnect Cape Wind.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	598	NSTAR Electric Company		11/2010	Cape Wind	At Canal 345 kV substation, install a redundant breaker in series with breaker #312.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	599	NSTAR Electric Company		11/2010	Cape Wind	Upgrade the Bourne 115 kV breaker #12272 with an IPT breaker.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	600	NSTAR Electric Company		11/2010	Cape Wind	Installation of differential insulation and additional grounding at each tower that is common for the 342 and 322 345 kV lines.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	1048	NSTAR Electric Company		11/2010	Cape Wind	Convert Canal 345 kV SPS to include tripping of Cape Wind for the simultaneous loss of 342 and 322 345 kV lines.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	1046	National Grid, USA		06/2011	Queue Position 178	Reconductor 115 kV F19 Line (Auburn - Brockton Tap).	Proposed	Proposed	3/10/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1047	National Grid, USA		06/2011	Queue Position 178	Replace Bridgewater 115 kV 1631 circuit breaker with 63 kA breaker.	Proposed	Proposed	3/10/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	622	Northeast Utilities		06/2011	Queue Position 135	Interconnection to WMECO's 115-kV 1512 line through a new Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR
Generator Interconnection Upgrade	2a	1043	Northeast Utilities		06/2011	Queue Position 135	Upgrade the 1768 line terminal equipment at Southwick Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR
Generator Interconnection Upgrade	2a	1044	Northeast Utilities		06/2011	Queue Position 135	Upgrade the 1512 line terminal equipment at Southwick Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR
Generator Interconnection Upgrade	2a	1058	National Grid, USA		06/2011	Billerica Power	Interconnection to Tewksbury 115 kV Substation via O-193 Line and refurbish section of J-162 line.	Planned	Planned	7/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1059	National Grid, USA		06/2011	Billerica Power	Re-terminate line tap section (Perry Street) of J-162 Line to new bay position at Tewksbury.	Planned	Planned	7/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1060	National Grid, USA		06/2011	Billerica Power	Reconductor 2.8 mi. of the M-139 115 kV line.	Planned	Planned	7/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1061	National Grid, USA		06/2011	Billerica Power	Replace (16) 115 kV circuit breakers at Tewksbury 22 w/ IPT capability if all generators w/ higher Queue Position are constructed. The quantity of breaker upgrades subject to Queued generators constructed.	Planned	Planned	7/8/2008	NR	NR	NR

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Generator Interconnection Upgrade	2a	1062	National Grid, USA		06/2011	Billerica Power	Upgrade #137T and #K-137W 115 kV circuit breakers at Sandy Pond (if not completed as part of Merrimack Valley/North Shore Project).	Planned	Planned	7/8/2008	NR	NR	NR
Elective	4a	1057	Braintree Electric Light Department		06/2010		Upgrade 115-10-16 underground 115 kV cable.	Planned	Planned	4/17/2008	No	TBD	TBD

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<b>RHODE ISLAND</b>													
Reliability Upgrade	1a	484	National Grid, USA		11/2010	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Add (1) new 115 kV breaker at Woonsocket.	Planned	Planned	4/25/2008	No	\$690,000	\$690,000
Reliability Upgrade	1a	791	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New 115 kV circuit between Somerset and Brayton Point.	Planned	Planned	4/25/2008	No	\$11,560,000	\$11,560,000
Reliability Upgrade	1a	913	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Brayton Point substation reinforcements to accommodate the new 115 kV line.	Planned	Planned	4/25/2008	No	\$3,250,000	\$3,250,000
Reliability Upgrade	1a	914	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New third circuit between Somerset and Bell Rock.	Planned	Planned	4/25/2008	No	\$28,150,000	\$28,150,000
Reliability Upgrade	1a	915	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Reconductor M13 and L14 between Bell Rock and Dexter + Reconductor 69 kV lines 61 and 62.	Planned	Planned	4/25/2008	No	\$19,450,000	\$19,450,000
Reliability Upgrade	1a	916	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Conversion of Jepson 69 kV substation to 115 kV substation.	Planned	Planned	4/25/2008	No	\$11,800,000	\$11,800,000
Reliability Upgrade	1a	917	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Bell Rock substation expansion.	Planned	Planned	4/25/2008	No	\$7,000,000	\$7,000,000
Reliability Upgrade	1a	918	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Dexter substation changes.	Planned	Planned	4/25/2008	No	\$3,180,000	\$3,180,000
Reliability Upgrade	1a	792	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Admiral St-Franklin Square (Q143 and R144) 115 kV UG recabling.	Planned	Planned	4/25/2008	No	\$39,200,000	\$39,200,000
Reliability Upgrade	1a	793	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Somerset substation reinforcements.	Planned	Planned	4/25/2008	No	\$6,400,000	\$6,400,000
Reliability Upgrade	1a	786	National Grid, USA		11/2010	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Terminal upgrades at Drumrock, Chartley Pond, and Brayton Point.	Planned	Planned	4/25/2008	No	\$565,000	\$1,000,000
Reliability Upgrade	1a	787	National Grid, USA		12/2010	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	West Farnum breaker replacements.	Planned	Planned	4/25/2008	No	\$7,631,000	\$7,631,000
Reliability Upgrade	1a	788	National Grid, USA		06/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Kent County substation expansion.	Planned	Planned	4/25/2008	No	\$42,300,000	\$42,300,000
Reliability Upgrade	1a	789	National Grid, USA		11/2010	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Reconductoring of T7 115 kV line.	Planned	Planned	4/25/2008	No	\$23,304,000	\$23,304,000
Reliability Upgrade	1a	790	National Grid, USA		12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Berry Street 345/115 kV substation.	Planned	Planned	4/25/2008	No	\$50,600,000	\$50,600,000
Reliability Upgrade	1a	1098	National Grid, USA		12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	345/115kV line interconnections at Berry Street	Planned	Planned	4/25/2008	No	\$37,529,000	\$37,529,000
Reliability Upgrade	1a	190	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	New Millbury to West Farnum (366) 345kV line.	Planned	Planned	9/24/2008	No	\$69,600,000	\$69,600,000
Reliability Upgrade	1a	1094	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV Millbury Substation equipment	Planned	Planned	9/24/2008	No	\$20,800,000	\$25,000,000
Reliability Upgrade	1a	1095	National Grid, USA		06/2012	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV West Farnum Substation Equipment	Planned	Planned	9/24/2008	No	\$73,800,000	\$73,800,000
Reliability Upgrade	1a	794	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	New West Farnum to Connecticut/Rhode Island border (341) 345kV line (to Lake Road).	Planned	Planned	9/24/2008	No	\$55,800,000	\$55,800,000
Reliability Upgrade	1a	796	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	347 Reconductor from Sherman Road to CT/RI Border.	Planned	Planned	9/24/2008	No	\$16,400,000	\$16,400,000
Reliability Upgrade	1a	797	National Grid, USA		12/2012	NEEWS (Interstate Reliability Project)	3361 Upgrade 345kV terminal equipment at Sherman Road.	Planned	Planned	9/24/2008	No	\$8,300,000	\$8,300,000
Reliability Upgrade	1a	795	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	New Kent County to West Farnum 345kV line.	Planned	Planned	9/24/2008	No	\$99,900,000	\$99,900,000

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Reliability Upgrade	1a	1106	National Grid, USA		05/2012	NEEWS (Rhode Island Reliability Project)	Installation of third 345/115kV autotransformer at Kent County.	Planned	Planned	9/24/2008	No	Part of \$99,900,000 above	Part of \$99,900,000 above
Reliability Upgrade	1a	798	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Upgrade of 115kV terminal equipment at Franklin Square.	Planned	Planned	9/24/2008	No	\$4,900,000	\$4,900,000
Reliability Upgrade	1a	799	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	G-185N (Kent County-Drumrock) 115 kV reconductor.	Planned	Planned	9/24/2008	No	\$4,500,000	\$4,500,000
Reliability Upgrade	1a	1096	National Grid, USA		05/2012	NEEWS (Rhode Island Reliability Project)	Drumrock substation: Terminal equipment upgrades, Protection modifications and upgrades to meet BPS standards	Planned	Planned	9/24/2008	No	\$5,800,000	\$12,000,000
Reliability Upgrade	1a	800	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Reconductoring of short segments of S-171S, T-172N and T-172S with associated terminal equipment upgrades.	Planned	Planned	9/24/2008	No	\$7,300,000	\$10,000,000
Reliability Upgrade	1a	1097	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Relocate and Rebuild 115kV lines in the same ROW associated with new 345kV line from W. Farnum to Kent County	Planned	Planned	9/24/2008	No	\$129,800,000	\$129,800,000
Reliability Upgrade	1a	1099	National Grid, USA		05/2012	NEEWS (Rhode Island Reliability Project)	Hartford Ave 115kV terminal equipment upgrades	Planned	Planned	9/24/2008	No	\$4,100,000	\$6,000,000
Reliability Upgrade	1a	1109	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	South Wrentham 115kV terminal equipment upgrades	Planned	Planned	9/24/2008	No	\$360,000	\$1,000,000

### CONNECTICUT

Reliability Upgrade	1a	211	Northeast Utilities		11/2009	NU LSP - Rood Ave Substation	New Rood Ave (formerly Windsor) distribution substation with 115kV terminal modifications.	Under Construction	Under Construction	4/25/2008	02/15/2008	\$9,162,029	\$9,162,029
Reliability Upgrade	1a	1049	United Illuminating Company		12/2010		East Shore 115 kV Capacitor Bank Transient Recovery	Planned	Planned	NR	NR	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	582	Northeast Utilities		12/2010		Separate 310 and 368 345-KV lines and create 368/1767 DCT	Planned	Planned	7/18/2008	No	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	1112	United Illuminating Company		12/2010		Water Street 115kV circuit breaker and switch replacements.	Planned	Planned	NR	NR	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	974	United Illuminating Company		12/2011		East Shore 115 kV Oil Circuit Breaker & Disconnect Replacements.	Planned	Planned	NR	No	\$6,700,000	\$6,700,000
Reliability Upgrade	1a	816	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	North Bloomfield 2A Substation Expansion - add a second 345/115-kV autotransformer	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1054	Northeast Utilities		12/2013	NEEWS (Ancillary Greater Springfield Reliability Project)	Manchester - Meekville Jct. line (395/1448) separation.	Planned	Planned	9/24/2008	No	\$14,000,000	\$14,000,000
Reliability Upgrade	1a	576	Northeast Utilities		12/2013	NEEWS (Central Connecticut Reliability Project)	Build new 345kV line (3208) North Bloomfield to Frost Bridge.	Planned	Planned	9/24/2008	No	\$313,000,000	\$313,000,000
Reliability Upgrade	1a	1114	Northeast Utilities		12/2013	NEEWS (Central Connecticut Reliability Project)	Frost Bridge 18R substation expansion - add a 345/115kV autotransformer.	Planned	Planned	9/24/2008	No	Part of NEEWS (Central Connecticut Reliability Project)	Part of NEEWS (Central Connecticut Reliability Project)
Reliability Upgrade	1a	814	Northeast Utilities		12/2013	NEEWS (Ancillary Central Connecticut Reliability Project)	Reconductor a portion of the Manchester to Scovill Rock 353 345-kV line and terminal work.	Planned	Planned	9/24/2008	No	\$9,000,000	\$9,000,000
Reliability Upgrade	1a	802	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Build new 345kV line (3271) Card to Lake Road	Planned	Planned	9/24/2008	No	\$251,000,000	\$251,000,000
Reliability Upgrade	1a	1084	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Loop the Millstone - Manchester (310) 345 kV line into the Card substation.	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1085	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Card 11F substation expansion	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1086	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1704, SW Hartford to South Meadow	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1087	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to line 115kV 1722 SW Hartford NW Hartford	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1088	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1786, East Hartford to Riverside to South Meadow	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1089	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Killingly 3G substation 345kV breaker addition	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)

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Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jul-09 Status	Oct-09 Status	PPA (I.3.9) Approval	TCA Approval	Jul-09 Estimated PTF Costs	Oct-09 Estimated PTF Costs
Reliability Upgrade	1a	1090	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Millstone 15G substation breaker 14T upgrade 50kA	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1091	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Southington 4C substation breaker 19T upgrade to 63kA	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	810	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Lake Road 27E 345 kV substation expansion	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	191	Northeast Utilities	National Grid, USA	12/2013	NEEWS (Interstate Reliability Project)	Build Lake Road to Connecticut/Rhode Island border (341) 345-kV line (to West Farnum).	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	807	Northeast Utilities		12/2013	NEEWS (Ancillary Interstate Reliability Project)	Install 480 MVAR's of capacitors at the Montville 345 kV substation	Planned	Planned	9/24/2008	No	\$33,000,000	\$33,000,000
Reliability Upgrade	1a	1092	Northeast Utilities		12/2013	NEEWS (BPS) 2	Upgrade the Card 115 kV, East Hartford 115 kV, Agawam 115 kV, Barbour Hill 115 kV, and North Bloomfield 345 kV Substations to BPS standards.	Planned	Planned	9/24/2008	No	\$37,000,000	\$37,000,000
Reliability Upgrade	1a	1056	Northeast Utilities		12/2011	CT LSP - Sherwood Substation	Sherwood Substation - add a 115/13.8-kV substation with two transformers and a 115-kV circuit breaker.	Planned	Planned	12/12/2008	No	\$9,751,000	\$9,751,000
Reliability Upgrade	1a	1110	United Illuminating Company		12/2010		Broadway 115/13.8 kV Substation Addition	Planned	Planned	12/8/2008	No	\$1,200,000	\$1,200,000
Reliability Upgrade	1a	1111	United Illuminating Company		12/2010		Metro North Union Avenue 115/26.4 kV Substation	Planned	Planned	1/7/2009	No	\$10,543,000	\$10,543,000
Reliability Upgrade	1a	976	United Illuminating Company		05/2012		Grand Avenue 115 kV Switching Station Rebuild.	Planned	Planned	1/7/2009	No	\$48,000,000	\$48,000,000
Reliability Upgrade	1a	879		Bangor Hydro-Electric Company, New England Power Company, Northeast Utilities System Com	TBD	Dynamic Swing Reorder Project	Upgrade 7 of 8 Dynamic Swing Recorders in New England to comply with NERC, NPCC, and ISO-NE Standards.	Planned	Planned	03/01/2007	NR	\$420,000	\$420,000
Generator Interconnection Upgrade	2a	983	Northeast Utilities		09/2012	Queue Position 207/241	Rebuild 115 kV 1585N Line between new substation and Bunker Hill.	Proposed	Proposed	9/26/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1107	Northeast Utilities		09/2012	Queue Position 207/241	Interconnection to new 115 kV substation consisting of (14) circuit breakers in a breaker and a half configuration that sectionalizes the existing 1575, 1585, and 1990 lines.	Proposed	Proposed	9/26/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1108	Northeast Utilities		09/2012	Queue Position 207/241	Installation of a 2.5% series reactor on the 1990S Line at the new substation.	Proposed	Proposed	9/26/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	331	Northeast Utilities		10/2009	Kleen Energy	Install 5-breaker ring bus interconnecting between Scovill Rock and Manchester on the 345 kV 353 Line.	Under Construction	Under Construction	10/08/2003	NR	NR	NR
Generator Interconnection Upgrade	2a	1121	Northeast Utilities		10/2009	Queue Position 161-2	Four units connected to 384 line through a new 345kV Substation; unit #4 will also connect to Substation	Proposed	Planned	12/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1149	Northeast Utilities		06/2010	Queue Position 161-1	Four units connected at Devon Substation		Under Construction	12/8/2007	NR	NR	NR
Generator Interconnection Upgrade	2a	1122	Northeast Utilities		11/2010	Queue Position 191	One turbine connected to #1238 Line (Frost Bridge to Carmel) via a new 3-breaker ring bus Substation	Proposed	Proposed	2/24/2009	NR	NR	NR
Reliability Upgrade	1a	1050	United Illuminating Company		12/2011		Devon Tie 115kV Switching Station BPS Compliance	Planned	Planned	NR	NR	\$2,620,000	\$2,620,000

### TABLE B

#### MAINE

Reliability Upgrade	1b	148	Central Maine Power Company		06/2012	CMP LSP - Saco Bay Area Reinforcement Project	Establish a new Vallee Lane 115/34.5 kV substation and 115 kV line from Louden S/S to Vallee Lane Substation.	Proposed	Proposed	No	NR	\$100,000	\$100,000
Reliability Upgrade	1b	1116	Bangor Hydro-Electric Company		12/2011	Maine Power Reliability Program (MPRP)	L 64 Rebuild	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	1031	Bangor Hydro-Electric Company		01/2012	Maine Power Reliability Program (MPRP)	Rebel Hill Switching Station, Rebuild Line 66, and Capacitor Bank Additions (10MVar at Trenton, Downeast & Hancock County area)	Concept	Concept	No	No	TBD	TBD

## October '09 ISO-NEW ENGLAND Project Listing Update

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jul-09 Status	Oct-09 Status	PPA (1.3.9) Approval	TCA Approval	Jul-09 Estimated PTF Costs	Oct-09 Estimated PTF Costs
Reliability Upgrade	1b	1130	Central Maine Power Company		12/2011	Sturtevant Improvements	Add 115kV circuit breakers & 25 MVAR capacitor bank at Sturtevant Substation; Re-rate Section 63 between Wyman Hydro & Madison Substation	Proposed	Proposed	No	No	\$3,000,000	\$3,000,000
Reliability Upgrade	1b	1131	Central Maine Power Company		12/2011	CMP-LSP Bowman St. Substation	Add 115/34kV transformer	Proposed	Proposed	No	NR	\$600,000	\$600,000
Reliability Upgrade	1b	1132	Central Maine Power Company		12/2011	CMP-LSP Maxcy's Substation	Add 115/34kV transformer (coordinate with MPRP)	Proposed	Proposed	No	NR	\$600,000	\$600,000
Reliability Upgrade	1b	1133	Central Maine Power Company		10/2010	CMP-LSP Leeds Substation	Add 115/34kV Leeds Substation & new 34kV line from Leeds to Turner	Proposed	Proposed	No	NR	\$300,000	\$300,000
Reliability Upgrade	1b	1135	Central Maine Power Company		TBD	CMP-Athens Substation LSP	Add two 115kV circuit breakers on Section 66; and 115/12kV transformer	Proposed	Proposed	No	No	\$1,500,000	\$1,500,000
Elective	4b	1018	Bangor Hydro-Electric Company		TBD	Orrington-Boston HVDC	Orrington substation reconfiguration and addition of new HVDC cable system terminating in Boston area.	Concept	Concept	No	No	TBD	TBD
Elective	4b	984	Central Maine Power Company	Maine Public Service	TBD	MEPCO-MPS 345 kV Interconnection	MEPCO-MPS 345 kV Interconnection.	Concept	Concept	No	No	TBD	TBD
<b>NEW HAMPSHIRE</b>													
Reliability Upgrade	1b	275	Northeast Utilities		TBD		Merrimack 115-kV substation - Protection Separation Upgrade.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	1143	Northeast Utilities		TBD		Littleton 115kV breaker addition and reconfiguration	Proposed	Proposed	No	No	\$5,338,000	\$5,338,000
<b>VERMONT</b>													
Reliability Upgrade	1b	318	Vermont Electric Power Company		12/2011		Rebuild the existing Georgia substation 115 kV bus into a ring bus to address reliability problems through the 1,250 MW Vermont state load level.	Concept	Concept	No	No	\$9,000,000	\$9,000,000
Reliability Upgrade	1b	325	Vermont Electric Power Company		12/2011	VELCO LSP - Chelsea Substation	Replace (2) SCADA controlled motorized disconnect switches with 115 kV circuit breakers at the existing Chelsea substation to maintain adequate supply to the load.	Concept	Concept	No	No	\$5,000,000	\$5,000,000
Reliability Upgrade	1b	324	Vermont Electric Power Company		12/2012		Granite to Middlesex 230-kV line with necessary substation upgrades to mitigate several reliability concerns, including those related to the potential Highgate contract termination.	Concept	Concept	No	No	\$100,000,000	\$100,000,000
<b>MASSACHUSETTS</b>													
Reliability Upgrade	1b	785	National Grid, USA		07/2017	Merrimack Valley/North Shore Reliability Project	Re-conductor F-158N (Golden Hills-Maplewood-Everett) 115 kV line.	Concept	Concept	No	No	\$1,330,000	\$1,330,000
Reliability Upgrade	1b	963	NSTAR Electric Company		12/2009	Boston Area 115 kV Enhancements	Add a new 115kV breaker # 11 Relocate 447-509 and add control and protect at Holbrook.	Proposed	Proposed	No	No	\$4,000,000	\$4,000,000
Reliability Upgrade	1b	842	NSTAR Electric Company		06/2010	Boston Area 115 kV Enhancements	Add 115 kV 54 MVAR capacitor bank at W. Framingham.	Proposed	Proposed	No	No	\$3,000,000	\$3,700,000
Reliability Upgrade	1b	1153	NSTAR Electric Company		06/2010	Boston Area 115 kV Enhancements	Reliability Upgrades at West Framingham Station	Concept	No	No		\$3,000,000	
Reliability Upgrade	1b	843	NSTAR Electric Company		12/2013	Boston Area 115 kV Enhancements	Install (2) new 115 kV breakers at Trapelo Road.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	965	NSTAR Electric Company		12/2012	Boston Area 115 kV Enhancements	Add third 115kV line from Walpole to Holbrook	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	964	NSTAR Electric Company		06/2011	Boston Area 115 kV Enhancements	Relocate 115kV terminals at W. Walpole to mitigate breaker failure #8.	Proposed	Proposed	No	No	\$5,600,000	\$5,600,000
Reliability Upgrade	1b	969	NSTAR Electric Company		06/2018	Boston Area 115 kV Enhancements	Add a new 54 MVAR capacitor bank at Chelsea.	Concept	Concept	No	No	\$1,200,000	\$1,200,000
Reliability Upgrade	1b	301	NSTAR Electric Company		12/2011	Boston Area 115 kV Enhancements	Reconductor 115-kV circuits 320-507 and 320-508.	Concept	Concept	No	No	\$4,600,000	\$4,600,000
Reliability Upgrade	1b	1113	NSTAR Electric Company		12/2010		Install KSt Breaker #31	Proposed	Proposed	No	No	\$2,100,000	\$2,960,000
Reliability Upgrade	1b	593	NSTAR Electric Company		2013	Mid Cape Reliability Project	Add a new 115 kV line from Canal to Barnstable/Falmouth	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	1068	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Install a new 345kV line from Carver to Sandwich and a a 345-115kV auto-transformer at Sandwich	Proposed	Proposed	No	No	\$110,000,000	\$110,000,000
Reliability Upgrade	1b	592	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Separate existing 345kV double circuit Cape Cod Canal crossing	Proposed	Proposed	No	No	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA

Notes  
 - Black shading indicates change from July '09 Update.  
 - All costs provided by Transmission Owners.



## October '09 ISO-NEW ENGLAND Project Listing Update

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jul-09 Status	Oct-09 Status	PPA (1.3.9) Approval	TCA Approval	Jul-09 Estimated PTF Costs	Oct-09 Estimated PTF Costs
Reliability Upgrade	1b	1118	NSTAR Electric Company	National Grid, USA	12/2012	Long Term Lower SEMA Upgrades	Upgrade 115kV line D21	Proposed	Proposed	No	No	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA
Reliability Upgrade	1b	1067	NSTAR Electric Company		12/2010	NPCC BPS Compliance	Tremont Station	Proposed	Proposed	No	No	\$11,200,000	\$12,800,000
Reliability Upgrade	1b	1066	NSTAR Electric Company		09/2011	NPCC BPS Compliance	Needham Station	Concept	Concept	No	No	\$9,300,000	\$9,300,000
Reliability Upgrade	1b	1065	NSTAR Electric Company		07/2012	NPCC BPS Compliance	Waltham Station	Concept	Proposed		No	\$24,300,000	\$26,600,000
Reliability Upgrade	1b	970	NSTAR Electric Company		12/2012	Greater Boston Reliability Project	Add a new 345 kV line from Lexington to Waltham.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	971	NSTAR Electric Company		12/2012	Greater Boston Reliability Project	Add a new 345/230 kV auto at Waltham and 230 kV switching facilities.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	1119	NSTAR Electric Company		12/2010	Greater Boston Reliability Project	Upgrade West Medway-West Walpole 345kV line #325	Proposed	Proposed	No	No	\$2,200,000	\$2,200,000
Reliability Upgrade	1b	1120	NSTAR Electric Company		06/2010		Install 345kV 160 MVAR shunt reactor at W. Walpole	Proposed	Proposed	No	No	\$7,200,000	\$7,200,000
Reliability Upgrade	1b	956	National Grid, USA		05/2013	Central/Western Massachusetts Upgrades	Carpenter Hill - replace one 345 kV, 448 MVA autotransformer and upgrade thermal rating of bus to at least 580 MVA.	Concept	Concept	No	No	\$7,021,534	\$7,021,534
Reliability Upgrade	1b	1136	National Grid, USA		12/2012		New 115kV Switching Station at Devens Convert 69kV lines to 115kV, Reconfigure 115kV Supply at Ayer Substation	Proposed	Proposed	7/28/2009	No	\$9,200,000	\$9,200,000
Reliability Upgrade	1b	824	Northeast Utilities		TBD	Pittsfield / Greenfield Project	Reconductor the Woodland to Pleasant 1371 115-kV line and terminal work at Woodland substation.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	825	Northeast Utilities		TBD	Pittsfield / Greenfield Project	Upgrade the Pleasant to Blanford 115-kV line and the Blanford to Granville Jct. portion of the 115-kV line 1512.	Concept	Concept	No	No	TBD	TBD
Generator Interconnection Upgrade	2b	863	Northeast Utilities		06/2010	Queue Position 217	Northfield Mountain - W. Mass Northfield 345 kV substation.	Proposed	Proposed	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1014	Northeast Utilities		06/2010	Queue Position 196	345 kV Northfield Substation	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1123	Northeast Utilities		TBD	Queue Position 236	New Substation on 1302 Line; terminal upgrades at Buck Pond and Agawam	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	880	National Grid, USA	Northeast Utilities	06/2011	Queue Position 177	Sutton Energy - 345 kV Carpenter Hill-Millbury Line.	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1042	National Grid, USA		06/2013	Queue Position 165	Replace (2) 345 kV circuit breakers at Sandy Pond	Concept	Concept	No	NR	NR	NR
<b>RHODE ISLAND</b>													
Generator Interconnection Upgrade	2b	881	National Grid, USA	Northeast Utilities	06/2012	Queue Position 201	RISEP - 345 kV RISE Substation.	Concept	Concept	No	NR	NR	NR
<b>CONNECTICUT</b>													
Reliability Upgrade	1b	1055	Northeast Utilities		2010	CT LSP - Waterside Substation	Waterside Substation - add a 115/13.2-kV transformer and a 115-kV circuit breaker.	Concept	Concept	No	No	\$4,107,000	\$4,107,000
Reliability Upgrade	1b	809	Northeast Utilities		12/2009		Upgrade terminal equipment at Bunker Hill 115 kV substation.	Proposed	Proposed	No	No	\$1,000,000	\$1,000,000
Reliability Upgrade	1b	1150	United Illuminating Company		10/2011		Grand Avenue - West River 115 kV Pumping Plant Replacements	Proposed	Proposed	NR	NR		\$1,200,000
Reliability Upgrade	1b	1151	United Illuminating Company		12/2011		West River 115kV Switching Station Fault Duty Migration	Proposed	Proposed	NR	NR		\$3,500,000
Reliability Upgrade	1b	721	United Illuminating Company		06/2013		New Shelton 115/13.8 kV substation	Proposed	Proposed	No	No	\$11,300,000	\$11,300,000
Reliability Upgrade	1b	975	United Illuminating Company		12/2013		Pequonnock 115 kV Fault Duty Mitigation.	Concept	Concept	No	No	\$44,300,000	\$44,300,000
Reliability Upgrade	1b	699	United Illuminating Company		12/2012		Naugatuck Valley 115 kV reliability improvement.	Concept	Concept	No	No	\$10,000,000	\$10,000,000
Reliability Upgrade	1b	1147	Northeast Utilities		2011		Waterside Substation - install a three-breaker 115kV ring bus	Proposed	Proposed	No	No		\$4,000,000

Notes  
 - Black shading indicates change from July '09 Update.  
 - All costs provided by Transmission Owners.

## October '09 ISO-NEW ENGLAND Project Listing Update

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jul-09 Status	Oct-09 Status	PPA (I.3.9) Approval	TCA Approval	Jul-09 Estimated PTF Costs	Oct-09 Estimated PTF Costs
Reliability Upgrade	1b	1148	Northeast Utilities		2011		Add a 2nd high speed relay on the Glensbrook to Waterside 115kV 1440		Proposed	No	No		\$600,000
Reliability Upgrade	1b	801	Northeast Utilities		TBD		Build Manchester to East Hartford 115-kV cable with a series reactor.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	85	Northeast Utilities		TBD		Upgrade the South Meadow Substation to Bulk Power System standards (BPS).	Concept	Concept	08/04/2004	No	TBD	TBD
Generator Interconnection Upgrade	2b	1124	Northeast Utilities		TBD	Queue Position 2422	New Substation on Haddam Neck-Southington 345kV line	Proposed	Proposed	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1125	Northeast Utilities		TBD	Queue Position 240	345kV on Montville Substation	Concept	Concept	No	NR	NR	NR

### IN-SERVICE PROJECTS

Reliability Upgrade	1a	1051	Central Maine Power Company		09/2009	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Riley 115 kV capacitor bank.	Under Construction	In-service	11/30/2007	No	Part of Project 625	Part of Project 625
Generator Interconnection Upgrade	2a	1134	Central Maine Power Company		09/2009	Kibby Wind Farm	Separate Section 215 from Section 63 and terminate Section 215 at newly established breaker position in Wyman Hydro S/S, which includes re-rating of Section 215. Expand Bigelow S/S & add capacitor banks at Lakewood, Guilford, Wyman Hydro Station & Sturtevant S/S's.	Under Construction	In-service	6/16/2006	NR	NR	NR
Reliability Upgrade	1a	267	Northeast Utilities	Central Maine Power Company	8/2009	Y138 Closing	White Lake - Saco Valley (Y138) Line Closing - Add PAR on Y138 at Saco Valley, retension lines, upgrade Beebe terminal, and add capacitor banks at White Lake and Beebe.	Under Construction	In-service	01/01/2006	No	\$27,775,000	\$27,775,000
Reliability Upgrade	1a	936	National Grid, USA		07/2009	Central/Western Massachusetts Upgrades	Reconductor (P142/P142S) Rolfe Avenue - West Bolyston 115 kV line w/1590 ACSR.	Under Construction	In-service	12/17/2007	No	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	176	Northeast Utilities		07/2009	Monadnock Area Reliability Project	New Fitzwilliam 345/115kV substation along with 345 kV breakers.	Under Construction	In-service	9/27/2007	No	\$76,100,000	\$76,100,000
Reliability Upgrade	1a	174	National Grid, USA		06/2009	Monadnock Area Reliability Project	Reconductor I-135 (Bellows Falls-Monadnock Tap-Flag Pond) 115 kV line.	Under Construction	In-service	03/24/2006	No	\$15,778,000	\$15,778,000
Reliability Upgrade	1a	832	NSTAR Electric Company		07/2009	Short Term Lower SEMA Upgrades	Add(1) 115kV SVC (0-112 MVARs lagging) at Barnstable.	Under Construction	In-service	08/17/2007	No	\$82 M (Total NSTAR Project Cost Including Brook St. Station upgrade	\$82 M (Total NSTAR Project Cost Including Brook St. Station upgrade
Reliability Upgrade	1a	182	Vermont Electric Power Company		09/2009	Monadnock Area Reliability Project	Upgrade bus cable at N. Rutland and K35 115 kV breaker at Rutland.	Under Construction	In-service	03/24/2006	NR	\$1,000,000	\$1,000,000

### CANCELLED PROJECTS

Reliability Upgrade	1b	1117	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Install 115kV 50 MVAR capacitor bank at Falmouth	Proposed	Cancelled	No	No	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA
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Notes		
<sup>1</sup> Project pending solution documentation for the Greater Rhode Island Transmission Reinforcements.		
<sup>2</sup> The Northeast Utilities' estimated costs for the NEEWS BPS upgrades are shared among the Greater Springfield, Central Connecticut, and Interstate portions of the NEEWS Project.		
<sup>3</sup> The total TCA (NU-07-TCA-24) PTF cost is \$234.2 million for the Norwalk - Glenbrook Project. The forecasted PTF cost is \$249.4 million.		
<sup>4</sup> The total TCA (NU-08-TCA-01) PTF cost is \$1.05 billion for Northeast Utilities portion of the Middletown-Norwalk Project. The forecasted PTF cost is \$978.2 million.		
<b>Local Project Listing Links</b>		
NSTAR: <a href="http://www.nstar.com/business/rates_tariffs/open_access/">http://www.nstar.com/business/rates_tariffs/open_access/</a>		
CMP: <a href="http://www.cmpco.com/SuppliersAndPartners/TransmissionServices/CMPTransmissionSvc/lsp.html">http://www.cmpco.com/SuppliersAndPartners/TransmissionServices/CMPTransmissionSvc/lsp.html</a>		
BHE: <a href="http://www.bhe.com/data/OASIS/LSP.html">http://www.bhe.com/data/OASIS/LSP.html</a>		
VELCO: <a href="http://www.vermontspc.com/default.aspx">http://www.vermontspc.com/default.aspx</a>		
NU: <a href="http://www.transmission-nu.com/business/ferc890postings.asp">http://www.transmission-nu.com/business/ferc890postings.asp</a>		
NGRID: <a href="http://www.nationalgridus.com/oasis/filings_studies.asp">http://www.nationalgridus.com/oasis/filings_studies.asp</a>		
UI: <a href="http://www.uinet.com/uinet/resources/file/ebcfda4cb73dd/U1%20Local%20System%20Plan.pdf">http://www.uinet.com/uinet/resources/file/ebcfda4cb73dd/U1%20Local%20System%20Plan.pdf</a>		

## April '09 ISO-NEW ENGLAND Project Listing Update (FINAL)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-08 Status	Apr -09 Status	PPA (I.3.9) Approval	TCA Approval	Oct-08 Estimated PTF Costs	Apr-09 Estimated PTF Costs
<b>TABLE A</b>													
<b>MAINE</b>													
Reliability Upgrade	1a	575	Central Maine Power Company		05/2009	Heywood Road Project	New Heywood Rd 115kV switchyard with (6) 115kV circuit breakers (3) 115kV line retensionings and 115kV 20 MVAR capacitor bank at Heywood Rd.	Concept	Under Construction	01/01/2007	1/26/2009	\$6,100,000	\$7,000,000
Reliability Upgrade	1a	1129	Central Maine Power Company		12/2012	Heywood Road Project	New 115kV line between Wyman Hydro and Heywood Rd. parallel to exiting Section 83. Install a 115kV circuit breaker at Wyman Hydro termination		Planned	1/26/2009	No		\$19,500,000
Reliability Upgrade	1a	626	Central Maine Power Company		04/2009	Rumford-Woodstock-Kimball Road Corridor Project	Addition of 115/34.5 kV transformer and six new 115 kV breakers and a half substation at Woodstock.	Planned	Planned	11/30/2007	No	\$7,400,000	\$8,000,000
Reliability Upgrade	1a	1051	Central Maine Power Company		05/2009	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Riley 115 kV capacitor bank.	Planned	Planned	11/30/2007	No	Portion of 5,400,000 (above)	Part of Project 625
Reliability Upgrade	1a	625	Central Maine Power Company		02/2010	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Rumford Industrial Park capacitor bank.	Planned	Planned	11/30/2007	No	\$5,400,000	\$5,400,000
Reliability Upgrade	1a	624	Central Maine Power Company		2010	Rumford-Woodstock-Kimball Road Corridor Project	Install 115 kV line (New Page - Rumford Industrial Park).	Planned	Planned	11/30/2007	No	Portion of 5,400,000 (above)	Part of project 625
Reliability Upgrade	1a	1127	Central Maine Power Company		05/2009	CMP-LSP Newcastle Substation	Add 115/34kV transformer with two 115kV breakers		Under Construction	8/20/2008	8/20/2008		\$1,300,000
Reliability Upgrade	1a	1128	Central Maine Power Company		07/2010	CMP-LSP Hotel Road Substation	Add 115/34kV transformer with 115kV breaker at Hotel Rd.		Planned	8/20/2008	No		\$800,000
Reliability Upgrade	1a	144	Bangor Hydro-Electric Company		12/2010	Keene Rd Autotransformer	Installation of a 345/115 kV autotransformer at Keene Rd Substation.	Proposed	Under Construction	No	No	\$20,000,000	\$29,000,000
Reliability Upgrade	1a	905	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Orrington-Albion Rd-Coopers Mills, Coopers Mills-Larrabee Road, Larrabee Road-Surawiec).	Planned	Planned	7/31/2008	No	\$1,354,000,000	\$1,510,000,000
Reliability Upgrade	1a	906	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 115kV line construction (Orrington-Coopers Mills, Coopers Mills-Highland, Larrabee Road-Lewiston Lower, Larrabee Road-Livermore Falls, Livermore Falls-Rumford IP)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	907	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Rebuild Existing 115kV lines: Sections 86 (Buckspport-Belfast), Section 84 (Albion Road-Coopers Mills), Section 203 (Detroit-Orrington), Section 80 (Coopers Mills-Highland), Sections 60 & 212 (Coopers Mills-Bowman St-Larrabee Road), Sections 89 & 229 (Livermore Falls-Riley-Rumford IP)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	908	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Albion Road, Larrabee Road)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	909	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New capacitor (10.8 MVAR at Belfast)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1025	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	Separation of Double Circuit Towers (345kV Kennebec River Crossing 375/377 & Maine Yankee 375/392, 115kV Bucksport 65/205) and Maine Yankee 345 kV re-termination	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1026	Central Maine Power Company	Northeast Utilities	12/2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Surowiec-Raven Farm, South Gorham-Maguire Road, Maguire Road-Three Rivers)	Planned	Planned	7/31/2008 & 2/26/09	No	\$70,000,000 (NU portion of MPRP)	Portion of CMP \$1.51B and portion of NU is \$35.1M
Reliability Upgrade	1a	1027	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 115kV Line Construction (Elm Street-East Deering, East Deering -Cape)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1028	Central Maine Power Company	Northeast Utilities	12/2012	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV Line (Section 250, Maguire Rd-Three Rivers)	Planned	Planned	7/31/2008 & 2/26/09	No	Portion of CMP \$1.354B and portion of NU is TBD	Portion of CMP \$1.51B and portion of NU is TBD
Reliability Upgrade	1a	1029	Central Maine Power Company		12/2009	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformer at South Gorham	Planned	Under Construction	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program

## April '09 ISO-NEW ENGLAND Project Listing Update (FINAL)

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Reliability Upgrade	1a	1030	Central Maine Power Company		12/2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Raven Farm, Maguire Road)	Planned	Planned	7/31/2008 & 2/26/09	No	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	143	Bangor Hydro-Electric Company		12/2012	Down East Reliability Improvement	Contract 115 kV from Trenton tap (part of Hancock Reliability Project) to new Tunk Lake Substation to Harrington Substation.	Planned	Planned	5/10/2006	6/13/2008	\$66,100,000	\$66,100,000
Generator Interconnection Upgrade	2a	1134	Central Maine Power Company		12/2010	Kibby Wind Farm	Separate Section 215 from Section 63 and terminate Section 215 at newly established breaker position in Wyman Hydro S/S, which includes re-rating of Section 215. Expand Bigelow S/S & add capacitor banks at Lakewood, Guilford, Wyman Hydro Station & Sturtevant S/S's.		Planned	6/16/2006	NR		NR
Generator Interconnection Upgrade	2a	770	Central Maine Power Company		TBD	Queue Position 137	Installation of New Page Substation (aka Railroad Street Substation) with (3) circuit breakers tapping Section 218 115 kV.	Proposed	Proposed	3/18/2007	NR	NR	NR
<b>NEW HAMPSHIRE</b>													
Reliability Upgrade	1a	267	Northeast Utilities	Central Maine Power Company	07/2009	Y138 Closing	White Lake - Saco Valley (Y138) Line Closing - Add PAR on Y138 at Saco Valley, retention lines, upgrade Beebe terminal, and add capacitor banks at White Lake and Beebe.	Under Construction	Under Construction	01/01/2006	No	\$28,412,000	\$27,775,000
Reliability Upgrade	1a	174	National Grid, USA		07/2009	Monadnock Area Reliability Project	Reconductor I-135 (Bellows Falls-Monadnock Tap-Flagg Pond) 115 kV line.	Planned	Under Construction	03/24/2006	No	\$9,600,000	\$9,600,000
Reliability Upgrade	1a	176	Northeast Utilities		8/2009	Monadnock Area Reliability Project	New Fitzwilliam 345/115kV substation along with 345 kV breakers.	Under Construction	Under Construction	9/27/2007	No	\$76,100,000	\$76,100,000
Reliability Upgrade	1a	680	National Grid, USA		11/2011		Rebuild Bellows Falls Substation and install 115 kV capacitor bank.	Planned	Planned	1/28/2008	No	\$11,497,000	\$11,497,000
Reliability Upgrade	1a	674	National Grid, USA		10/2012		Replace Comerford 230 kV breakers and add (1) 230 kV bus tie breaker.	Planned	Planned	4/1/2008	No	\$12,000,000	\$12,000,000
Generator Interconnection Upgrade	2a	724	National Grid, USA		11/2009	NGRID Comerford Substation	NGRID Comerford Substation.	Planned	Planned	6/12/2007	NR	NR	NR
<b>VERMONT</b>													
Reliability Upgrade	1a	320	Vermont Electric Power Company		09/2009	Lamoille County Project	Middlesex Substation 115 kV breaker addition.	Under Construction	Under Construction	08/16/2007	02/07/2008	\$4,857,000	\$4,857,000
Reliability Upgrade	1a	322	Vermont Electric Power Company		09/2009	Lamoille County Project	Installation of new Duxbury Substation that involves looping in and out of the Middlesex - Essex 115 kV (K24) line.	Under Construction	Under Construction	08/16/2007	02/07/2008	Part of Lamoille County Project	Part of Lamoille County Project
Reliability Upgrade	1a	139	Vermont Electric Power Company		12/2010	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 2: synchronous condensers expanded to +200/- 100 MVAR and two 25 MVAR capacitor banks.	Planned	Planned	01/10/2003	03/31/2003	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	182	Vermont Electric Power Company		09/2009	Monadnock Area Reliability Project	Upgrade bus cable at N. Rutland and K35 115 kV breaker at Rutland.	Planned	Under Construction	03/24/2006	No	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	321	Vermont Electric Power Company		12/2009		Burlington 115kV Loop - 5 mi of new line & rebuilding 5 miles of existing line between two existing substations with expansion of the East Avenue substation.	Planned	Under Construction	10/24/2006	05/23/2007	\$25,142,000	\$25,142,000
Reliability Upgrade	1a	323	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project	New VY - Newfane - Coolidge 345 kV line with requisite station upgrades.	Planned	Under Construction	10/1/2008	No	\$135,300,000	\$136,368,000
Reliability Upgrade	1a	1032	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project	Installation of a new 345/115kV substation called Vernon including a new 345/115kV autotransformer	Planned	Under Construction	10/1/2008	No	\$64,600,000	\$69,815,000
Reliability Upgrade	1a	1033	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project (VELCO LSP - Newfane Substation)	Installation of a new 345/115kV substation called Newfane	Planned	Under Construction	10/1/2008	No	\$38,500,000	\$16,664,000
Reliability Upgrade	1a	1034	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project	Loop new 345kV Line into Newfane Substation.	Planned	Under Construction	10/1/2008	No	\$18,000,000	Part of project 323
Reliability Upgrade	1a	1035	Vermont Electric Power Company		06/2011	Vermont Southern Loop Project	Expansion of Coolidge 345kV substation	Planned	Under Construction	10/1/2008	No	\$18,000,000	\$20,117,000
Generator Interconnection Upgrade	2a	1036	Vermont Electric Power Company		12/2009	Queue Position 172	Installation of 3-breaker 115kV ring bus interconnection of the St. Johnsbury-Irasburg 115kV K39 line.	Planned	Planned	08/16/2007	NR	NR	NR

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<b>MASSACHUSETTS</b>													
Reliability Upgrade	1a	887	National Grid, USA		05/2012	Auburn Area Transmission System Upgrades	Expand Auburn St Substation to include 2nd 345/115 kV autotransformer and 345 kV ring bus.	Planned	Planned	1/28/2008	No	\$30,000,000	\$30,000,000
Reliability Upgrade	1a	921	National Grid, USA		01/2012	Auburn Area Transmission System Upgrades	Bridgewater substation - Upgrade Bus work and convert to BPS substation.	Planned	Planned	1/28/2008	No	\$12,100,000	\$12,100,000
Reliability Upgrade	1a	919	National Grid, USA		12/2012	Auburn Area Transmission System Upgrades	Dupont substation - Upgrade Buswork and convert to BPS substation.	Planned	Planned	1/28/2008	No	\$4,600,000	\$4,600,000
Reliability Upgrade	1a	840	NSTAR Electric Company		10/2010	Merrimack Valley/North Shore Reliability Project	Upgrade the 115 kV line (Line 423-515) from Mystic-Everett by adding a new parallel cable to the existing 115 kV cable. (NSTAR portion only)	Concept	Planned	4/1/2008	No	\$5,400,000	\$7,300,000
Reliability Upgrade	1a	775	National Grid, USA		06/2012	Merrimack Valley/North Shore Reliability Project	Addition of 4 breakers and relocation of T1 and T2 into new bays at Sandy Pond.	Planned	Planned	6/27/2008	No	\$20,100,000	\$20,100,000
Reliability Upgrade	1a	777	National Grid, USA		11/2009	Merrimack Valley/North Shore Reliability Project	Build Wakefield Junction station with four 345/115 kV autotransformers.	Under Construction	Under Construction	4/1/2008	No	\$95,000,000	\$95,000,000
Reliability Upgrade	1a	161	National Grid, USA		11/2009	Merrimack Valley/North Shore Reliability Project	Loop 345 kV 339 line and 115 kV S-145/T-146 into new Wakefield Jct. Substation.	Under Construction	Under Construction	4/1/2008	No	\$3,200,000	\$4,986,431
Reliability Upgrade	1a	779	National Grid, USA		04/2010	Merrimack Valley/North Shore Reliability Project	Bypass and remove Golden Hills 345 kV substation.	Under Construction	Under Construction	4/1/2008	No	\$4,000,000	\$5,132,609
Reliability Upgrade	1a	776	National Grid, USA		06/2012	Merrimack Valley/North Shore Reliability Project	Re-conductor O-167 (NGRID portion of Mystic - Everett) 115 kV line.	Planned	Planned	6/27/2008	No	\$2,865,876	\$2,865,876
Reliability Upgrade	1a	782	National Grid, USA		10/2013	Merrimack Valley/North Shore Reliability Project	Replace existing S145/T146 UG cables with higher capacity cables between Salem Harbor n Railyard.	Planned	Planned	6/27/2008	No	\$37,600,000	\$38,100,000
Reliability Upgrade	1a	961	NSTAR Electric Company		11/2010	Mystic Breaker Additions Project	Install (2) new 115 kV East Bus breakers #30 and #32 at Mystic and move Transformer 110B Connection.	Planned	Planned	3/10/2008	No	\$3,800,000	\$3,800,000
Reliability Upgrade	1a	302	NSTAR Electric Company		07/2009	Boston Area 115 kV Enhancements	DCT separation of Framingham to Speen St. 433-507 circuit.	Under Construction	Under Construction	01/18/2005	03/01/2005	\$3,100,000	\$3,100,000
Reliability Upgrade	1a	903	NSTAR Electric Company		12/2009	Mystic IPT Breaker Project	Upgrade (4) 115 kV breakers #2, #4, #5, and #16 at Mystic to IPT and separate controls with Boston Gen units #5 and #6.	Planned	Planned	NR	NR	\$1,240,000	\$1,240,000
Reliability Upgrade	1a	904	NSTAR Electric Company		12/2010	Mystic IPT Breaker Project	Upgrade (5) 115 kV breakers #1, #7, #15 #19 and #20 at Mystic to IPT and separate controls with Boston Gen #4.	Planned	Planned	NR	NR	\$990,000	\$990,000
Reliability Upgrade	1a	59	National Grid, USA		01/2012	Auburn Reliability Transmission System Upgrades	G18, F19 line terminals 115kV upgrades at Bridgewater sub	Planned	Planned	03/12/2002	1/31/2003	\$400,000	\$400,000
Reliability Upgrade	1a	695	NSTAR Electric Company		04/2009	Short Term Lower SEMA Upgrades	Loop (355) 345 kV line in and out of Carver Substation and add (5) new 345 kV circuit breakers at Carver substation.	Planned	Under Construction	08/17/2007	No	\$10,800,000	\$86.6 M (Total NSTAR Project Cost)
Reliability Upgrade	1a	830	NSTAR Electric Company		04/2009	Short Term Lower SEMA Upgrades	Add a second 345/115 kV Auto transformer at Carver substation and add (1) new 345 kV circuit breaker and (3) new 115 kV circuit breakers at Carver substation.	Planned	Under Construction	08/17/2007	No	\$8,000,000	Part of Short Term Lower SEMA
Reliability Upgrade	1a	831	NSTAR Electric Company		06/2009	Short Term Lower SEMA Upgrades	Add a second 115 kV line from Carver to Tremont and add (2) new 115 kV circuit breakers at Carver substation and (1) new 115 kV circuit breaker at Tremont substation.	Planned	Under Construction	08/17/2007	No	\$2,500,000	Part of Short Term Lower SEMA
Reliability Upgrade	1a	832	NSTAR Electric Company		09/2009	Short Term Lower SEMA Upgrades	Add(1) 115kV SVC (0-112 MVARs lagging) at Barnstable.	Planned	Under Construction	08/17/2007	No	\$16,000,000	Part of Short Term Lower SEMA
Reliability Upgrade	1a	931	National Grid, USA		06/2009	Central/Western Massachusetts Upgrades	Park St. - incremental cost of designing for 115 kV instead of 69 kV.	Planned	Planned	12/17/2007	No	\$531,481	\$531,481
Reliability Upgrade	1a	930	National Grid, USA		12/2009	Central/Western Massachusetts Upgrades	Reconductor Nashua St - Quinsigamond Jct (O141) 115 kV line w/636 ACSS.	Planned	Planned	12/17/2007	No	\$1,765,000	\$2,300,000
Reliability Upgrade	1a	934	National Grid, USA		12/2009	Central/Western Massachusetts Upgrades	Reconductor #2 Tap from Tower 510 - Webster St. 115 kV circuit.	Planned	Planned	12/17/2007	No	\$818,480	\$818,480



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Reliability Upgrade	1a	933	National Grid, USA		04/2010	Central/Western Massachusetts Upgrades	Reconductor Pratts Jct - Flagg Pond I-135S & J-136S 115 kV lines w/795 ACSR.	Planned	Planned	12/17/2007	No	\$5,952,582	\$6,137,112
Reliability Upgrade	1a	938	National Grid, USA		06/2010	Central/Western Massachusetts Upgrades	Deerfield - install a new 115/69KV autotransformer and a 69KV breaker and disconnect switches.	Planned	Planned	12/17/2007	No	\$3,068,556	\$3,068,556
Reliability Upgrade	1a	942	National Grid, USA		06/2010	Central/Western Massachusetts Upgrades	Webster St. - add two 115 kV circuit breakers.	Planned	Planned	12/17/2007	No	\$2,767,180	\$2,767,180
Reliability Upgrade	1a	935	National Grid, USA		07/2010	Central/Western Massachusetts Upgrades	Reconductor from (A-127E/B-128E) Millbury - Tower 510 115 kV line.	Planned	Planned	12/17/2007	No	\$5,208,509	\$5,208,509
Reliability Upgrade	1a	927	National Grid, USA		07/2010	Central/Western Massachusetts Upgrades	Greendale - replace 115 kV breaker and upgrade to 2000A.	Planned	Planned	12/17/2007	No	\$584,629	\$584,629
Reliability Upgrade	1a	929	National Grid, USA		12/2010	Central/Western Massachusetts Upgrades	Searsburg - install in-line 69 kV breaker for operational flexibility.	Planned	Planned	12/17/2007	No	\$1,381,849	\$1,381,849
Reliability Upgrade	1a	936	National Grid, USA		12/2010	Central/Western Massachusetts Upgrades	Reconductor (P142/P142S) Rolfe Avenue - West Bolyston 115 kV line w/1590 ACSR.	Planned	Planned	12/17/2007	No	\$2,890,000	\$3,000,000
Reliability Upgrade	1a	928	National Grid, USA		12/2010	Central/Western Massachusetts Upgrades	Millbury -upgrade terminal equipment for O-141, P-142, B-128, A-127 circuit breakers.	Planned	Planned	12/17/2007	No	\$1,945,218	\$1,945,218
Reliability Upgrade	1a	924	National Grid, USA		12/2010	Central/Western Massachusetts Upgrades	Replace five 115 kV-25 kA breakers with 115 kV-50 kA breakers and upgrade disconnect switch (175-3) to 2000A.	Planned	Planned	12/17/2007	No	\$2,147,181	\$2,147,181
Reliability Upgrade	1a	943	National Grid, USA		01/2011	Central/Western Massachusetts Upgrades	Millbury - new 115 kV breaker position for new line to Twr 510.	Planned	Planned	12/17/2007	No	\$1,073,995	\$1,073,995
Reliability Upgrade	1a	946	National Grid, USA		03/2011	Central/Western Massachusetts Upgrades	Convert 69 kV (O-15S) Palmer - E Longmeadow - Shaker Rd line to 115 kV.	Planned	Planned	12/17/2007	No	\$14,809,054	\$9,604,032
Reliability Upgrade	1a	947	National Grid, USA		03/2011	Central/Western Massachusetts Upgrades	Reconductor 115 kV line from Palmer to new Hampden Substation.	Planned	Planned	12/17/2007	No	\$14,170,733	\$2,632,635
Reliability Upgrade	1a	940	National Grid, USA		04/2011	Central/Western Massachusetts Upgrades	Reconductor sections of A127W line w/795 ACSR.	Planned	Planned	12/17/2007	No	\$6,235,744	\$6,235,744
Reliability Upgrade	1a	945	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Adams - install third 115 kV breaker to complete ring bus.	Planned	Planned	12/17/2007	No	\$1,581,841	\$1,581,841
Reliability Upgrade	1a	948	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Hampden - build new 115 kV substation at 1515/O-15S intersection (4 breaker ring).	Planned	Planned	12/17/2007	No	\$5,649,430	\$5,649,430
Reliability Upgrade	1a	949	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Palmer - add 115 kV breaker position for O15S conversion, includes thermal upgrade of W-175 bay.	Planned	Planned	12/17/2007	No	\$1,694,829	\$1,694,829
Reliability Upgrade	1a	952	National Grid, USA		06/2011	Central/Western Massachusetts Upgrades	Reconductor E Winchendon - J136 Tap within I135/J136 ROW w/795 ACSR.	Planned	Planned	12/17/2007	No	\$932,156	\$932,156
Reliability Upgrade	1a	925	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - supply 13 kV from T3 and T4.	Planned	Planned	12/17/2007	No	\$318,888	\$318,888
Reliability Upgrade	1a	926	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - replace T8 autotransformer with 230 kV 333 mVA, upgrade breaker and bus to 115 kV. Install high side 230 kV breaker.	Planned	Planned	12/17/2007	No	\$4,889,621	\$6,027,520
Reliability Upgrade	1a	932	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Pratts Jct. - increase thermal rating of I-135 and J-136 buswork.	Planned	Planned	12/17/2007	No	\$372,036	\$372,036
Reliability Upgrade	1a	937	National Grid, USA		10/2011	Central/Western Massachusetts Upgrades	Bear Swamp - install one 230-115 kV 333 mVA auto, one 115 kV breaker and upgrade various terminal equipment.	Planned	Planned	12/17/2007	No	\$6,602,875	\$6,602,875
Reliability Upgrade	1a	955	National Grid, USA		11/2011	Central/Western Massachusetts Upgrades	Reconductor (W175) W Charlton - Little Rest - Palmer w/1590 ACSR.	Planned	Planned	12/17/2007	No	\$10,779,113	\$10,779,113
Reliability Upgrade	1a	939	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Reconductor and retension (E205W) Harriman - Bear Swamp Tap 230 kV circuit.	Planned	Planned	12/17/2007	No	\$3,287,738	\$3,389,658
Reliability Upgrade	1a	941	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Install new Millbury - Tower #510 115 kV line.	Planned	Planned	12/17/2007	No	\$5,753,542	\$7,909,203
Reliability Upgrade	1a	944	National Grid, USA		12/2011	Central/Western Massachusetts Upgrades	Wachusett - install one 345 kV, 448 mVA transformer, one 345 kV breaker, and one 115 kV breaker.	Planned	Planned	12/17/2007	No	\$9,898,000	\$11,411,849
Reliability Upgrade	1a	950	National Grid, USA		02/2012	Central/Western Massachusetts Upgrades	E Winchendon - install 115 kV breaker and 115 kV disconnect switch.	Planned	Planned	12/17/2007	No	\$899,312	\$1,016,897
Reliability Upgrade	1a	953	National Grid, USA		02/2012	Central/Western Massachusetts Upgrades	Otter River - expand substation into 6-breaker ring bus with four 115 kV breakers and install two transformers.	Planned	Planned	12/17/2007	No	\$9,444,260	\$10,248,067
Reliability Upgrade	1a	954	National Grid, USA		02/2012	Central/Western Massachusetts Upgrades	E Westminster - install new 115 kV breaker, including disconnect switches. Assumes no new control house.	Planned	Planned	12/17/2007	No	\$799,506	\$903,909
Reliability Upgrade	1a	951	National Grid, USA		02/2013	Central/Western Massachusetts Upgrades	Install new Otter River - E Winchendon 115 kV line.	Planned	Planned	12/17/2007	No	\$6,400,522	\$7,455,440
Reliability Upgrade	1a	1064	NSTAR Electric Company		04/2009		Install (1) 345kV 160 MVAR shunt reactor at Mystic Station	Planned	Planned	9/26/2008	No	\$8,000,000	\$10,400,000
Reliability Upgrade	1a	166	National Grid, USA		06/2009		Replace (16) 115 kV breakers at Tewksbury 22.	Under Construction	Under Construction	NR	NR	\$3,300,000	\$3,300,000

Notes  
- Black shading indicates change from OCTOBER '08 Update.  
- All costs provided by Transmission Owners.

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Reliability Upgrade	1a	162	National Grid, USA		04/2010		Q-169 Golden Hills to Lynn 115 kV line upgrade.	Under Construction	Under Construction	9/2/2005	4/25/2008	\$12,390,000	\$12,390,000
Reliability Upgrade	1a	673	National Grid, USA		07/2010	Worcester Area Reinforcements	Bloomingtondale Substation - #27 install 115 kV breaker.	Concept	Planned	2/27/2009	No	\$2,200,000	\$2,200,000
Reliability Upgrade	1a	676	National Grid, USA		03/2012	Worcester Area Reinforcements	New Bloomingtondale to Vernon Hill 115 kV (UG Cable-3.6 mi.)	Concept	Planned	2/27/2009	No	\$30,000,000	\$30,000,000
Reliability Upgrade	1a	1000	Northeast Utilities		12/2011	Agawam-West Springfield Project	Separate and reconductor the 1311 and 1412 (West Springfield - Agawam) 115 kV double circuit.	Planned	Planned	6/27/2008	No	\$22,000,000	\$22,000,000
Reliability Upgrade	1a	1076	Northeast Utilities		12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1311) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	1077	Northeast Utilities		12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1412) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	902	National Grid, USA		03/2012	Middleboro Municipal	Close the E1-M1 loop at Middleboro's Wareham St Sub.	Under Construction	Under Construction	12/01/2006	NR	\$715,000	\$715,000
Reliability Upgrade	1a	687	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Fairmont 16H Substation Expansion	Planned	Planned	9/24/2008	No	\$714,000,000	\$714,000,000
Reliability Upgrade	1a	826	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	South Agawam 42E Substation Reconfigure	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	196	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line (3216), Agawam (MA) - North Bloomfield (CT)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	818	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reconstruct a new 115kV line South Agawam to Southwick (1768)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	819	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line Ludlow - Agawam (3196)	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	820	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Expansion of Agawam 16C 115 kV Substation to include new 345 kV station with two 345/115-kV autotransformers.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	823	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Ludlow 19S 345 kV Substation Expansion, two 345/115kV Autotransformers replacements. Add two 345kV 120 MVAR Capacitor additions	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)

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Reliability Upgrade	1a	828	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Breckwood 115kV circuit 1322 Reactor Bypass and Open Breckwood Substation IT breaker and maintain breaker in the normally open position	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	829	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Piper (1230) 115 kV line.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1010	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build 115-kV Cadwell switching 50F station.	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	259	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to Orchard (1426) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	688	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Cadwell (1481) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1100	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Chicopee (1314) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1101	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Orchard (1552) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1102	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Piper (1601) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1103	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Chicopee (1602) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1104	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Cadwell (1603) 115kV line and add 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1105	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Shawinigan (1604) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1070	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1781) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1071	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1782) 115kV line and add a 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1072	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Shawinigan (1845) 115kV line and add 2nd High Speed Protection	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1073	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Retermine Cadwell to East Springfield (5001) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1074	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Retermine Cadwell to East Springfield (5002) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1075	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add 2nd high speed protection scheme to Agawam to Elm (1007) 115kV line if the Russell Biomass Plant, queue position #135 is constructed	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1078	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Pineshed (1327) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1079	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Mt. Tom (1428) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1080	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Replace 4T and 6T 115kV circuit breaker to Shawinigan substation	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Generator Interconnection Upgrade	2a	1045	National Grid, USA		06/2010	Lowell Power	Upgrade 137T and K-137W 115 kV circuit breakers at Sandy Pond.	Planned	Planned	7/25/2006	NR	NR	NR
Generator Interconnection Upgrade	2a	505	National Grid, USA		07/2010	Hoosac Wind Farm	Tap Y-25S line between Harriman and Deerfield 5. Construct 69/34.5 kV substation and 34.5 kV line connecting 30 MW generating facility with the 69 kV system.	Planned	Planned	02/01/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	595	NSTAR Electric Company		11/2010	Cape Wind	Expansion of Barnstable 115 kV substation to include 5th bay and (2) circuit breakers, addition of a 3rd breaker in the planned 4th bay, and (2) 35MVAR shunt reactors.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	596	NSTAR Electric Company		11/2010	Cape Wind	Installation of (2) 115 kV circuits out of Barnstable substation to interconnect Cape Wind.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	598	NSTAR Electric Company		11/2010	Cape Wind	At Canal 345 kV substation, install a redundant breaker in series with breaker #312.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	599	NSTAR Electric Company		11/2010	Cape Wind	Upgrade the Bourne 115 kV breaker #12272 with an IPT breaker.	Planned	Planned	10/6/2005	NR	NR	NR

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Generator Interconnection Upgrade	2a	600	NSTAR Electric Company		11/2010	Cape Wind	Installation of differential insulation and additional grounding at each tower that is common for the 342 and 322 345 kV lines.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	1048	NSTAR Electric Company		11/2010	Cape Wind	Convert Canal 345 kV SPS to include tripping of Cape Wind for the simultaneous loss of 342 and 322 345 kV lines.	Planned	Planned	10/6/2005	NR	NR	NR
Generator Interconnection Upgrade	2a	1046	National Grid, USA		06/2011	Queue Position 178	Reconductor 115 kV F19 Line (Auburn - Brockton Tap).	Proposed	Proposed	3/10/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1047	National Grid, USA		06/2011	Queue Position 178	Replace Bridgewater 115 kV 1631 circuit breaker with 63 kA breaker.	Proposed	Proposed	3/10/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	622	Northeast Utilities		06/2011	Queue Position 135	Interconnection to WMECO's 115-kV 1512 line through a new Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR
Generator Interconnection Upgrade	2a	1043	Northeast Utilities		06/2011	Queue Position 135	Upgrade the 1768 line terminal equipment at Southwick Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR
Generator Interconnection Upgrade	2a	1044	Northeast Utilities		06/2011	Queue Position 135	Upgrade the 1512 line terminal equipment at Southwick Substation.	Proposed	Proposed	06/01/2007	NR	NR	NR
Generator Interconnection Upgrade	2a	1058	National Grid, USA		06/2011	Billerica Power	Interconnection to Tewksbury 115 kV Substation via O-193 Line and refurbish section of J-162 line.	Planned	Planned	7/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1059	National Grid, USA		06/2011	Billerica Power	Re-terminate line tap section (Perry Street) of J-162 Line to new bay position at Tewksbury.	Planned	Planned	7/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1060	National Grid, USA		06/2011	Billerica Power	Reconductor 2.8 mi. of the M-139 115 kV line.	Planned	Planned	7/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1061	National Grid, USA		06/2011	Billerica Power	Replace (16) 115 kV circuit breakers at Tewksbury 22 w/ IPT capability if all generators w/ higher Queue Position are constructed. The quantity of breaker upgrades subject to Queued generators constructed.	Planned	Planned	7/8/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1062	National Grid, USA		06/2011	Billerica Power	Upgrade #137T and #K-137W 115 kV circuit breakers at Sandy Pond (if not completed as part of Merrimack Valley/North Shore Project).	Planned	Planned	7/8/2008	NR	NR	NR

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Elective	4a	1057	Braintree Electric Light Department		06/2010		Upgrade 115-10-16 underground 115 kV cable.	Planned	Planned	4/17/2008	No	TBD	TBD
<b>RHODE ISLAND</b>													
Reliability Upgrade	1a	484	National Grid, USA		01/2010	Greater Rhode Island Transmission Reinforcements 1	Add (1) new 115 kV breaker at Woonsocket.	Planned	Planned	4/25/2008	No	\$690,000	\$690,000
Reliability Upgrade	1a	792	National Grid, USA		01/2011	Greater Rhode Island Transmission Reinforcements 1	Admiral St-Franklin Square (Q143 and R144) 115 kV UG recabling.	Planned	Planned	4/25/2008	No	\$22,500,000	\$39,200,000
Reliability Upgrade	1a	913	National Grid, USA		02/2011	Greater Rhode Island Transmission Reinforcements 1	Brayton Point substation reinforcements to accommodate the new 115 kV line.	Planned	Planned	4/25/2008	No	\$3,250,000	\$3,250,000
Reliability Upgrade	1a	793	National Grid, USA		02/2011	Greater Rhode Island Transmission Reinforcements 1	Somerset substation reinforcements.	Planned	Planned	4/25/2008	No	\$6,400,000	\$6,400,000
Reliability Upgrade	1a	791	National Grid, USA		06/2011	Greater Rhode Island Transmission Reinforcements 1	New 115 kV circuit between Somerset and Brayton Point.	Planned	Planned	4/25/2008	No	\$11,560,000	\$11,560,000
Reliability Upgrade	1a	914	National Grid, USA		01/2014	Greater Rhode Island Transmission Reinforcements 1	New third circuit between Somerset and Bell Rock.	Planned	Planned	4/25/2008	No	\$28,150,000	\$28,150,000
Reliability Upgrade	1a	915	National Grid, USA		01/2014	Greater Rhode Island Transmission Reinforcements 1	Reconductor M13 and L14 between Bell Rock and Dexter + Reconductor 69 kV lines 61 and 62.	Planned	Planned	4/25/2008	No	\$19,450,000	\$19,450,000
Reliability Upgrade	1a	916	National Grid, USA		01/2014	Greater Rhode Island Transmission Reinforcements 1	Conversion of Jepson 69 kV substation to 115 kV substation.	Planned	Planned	4/25/2008	No	\$11,800,000	\$11,800,000
Reliability Upgrade	1a	917	National Grid, USA		01/2014	Greater Rhode Island Transmission Reinforcements 1	Bell Rock substation expansion.	Planned	Planned	4/25/2008	No	\$7,000,000	\$7,000,000
Reliability Upgrade	1a	918	National Grid, USA		01/2014	Greater Rhode Island Transmission Reinforcements 1	Dexter substation changes.	Planned	Planned	4/25/2008	No	\$3,180,000	\$3,180,000
Reliability Upgrade	1a	786	National Grid, USA		06/2009	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Terminal upgrades at Drumrock, Chartley Pond, and Brayton Point.	Planned	Planned	4/25/2008	No	\$565,000	\$565,000
Reliability Upgrade	1a	789	National Grid, USA		11/2009	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Reconductoring of T7 115 kV line.	Planned	Planned	4/25/2008	No	\$20,900,000	\$23,304,000
Reliability Upgrade	1a	787	National Grid, USA		12/2010	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	West Farnum breaker replacements.	Planned	Planned	4/25/2008	No	\$7,600,000	\$7,631,000
Reliability Upgrade	1a	788	National Grid, USA		12/2010	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Kent County substation expansion.	Planned	Planned	4/25/2008	No	\$42,300,000	\$42,300,000
Reliability Upgrade	1a	790	National Grid, USA		10/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Berry Street 345/115 kV substation.	Planned	Planned	4/25/2008	No	\$50,600,000	\$50,600,000
Reliability Upgrade	1a	1098	National Grid, USA		10/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	345/115kV line interconnections at Berry Street	Planned	Planned	4/25/2008	No	\$23,000,000	\$37,529,000
Reliability Upgrade	1a	1094	National Grid, USA		06/2012	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV Millbury Substation equipment	Planned	Planned	9/24/2008	No	\$20,800,000	\$20,800,000
Reliability Upgrade	1a	1095	National Grid, USA		06/2012	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV West Farnum Substation Equipment	Planned	Planned	9/24/2008	No	\$73,800,000	\$73,800,000
Reliability Upgrade	1a	795	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	New Kent County to West Farnum 345kV line.	Planned	Planned	9/24/2008	No	\$99,900,000	\$99,900,000



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Reliability Upgrade	1a	1106	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Installation of third 345/115kV autotransformer at Kent County.	Planned	Planned	9/24/2008	No	Part of \$99,900,000 above	Part of \$99,900,000 above
Reliability Upgrade	1a	798	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	E-183E upgrade of 115kV terminal equipment at Franklin Square.	Planned	Planned	9/24/2008	No	\$4,900,000	\$4,900,000
Reliability Upgrade	1a	799	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	G-185N (Kent County-Drumrock) 115 kV reconductor.	Planned	Planned	9/24/2008	No	\$4,500,000	\$4,500,000
Reliability Upgrade	1a	1096	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Drumrock substation: Terminal equipment upgrades, Protection modifications and upgrades to meet BPS standards	Planned	Planned	9/24/2008	No	\$5,800,000	\$5,800,000
Reliability Upgrade	1a	800	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Reconductoring of short segments of S-171S, T-172N and T-172S with associated terminal equipment upgrades.	Planned	Planned	9/24/2008	No	\$7,300,000	\$7,300,000
Reliability Upgrade	1a	1097	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Relocate and Rebuild 115kV lines in the same ROW associated with new 345kV line from W. Farnum to Kent County	Planned	Planned	9/24/2008	No	\$129,800,000	\$129,800,000
Reliability Upgrade	1a	1099	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	Hartford Ave 115kV terminal equipment upgrades	Planned	Planned	9/24/2008	No	\$4,100,000	\$4,100,000
Reliability Upgrade	1a	1109	National Grid, USA		06/2012	NEEWS (Rhode Island Reliability Project)	South Wrentham 115kv terminal equipment upgrades	Planned	Planned	9/24/2008	No	\$360,000	\$360,000
Reliability Upgrade	1a	796	National Grid, USA		11/2012	NEEWS (Interstate Reliability Project)	347 Reconductor from Sherman Road to CT/RI Border.	Planned	Planned	9/24/2008	No	\$16,400,000	\$16,400,000
Reliability Upgrade	1a	797	National Grid, USA		12/2012	NEEWS (Interstate Reliability Project)	3361 Upgrade 345kV terminal equipment at Sherman Road.	Planned	Planned	9/24/2008	No	\$8,300,000	\$8,300,000
Reliability Upgrade	1a	190	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	New Millbury to West Farnum (366) 345kV line.	Planned	Planned	9/24/2008	No	\$69,600,000	\$69,600,000
Reliability Upgrade	1a	794	National Grid, USA		12/2013	NEEWS (Interstate Reliability Project)	New West Farnum to Connecticut/Rhode Island border (341) 345kV line (to Lake Road).	Planned	Planned	9/24/2008	No	\$55,800,000	\$55,800,000
<b>CONNECTICUT</b>													
Reliability Upgrade	1a	1009	Northeast Utilities		05/2009		Install a 2% reactor on the North Bloomfield-Canton 115kV line.	Under Construction	Under Construction	10/20/2007	No	\$2,075,000	\$3,638,000
Reliability Upgrade	1a	203	Northeast Utilities		05/2009	NU LSP - Stepstone Substation	Install new Stepstone 115 kV substation in Guilford.	Under Construction	Under Construction	11/8/2005	4/24/2006	\$4,465,000	\$6,332,000
Reliability Upgrade	1a	211	Northeast Utilities		10/2009	NU LSP - Rood Ave Substation	New Rood Ave (formally Windsor) distribution substation with 115kV terminal modifications.	Under Construction	Under Construction	4/25/2008	02/15/2008	\$9,162,029	\$9,162,029
Reliability Upgrade	1a	1110	United Illuminating Company		06/2010		Broadway 115/13.8 kV Substation Addition	Proposed	Planned	12/8/2008	NR	\$1,000,000	\$800,000
Reliability Upgrade	1a	1111	United Illuminating Company		09/2010		Metro North Union Avenue 115/26.4 kV Substation	Proposed	Planned	1/7/2009	No	\$8,700,000	\$8,700,000
Reliability Upgrade	1a	1049	United Illuminating Company		12/2010		East Shore 115 kV Capacitor Bank Transient Recovery	Planned	Planned	NR	NR	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	582	Northeast Utilities		12/2010		Separate 310 and 368 345-KV lines and create 368/1767 DCT	Planned	Planned	7/18/2008	No	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	1050	United Illuminating Company		12/2010		Devon Tie 115kV Switching Station BPS Compliance	Concept	Planned	NR	NR	\$2,620,000	\$2,620,000
Reliability Upgrade	1a	1112	United Illuminating Company		12/2010		Water Street 115kV circuit breaker and switch replacements.	Planned	Planned	NR	NR	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	1056	Northeast Utilities		12/2011	CT LSP - Sherwood Substation	Sherwood Substation - add a 115/13.8-kV substation with two transformers and a 115-kV circuit breaker.	Concept	Planned	12/12/2008	No	TBD	\$9,751,000
Reliability Upgrade	1a	974	United Illuminating Company		12/2011		East Shore 115 kV Oil Circuit Breaker & Disconnect Replacements.	Planned	Planned	NR	No	\$6,700,000	\$6,700,000
Reliability Upgrade	1a	976	United Illuminating Company		05/2012		Grand Avenue 115 kV Switching Station Rebuild.	Proposed	Planned	1/7/2009	No	\$48,000,000	\$48,000,000

## April '09 ISO-NEW ENGLAND Project Listing Update (FINAL)

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Reliability Upgrade	1a	816	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	North Bloomfield 2A Substation Expansion - add a second 345/115-kV autotransformer	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1054	Northeast Utilities		12/2013	NEEWS (Ancillary Greater Springfield Reliability Project)	Manchester - Meekville Jct. line (395/1448) separation.	Planned	Planned	9/24/2008	No	\$14,000,000	\$14,000,000
Reliability Upgrade	1a	576	Northeast Utilities		12/2013	NEEWS (Central Connecticut Reliability Project)	Build new 345kV line (3208) North Bloomfield to Frost Bridge.	Planned	Planned	9/24/2008	No	\$313,000,000	\$313,000,000
Reliability Upgrade	1a	1114	Northeast Utilities		12/2013	NEEWS (Central Connecticut Reliability Project)	Frost Bridge 18R substation expansion - add a 345/115kV autotransformer.	Planned	Planned	9/24/2008	No	Part of NEEWS (Central Connecticut Reliability Project)	Part of NEEWS (Central Connecticut Reliability Project)
Reliability Upgrade	1a	814	Northeast Utilities		12/2013	NEEWS (Ancillary Central Connecticut Reliability Project)	Reconductor a portion of the Manchester to Scovill Rock 353 345-kV line and terminal work.	Planned	Planned	9/24/2008	No	\$9,000,000	\$9,000,000
Reliability Upgrade	1a	802	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Build new 345kV line (3271) Card to Lake Road	Planned	Planned	9/24/2008	No	\$251,000,000	\$251,000,000
Reliability Upgrade	1a	1084	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Loop the Millstone - Manchester (310) 345 kV line into the Card substation.	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1085	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Card 11F substation expansion	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1086	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1704, SW Hartford to South Meadow	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1087	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to line 115kV 1722 SW Hartford NW Hartford	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1088	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1786, East Hartford to Riverside to South Meadow	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1089	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Killingly 3G substation 345kV breaker addition	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1090	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Millstone 15G substation breaker 14T upgrade 50kA	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1091	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Southington 4C substation breaker 19T upgrade to 63kA	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	810	Northeast Utilities		12/2013	NEEWS (Interstate Reliability Project)	Lake Road 27E 345 kV substation expansion	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	191	Northeast Utilities	National Grid, USA	12/2013	NEEWS (Interstate Reliability Project)	Build Lake Road to Connecticut/Rhode Island border (341) 345-kV line (to West Farnum).	Planned	Planned	9/24/2008	No	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	807	Northeast Utilities		12/2013	NEEWS (Ancillary Interstate Reliability Project)	Install 480 MVAR's of capacitors at the Montville 345 kV substation	Planned	Planned	9/24/2008	No	\$33,000,000	\$33,000,000
Reliability Upgrade	1a	1092	Northeast Utilities		12/2013	NEEWS (BPS) <sup>2</sup>	Upgrade the Card 115 kV, East Hartford 115 kV, Agawam 115 kV, Barbour Hill 115 kV, and North Bloomfield 345 kV Substations to BPS standards.	Planned	Planned	9/24/2008	No	\$37,000,000	\$37,000,000
Reliability Upgrade	1a	879		Bangor Hydro-Electric Company, New England Power Company, Northeast Utilities System Com	TBD	Dynamic Swing Reorder Project	Upgrade 7 of 8 Dynamic Swing Recorders in New England to comply with NERC, NPCC, and ISO-NE Standards.	Planned	Planned	03/01/2007	NR	\$420,000	\$420,000
Generator Interconnection Upgrade	2a	983	Northeast Utilities		10/2010	Queue Position 207	Rebuild 115 kV 1585N Line between new substation and Bunker Hill.	Proposed	Proposed	9/26/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1107	Northeast Utilities		10/2010	Queue Position 207	Interconnection to new 115 kV substation consisting of (14) circuit breakers in a breaker and a half configuration that sectionalizes the existing 1575, 1585, and 1990 lines.	Proposed	Proposed	9/26/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	1108	Northeast Utilities		10/2010	Queue Position 207	Installation of a 2.5% series reactor on the 1990S Line at the new substation.	Proposed	Proposed	9/26/2008	NR	NR	NR
Generator Interconnection Upgrade	2a	331	Northeast Utilities		11/2010	Kleen Energy	Install 5-breaker ring bus interconnecting between Scovill Rock and Manchester on the 345 kV 353 Line.	Planned	Planned	10/08/2003	NR	NR	NR
Generator Interconnection Upgrade	2a	1121	Northeast Utilities		06/2010	Queue Position 161-2	Four units connected to 384 line through a new 345kV Substation: unit #4 will also connect to Substation		Proposed	12/8/2008	NR		NR
Generator Interconnection Upgrade	2a	1122	Northeast Utilities		11/2010	Queue Position 191	One turbine connected to #1238 Line (Frost Bridge to Carmel) via a new 3-breaker ring bus Substation		Proposed	2/24/2009	NR		NR
Generator Interconnection Upgrade	2a	1126	Northeast Utilities		TBD	Queue Position 161-4	Two units and repowering of #6 Montville 345kV Substation		Proposed	6/9/2008	NR		NR

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<b>TABLE B</b>													
<b>MAINE</b>													
Reliability Upgrade	1b	1130	Central Maine Power Company		12/2009	Sturtevant Improvements	Add 115kV circuit breakers & capacitor bank at Sturtevant Substation		Proposed	No	No		\$2,000,000
Reliability Upgrade	1b	148	Central Maine Power Company		06/2010	CMP LSP - Saco Bay Area Reinforcement Project	Establish a new Old Orchard Beach 115/34.5 kV substation and 115 kV line.	Concept	Proposed	No	No	\$16,900,000	\$16,900,000
Reliability Upgrade	1b	1133	Central Maine Power Company		10/2010	CMP-LSP Leeds Substation	Add 115/34kV Leeds Substation & new 34kV line from Leeds to Turner		Proposed	No	No		\$300,000
Reliability Upgrade	1b	1116	Bangor Hydro-Electric Company		12/2011	Maine Power Reliability Program (MPRP)	L 64 Rebuild		Concept	No	No		TBD
Reliability Upgrade	1b	1031	Bangor Hydro-Electric Company		01/2012	Maine Power Reliability Program (MPRP)	Rebel Hill Switching Station, Rebuild Line 66, and Capacitor Bank Additions (10MVar at Treneton, Downeast & Hancock County area)	Proposed	Concept	No	No	Part of Maine Power Reliability Program	TBD
Reliability Upgrade	1b	1131	Central Maine Power Company		12/2011	CMP-LSP Bowman St. Substation	Add 115/34kV transformer		Proposed	No	No		\$600,000
Reliability Upgrade	1b	1132	Central Maine Power Company		12/2011	CMP-LSP Maxcy's Substation	Add 115/34kV transformer (coordinate with MPRP)		Proposed	No	No		\$600,000
Elective	4b	1018	Bangor Hydro-Electric Company		TBD	Orrington-Boston HVDC	Orrington substation reconfiguration and addition of new HVDC cable system terminating in Boston area.	Concept	Concept	No	No	TBD	TBD
Elective	4b	984	Central Maine Power Company	Maine Public Service	TBD	MEPCO-MPS 345 kV Interconnection	MEPCO-MPS 345 kV Interconnection.	Concept	Concept	No	No	TBD	TBD
<b>NEW HAMPSHIRE</b>													
Reliability Upgrade	1b	275	Northeast Utilities		TBD		Merrimack 115-kV substation - Protection Separation Upgrade.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	277	Northeast Utilities		TBD		Add 2nd 345 kV autotransformer at Deerfield and associated substation work	Concept	Concept	No	No	TBD	TBD
Generator Interconnection Upgrade	2b	869	Northeast Utilities		06/2013	Queue Position 165	Rebuild 345 kV 326 Line	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1041	Northeast Utilities		06/2013	Queue Position 165	Rebuild 115 kV U181 Line	Concept	Concept	No	NR	NR	NR
<b>VERMONT</b>													
Reliability Upgrade	1b	318	Vermont Electric Power Company		12/2011		Rebuild the existing Georgia substation 115 kV bus into a ring bus to address reliability problems through the 1,250 MW Vermont state load level.	Concept	Concept	No	No	\$9,000,000	\$9,000,000
Reliability Upgrade	1b	325	Vermont Electric Power Company		12/2011	VELCO LSP - Chelsea Substation	Replace (2) SCADA controlled motorized disconnect switches with 115 kV circuit breakers at the existing Chelsea substation to maintain adequate supply to the load.	Concept	Concept	No	No	\$5,000,000	\$5,000,000
Reliability Upgrade	1b	324	Vermont Electric Power Company		12/2012		Granite to Middlesex 230-kV line with necessary substation upgrades to mitigate several reliability concerns, including those related to the potential Highgate contract termination.	Concept	Concept	No	No	\$100,000,000	\$100,000,000

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<b>MASSACHUSETTS</b>													
Reliability Upgrade	1b	1063	NSTAR Electric Company		12/2009		Install (2) 115kV 40 MVAR shunt reactors at Edgar Station	Concept	Proposed	No	No	TBD	\$5,400,000
Reliability Upgrade	1b	963	NSTAR Electric Company		12/2009	Boston Area 115 kV Enhancements	Add a new 115kV breaker # 11 at Holbrook.	Concept	Proposed	No	No	TBD	\$3,400,000
Reliability Upgrade	1b	842	NSTAR Electric Company		06/2010	Boston Area 115 kV Enhancements	Add 115 kV 54 MVAR capacitor bank at W. Framingham.	Concept	Proposed	No	No	TBD	\$3,000,000
Reliability Upgrade	1b	964	NSTAR Electric Company		12/2011	Boston Area 115 kV Enhancements	Add a new series breaker # 8 at W. Walpole.	Concept	Proposed	No	No	TBD	\$5,600,000
Reliability Upgrade	1b	965	NSTAR Electric Company		12/2012	Boston Area 115 kV Enhancements	Add third 115kV line from Walpole to Holbrook	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	969	NSTAR Electric Company		12/2012	Boston Area 115 kV Enhancements	Add a new 54 MVAR capacitor bank at Chelsea.	Concept	Concept	No	No	\$1,200,000	\$1,200,000
Reliability Upgrade	1b	301	NSTAR Electric Company		12/2012	Boston Area 115 kV Enhancements	Reconductor 115-kV circuits 320-507 and 320-508.	Concept	Concept	No	No	\$4,600,000	\$4,600,000
Reliability Upgrade	1b	843	NSTAR Electric Company		12/2013	Boston Area 115 kV Enhancements	Install (2) new 115 kV breakers at Trapelo Road.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	1119	NSTAR Electric Company		12/2009	Greater Boston Reliability Project	Remove limiting ground clearance conditions on West Medway-West Walpole 345kV line (#325 )		Proposed	No	No		\$1,300,000
Reliability Upgrade	1b	970	NSTAR Electric Company		12/2012	Greater Boston Reliability Project	Add a new 345 kV line from Lexington to Waltham.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	971	NSTAR Electric Company		12/2012	Greater Boston Reliability Project	Add a new 345/230 kV auto at Waltham and 230 kV switching facilities.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	1113	NSTAR Electric Company		06/2010		Install KSt Breaker #301	Concept	Proposed	No	No	TBD	\$2,100,000
Reliability Upgrade	1b	1120	NSTAR Electric Company		06/2010		Install 345kV 160 MVAR shunt reactor at W. Walpole		Proposed	No	No		\$6,000,000
Reliability Upgrade	1b	1067	NSTAR Electric Company		12/2010	NPCC BPS Compliance	Tremont Station	Proposed	Proposed	No	No	\$7,100,000	\$11,200,000
Reliability Upgrade	1b	1066	NSTAR Electric Company		09/2011	NPCC BPS Compliance	Needham Station	Proposed	Proposed	No	No	\$7,500,000	\$9,300,000
Reliability Upgrade	1b	1065	NSTAR Electric Company		07/2012	NPCC BPS Compliance	Waltham Station	Proposed	Proposed	No	No	\$22,000,000	\$24,300,000
Reliability Upgrade	1b	783	National Grid, USA		12/2010	Merrimack Valley/North Shore Reliability Project	Extend the 115kV by addition of 115kV Breaker and K-153 line from King St. to W. Amesbury 115kV station. (W. Amesbury 345/115kV Station becomes PTF)	Concept	Concept	4/1/2008	No	\$30,349,000	\$30,349,000
Reliability Upgrade	1b	785	National Grid, USA		07/2017	Merrimack Valley/North Shore Reliability Project	Re-conductor F-158N (Golden Hills-Maplewood-Everett) 115 kV line.	Concept	Concept	No	No	\$1,330,000	\$1,330,000
Reliability Upgrade	1b	1068	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Install a new 345kV line from Carver to Sandwich and a a 345-115kV auto-transformer at Sandwich	Concept	Proposed	No	No	TBD	\$110,000,000
Reliability Upgrade	1b	593	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Add a new 115 kV line from Canal to Barnstable.	Concept	Proposed	No	No	TBD	Part of Long Term Lower SEMA
Reliability Upgrade	1b	592	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Separate existing 345kV double circuit Cape Cod Canal crossing	Concept	Proposed	No	No	TBD	Part of Long Term Lower SEMA
Reliability Upgrade	1b	1117	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Install 115kV 50 MVAR capacitor bank at Falmouth	Concept	Proposed	No	No	TBD	Part of Long Term Lower SEMA
Reliability Upgrade	1b	1118	NSTAR Electric Company	National Grid, USA	12/2012	Long Term Lower SEMA Upgrades	Upgrade 115kV line D21 and 111	Concept	Proposed	No	No	TBD	Part of Long Term Lower SEMA
Reliability Upgrade	1b	956	National Grid, USA		05/2013	Central/Western Massachusetts Upgrades	Carpenter Hill - replace one 345 kV, 448 MVA autotransformer and upgrade thermal rating of bus to at least 580 MVA.	Concept	Concept	No	No	\$7,021,534	\$7,021,534

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Reliability Upgrade	1b	824	Northeast Utilities		TBD	Pittsfield / Greenfield Project	Reconductor the Woodland to Pleasant 1371 115-kV line and terminal work at Woodland substation.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	825	Northeast Utilities		TBD	Pittsfield / Greenfield Project	Upgrade the Pleasant to Blanford 115-kV line and the Blanford to Granville Jct. portion of the 115-kV line 1512.	Concept	Concept	No	No	TBD	TBD
Generator Interconnection Upgrade	2b	861	Northeast Utilities		01/2010	Queue Position 190	Mount Tom - W Mass. Mt. Tom 115 kV Substation.	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	863	Northeast Utilities		06/2010	Queue Position 217	Northfield Mountain - W. Mass Northfield 345 kV substation.	Proposed	Proposed	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1014	Northeast Utilities		06/2010	Queue Position 196	345 kV Northfield Substation	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	880	National Grid, USA	Northeast Utilities	06/2011	Queue Position 177	Sutton Energy - 345 kV Carpenter Hill-Millbury Line.	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1042	National Grid, USA		06/2013	Queue Position 165	Replace (2) 345 kV circuit breakers at Sandy Pond	Concept	Concept	No	NR	NR	NR
Generator Interconnection Upgrade	2b	1123	Northeast Utilities		TBD	Queue Position 236	New Substation on 1302 Line; terminal upgrades at Buck Pond and Agawam		Concept	No	NR		NR
<b>RHODE ISLAND</b>													
Generator Interconnection Upgrade	2b	881	National Grid, USA	Northeast Utilities	06/2012	Queue Position 201	RISEP - 345 kV RISE Substation.	Concept	Concept	No	NR	NR	NR
<b>CONNECTICUT</b>													
Reliability Upgrade	1b	809	Northeast Utilities		12/2009		Upgrade terminal equipment at Bunker Hill 115 kV substation.	Proposed	Proposed	No	No	\$1,000,000	\$1,000,000
Reliability Upgrade	1b	1055	Northeast Utilities		2010	CT LSP - Waterside Substation	Waterside Substation - add a 115/13.2-kV transformer and a 115-kV circuit breaker.	Concept	Concept	No	No	\$4,107,000	\$4,107,000
Reliability Upgrade	1b	721	United Illuminating Company		06/2011		New Shelton 115/13.8 kV substation	Proposed	Proposed	No	No	\$11,300,000	\$11,300,000
Reliability Upgrade	1b	316	United Illuminating Company		06/2012		New Fairfield 115/13.8 kV substation	Concept	Concept	No	No	\$7,450,000	\$7,450,000
Reliability Upgrade	1b	699	United Illuminating Company		12/2012		Naugatuck Valley 115 kV reliability improvement.	Concept	Concept	No	No	\$46,540,000	\$10,000,000
Reliability Upgrade	1b	977	United Illuminating Company		06/2013		New Orange 115/13.8 kV substation	Concept	Concept	No	No	\$7,550,000	\$7,550,000
Reliability Upgrade	1b	975	United Illuminating Company		12/2013		Pequonnock 115 kV Fault Duty Mitigation.	Concept	Concept	No	No	\$44,300,000	\$44,300,000
Reliability Upgrade	1b	980	United Illuminating Company		06/2014		New Hamden 115/13.8 kV substation.	Concept	Concept	No	No	\$7,750,000	\$7,750,000
Reliability Upgrade	1b	317	United Illuminating Company		06/2014		New North Branford 115/13.8-kV substation.	Concept	Concept	No	No	\$7,750,000	\$7,750,000
Reliability Upgrade	1b	801	Northeast Utilities		TBD		Build Manchester to East Hartford 115-kV cable with a series reactor.	Concept	Concept	No	No	TBD	TBD
Reliability Upgrade	1b	85	Northeast Utilities		TBD		Upgrade the South Meadow Substation to Bulk Power System standards (BPS).	Concept	Concept	08/04/2004	No	TBD	TBD
Generator Interconnection Upgrade	2b	1124	Northeast Utilities		TBD	Queue Position 222	New Substation on Haddam Neck-Southington 345kV line		Proposed	No	NR		NR
Generator Interconnection Upgrade	2b	1125	Northeast Utilities		TBD	Queue Position 240	345kV on Montville Substation		Concept	No	NR		NR



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<b>IN-SERVICE PROJECTS</b>													
Reliability Upgrade	1a	155	Central Maine Power Company	Northeast Utilities	01/2009	Maguire Road Project	Rebuild Three Rivers - Quaker Hill 115 kV Line K197.	Under Construction	In-Service	03/01/2007	1/9/2009	\$5,500,000	\$5,500,000
Reliability Upgrade	1a	910	Central Maine Power Company		12/2008	Rumford-Woodstock-Kimball Road Corridor Project	Rebuild Section 211 Woodstock - Rumford.	Under Construction	In-Service	11/30/2007	No	\$6,800,000	\$8,400,000
Reliability Upgrade	1a	923	National Grid, USA		12/2008	Auburn Area Transmission System Upgrades	Reconductor 115 kV A94 line and associated substation upgrades.	Planned	In-Service	1/28/2008	No	\$3,400,000	\$2,400,000
Reliability Upgrade	1a	922	National Grid, USA		02/2009	Auburn Area Transmission System Upgrades	Reconductor 115kV L1 line and associated substation upgrades.	Planned	In-Service	1/28/2008	No	\$1,050,000	\$800,000
Reliability Upgrade	1a	781	National Grid, USA		10/2008	Merrimack Valley/North Shore Reliability Project	Install 115 kV 30 MVar capacitor bank at Revere.	Planned	In-Service	4/1/2008	No	\$1,500,000	\$1,727,000
Reliability Upgrade	1a	168	National Grid, USA		09/2008	Southwest Rhode Island Reliability Enhancements	Reconductor Kenyon - Wood River 115 kV 1870 line.	Under Construction	In-Service	1/1/2005	03/29/2005	\$2,600,000	\$2,234,232
Reliability Upgrade	1a	171	National Grid, USA		10/2008	Southwest Rhode Island Reliability Enhancements	Reconductoring L-190 between Kent Co. and Davisville.	Under Construction	In-Service	11/10/2004	03/29/2005	\$3,000,000	\$2,666,291
Reliability Upgrade	1a	900	National Grid, USA		11/2008	Southwest Rhode Island Reliability Enhancements	Wood River substation upgrades.	Under Construction	In-Service	04/07/2007	05/07/2007	\$240,000	\$130,000
Reliability Upgrade	1a	899	National Grid, USA		12/2008	Southwest Rhode Island Reliability Enhancements	Kenyon substation upgrades.	Under Construction	In-Service	04/07/2007	05/07/2007	\$278,000	\$278,000
Reliability Upgrade	1a	177	Northeast Utilities		12/2008	Monadnock Area Reliability Project	Replace limiting terminal equipment at Webster Substation on line to North Road.	Under Construction	In-Service	03/24/2006	No	Part of Monadnock Area Reliability Project	Part of Monadnock Area Reliability Project
Reliability Upgrade	1a	180	Northeast Utilities		12/2008	Monadnock Area Reliability Project	Rebuild 115 kV Keene to Swanzey A-152 line.	Under Construction	In-Service	03/24/2006	No	Part of Monadnock Area Reliability Project	Part of Monadnock Area Reliability Project
Reliability Upgrade	1a	178	Northeast Utilities		02/2009	Monadnock Area Reliability Project	Rebuild 115 kV Garvins to Webster V-182 line.	Under Construction	In-Service	03/24/2006	No	Part of Monadnock Area Reliability Project	Part of Monadnock Area Reliability Project
Reliability Upgrade	1a	248	Northeast Utilities		12/2008	Norwalk-Glenbrook Cable Project	Install two new 115 kV cables from Norwalk to Glenbrook (accommodate 345 kV class cable).	Under Construction	In-Service	08/01/2005	No	\$222,850,000	\$249,372,000 <sup>3</sup>
Reliability Upgrade	1a	569	Northeast Utilities-CT		2007	Norwalk-Glenbrook Cable Project	Replace two 115-kV circuit breakers at Cos Cob.	In-Service	In-Service	08/01/2005	No	\$500,000	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>
Reliability Upgrade	1a	243	Northeast Utilities		09/2008	Norwalk-Glenbrook Cable Project	Expand and upgrade to BPS and remove SPS at Glenbrook 115 kV substation.	In-Service	In-Service	08/01/2005	No	\$8,390,000	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>
Reliability Upgrade	1a	570	Northeast Utilities		10/2008	Norwalk-Glenbrook Cable Project	Add second high speed relay system on the 1450 line.	In-Service	In-Service	08/01/2005	No	\$788,000	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>
Reliability Upgrade	1a	571	Northeast Utilities		12/2008	Norwalk-Glenbrook Cable Project	Upgrade Flax Hill Substation to BPS.	Under Construction	In-Service	08/01/2005	No	\$2,175,000	Part of Norwalk-Glenbrook Cable Project <sup>3</sup>
Reliability Upgrade	1a	208	Northeast Utilities		12/2008	NU LSP - Oxford Substation	Install new Oxford (previously Jack's Hill) 115 kV substation.	Under Construction	In-Service	01/14/2006	06/01/2007	\$5,710,287	\$4,459,000

Notes  
 - Black shading indicates change from OCTOBER '08 Update.  
 - All costs provided by Transmission Owners.

## April '09 ISO-NEW ENGLAND Project Listing Update (FINAL)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-08 Status	Apr -09 Status	PPA (I.3.9) Approval	TCA Approval	Oct-08 Estimated PTF Costs	Apr-09 Estimated PTF Costs
Reliability Upgrade	1a	246	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Add second 345/115 kV autotransformer at Norwalk Substation along with shunt reactors and 345 kV circuit breakers.	Under Construction	In-Service	01/14/2006	No	\$1,047,000,000	\$978,182,000 <sup>4</sup>
Reliability Upgrade	1a	226	Northeast Utilities	United Illuminating Company	12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install two 345 kV underground cables from Singer(UI) to Norwalk.	Under Construction	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project	Part of SWCT (M-N) Reliability Project <sup>4</sup>
Reliability Upgrade	1a	235	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Expand Norwalk 345-kV substation and install transfer trip relaying scheme on the 1389 115 kV line between Norwalk and Flax Hill.	Under Construction	In-Service	01/14/2006	No	Part of SWCT (M-N) Reliability Project	Part of SWCT (M-N) Reliability Project <sup>4</sup>
Reliability Upgrade	1a	247	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Replace Norwalk Harbor 138/115 kV autotransformer.	Under Construction	In-Service	01/14/2006	No	\$8,351,000	Part of SWCT (M-N) Reliability Project <sup>4</sup>
Reliability Upgrade	1a	684	Northeast Utilities		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Replace (6) 115 kV breakers (4-Glenbrook, 1-Glenbrook Statcom, 1-Southington #1) and (3) 345-kV circuit breakers at Millstone and replace (4) 345- kV breakers with 500-kV breakers at Long Mountain substation.	Under Construction	In-Service	01/14/2006	No	\$11,321,000	Part of SWCT (M-N) Reliability Project <sup>4</sup>
Reliability Upgrade	1a	551	Northeast Utilities		10/2007	Southwest Connecticut Reliability Project PH II (M-N)	Rebuild the 1466 115-kV line from East Meriden to North Wallingford and the 1588 115-kV rebuild from North Wallingford to Colony.	In-Service	In-Service	04/01/2007	No	\$805,000	Part of SWCT (M-N) Reliability Project <sup>4</sup>
Reliability Upgrade	1a	244	Northeast Utilities		6/20/2008	Southwest Connecticut Reliability Project PH II (M-N)	Reconductor 115 kV 1570 and 1575 line taps into Beacon Falls Substation.	In-Service	In-Service	04/01/2007	No	\$5,692,000	Part of SWCT (M-N) Reliability Project <sup>4</sup>
Reliability Upgrade	1a	239	Northeast Utilities		07/2008	Southwest Connecticut Reliability Project PH II (M-N)	Install (1) new 115 kV circuit breaker at Devon Substation in series with 7R-2T.	In-Service	In-Service	04/01/2007	No	\$5,009,000	Part of SWCT (M-N) Reliability Project <sup>4</sup>
Reliability Upgrade	1a	250	Northeast Utilities		12/2008		Add a 345 kV breaker at Ludlow Substation.	Planned	In-Service	06/01/2007	8/1/2007	\$1,644,885	\$1,644,885
Reliability Upgrade	1a	841	NSTAR Electric Company		11/2008	Mystic Breaker Additions Project	Install (2) new 115 kV West Bus breakers #29 and #31 at Mystic.	Planned	In-Service	3/10/2008	No	\$2,300,000	\$2,300,000
Reliability Upgrade	1a	1040	NSTAR Electric Company		12/2008	Mystic IPT Breaker Project	Upgrade (4) 115 kV breakers #11, #8, #17 and #3 at Mystic to IPT	Planned	In-Service	NR	NR	\$990,000	\$990,000
Reliability Upgrade	1a	116	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add 2nd 345 kV UG Cables from Stoughton to Mattapan Sq.to K Street and install another new autotransformer at K. St.	Under Construction	In-Service	02/10/2005	09/15/2005	\$307,900,000	\$307,900,000
Reliability Upgrade	1a	572	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 345 kV 160 MVAR shunt reactors at Stoughton.	Under Construction	In-Service	02/10/2005	09/15/2005	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project
Reliability Upgrade	1a	573	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 345 kV 160 MVAR shunt reactors at K St.	Under Construction	In-Service	02/10/2005	09/15/2005	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project
Reliability Upgrade	1a	772	NSTAR Electric Company		04/2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 115 kV breaker at K St.	Under Construction	In-Service	02/01/2005	09/01/2005	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project
Reliability Upgrade	1a	238	United Illuminating Company		12/2008	Southwest Connecticut Reliability Project PH II (M-N)	Build new Singer 345 kV substation with (12) circuit breakers, (2) autos, (4) shunt reactors along with reconnecting Bridgeport Energy thru one of the new autos. Includes 115 kV connection from Singer to Pequonnock substation.	Under Construction	In-Service	01/14/2006	No	\$162,264,000	\$162,264,000
Reliability Upgrade	1a	224	United Illuminating Company	Northeast Utilities	12/2008	Southwest Connecticut Reliability Project PH II (M-N) <sup>4</sup>	Install new 345 kV line from East Devon to Singer(UI).	Under Construction	In-Service	01/14/2006	No	\$157,476,000	\$157,476,000
Reliability Upgrade	1a	846	United Illuminating Company		11/2008		Replace Mix Avenue 115 kV Oil Circuit Breaker & foundation.	Under Construction	In-Service	NR	NR	\$450,000	\$450,000
Reliability Upgrade	1a	138	Vermont Electric Power Company		12/2008	Northwest Vermont Reliability Project	N. Haven - Vergennes - Q. City 115 kV line.	Under Construction	In-Service	01/10/2003	12/18/2006	\$70,200,000	\$70,200,000
Reliability Upgrade	1a	136	Vermont Electric Power Company		04/2009	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 1: two 115 kV PARs, four 25 MVAR Cap. banks, four +25/-12.5 MVAR synchronous condensers, and two 230/115 transformers.	Under Construction	In-Service	01/10/2003	03/31/2003	\$62,400,000	\$62,400,000
Generator Interconnection Upgrade	2a	847	Bangor Hydro-Electric Company		12/2008	Stetson Wind	Interconnect 60 MW of wind via 115 kV generator lead into Keene Road Substation.	Planned	In-Service	07/01/2007	NR	NR	NR

April '09 ISO-NEW ENGLAND Project Listing Update (FINAL)													
Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Oct-08 Status	Apr -09 Status	PPA (I.3.9) Approval	TCA Approval	Oct-08 Estimated PTF Costs	Apr-09 Estimated PTF Costs
<b>CANCELLED PROJECTS</b>													
Reliability Upgrade	1b	912	Central Maine Power Company		12/2009	CMP LSP - Anson Substation	Add 115 kV circuit breakers and transformer at Anson Section 63.	Concept	Cancelled	No	No	TBD	NR
Reliability Upgrade	1b	106	Northeast Utilities		TBD		Upgrade the Southwest Hartford Substation to Bulk Power System standards (BPS).	Concept	Cancelled	08/04/2004	No	TBD	NR
Reliability Upgrade	1b	1069	NSTAR Electric Company		07/2011	NPCC BPS Compliance	Bourne Station	Proposed	Cancelled	No	No	\$8,800,000	NR

**Notes**

- <sup>1</sup> Project pending solution documentation for the Greater Rhode Island Transmission Reinforcements.
- <sup>2</sup> The Northeast Utilities' estimated costs for the NEEWS BPS upgrades are shared among the Greater Springfield, Central Connecticut, and Interstate portions of the NEEWS Project.
- <sup>3</sup> The total TCA (NU-07-TCA-24) PTF cost is \$234.2 million for the Norwalk - Glenbrook Project. The forecasted PTF cost is \$249.4 million.
- <sup>4</sup> The total TCA (NU-08-TCA-01) PTF cost is \$1.05 billion for Northeast Utilities portion of the Middletown-Norwalk Project. The forecasted PTF cost is \$978.2 million.

**Local Project Listing Links**

- NSTAR: [http://www.nstar.com/business/rates\\_tariffs/open\\_access/](http://www.nstar.com/business/rates_tariffs/open_access/)
- CMP: <http://www.cmpco.com/SuppliersAndPartners/TransmissionServices/CMPTransmissionSvc/lsp.html>
- BHE: <http://www.bhe.com/data/OASIS/LSP.html>
- VELCO: <http://www.vermontspc.com/About%20the%20VSPC/Home.aspx>
- NU: [http://www.transmission-nu.com/business/pdfs/NU\\_Local\\_Transmission\\_Studies\\_List.pdf](http://www.transmission-nu.com/business/pdfs/NU_Local_Transmission_Studies_List.pdf)
- NGRID: <http://www.nationalgridus.com/oasis/>
- UI: <http://www.uinet.com/uinet/resources/file/ebcfda4ccb73dd/UI%20Local%20System%20Plan.pdf>

**COST COMPARISON OF  
RELIABILITY PROJECTS  
November 2011 vs March 2012**

	As of November 2011 Plan Update (in millions \$)	As of March 2012 Plan Update (in millions \$)	Change in Plan Estimate (in millions \$)
<b>MAJOR PROJECTS</b>			
Maine Power Reliability Program	1440	1440	0
Merrimack Valley / North Shore Reliability Project	197	198	1
Long Term Lower SEMA Upgrades	113	113	0
New England East - West Solution (NEEWS) NEEWS (Greater Springfield Reliability Project) \$746.80 NEEWS (Rhode Island Reliability Project) \$225.8 NEEWS (Central Connecticut Reliability Project) \$301.00 NEEWS (Interstate Reliability Project) \$604.66	1845	1878	33
Greater Rhode Island Transmission Reinforcements (including Advanced NEEWS)	242	242	0
Pittsfield/Greenfield Project	129	133	4
Greater Boston - North, South, Central, Western Suburbs	265	417	152
New Hampshire Solution - Southern, Central, Seacoast, Northern		453	453
Vermont Solution - Northwestern, Central, Southwestern		485	485
SUBTOTAL <sup>(2)</sup>	<b>4231</b>	<b>5359</b>	<b>1128</b>
<b>OTHER PROJECTS</b>	5352	5482	131
<b>NEW PROJECTS</b>		4	4
<b>PROJECTS WHOSE COST ESTIMATES WERE PREVIOUSLY REPORTED AS TO BE DETERMINED (TBD)</b>		132	132
TOTAL <sup>(2)</sup>	<b>9582</b>	<b>10977</b>	<b>633</b>
Minus 'concept'	-128	-132	
Minus 'in-service'	-4421	-4661	
<b>Aggregate estimate of active projects in the Plan <sup>(2)</sup></b>	<b>5033</b>	<b>6184</b>	

5160.847295

6315.544234

MAJOR PROJECTS	5358.6400000	
NEW PROJECTS	3.900	
TBD NOW W/ COSTS	132.300	
OTHER PROJECTS	<b>5482.07193900</b>	5482.0719390 VERIFICATION of RED CELL
GRAND TOTAL	10976.911939	
ACTIVE COSTS	<b>6315.544234</b>	(typed in Project Total from Master File)
IN SERVICE	<b>240.16500000</b>	(typed in from In-service tab)

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**COST COMPARISON OF  
RELIABILITY PROJECTS  
April 2011 vs June 2011**

	As of April 2011 Plan Update (in millions \$)	As of June 2011 Plan Update (in millions \$)	Change in Plan Estimate (in millions \$)
<b>MAJOR 345 kV PROJECTS</b>			
Maine Power Reliability Program	1546	1546	0
Merrimack Valley / North Shore Reliability Project	217	217	0
Long Term Lower SEMA Upgrades	107	113	6
New England East - West Solution (NEEWS) (including Ancillary components)	1992	1928	-64
Pittsfield/Greenfield Project	129	129	0
Greater Boston - North, South, Central	292	292	0
Greater Rhode Island Transmission Reinforcements (including Advanced NEEWS)	279	279	0
SUBTOTAL (a)	<b>4561</b>	<b>4503</b>	<b>-58</b>
<b>OTHER PROJECTS</b>	5061	5282	221
<b>NEW PROJECTS</b>		39	39
<b>PROJECTS WHOSE COST ESTIMATES WERE PREVIOUSLY REPORTED AS TO BE DETERMINED (TBD)</b>		7	7
TOTAL (a)	<b>9622</b>	<b>9831</b>	<b>209</b>
Minus 'concept'	-139	-142	
Minus 'in-service'	-4328	-4387	
Aggregate estimate of active projects in the Plan (a)	<b>5155</b>	<b>5303</b>	

MAJOR PROJECTS	4503.1520950	
NEW PROJECTS	39.000	
TBD NOW W/ COSTS	7.300	
OTHER PROJECTS	<b>5475.07932500</b>	5282.0000000 VERIFICATION of RED CELL
GRAND TOTAL	9830.531420	
ACTIVE COSTS	5443.885715 (b)	
IN SERVICE	58.5000000 (b)	

**Author:**  
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from cell AQ24 also  
added in Vt Southern  
Loop Project +194

**Author:**  
I updated the In-service  
tab and Total Deviation  
tab with the 58.5 as well  
(b)



**COST COMPARISON OF  
RELIABILITY PROJECTS  
October 2010 vs April 2011**

	<b>As of October 2010 Plan Update (in millions \$)</b>	<b>As of April 2011 Plan Update (in millions \$)</b>	<b>Change in Plan Estimate (in millions \$)</b>
<b>MAJOR 345 kV PROJECTS</b>			
Maine Power Reliability Program	1356	1547	191
Vermont Southern Loop Project	208	194	-14
Merrimack Valley / North Shore Reliability Project	218	217	-1
Long Term Lower SEMA Upgrades	107	107	0
New England East - West Solution (NEEWS) (including Ancillary components)	1881	1992	111
Pittsfield/Greenfield Project		129	129
Greater Boston - North, South, Central Greater Rhode Island Transmission Reinforcements (including Advanced NEEWS)	293	279	-14
SUBTOTAL <sup>(2)</sup>	<b>4063</b>	<b>4755</b>	<b>693</b>
<b>OTHER PROJECTS</b>	4966	4952	-14
<b>NEW PROJECTS</b>		110	110
<b>AS TO BE DETERMINED (TBD)</b>		0	0
TOTAL <sup>(2)</sup>	<b>9029</b>	<b>9818</b>	<b>789</b>
Minus 'concept'	-141	-139	
Minus 'in-service'	-3960	-4328	
<b>Aggregate estimate of active projects in the Plan <sup>(2)</sup></b>	<b>4928</b>	<b>5351</b>	

**Author:**  
Includes RSP ID 1116 (Line 64 Rebuild) project. Confirm whether or not this project should be included in the cost estimate for MPRP. The October 2010 Update cost for MPRP excludes this project.

**Author:**  
Type in number in red from cell AQ23

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Since this is zero for the April-11 Update, consider hiding this row.

MAJOR PROJECTS	4755.4520950	
NEW PROJECTS	110.361	
TBD NOW W/ COSTS	0.000	
OTHER PROJECTS	<b>4950.12260500</b>	4952.0000000 VERIFICATION of RED CELL
GRAND TOTAL	9815.935950	
ACTIVE COSTS	5487.790245	(typed in from Master File)
IN SERVICE	368.07400000	(typed in from In-service tab)

## April 10 -NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jul-09 Status	Oct-09 Status	I.3.9 Approval	TCA Approval	Jul-09 Estimated Costs	Oct 09 Estimated Costs	Why Needed
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### IN-SERVICE PROJECTS

Reliability Upgrade	1a	1051	Central Maine Power Company		09/2009	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Riley 115 kV capacitor bank.	Under Construction	In-service	11/30/2007	No	Part of Project 625	Part of Project 625	
Reliability Upgrade	1a	267	Northeast Utilities	Central Maine Power Company	8/2009	Y138 Closing	White Lake - Saco Valley (Y138) Line Closing - Add PAR on Y138 at Saco Valley, retension lines, upgrade Beebe terminal, and add capacitor banks at White Lake and Beebe.	Under Construction	In-service	01/01/2006	No	\$27,775,000	\$27,775,000	
Reliability Upgrade	1a	936	National Grid, USA		07/2009	Central/Western Massachusetts Upgrades	Reconductor (P142/P142S) Rolfe Avenue - West Bolyston 115 kV line w/1590 ACSR.	Under Construction	In-service	12/17/2007	No	\$3,000,000	\$3,000,000	
Reliability Upgrade	1a	176	Northeast Utilities		07/2009	Monadnock Area Reliability Project	New Fitzwilliam 345/115kV substation along with 345 kV breakers.	Under Construction	In-service	9/27/2007	No	\$76,100,000	\$76,100,000	
Reliability Upgrade	1a	174	National Grid, USA		06/2009	Monadnock Area Reliability Project	Reconductor I-135 (Bellows Falls-Monadnock Tap-Flagg Pond) 115 kV line.	Under Construction	In-service	03/24/2006	No	\$15,778,000	\$15,778,000	
Reliability Upgrade	1a	832	NSTAR Electric Company		07/2009	Short Term Lower SEMA Upgrades	Add(1) 115kV SVC (0-112 MVARs lagging) at Barnstable.	Under Construction	In-service	08/17/2007	No	\$82 M (Total NSTAR Project Cost Including Brook St. Station upgrade)	\$82 M (Total NSTAR Project Cost Including Brook St. Station upgrade)	
Reliability Upgrade	1a	182	Vermont Electric Power Company		09/2009	Monadnock Area Reliability Project	Upgrade bus cable at N. Rutland and K35 115 kV breaker at Rutland.	Under Construction	In-service	03/24/2006	NR	\$1,000,000	\$1,000,000	
												<b>Total</b>	<b>\$205,653,000</b>	

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Notes  
 - Gray shading indicates change from OCTOBER '07 Update.  
 - All costs provided by Transmission Owners.

**November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jun-11 Status	Oct-11 Status	PPA (I.3.9) Approval	TCA Approval	Jun-11 Estimated PTF Costs	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	1031	ME	Bangor Hydro-Electric Company		12/2013	Maine Power Reliability Program (MPRP)	Rebel Hill Switching Station	Concept	Concept	10/22/2010	No	TBD	TBD	TBD
Reliability Upgrade	1b	1154	ME	Bangor Hydro-Electric Company		12/2013	Maine Power Reliability Program (MPRP)	Rerate Line 66	Concept	Concept	10/22/2010	No	TBD	TBD	TBD
Reliability Upgrade	1b	1155	ME	Bangor Hydro-Electric Company		12/2014	Maine Power Reliability Program (MPRP)	Capacitor Bank Addition (10 MVAR at Trenton 34.5kV and Epping)	Concept	Concept	10/22/2010	No	TBD	TBD	TBD
Reliability Upgrade	1b	325	VT	Vermont Electric Power Company		TBD	VELCO LSP - Chelsea Substation	Replace (2) SCADA controlled motorized disconnect switches with 115 kV circuit breakers at the existing Chelsea substation to maintain adequate supply to the load.	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	324	VT	Vermont Electric Power Company		TBD		Granite to Middlesex 230-kV line with necessary substation upgrades to mitigate several reliability concerns, including those related to the potential Highgate contract termination.	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	139	VT	Vermont Electric Power Company		TBD	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 2: synchronous condensers expanded to +200/- 100 MVAR and two 25 MVAR capacitor banks.	Concept	Concept	01/10/2003	03/31/2003	TBD	TBD	TBD
Reliability Upgrade	1b	1250	VT	Vermont Electric Power Company		2016	VELCO LSP - West Rutland Substation	Installation of a 115/46kV transformer at West Rutland between breakers K30 and K34	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	593	MA	NSTAR Electric Company		2013	Mid Cape Reliability Project	Add a new 115 kV line from Bourne and Barnstable/Falmouth/Equivalent	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1177	MA	NSTAR Electric Company		12/2015	Greater Boston - North	Reconductor 211-503/504 from North Woburn Tap to Reading	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1178	MA	NSTAR Electric Company		12/2015	Greater Boston - North	Install 115kV Capacitor Bank at North Woburn	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1190	MA	NSTAR Electric Company		12/2015	Greater Boston - North	Install a second 345/115kV Auto Transformer at Woburn	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	970	MA	NSTAR Electric Company		TBD	Greater Boston - Central	Add a new 345 kV line from Lexington to Waltham.	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	971	MA	NSTAR Electric Company		TBD	Greater Boston - Central	Add a new 345/230 kV auto at Waltham and 230 kV switching facilities.	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1176	MA	NSTAR Electric Company		TBD	Greater Boston - Central	Install an oil circulation pipe and heat exchangers at K Street and Chatham Street sections of 250-516/517 circuits	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1189	MA	NSTAR Electric Company		12/2015	Greater Boston - Central	Install 3rd 115kV Circuit between Waltham and Brighton	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1198	MA	NSTAR Electric Company		TBD	Greater Boston - Central	Add a second 115kV line from Woburn to Burlington	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1199	MA	NSTAR Electric Company		TBD	Greater Boston - Central	Install a new 230/115kV auto transformer at Sudbury or equivalent	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1191	MA	NSTAR Electric Company		12/2012		Rebuild Section of Line 322 (Canal-Carver)	Concept	Concept	No	No	\$12,200,000	\$12,200,000	\$12,200,000
Reliability Upgrade	1b	1181	MA	NSTAR Electric Company		12/2013		Rebuild the High Hill 115kV Substation to a Breaker and a half design	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1204	MA	NSTAR Electric Company		06/2012		Rebuild the Mashpee Substation to a Ring Bus and install an overvoltage trip relay on the Mashpee 115kV Capacitor Bank	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1205	MA	NSTAR Electric Company		12/2013	Mid-Cape Reliability Project	Separate 120 (Canal-Barnstable) /122 (Oak St-Barnstable) DCT	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1206	MA	NSTAR Electric Company		12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system resoration	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1247	MA	NSTAR Electric Company		TBD		Rebuild the Acushnet 115kV Substation	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1248	MA	NSTAR Electric Company		12/2014		Rebuild the Kingston Substation to a breaker and a half scheme	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1249	MA	NSTAR Electric Company		12/2013		Rebuild the Wareham Substation to a breaker and a half scheme	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1207	MA	NSTAR Electric Company		2012	Belmont Transmission Interconnection	Build a new 115kV Substation for the Belmont Transmission Interconnection	Concept	Concept	2/26/2010	No	TBD	TBD	TBD
Reliability Upgrade	1b	1255	MA	CELD (Chicopee Electric Light Department)		12/2013	CELD 115/13.8kV Substation	115/13.8kV substation on Memorial Dr. with two transformers and twelve feeders looped into 1904 (1723) line between Piper and Fairmont substations		Concept	No	No		TBD	TBD
Reliability Upgrade	1b	1234	RI	National Grid, USA		12/2015	NEEWS (Interstate Reliability Project)	Install a 115kV redundant breaker in series with breaker #1713 at West Farmum Substation and upgrade to current BPS standards	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1084	CT	Northeast Utilities		TBD	Greater Hartford Central Connecticut Project	Loop the Millstone - Manchester (310) 345 kV line into the Card substation <sup>(2)</sup>	Concept	Concept	9/24/2008	No	TBD	TBD	TBD

**November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jun-11 Status	Oct-11 Status	PPA (I.3.9) Approval	TCA Approval	Jun-11 Estimated PTF Costs	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	1086	CT	Northeast Utilities		TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to 115kV line 1704, SW Hartford to South Meadow <sup>(2)</sup>	Concept	Concept	9/24/2008	No	TBD	TBD	TBD
Reliability Upgrade	1b	1087	CT	Northeast Utilities		TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to line 115kV 1722 SW Hartford NW Hartford <sup>(2)</sup>	Concept	Concept	9/24/2008	No	TBD	TBD	TBD
Reliability Upgrade	1b	1088	CT	Northeast Utilities		TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to 115kV line 1786, East Hartford to Riverside to South Meadow <sup>(2)</sup>	Concept	Concept	9/24/2008	No	TBD	TBD	TBD

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Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jun-11 Status	Oct-11 Status	PPA (I.3.9) Approval	TCA Approval	Jun-11 Estimated PTF Costs	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	975	CT	United Illuminating Company		06/2015		Pequonnock 115 kV Fault Duty Mitigation.	Concept	Concept	No	No	\$105,000,000	\$105,000,000	\$105,000,000
Reliability Upgrade	1b	699	CT	United Illuminating Company		12/2014		Naugatuck Valley 115 kV reliability improvement.	Concept	Concept	No	No	\$11,100,000	\$11,100,000	\$11,100,000
Reliability Upgrade	1b	801	CT	Northeast Utilities		TBD		Build Manchester to East Hartford 115-kV cable with a series reactor.	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	85	CT	Northeast Utilities		TBD		Upgrade the South Meadow Substation to Bulk Power System standards (BPS).	Concept	Concept	08/04/2004	No	TBD	TBD	TBD
Reliability Upgrade	1b	1228	CT	Northeast Utilities		TBD	Stamford Area	Additional circuit into the Stamford Area (Glenbrook-South End)	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1229	CT	Northeast Utilities		TBD		Replace 115kV 1990 (Frost Bridge-Stevenson) lattice structure	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1b	1230	CT	Northeast Utilities		TBD	LSP - Greater Hartford Area	115kV breaker addition at Northeast Simsbury Substation	Concept	Concept	3/30/2011	No	TBD	TBD	TBD
Reliability Upgrade	1b	1243	CT	CMEEC		10/2013	TTD's Fitch St 115kV Substation	TTD 115/27kV substation with two transformers and a 115kV circuit breaker looped into 1416 line (between Compo and Darien substations)	Concept	Concept	No	No	TBD	TBD	TBD
Reliability Upgrade	1a	1197	ME	Bangor Hydro-Electric Company		12/2013	Keene Rd Autotransformer	Orrington 345kV Series Breaker Addition	Planned	Planned	10/22/2010	6/16/2011	\$1,761,250	\$1,761,250	\$1,761,250
Reliability Upgrade	1a	907	ME	Central Maine Power Company		05/2014	Maine Power Reliability Program (MPRP)	Rebuild Existing 115kV lines: Sections 86 (Bucksport-Belfast), Section 203 (Detroit-Orrington), Sections 60 & 212 (Coopers Mills-Bowman St-Larrabee Road), Sections 89 & 229 (Livermore Falls-Riley-Rumford IP)	Planned	Planned	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	909	ME	Central Maine Power Company		8/2014	Maine Power Reliability Program (MPRP)	Add 2-115kV breakers & rebuild 86A, new .25 mile transmission at Belfast forming Sections 86 & 266	Planned	Planned	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1025	ME	Central Maine Power Company		05/2014	Maine Power Reliability Program (MPRP)	Separation of Double Circuit Towers (345kV Kennebec River Crossing 375/377, 115kV Bucksport 65/205)	Planned	Planned	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1026	ME	Central Maine Power Company	Northeast Utilities	12/2013	Maine Power Reliability Program (MPRP)	New 345kV Line Construction associated with (Surowiec-Raven Farm, South Gorham-Maguire Road, Maguire Road-Elliott Switching Station) line work	Planned	Planned	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010 (CMP) 4/14/2011 (NU)	Portion of CMP \$1.47B and portion of NU is \$36.0M	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M	\$36,000,000
Reliability Upgrade	1a	1028	ME	Central Maine Power Company	Northeast Utilities	12/2013	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV Line (Section 250, Maguire Rd-Three Rivers)	Planned	Planned	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010 (CMP) 4/14/2011 (NU)	Portion of CMP \$1.47B and portion of NU is \$36.0M	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M
Reliability Upgrade	1a	1030	ME	Central Maine Power Company		11/2013	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Maguire Road)	Planned	Planned	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1132	ME	Central Maine Power Company		8/2014	Maine Power Reliability Program (MPRP)	Add 115/34kV transformer at Coopers Mills	Planned	Planned	7/31/08 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1129	ME	Central Maine Power Company		05/2012		New 115kV line between Wyman Hydro and Rice Rips Tap, parallel to exiting Section 83. Install a 115kV circuit breaker at Wyman Hydro termination	Planned	Planned	1/26/2009	12/28/2010	\$32,800,000	\$32,800,000	\$32,800,000
Reliability Upgrade	1a	1135	ME	Central Maine Power Company		02/2012	CMP-Athens Substation LSP	Add two 115kV circuit breakers on Section 66; and 115/12kV transformer	Planned	Planned	12/21/2007	NR	\$1,500,000	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	1184	ME	Central Maine Power Company		05/2012	Starks Switching Station	Add 4-115kV circuit breakers in a breaker-and a-half configuration on Section 63 and 2-18 MVar cap banks at a new Starks Switching Station	Planned	Planned	9/20/2010	3/25/2011	\$10,750,000	\$9,750,000	\$9,750,000
Reliability Upgrade	1a	1251	ME	Central Maine Power Company		12/2012	Lakewood Substation Expansion	Sectionalize Section 241 by adding four 115kV circuit breakers at Lakewood Substation and install a second 115/34.5 kV transformer	Planned	Planned	4/21/2011	No	\$13,700,000	\$13,700,000	\$13,700,000
Reliability Upgrade	1a	1141	NH	Northeast Utilities		2015	2nd Deerfield 345/115kV Autotransformer Project	Rochester Substation Upgrades	Planned	Planned	6/29/2009	7/15/2011	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	680	NH	National Grid, USA		06/2013		Rebuild Bellows Falls Substation and install 115 kV capacitor bank.	Planned	Planned	1/28/2008	No	\$7,393,000	\$7,393,000	\$7,393,000
Reliability Upgrade	1a	674	NH	National Grid, USA		12/2013		Replace Comerford 230 kV breakers and add (1) 230 kV bus tie breaker.	Planned	Planned	4/1/2008	No	\$19,460,000	\$19,460,000	\$19,460,000
Reliability Upgrade	1a	1172	VT	Vermont Electric Power Company		06/2012	Vermont Shunt Reactors	Install 345kV 60 MVar shunt reactors (two at Coolidge and one at New Haven and relocate the New Haven reactor to Vernon) to address high voltage concerns	Planned	Planned	3/23/2011	No	\$20,000,000	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	318	VT	Vermont Electric Power Company		12/2012	Georgia Substation Rebuild	Rebuild the existing Georgia substation 115 kV bus into a ring bus to address reliability problems due to breaker failure contingencies	Planned	Planned	11/22/2010	No	\$16,000,000	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	1169	VT	Vermont Electric Power Company		12/2012	Ascutney Substation Rebuild	Rebuild the existing Ascutney substation 115kV bus into a ring bus, to address reliability problems due to breaker failure contingencies	Planned	Planned	11/22/2010	No	\$14,500,000	\$14,500,000	\$14,500,000
Reliability Upgrade	1a	1170	VT	Vermont Electric Power Company		06/2013	Bennington Substation Rebuild	Rebuild the existing Bennington substation 115kV bus into a ring bus to address reliability problems due to breaker failure contingencies	Planned	Planned	11/22/2010	No	\$23,000,000	\$28,000,000	\$28,000,000
Reliability Upgrade	1a	1171	VT	Vermont Electric Power Company		12/2011	West Rutland Capacitor Rebuild	Install two 115kV 25 MVar capacitor banks at West Rutland to address low voltage concerns	Planned	Planned	11/2/2010	NR	\$2,400,000	\$2,400,000	\$2,400,000

**Concept**

**40      \$128,300,000      \$128,300,000**

**40      \$128,300,000      \$128,300,000**



## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jun-11 Status	Oct-11 Status	PPA (I.3.9) Approval	TCA Approval	Jun-11 Estimated PTF Costs	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1a	1194	VT	Vermont Electric Power Company		12/2012	LSP Jay Substation	Construct a new 4-breaker ring substation at Jay with two 115/46kV transformers	Planned	Planned	2/7/2011	No	\$6,500,000	\$6,500,000	\$6,500,000
Reliability Upgrade	1a	1195	VT	Vermont Electric Power Company		03/2013	Highgate Refurbishment	Replace Highgate controls and cooling system	Planned	Planned	NR	No	\$35,600,000	\$35,600,000	\$35,600,000
Reliability Upgrade	1a	921	MA	National Grid, USA		12/2012	Auburn Area Transmission System Upgrades	Bridgewater substation - Upgrade Bus work and convert to BPS substation.	Planned	Planned	1/28/2008	No	\$40,000,000	\$40,000,000	\$40,000,000
Reliability Upgrade	1a	919	MA	National Grid, USA		04/2014	Auburn Area Transmission System Upgrades	Dupont substation - Upgrade Buswork and convert to BPS substation.	Planned	Planned	2/10/2010	No	\$9,200,000	\$13,600,000	\$13,600,000
Reliability Upgrade	1a	59	MA	National Grid, USA		12/2012	Auburn Reliability Transmission System Upgrades	G18, F19 line terminals 115kV upgrades at Bridgewater sub	Planned	Planned	1/28/2008	No	Part of RSP 921	Part of RSP 921	Part of RSP 921
Reliability Upgrade	1a	840	MA	NSTAR Electric Company		12/2012	Merrimack Valley/North Shore Reliability Project	Upgrade the 115 kV line (Line 423-515) from Mystic-Everett by adding a new parallel cable to the existing 115 kV cable. (NSTAR portion only)	Planned	Planned	4/1/2008	1/10/2011	\$5,900,000	\$5,900,000	\$5,900,000
Reliability Upgrade	1a	776	MA	National Grid, USA		11/2012	Merrimack Valley/North Shore Reliability Project	Re-conductor O-167 (NGRID portion of Mystic - Everett) 115 kV line.	Planned	Planned	6/27/2008	No	\$3,125,000	\$3,125,000	\$3,125,000
Reliability Upgrade	1a	782	MA	National Grid, USA		01/2016	Merrimack Valley/North Shore Reliability Project	Replace existing S145/T146 UG cables with higher capacity cables between Salem Harbor and Railyard.	Planned	Planned	6/27/2008	No	\$43,912,000	\$43,912,000	\$43,912,000
Reliability Upgrade	1a	1068	MA	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Install a new 345kV line from Carver to vicinity of Bourne and connect to existing #120 line and install a 345kV - 115kV auto-transformer at new substation about 3 miles west of the Barnstable Substation Loop Line #115 in and out of the new Substation. Create a new line position at the Bourne Substation and connect the Bourne-Canal section of Line #120	Planned	Planned	07/2011	No	\$106,500,000	\$106,500,000	\$106,500,000
Reliability Upgrade	1a	592	MA	NSTAR Electric Company		12/2012	Long Term Lower SEMA Upgrades	Separate existing 345kV double circuit Cape Cod Canal crossing. The lines being separated are 322 (Canal-Carver) and 342 (Canal-Pilgrim-Auburn)	Planned	Planned	07/2011	No	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA
Reliability Upgrade	1a	1118	MA	National Grid, USA	NSTAR Electric Company	12/2012	Long Term Lower SEMA Upgrades	Upgrade 115kV line D21 (Bellrock-High Hill)	Planned	Planned	07/2011	No	\$6,000,000	\$6,000,000	\$6,000,000
Reliability Upgrade	1a	1187	MA	National Grid, USA		06/2014	A127/B128 Conductor Refurbishment	A127/B128 Conductor Refurbishment - Tower 510 to Harriman Substation, VT	Planned	Planned	12/17/2007 01/20/11	NR	\$65,000,000	\$65,000,000	\$65,000,000
Reliability Upgrade	1a	929	MA	National Grid, USA		09/2013	Central/Western Massachusetts Upgrades	Searsburg - install in-line 69 kV breaker for operational flexibility.	Planned	Planned	12/17/2007	No	\$2,500,000	\$2,500,000	\$2,500,000
Reliability Upgrade	1a	931	MA	National Grid, USA		01/2013	Central/Western Massachusetts Upgrades	Park St. - incremental cost of designing for 115 kV instead of 69 kV.	Planned	Planned	12/17/2007	No	\$531,481	\$531,481	\$531,481
Reliability Upgrade	1a	928	MA	National Grid, USA		06/2013	Central/Western Massachusetts Upgrades	Millbury -upgrade terminal equipment for O-141, P-142, B-128, A-127 circuit breakers.	Planned	Planned	12/17/2007	No	\$3,400,000	\$3,400,000	\$3,400,000
Reliability Upgrade	1a	938	MA	National Grid, USA		05/2013	Central/Western Massachusetts Upgrades	Deerfield - install a new 115/69kV autotransformer and a 69kV breaker and disconnect switches.	Planned	Planned	12/17/2007	No	\$5,430,000	\$5,430,000	\$5,430,000
Reliability Upgrade	1a	940	MA	National Grid, USA		06/2014	Central/Western Massachusetts Upgrades	Reconductor sections of A127W line w/795 ACSS (A127 West reconductoring. Tower 510 to Paxton, French King to French King).	Planned	Planned	12/17/2007	No	\$18,000,000	\$18,000,000	\$18,000,000
Reliability Upgrade	1a	942	MA	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Webster St. - add two 115 kV circuit breakers.	Planned	Planned	12/17/2007	No	\$3,650,000	\$3,650,000	\$3,650,000
Reliability Upgrade	1a	925	MA	National Grid, USA		11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - supply 13 kV from T3 and T4.	Planned	Planned	12/17/2007	No	Part of RSP 926	Part of RSP 926	Part of RSP 926
Reliability Upgrade	1a	926	MA	National Grid, USA		11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - replace T8 autotransformer with 230 kV 333 mVA, upgrade breaker and bus to 115 kV. Install high side 230 kV breaker.	Planned	Planned	12/17/2007	No	\$14,700,000	\$14,700,000	\$14,700,000
Reliability Upgrade	1a	932	MA	National Grid, USA		11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - increase thermal rating of I-135 and J-136 buswork.	Planned	Planned	12/17/2007	No	Part of RSP 926	Part of RSP 926	Part of RSP 926
Reliability Upgrade	1a	941	MA	National Grid, USA		8/2013	Central/Western Massachusetts Upgrades	Install new Z126 Millbury - Tower #510 115 kV line.	Planned	Planned	12/17/2007	No	\$13,748,000	\$13,748,000	\$13,748,000
Reliability Upgrade	1a	943	MA	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Millbury - new 115 kV breaker position for new line to Twr 510.	Planned	Planned	12/17/2007	No	\$4,100,000	\$4,100,000	\$4,100,000
Reliability Upgrade	1a	950	MA	National Grid, USA		02/2015	Central/Western Massachusetts Upgrades	E Winchendon - install 115 kV breaker and 115 kV disconnect switch.	Planned	Planned	12/17/2007	No	\$1,016,897	\$1,016,897	\$1,016,897
Reliability Upgrade	1a	953	MA	National Grid, USA		02/2015	Central/Western Massachusetts Upgrades	Otter River - expand substation into 6-breaker ring bus with four 115 kV breakers and install two transformers.	Planned	Planned	12/17/2007	No	\$10,248,067	\$10,248,067	\$10,248,067
Reliability Upgrade	1a	954	MA	National Grid, USA		02/2015	Central/Western Massachusetts Upgrades	Westminster - install new 69kV breaker, including disconnect switches.	Planned	Planned	12/17/2007	No	\$903,909	\$903,909	\$903,909
Reliability Upgrade	1a	945	MA	National Grid, USA		05/2014	Central/Western Massachusetts Upgrades	Adams - install two new 115 kV breakers and replace two existing 115kV breakers	Planned	Planned	12/17/2007	No	\$5,000,000	\$5,000,000	\$5,000,000
Reliability Upgrade	1a	946	MA	National Grid, USA		04/2015	Central/Western Massachusetts Upgrades	Convert 69 kV (O-15S) Palmer- Hampden to 115 kV.	Planned	Planned	3/29/2011	No	\$16,000,000	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	948	MA	National Grid, USA		05/2014	Central/Western Massachusetts Upgrades	Hampden - build new 115 kV substation at 1515/O-15S intersection (4 breaker ring).	Planned	Planned	3/29/2011	No	\$13,400,000	\$13,400,000	\$13,400,000
Reliability Upgrade	1a	949	MA	National Grid, USA		04/2015	Central/Western Massachusetts Upgrades	Palmer - add 115 kV breaker position for O15S conversion, includes thermal upgrade of W-175 bay.	Planned	Planned	3/29/2011	No	\$1,600,000	\$1,600,000	\$1,600,000

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Reliability Upgrade	1a	937	MA	National Grid, USA		12/2015	Central/Western Massachusetts Upgrades	Bear Swamp - install one 230-115 kV 333 mVA auto. one 115 kV breaker and upgrade various terminal equipment.	Planned	Planned	12/17/2007	No	\$6,602,875	\$6,602,875	\$6,602,875
Reliability Upgrade	1a	955	MA	National Grid, USA		10/2012	Central/Western Massachusetts Upgrades	Reconductor (W175) W Charlton - Little Rest - Palmer w/1590 ACSR.	Planned	Planned	12/17/2007	No	\$13,800,000	\$13,800,000	\$13,800,000
Reliability Upgrade	1a	951	MA	National Grid, USA		01/2014	Central/Western Massachusetts Upgrades	Install new Otter River - E Winchendon (H-134) 115 kV line.	Planned	Planned	12/17/2007	No	\$7,455,440	\$7,455,440	\$7,455,440
Reliability Upgrade	1a	1217	MA	Northeast Utilities		12/2012	Central/Western Massachusetts Upgrades	Substation work at Ludlow (MA) and Scitico (CT) associated with the new Hampden (MA) substation project (Ngrid)	Planned	Planned	12/17/2007	No	\$3,140,000	\$3,140,000	\$3,140,000
Reliability Upgrade	1a	687	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Fairmont 16H Substation Expansion	Planned	Planned	9/24/2008	No	\$795,000,000	\$718,000,000	\$718,000,000
Reliability Upgrade	1a	826	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	South Agawam 42E Substation Reconfigure	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	828	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Breckwood 115kV circuit 1322 Reactor Bypass and Open Breckwood Substation 1T breaker and maintain breaker in the normally open position	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1075	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add 2nd high speed protection scheme to Agawam to Elm (1007) 115kV line if the Russell Biomass Plant, queue position #135 is constructed	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1078	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Pineshed (1327) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1079	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Mt. Tom (1428) 115kV line	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1080	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Replace 4T and 6T 115kV circuit breaker to Shawinigan substation	Planned	Planned	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1094	MA	National Grid, USA		12/2015	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV Millbury Substation equipment	Planned	Planned	9/24/2008	No	\$25,000,000	\$25,000,000	\$25,000,000
Reliability Upgrade	1a	1202	MA	NSTAR Electric Company		06/2013	NEEWS (Ancillary Interstate Reliability Project)	Rebuild 1.2 mile length of line 336 with 2-900 ACSS conductor and replace 5, 345kV 2000 amp disconnect switches with 3000 amp switches at W. Medway station	Planned	Planned	3/30/2011	NR	\$1,700,000	\$1,700,000	\$1,700,000
Reliability Upgrade	1a	791	MA	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New 115 kV circuit between Somerset and Brayton Point.	Planned	Planned	4/25/2008	No	\$11,560,000	\$11,560,000	\$11,560,000
Reliability Upgrade	1a	913	MA	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Brayton Point substation reinforcements to accommodate the new 115 kV line.	Planned	Planned	4/25/2008	No	\$3,250,000	\$3,250,000	\$3,250,000
Reliability Upgrade	1a	914	MA	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New third circuit between Somerset and Bell Rock.	Planned	Planned	4/25/2008	No	\$28,150,000	\$28,150,000	\$28,150,000
Reliability Upgrade	1a	917	MA	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Bell Rock substation expansion.	Planned	Planned	4/25/2008	No	\$7,000,000	\$7,000,000	\$7,000,000
Reliability Upgrade	1a	793	MA	National Grid, USA		12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Somerset substation reinforcements.	Planned	Planned	4/25/2008	No	\$6,400,000	\$6,400,000	\$6,400,000
Reliability Upgrade	1a	1268	MA	Northeast Utilities		12/2012		345kV Northfield Mountain to Berkshire (portion of 312) line structure replacements		Planned	NR	No	\$7,900,000	\$7,900,000	\$7,900,000
Reliability Upgrade	1a	673	MA	National Grid, USA		12/2012	Worcester Area Reinforcements	Add new 115kV bay to separate the M-165 & E-157 terminal at Millbury #2 Substation	Planned	Planned	2/27/2009	No	\$2,200,000	\$2,200,000	\$2,200,000
Reliability Upgrade	1a	676	MA	National Grid, USA		12/2012	Worcester Area Reinforcements	New Bloomingdale to Vernon Hill 115 kV (UG Cable-3.6 mi.) new 115kV breaker at Bloomingdale & Vernon Hill	Planned	Planned	2/27/2009	No	\$30,000,000	\$30,000,000	\$30,000,000
Reliability Upgrade	1a	1257	MA	National Grid, USA		06/2014	Salem Harbor Retirement	115kV line Reconductoring of the S-145/T-146 from Tewksbury-North Reading Tap (9.3 miles each)		Planned	7/28/2011	No		\$29,000,000	\$29,000,000
Reliability Upgrade	1a	1258	MA	National Grid, USA		06/2014	Salem Harbor Retirement	115kV line Reconductoring of the Y-151 from Tewksbury Junction - West Methuen (8.2 miles)		Planned	7/28/2011	No		\$11,500,000	\$11,500,000
Reliability Upgrade	1a	1259	MA	National Grid, USA		06/2014	Salem Harbor Retirement	115kV line Reconductoring of the B154/C-155N from King St Tap - South Danvers (14.5 miles each way)		Planned	7/28/2011	No		\$20,000,000	\$20,000,000
Reliability Upgrade	1a	1201	MA	NSTAR Electric Company	NGRID	12/2012	Greater Boston - North	115kV line Reconductoring of the P168/128-518 Line between Chelsea and Revere (NSTAR Portion of the line)	Proposed	Planned	3/25/2011	NR	\$800,000	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	1168	MA	Holyoke Gas & Electric		12/2012	North Canal 44P	Loop the 1525 (Holyoke Fairmont South 115kV) line into the new North Canal 44P	Proposed	Planned	5/25/2011	No	\$4,100,000	\$4,100,000	\$4,100,000



## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jun-11 Status	Oct-11 Status	PPA (I.3.9) Approval	TCA Approval	Jun-11 Estimated PTF Costs	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	1279	ME	Central Maine Power Company		12/2014		New 345/115kV Autotransformer and 115kV switchyard at Raven Farm substation consisting of a four-bay breaker and a half configuration of eleven (11) breakers		Proposed	1/29/2010	No		\$26,126,000	\$26,126,000
Reliability Upgrade	1b	1280	ME	Central Maine Power Company		12/2014		New 115kV line section 244 and upgraded line section 80 between Coopers Mill and Highland Substations		Proposed	1/29/2010	No		\$62,735,000	\$62,735,000
Reliability Upgrade	1b	1183	NH	Northeast Utilities		2014	LSP New Peaselee Substation and 115/34.5KV transformer	New 115kV Peaselee Substation and transmission line work	Proposed	Proposed	No	No	\$12,400,000	\$12,400,000	\$12,400,000
Reliability Upgrade	1b	1220	NH	Northeast Utilities		12/2015	Greater Boston - North	Install a new 345kV circuit between Scobie and Pelham NH (this is NU's portion of the new Scobie-Tewksbury circuit)	Proposed	Proposed	No	No	\$40,100,000	\$40,100,000	\$40,100,000
Reliability Upgrade	1b	1269	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Amherst Substation - New 345kV breaker and three 25MVar Capacitor Banks		Proposed	No	No		\$19,600,000	\$19,600,000
Reliability Upgrade	1b	1270	NH	Northeast Utilities		TBD	Western New Hampshire Solution	New 115kV line from Fitzwilliams to Monadnock		Proposed	No	No		\$10,500,000	\$10,500,000
Reliability Upgrade	1b	1271	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Upgrade the Keene to Monadnock (T198) 115kV line		Proposed	No	No		\$11,900,000	\$11,900,000
Reliability Upgrade	1b	1272	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Weare Substation - Add two 13.3 MVar 115V capacitors		Proposed	No	No		\$3,600,000	\$3,600,000
Reliability Upgrade	1b	1273	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Rebuild A152 115kV line		Proposed	No	No		\$22,500,000	\$22,500,000
Reliability Upgrade	1b	1274	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Rebuild N186 115kV line		Proposed	No	No		\$2,300,000	\$2,300,000
Reliability Upgrade	1b	1275	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Upgrade the 381 345kV line		Proposed	No	No		\$4,200,000	\$4,200,000
Reliability Upgrade	1b	1276	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Littleton Substation - Add a second 230/115kV autotransformer and associated 115kV substation work		Proposed	No	No		\$16,700,000	\$16,700,000
Reliability Upgrade	1b	1277	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Webster Substation - Add four 26.6 MVar 115kV capacitors		Proposed	No	No		\$11,900,000	\$11,900,000
Reliability Upgrade	1b	1278	NH	Northeast Utilities		TBD	Western New Hampshire Solution	Saco Valley Substation - Add two 25 MVar dynamic Var devices		Proposed	No	No		\$15,800,000	\$15,800,000
Reliability Upgrade	1b	1263	NH	National Grid, USA		TBD	Northern New Hampshire Solution	New C-203 230kV line tap to Littleton NH Substation associated with 2nd 230/115kV auto project		Proposed	No	No		\$1,100,000	\$1,100,000
Reliability Upgrade	1b	843	MA	NSTAR Electric Company		06/2012	Boston Area 115 kV Enhancements	Install (2) new 115 kV breakers at Trapelo Road.	Concept	Proposed	No	NR	\$3,200,000	\$3,450,000	\$3,450,000
Reliability Upgrade	1b	965	MA	NSTAR Electric Company		06/2014	Greater Boston - South	Add third 115kV line from W. Walpole to Holbrook	Proposed	Proposed	No	No	\$19,000,000	\$19,000,000	\$19,000,000
Reliability Upgrade	1b	1175	MA	NSTAR Electric Company		12/2013	Greater Boston - South	Upgrade the 115kV line 201-501 (Medway-Depot St.) and the 201-502 (Beaver Pond - Depot Street Tap) to a higher capacity line	Proposed	Proposed	No	NR	\$3,700,000	\$3,700,000	\$3,700,000
Reliability Upgrade	1b	1214	MA	National Grid, USA		12/2015	Greater Boston - South	Line Reconductoring of the C-129 Beaver Pond - Depot St. Tap) and D-130 (Depot St. Tap - Medway) 115kV lines	Proposed	Proposed	No	No	\$500,000	\$500,000	\$500,000
Reliability Upgrade	1b	1179	MA	NSTAR Electric Company		12/2015	Greater Boston - North	Install 2nd 345kV circuit between Bellerica/Burlington town line to Tewksbury	Proposed	Proposed	No	No	\$33,000,000	\$33,000,000	\$33,000,000
Reliability Upgrade	1b	1200	MA	NSTAR Electric Company		TBD	Greater Boston - North	Add a new 345kV UG circuit between Woburn and North Cambridge	Proposed	Proposed	No	No	\$52,000,000	\$52,000,000	\$52,000,000
Reliability Upgrade	1b	1211	MA	National Grid, USA		12/2015	Greater Boston - North	Install 2nd 345kV circuit between Tewksbury - Billerica/Burlington Town Line (NSTAR Border)	Proposed	Proposed	No	No	\$32,700,000	\$32,700,000	\$32,700,000
Reliability Upgrade	1b	1212	MA	National Grid, USA		12/2015	Greater Boston - North	115kV Line Reconductoring of M-139/N-140 Tewksbury-Pinehurst (6.1 miles each)	Proposed	Proposed	No	No	\$57,000,000	\$11,600,000	\$11,600,000
Reliability Upgrade	1b	1213	MA	National Grid, USA		12/2015	Greater Boston - North	Install new 345kV circuit between NH/MA border and Tewksbury (this is NGRID's portion of the new Scobie-Tewksbury circuit)	Proposed	Proposed	No	No	\$23,370,000	\$23,370,000	\$23,370,000
Reliability Upgrade	1b	1215	MA	National Grid, USA		12/2015	Greater Boston - North	New 115kV line between Wakefield - Everett	Proposed	Proposed	No	No	\$20,000,000	\$20,000,000	\$20,000,000
Reliability Upgrade	1b	1254	MA	National Grid, USA		12/2015	Greater Boston - North	Substation work at Revere Substation to increase ratings on the 128-515P/168 line between Chelsea and Revere	Concept	Proposed	No	No	TBD	\$1,000,000	\$1,000,000
Reliability Upgrade	1b	1260	MA	National Grid, USA		12/2015	Greater Boston - North	115kV Line reconductoring of the F-158N/S Wakefield Jct - Everett (7.36 miles)		Proposed	No	No	TBD	\$3,500,000	\$3,500,000
Reliability Upgrade	1b	1261	MA	National Grid, USA		12/2015	Greater Boston - North	115kV Line reconductoring of the S-145T-146 from North Reading Tap - Wakefield Jct (5.1 miles each)		Proposed	No	No	TBD	\$10,800,000	\$10,800,000
Reliability Upgrade	1b	1262	MA	National Grid, USA		12/2015	Greater Boston - North	115kV Line reconductoring of the Y-151 from Tewksbury Junction - Tewksbury Substation (1.6 miles)		Proposed	No	No	TBD	\$1,250,000	\$1,250,000
Reliability Upgrade	1b	1208	MA	National Grid, USA		12/2014	Pittsfield / Greenfield Project	Separation and reconductoring of Cabot Taps (A-127 and Y-177 115kV lines)	Proposed	Proposed	No	No	\$7,400,000	\$7,400,000	\$7,400,000
Reliability Upgrade	1b	1209	MA	National Grid, USA		12/2014	Pittsfield / Greenfield Project	Reconductoring of A-127 between Erving and Cabot Tap with 1590 ACSS	Proposed	Proposed	No	No	\$12,000,000	\$12,000,000	\$12,000,000



## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jun-11 Status	Oct-11 Status	PPA (I.3.9) Approval	TCA Approval	Jun-11 Estimated PTF Costs	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	1210	MA	National Grid, USA		12/2014	Pittsfield / Greenfield Project	Harriman 115kV breaker upgrades	Proposed	Proposed	No	No	\$1,100,000	\$1,100,000	\$1,100,000
Reliability Upgrade	1b	1221	MA	Northeast Utilities		11/2014	Pittsfield / Greenfield Project	Modify Northfield Mountain 16R substation and install a 345/115kV autotransformer	Proposed	Proposed	No	No	\$108,500,000	\$108,500,000	\$108,500,000
Reliability Upgrade	1b	1222	MA	Northeast Utilities		11/2014	Pittsfield / Greenfield Project	Build a new 115kV three breaker Switching Station (Erving) ring bus	Proposed	Proposed	No	No	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1223	MA	Northeast Utilities		11/2014	Pittsfield / Greenfield Project	Build a new 115kV line from Northfield Mountain to the new Erving Switching Station	Proposed	Proposed	No	No	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1224	MA	Northeast Utilities		11/2014	Pittsfield / Greenfield Project	Install 115kV 14.4 MVAR capacitor banks at Cumberland, Podick and Amherst Substations	Proposed	Proposed	No	No	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1225	MA	Northeast Utilities		11/2014	Pittsfield / Greenfield Project	Rebuild the Cumberland to Montague 1361 115kV line and terminal work at Cumberland and Montague	Proposed	Proposed	No	No	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1226	MA	Northeast Utilities		11/2014	Pittsfield / Greenfield Project	Reconductor the Woodland to Pleasant 1371 115-kV line and terminal work at Woodland substation.	Proposed	Proposed	No	No	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	956	MA	National Grid, USA		01/2015	Central/Western Massachusetts Upgrades	Carpenter Hill - replace one 345 kV, 448 MVA autotransformer and upgrade thermal rating of bus to at least 580 MVA.	Proposed	Proposed	No	No	\$7,021,534	\$7,021,534	\$7,021,534
Reliability Upgrade	1b	1252	MA	National Grid, USA		12/2015	NEEWS (Interstate Reliability Project)	Re-conductor 345kV 328 line (West Farnum-Sherman Rd)	Concept	Proposed	No	No	TBD	\$36,500,000	\$36,500,000
Reliability Upgrade	1b	1233	RI	National Grid, USA		12/2015	NEEWS (Interstate Reliability Project)	New Sherman Road 345kV AIS Substation	Concept	Proposed	No	No	TBD	\$36,600,000	\$36,600,000
Reliability Upgrade	1b	1242	CT	CMEEC		10/2012	SNEW 115kV substation	SNEW 115/13.8kV substation with two transformers and a 115kV circuit breaker looped into the 1890 line (between Norwalk Hbr - Ely Ave)	Proposed	Proposed	No	No	\$2,000,000	\$2,000,000	\$2,000,000
Reliability Upgrade	1b	1244	CT	CMEEC		10/2011	115kV Circuit Breaker Installation	Install 115kV Bus Tie Circuit Breaker at Stock House Rd Substation	Proposed	Proposed	No	No	\$750,000	\$750,000	\$750,000
Reliability Upgrade	1b	1246	CT	United Illuminating Company		09/2013	8300 Line Reconfiguration Project	Reconfiguration of 115kV (8300) line from Mill River to Quinipiac	Proposed	Proposed	No	No	\$17,400,000	\$17,400,000	\$17,400,000
Reliability Upgrade	1a	1116	ME	Bangor Hydro-Electric Company		12/2011	Maine Power Reliability Program (MPRP)	L 64 Rebuild	Under Construction	Under Construction	10/22/2010	6/16/2011	\$37,126,000	\$37,626,000	\$37,626,000
Reliability Upgrade	1a	1156	ME	Bangor Hydro-Electric Company		12/2011	Maine Power Reliability Program (MPRP)	Orrington Shunt Cap Reconfiguration	Under Construction	Under Construction	10/22/2010	6/16/2011	\$2,260,262	\$2,260,262	\$2,260,262
Reliability Upgrade	1a	905	ME	Central Maine Power Company		8/2014	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Orrington-Albion Rd-Coopers Mills, Coopers Mills-Larrabee Road, Larrabee Road-Surweic).	Under Construction	Under Construction	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	\$1,470,187,000	\$1,364,108,000	\$1,364,108,000
Reliability Upgrade	1a	906	ME	Central Maine Power Company		05/2014	Maine Power Reliability Program (MPRP)	New 115kV line construction (Orrington-Coopers Mills, Larrabee Road-Middle St,Middle St -Lewiston Lower, Larrabee Road-Livermore Falls, Livermore Falls-Rumford IP)	Under Construction	Under Construction	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	908	ME	Central Maine Power Company		07/2014	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Albion Road, Larrabee Road); Coopers Mills autotransformer replaces Maxcy's autotransformer	Under Construction	Under Construction	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1158	ME	Central Maine Power Company		07/2014	Maine Power Reliability Program (MPRP)	Two 40 MVAR reactors at Albion Road, two 40 MVAR reactors at Larabee Road, two 40 MVAR at Coopers Mills	Under Construction	Under Construction	7/31/2008 & 2/26/09 & 11/22/10	1/29/2010	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	143	ME	Bangor Hydro-Electric Company		12/2012	Down East Reliability Improvement	Contract 115 kV from Trenton tap (part of Hancock Reliability Project) to new Tunk Lake Substation (2 new breakers) to Harrington Substation to Epping Substation (3 new breakers)	Under Construction	Under Construction	5/10/2006	6/13/2008	\$66,100,000	\$66,100,000	\$66,100,000
Reliability Upgrade	1a	1131	ME	Central Maine Power Company		11/2011	CMP-LSP Bowman St. Substation	Add 115/34kV transformer	Planned	Under Construction	11/22/2010	NR	\$600,000	\$600,000	\$600,000
Reliability Upgrade	1a	1196	ME	Bangor Hydro-Electric Company		01/2012	SVC Filter Upgrade (Part of Keene Rd Auto-transformer ID 144)	Upgrade of filter bank at Chester SVC facility	Under Construction	Under Construction	7/15/2011	7/15/2011	\$3,500,000	\$3,500,000	\$3,500,000
Reliability Upgrade	1a	1219	NH	Northeast Utilities		12/2011		Install 115kV two 13.3 MVAR capacitor banks at Oak Hill substation	Planned	Under Construction	2/28/2011	NR	\$3,800,000	\$4,000,000	\$4,000,000
Reliability Upgrade	1a	277	NH	Northeast Utilities		11/2011	2nd Deerfield 345/115kV Autotransformer Project	Add 2nd 345/115 kV autotransformer and 3-345kV breakers at Deerfield substation.	Under Construction	Under Construction	6/29/2009	7/15/2011	\$52,000,000	\$52,000,000	\$52,000,000
Reliability Upgrade	1a	1140	NH	Northeast Utilities		10/2011	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV C129 Line	Under Construction	Under Construction	6/29/2009	7/15/2011	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1182	NH	Northeast Utilities		06/2012	LSP New Eagle Substation and 115/34.5kV transformer	New 115kV Eagle Substation connected to 115/34.5kV Thornton Substation	Planned	Under Construction	7/27/2010	No	\$22,800,000	\$22,800,000	\$22,800,000
Reliability Upgrade	1a	887	MA	National Grid, USA		06/2013	Auburn Area Transmission System Upgrades	Expand Auburn St Substation to include 2nd 345/115 kV autotransformer and 345 kV ring bus.	Under Construction	Under Construction	2/10/2010	No	\$66,300,000	\$58,000,000	\$58,000,000
Reliability Upgrade	1a	1165	MA	NSTAR Electric Company		12/2011	Mystic Breaker Additions Project	Move Transformer 110B Connection at Mystic	Planned	Under Construction	3/10/2008	NR	\$1,700,000	\$2,600,000	\$2,600,000
Reliability Upgrade	1a	934	MA	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Reconductor #2 Tap from Tower 510 - Webster St. 115 kV circuit.	Under Construction	Under Construction	12/17/2007	No	Part of RSP 935	Part of RSP 935	Part of RSP 935

45 Proposed                      -25%                      25%

45                      **\$706,902,534**                      **\$530,176,901**                      **\$883,628,168**

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Reliability Upgrade	1a	935	MA	National Grid, USA		12/2012	Central/Western Massachusetts Upgrades	Reconductor from (A-127E/B-128E) Millbury - Tower 510 115 kV line.	Under Construction	Under Construction	12/17/2007	No	\$10,200,000	\$10,200,000	\$10,200,000
Reliability Upgrade	1a	944	MA	National Grid, USA		03/2012	Central/Western Massachusetts Upgrades	Wachusett - install one 345 kV, 448 mVA transformer, one 345 kV breaker, and one 115 kV breaker.	Planned	Under Construction	12/17/2007	No	\$16,530,000	\$15,700,000	\$15,700,000
Reliability Upgrade	1a	1076	MA	Northeast Utilities		12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1311) 115kV line	Under Construction	Under Construction	9/24/2008	No	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	196	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line (3216), Agawam (MA) - North Bloomfield (CT)	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	818	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reconstruct the 115kV line South Agawam to Southwick (1768)	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	819	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line Ludlow - Agawam (3196)	Under Construction	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	820	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Expansion of Agawam 16C 115 kV Substation to include new 345 kV station with two 345/115-kV autotransformers.	Under Construction	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	823	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Ludlow 19S 345 kV Substation Expansion, two 345/115kV Autotransformers replacements. Add two 345kV 120 MVar Capacitor additions	Under Construction	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	829	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Piper (1230) 115 kV line.	Under Construction	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1010	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Build 115-kV Cadwell switching 50F station.	Under Construction	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	259	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to Orchard (1426) 115kV line	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	688	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Cadwell (1481) 115kV line	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1100	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Chicopee (1314) 115kV line	Under Construction	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1101	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Orchard (1552) 115kV line	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1102	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Piper (1601) 115kV line	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1103	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Chicopee (1602) 115kV line	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1104	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Cadwell (1603) 115kV line and add 2nd High Speed Protection	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1105	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Shawinigan (1604) 115kV line and add a 2nd High Speed Protection	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1070	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1781) 115kV line and add a 2nd High Speed Protection	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1071	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1782) 115kV line and add a 2nd High Speed Protection	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1072	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Shawinigan (1845) 115kV line and add 2nd High Speed Protection	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1073	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5001) 115kV line	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1074	MA	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5002) 115kV line	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1109	MA	National Grid, USA		12/2011	NEEWS (Rhode Island Reliability Project)	South Wrentham 115kv terminal equipment upgrades	Planned	Under Construction	9/24/2008	No	\$1,000,000	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	790	MA	National Grid, USA		12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Berry Street 345/115 kV substation.	Under Construction	Under Construction	4/25/2008	No	\$52,000,000	\$52,000,000	\$52,000,000
Reliability Upgrade	1a	1098	MA	National Grid, USA		12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	345/115kV line interconnections at Berry Street	Under Construction	Under Construction	4/25/2008	No	\$22,000,000	\$22,000,000	\$22,000,000
Reliability Upgrade	1a	1092	MA	Northeast Utilities		12/2013	Agawam (BPS)	Upgrade the Agawam 115kV, Substations to BPS standards together with other misc. substation upgrades	Under Construction	Under Construction	9/24/2008	No	\$13,600,000	\$12,100,000	\$12,100,000
Reliability Upgrade	1a	1216	MA	Northeast Utilities		04/2012		345kV Ludlow - Northfield (portion of 354) Line Structure replacements	Under Construction	Under Construction	NR	No	\$17,000,000	\$25,100,000	\$25,100,000
Reliability Upgrade	1a	1266	MA	Northeast Utilities		12/2011		115kV Pleasant to Blandford (portion of 1421) Line structure replacement		Under Construction	NR	No		\$9,960,000	\$9,960,000
Reliability Upgrade	1a	1267	MA	Northeast Utilities		12/2011		115kV Blandford to Southwick (portion of 1512) Line structure replacement		Under Construction	NR	No		\$9,600,000	\$9,600,000
Reliability Upgrade	1a	969	MA	NSTAR Electric Company		11/2012	Greater Boston - North	Add a new 115kV 36.7 MVAR capacitor bank at Chelsea.	Planned	Under Construction	3/30/2011	NR	\$1,500,000	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	301	MA	NSTAR Electric Company		12/2011	Greater Boston - Central	Reconductor 115-kV circuits 320-507 and 320-508. (Lexington - Waltham)	Concept	Under Construction	2/15/2011	No	\$8,400,000	\$9,600,000	\$9,600,000
Reliability Upgrade	1a	1066	MA	NSTAR Electric Company		12/2011	NPCC BPS Compliance	Needham Station	Under Construction	Under Construction	NR	No	\$6,500,000	\$8,000,000	\$8,000,000
Reliability Upgrade	1a	1065	MA	NSTAR Electric Company		07/2012	NPCC BPS Compliance	Waltham Station	Under Construction	Under Construction	NR	No	\$14,700,000	\$14,700,000	\$14,700,000



## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Jun-11 Status	Oct-11 Status	PPA (I.3.9) Approval	TCA Approval	Jun-11 Estimated PTF Costs	Oct-11 Estimated PTF Costs
Reliability Upgrade	1a	484	RI	National Grid, USA		11/2011	Greater Rhode Island Transmission Reinforcements 1	Add (1) new 115 kV breaker at Woonsocket.	Planned	Under Construction	4/25/2008	No	\$580,000	\$580,000
Reliability Upgrade	1a	1193	CT	United Illuminating Company		12/2012		North Haven 115kV Capacitor Bank TRV Mitigation Project	Under Construction	Under Construction	NR	NR	\$5,100,000	\$4,900,000
Reliability Upgrade	1a	974	CT	United Illuminating Company		05/2013		East Shore 115 kV Oil Circuit Breaker & Disconnect Replacements.	Under Construction	Under Construction	NR	No	\$16,900,000	\$16,900,000
Reliability Upgrade	1a	816	CT	Northeast Utilities		12/2013	NEEWS (Greater Springfield Reliability Project)	North Bloomfield 2A Substation Expansion - add a second 345/115-kV autotransformer	Planned	Under Construction	9/24/2008	No	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1056	CT	Northeast Utilities		12/2011	LSP - Sherwood Substation	Sherwood Substation - add a 115/13.8-kV substation with two transformers and a 115-kV circuit breaker.	Under Construction	Under Construction	12/12/2008	4/14/2011	\$10,969,000	\$10,969,000
Reliability Upgrade	1a	1111	CT	United Illuminating Company		01/2012		Union Avenue 115/26.4 kV Substation	Under Construction	Under Construction	1/7/2009	11/10/2009	\$10,543,000	\$13,500,000
Reliability Upgrade	1a	976	CT	United Illuminating Company		05/2012		Grand Avenue 115 kV Switching Station Rebuild.	Under Construction	Under Construction	1/7/2009 & 11/22/2010	No	\$70,000,000	\$70,000,000
Reliability Upgrade	1a	1050	CT	United Illuminating Company		12/2011		Devon Tie 115kV Switching Station BPS Compliance	Under Construction	Under Construction	NR	NR	\$4,000,000	\$4,000,000

\$580,000
\$4,900,000
\$16,900,000
Part of NEEWS (Greater Springfield Reliability Project)
\$10,969,000
\$13,500,000
\$70,000,000
\$4,000,000
<b>\$5,460,853,715</b>

58 UnderConstruction -10% 10%				
58 <b>\$1,925,903,262</b> \$1,733,312,936 \$2,118,493,588				
Total w/ Concept	\$5,460,853,715	247	\$4,416,600,776	\$2,118,493,588
Total w/o Concept	\$5,332,553,715	207	\$4,288,300,776	\$5,348,690,245

## October 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Projected In-Service Month/Year	Major Project	Project	Oct-11 Status	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1a	1197	ME	Bangor Hydro-Electric Company	12/2013	Keene Rd Autotransformer	Orrington 345kV Series Breaker Addition	Planned	\$1,761,250	\$1,761,250
Reliability Upgrade	1a	1116	ME	Bangor Hydro-Electric Company	12/2011	Maine Power Reliability Program (MPRP)	L 64 Rebuild	Under Construction	\$37,626,000	\$37,626,000
Reliability Upgrade	1a	1156	ME	Bangor Hydro-Electric Company	12/2011	Maine Power Reliability Program (MPRP)	Orrington Shunt Cap Reconfiguration	Under Construction	\$2,260,262	\$2,260,262
Reliability Upgrade	1a	905	ME	Central Maine Power Company	8/2014	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Orrington-Albion Rd-Coopers Mills, Coopers Mills-Larrabee Road, Larrabee Road-Surowiec).	Under Construction	\$1,364,108,000	\$1,364,108,000
Reliability Upgrade	1a	906	ME	Central Maine Power Company	05/2014	Maine Power Reliability Program (MPRP)	New 115kV line construction (Orrington-Coopers Mills, Larrabee Road-Middle St.Middle St -Lewiston Lower, Larrabee Road-Livermore Falls, Livermore Falls-Rumford IP)	Under Construction	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	907	ME	Central Maine Power Company	05/2014	Maine Power Reliability Program (MPRP)	Rebuild Existing 115kV lines: Sections 86 (Bucksport-Belfast), Section 203 (Detroit-Orrington), Sections 60 & 212 (Coopers Mills-Bowman St-Larrabee Road), Sections 89 & 229 (Livermore Falls-Riley-Rumford IP)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	908	ME	Central Maine Power Company	07/2014	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Albion Road, Larrabee Road); Coopers Mills autotransformer replaces Maxcy's autotransformer	Under Construction	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	909	ME	Central Maine Power Company	8/2014	Maine Power Reliability Program (MPRP)	Add 2-115kV breakers & rebuild 86A, new .25 mile transmission at Belfast forming Sections 86 & 266	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1025	ME	Central Maine Power Company	05/2014	Maine Power Reliability Program (MPRP)	Separation of Double Circuit Towers (345kV Kennebec River Crossing 375/377, 115kV Bucksport 65/205)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1026	ME	Central Maine Power Company	12/2013	Maine Power Reliability Program (MPRP)	New 345kV Line Construction associated with (Surowiec-Raven Farm, South Gorham-Maguire Road, Maguire Road-Elliott Switching Station) line work	Planned	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M	\$36,000,000
Reliability Upgrade	1a	1028	ME	Central Maine Power Company	12/2013	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV Line (Section 250, Maguire Rd-Three Rivers)	Planned	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M
Reliability Upgrade	1a	1158	ME	Central Maine Power Company	07/2014	Maine Power Reliability Program (MPRP)	Two 40 MVAR reactors at Albion Road, two 40 MVAR reactors at Larabee Road, two 40 MVAR at Coopers Mills	Under Construction	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1030	ME	Central Maine Power Company	11/2013	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Maguire Road)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1132	ME	Central Maine Power Company	8/2014	Maine Power Reliability Program (MPRP)	Add 115/34kV transformer at Coopers Mills	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	143	ME	Bangor Hydro-Electric Company	12/2012	Down East Reliability Improvement	Contract 115 kV from Trenton tap (part of Hancock Reliability Project) to new Tunk Lake Substation (2 new breakers) to Harrington Substation to Epping Substation (3 new breakers)	Under Construction	\$66,100,000	\$66,100,000
Reliability Upgrade	1a	1129	ME	Central Maine Power Company	05/2012		New 115kV line between Wyman Hydro and Rice Rips Tap, parallel to exiting Section 63. Install a 115kV circuit breaker at Wyman Hydro termination	Planned	\$32,800,000	\$32,800,000
Reliability Upgrade	1a	1131	ME	Central Maine Power Company	11/2011	CMP-LSP Bowman St. Substation	Add 115/34kV transformer	Under Construction	\$600,000	\$600,000
Reliability Upgrade	1a	1135	ME	Central Maine Power Company	02/2012	CMP-Athens Substation LSP	Add two 115kV circuit breakers on Section 66; and 115/12kV transformer	Planned	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	1196	ME	Bangor Hydro-Electric Company	01/2012	SVC Filter Upgrade (Part of Keene Rd Auto-transformer ID 144)	Upgrade of filter bank at Chester SVC facility	Under Construction	\$3,500,000	\$3,500,000
Reliability Upgrade	1a	1184	ME	Central Maine Power Company	05/2012	Starks Switching Station	Add 4-115kV circuit breakers in a breaker-and a-half configuration on Section 63 and 2-18 MVAR cap banks at a new Starks Switching Station	Planned	\$9,750,000	\$9,750,000
Reliability Upgrade	1a	1251	ME	Central Maine Power Company	12/2012	Lakewood Substation Expansion	Sectionalize Section 241 by adding four 115kV circuit breakers at Lakewood Substation and install a second 115/34.5 kV transformer	Planned	\$13,700,000	\$13,700,000
Reliability Upgrade	1a	1219	NH	Northeast Utilities	12/2011		Install 115kV two 13.3 MVAR capacitor banks at Oak Hill substation	Under Construction	\$4,000,000	\$4,000,000
Reliability Upgrade	1a	277	NH	Northeast Utilities	11/2011	2nd Deerfield 345/115kV Autotransformer Project	Add 2nd 345/115 kV autotransformer and 3-345kV breakers at Deerfield substation.	Under Construction	\$52,000,000	\$52,000,000
Reliability Upgrade	1a	1140	NH	Northeast Utilities	10/2011	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV C129 Line	Under Construction	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1141	NH	Northeast Utilities	2015	2nd Deerfield 345/115kV Autotransformer Project	Rochester Substation Upgrades	Planned	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1182	NH	Northeast Utilities	06/2012	LSP New Eagle Substation and 115/34.5kV transformer	New 115kV Eagle Substation connected to 115/34.5kV Thornton Substation	Under Construction	\$22,800,000	\$22,800,000

**October 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Projected In-Service Month/Year	Major Project	Project	Oct-11 Status	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1a	680	NH	National Grid, USA	06/2013		Rebuild Bellows Falls Substation and install 115 kV capacitor bank.	Planned	\$7,393,000	\$7,393,000
Reliability Upgrade	1a	674	NH	National Grid, USA	12/2013		Replace Comerford 230 kV breakers and add (1) 230 kV bus tie breaker.	Planned	\$19,460,000	\$19,460,000
Reliability Upgrade	1a	1172	VT	Vermont Electric Power Company	06/2012	Vermont Shunt Reactors	Install 345kV 60 MVAR shunt reactors (two at Coolidge and one at New Haven and relocate the New Haven reactor to Vernon) to address high voltage concerns	Planned	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	318	VT	Vermont Electric Power Company	12/2012	Georgia Substation Rebuild	Rebuild the existing Georgia substation 115 kV bus into a ring bus to address reliability problems due to breaker failure contingencies	Planned	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	1169	VT	Vermont Electric Power Company	12/2012	Ascutney Substation Rebuild	Rebuild the existing Ascutney substation 115kV bus into a ring bus, to address reliability problems due to breaker failure contingencies	Planned	\$14,500,000	\$14,500,000

**October 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Projected In-Service Month/Year	Major Project	Project	Oct-11 Status	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1a	1170	VT	Vermont Electric Power Company	06/2013	Bennington Substation Rebuild	Rebuild the exiting Bennington substation 115kV bus into a ring bus to address reliability problems due to breaker failure contingencies	Planned	\$28,000,000	\$28,000,000
Reliability Upgrade	1a	1171	VT	Vermont Electric Power Company	12/2011	West Rutland Capacitor Rebuild	Install two 115kV 25 MVA capacitor banks at West Rutland to address low voltage concerns	Planned	\$2,400,000	\$2,400,000
Reliability Upgrade	1a	1194	VT	Vermont Electric Power Company	12/2012	LSP Jay Substation	Construct a new 4-breaker ring substation at Jay with two 115/46kV transformers	Planned	\$6,500,000	\$6,500,000
Reliability Upgrade	1a	1195	VT	Vermont Electric Power Company	03/2013	Highgate Refurbishment	Replace Highgate controls and cooling system	Planned	\$35,600,000	\$35,600,000
Reliability Upgrade	1a	887	MA	National Grid, USA	06/2013	Auburn Area Transmission System Upgrades	Expand Auburn St substation to include 2nd 345/115 kV autotransformer and 345 kV ring bus.	Under Construction	\$58,000,000	\$58,000,000
Reliability Upgrade	1a	921	MA	National Grid, USA	12/2012	Auburn Area Transmission System Upgrades	Bridgewater substation - Upgrade Bus work and convert to BPS substation.	Planned	\$40,000,000	\$40,000,000
Reliability Upgrade	1a	919	MA	National Grid, USA	04/2014	Auburn Area Transmission System Upgrades	Dupont substation - Upgrade Buswork and convert to BPS substation.	Planned	\$13,600,000	\$13,600,000
Reliability Upgrade	1a	59	MA	National Grid, USA	12/2012	Auburn Reliability Transmission System Upgrades	G18, F19 line terminals 115kV upgrades at Bridgewater sub	Planned	Part of RSP 921	Part of RSP 921
Reliability Upgrade	1a	840	MA	NSTAR Electric Company	12/2012	Merrimack Valley/North Shore Reliability Project	Upgrade the 115 kV line (Line 423-515) from Mystic-Everett by adding a new parallel cable to the existing 115 kV cable. (NSTAR portion only)	Planned	\$5,900,000	\$5,900,000
Reliability Upgrade	1a	776	MA	National Grid, USA	11/2012	Merrimack Valley/North Shore Reliability Project	Re-conductor O-167 (NGRID portion of Mystic - Everett) 115 kV line.	Planned	\$3,125,000	\$3,125,000
Reliability Upgrade	1a	782	MA	National Grid, USA	01/2016	Merrimack Valley/North Shore Reliability Project	Replace existing S145/T146 UG cables with higher capacity cables between Salem Harbor and Railway.	Planned	\$43,912,000	\$43,912,000
Reliability Upgrade	1a	1165	MA	NSTAR Electric Company	12/2011	Mystic Breaker Additions Project	Move Transformer 110B Connection at Mystic	Under Construction	\$2,600,000	\$2,600,000
Reliability Upgrade	1a	1068	MA	NSTAR Electric Company	12/2012	Long Term Lower SEMA Upgrades	Install a new 345kV line from Carver to vicinity of Bourne and connect to existing #120 line and install a 345KV - 115kV auto-transformer at new substation about 3 miles west of the Barnstable Substation Loop Line #115 in and out of the new Substation. Create a new line position at the Bourne Substation and connect the Bourne-Canal section of Line #120	Planned	\$106,500,000	\$106,500,000
Reliability Upgrade	1a	592	MA	NSTAR Electric Company	12/2012	Long Term Lower SEMA Upgrades	Separate existing 345kV double circuit Cape Cod Canal crossing. The lines being separated are 322 (Canal-Carver) and 342 (Canal-Pilgrim-Auburn)	Planned	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA
Reliability Upgrade	1a	1118	MA	National Grid, USA	12/2012	Long Term Lower SEMA Upgrades	Upgrade 115kV line D21 (Bellrock-High Hill)	Planned	\$6,000,000	\$6,000,000
Reliability Upgrade	1a	1187	MA	National Grid, USA	06/2014	A127/B128 Conductor Refurbishment	A127/B128 Conductor Refurbishment - Tower 510 to Harriman Substation, VT	Planned	\$65,000,000	\$65,000,000
Reliability Upgrade	1a	929	MA	National Grid, USA	09/2013	Central/Western Massachusetts Upgrades	Searsburg - install in-line 69 kV breaker for operational flexibility.	Planned	\$2,500,000	\$2,500,000
Reliability Upgrade	1a	931	MA	National Grid, USA	01/2013	Central/Western Massachusetts Upgrades	Park St. - incremental cost of designing for 115 kV instead of 69 kV.	Planned	\$531,481	\$531,481
Reliability Upgrade	1a	928	MA	National Grid, USA	06/2013	Central/Western Massachusetts Upgrades	Millbury -upgrade terminal equipment for O-141, P-142, B-128, A-127 circuit breakers.	Planned	\$3,400,000	\$3,400,000
Reliability Upgrade	1a	934	MA	National Grid, USA	12/2012	Central/Western Massachusetts Upgrades	Reconductor #2 Tap from Tower 510 - Webster St. 115 kV circuit.	Under Construction	Part of RSP 935	Part of RSP 935
Reliability Upgrade	1a	935	MA	National Grid, USA	12/2012	Central/Western Massachusetts Upgrades	Reconductor from (A-127E/B-128E) Millbury - Tower 510 115 kV line.	Under Construction	\$10,200,000	\$10,200,000
Reliability Upgrade	1a	938	MA	National Grid, USA	05/2013	Central/Western Massachusetts Upgrades	Deerfield - install a new 115/69kV autotransformer and a 69kV breaker and disconnect switches.	Planned	\$5,430,000	\$5,430,000
Reliability Upgrade	1a	940	MA	National Grid, USA	06/2014	Central/Western Massachusetts Upgrades	Reconductor sections of A127W line w/795 ACSS (A127 West reconductoring. Tower 510 to Paxton, French King to French King).	Planned	\$18,000,000	\$18,000,000
Reliability Upgrade	1a	942	MA	National Grid, USA	12/2012	Central/Western Massachusetts Upgrades	Webster St. - add two 115 kV circuit breakers.	Planned	\$3,650,000	\$3,650,000
Reliability Upgrade	1a	925	MA	National Grid, USA	11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - supply 13 kV from T3 and T4.	Planned	Part of RSP 926	Part of RSP 926
Reliability Upgrade	1a	926	MA	National Grid, USA	11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - replace T8 autotransformer with 230 kV 333 mVA, upgrade breaker and bus to 115 kV. Install high side 230 kV breaker.	Planned	\$14,700,000	\$14,700,000
Reliability Upgrade	1a	932	MA	National Grid, USA	11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - increase thermal rating of I-135 and J-136 buswork.	Planned	Part of RSP 926	Part of RSP 926

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Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Projected In-Service Month/Year	Major Project	Project	Oct-11 Status	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1a	941	MA	National Grid, USA	8/2013	Central/Western Massachusetts Upgrades	Install new Z126 Millbury - Tower #510 115 kV line.	Planned	\$13,748,000	\$13,748,000
Reliability Upgrade	1a	943	MA	National Grid, USA	12/2012	Central/Western Massachusetts Upgrades	Millbury - new 115 kV breaker position for new line to Twr 510.	Planned	\$4,100,000	\$4,100,000
Reliability Upgrade	1a	944	MA	National Grid, USA	03/2012	Central/Western Massachusetts Upgrades	Wachusett - install one 345 kV, 448 mVA transformer, one 345 kV breaker, and one 115 kV breaker.	Under Construction	\$15,700,000	\$15,700,000
Reliability Upgrade	1a	950	MA	National Grid, USA	02/2015	Central/Western Massachusetts Upgrades	E Winchendon - install 115 kV breaker and 115 kV disconnect switch.	Planned	\$1,016,897	\$1,016,897
Reliability Upgrade	1a	953	MA	National Grid, USA	02/2015	Central/Western Massachusetts Upgrades	Otter River - expand substation into 6-breaker ring bus with four 115 kV breakers and install two transformers.	Planned	\$10,248,067	\$10,248,067
Reliability Upgrade	1a	954	MA	National Grid, USA	02/2015	Central/Western Massachusetts Upgrades	Westminster - install new 69kV breaker, including disconnect switches.	Planned	\$903,909	\$903,909
Reliability Upgrade	1a	945	MA	National Grid, USA	05/2014	Central/Western Massachusetts Upgrades	Adams - install two new 115 kV breakers and replace two existing 115kV breakers	Planned	\$5,000,000	\$5,000,000
Reliability Upgrade	1a	946	MA	National Grid, USA	04/2015	Central/Western Massachusetts Upgrades	Convert 69 kV (O-15S) Palmer- Hampden to 115 kV.	Planned	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	948	MA	National Grid, USA	05/2014	Central/Western Massachusetts Upgrades	Hampden - build new 115 kV substation at 1515/O-15S intersection (4 breaker ring).	Planned	\$13,400,000	\$13,400,000
Reliability Upgrade	1a	949	MA	National Grid, USA	04/2015	Central/Western Massachusetts Upgrades	Palmer - add 115 kV breaker position for O15S conversion, includes thermal upgrade of W-175 bay.	Planned	\$1,600,000	\$1,600,000
Reliability Upgrade	1a	937	MA	National Grid, USA	12/2015	Central/Western Massachusetts Upgrades	Bear Swamp - install one 230-115 kV 333 mVA auto, one 115 kV breaker and upgrade various terminal equipment.	Planned	\$6,602,875	\$6,602,875
Reliability Upgrade	1a	955	MA	National Grid, USA	10/2012	Central/Western Massachusetts Upgrades	Reconductor (W175) W Charlton - Little Rest - Palmer w/1590 ACSR.	Planned	\$13,800,000	\$13,800,000
Reliability Upgrade	1a	951	MA	National Grid, USA	01/2014	Central/Western Massachusetts Upgrades	Install new Otter River - E Winchendon (H-134) 115 kV line.	Planned	\$7,455,440	\$7,455,440
Reliability Upgrade	1a	1217	MA	Northeast Utilities	12/2012	Central/Western Massachusetts Upgrades	Substation work at Ludlow (MA) and Scitico (CT) associated with the new Hampden (MA) substation project (Ngrid)	Planned	\$3,140,000	\$3,140,000
Reliability Upgrade	1a	1076	MA	Northeast Utilities	12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1311) 115kV line	Under Construction	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	687	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Fairmont 16H Substation Expansion	Planned	\$718,000,000	\$718,000,000
Reliability Upgrade	1a	826	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	South Agawam 42E Substation Reconfigure	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	196	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line (3216), Agawam (MA) - North Bloomfield (CT)	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	818	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Reconstruct the 115kV line South Agawam to Southwick (1768)	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	819	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line Ludlow - Agawam (3196)	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	820	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Expansion of Agawam 16C 115 kV Substation to include new 345 kV station with two 345/115-kV autotransformers.	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	823	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Ludlow 19S 345 kV Substation Expansion, two 345/115kV Autotransformers replacements. Add two 345kV 120 MVar Capacitor additions	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	828	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Breckwood 115kV circuit 1322 Reactor Bypass and Open Breckwood Substation 1T breaker and maintain breaker in the normally open position	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	829	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Piper (1230) 115 kV line.	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1010	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Build 115-kV Cadwell switching 50F station.	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	259	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to Orchard (1426) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	688	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Cadwell (1481) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1100	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Chicopee (1314) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1101	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Orchard (1552) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1102	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Piper (1601) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)

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Reliability Upgrade	1a	1103	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Chicopee (1602) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1104	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Cadwell (1603) 115kV line and add 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1105	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Shawinigan (1604) 115kV line and add a 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1070	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1781) 115kV line and add a 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1071	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1782) 115kV line and add a 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1072	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Shawinigan (1845) 115kV line and add 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1073	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5001) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1074	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5002) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1075	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Add 2nd high speed protection scheme to Agawam to Elm (1007) 115kV line if the Russell Biomass Plant, queue position #135 is constructed	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1078	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Pinshed (1327) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1079	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Mt. Tom (1428) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1080	MA	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	Replace 4T and 6T 115kV circuit breaker to Shawinigan substation	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1109	MA	National Grid, USA	12/2011	NEEWS (Rhode Island Reliability Project)	South Wrentham 115kv terminal equipment upgrades	Under Construction	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	1094	MA	National Grid, USA	12/2015	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV Milbury Substation equipment	Planned	\$25,000,000	\$25,000,000
Reliability Upgrade	1a	1202	MA	NSTAR Electric Company	06/2013	NEEWS (Ancillary Interstate Reliability Project)	Rebuild 1.2 mile length of line 336 with 2-900 ACSS conductor and replace 5, 345kV 2000 amp disconnect switches with 3000 amp switches at W. Medway station	Planned	\$1,700,000	\$1,700,000
Reliability Upgrade	1a	791	MA	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New 115 kV circuit between Somerset and Brayton Point.	Planned	\$11,560,000	\$11,560,000
Reliability Upgrade	1a	913	MA	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Brayton Point substation reinforcements to accommodate the new 115 kV line.	Planned	\$3,250,000	\$3,250,000
Reliability Upgrade	1a	914	MA	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New third circuit between Somerset and Bell Rock.	Planned	\$28,150,000	\$28,150,000
Reliability Upgrade	1a	917	MA	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Bell Rock substation expansion.	Planned	\$7,000,000	\$7,000,000
Reliability Upgrade	1a	793	MA	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Somerset substation reinforcements.	Planned	\$6,400,000	\$6,400,000
Reliability Upgrade	1a	790	MA	National Grid, USA	12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Berry Street 345/115 kV substation.	Under Construction	\$52,000,000	\$52,000,000
Reliability Upgrade	1a	1098	MA	National Grid, USA	12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	345/115kV line interconnections at Berry Street	Under Construction	\$22,000,000	\$22,000,000
Reliability Upgrade	1a	1092	MA	Northeast Utilities	12/2013	Agawam (BPS)	Upgrade the Agawam 115kV. Substations to BPS standards together with other misc. substation upgrades	Under Construction	\$12,100,000	\$12,100,000
Reliability Upgrade	1a	1216	MA	Northeast Utilities	04/2012		345kV Ludlow - Northfield (portion of 354) Line Structure replacements	Under Construction	\$25,100,000	\$25,100,000
Reliability Upgrade	1a	1266	MA	Northeast Utilities	12/2011		115kV Pleasant to Blandford (portion of 1421) Line structure replacement	Under Construction	\$9,960,000	\$9,960,000



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Reliability Upgrade	1a	1267	MA	Northeast Utilities	12/2011		115kV Blandford to Southwick (portion of 1512) Line structure replacement	Under Construction	\$9,600,000	\$9,600,000
Reliability Upgrade	1a	1268	MA	Northeast Utilities	12/2012		345kV Northfield Mountain to Berkshire (portion of 312) line structure replacements	Planned	\$7,900,000	\$7,900,000
Reliability Upgrade	1a	673	MA	National Grid, USA	12/2012	Worcester Area Reinforcements	Add new 115kV bay to separate the M-165 & E-157 terminal at Millbury #2 Substation	Planned	\$2,200,000	\$2,200,000
Reliability Upgrade	1a	676	MA	National Grid, USA	12/2012	Worcester Area Reinforcements	New Bloomingdale to Vernon Hill 115 kV (UG Cable-3.6 mi.) new 115kV breaker at Bloomingdale & Vernon Hill	Planned	\$30,000,000	\$30,000,000
Reliability Upgrade	1a	1257	MA	National Grid, USA	06/2014	Salem Harbor Retirement	115kV line Reconductoring of the S-145/T-146 from Tewksbury-North Reading Tap (9.3 miles each)	Planned	\$29,000,000	\$29,000,000
Reliability Upgrade	1a	1258	MA	National Grid, USA	06/2014	Salem Harbor Retirement	115kV line Reconductoring of the Y-151 from Tewksbury Junction - West Methuen (8.2 miles)	Planned	\$11,500,000	\$11,500,000
Reliability Upgrade	1a	1259	MA	National Grid, USA	06/2014	Salem Harbor Retirement	115kV line Reconductoring of the B154/C-155N from King St Tap - South Danvers (14.5 miles each way)	Planned	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	969	MA	NSTAR Electric Company	11/2012	Greater Boston - North	Add a new 115kV 36.7 MVAR capacitor bank at Chelsea.	Under Construction	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	1201	MA	NSTAR Electric Company	12/2012	Greater Boston - North	115kV line Reconductoring of the P168/128-518 Line between Chelsea and Revere (NSTAR Portion of the line)	Planned	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	301	MA	NSTAR Electric Company	12/2011	Greater Boston - Central	Reconductor 115-kV circuits 320-507 and 320-508. (Lexington - Waltham)	Under Construction	\$9,600,000	\$9,600,000
Reliability Upgrade	1a	1066	MA	NSTAR Electric Company	12/2011	NPCC BPS Compliance	Needham Station	Under Construction	\$8,000,000	\$8,000,000
Reliability Upgrade	1a	1065	MA	NSTAR Electric Company	07/2012	NPCC BPS Compliance	Waltham Station	Under Construction	\$14,700,000	\$14,700,000
Reliability Upgrade	1a	1168	MA	Holyoke Gas & Electric	12/2012	North Canal 44P	Loop the 1525 (Holyoke Fairmont South 115kV) line into the new North Canal 44P	Planned	\$4,100,000	\$4,100,000
Reliability Upgrade	1a	1256	MA	Unitil	06/2013	Flagg Pond Upgrades	At Flagg Pond Substation upgrade terminal equipment on the I-135N, I-135S, J-136N and J-136S 115kV lines and Zone 3 relay upgrades for the J-136N 115kV line.	Planned	\$2,750,000	\$2,750,000
Reliability Upgrade	1a	484	RI	National Grid, USA	11/2011	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Add (1) new 115 kV breaker at Woonsocket.	Under Construction	\$580,000	\$580,000
Reliability Upgrade	1a	915	RI	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Reconductor M13 and L14 between Bell Rock and Dexter + Reconductor 69 kV lines 61 and 62.	Planned	\$19,450,000	\$19,450,000
Reliability Upgrade	1a	916	RI	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Conversion of Jepson 69 kV substation to 115 kV substation.	Planned	\$11,800,000	\$11,800,000
Reliability Upgrade	1a	918	RI	National Grid, USA	12/2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Dexter substation changes.	Planned	\$3,180,000	\$3,180,000
Reliability Upgrade	1a	190	RI	National Grid, USA	12/2015	NEEWS (Interstate Reliability Project)	New Millbury to West Farnum (366) 345kV line.	Planned	\$81,800,000	\$81,800,000
Reliability Upgrade	1a	1095	RI	National Grid, USA	12/2012	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV West Farnum Substation Equipment	Planned	\$73,800,000	\$73,800,000
Reliability Upgrade	1a	794	RI	National Grid, USA	12/2015	NEEWS (Interstate Reliability Project)	New West Farnum to Connecticut/Rhode Island border (341) 345kV line (to Lake Road).	Planned	\$71,700,000	\$71,700,000
Reliability Upgrade	1a	795	RI	National Grid, USA	04/2013	NEEWS (Rhode Island Reliability Project)	New Kent County to West Farnum 345kV (359) line.	Planned	\$69,000,000	\$69,000,000
Reliability Upgrade	1a	1106	RI	National Grid, USA	06/2012	NEEWS (Rhode Island Reliability Project)	Kent County Substation Upgrades related to third 345/115 kV Autotransformer.	Planned	\$26,000,000	\$26,000,000
Reliability Upgrade	1a	798	RI	National Grid, USA	12/2011	NEEWS (Rhode Island Reliability Project)	Upgrade of 115kV terminal equipment at Franklin Square.	Planned	\$600,000	\$600,000
Reliability Upgrade	1a	1096	RI	National Grid, USA	06/2012	NEEWS (Rhode Island Reliability Project)	Drumrock substation: Terminal equipment upgrades, Protection modifications and upgrades to meet BPS standards	Planned	\$12,000,000	\$12,000,000
Reliability Upgrade	1a	1097	RI	National Grid, USA	01/2013	NEEWS (Rhode Island Reliability Project)	Relocate and Rebuild 115kV lines in the same ROW associated with new 345kV line from W. Farnum to Kent County including S-175, T172N and T-172S with associated terminal equipment upgrade.	Planned	\$129,800,000	\$129,800,000
Reliability Upgrade	1a	1099	RI	National Grid, USA	06/2012	NEEWS (Rhode Island Reliability Project)	Hartford Ave 115kV terminal equipment upgrades	Planned	\$6,000,000	\$6,000,000
Reliability Upgrade	1a	1253	RI	National Grid, USA	04/2015		New Crandall St. Substation 115-13 kV substation addition	Planned	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	1241	RI	National Grid, USA	06/2013		Re-conductor G-185S (Kent County - Davisville Tap)	Planned	\$4,200,000	\$4,200,000

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Reliability Upgrade	1a	1193	CT	United Illuminating Company	12/2012		North Haven 115kV Capacitor Bank TRV Mitigation Project	Under Construction	\$4,900,000	\$4,900,000
Reliability Upgrade	1a	974	CT	United Illuminating Company	05/2013		East Shore 115 kV Oil Circuit Breaker & Disconnect Replacements.	Under Construction	\$16,900,000	\$16,900,000
Reliability Upgrade	1a	816	CT	Northeast Utilities	12/2013	NEEWS (Greater Springfield Reliability Project)	North Bloomfield 2A Substation Expansion - add a second 345/115-kV autotransformer	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1054	CT	Northeast Utilities	12/2013	NEEWS (Ancillary Greater Springfield Reliability Project)	Build a new 345 kV line from Manchester to Meekville Junction and re-terminate the 395 line at Meekville Junction	Planned	\$28,800,000	\$28,800,000
Reliability Upgrade	1a	576	CT	Northeast Utilities	2016	NEEWS (Central Connecticut Reliability Project)	Build new 345kV line (3208) North Bloomfield to Frost Bridge.	Planned	\$301,000,000	\$301,000,000
Reliability Upgrade	1a	1114	CT	Northeast Utilities	2016	NEEWS (Central Connecticut Reliability Project)	Frost Bridge 18R substation expansion - add a 345/115kV autotransformer.	Planned	Part of NEEWS (Central Connecticut Reliability Project)	Part of NEEWS (Central Connecticut Reliability Project)
Reliability Upgrade	1a	802	CT	Northeast Utilities	2015	NEEWS (Interstate Reliability Project)	Build new 345kV line (3271) Card to Lake Road	Planned	\$218,000,000	\$218,000,000
Reliability Upgrade	1a	1085	CT	Northeast Utilities	2015	NEEWS (Interstate Reliability Project)	Card 11F substation expansion	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	810	CT	Northeast Utilities	2015	NEEWS (Interstate Reliability Project)	Lake Road 27E 345 kV substation expansion	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	191	CT	Northeast Utilities	2015	NEEWS (Interstate Reliability Project)	Build Lake Road to Connecticut/Rhode Island border (341) 345-kV line (to West Farnum).	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1235	CT	Northeast Utilities	12/2015	NEEWS (Ancillary Interstate Reliability Project)	Sag elimination on 1410 Line (Montville-Buddington)	Planned	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	1245	CT	CMEEC	12/2015	NEEWS (Ancillary Interstate Reliability Project)	Sag elimination on 1410 Line (Montville-Buddington)	Planned	\$60,000	\$60,000
Reliability Upgrade	1a	1227	CT	Northeast Utilities	2012	LSP - Stamford Area	Add 4th transformer and build a five breaker ring bus at South End Substation	Planned	\$6,400,000	\$6,400,000
Reliability Upgrade	1a	1056	CT	Northeast Utilities	12/2011	LSP - Sherwood Substation	Sherwood Substation - add a 115/13.8-kV substation with two transformers and a 115-kV circuit breaker.	Under Construction	\$10,969,000	\$10,969,000
Reliability Upgrade	1a	1218	CT	Northeast Utilities	12/2013	Millstone 345kV Circuit Separation project & SLOD SPS System Retirement	Separate the 345kV Double Circuit Tower 310/348 and 371/383 Tower configuration	Planned	\$25,600,000	\$25,600,000
Reliability Upgrade	1a	1111	CT	United Illuminating Company	01/2012		Union Avenue 115/26.4 kV Substation	Under Construction	\$13,500,000	\$13,500,000
Reliability Upgrade	1a	976	CT	United Illuminating Company	05/2012		Grand Avenue 115 kV Switching Station Rebuild.	Under Construction	\$70,000,000	\$70,000,000
Reliability Upgrade	1a	721	CT	United Illuminating Company	06/2015		New Shelton 115/13.8 kV substation	Planned	\$19,500,000	\$19,500,000
Reliability Upgrade	1a	879	CT	Bangor Hydro-Electric Company	TBD	Dynamic Swing Reorder Project	Upgrade 7 of 8 Dynamic Swing Recorders in New England to comply with NERC, NPCC, and ISO-NE Standards.	Planned	\$420,000	\$420,000
Reliability Upgrade	1a	1050	CT	United Illuminating Company	12/2011		Devon Tie 115kV Switching Station BPS Compliance	Under Construction	\$4,000,000	\$4,000,000
Reliability Upgrade	1b	1031	ME	Bangor Hydro-Electric Company	12/2013	Maine Power Reliability Program (MPRP)	Rebel Hill Switching Station	Concept	TBD	TBD
Reliability Upgrade	1b	1154	ME	Bangor Hydro-Electric Company	12/2013	Maine Power Reliability Program (MPRP)	Rerate Line 66	Concept	TBD	TBD
Reliability Upgrade	1b	1155	ME	Bangor Hydro-Electric Company	12/2014	Maine Power Reliability Program (MPRP)	Capacitor Bank Addition (10 MVAR at Trenton 34.5kV and Epping)	Concept	TBD	TBD
Reliability Upgrade	1b	1133	ME	Central Maine Power Company	12/2011	CMP-LSP Leeds Substation	Add 115/34kV Leeds Substation and new 34kV line from Leeds to Turner	Proposed	\$300,000	\$300,000
Reliability Upgrade	1b	1279	ME	Central Maine Power Company	12/2014		New 345/115kV Autotransformer and 115kV switchyard at Raven Farm substation consisting of a four-bay breaker and a half configuration of eleven (11) breakers	Proposed	\$26,126,000	\$26,126,000
Reliability Upgrade	1b	1280	ME	Central Maine Power Company	12/2014		New 115kV line section 244 and upgraded line section 80 between Coopers Mill and Highland Substations	Proposed	\$62,735,000	\$62,735,000
Reliability Upgrade	1b	1183	NH	Northeast Utilities	2014	LSP New Peaselee Substation and 115/34.5KV transformer	New 115kV Peaselee Substation and transmission line work	Proposed	\$12,400,000	\$12,400,000
Reliability Upgrade	1b	1220	NH	Northeast Utilities	12/2015	Greater Boston - North	Install a new 345kV circuit between Scobie and Pelham NH (this is NU's portion of the new Scobie-Tewksbury circuit)	Proposed	\$40,100,000	\$40,100,000
Reliability Upgrade	1b	1269	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Amherst Substation - New 345kV breaker and three 25MVar Capacitor Banks	Proposed	\$19,600,000	\$19,600,000
Reliability Upgrade	1b	1270	NH	Northeast Utilities	TBD	Western New Hampshire Solution	New 115kV line from Fitzwilliams to Monadnock	Proposed	\$10,500,000	\$10,500,000
Reliability Upgrade	1b	1271	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Upgrade the Keene to Monadnock (T198) 115kV line	Proposed	\$11,900,000	\$11,900,000

**October 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Projected In-Service Month/Year	Major Project	Project	Oct-11 Status	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	1272	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Weare Substation - Add two 13.3 MVar 115V capacitors	Proposed	\$3,600,000	\$3,600,000
Reliability Upgrade	1b	1273	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Rebuild A152 115kV line	Proposed	\$22,500,000	\$22,500,000
Reliability Upgrade	1b	1274	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Rebuild N186 115kV line	Proposed	\$2,300,000	\$2,300,000
Reliability Upgrade	1b	1275	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Upgrade the 381 345kV line	Proposed	\$4,200,000	\$4,200,000
Reliability Upgrade	1b	1276	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Littleton Substation - Add a second 230/115kV autotransformer and associated 115kV substation work	Proposed	\$16,700,000	\$16,700,000
Reliability Upgrade	1b	1277	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Webster Substation - Add four 26.6 MVar 115kV capacitors	Proposed	\$11,900,000	\$11,900,000
Reliability Upgrade	1b	1278	NH	Northeast Utilities	TBD	Western New Hampshire Solution	Saco Valley Substation - Add two 25 MVar dynamic Var devices	Proposed	\$15,800,000	\$15,800,000
Reliability Upgrade	1b	1263	NH	National Grid, USA	TBD	Northern New Hampshire Solution	New C-203 230kV line tap to Littleton NH Substation associated with 2nd 230/115kV auto project	Proposed	\$1,100,000	\$1,100,000
Reliability Upgrade	1b	325	VT	Vermont Electric Power Company	TBD	VELCO LSP - Chelsea Substation	Replace (2) SCADA controlled motorized disconnect switches with 115 kV circuit breakers at the existing Chelsea substation to maintain adequate supply to the load.	Concept	TBD	TBD
Reliability Upgrade	1b	324	VT	Vermont Electric Power Company	TBD		Granite to Middlesex 230-kV line with necessary substation upgrades to mitigate several reliability concerns, including those related to the potential Highgate contract termination.	Concept	TBD	TBD
Reliability Upgrade	1b	139	VT	Vermont Electric Power Company	TBD	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 2: synchronous condensers expanded to +200/- 100 MVAR and two 25 MVAR capacitor banks.	Concept	TBD	TBD
Reliability Upgrade	1b	1250	VT	Vermont Electric Power Company	2016	VELCO LSP - West Rutland Substation	Installation of a 115/46kV transformer at West Rutland between breakers K30 and K34	Concept	TBD	TBD
Reliability Upgrade	1b	843	MA	NSTAR Electric Company	06/2012	Boston Area 115 kV Enhancements	Install (2) new 115 kV breakers at Trapelo Road.	Proposed	\$3,450,000	\$3,450,000
Reliability Upgrade	1b	593	MA	NSTAR Electric Company	2013	Mid Cape Reliability Project	Add a new 115 kV line from Bourne and Barnstable/Falmouth/equivalent	Concept	TBD	TBD
Reliability Upgrade	1b	965	MA	NSTAR Electric Company	06/2014	Greater Boston - South	Add third 115kV line from W. Walpole to Holbrook	Proposed	\$19,000,000	\$19,000,000
Reliability Upgrade	1b	1175	MA	NSTAR Electric Company	12/2013	Greater Boston - South	Upgrade the 115kV line 201-501 (Medway-Depot St.) and the 201-502 (Beaver Pond - Depot Street Tap) to a higher capacity line	Proposed	\$3,700,000	\$3,700,000
Reliability Upgrade	1b	1214	MA	National Grid, USA	12/2015	Greater Boston - South	Line Reconductoring of the C-129 Beaver Pond - Depot St. Tap) and D-130 (Depot St. Tap - Medway) 115kV lines	Proposed	\$500,000	\$500,000
Reliability Upgrade	1b	1177	MA	NSTAR Electric Company	12/2015	Greater Boston - North	Reconductor 211-503/504 from North Woburn Tap to Reading	Concept	TBD	TBD
Reliability Upgrade	1b	1178	MA	NSTAR Electric Company	12/2015	Greater Boston - North	Install 115kV Capacitor Bank at North Woburn	Concept	TBD	TBD
Reliability Upgrade	1b	1179	MA	NSTAR Electric Company	12/2015	Greater Boston - North	Install 2nd 345kV circuit between Bellerica/Burlington town line to Tewksbury	Proposed	\$33,000,000	\$33,000,000
Reliability Upgrade	1b	1190	MA	NSTAR Electric Company	12/2015	Greater Boston - North	Install a second 345/115kV Auto Transformer at Woburn	Concept	TBD	TBD
Reliability Upgrade	1b	1200	MA	NSTAR Electric Company	TBD	Greater Boston - North	Add a new 345kV UG circuit between Woburn and North Cambridge	Proposed	\$52,000,000	\$52,000,000
Reliability Upgrade	1b	1211	MA	National Grid, USA	12/2015	Greater Boston - North	Install 2nd 345kV circuit between Tewksbury - Billerica/Burlington Town Line (NSTAR Border)	Proposed	\$32,700,000	\$32,700,000
Reliability Upgrade	1b	1212	MA	National Grid, USA	12/2015	Greater Boston - North	115kV Line Reconductoring of M-139/N-140 Tewksbury-Pinehurst (6.1 miles each)	Proposed	\$11,600,000	\$11,600,000
Reliability Upgrade	1b	1213	MA	National Grid, USA	12/2015	Greater Boston - North	Install new 345kV circuit between NH/MA border and Tewksbury (this is NGRID's portion of the new Scobie-Tewksbury circuit)	Proposed	\$23,370,000	\$23,370,000
Reliability Upgrade	1b	1215	MA	National Grid, USA	12/2015	Greater Boston - North	New 115kV line between Wakefield - Everett	Proposed	\$20,000,000	\$20,000,000
Reliability Upgrade	1b	1254	MA	National Grid, USA	12/2015	Greater Boston - North	Substation work at Revere Substation to increase ratings on the 128-515P/168 line between Chelsea and Revere	Proposed	\$1,000,000	\$1,000,000
Reliability Upgrade	1b	1260	MA	National Grid, USA	12/2015	Greater Boston - North	115kV Line reconductoring of the F-158N/S Wakefield Jct - Everett (7.36 miles)	Proposed	\$3,500,000	\$3,500,000
Reliability Upgrade	1b	1261	MA	National Grid, USA	12/2015	Greater Boston - North	115kV Line reconductoring of the S-145T-146 from North Reading Tap - Wakefield Jct (5.1 miles each)	Proposed	\$10,800,000	\$10,800,000

**October 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	State	Primary Equipment Owner	Projected In-Service Month/Year	Major Project	Project	Oct-11 Status	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	1262	MA	National Grid, USA	12/2015	Greater Boston - North	115kV Line reconductoring of the Y-151 from Tewksbury Junction - Tewksbury Substation (1.6 miles)	Proposed	\$1,250,000	\$1,250,000
Reliability Upgrade	1b	970	MA	NSTAR Electric Company	TBD	Greater Boston - Central	Add a new 345 kV line from Lexington to Waltham.	Concept	TBD	TBD
Reliability Upgrade	1b	971	MA	NSTAR Electric Company	TBD	Greater Boston - Central	Add a new 345/230 kV auto at Waltham and 230 kV switching facilities.	Concept	TBD	TBD
Reliability Upgrade	1b	1176	MA	NSTAR Electric Company	TBD	Greater Boston - Central	Install an oil circulation pipe and heat exchangers at K Street and Chatham Street sections of 250-516/517 circuits	Concept	TBD	TBD
Reliability Upgrade	1b	1189	MA	NSTAR Electric Company	12/2015	Greater Boston - Central	Install 3rd 115kV Circuit between Waltham and Brighton	Concept	TBD	TBD
Reliability Upgrade	1b	1198	MA	NSTAR Electric Company	TBD	Greater Boston - Central	Add a second 115kV line from Woburn to Burlington	Concept	TBD	TBD
Reliability Upgrade	1b	1199	MA	NSTAR Electric Company	TBD	Greater Boston - Central	Install a new 230/115kV auto transformer at Sudbury or equivalent	Concept	TBD	TBD
Reliability Upgrade	1b	1208	MA	National Grid, USA	12/2014	Pittsfield / Greenfield Project	Separation and reconductoring of Cabot Taps (A-127 and Y-177 115kV lines)	Proposed	\$7,400,000	\$7,400,000
Reliability Upgrade	1b	1209	MA	National Grid, USA	12/2014	Pittsfield / Greenfield Project	Reconductoring of A-127 between Erving and Cabot Tap with 1590 ACSS	Proposed	\$12,000,000	\$12,000,000
Reliability Upgrade	1b	1210	MA	National Grid, USA	12/2014	Pittsfield / Greenfield Project	Harriman 115kV breaker upgrades	Proposed	\$1,100,000	\$1,100,000
Reliability Upgrade	1b	1221	MA	Northeast Utilities	11/2014	Pittsfield / Greenfield Project	Modify Northfield Mountain 16R substation and install a 345/115kV autotransformer	Proposed	\$108,500,000	\$108,500,000
Reliability Upgrade	1b	1222	MA	Northeast Utilities	11/2014	Pittsfield / Greenfield Project	Build a new 115kV three breaker Switching Station (Erving) ring bus	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1223	MA	Northeast Utilities	11/2014	Pittsfield / Greenfield Project	Build a new 115kV line from Northfield Mountain to the new Erving Switching Station	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1224	MA	Northeast Utilities	11/2014	Pittsfield / Greenfield Project	Install 115kV 14.4 MVAR capacitor banks at Cumberland, Podick and Amherst Substations	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1225	MA	Northeast Utilities	11/2014	Pittsfield / Greenfield Project	Rebuild the Cumberland to Montague 1361 115kV line and terminal work at Cumberland and Montague	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1226	MA	Northeast Utilities	11/2014	Pittsfield / Greenfield Project	Reconductor the Woodland to Pleasant 1371 115-kV line and terminal work at Woodland substation.	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	956	MA	National Grid, USA	01/2015	Central/Western Massachusetts Upgrades	Carpenter Hill - replace one 345 kV, 448 MVA autotransformer and upgrade thermal rating of bus to at least 580 MVA.	Proposed	\$7,021,534	\$7,021,534
Reliability Upgrade	1b	1252	MA	National Grid, USA	12/2015	NEEWS (Interstate Reliability Project)	Re-conductor 345kV 328 line (West Farnum-Sherman Rd)	Proposed	\$36,500,000	\$36,500,000
Reliability Upgrade	1b	1191	MA	NSTAR Electric Company	12/2012		Rebuild Section of Line 322 (Canal-Carver)	Concept	\$12,200,000	\$12,200,000
Reliability Upgrade	1b	1181	MA	NSTAR Electric Company	12/2013		Rebuild the High Hill 115kV Substation to a Breaker and a half design	Concept	TBD	TBD
Reliability Upgrade	1b	1204	MA	NSTAR Electric Company	06/2012		Rebuild the Mashpee Substation to a Ring Bus and install an overvoltage trip relay on the Mashpee 115kV Capacitor Bank	Concept	TBD	TBD
Reliability Upgrade	1b	1205	MA	NSTAR Electric Company	12/2013	Mid-Cape Reliability Project	Separate 120 (Canal-Barnstable) /122 (Oak St-Barnstable) DCT	Concept	TBD	TBD
Reliability Upgrade	1b	1206	MA	NSTAR Electric Company	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system resoration	Concept	TBD	TBD
Reliability Upgrade	1b	1247	MA	NSTAR Electric Company	TBD		Rebuild the Acushnet 115kV Substation	Concept	TBD	TBD
Reliability Upgrade	1b	1248	MA	NSTAR Electric Company	12/2014		Rebuild the Kingston Substation to a breaker and a half scheme	Concept	TBD	TBD
Reliability Upgrade	1b	1249	MA	NSTAR Electric Company	12/2013		Rebuild the Wareham Substation to a breaker and a half scheme	Concept	TBD	TBD
Reliability Upgrade	1b	1207	MA	NSTAR Electric Company	2012	Belmont Transmission Interconnection	Build a new 115kV Substation for the Belmont Transmission Interconnection	Concept	TBD	TBD
Reliability Upgrade	1b	1255	MA	CELD (Chicopee Electric Light Department)	12/2013	CELD 115/13.8kV Substation	115/13.8kV substation on Memorial Dr. with two transformers and twelve feeders looped into 1904 (1723) line between Piper and Fairmont substations	Concept	TBD	TBD
Reliability Upgrade	1b	1233	RI	National Grid, USA	12/2015	NEEWS (Interstate Reliability Project)	New Sherman Road 345kV AIS Substation	Proposed	\$36,600,000	\$36,600,000
Reliability Upgrade	1b	1234	RI	National Grid, USA	12/2015	NEEWS (Interstate Reliability Project)	Install a 115kV redundant breaker in series with breaker #1713 at West Farnum Substation and upgrade to current BPS standards	Concept	TBD	TBD
Reliability Upgrade	1b	1084	CT	Northeast Utilities	TBD	Greater Hartford Central Connecticut Project	Loop the Millstone - Manchester (310) 345 kV line into the Card substation <sup>(2)</sup>	Concept	TBD	TBD
Reliability Upgrade	1b	1086	CT	Northeast Utilities	TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to 115kV line 1704, SW Hartford to South Meadow <sup>(2)</sup>	Concept	TBD	TBD
Reliability Upgrade	1b	1087	CT	Northeast Utilities	TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to line 115kV 1722 SW Hartford NW Hartford <sup>(2)</sup>	Concept	TBD	TBD

**October 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	State	Primary Equipment Owner		Projected In-Service Month/Year	Major Project	Project	Oct-11 Status	Oct-11 Estimated PTF Costs	
Reliability Upgrade	1b	1088	CT	Northeast Utilities		TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to 115kV line 1786, East Hartford to Riverside to South Meadow <sup>(2)</sup>	Concept	TBD	TBD
Reliability Upgrade	1b	975	CT	United Illuminating Company		06/2015		Pequonnock 115 kV Fault Duty Mitigation.	Concept	\$105,000,000	\$105,000,000
Reliability Upgrade	1b	699	CT	United Illuminating Company		12/2014		Naugatuck Valley 115 kV reliability improvement.	Concept	\$11,100,000	\$11,100,000
Reliability Upgrade	1b	801	CT	Northeast Utilities		TBD		Build Manchester to East Hartford 115-kV cable with a series reactor.	Concept	TBD	TBD
Reliability Upgrade	1b	85	CT	Northeast Utilities		TBD		Upgrade the South Meadow Substation to Bulk Power System standards (BPS).	Concept	TBD	TBD
Reliability Upgrade	1b	1228	CT	Northeast Utilities		TBD	Stamford Area	Additional circuit into the Stamford Area (Glenbrook-South End)	Concept	TBD	TBD
Reliability Upgrade	1b	1229	CT	Northeast Utilities		TBD		Replace 115kV 1990 (Frost Bridge-Stevenson) lattice structure	Concept	TBD	TBD
Reliability Upgrade	1b	1230	CT	Northeast Utilities		TBD	LSP - Greater Hartford Area	115kV breaker addition at Northeast Simsbury Substation	Concept	TBD	TBD
Reliability Upgrade	1b	1242	CT	CMEEC		10/2012	SNEW 115kV substation	SNEW 115/13.8kV substation with two transformers and a 115kV circuit breaker looped into the 1890 line (between Norwalk Hbr - Ely Ave)	Proposed	\$2,000,000	\$2,000,000
Reliability Upgrade	1b	1243	CT	CMEEC		10/2013	TTD's Fitch St 115kV Substation	TTD 115/27kV substation with two transformers and a 115kV circuit breaker looped into 1416 line (between Compo and Darien substations)	Concept	TBD	TBD
Reliability Upgrade	1b	1244	CT	CMEEC		10/2011	115kV Circuit Breaker Installation	Install 115kV Bus Tie Circuit Breaker at Stock House Rd Substation	Proposed	\$750,000	\$750,000
Reliability Upgrade	1b	1246	CT	United Illuminating Company		09/2013	8300 Line Reconfiguration Project	Reconfiguration of 115kV (8300) line from Mill River to Quinipiac	Proposed	\$17,400,000	\$17,400,000
<b>IN-SERVICE PROJECTS</b>											<b>\$5,460,853,715</b>
Reliability Upgrade	1a	582	CT	Northeast Utilities	2011	06/2011		Separate 310(Manchester-Millstone) and 368 (Manchester-Card) 345-kV lines and create 368/1767 DCT	In-service	\$11,350,000	\$11,350,000
Reliability Upgrade	1a	1147	CT	Northeast Utilities	2011	07/2011		Waterside Substation - install a three-breaker 115kV ring bus	In-service	\$4,616,000	\$4,616,000
Reliability Upgrade	1a	1151	CT	United Illuminating Company	2011	06/2011		West River 115kV Switching Station Fault Duty Mitigation	In-service	\$2,900,000	\$2,900,000
Reliability Upgrade	1a	799	RI	National Grid, USA	2011	07/2011	NEEWS (Rhode Island Reliability Project)	G-185N (Kent County-Drumrock) 115 kV reconductor.	In-service	\$4,500,000	\$4,500,000
Reliability Upgrade	1a	1264	RI	National Grid, USA	2011	06/2011	NEEWS (Rhode Island Reliability Project)	Installation of third 345/115kV autotransformer at Kent County.	In-service	Part of RSP 1105	Part of RSP 1105
Reliability Upgrade	1a	924	MA	National Grid, USA	2011	07/2011	Central/Western Massachusetts Upgrades	Carpenter Hill - Replace five 115 kV-25 kA breakers with 115 kV-50 kA breakers and upgrade disconnect switch (175-3) to 2000A.	In-service	\$4,200,000	\$4,200,000
Reliability Upgrade	1a	1137	NH	Northeast Utilities	2011	04/2011	2nd Deerfield 345/115kV Autotransformer Project	Replace 5-115kV breakers and add 1-115kV breaker at Deerfield Substation	In-service	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1143	NH	Northeast Utilities	2011	06/2011		Littleton 115kV breaker addition and reconfiguration	In-service	\$7,011,000	\$7,011,000
Reliability Upgrade	1a	624	ME	Central Maine Power Company	2011	07/2011	Rumford-Woodstock-Kimball Road Corridor Project	Install 115 kV line (Rumford Industrial Park - Rumford)	In-service	Part of project 625	Part of project 625
											<b>\$34,577,000</b>



## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	Primary Equipment Owner	Year	Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system restoration	Concept	TBD	TBD
Reliability Upgrade	1a	1171	Vermont Electric Power Company	2011	12/2011	West Rutland Capacitor Rebuild	Install two 115kV 25 MVAR capacitor banks at West Rutland to address low voltage concerns	Planned	\$2,400,000	\$2,400,000
Reliability Upgrade	1a	798	National Grid, USA	2011	12/2011	NEEWS (Rhode Island Reliability Project)	Upgrade of 115kV terminal equipment at Franklin Square.	Planned	\$600,000	\$600,000
Reliability Upgrade	1b	1133	Central Maine Power Company	2011	12/2011	CMP-LSP Leeds Substation	Add 115/34kV Leeds Substation and new 34kV line from Leeds to Turner	Proposed	\$300,000	\$300,000
Reliability Upgrade	1b	1244	CMEEC	2011	10/2011	115kV Circuit Breaker Installation	Install 115kV Bus Tie Circuit Breaker at Stock House Rd Substation	Proposed	\$750,000	\$750,000
Reliability Upgrade	1a	1116	Bangor Hydro-Electric Company	2011	12/2011	Maine Power Reliability Program (MPRP)	L 64 Rebuild	Under Construction	\$37,626,000	\$37,626,000
Reliability Upgrade	1a	1156	Bangor Hydro-Electric Company	2011	12/2011	Maine Power Reliability Program (MPRP)	Orrington Shunt Cap Reconfiguration	Under Construction	\$2,260,262	\$2,260,262
Reliability Upgrade	1a	1131	Central Maine Power Company	2011	11/2011	CMP-LSP Bowman St. Substation	Add 115/34kV transformer	Under Construction	\$600,000	\$600,000
Reliability Upgrade	1a	1219	Northeast Utilities	2011	12/2011		Install 115kV two 13.3 MVAR capacitor banks at Oak Hill substation	Under Construction	\$4,000,000	\$4,000,000
Reliability Upgrade	1a	277	Northeast Utilities	2011	11/2011	2nd Deerfield 345/115kV Autotransformer Project	Add 2nd 345/115 kV autotransformer and 3-345kV breakers at Deerfield substation.	Under Construction	\$52,000,000	\$52,000,000
Reliability Upgrade	1a	1140	Northeast Utilities	2011	10/2011	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV C129 Line	Under Construction	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1165	NSTAR Electric Company	2011	12/2011	Mystic Breaker Additions Project	Move Transformer 110B Connection at Mystic	Under Construction	\$2,600,000	\$2,600,000
Reliability Upgrade	1a	1076	Northeast Utilities	2011	12/2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1311) 115kV line	Under Construction	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	1109	National Grid, USA	2011	12/2011	NEEWS (Rhode Island Reliability Project)	South Wrentham 115kv terminal equipment upgrades	Under Construction	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	790	National Grid, USA	2011	12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Berry Street 345/115 kV substation.	Under Construction	\$52,000,000	\$52,000,000
Reliability Upgrade	1a	1098	National Grid, USA	2011	12/2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	345/115kV line interconnections at Berry Street	Under Construction	\$22,000,000	\$22,000,000
Reliability Upgrade	1a	1266	Northeast Utilities	2011	12/2011		115kV Pleasant to Blandford (portion of 1421) Line structure replacement	Under Construction	\$9,960,000	\$9,960,000
Reliability Upgrade	1a	1267	Northeast Utilities	2011	12/2011		115kV Blandford to Southwick (portion of 1512) Line structure replacement	Under Construction	\$9,600,000	\$9,600,000
Reliability Upgrade	1a	301	NSTAR Electric Company	2011	12/2011	Greater Boston - Central	Reconductor 115-kV circuits 320-507 and 320-508. (Lexington - Waltham)	Under Construction	\$9,600,000	\$9,600,000
Reliability Upgrade	1a	1066	NSTAR Electric Company	2011	12/2011	NPCC BPS Compliance	Needham Station	Under Construction	\$8,000,000	\$8,000,000
Reliability Upgrade	1a	484	National Grid, USA	2011	11/2011	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Add (1) new 115 kV breaker at Woonsocket.	Under Construction	\$580,000	\$580,000
Reliability Upgrade	1a	1056	Northeast Utilities	2011	12/2011	LSP - Sherwood Substation	Sherwood Substation - add a 115/13.8-kV substation with two transformers and a 115-kV circuit breaker.	Under Construction	\$10,969,000	\$10,969,000
Reliability Upgrade	1a	1050	United Illuminating Company	2011	12/2011		Devon Tie 115kV Switching Station BPS Compliance	Under Construction	\$4,000,000	\$4,000,000
Reliability Upgrade	1b	1191	NSTAR Electric Company	2012	12/2012		Rebuild Section of Line 322 (Canal-Carver)	Concept	\$12,200,000	\$12,200,000
Reliability Upgrade	1b	1204	NSTAR Electric Company	2012	06/2012		Rebuild the Mashpee Substation to a Ring Bus and install an overvoltage trip relay on the Mashpee 115kV Capacitor Bank	Concept	TBD	TBD
Reliability Upgrade	1b	1207	NSTAR Electric Company	2012	2012	Belmont Transmission Interconnection	Build a new 115kV Substation for the Belmont Transmission Interconnection	Concept	TBD	TBD
Reliability Upgrade	1a	1129	Central Maine Power Company	2012	05/2012		New 115kV line between Wyman Hydro and Rice Rips Tap, parallel to exiting Section 83. Install a 115kV circuit breaker at Wyman Hydro termination	Planned	\$32,800,000	\$32,800,000
Reliability Upgrade	1a	1135	Central Maine Power Company	2012	02/2012	CMP-Athens Substation LSP	Add two 115kV circuit breakers on Section 66; and 115/12kV transformer	Planned	\$1,500,000	\$1,500,000

**1-2011 Concept**  
**2-2011 Planned**  
**2-2011 Proposed**  
**18-2011 UnderConstruct**



**November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	Primary Equipment Owner		Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system resoration	Concept	TBD	TBD
Reliability Upgrade	1a	1184	Central Maine Power Company	2012	05/2012	Starks Switching Station	Add 4-115kV circuit breakers in a breaker-and-a-half configuration on Section 63 and 2-18 MVar cap banks at a new Starks Switching Station	Planned	\$9,750,000	\$9,750,000
Reliability Upgrade	1a	1251	Central Maine Power Company	2012	12/2012	Lakewood Substation Expansion	Sectionalize Section 241 by adding four 115kV circuit breakers at Lakewood Substation and install a second 115/34.5 kV transformer	Planned	\$13,700,000	\$13,700,000
Reliability Upgrade	1a	1172	Vermont Electric Power Company	2012	06/2012	Vermont Shunt Reactors	Install 345kV 60 MVar shunt reactors (two at Coolidge and one at New Haven and relocate the New Haven reactor to Vernon) to address high voltage concerns	Planned	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	318	Vermont Electric Power Company	2012	12/2012	Georgia Substation Rebuild	Rebuild the existing Georgia substation 115 kV bus into a ring bus to address reliability problems due to breaker failure contingencies	Planned	\$16,000,000	\$16,000,000

## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	Primary Equipment Owner		Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system restoration	Concept	TBD	TBD
Reliability Upgrade	1a	1169	Vermont Electric Power Company	2012	12/2012	Ascutney Substation Rebuild	Rebuild the existing Ascutney substation 115kV bus into a ring bus, to address reliability problems due to breaker failure contingencies	Planned	\$14,500,000	\$14,500,000
Reliability Upgrade	1a	1194	Vermont Electric Power Company	2012	12/2012	LSP Jay Substation	Construct a new 4-breaker ring substation at Jay with two 115/46kV transformers	Planned	\$6,500,000	\$6,500,000
Reliability Upgrade	1a	921	National Grid, USA	2012	12/2012	Auburn Area Transmission System Upgrades	Bridgewater substation - Upgrade Bus work and convert to BPS substation.	Planned	\$40,000,000	\$40,000,000
Reliability Upgrade	1a	59	National Grid, USA	2012	12/2012	Auburn Reliability Transmission System Upgrades	G18, F19 line terminals 115kV upgrades at Bridgewater sub	Planned	Part of RSP 921	Part of RSP 921
Reliability Upgrade	1a	840	NSTAR Electric Company	2012	12/2012	Merrimack Valley/North Shore Reliability Project	Upgrade the 115 kV line (Line 423-515) from Mystic-Everett by adding a new parallel cable to the existing 115 kV cable. (NSTAR portion only)	Planned	\$5,900,000	\$5,900,000
Reliability Upgrade	1a	776	National Grid, USA	2012	11/2012	Merrimack Valley/North Shore Reliability Project	Re-conductor O-167 (NGRID portion of Mystic - Everett) 115 kV line.	Planned	\$3,125,000	\$3,125,000
Reliability Upgrade	1a	1068	NSTAR Electric Company	2012	12/2012	Long Term Lower SEMA Upgrades	connect to existing #120 line and install a 345KV - 115KV auto-transformer at new substation about 3 miles west of the Barnstable Substation Loop Line #115 in and out of the new Substation. Create a new line position at the Bourne Substation and connect the Bourne-Canal section of Line	Planned	\$106,500,000	\$106,500,000
Reliability Upgrade	1a	592	NSTAR Electric Company	2012	12/2012	Long Term Lower SEMA Upgrades	Separate existing 345kV double circuit Cape Cod Canal crossing. The lines being separated are 322 (Canal-Carver) and 342 (Canal-Pilgrim-Auburn)	Planned	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA
Reliability Upgrade	1a	1118	National Grid, USA	2012	12/2012	Long Term Lower SEMA Upgrades	Upgrade 115kV line D21 (Bellrock-High Hill)	Planned	\$6,000,000	\$6,000,000
Reliability Upgrade	1a	942	National Grid, USA	2012	12/2012	Central/Western Massachusetts Upgrades	Webster St. - add two 115 kV circuit breakers.	Planned	\$3,650,000	\$3,650,000
Reliability Upgrade	1a	925	National Grid, USA	2012	11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - supply 13 kV from T3 and T4.	Planned	Part of RSP 926	Part of RSP 926
Reliability Upgrade	1a	926	National Grid, USA	2012	11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - replace T8 autotransformer with 230 kV 333 mVA, upgrade breaker and bus to 115 kV. Install high side 230 kV breaker.	Planned	\$14,700,000	\$14,700,000
Reliability Upgrade	1a	932	National Grid, USA	2012	11/2012	Central/Western Massachusetts Upgrades	Pratts Jct. - increase thermal rating of I-135 and J-136 buswork.	Planned	Part of RSP 926	Part of RSP 926
Reliability Upgrade	1a	943	National Grid, USA	2012	12/2012	Central/Western Massachusetts Upgrades	Millbury - new 115 kV breaker position for new line to Twr 510.	Planned	\$4,100,000	\$4,100,000
Reliability Upgrade	1a	955	National Grid, USA	2012	10/2012	Central/Western Massachusetts Upgrades	Reconductor (W175) W Charlton - Little Rest - Palmer w/1590 ACSR.	Planned	\$13,800,000	\$13,800,000
Reliability Upgrade	1a	1217	Northeast Utilities	2012	12/2012	Central/Western Massachusetts Upgrades	Substation work at Ludlow (MA) and Scitico (CT) associated with the new Hampden (MA) substation project (Ngrid)	Planned	\$3,140,000	\$3,140,000
Reliability Upgrade	1a	1268	Northeast Utilities	2012	12/2012		345kV Northfield Mountain to Berkshire (portion of 312) line structure replacements	Planned	\$7,900,000	\$7,900,000
Reliability Upgrade	1a	673	National Grid, USA	2012	12/2012	Worcester Area Reinforcements	Add new 115kV bay to separate the M-165 & E-157 terminal at Millbury #2 Substation	Planned	\$2,200,000	\$2,200,000
Reliability Upgrade	1a	676	National Grid, USA	2012	12/2012	Worcester Area Reinforcements	New Bloomingdale to Vernon Hill 115 kV (UG Cable-3.6 mi.) new 115kV breaker at Bloomingdale & Vernon Hill	Planned	\$30,000,000	\$30,000,000
Reliability Upgrade	1a	1201	NSTAR Electric Company	2012	12/2012	Greater Boston - North	115kV line Reconductoring of the P168/128-518 Line between Chelsea and Revere (NSTAR Portion of the line)	Planned	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	1168	Holyoke Gas & Electric	2012	12/2012	North Canal 44P	Loop the 1525 (Holyoke Fairmont South 115kV) line into the new North Canal 44P	Planned	\$4,100,000	\$4,100,000
Reliability Upgrade	1a	1095	National Grid, USA	2012	12/2012	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV West Farnum Substation	Planned	\$73,800,000	\$73,800,000
Reliability Upgrade	1a	1106	National Grid, USA	2012	06/2012	NEEWS (Rhode Island Reliability Project)	Kent County Substation Upgrades related to third 345/115 kV Autotransformer.	Planned	\$26,000,000	\$26,000,000
Reliability Upgrade	1a	1096	National Grid, USA	2012	06/2012	NEEWS (Rhode Island Reliability Project)	Drumrock substation: Terminal equipment upgrades, Protection modifications and upgrades to meet BPS standards	Planned	\$12,000,000	\$12,000,000
Reliability Upgrade	1a	1099	National Grid, USA	2012	06/2012	NEEWS (Rhode Island Reliability Project)	Hartford Ave 115kV terminal equipment upgrades	Planned	\$6,000,000	\$6,000,000
Reliability Upgrade	1a	1227	Northeast Utilities	2012	2012	LSP - Stamford Area	Add 4th transformer and build a five breaker ring bus at South End Substation	Planned	\$6,400,000	\$6,400,000
Reliability Upgrade	1b	843	NSTAR Electric Company	2012	06/2012	Boston Area 115 kV Enhancements	Install (2) new 115 kV breakers at Trapelo Road.	Proposed	\$3,450,000	\$3,450,000
Reliability Upgrade	1b	1242	CMEEC	2012	10/2012	SNEW 115kV substation	SNEW 115/13.8kV substation with two transformers and a 115kV circuit breaker looped into the 1890 line (between Norwalk Hbr - Ety Ave)	Proposed	\$2,000,000	\$2,000,000

**November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	Primary Equipment Owner		Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system restoration	Concept	TBD	TBD
Reliability Upgrade	1a	143	Bangor Hydro-Electric Company	2012	12/2012	Down East Reliability Improvement	Contract 115 kV from Trenton tap (part of Hancock Reliability Project) to new Tunk Lake Substation (2 new breakers) to Harrington Substation to Epping Substation (3 new breakers)	Under Construction	\$66,100,000	\$66,100,000
Reliability Upgrade	1a	1182	Northeast Utilities	2012	06/2012	LSP New Eagle Substation and 115/34.5KV transformer	New 115kV Eagle Substation connected to 115/34.5kV Thornton Substation	Under Construction	\$22,800,000	\$22,800,000
Reliability Upgrade	1a	934	National Grid, USA	2012	12/2012	Central/Western Massachusetts Upgrades	Reconductor #2 Tap from Tower 510 - Webster St. 115 kV circuit.	Under Construction	Part of RSP 935	Part of RSP 935
Reliability Upgrade	1a	935	National Grid, USA	2012	12/2012	Central/Western Massachusetts Upgrades	Reconductor from (A-127E/B-128E) Millbury - Tower 510 115 kV line.	Under Construction	\$10,200,000	\$10,200,000
Reliability Upgrade	1a	944	National Grid, USA	2012	03/2012	Central/Western Massachusetts Upgrades	Wachusett - install one 345 kV, 448 mVA transformer, one 345 kV breaker, and one 115 kV breaker.	Under Construction	\$15,700,000	\$15,700,000
Reliability Upgrade	1a	1216	Northeast Utilities	2012	04/2012		345kV Ludlow - Northfield (portion of 354) Line Structure replacements	Under Construction	\$25,100,000	\$25,100,000
Reliability Upgrade	1a	969	NSTAR Electric Company	2012	11/2012	Greater Boston - North	Add a new 115kV 36.7 MVAR capacitor bank at Chelsea.	Under Construction	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	1065	NSTAR Electric Company	2012	07/2012	NPCC BPS Compliance	Waltham Station	Under Construction	\$14,700,000	\$14,700,000
Reliability Upgrade	1a	1193	United Illuminating Company	2012	12/2012		North Haven 115kV Capacitor Bank TRV Mitigation Project	Under Construction	\$4,900,000	\$4,900,000
Reliability Upgrade	1a	1111	United Illuminating Company	2012	01/2012		Union Avenue 115/26.4 kV Substation	Under Construction	\$13,500,000	\$13,500,000
Reliability Upgrade	1a	976	United Illuminating Company	2012	05/2012		Grand Avenue 115 kV Switching Station Rebuild.	Under Construction	\$70,000,000	\$70,000,000
Reliability Upgrade	1a	1196	Bangor Hydro-Electric Company	2012	01/2012	SVC Filter Upgrade (Part of Keene Rd Auto-transformer ID 144)	Upgrade of filter bank at Chester SVC facility	Under Construction	\$3,500,000	\$3,500,000
Reliability Upgrade	1b	1031	Bangor Hydro-Electric Company	2013	12/2013	Maine Power Reliability Program (MPRP)	Rebel Hill Switching Station	Concept	TBD	TBD
Reliability Upgrade	1b	1154	Bangor Hydro-Electric Company	2013	12/2013	Maine Power Reliability Program (MPRP)	Rerate Line 66	Concept	TBD	TBD
Reliability Upgrade	1b	1155	Bangor Hydro-Electric Company	2013	12/2014	Maine Power Reliability Program (MPRP)	Capacitor Bank Addition (10 MVAR at Trenton 34.5kV and Epping)	Concept	TBD	TBD
Reliability Upgrade	1b	593	NSTAR Electric Company	2013	2013	Mid Cape Reliability Project	Add a new 115 kV line from Bourne and Barnstable/Falmouth/equivalent	Concept	TBD	TBD
Reliability Upgrade	1b	1181	NSTAR Electric Company	2013	12/2013		Rebuild the High Hill 115kV Substation to a Breaker and a half design	Concept	TBD	TBD
Reliability Upgrade	1b	1205	NSTAR Electric Company	2013	12/2013	Mid-Cape Reliability Project	Separate 120 (Canal-Barnstable) /122 (Oak St-Barnstable) DCT	Concept	TBD	TBD
Reliability Upgrade	1b	1249	NSTAR Electric Company	2013	12/2013		Rebuild the Wareham Substation to a breaker and a half scheme	Concept	TBD	TBD
Reliability Upgrade	1b	1255	CELD (Chicopee Electric Light Department)	2013	12/2013	CELD 115/13.8kV Substation	115/13.8kV substation on Memorial Dr. with two transformers and twelve feeders looped into 1904 (1723) line between Piper and Fairmont substations	Concept	TBD	TBD
Reliability Upgrade	1b	1243	CMEEC	2013	10/2013	TTD's Fitch St 115kV Substation	TTD 115/27kV substation with two transformers and a 115kV circuit breaker looped into 1416 line (between Compo and Darien substations)	Concept	TBD	TBD
Reliability Upgrade	1a	1197	Bangor Hydro-Electric Company	2013	12/2013	Keene Rd Autotransformer	Orrington 345kV Series Breaker Addition	Planned	\$1,761,250	\$1,761,250
Reliability Upgrade	1a	1026	Central Maine Power Company	2013	12/2013	Maine Power Reliability Program (MPRP)	New 345kV Line Construction associated with (Surowiec-Raven Farm, South Gorham-Maguire Road, Maguire Road-Elliott Switching Station) line work	Planned	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M	\$36,000,000
Reliability Upgrade	1a	1028	Central Maine Power Company	2013	12/2013	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV Line (Section 250, Maguire Rd-Three Rivers)	Planned	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M	Portion of CMP \$1.364 (billion) and portion of NU is \$36.0M
Reliability Upgrade	1a	1030	Central Maine Power Company	2013	11/2013	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Maguire Road)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	680	National Grid, USA	2013	06/2013		Rebuild Bellows Falls Substation and install 115 kV capacitor bank.	Planned	\$7,393,000	\$7,393,000
Reliability Upgrade	1a	674	National Grid, USA	2013	12/2013		Replace Comerford 230 kV breakers and add (1) 230 kV bus tie breaker.	Planned	\$19,460,000	\$19,460,000
Reliability Upgrade	1a	1170	Vermont Electric Power Company	2013	06/2013	Bennington Substation Rebuild	Rebuild the exiting Bennington substation 115kV bus into a ring bus to address reliability problems due to breaker failure contingencies	Planned	\$28,000,000	\$28,000,000
Reliability Upgrade	1a	1195	Vermont Electric Power Company	2013	03/2013	Highgate Refurbishment	Replace Highgate controls and cooling system	Planned	\$35,600,000	\$35,600,000
Reliability Upgrade	1a	929	National Grid, USA	2013	09/2013	Central/Western Massachusetts Upgrades	Searsburg - install in-line 69 kV breaker for operational flexibility.	Planned	\$2,500,000	\$2,500,000
Reliability Upgrade	1a	931	National Grid, USA	2013	01/2013	Central/Western Massachusetts Upgrades	Park St. - incremental cost of designing for 115 kV instead of 69 kV.	Planned	\$531,481	\$531,481
Reliability Upgrade	1a	928	National Grid, USA	2013	06/2013	Central/Western Massachusetts Upgrades	Millbury -upgrade terminal equipment for O-141, P-142, B-128, A-127 circuit breakers.	Planned	\$3,400,000	\$3,400,000

**3-2012 Concept  
32-2012 Planned  
2 -2012 Proposed  
12 -2012 UnderConstruct**

## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	Primary Equipment Owner	Year	Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system restoration	Concept	TBD	TBD
Reliability Upgrade	1a	938	National Grid, USA	2013	05/2013	Central/Western Massachusetts Upgrades	Deerfield - install a new 115/69kV autotransformer and a 69kV breaker and disconnect switches.	Planned	\$5,430,000	\$5,430,000
Reliability Upgrade	1a	941	National Grid, USA	2013	8/2013	Central/Western Massachusetts Upgrades	Install new Z126 Millbury - Tower #510 115 kV line.	Planned	\$13,748,000	\$13,748,000
Reliability Upgrade	1a	687	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Fairmont 16H Substation Expansion	Planned	\$718,000,000	\$718,000,000
Reliability Upgrade	1a	826	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	South Agawam 42E Substation Reconfigure	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	828	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Breckwood 115kV circuit 1322 Reactor Bypass and Open Breckwood Substation 1T breaker and maintain breaker in the normally open position	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1075	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Add 2nd high speed protection scheme to Agawam to Elm (1007) 115kV line if the Russell Biomass Plant, queue position #135 is constructed	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1078	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Pineshed (1327) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1079	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Mt. Tom (1428) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1080	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Replace 4T and 6T 115kV circuit breaker to Shawinigan substation	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1202	NSTAR Electric Company	2013	06/2013	NEEWS (Ancillary Interstate Reliability Project)	Rebuild 1.2 mile length of line 336 with 2-900 ACSS conductor and replace 5, 345kV 2000 amp disconnect switches with 3000 amp switches at W. Medway station	Planned	\$1,700,000	\$1,700,000
Reliability Upgrade	1a	1256	Unitil	2013	06/2013	Flagg Pond Upgrades	At Flagg Pond Substation upgrade terminal equipment on the I-135N, I-135S, J-136N and J-136S 115kV lines and Zone 3 relay upgrades for the J-136N 115kV line.	Planned	\$2,750,000	\$2,750,000
Reliability Upgrade	1a	795	National Grid, USA	2013	04/2013	NEEWS (Rhode Island Reliability Project)	New Kent County to West Farnum 345kV (359) line.	Planned	\$69,000,000	\$69,000,000
Reliability Upgrade	1a	1097	National Grid, USA	2013	01/2013	NEEWS (Rhode Island Reliability Project)	Relocate and Rebuild 115kV lines in the same ROW associated with new 345kV line from W. Farnum to Kent County including S-175, T172N and T-172S with associated terminal equipment upgrade.	Planned	\$129,800,000	\$129,800,000
Reliability Upgrade	1a	1241	National Grid, USA	2013	06/2013		Re-conductor G-185S (Kent County - Davisville Tap)	Planned	\$4,200,000	\$4,200,000
Reliability Upgrade	1a	1054	Northeast Utilities	2013	12/2013	NEEWS (Ancillary Greater Springfield Reliability Project)	Build a new 345 kV line from Manchester to Meekville Junction and re-terminate the 395 line at Meekville Junction	Planned	\$28,800,000	\$28,800,000
Reliability Upgrade	1a	1218	Northeast Utilities	2013	12/2013	Millstone 345kV Circuit Separation project & SLOD SPS System Retirement	Separate the 345kV Double Circuit Tower 310/348 and 371/383 Tower configuration	Planned	\$25,600,000	\$25,600,000
Reliability Upgrade	1b	1175	NSTAR Electric Company	2013	12/2013	Greater Boston - South	Upgrade the 115kV line 201-501 (Medway-Depot St.) and the 201-502 (Beaver Pond - Depot Street Tap) to a higher capacity line	Proposed	\$3,700,000	\$3,700,000
Reliability Upgrade	1b	1246	United Illuminating Company	2013	09/2013	8300 Line Reconfiguration Project	Reconfiguration of 115kV (8300) line from Mill River to Quinipiac	Proposed	\$17,400,000	\$17,400,000
Reliability Upgrade	1a	887	National Grid, USA	2013	06/2013	Auburn Area Transmission System Upgrades	Expand Auburn St Substation to include 2nd 345/115 kV autotransformer and 345 kV ring bus.	Under Construction	\$58,000,000	\$58,000,000
Reliability Upgrade	1a	196	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line (3216), Agawam (MA) - North Bloomfield (CT)	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	818	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Reconstruct the 115kV line South Agawam to Southwick (1768)	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	819	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line Ludlow - Agawam (3196)	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	820	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Expansion of Agawam 16C 115 kV Substation to include new 345 kV station with two 345/115-kV autotransformers.	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	823	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Ludlow 19S 345 kV Substation Expansion, two 345/115kV Autotransformers replacements. Add two 345kV 120 MVar Capacitor additions	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	829	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Piper (1230) 115 kV line.	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)

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Primary Driver	Part#	Project ID	Primary Equipment Owner	Year	Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system resoration	Concept	TBD	TBD
Reliability Upgrade	1a	1010	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Build 115-kV Cadwell switching 50F station.	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	259	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to Orchard (1426) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	688	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Cadwell (1481) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1100	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Chicopee (1314) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1101	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Orchard (1552) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1102	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Piper (1601) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1103	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Chicopee (1602) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1104	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Cadwell (1603) 115kV line and add 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1105	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Shawinigan (1604) 115kV line and add a 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1070	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1781) 115kV line and add a 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1071	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1782) 115kV line and add a 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1072	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Shawinigan (1845) 115kV line and add 2nd High Speed Protection	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1073	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to East Springfield (5001) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1074	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to East Springfield (5002) 115kV line	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1092	Northeast Utilities	2013	12/2013	Agawam (BPS)	Upgrade the Agawam 115kV, Substations to BPS standards together with other misc. substation upgrades	Under Construction	\$12,100,000	\$12,100,000
Reliability Upgrade	1a	974	United Illuminating Company	2013	05/2013		East Shore 115 kV Oil Circuit Breaker & Disconnect Replacements.	Under Construction	\$16,900,000	\$16,900,000
Reliability Upgrade	1a	816	Northeast Utilities	2013	12/2013	NEEWS (Greater Springfield Reliability Project)	North Bloomfield 2A Substation Expansion - add a second 345/115-kV autotransformer	Under Construction	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1b	1248	NSTAR Electric Company	2014	12/2014		Rebuild the Kingston Substation to a breaker and a half scheme	Concept	TBD	TBD
Reliability Upgrade	1b	699	United Illuminating Company	2014	12/2014		Naugatuck Valley 115 kV reliability improvement.	Concept	\$11,100,000	\$11,100,000
Reliability Upgrade	1a	907	Central Maine Power Company	2014	05/2014	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV lines: Sections 86 (Bucksport-Belfast), Section 203 (Detroit-Orrington), Sections 60 & 212 (Coopers Mills-Bowman St-Larrabee Road), Sections 89 & 229 (Lewmore Falls-River-Bumford LP)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	909	Central Maine Power Company	2014	8/2014	Maine Power Reliability Program (MPRP)	Add 2-115kV breakers & rebuild 86A, new .25 mile transmission at Belfast forming Sections 86 & 266	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1025	Central Maine Power Company	2014	05/2014	Maine Power Reliability Program (MPRP)	Separation of Double Circuit Towers (345kV Kennebec River Crossing 375/377, 115kV Bucksport 65/205)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1132	Central Maine Power Company	2014	8/2014	Maine Power Reliability Program (MPRP)	Add 115/34kV transformer at Coopers Mills	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	919	National Grid, USA	2014	04/2014	Auburn Area Transmission System Upgrades	Dupont substation - Upgrade Buswork and convert to BPS substation.	Planned	\$13,600,000	\$13,600,000
Reliability Upgrade	1a	1187	National Grid, USA	2014	06/2014	A127/B128 Conductor Refurbishment	A127/B128 Conductor Refurbishment - Tower 510 to Harriman Substation, VT	Planned	\$65,000,000	\$65,000,000
Reliability Upgrade	1a	940	National Grid, USA	2014	06/2014	Central/Western Massachusetts Upgrades	Reconductor sections of A127W line w/795 ACSS (A127 West reconductoring. Tower 510 to Paxton, French King to French King).	Planned	\$18,000,000	\$18,000,000
Reliability Upgrade	1a	945	National Grid, USA	2014	05/2014	Central/Western Massachusetts Upgrades	Adams - install two new 115 kV breakers and replace two existing 115kV breakers	Planned	\$5,000,000	\$5,000,000
Reliability Upgrade	1a	948	National Grid, USA	2014	05/2014	Central/Western Massachusetts Upgrades	Hampden - build new 115 kV substation at 1515/O-15S intersection (4 breaker ring).	Planned	\$13,400,000	\$13,400,000



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Primary Driver	Part#	Project ID	Primary Equipment Owner		Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system resoration	Concept	TBD	TBD
Reliability Upgrade	1a	951	National Grid, USA	2014	01/2014	Central/Western Massachusetts Upgrades	Install new Otter River - E Winchendon (H-134) 115 kV line.	Planned	\$7,455,440	\$7,455,440
Reliability Upgrade	1a	791	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	New 115 kV circuit between Somerset and Brayton Point.	Planned	\$11,560,000	\$11,560,000
Reliability Upgrade	1a	913	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	Brayton Point substation reinforcements to accommodate the new 115 kV line.	Planned	\$3,250,000	\$3,250,000
Reliability Upgrade	1a	914	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	New third circuit between Somerset and Bell Rock.	Planned	\$28,150,000	\$28,150,000
Reliability Upgrade	1a	917	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	Bell Rock substation expansion.	Planned	\$7,000,000	\$7,000,000
Reliability Upgrade	1a	793	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	Somerset substation reinforcements.	Planned	\$6,400,000	\$6,400,000
Reliability Upgrade	1a	1257	National Grid, USA	2014	06/2014	Salem Harbor Retirement	115kV line Reconductoring of the S-145/T-146 from Tewksbury-North Reading Tap (9.3 miles each)	Planned	\$29,000,000	\$29,000,000
Reliability Upgrade	1a	1258	National Grid, USA	2014	06/2014	Salem Harbor Retirement	115kV line Reconductoring of the Y-151 from Tewksbury Junction - West Methuen (8.2 miles)	Planned	\$11,500,000	\$11,500,000
Reliability Upgrade	1a	1259	National Grid, USA	2014	06/2014	Salem Harbor Retirement	115kV line Reconductoring of the B154/C-155N from King St Tap - South Danvers (14.5 miles each way)	Planned	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	915	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	Reconductor M13 and L14 between Bell Rock and Dexter + Reconductor 69 kV lines 61 and 62.	Planned	\$19,450,000	\$19,450,000
Reliability Upgrade	1a	916	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	Conversion of Jepson 69 kV substation to 115 kV substation.	Planned	\$11,800,000	\$11,800,000
Reliability Upgrade	1a	918	National Grid, USA	2014	12/2014	Greater Rhode Island Transmission Reinforcements 1	Dexter substation changes.	Planned	\$3,180,000	\$3,180,000
Reliability Upgrade	1b	1279	Central Maine Power Company	2014	12/2014		New 345/115kV Autotransformer and 115kV switchyard at Raven Farm substation consisting of a four-bay breaker and a half configuration of eleven (11) breakers	Proposed	\$26,126,000	\$26,126,000
Reliability Upgrade	1b	1280	Central Maine Power Company	2014	12/2014		New 115kV line section 244 and upgraded line section 80 between Coopers Mill and Highland Substations	Proposed	\$62,735,000	\$62,735,000
Reliability Upgrade	1b	1183	Northeast Utilities	2014	2014	LSP New Peaselee Substation and 115/34.5kV transformer	New 115kV Peaselee Substation and transmission line work	Proposed	\$12,400,000	\$12,400,000
Reliability Upgrade	1b	965	NSTAR Electric Company	2014	06/2014	Greater Boston - South	Add third 115kV line from W. Walpole to Holbrook	Proposed	\$19,000,000	\$19,000,000
Reliability Upgrade	1b	1208	National Grid, USA	2014	12/2014	Pittsfield / Greenfield Project	Separation and reconductoring of Cabot Taps (A-127 and Y-177 115kV lines)	Proposed	\$7,400,000	\$7,400,000
Reliability Upgrade	1b	1209	National Grid, USA	2014	12/2014	Pittsfield / Greenfield Project	Reconductoring of A-127 between Erving and Cabot Tap with 1590 ACSS	Proposed	\$12,000,000	\$12,000,000
Reliability Upgrade	1b	1210	National Grid, USA	2014	12/2014	Pittsfield / Greenfield Project	Harriman 115kV breaker upgrades	Proposed	\$1,100,000	\$1,100,000
Reliability Upgrade	1b	1221	Northeast Utilities	2014	11/2014	Pittsfield / Greenfield Project	Modify Northfield Mountain 16R substation and install a 345/115kV autotransformer	Proposed	\$108,500,000	\$108,500,000
Reliability Upgrade	1b	1222	Northeast Utilities	2014	11/2014	Pittsfield / Greenfield Project	Build a new 115kV three breaker Switching Station (Erving) ring bus	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1223	Northeast Utilities	2014	11/2014	Pittsfield / Greenfield Project	Build a new 115kV line from Northfield Mountain to the new Erving Switching Station	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1224	Northeast Utilities	2014	11/2014	Pittsfield / Greenfield Project	Install 115kV 14.4 MVAR capacitor banks at Cumberland, Podick and Amherst Substations	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1225	Northeast Utilities	2014	11/2014	Pittsfield / Greenfield Project	Rebuild the Cumberland to Montague 1361 115kV line and terminal work at Cumberland and Montague	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1b	1226	Northeast Utilities	2014	11/2014	Pittsfield / Greenfield Project	Reconductor the Woodland to Pleasant 1371 115-kV line and terminal work at Woodland substation.	Proposed	Part of Pittsfield/Greenfield Project	Part of Pittsfield/Greenfield Project
Reliability Upgrade	1a	905	Central Maine Power Company	2014	8/2014	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Orrington-Albion Rd-Coopers Mills, Coopers Mills-Larrabee Road, Larrabee Road-Surweic).	Under Construction	\$1,364,108,000	\$1,364,108,000
Reliability Upgrade	1a	906	Central Maine Power Company	2014	05/2014	Maine Power Reliability Program (MPRP)	New 115kV line construction (Orrington-Coopers Mills, Larrabee Road-Middle St,Middle St -Lewiston Lower, Larrabee Road-Livermore Falls, Livermore Falls-Rumford IP)	Under Construction	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	908	Central Maine Power Company	2014	07/2014	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Albion Road, Larrabee Road); Coopers Mills autotransforme replaces Maxcy's autotransformer	Under Construction	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1158	Central Maine Power Company	2014	07/2014	Maine Power Reliability Program (MPRP)	Two 40 MVAR reactors at Albion Road, two 40 MVAR reactors at Larabee Road, two 40 MVAR at Coopers Mills	Under Construction	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program

2-2014 Concept

21 - 2014 Planned

13 -2014 Proposed

4 -2014 UnderConstruct



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Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system resoration	Concept	TBD	TBD
Reliability Upgrade	1b	1177	NSTAR Electric Company	2015	12/2015	Greater Boston - North	Reconductor 211-503/504 from North Woburn Tap to Reading	Concept	TBD	TBD
Reliability Upgrade	1b	1178	NSTAR Electric Company	2015	12/2015	Greater Boston - North	Install 115kV Capacitor Bank at North Woburn	Concept	TBD	TBD
Reliability Upgrade	1b	1190	NSTAR Electric Company	2015	12/2015	Greater Boston - North	Install a second 345/115kV Auto Transformer at Woburn	Concept	TBD	TBD
Reliability Upgrade	1b	1189	NSTAR Electric Company	2015	12/2015	Greater Boston - Central	Install 3rd 115kV Circuit between Waltham and Brighton	Concept	TBD	TBD
Reliability Upgrade	1b	1234	National Grid, USA	2015	12/2015	NEEWS (Interstate Reliability Project)	Install a 115kV redundant breaker in series with breaker #1713 at West Farnum Substation and upgrade to current BPS standards	Concept	TBD	TBD
Reliability Upgrade	1b	975	United Illuminating Company	2015	06/2015		Pequonnock 115 kV Fault Duty Mitigation.	Concept	\$105,000,000	\$105,000,000
Reliability Upgrade	1a	1141	Northeast Utilities	2015	2015	2nd Deerfield 345/115kV Autotransformer Project	Rochester Substation Upgrades	Planned	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	950	National Grid, USA	2015	02/2015	Central/Western Massachusetts Upgrades	E Winchendon - install 115 kV breaker and 115 kV disconnect switch.	Planned	\$1,016,897	\$1,016,897
Reliability Upgrade	1a	953	National Grid, USA	2015	02/2015	Central/Western Massachusetts Upgrades	Otter River - expand substation into 6-breaker ring bus with four 115 kV breakers and install two transformers.	Planned	\$10,248,067	\$10,248,067
Reliability Upgrade	1a	954	National Grid, USA	2015	02/2015	Central/Western Massachusetts Upgrades	Westminster - install new 69kV breaker, including disconnect switches.	Planned	\$903,909	\$903,909
Reliability Upgrade	1a	946	National Grid, USA	2015	04/2015	Central/Western Massachusetts Upgrades	Convert 69 kV (O-15S) Palmer- Hampden to 115 kV.	Planned	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	949	National Grid, USA	2015	04/2015	Central/Western Massachusetts Upgrades	Palmer - add 115 kV breaker position for O15S conversion, includes thermal upgrade of W-175 bay.	Planned	\$1,600,000	\$1,600,000
Reliability Upgrade	1a	937	National Grid, USA	2015	12/2015	Central/Western Massachusetts Upgrades	Bear Swamp - install one 230-115 kV 333 mVA auto, one 115 kV breaker and upgrade various terminal equipment.	Planned	\$6,602,875	\$6,602,875
Reliability Upgrade	1a	1094	National Grid, USA	2015	12/2015	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV Millbury Substation equipment	Planned	\$25,000,000	\$25,000,000
Reliability Upgrade	1a	190	National Grid, USA	2015	12/2015	NEEWS (Interstate Reliability Project)	New Millbury to West Farnum (366) 345kV line.	Planned	\$81,800,000	\$81,800,000
Reliability Upgrade	1a	794	National Grid, USA	2015	12/2015	NEEWS (Interstate Reliability Project)	New West Farnum to Connecticut/Rhode Island border (341) 345kV line (to Lake Road).	Planned	\$71,700,000	\$71,700,000
Reliability Upgrade	1a	1253	National Grid, USA	2015	04/2015		New Crandall St. Substation 115-13 kV substation addition	Planned	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	802	Northeast Utilities	2015	2015	NEEWS (Interstate Reliability Project)	Build new 345kV line (3271) Card to Lake Road	Planned	\$218,000,000	\$218,000,000
Reliability Upgrade	1a	1085	Northeast Utilities	2015	2015	NEEWS (Interstate Reliability Project)	Card 11F substation expansion	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	810	Northeast Utilities	2015	2015	NEEWS (Interstate Reliability Project)	Lake Road 27E 345 kV substation expansion	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	191	Northeast Utilities	2015	2015	NEEWS (Interstate Reliability Project)	Build Lake Road to Connecticut/Rhode Island border (341) 345-kV line (to West Farnum).	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1235	Northeast Utilities	2015	12/2015	NEEWS (Ancillary Interstate Reliability Project)	Sag elimination on 1410 Line (Montville-Buddington)	Planned	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	1245	CMEEC	2015	12/2015	NEEWS (Ancillary Interstate Reliability Project)	Sag elimination on 1410 Line (Montville-Buddington)	Planned	\$60,000	\$60,000
Reliability Upgrade	1a	721	United Illuminating Company	2015	06/2015		New Shelton 115/13.8 kV substation	Planned	\$19,500,000	\$19,500,000
Reliability Upgrade	1b	1220	Northeast Utilities	2015	12/2015	Greater Boston - North	Install a new 345kV circuit between Scobie and Pelham NH (this is NU's portion of the new Scobie-Tewksbury circuit)	Proposed	\$40,100,000	\$40,100,000
Reliability Upgrade	1b	1214	National Grid, USA	2015	12/2015	Greater Boston - South	Line Reconductoring of the C-129 Beaver Pond - Depot St. Tap) and D-130 (Depot St. Tap - Medway) 115kV lines	Proposed	\$500,000	\$500,000
Reliability Upgrade	1b	1179	NSTAR Electric Company	2015	12/2015	Greater Boston - North	Install 2nd 345kV circuit between Bellerica/Burlington town line to Tewksbury	Proposed	\$33,000,000	\$33,000,000

## November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>

Primary Driver	Part#	Project ID	Primary Equipment Owner	Year	Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system restoration	Concept	TBD	TBD
Reliability Upgrade	1b	1211	National Grid, USA	2015	12/2015	Greater Boston - North	Install 2nd 345kV circuit between Tewksbury - Billerica/Burlington Town Line (NSTAR Border)	Proposed	\$32,700,000	\$32,700,000
Reliability Upgrade	1b	1212	National Grid, USA	2015	12/2015	Greater Boston - North	115kV Line Reconductoring of M-139/N-140 Tewksbury-Pinehurst (6.1 miles each)	Proposed	\$11,600,000	\$11,600,000
Reliability Upgrade	1b	1213	National Grid, USA	2015	12/2015	Greater Boston - North	Install new 345kV circuit between NH/MA border and Tewksbury (this is NGRID's portion of the new Scobie-Tewksbury circuit)	Proposed	\$23,370,000	\$23,370,000
Reliability Upgrade	1b	1215	National Grid, USA	2015	12/2015	Greater Boston - North	New 115kV line between Wakefield - Everett	Proposed	\$20,000,000	\$20,000,000
Reliability Upgrade	1b	1254	National Grid, USA	2015	12/2015	Greater Boston - North	Substation work at Revere Substation to increase ratings on the 128-515P/168 line between Chelsea and Revere	Proposed	\$1,000,000	\$1,000,000
Reliability Upgrade	1b	1260	National Grid, USA	2015	12/2015	Greater Boston - North	115kV Line reconductoring of the F-158N/S Wakefield Jct - Everett (7.36 miles)	Proposed	\$3,500,000	\$3,500,000
Reliability Upgrade	1b	1261	National Grid, USA	2015	12/2015	Greater Boston - North	115kV Line reconductoring of the S-145T-146 from North Reading Tap - Wakefield Jct (5.1 miles each)	Proposed	\$10,800,000	\$10,800,000
Reliability Upgrade	1b	1262	National Grid, USA	2015	12/2015	Greater Boston - North	115kV Line reconductoring of the Y-151 from Tewksbury Junction - Tewksbury Substation (1.6 miles)	Proposed	\$1,250,000	\$1,250,000
Reliability Upgrade	1b	956	National Grid, USA	2015	01/2015	Central/Western Massachusetts Upgrades	Carpenter Hill - replace one 345 kV, 448 MVA autotransformer and upgrade thermal rating of bus to at least 580 MVA.	Proposed	\$7,021,534	\$7,021,534
Reliability Upgrade	1b	1252	National Grid, USA	2015	12/2015	NEEWS (Interstate Reliability Project)	Re-conductor 345kV 328 line (West Farnum-Sherman Rd)	Proposed	\$36,500,000	\$36,500,000
Reliability Upgrade	1b	1233	National Grid, USA	2015	12/2015	NEEWS (Interstate Reliability Project)	New Sherman Road 345kV AIS Substation	Proposed	\$36,600,000	\$36,600,000
Reliability Upgrade	1b	1250	Vermont Electric Power Company	2016	2016	VELCO LSP - West Rutland Substation	Installation of a 115/46kV transformer at West Rutland between breakers K30 and K34	Concept	TBD	TBD
Reliability Upgrade	1a	782	National Grid, USA	2016	01/2016	Merrimack Valley/North Shore Reliability Project	Replace existing S145/T146 UG cables with higher capacity cables between Salem Harbor and Railyard.	Planned	\$43,912,000	\$43,912,000
Reliability Upgrade	1a	576	Northeast Utilities	2016	2016	NEEWS (Central Connecticut Reliability Project)	Build new 345kV line (3208) North Bloomfield to Frost Bridge.	Planned	\$301,000,000	\$301,000,000
Reliability Upgrade	1a	1114	Northeast Utilities	2016	2016	NEEWS (Central Connecticut Reliability Project)	Frost Bridge 18R substation expansion - add a 345/115kV autotransformer.	Planned	Part of NEEWS (Central Connecticut Reliability Project)	Part of NEEWS (Central Connecticut Reliability Project)
Reliability Upgrade	1b	325	Vermont Electric Power Company	TBD	TBD	VELCO LSP - Chelsea Substation	Replace (2) SCADA controlled motorized disconnect switches with 115 kV circuit breakers at the existing Chelsea substation to maintain adequate supply to the load.	Concept	TBD	TBD
Reliability Upgrade	1b	324	Vermont Electric Power Company	TBD	TBD		Granite to Middlesex 230-kV line with necessary substation upgrades to mitigate several reliability concerns, including those related to the potential Highgate contract termination.	Concept	TBD	TBD
Reliability Upgrade	1b	139	Vermont Electric Power Company	TBD	TBD	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 2: synchronous condensers expanded to +200- 100 MVAR and two 25 MVAR capacitor banks.	Concept	TBD	TBD
Reliability Upgrade	1b	970	NSTAR Electric Company	TBD	TBD	Greater Boston - Central	Add a new 345 kV line from Lexington to Waltham.	Concept	TBD	TBD
Reliability Upgrade	1b	971	NSTAR Electric Company	TBD	TBD	Greater Boston - Central	Add a new 345/230 kV auto at Waltham and 230 kV switching facilities.	Concept	TBD	TBD
Reliability Upgrade	1b	1176	NSTAR Electric Company	TBD	TBD	Greater Boston - Central	Install an oil circulation pipe and heat exchangers at K Street and Chatham Street sections of 250-516/517 circuits	Concept	TBD	TBD
Reliability Upgrade	1b	1198	NSTAR Electric Company	TBD	TBD	Greater Boston - Central	Add a second 115kV line from Woburn to Burlington	Concept	TBD	TBD
Reliability Upgrade	1b	1199	NSTAR Electric Company	TBD	TBD	Greater Boston - Central	Install a new 230/115kV auto transformer at Sudbury or equivalent	Concept	TBD	TBD
Reliability Upgrade	1b	1247	NSTAR Electric Company	TBD	TBD		Rebuild the Acushnet 115kV Substation	Concept	TBD	TBD
Reliability Upgrade	1b	1084	Northeast Utilities	TBD	TBD	Greater Hartford Central Connecticut Project	Loop the Millstone - Manchester (310) 345 kV line into the Card substation <sup>(2)</sup>	Concept	TBD	TBD
Reliability Upgrade	1b	1086	Northeast Utilities	TBD	TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to 115kV line 1704, SW Hartford to South Meadow <sup>(2)</sup>	Concept	TBD	TBD
Reliability Upgrade	1b	1087	Northeast Utilities	TBD	TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to line 115kV 1722 SW Hartford NW Hartford <sup>(2)</sup>	Concept	TBD	TBD
Reliability Upgrade	1b	1088	Northeast Utilities	TBD	TBD	Greater Hartford Central Connecticut Project	Add 2nd high speed protection to 115kV line 1786, East Hartford to Riverside to South Meadow <sup>(2)</sup>	Concept	TBD	TBD
Reliability Upgrade	1b	801	Northeast Utilities	TBD	TBD		Build Manchester to East Hartford 115-kV cable with a series reactor.	Concept	TBD	TBD
Reliability Upgrade	1b	85	Northeast Utilities	TBD	TBD		Upgrade the South Meadow Substation to Bulk Power System standards (BPS).	Concept	TBD	TBD
Reliability Upgrade	1b	1228	Northeast Utilities	TBD	TBD	Stamford Area	Additional circuit into the Stamford Area (Glenbrook-South End)	Concept	TBD	TBD

6 -2015 Concept

18 - 2015 Planned

14 - 2015 Proposed

0 -2015 UnderConstruct

1 -2016 Concept

3 - 2016 Planned

0 -2016 Proposed

0 -2016 UnderConstruct

18 - Concept TBD

1- Planned TBD

12- Proposed TBD

**November 2011 ISO-NEW ENGLAND Project Listing Update (DRAFT)<sup>(7)</sup>**

Primary Driver	Part#	Project ID	Primary Equipment Owner		Projected In-Service Month/Year	Major Project	Project	Nov-11 Status	Nov-11 Estimated PTF Costs	
Reliability Upgrade	1b	1206	NSTAR Electric Company	2011	12/2011		Install a new 230kV breaker for line 282-602 (West Medway-Waltham) at W. Medway for system resoration	Concept	TBD	TBD
Reliability Upgrade	1b	1229	Northeast Utilities	TBD	TBD		Replace 115kV 1990 (Frost Bridge-Stevenson) lattice structure	Concept	TBD	TBD
Reliability Upgrade	1b	1230	Northeast Utilities	TBD	TBD	LSP - Greater Hartford Area	115kV breaker addition at Northeast Simsbury Substation	Concept	TBD	TBD
Reliability Upgrade	1a	879	Bangor Hydro-Electric Company	TBD	TBD	Dynamic Swing Reorder Project	Upgrade 7 of 8 Dynamic Swing Recorders in New England to comply with NERC, NPCC, and ISO-NE Standards.	Planned	\$420,000	\$420,000
Reliability Upgrade	1b	1269	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Amherst Substation - New 345kV breaker and three 25MVar Capacitor Banks	Proposed	\$19,600,000	\$19,600,000
Reliability Upgrade	1b	1270	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	New 115kV line from Fitzwilliams to Monadnock	Proposed	\$10,500,000	\$10,500,000
Reliability Upgrade	1b	1271	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Upgrade the Keene to Monadnock (T198) 115kV line	Proposed	\$11,900,000	\$11,900,000
Reliability Upgrade	1b	1272	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Weare Substation - Add two 13.3 MVar 115V capacitors	Proposed	\$3,600,000	\$3,600,000
Reliability Upgrade	1b	1273	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Rebuild A152 115kV line	Proposed	\$22,500,000	\$22,500,000
Reliability Upgrade	1b	1274	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Rebuild N186 115kV line	Proposed	\$2,300,000	\$2,300,000
Reliability Upgrade	1b	1275	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Upgrade the 381 345kV line	Proposed	\$4,200,000	\$4,200,000
Reliability Upgrade	1b	1276	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Littleton Substation - Add a second 230/115kV autotransformer and associated 115kV substation work	Proposed	\$16,700,000	\$16,700,000
Reliability Upgrade	1b	1277	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Webster Substation - Add four 26.6 MVar 115kV capacitors	Proposed	\$11,900,000	\$11,900,000
Reliability Upgrade	1b	1278	Northeast Utilities	TBD	TBD	Western New Hampshire Solution	Saco Valley Substation - Add two 25 MVar dynamic Var devices	Proposed	\$15,800,000	\$15,800,000
Reliability Upgrade	1b	1263	National Grid, USA	TBD	TBD	Northern New Hsmphshire Solution	New C-203 230kV line tap to Littleton NH Substation associated with 2nd 230/115kV auto project	Proposed	\$1,100,000	\$1,100,000
Reliability Upgrade	1b	1200	NSTAR Electric Company	TBD	TBD	Greater Boston - North	Add a new 345kV UG circuit between Woburn and North Cambridge	Proposed	\$52,000,000	\$52,000,000
										<b>\$5,460,853,715</b>

# October '09 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Projected In-Service Month/Year	Projected In-Service Year	Major Project	Project	Oct -09 Status	Oct-09 Estimated PTF Costs
Reliability Upgrade	1a	910	Central Maine Power Company	12/2008	2008	Rumford-Woodstock-Kimball Road Corridor Project	Rebuild Section 211 Woodstock - Rumford.	In-Service	\$8,400,000
Reliability Upgrade	1a	177	Northeast Utilities	12/2008	2008	Monadnock Area Reliability Project	Replace limiting terminal equipment at Webster Substation on line to North Road.	In-Service	Part of Monadnock Area Reliability Project
Reliability Upgrade	1a	180	Northeast Utilities	12/2008	2008	Monadnock Area Reliability Project	Rebuild 115 kV Keene to Swanzey A-152 line.	In-Service	Part of Monadnock Area Reliability Project
Reliability Upgrade	1a	138	Vermont Electric Power Company	12/2008	2008	Northwest Vermont Reliability Project	N. Haven - Vergennes - Q. City 115 kV line.	In-Service	\$70,200,000
Reliability Upgrade	1a	923	National Grid, USA	12/2008	2008	Auburn Area Transmission System Upgrades	Reconductor 115 kV A94 line and associated substation upgrades.	In-Service	\$2,400,000
Reliability Upgrade	1a	781	National Grid, USA	10/2008	2008	Merrimack Valley/North Shore Reliability Project	Install 115 kV 30 MVar capacitor bank at Revere.	In-Service	\$1,727,000
Reliability Upgrade	1a	841	NSTAR Electric Company	11/2008	2008	Mystic Breaker Additions Project	Install (2) new 115 kV West Bus breakers #29 and #31 at Mystic.	In-Service	\$2,300,000
Reliability Upgrade	1a	1040	NSTAR Electric Company	12/2008	2008	Mystic IPT Breaker Project	Upgrade (4) 115 kV breakers #11, #8, #17 and #3 at Mystic to IPT	In-Service	\$990,000
Reliability Upgrade	1a	168	National Grid, USA	09/2008	2008	Southwest Rhode Island Reliability Enhancements	Reconductor Kenyon - Wood River 115 kV 1870 line.	In-Service	\$2,234,232
Reliability Upgrade	1a	899	National Grid, USA	12/2008	2008	Southwest Rhode Island Reliability Enhancements	Kenyon substation upgrades.	In-Service	\$278,000
Reliability Upgrade	1a	171	National Grid, USA	10/2008	2008	Southwest Rhode Island Reliability Enhancements	Reconductoring L-190 between Kent Co. and Davisville.	In-Service	\$2,666,291
Reliability Upgrade	1a	900	National Grid, USA	11/2008	2008	Southwest Rhode Island Reliability Enhancements	Wood River substation upgrades.	In-Service	\$130,000
Reliability Upgrade	1a	846	United Illuminating Company	11/2008	2008		Replace Mix Avenue 115 kV Oil Circuit Breaker & foundation.	In-Service	\$450,000
Reliability Upgrade	1a	208	Northeast Utilities	12/2008	2008	NU LSP - Oxford Substation	Install new Oxford (previously Jack's Hill) 115 kV substation.	In-Service	\$4,459,000
Reliability Upgrade	1a	571	Northeast Utilities	12/2008	2008	Norwalk-Glenbrook Cable Project	Upgrade Flax Hill Substation to BPS.	In-Service	Part of project 248
Reliability Upgrade	1a	248	Northeast Utilities	12/2008	2008	Norwalk-Glenbrook Cable Project	Install two new 115 kV cables from Norwalk to Glenbrook (accommodate 345 kV class cable).	In-Service	\$249,372,000
Reliability Upgrade	1a	246	Northeast Utilities	12/2008	2008	Southwest Connecticut Reliability Project PH II (M-N)	Add second 345/115 kV autotransformer at Norwalk Substation along with shunt reactors and 345 kV circuit breakers.	In-Service	\$978,182,000
Reliability Upgrade	1a	238	United Illuminating Company	12/2008	2008	Southwest Connecticut Reliability Project PH II (M-N)	Build new Singer 345 kV substation with (12) circuit breakers, (2) autos, (4) shunt reactors along with reconnecting Bridgeport Energy thru one of the new autos. Includes 115 kV connection from Singer to Pequonnock substation.	In-Service	\$162,264,000
Reliability Upgrade	1a	224	United Illuminating Company	12/2008	2008	Southwest Connecticut Reliability Project PH II (M-N)	Install new 345 kV line from East Devon to Singer(UI).	In-Service	\$157,476,000
Reliability Upgrade	1a	226	Northeast Utilities	12/2008	2008	Southwest Connecticut Reliability Project PH II (M-N)	Install two 345 kV underground cables from Singer(UI) to Norwalk.	In-Service	Part of SWCT (Middletown-Norwalk) Reliability Project
Reliability Upgrade	1a	235	Northeast Utilities	12/2008	2008	Southwest Connecticut Reliability Project PH II (M-N)	Expand Norwalk 345-kV substation and install transfer trip relaying scheme on the 1389 115 kV line between Norwalk and Flax Hill.	In-Service	Part of SWCT (Middletown-Norwalk) Reliability Project
Reliability Upgrade	1a	247	Northeast Utilities	12/2008	2008	Southwest Connecticut Reliability Project PH II (M-N)	Replace Norwalk Harbor 138/115 kV autotransformer.	In-Service	Part of SWCT (Middletown-Norwalk) Reliability Project

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TBD
In-Service	\$494	\$327	\$1,912	\$800	\$11									
Under Construction					\$305	\$153								
Planned					\$107	\$157	\$2,468	\$1,602	\$174	\$20				\$0
Proposed					\$5	\$50	\$9							\$7
Concept					\$1	\$22	\$0	\$0	\$11	\$75		\$1	\$1	\$0
total			\$1,912	\$800	\$429	\$382	\$2,478	\$1,602	\$185	\$95	\$0	\$1	\$1	\$7

NOTE- Total I/S costs as of Oct 2008 Upd \$1,431,150,385

	In-Service	UC+PL+PR	UC+PL+PR+C	2011	2012
2002	\$16				
Oct-09	\$3,876	\$3,876	\$3,876	131315	\$0.006
Dec-09	\$3,876	\$3,876	\$3,876	131315	\$0.006
2010	\$3,876	\$4,293	\$4,294	131330	\$0.007
2011	\$3,876	\$4,654	\$4,676	132350	\$0.007
2012	\$3,876	\$7,131	\$7,154	134015	\$0.011
2013	\$3,876	\$8,734	\$8,756	134635	\$0.013

Notes  
 - Gray shading indicates change from JULY '08 Update.  
 - All costs provided by Transmission Owners.

## October '09 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Projected In-Service Month/Year	Projected In-Service Year	Major Project	Project	Oct -09 Status	Oct-09 Estimated PTF Costs	
Reliability Upgrade	1a	684	Northeast Utilities	12/2008	2008	Southwest Connecticut Reliability Project PH II (M-N)	Replace (6) 115 kV breakers (4-Glenbrook, 1-Glenbrook Statcom, 1-Southington #1) and (3) 345-kV circuit breakers at Millstone and replace (4) 345- kV breakers with 500-kV breakers at Long Mountain substation.	In-Service	Part of SWCT (Middletown-Norwalk) Reliability Project	Part of SWCT (Middletown-Norwalk) Reliability Project
Reliability Upgrade	1a	250	Northeast Utilities	12/2008	2008		Add a 345 kV breaker at Ludlow Substation.	In-Service	\$1,644,885	\$1,644,885
Reliability Upgrade	1a	155	Central Maine Power Company	Northeast Utilities	2009	Maguire Road Project	Rebuild Three Rivers - Quaker Hill 115 kV Line K197.	In-Service	\$5,500,000	\$5,500,000
Reliability Upgrade	1a	178	Northeast Utilities	02/2009	2009	Monadnock Area Reliability Project	Rebuild 115 kV Garvins to Webster V-182 line.	In-Service	Part of Monadnock Area Reliability Project	Part of Monadnock Area Reliability Project
Reliability Upgrade	1a	922	National Grid, USA	02/2009	2009	Auburn Area Transmission System Upgrades	Reconductor 115kV L1 line and associated substation upgrades.	In-Service	\$800,000	\$800,000
Reliability Upgrade	1a	116	NSTAR Electric Company	04/2009	2009	NSTAR 345 kV Transmission Reliability Project	Add 2nd 345 kV UG Cables from Stoughton to Mattapan Sq. to K Street and install another new autotransformer at K. St.	In-Service	\$307,900,000	\$307,900,000
Reliability Upgrade	1a	572	NSTAR Electric Company	04/2009	2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 345 kV 160 MVAR shunt reactors at Stoughton.	In-Service	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project
Reliability Upgrade	1a	573	NSTAR Electric Company	04/2009	2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 345 kV 160 MVAR shunt reactors at K St.	In-Service	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project
Reliability Upgrade	1a	772	NSTAR Electric Company	04/2009	2009	NSTAR 345 kV Transmission Reliability Project	Add (1) 115 kV breaker at K St.	In-Service	Part of NSTAR 345 kV Reliability Project	Part of NSTAR 345 kV Reliability Project
Reliability Upgrade	1a	136	Vermont Electric Power Company	04/2009	2009	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 1: two 115 kV PARs, four 25 MVAR Cap. banks, four +25/-12.5 MVAR synchronous condensers, and two 230/115 transformers.	In-Service	\$62,400,000	\$62,400,000
Reliability Upgrade	1a	695	NSTAR Electric Company	07/2009	2009	Short Term Lower SEMA Upgrades	Loop (355) 345 kV line in and out of Carver Substation and add (5) new 345 kV circuit breakers at Carver substation.	In-Service	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA
Reliability Upgrade	1a	830	NSTAR Electric Company	07/2009	2009	Short Term Lower SEMA Upgrades	Add a second 345/115 kV Auto transformer at Carver substation and add (1) new 345 kV circuit breaker and (3) new 115 kV circuit breakers at Carver substation.	In-Service	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA
Reliability Upgrade	1a	831	NSTAR Electric Company	07/2009	2009	Short Term Lower SEMA Upgrades	Add a second 115 kV line from Carver to Tremont and add (2) new 115 kV circuit breakers at Carver substation and (1) new 115 kV circuit breaker at Tremont substation.	In-Service	Part of Short Term Lower SEMA	Part of Short Term Lower SEMA
Reliability Upgrade	1a	626	Central Maine Power Company	04/2009		Rumford-Woodstock-Kimball Road Corridor Project	Addition of 115/34.5 kV transformer and six new 115 kV breakers and a half substation at Woodstock.	In-service	\$8,000,000	\$8,000,000
Reliability Upgrade	1a	575	Central Maine Power Company	05/2009		Heywood Road Project	New Heywood Rd 115kV switchyard with (6) 115kV circuit breakers (3) 115kV line retensionings and 115kV 20 MVAR capacitor bank at Heywood Rd.	In-service	\$7,000,000	\$7,000,000
Reliability Upgrade	1a	1127	Central Maine Power Company	05/2009		CMP-LSP Newcastle Substation	Add 115/34kV transformer with two 115kV breakers	In-service	\$1,300,000	\$1,300,000
Reliability Upgrade	1a	166	National Grid, USA	06/2009			Replace (16) 115 kV breakers at Tewksbury 22.	In-service	\$3,300,000	\$3,300,000
Reliability Upgrade	1a	1009	Northeast Utilities	05/2009			Install a 2% reactor on the North Bloomfield-Canton 115kV line and also replacement to the Frostbridge 345/115kV autotransformer	In-service	\$3,089,000	\$3,089,000
Reliability Upgrade	1a	203	Northeast Utilities	05/2009		NU LSP - Stepstone Substation	Install new Stepstone 115 kV substation in Guilford.	In-service	\$6,332,000	\$6,332,000
Reliability Upgrade	1a	1064	NSTAR Electric Company	04/2009			Install (1) 345kV 160 MVAR shunt reactor at Mystic Station	In-service	\$10,400,000	\$10,400,000
Reliability Upgrade	1a	1051	Central Maine Power Company	09/2009		Rumford-Woodstock-Kimball Road Corridor Project	Addition of Riley 115 kV capacitor bank.	In-service	Part of Project 625	Part of Project 625
Reliability Upgrade	1a	267	Northeast Utilities	8/2009		Y138 Closing	White Lake - Saco Valley (Y138) Line Closing - Add PAR on Y138 at Saco Valley, retension lines, upgrade Beebe terminal, and add capacitor banks at White Lake and Beebe.	In-service	\$27,775,000	\$27,775,000
Reliability Upgrade	1a	936	National Grid, USA	07/2009		Central/Western Massachusetts Upgrades	Reconductor (P142/P142S) Rolfe Avenue - West Bolyston 115 kV line w/1590 ACSR.	In-service	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	176	Northeast Utilities	07/2009		Monadnock Area Reliability Project	New Fitzwilliam 345/115kV substation along with 345 kV breakers.	In-service	\$76,100,000	\$76,100,000
Reliability Upgrade	1a	174	National Grid, USA	06/2009		Monadnock Area Reliability Project	Reconductor I-135 (Bellows Falls-Monadnock Tap-Flagg Pond) 115 kV line.	In-service	\$15,778,000	\$15,778,000
Reliability Upgrade	1a	832	NSTAR Electric Company	07/2009		Short Term Lower SEMA Upgrades	Add(1) 115kV SVC (0-112 MVARs lagging) at Barnstable.	In-service	\$82 M (Total NSTAR Project Cost Including Brook St. Station upgrade)	\$82,000,000
Reliability Upgrade	1a	182	Vermont Electric Power Company	09/2009		Monadnock Area Reliability Project	Upgrade bus cable at N. Rutland and K35 115 kV breaker at Rutland.	In-service	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	302	NSTAR Electric Company	05/2009		Boston Area 115 kV Enhancements	DCT separation of Framingham to Speen St. 433-507 circuit.	In-service	\$3,100,000	\$3,100,000
Reliability Upgrade	1a	320	Vermont Electric Power Company	10/2009	2009	Lamoille County Project	Middlesex Substation 115 kV breaker addition.	In-service	\$4,857,000	\$4,857,000
Reliability Upgrade	1a	322	Vermont Electric Power Company	10/2009	2009	Lamoille County Project	Installation of new Duxbury Substation that involves looping in and out of the Middlesex - Essex 115 kV (K24) line.	In-service	Part of Lamoille County Project	Part of Lamoille County Project



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Reliability Upgrade	1a	321	Vermont Electric Power Company	11/2009	2009	Burlington Project	Burlington 115kV Loop - 5 mi of new line & rebuilding 5 miles of existing line between two existing substations with expansion of the East Avenue substation.	In-service	\$25,142,000	\$25,142,000
Reliability Upgrade	1a	1063	NSTAR Electric Company	12/2009	2009		Install (2) 115kV 40 MVAR shunt reactors at Edgar Station	In-service	\$3,745,000	\$3,745,000
Reliability Upgrade	1a	777	National Grid, USA	11/2009	2009	Merrimack Valley/North Shore Reliability Project	Build Wakefield Junction station with four 345/115 kV autotransformers.	In-service	\$95,000,000	\$95,000,000
Reliability Upgrade	1a	161	National Grid, USA	11/2009	2009	Merrimack Valley/North Shore Reliability Project	Loop 345 kV 339 line and 115 kV S-145/T-146 into new Wakefield Jct. Substation.	In-service	\$5,406,900	\$5,406,900
Reliability Upgrade	1a	961	NSTAR Electric Company	12/2009	2009	Mystic Breaker Additions Project	Install (2) new 115 kV East Bus breakers #30 and #32 at Mystic.	In-service	\$3,689,000	\$3,689,000
Reliability Upgrade	1a	903	NSTAR Electric Company	12/2009	2009	Mystic IPT Breaker Project	Upgrade (4) 115 kV breakers #2, #4, #5, and #16 at Mystic to IPT and separate controls with Boston Gen units #5 and #6.	In-service	\$1,576,000	\$1,576,000
Reliability Upgrade	1a	930	National Grid, USA	11/2009	2009	Central/Western Massachusetts Upgrades	Reconductor Nashua St - Quinsigamond Jct (O141) 115 kV line w/636 ACSS.	In-service	\$2,300,000	\$2,300,000
Reliability Upgrade	1a	211	Northeast Utilities	11/2009	2009	NU LSP - Rood Ave Substation	New Rood Ave (formally Windsor) distribution substation with 115kV terminal modifications.	In-service	\$8,681,000	\$8,681,000
Reliability Upgrade	1a	789	National Grid, USA	12/2009	2009	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Reconductoring of T7 115 kV line.	In-service	\$23,304,000	\$23,304,000
Reliability Upgrade	1b	963	NSTAR Electric Company	12/2009	2009	Boston Area 115 kV Enhancements	Add a new 115kV breaker # 11. Relocate 447-509 and add control and protection at Holbrook.	In-service	\$1,276,800	\$1,276,800
Reliability Upgrade	1a	933	National Grid, USA	01/2010	2010	Central/Western Massachusetts Upgrades	Reconductor Pratts Jct - Flagg Pond I-135S & J-136S 115 kV lines w/795 ACSS.	In-service	\$11,200,000	\$11,200,000
Reliability Upgrade	1b	1167	NSTAR Electric Company	12/2010	2010		Replace three 40kA 115kV circuit breakers at Carver with 63kV breakers	Concept	\$850,000	\$850,000
Reliability Upgrade	1b	1157	Bangor Hydro-Electric Company	12/2010	2010		Bangor Hydro Synchrophasors	Concept	\$100,000	\$100,000
Reliability Upgrade	1a	1128	Central Maine Power Company	07/2010	2010	CMP-LSP Hotel Road Substation	Add 115/34kV transformer with 115kV breaker at Hotel Rd.	Planned	\$800,000	\$800,000
Reliability Upgrade	1a	624	Central Maine Power Company	2010	2010	Rumford-Woodstock-Kimball Road Corridor Project	Install 115 kV line (New Page - Rumford Industrial Park)	Planned	Part of project 625	Part of project 625
Reliability Upgrade	1a	1145	Vermont Electric Power Company	12/2010	2010	Burlington Gorge Project	Installation of a 3-breaker 115kV ring substation and 115/34.5kV transformer on the East Ave. - Tafts Coners 115kV line	Planned	\$14,000,000	\$14,000,000
Reliability Upgrade	1a	1152	National Grid, USA	8/2010	2010		Bear Swamp - Pratts Junction 230kV Line Refurbishment Project (E205E)	Planned	\$43,596,000	\$43,596,000
Reliability Upgrade	1a	842	NSTAR Electric Company	06/2010	2010	Boston Area 115 kV Enhancements	Add 115 kV 54 MVAR capacitor bank at W. Framingham.	Planned	\$2,650,000	\$2,650,000
Reliability Upgrade	1a	1113	NSTAR Electric Company	12/2010	2010		Install 115kV Breaker #31 at K St.	Planned	\$2,800,000	\$2,800,000
Reliability Upgrade	1a	928	National Grid, USA	12/2010	2010	Central/Western Massachusetts Upgrades	Millbury -upgrade terminal equipment for O-141, P-142, B-128, A-127 circuit breakers.	Planned	\$2,300,000	\$2,300,000
Reliability Upgrade	1a	927	National Grid, USA	07/2010	2010	Central/Western Massachusetts Upgrades	Greendale - replace 115 kV breaker and upgrade to 2000A.	Planned	\$680,000	\$680,000
Reliability Upgrade	1a	924	National Grid, USA	12/2010	2010	Central/Western Massachusetts Upgrades	Replace five 115 kV-25 kA breakers with 115 kV-50 kA breakers and upgrade disconnect switch (175-3) to 2000A.	Planned	\$2,147,181	\$2,147,181
Reliability Upgrade	1a	1067	NSTAR Electric Company	12/2010	2010	NPCC BPS Compliance	Tremont Station	Planned	\$12,370,000	\$12,370,000
Reliability Upgrade	1a	484	National Grid, USA	11/2010	2010	Greater Rhode Island Transmission Reinforcements 1	Add (1) new 115 kV breaker at Woonsocket.	Planned	\$580,000	\$580,000
Reliability Upgrade	1a	1055	Northeast Utilities	2010	2010	CT LSP - Waterside Substation	Waterside Substation - add a 115/13.2-kV transformer and a 115-kV circuit breaker.	Planned	\$2,619,000	\$2,619,000
Reliability Upgrade	1a	1049	United Illuminating Company	12/2010	2010		East Shore 115 kV Capacitor Bank Transient Recovery	Planned	\$4,050,000	\$4,050,000
Reliability Upgrade	1a	582	Northeast Utilities	12/2010	2010		Separate 310 and 368 345-kV lines and create 368/1767 DCT	Planned	\$16,000,000	\$16,000,000
Reliability Upgrade	1a	1112	United Illuminating Company	12/2010	2010		Water Street 115kV circuit breaker and switch replacements.	Planned	\$2,840,000	\$2,840,000

inservice 2009 additional \$174,977,700

inservice 2010 \$11,200,00

2010 Concept 2

2010 Planned 15

2010 Proposed 1

2010 Under Constr 18

Notes  
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## October '09 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Projected In-Service Month/Year	Projected In-Service Year	Major Project	Project	Oct -09 Status	Oct-09 Estimated PTF Costs	
Reliability Upgrade	1b	1133	Central Maine Power Company	10/2010	2010	CMP-LSP Leeds Substation	Add 115/34kV Leeds Substation & new 34kV line from Leeds to Turner	Proposed	\$300,000	\$300,000
Reliability Upgrade	1a	1166	NSTAR Electric Company	12/2010	2010	Greater Boston Reliability Project	Terminal upgrades at W. Walpole and W. Medway for #325 line	Proposed	\$1,350,000	\$1,350,000
Reliability Upgrade	1b	1150	United Illuminating Company	12/2010	2010		Grand Avenue - West River 115 kV Pumping Plant Replacements	Proposed	\$2,900,000	\$2,900,000
Reliability Upgrade	1a	144	Bangor Hydro-Electric Company	12/2010	2010	Keene Rd Autotransformer	Installation of a 345/115 kV autotransformer at Keene Rd Substation.	Under Construction	\$29,000,000	\$29,000,000
Reliability Upgrade	1a	625	Central Maine Power Company	04/2010	2010	Rumford-Woodstock-Kimball Road Corridor Project	Addition of Rumford Industrial Park capacitor bank.	Under Construction	\$5,400,000	\$5,400,000
Reliability Upgrade	1a	1029	Central Maine Power Company	11/2010	2010	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformer at South Gorham	Under Construction	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1144	Central Maine Power Company	09/2010	2010	Heywood Road Project	Circuit switcher replacements at Detroit, Lakewood, Rice Rips and Winslow	Under Construction	Part of Heywood Road Project	Part of the Heywood Road Project
Reliability Upgrade	1a	323	Vermont Electric Power Company	12/2010	2010	Vermont Southern Loop Project	New VY - Newfane - Coolidge 345 kV line with requisite station upgrades.	Under Construction	\$136,368,000	\$136,368,000
Reliability Upgrade	1a	1032	Vermont Electric Power Company	09/2010	2010	Vermont Southern Loop Project	Installation of a new 345/115kV substation called Vernon including a new 345/115kV autotransformer	Under Construction	\$69,815,000	\$69,815,000
Reliability Upgrade	1a	1033	Vermont Electric Power Company	12/2010	2010	Vermont Southern Loop Project (VELCO LSP - Newfane Substation)	Installation of a new 345/115kV substation called Newfane	Under Construction	\$16,664,000	\$16,664,000
Reliability Upgrade	1a	1034	Vermont Electric Power Company	12/2010	2010	Vermont Southern Loop Project	Loop new 345kV Line into Newfane Substation.	Under Construction	Part of project 323	Part of project 323
Reliability Upgrade	1a	1035	Vermont Electric Power Company	12/2010	2010	Vermont Southern Loop Project	Expansion of Coolidge 345kV substation	Under Construction	\$20,117,000	\$20,117,000
Reliability Upgrade	1a	779	National Grid, USA	04/2010	2010	Merrimack Valley/North Shore Reliability Project	Bypass and remove Golden Hills 345 kV substation.	Under Construction	\$5,507,195	\$5,507,195
Reliability Upgrade	1a	904	NSTAR Electric Company	12/2010	2010	Mystic IPT Breaker Project	Upgrade (5) 115 kV breakers #1, #7, #15 #19 and #20 at Mystic to IPT.	Under Construction	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	1119	NSTAR Electric Company	06/2010	2010	Greater Boston Reliability Project	Upgrade West Medway-West Walpole 345kV line #325	Under Construction	\$2,200,000	\$2,200,000
Reliability Upgrade	1a	1120	NSTAR Electric Company	06/2010	2010		Install 345kV 160 MVAR shunt reactor at W. Walpole	Under Construction	\$7,200,000	\$7,200,000
Reliability Upgrade	1a	902	National Grid, USA	10/2010	2010	Middleboro Municipal	Close the E1-M1 loop at Middleboro's Wareham St Sub.	Under Construction	\$715,000	\$715,000
Reliability Upgrade	1a	786	National Grid, USA	11/2010	2010	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Terminal upgrades at Drumrock, Chartley Pond, and Brayton Point.	Under Construction	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	787	National Grid, USA	06/2010	2010	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	West Farnum breaker replacements.	Under Construction	\$7,631,000	\$7,631,000
Reliability Upgrade	1a	809	Northeast Utilities	12/2010	2010		Upgrade terminal equipment at Bunker Hill 115 kV substation.	Under Construction	\$516,000	\$516,000
Reliability Upgrade	1a	1110	United Illuminating Company	12/2010	2010		Broadway 115/13.8 kV Substation Addition	Under Construction	\$1,200,000	\$1,200,000
Reliability Upgrade	1b	301	NSTAR Electric Company	12/2011	2011	Boston Area 115 kV Enhancements	Reconductor 115-kV circuits 320-507 and 320-508.	Concept	\$4,600,000	\$4,600,000
Reliability Upgrade	1b	1156	Bangor Hydro-Electric Company	12/2011	2011	Maine Power Reliability Program (MPRP)	Orrington Shunt Cap Reconfiguration	Concept	TBD	TBD
Reliability Upgrade	1b	318	Vermont Electric Power Company	12/2011	2011		Rebuild the existing Georgia substation 115 kV bus into a ring bus to address reliability problems through the 1,250 MW Vermont state load level.	Concept	\$9,000,000	\$9,000,000
Reliability Upgrade	1b	325	Vermont Electric Power Company	12/2011	2011	VELCO LSP - Chelsea Substation	Replace (2) SCADA controlled motorized disconnect switches with 115 kV circuit breakers at the existing Chelsea substation to maintain adequate supply to the load.	Concept	\$5,000,000	\$5,000,000
Reliability Upgrade	1b	1153	NSTAR Electric Company	12/2011	2011	Boston Area 115 kV Enhancements	Reliability Upgrades at West Framingham Station	Concept	\$3,000,000	\$3,000,000
Reliability Upgrade	1a	1146	Vermont Electric Power Company	02/2011	2011	Lyndonville Project	Installation of a 4-breaker ring 115 kV substation consisting of two 115kV 12.5 MVAR capacitor banks and 115/34.5 kV transformer interconnecting to the Irasburg - St. Johnsbury 115kV line	Planned	\$9,000,000	\$9,000,000
Reliability Upgrade	1a	783	National Grid, USA	03/2011	2011	Merrimack Valley/North Shore Reliability Project	Extend the 115kV by addition of 115kV Breaker and K-153 line from King St. to W. Amesbury 115kV station. (W. Amesbury 345/115kV Station becomes PTF)	Planned	\$30,349,000	\$30,349,000
Reliability Upgrade	1a	1165	NSTAR Electric Company	12/2011	2011	Mystic Breaker Additions Project	Move Transformer 110B Connection at Mystic	Planned	\$1,700,000	\$1,700,000
Reliability Upgrade	1a	929	National Grid, USA	06/2011	2011	Central/Western Massachusetts Upgrades	Searsburg - install in-line 69 kV breaker for operational flexibility.	Planned	\$1,381,849	\$1,381,849
Reliability Upgrade	1a	939	National Grid, USA	12/2011	2011	Central/Western Massachusetts Upgrades	Reconductor and retention (E205W) Harriman - Bear Swamp Tap 230 kV circuit.	Planned	\$3,389,658	\$3,389,658
Reliability Upgrade	1a	940	National Grid, USA	04/2011	2011	Central/Western Massachusetts Upgrades	Reconductor sections of A127W line w/795 ACSS.	Planned	\$6,235,744	\$6,235,744

2011 Concept 5  
 2011 Planned 24  
 2011 Proposed 6  
 2011 Under Constr 6

Notes  
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## October '09 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Projected In-Service Month/Year	Projected In-Service Year	Major Project	Project	Oct -09 Status	Oct-09 Estimated PTF Costs	
Reliability Upgrade	1a	942	National Grid, USA	12/2011	2011	Central/Western Massachusetts Upgrades	Webster St. - add two 115 kV circuit breakers.	Planned	\$3,650,000	\$3,650,000
Reliability Upgrade	1a	925	National Grid, USA	10/2011	2011	Central/Western Massachusetts Upgrades	Pratts Jct. - supply 13 kV from T3 and T4.	Planned	\$318,888	\$318,888
Reliability Upgrade	1a	926	National Grid, USA	10/2011	2011	Central/Western Massachusetts Upgrades	Pratts Jct. - replace T8 autotransformer with 230 kV 333 mVA, upgrade breaker and bus to 115 kV. Install high side 230 kV breaker.	Planned	\$6,027,520	\$6,027,520
Reliability Upgrade	1a	932	National Grid, USA	10/2011	2011	Central/Western Massachusetts Upgrades	Pratts Jct. - increase thermal rating of I-135 and J-136 buswork.	Planned	\$372,036	\$372,036
Reliability Upgrade	1a	943	National Grid, USA	01/2011	2011	Central/Western Massachusetts Upgrades	Millbury - new 115 kV breaker position for new line to Twr 510.	Planned	\$1,073,995	\$1,073,995
Reliability Upgrade	1a	944	National Grid, USA	12/2011	2011	Central/Western Massachusetts Upgrades	Wachusett - install one 345 kV, 448 mVA transformer, one 345 kV breaker, and one 115 kV breaker.	Planned	\$16,530,000	\$16,530,000
Reliability Upgrade	1a	945	National Grid, USA	12/2011	2011	Central/Western Massachusetts Upgrades	Adams - install third 115 kV breaker to complete ring bus.	Planned	\$1,584,841	\$1,584,841
Reliability Upgrade	1a	952	National Grid, USA	06/2011	2011	Central/Western Massachusetts Upgrades	Reconductor E Winchendon - J136 Tap within I135/J136 ROW w/795 ACSR.	Planned	\$932,156	\$932,156
Reliability Upgrade	1a	955	National Grid, USA	11/2011	2011	Central/Western Massachusetts Upgrades	Reconductor (W175) W Charlton - Little Rest - Palmer w/1590 ACSR.	Planned	\$12,213,934	\$12,213,934
Reliability Upgrade	1a	1000	Northeast Utilities	12/2011	2011	Agawam-West Springfield Project	Separate and reconductor the 1311 and 1412 (West Springfield - Agawam) 115 kV double circuit.	Planned	\$22,000,000	\$22,000,000
Reliability Upgrade	1a	1076	Northeast Utilities	12/2011	2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1311) 115kV line	Planned	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	1077	Northeast Utilities	12/2011	2011	Agawam-West Springfield Project	Add a 2nd high speed protection scheme to Agawam to West Springfield (1412) 115kV line	Planned	Part of Agawam-West Springfield Project	Part of Agawam-West Springfield Project
Reliability Upgrade	1a	1066	NSTAR Electric Company	09/2011	2011	NPCC BPS Compliance	Needham Station	Planned	\$10,531,000	\$10,531,000
Reliability Upgrade	1a	1147	Northeast Utilities	2011	2011		Waterside Substation - install a three-breaker 115kV ring bus	Planned	\$5,055,000	\$5,055,000
Reliability Upgrade	1a	1148	Northeast Utilities	2011	2011		Add a 2nd high speed relay on the Glennbrook to Waterside 115kV 1440	Planned	Part of Project #1147	Part of Project #1147
Reliability Upgrade	1a	1056	Northeast Utilities	12/2011	2011	CT LSP - Sherwood Substation	Sherwood Substation - add a 115/13.8-kV substation with two transformers and a 115-kV circuit breaker.	Planned	\$10,969,000	\$10,969,000
Reliability Upgrade	1a	1111	United Illuminating Company	8/2011	2011		Metro North Union Avenue 115/26.4 kV Substation	Planned	\$10,543,000	\$10,543,000
Reliability Upgrade	1a	1050	United Illuminating Company	12/2011	2011		Devon Tie 115kV Switching Station BPS Compliance	Planned	\$3,240,000	\$3,240,000
Reliability Upgrade	1b	1116	Bangor Hydro-Electric Company	12/2011	2011	Maine Power Reliability Program (MPRP)	L 64 Rebuild	Proposed	\$37,126,000	\$37,126,000
Reliability Upgrade	1b	1130	Central Maine Power Company	12/2011	2011	Sturtevant Improvements	Add 115kV circuit breakers & 25 MVAR capacitor bank at Sturtevant Substation; Re-rate Section 63 between Wyman Hydro & Madison Substation	Proposed	\$3,000,000	\$3,000,000
Reliability Upgrade	1b	1131	Central Maine Power Company	12/2011	2011	CMP-LSP Bowman St. Substation	Add 115/34kV transformer	Proposed	\$600,000	\$600,000
Reliability Upgrade	1b	1132	Central Maine Power Company	12/2011	2011	CMP-LSP Maxcy's Substation	Add 115/34kV transformer (coordinate with MPRP)	Proposed	\$600,000	\$600,000
Reliability Upgrade	1b	964	NSTAR Electric Company	06/2011	2011	Boston Area 115 kV Enhancements	Relocate 115kV terminals at W. Walpole to mitigate breaker failure #8.	Proposed	\$5,600,000	\$5,600,000
Reliability Upgrade	1b	1151	United Illuminating Company	12/2011	2011		West River 115kV Switching Station Fault Duty Migration	Proposed	\$3,500,000	\$3,500,000
Reliability Upgrade	1a	934	National Grid, USA	09/2011	2011	Central/Western Massachusetts Upgrades	Reconductor #2 Tap from Tower 510 - Webster St. 115 kV circuit.	Under Construction	Part of RSP 935	Part of RSP 935
Reliability Upgrade	1a	935	National Grid, USA	09/2011	2011	Central/Western Massachusetts Upgrades	Reconductor from (A-127E/B-128E) Millbury - Tower 510 115 kV line.	Under Construction	\$10,200,000	\$10,200,000
Reliability Upgrade	1a	162	National Grid, USA	04/2011	2011		Q-169 Golden Hills to Lynn 115 kV line upgrade.	Under Construction	\$12,390,000	\$12,390,000
Reliability Upgrade	1a	788	National Grid, USA	06/2011	2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Kent County substation expansion.	Under Construction	\$42,300,000	\$42,300,000
Reliability Upgrade	1a	790	National Grid, USA	12/2011	2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	Berry Street 345/115 kV substation.	Under Construction	\$50,600,000	\$50,600,000
Reliability Upgrade	1a	1098	National Grid, USA	12/2011	2011	Greater Rhode Island Transmission Reinforcements (Advanced NEEWS)	345/115kV line interconnections at Berry Street	Under Construction	\$37,529,000	\$37,529,000

2012 Concept	4
2012 Planned	49
2012 Proposed	2
2012 Under Constr	10

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## October '09 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Projected In-Service Month/Year	Projected In-Service Year	Major Project	Project	Oct -09 Status	Oct-09 Estimated PTF Costs	
Reliability Upgrade	1b	970	NSTAR Electric Company	12/2012	2012	Greater Boston Reliability Project	Add a new 345 kV line from Lexington to Waltham.	Concept	TBD	TBD
Reliability Upgrade	1b	971	NSTAR Electric Company	12/2012	2012	Greater Boston Reliability Project	Add a new 345/230 kV auto at Waltham and 230 kV switching facilities.	Concept	TBD	TBD
Reliability Upgrade	1b	1031	Bangor Hydro-Electric Company	12/2012	2012	Maine Power Reliability Program (MPRP)	Rebel Hill Switching Station	Concept	TBD	TBD
Reliability Upgrade	1b	965	NSTAR Electric Company	12/2012	2012	Boston Area 115 kV Enhancements	Add third 115kV line from W. Walpole to Holbrook	Concept	TBD	TBD
Reliability Upgrade	1a	905	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Orrington-Albion Rd-Coopers Mills, Coopers Mills-Larrabee Road, Larrabee Road-Surowiec).	Planned	\$1,510,000,000	\$1,510,000,000
Reliability Upgrade	1a	906	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	New 115kV line construction (Orrington-Coopers Mills, Coopers Mills-Highland, Larrabee Road-Lewiston Lower, Larrabee Road-Livermore Falls, Livermore Falls-Rumford IP)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	907	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	Rebuild Existing 115kV lines: Sections 86 (Bucksport-Belfast), Section 84 (Albion Road-Coopers Mills), Section 203 (Detroit-Orrington), Section 80 (Coopers Mills-Highland), Sections 60 & 212 (Coopers Mills-Bowman St-Larrabee Road), Sections 89 & 229 (Livermore Falls-Riley-Rumford IP)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	908	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Albion Road, Larrabee Road)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	909	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	Add 2-115kV breakers & rebuild 86A, new .25 mile transmission at Belfast	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1025	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	Separation of Double Circuit Towers (345kV Kennebec River Crossing 375/377 & Maine Yankee 375/392, 115kV Bucksport 65/205) and Maine Yankee 345 kV re-termination	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1026	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	New 345kV Line Construction (Surowiec-Raven Farm, South Gorham-Maguire Road, Maguire Road-Three Rivers)	Planned	Portion of CMP \$1.51B and portion of NU is \$36.0M	\$36,000,000
Reliability Upgrade	1a	1027	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	New 115kV Line Construction (Elm Street-East Deering, East Deering -Cape)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1028	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	Rebuild existing 115kV Line (Section 250, Maguire Rd-Three Rivers)	Planned	Portion of CMP \$1.51B and portion of NU is TBD	Portion of CMP \$1.51B and portion of NU is TBD
Reliability Upgrade	1a	1158	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	Two 40 MVAR reactors at Albion Road, two 40 MVAR reactors at Larabee Road, two 40 MVAR at Coopers Mills	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	1030	Central Maine Power Company	12/2012	2012	Maine Power Reliability Program (MPRP)	New 345/115kV Autotransformers (Raven Farm, Maguire Road)	Planned	Part of Maine Power Reliability Program	Part of Maine Power Reliability Program
Reliability Upgrade	1a	143	Bangor Hydro-Electric Company	12/2012	2012	Down East Reliability Improvement	Contract 115 kV from Trenton tap (part of Hancock Reliability Project) to new Tunk Lake Substation to Harrington Substation.	Planned	\$66,100,000	\$66,100,000
Reliability Upgrade	1a	1129	Central Maine Power Company	05/2012	2012		New 115kV line between Wyman Hydro and Heywood Rd. parallel to exiting Section 83. Install a 115kV circuit breaker at Wyman Hydro termination	Planned	\$32,800,000	\$32,800,000
Reliability Upgrade	1a	277	Northeast Utilities	2012	2012	2nd Deerfield 345/115kV Autotransformer Project	Add 2nd 345/115 kV autotransformer and 3-345kV breakers at Deerfield substation.	Planned	\$56,000,000	\$56,000,000
Reliability Upgrade	1a	1137	Northeast Utilities	2012	2012	2nd Deerfield 345/115kV Autotransformer Project	Replace 5-115kV breakers and add 1-115kV breaker at Deerfield Substation	Planned	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1138	Northeast Utilities	2012	2012	2nd Deerfield 345/115kV Autotransformer Project	Rebuild 115kV L175 line	Planned	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1139	Northeast Utilities	2012	2012	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV M183 Line	Planned	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	1140	Northeast Utilities	2012	2012	2nd Deerfield 345/115kV Autotransformer Project	Reconductor 115kV C129 Line	Planned	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	887	National Grid, USA	09/2012	2012	Auburn Area Transmission System Upgrades	Expand Auburn St Substation to include 2nd 345/115 kV autotransformer and 345 kV ring bus.	Planned	\$76,000,000	\$76,000,000
Reliability Upgrade	1a	921	National Grid, USA	06/2012	2012	Auburn Area Transmission System Upgrades	Bridgewater substation - Upgrade Bus work and convert to BPS substation.	Planned	\$40,000,000	\$40,000,000
Reliability Upgrade	1a	919	National Grid, USA	12/2012	2012	Auburn Area Transmission System Upgrades	Dupont substation - Upgrade Buswork and convert to BPS substation.	Planned	\$4,600,000	\$4,600,000

Notes  
 - Gray shading indicates change from JULY '08 Update.  
 - All costs provided by Transmission Owners.

## October '09 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Projected In-Service Month/Year	Projected In-Service Year	Major Project	Project	Oct -09 Status	Oct-09 Estimated PTF Costs	
Reliability Upgrade	1a	840	NSTAR Electric Company	06/2012	2012	Merrimack Valley/North Shore Reliability Project	Upgrade the 115 kV line (Line 423-515) from Mystic-Everett by adding a new parallel cable to the existing 115 kV cable. (NSTAR portion only)	Planned	\$7,300,000	\$7,300,000
Reliability Upgrade	1a	775	National Grid, USA	06/2012	2012	Merrimack Valley/North Shore Reliability Project	Addition of 4 breakers and relocation of T1 and T2 into new bays at Sandy Pond.	Planned	\$20,100,000	\$20,100,000
Reliability Upgrade	1a	776	National Grid, USA	09/2012	2012	Merrimack Valley/North Shore Reliability Project	Re-conductor O-167 (NGRID portion of Mystic - Everett) 115 kV line.	Planned	\$3,125,000	\$3,125,000
Reliability Upgrade	1a	59	National Grid, USA	06/2012	2012	Auburn Reliability Transmission System Upgrades	G18, F19 line terminals 115kV upgrades at Bridgewater sub	Planned	Part of RSP 921	Part of RSP 921
Reliability Upgrade	1a	1068	NSTAR Electric Company	12/2012	2012	Long Term Lower SEMA Upgrades	Install a new 345kV line from Carver to vicinity of Bourne and connect to existing #120 line and install a 345KV - 115kV auto-transformer at new substation about 3 miles west of the Barnstable Substation?	Planned	\$110,000,000	\$110,000,000
Reliability Upgrade	1a	592	NSTAR Electric Company	12/2012	2012	Long Term Lower SEMA Upgrades	Separate existing 345kV double circuit Cape Cod Canal crossing	Planned	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA
Reliability Upgrade	1a	1118	NSTAR Electric Company	12/2012	2012	Long Term Lower SEMA Upgrades	Upgrade 115kV line D21	Planned	Part of Long Term Lower SEMA	Part of Long Term Lower SEMA
Reliability Upgrade	1a	938	National Grid, USA	05/2012	2012	Central/Western Massachusetts Upgrades	Deerfield - install a new 115/69KV autotransformer and a 69KV breaker and disconnect switches.	Planned	\$3,068,556	\$3,068,556
Reliability Upgrade	1a	941	National Grid, USA	06/2012	2012	Central/Western Massachusetts Upgrades	Install new Z126 Millbury - Tower #510 115 kV line.	Planned	\$13,748,000	\$13,748,000
Reliability Upgrade	1a	946	National Grid, USA	12/2012	2012	Central/Western Massachusetts Upgrades	Convert 69 kV (O-15S) Palmer - E Longmeadow - Shaker Rd line to 115 kV.	Planned	\$9,962,060	\$9,962,060
Reliability Upgrade	1a	947	National Grid, USA	12/2012	2012	Central/Western Massachusetts Upgrades	Reconductor 115 kV line from Palmer to new Hampden Substation.	Planned	\$2,632,635	\$2,632,635
Reliability Upgrade	1a	948	National Grid, USA	12/2012	2012	Central/Western Massachusetts Upgrades	Hampden - build new 115 kV substation at 1515/O-15S intersection (4 breaker ring).	Planned	\$5,649,430	\$5,649,430
Reliability Upgrade	1a	949	National Grid, USA	12/2012	2012	Central/Western Massachusetts Upgrades	Palmer - add 115 kV breaker position for O15S conversion, includes thermal upgrade of W-175 bay.	Planned	\$1,500,000	\$1,500,000
Reliability Upgrade	1a	937	National Grid, USA	05/2012	2012	Central/Western Massachusetts Upgrades	Bear Swamp - install one 230-115 kV 333 mVA auto, one 115 kV breaker and upgrade various terminal equipment.	Planned	\$6,602,875	\$6,602,875
Reliability Upgrade	1a	673	National Grid, USA	12/2012	2012	Worcester Area Reinforcements	Add new 115kV bay to separate the M-165 & E-157 terminal at Millbury #2 Substation	Planned	\$2,200,000	\$2,200,000
Reliability Upgrade	1a	676	National Grid, USA	12/2012	2012	Worcester Area Reinforcements	New Bloomingdale to Vernon Hill 115 kV (UG Cable-3.6 mi.) new 115kV breaker at Bloomingdale & Vernon Hill	Planned	\$30,000,000	\$30,000,000
Reliability Upgrade	1a	1065	NSTAR Electric Company	07/2012	2012	NPCC BPS Compliance	Waltham Station	Planned	\$23,190,000	\$23,190,000
Reliability Upgrade	1a	1095	National Grid, USA	06/2012	2012	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV West Farnum Substation Equipment	Planned	\$73,800,000	\$73,800,000
Reliability Upgrade	1a	795	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	New Kent County to West Farnum 345kV line.	Planned	\$99,900,000	\$99,900,000
Reliability Upgrade	1a	1106	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	Installation of third 345/115kV autotransformer at Kent County.	Planned	Part of \$99,900,000 above	Part of \$99,900,000 above
Reliability Upgrade	1a	798	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	Upgrade of 115kV terminal equipment at Franklin Square.	Planned	\$4,900,000	\$4,900,000
Reliability Upgrade	1a	799	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	G-185N (Kent County-Drumrock) 115 kV reconductor.	Planned	\$4,500,000	\$4,500,000
Reliability Upgrade	1a	1096	National Grid, USA	05/2012	2012	NEEWS (Rhode Island Reliability Project)	Drumrock substation: Terminal equipment upgrades, Protection modifications and upgrades to meet BPS standards	Planned	\$12,000,000	\$12,000,000
Reliability Upgrade	1a	800	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	Reconductoring of short segments of S-171S, T-172N and T-172S with associated terminal equipment upgrades.	Planned	\$10,000,000	\$10,000,000
Reliability Upgrade	1a	1097	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	Relocate and Rebuild 115kV lines in the same ROW associated with new 345kV line from W. Farnum to Kent County	Planned	\$129,800,000	\$129,800,000
Reliability Upgrade	1a	1099	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	Hartford Ave 115kV terminal equipment upgrades	Planned	\$6,000,000	\$6,000,000
Reliability Upgrade	1a	1109	National Grid, USA	06/2012	2012	NEEWS (Rhode Island Reliability Project)	South Wrentham 115kv terminal equipment upgrades	Planned	\$1,000,000	\$1,000,000
Reliability Upgrade	1a	976	United Illuminating Company	05/2012	2012		Grand Avenue 115 kV Switching Station Rebuild.	Planned	\$66,000,000	\$66,000,000
Reliability Upgrade	1b	148	Central Maine Power Company	06/2012	2012	CMP LSP - Saco Bay Area Reinforcement Project	Establish a new Vallee Lane 115/34.5 kV substation and 115 kV line from Loudon S/S to Vallee Lane Substation.	Proposed	\$100,000	\$100,000

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Reliability Upgrade	1b	1136	National Grid, USA	12/2012	2012		New 115kV Switching Station at Devens Convert 69kV lines to 115kV, Reconfigure 115kV Supply at Ayer Substation	Proposed	\$9,200,000	\$9,200,000
Reliability Upgrade	1b	593	NSTAR Electric Company	2013	2013	Mid Cape Reliability Project	Add a new 115 kV line from Canal to Barnstable/Falmouth	Concept	TBD	TBD
Reliability Upgrade	1b	1154	Bangor Hydro-Electric Company	12/2013	2013	Maine Power Reliability Program (MPRP)	Rebuild Line 66	Concept	TBD	TBD
Reliability Upgrade	1b	1155	Bangor Hydro-Electric Company	12/2013	2013	Maine Power Reliability Program (MPRP)	Capacitor Bank Addition (10 MVAR at Trenton and Epping)	Concept	TBD	TBD
Reliability Upgrade	1b	843	NSTAR Electric Company	12/2013	2013	Boston Area 115 kV Enhancements	Install (2) new 115 kV breakers at Trapelo Road.	Concept	TBD	TBD
Reliability Upgrade	1a	680	National Grid, USA	03/2013	2013		Rebuild Bellows Falls Substation and install 115 kV capacitor bank.	Planned	\$7,393,000	\$7,393,000
Reliability Upgrade	1a	674	National Grid, USA	12/2013	2013		Replace Comerford 230 kV breakers and add (1) 230 kV bus tie breaker.	Planned	\$22,115,000	\$22,115,000
Reliability Upgrade	1a	931	National Grid, USA	01/2013	2013	Central/Western Massachusetts Upgrades	Park St. - incremental cost of designing for 115 kV instead of 69 kV.	Planned	\$531,481	\$531,481
Reliability Upgrade	1a	950	National Grid, USA	12/2013	2013	Central/Western Massachusetts Upgrades	E Winchendon - install 115 kV breaker and 115 kV disconnect switch.	Planned	\$1,016,897	\$1,016,897
Reliability Upgrade	1a	953	National Grid, USA	12/2013	2013	Central/Western Massachusetts Upgrades	Otter River - expand substation into 6-breaker ring bus with four 115 kV breakers and install two transformers.	Planned	\$10,248,067	\$10,248,067
Reliability Upgrade	1a	954	National Grid, USA	12/2013	2013	Central/Western Massachusetts Upgrades	E Westminster - install new 115 kV breaker, including disconnect switches. Assumes no new control house.	Planned	\$903,909	\$903,909
Reliability Upgrade	1a	951	National Grid, USA	02/2013	2013	Central/Western Massachusetts Upgrades	Install new Otter River - E Winchendon 115 kV line.	Planned	\$7,455,440	\$7,455,440
Reliability Upgrade	1a	687	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Fairmont 16H Substation Expansion	Planned	\$714,000,000	\$714,000,000
Reliability Upgrade	1a	826	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	South Agawam 42E Substation Reconfigure	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	196	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line (3216), Agawam (MA) - North Bloomfield (CT)	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	818	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Reconstruct a new 115kV line South Agawam to Southwick (1768)	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	819	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Build new 345kV line Ludlow - Agawam (3196)	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	820	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Expansion of Agawam 16C 115 kV Substation to include new 345 kV station with two 345/115-kV autotransformers.	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	823	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Ludlow 19S 345 kV Substation Expansion, two 345/115kV Autotransformers replacements. Add two 345kV 120 MVAR Capacitor additions	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	828	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Breckwood 115kV circuit 1322 Reactor Bypass and Open Breckwood Substation 1T breaker and maintain breaker in the normally open position	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	829	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Piper (1230) 115 kV line.	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1010	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Build 115-kV Cadwell switching 50F station.	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	259	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Cadwell to Orchard (1426) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	688	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Cadwell (1481) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1100	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to Chicopee (1314) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1101	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Orchard (1552) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)

2013 Concept 4

2013 Planned 58

2013 Proposed 6

2013 Under Constr 6



## October '09 ISO-NEW ENGLAND Project Listing Update (DRAFT)

Primary Driver	Part#	Project ID	Primary Equipment Owner	Projected In-Service Month/Year	Projected In-Service Year	Major Project	Project	Oct -09 Status	Oct-09 Estimated PTF Costs	
Reliability Upgrade	1a	1102	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Piper (1601) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1103	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Chicopee (1602) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1104	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Cadwell (1603) 115kV line and add 2nd High Speed Protection	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1105	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Fairmont to Shawinigan (1604) 115kV line and add a 2nd High Speed Protection	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1070	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1781) 115kV line and add a 2nd High Speed Protection	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1071	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Agawam to South Agawam (1782) 115kV line and add a 2nd High Speed Protection	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1072	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Rebuild Ludlow to Shawinigan (1845) 115kV line and add 2nd High Speed Protection	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1073	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5001) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1074	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Reterminate Cadwell to East Springfield (5002) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1075	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Add 2nd high speed protection scheme to Agawam to Elm (1007) 115kV line if the Russell Biomass Plant, queue position #135 is constructed	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1078	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Pineshed (1327) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1079	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Add a 2nd high speed protection scheme to Fairmont to Mt. Tom (1428) 115kV line	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1080	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	Replace 4T and 6T 115kV circuit breaker to Shawinigan substation	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	190	National Grid, USA	12/2013	2013	NEEWS (Interstate Reliability Project)	New Millbury to West Farnum (366) 345kV line.	Planned	\$69,600,000	\$69,600,000
Reliability Upgrade	1a	1094	National Grid, USA	12/2013	2013	NEEWS (Interstate Reliability Project)	Upgrade and expand the 345kV Millbury Substation equipment	Planned	\$25,000,000	\$25,000,000
Reliability Upgrade	1a	794	National Grid, USA	12/2013	2013	NEEWS (Interstate Reliability Project)	New West Farnum to Connecticut/Rhode Island border (341) 345kV line (to Lake Road).	Planned	\$55,800,000	\$55,800,000
Reliability Upgrade	1a	796	National Grid, USA	12/2013	2013	NEEWS (Interstate Reliability Project)	347 Reconnector from Sherman Road to CT/RI Border.	Planned	\$16,400,000	\$16,400,000
Reliability Upgrade	1a	797	National Grid, USA	12/2013	2013	NEEWS (Interstate Reliability Project)	3361 Upgrade 345kV terminal equipment at Sherman Road.	Planned	\$8,300,000	\$8,300,000
Reliability Upgrade	1a	974	United Illuminating Company	04/2013	2013		East Shore 115 kV Oil Circuit Breaker & Disconnect Replacements.	Planned	\$6,700,000	\$6,700,000
Reliability Upgrade	1a	816	Northeast Utilities	12/2013	2013	NEEWS (Greater Springfield Reliability Project)	North Bloomfield 2A Substation Expansion - add a second 345/115-kV autotransformer	Planned	Part of NEEWS (Greater Springfield Reliability Project)	Part of NEEWS (Greater Springfield Reliability Project)
Reliability Upgrade	1a	1054	Northeast Utilities	12/2013	2013	NEEWS (Ancillary Greater Springfield Reliability Project)	Manchester - Meekeville Jct. line (395/1448) separation.	Planned	\$14,000,000	\$14,000,000
Reliability Upgrade	1a	576	Northeast Utilities	12/2013	2013	NEEWS (Central Connecticut Reliability Project)	Build new 345kV line (3208) North Bloomfield to Frost Bridge.	Planned	\$313,000,000	\$313,000,000
Reliability Upgrade	1a	1114	Northeast Utilities	12/2013	2013	NEEWS (Central Connecticut Reliability Project)	Frost Bridge 18R substation expansion - add a 345/115kV autotransformer.	Planned	Part of NEEWS (Central Connecticut Reliability Project)	Part of NEEWS (Central Connecticut Reliability Project)
Reliability Upgrade	1a	814	Northeast Utilities	12/2013	2013	NEEWS (Ancillary Central Connecticut Reliability Project)	Reconnector a portion of the Manchester to Scovill Rock 353 345-kV line and terminal work.	Planned	\$9,000,000	\$9,000,000
Reliability Upgrade	1a	802	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Build new 345kV line (3271) Card to Lake Road	Planned	\$251,000,000	\$251,000,000
Reliability Upgrade	1a	1084	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Loop the Millstone - Manchester (310) 345 kV line into the Card substation.	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1085	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Card 11F substation expansion	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1086	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1704, SW Hartford to South Meadow	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1087	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to line 115kV 1722 SW Hartford NW Hartford	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1088	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Add 2nd high speed protection to 115kV line 1786, East Hartford to Riverside to South Meadow	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)



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Reliability Upgrade	1a	1089	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Killingly 3G substation 345kV breaker addition	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1090	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Millstone 15G substation breaker 14T upgrade 50kA	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	1091	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Southington 4C substation breaker 19T upgrade to 63kA	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	810	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Lake Road 27E 345 kV substation expansion	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	191	Northeast Utilities	12/2013	2013	NEEWS (Interstate Reliability Project)	Build Lake Road to Connecticut/Rhode Island border (341) 345-kV line (to West Farnum).	Planned	Part of NEEWS (Interstate Reliability Project)	Part of NEEWS (Interstate Reliability Project)
Reliability Upgrade	1a	807	Northeast Utilities	12/2013	2013	NEEWS (Ancillary Interstate Reliability Project)	Install 480 MVAR's of capacitors at the Montville 345 kV substation	Planned	\$33,000,000	\$33,000,000
Reliability Upgrade	1a	1092	Northeast Utilities	12/2013	2013	NEEWS (BPS) <sup>2</sup>	Upgrade the Card 115 kV, East Hartford 115 kV, Agawam 115 kV, Barbour Hill 115 kV, and North Bloomfield 345 kV Substations to BPS standards.	Planned	\$37,000,000	\$37,000,000
Reliability Upgrade	1b	699	United Illuminating Company	12/2014	2014		Naugatuck Valley 115 kV reliability improvement.	Concept	\$11,100,000	\$11,100,000
Reliability Upgrade	1a	782	National Grid, USA	10/2014	2014	Merrimack Valley/North Shore Reliability Project	Replace existing S145/T146 UG cables with higher capacity cables between Salem Harbor n Railyard.	Planned	\$43,912,000	\$43,912,000
Reliability Upgrade	1a	791	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New 115 kV circuit between Somerset and Brayton Point.	Planned	\$11,560,000	\$11,560,000
Reliability Upgrade	1a	913	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Brayton Point substation reinforcements to accommodate the new 115 kV line.	Planned	\$3,250,000	\$3,250,000
Reliability Upgrade	1a	914	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	New third circuit between Somerset and Bell Rock.	Planned	\$28,150,000	\$28,150,000
Reliability Upgrade	1a	915	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Reconductor M13 and L14 between Bell Rock and Dexter + Reconductor 69 kV lines 61 and 62.	Planned	\$19,450,000	\$19,450,000
Reliability Upgrade	1a	916	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Conversion of Jepson 69 kV substation to 115 kV substation.	Planned	\$11,800,000	\$11,800,000
Reliability Upgrade	1a	917	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Bell Rock substation expansion.	Planned	\$7,000,000	\$7,000,000
Reliability Upgrade	1a	918	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Dexter substation changes.	Planned	\$3,180,000	\$3,180,000
Reliability Upgrade	1a	792	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Admiral St-Franklin Square (Q143 and R144) 115 kV UG recabling.	Planned	\$39,200,000	\$39,200,000
Reliability Upgrade	1a	793	National Grid, USA	12/2014	2014	Greater Rhode Island Transmission Reinforcements <sup>1</sup>	Somerset substation reinforcements.	Planned	\$6,400,000	\$6,400,000
Reliability Upgrade	1b	969	NSTAR Electric Company	06/2015	2015	Boston Area 115 kV Enhancements	Add a new 54 MVAR capacitor bank at Chelsea.	Concept	\$2,780,000	\$2,780,000
Reliability Upgrade	1b	956	National Grid, USA	01/2015	2015	Central/Western Massachusetts Upgrades	Carpenter Hill - replace one 345 kV, 448 MVA autotransformer and upgrade thermal rating of bus to at least 580 MVA.	Concept	\$7,021,534	\$7,021,534
Reliability Upgrade	1b	975	United Illuminating Company	06/2015	2015		Pequonnock 115 kV Fault Duty Mitigation.	Concept	\$65,000,000	\$65,000,000
Reliability Upgrade	1a	1141	Northeast Utilities	2015	2015	2nd Deerfield 345/115kV Autotransformer Project	Rochester Substation Upgrades	Planned	Part of 2nd Deerfield 345/115kV Autotransformer Project	Part of 2nd Deerfield 345/115kV Autotransformer Project
Reliability Upgrade	1a	139	Vermont Electric Power Company	12/2015	2015	Northwest Vermont Reliability Project	Granite Sub Upgrade Phase 2: synchronous condensers expanded to +200/- 100 MVAR and two 25 MVAR capacitor banks.	Planned	\$20,000,000	\$20,000,000
Reliability Upgrade	1a	721	United Illuminating Company	06/2016	2016		New Shelton 115/13.8 kV substation	Planned	\$19,500,000	\$19,500,000
Reliability Upgrade	1b	785	National Grid, USA	07/2017	2017	Merrimack Valley/North Shore Reliability Project	Re-conductor F-158N (Golden Hills-Maplewood-Everett) 115 kV line.	Concept	\$1,330,000	\$1,330,000
Reliability Upgrade	1b	824	Northeast Utilities	TBD	TBD	Pittsfield / Greenfield Project	Reconductor the Woodland to Pleasant 1371 115-kV line and terminal work at Woodland substation.	Concept	TBD	TBD
Reliability Upgrade	1b	825	Northeast Utilities	TBD	TBD	Pittsfield / Greenfield Project	Upgrade the Pleasant to Blanford 115-kV line and the Blanford to Granville Jct. portion of the 115-kV line 1512.	Concept	TBD	TBD

2014 Concept 1  
 2014 Planned 10  
 2014 Proposed 0  
 2014 Under Const 0

Notes  
 - Gray shading indicates change from JULY '08 Update.  
 - All costs provided by Transmission Owners.