

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)	PTF \$(Millions)	LOCAL \$\$ (Millions)		Comments	
						Local as per ISO	Non PTF as per TO		
2004									
345 kV Reliability Project (NSTAR) Construction of a three-circuit, 345 kV underground transmission line from Stoughton, MA to both the Hyde Park & K-street substations in Boston. Project to be completed in two phases. Phase 1 ISD July 2006 Phase 2 ISD 2008	July 2004 RC issued conditional approval, pending completion of harmonics studies, analyses of NRI Project effects, completion of equipment and line rating assessments, and the subsequent mitigation of any adverse effects discovered to provide additional upgrades, as required. Conditional approved by ISO letter on August 4, 2004. NSTAR completed harmonics study. As a result, a revised application (NSTAR-04-T04 rev 1, removing the conditions) was submitted and the RC recommended approval on December 13, 2004. ISO approval letter sent on February 10, 2005.	NSTAR-04-TCA-01 Rev 1 Application submitted in July 2004 and the RC requested additional information. NSTAR re-submitted in August 2004, and the NEPOOL RC recommended approval. Total costs include transmission upgrades to avoid significant adverse effects on Exelon New England's New Boston 1 Generator. ISO determination letter sent on September 15, 2005.	4	\$234.216		\$225.562	ISO determination amount Requested & RC recommended amount was = \$234.2M	\$8.654	
345 kV Reliability Project (NSTAR) Construction of a three-circuit, 345 kV underground transmission line from Stoughton, MA to both the Hyde Park & K-street substations in Boston. Project to be completed in two phases. Phase 1 ISD July 2007 Phase 2 ISD 2009	Not required	NSTAR-04-TCA-01 Rev 2 NSTAR submitted a revised TCA on March 23, 2007 requesting an additional \$57.7M in PTF costs associated with phase 1 of the project, due to increases in materials and labor. The ISO sent an additional information request on April 24, 2007. NSTAR Replied on May 7, 2007. The ISO sent another additional information request on May 23, 2007 which was replied on May 25, 2007. A May RC vote was expected but deferred as RC requested additional time to review NSTAR's response to additional information request letter from ISO. In a special teleconference held on May 30, 2007, RC recommended approval for \$57.544M. ISO sent another additional information request on June 19, 2007. NSTAR's response was received on July 2, 2007. ISO determination letter sent January 2, 2008	4	\$57.700		\$57.469	Requested \$57.700M additional costs for Phase I only	\$0.231	
	Not required	NSTAR-04-TCA-01 Rev 3 NSTAR submitted a revised TCA application on April 9, 2008 requesting an additional \$42.1M in PTF cost associated with phase 2 of the project. NSTAR made a presentation at the April 15, 2008 and June 17, 2008 RC meetings. RC did not recommend approval by the ISO with 52.09% in favor, 17.36% opposed and 19 abstentions on the June 17, 2008 meeting. ISO-NE sent an additional information request letter on June 30, 2008, NSTAR responded August 5, 2008 ISO determination letter sent October 27, 2008	4	\$42.100		\$42.100	Requested \$42.1 M additional costs for Phase 2 only		

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

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Northeast Interconnect Project (BHE) Construction of a 345 kV line from Orrington, ME to Pt. Lepreau substation in New Brunswick. ISD December 2007	Recommended for approval by NEPOOL RC on March 2003. ISO approval letter sent in March 2003.	BHE-04-TCA-T01 July 2004, NEPOOL RC/ISO conditionally approved, pending resolution of MEPCO issues. ISO determination letter sent on 7/28/04. There are cost over-runs due to engineering/design changes and materials that have resulted in a new estimated project cost of \$136M, as reported to the RC on 4/4/07 and to ISO-NE on 3/23/07	4	\$90.400		\$90.400				Non PTF costs submitted for Canadian portion of the project = \$40M
Northeast Reliability Interconnect Project (BHE) Construction of a 345 kV line from Orrington, ME to Pt. Lepreau substation in New Brunswick. ISD December 2007	Not required	BHE-04-TCA-T01 Rev 1 Submitted to ISO-NE on 4/18/06. At the May 2, 2006 meeting, the motion to approve the additional funds was not approved (@59% in favor). ISO to prepare additional questions based on comments heard at the RC meeting. This request was sent on 5/5/06 and BHE response was received 5/9/06 but later updated on 5/12/06. The ISO determination letter sent on 5/15/06.	3	\$19.500	New total including Rev 1 \$109.9M	\$19.500				Original Non PTF costs submitted = \$48M.
Northeast Reliability Interconnect Project (BHE) Construction of a 345 kV line from Orrington, ME to Pt. Lepreau substation in New Brunswick. ISD December 2007	Not required	BHE-04-TCA-T01 Rev 2 RC recommended approval on July 10, 2007. ISO requesting additional information request letter sent September 10, 2007 and BHE responded on September 19, 2007. ISO determination letter sent on September 28, 2007	4	\$34.100	New total including Rev 2 \$144M	\$34.100				Original Non PTF costs submitted = \$51M.
Phase I SWCT (NU) New 20.4 mile UG 345 kV transmission line between Bethel CT (Plumtree S/S) & Norwalk CT (Norwalk S/S). Also replacement of certain sections of existing 115 kV transmission to UG between Plumtree S/S – Peaceable S/S – Norwalk S/S. ISD December 2006	NU-04-T01 through NU-04-T08 and UI-04-T01 Recommended for approval by NEPOOL RC on February 3, 2004. ISO approval letter sent in February 2004.	NU-04-TCA-04 (ISO received 1st draft of the Application 12/21/04 and updated Application on 1/18/05). NU-04-TCA-04 Rev. 1 received 2/6/06 (as part of ISO Question set dated 1/11/06). The ISO determination letter was released on 6/15 for a 30-day comment period ending 7/14. Comments were received from Connecticut Governor, Connecticut Attorney General, CL&P/NU, CT DPUC & Connecticut Office of Consumer Counsel (joint comments), UI, MA DTE, and ME PUC. ISO determination letter sent on September 22, 2006.	4	\$357.200		\$239.800	ISO final letter amount Requested \$354.8M per Rev 1 TCA application \$357.2M Original TCA application	\$117.400		ISO final letter amount Requested \$2.4M per Rev 1 TCA application \$0M per original TCA application
Breaker Replacement/Uprate at Pequonock Substation (UI) Replacement of 15 existing gas circuit breakers at the 115 kV Pequonock Substation. ISD July 2005	UI-04-T04 Level I – for info only. ISO approval letter sent on January 28, 2005. (NOTE: Replaces condition associated with NU Phase I approval)	UI-04-TCA-03 RC recommended approval on 2/1/05. ISO determination letter sent on 3/9/05.	2	\$1.750		\$1.750				

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<p>Phase II SWCT (NU)</p> <p>New 22.2 mile UG 345 kV transmission line between East Devon Substation and Norwalk Substation. 46.9 mi of new 345 kV OH transmission. Replacement of certain sections of existing 115 kV transmission between East Devon Substation and Besock Switching Station ISD 2009</p>	<p>NU-05-T23 through NU-05-T44 UI-05-T02, T03, T04 and T05</p> <p>RC recommend approval at their December '05 Meeting. Approved by ISO letter in January 2006.</p>	<p>NU-08-TCA-01/UI-08-TCA-01</p> <p>TCA application submitted on April 9, 2008. A brief presentation was made on May 21, 2008 to the RC. A Stakeholder meeting was held on June 10, 2008. Next presentation anticipated at the September 2008 RC meeting.</p> <p>An additional information request was sent to NU/UIO on September 3, 2008.</p> <p>A second additional information letter was sent on September 12, 2008.</p> <p>Responses on December 17, 2008 to additional information request dated June 10/12, 2008.</p> <p>A third additional information request sent to NU/UI on December 17, 2008. Response received April 6, 2009 from NU/UI</p> <p>NU/UI presented in front of PAC on April 21, 2009 discussing project cost with new CEWG templates.</p> <p>A fourth additional information request was sent to NU/UI on June 1, 2009.</p> <p>A fifth additional information request was sent to NU/UI on June 15, 2009 focusing on the feasibility of another alternative, Alternative C that is a combination of the preferred route and portions of alternatives A and B. Responses received on August 4, 2009.</p>	4	\$1,275		\$1,205.840	Requested \$1,274,571,160	\$68.73	\$37.262	ISO- NE supported the use of Alternate C
		<p>NU/UI made a presentation and requested a vote on the TCA Application at the August 17, 2009 Meeting. The motion was amended and the resulting motion failed. The RC did not recommend approval to the ISO with 51.25% in opposed, 17.36% opposed and 19 abstentions on the June 17, 2008 meeting.</p> <p>A sixth additional information request was sent to NU/UI on December 27, 2009. The letter focused on actual costs for the project and reflecting the project costs and alternative costs in 2008 dollars. NU/UI responded to the request on February 24, 2010 and provided a revised response on March 23, 2010 to fix a mathematical error.</p> <p>ISO draft determination posted on November 15, 2010 for 30 day stakeholder comment period.</p> <p>ISO determination letter posted on January 5, 2011</p>								
<p>Northwest Vermont Reliability Project (VELCO)</p> <p>Increase reliability by improving transmission in the Burlington area. Four parts to the project: (i) New Haven 345 kV S/S ISD May 2006 (ii) West Rutland - New Haven 345 kV line ISD May 2006 (iii) New Haven - Queen City 115 kV line ISD March 2007 (iv) Granite STATCOM/Upgrades ISD October 2007</p>	<p>January 2003 ISO approved (pre-100th amendments)</p> <p>VELCO must file new application to reflect material modifications ordered by VT PSB.</p> <p>Revised I.3.9 applications (level I) have started to be submitted. The first set were approved at the December 15, 2005 RC meeting.</p>	<p>NEPOOL PC approved (pre-100th amendment) as four applications: VELCO-03-155-T01 thru VELCO-03-155-T04.</p> <p>TCA Application received April 14, 2008. Presentations made to the RC on March 18, 2008, April 14, 2008 and June 17, 2008 regarding cost over-runs. ISO additional information request letter sent May 16, 2008 and awaiting response. A Stakeholder meeting was held on May 30, 2008.</p> <p>RC recommended approval on June 17, 2008</p> <p>A second additional information request letter sent on July 28, 2008.</p> <p>ISO determination letter sent October 23, 2008</p>	4	\$251.70	Original 15.5 Amount approved \$153.7M and as part of Rev. 1 increase of \$134.6M for a new total of \$288.32M.	\$106.700	Original 15.5 Amount approved \$145.3M and as part of Rev. 1 requesting \$106.7 for a total of \$251.7M		\$25.420	Original 15.5 Amount \$8.4M
		<p>\$228M (Vermont Public Service Board Letter dated 6/2/07. This amount includes a 15% contingency)</p> <p>\$198.0 (updated 7/8/05 via press release)</p> <p>Original Est. \$156.0 (RTEP04)</p>								

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UI Highway Relocation Project (UI) "Q-Bridge" Reconstruction of the Pearl Harbor Memorial Bridge (formally known as the "Q-bridge") in New Haven, CT. This conflicts with portions of the seven of UI's overhead and underground transmission lines. UI has been ordered to relocate the conflicting lines. Modifications required to these lines will not result in any changes in transmission line ratings. ISD February 2005	Accepted as a Level I, Information Only by NEPOOL RC on October 5, 2004. ISO approval letter sent on October 8, 2004.	UI-04-TCA-01 REPLACEMENT IN KIND NEPOOL Transmission Committee discussed at their June 16, 2005 meeting. UI resubmitted their application on July 12, 2005. RC recommended approval of \$1.4M for PTF on 7/28. A data request was sent out on 3/24/06 for additional information. The response was received 4/25. ISO Determination Letter was sent 5/3/06 supporting \$1,124,788 rather than \$1,401,330 as PTF.	2	\$10.100		\$1.124	Original request \$1.401M	\$0.276	\$8.686	CT DOT to pay these costs as per revised TCA
Glenbrook STATCOM (NU) Three Projects (i) STATCOMs (2) (ii) Capacitor Banks (3) (iii) 1977 Line Tap (i) Install new 115 kV 1977-line position at the Glenbrook substation, tap the existing Darien to South End 1977-line forming a new three terminal transmission line. (ii) Install three 50 MVAR Capacitor banks at the Glenbrook substation (iii) Install two +/-75 MVAR STATCOMs at the Glenbrook substation ISD June 2004	Recommended for approval by NEPOOL RC on June 12, 2002. ISO approval letter sent on June 14, 2002.	NU-04-TCA-T01, T02 & T03 Pre-100th amendment: NEPOOL approved. Post-100th amendments: July 22, 2004. NEPOOL RC recommended approval of added costs for siting and construction issues redesign necessitated by the discovery of underground obstructions, and a change from overhead to underground construction for the three projects, respectively. ISO determination letter sent on December 21, 2004.	4 2 3	\$41.100	An increase from \$29.6M (original application) to \$41.1M	\$41.100	(i) from \$25.9M to \$33.9M (ii) from \$1.8M to \$2.1M (iii) from \$1.9M to \$5.1M for a total of \$41.1M			

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Raynham 115 kV Substation in Raynham, MA (National Grid) (i) Replace one double-circuit steel tower with a two-column line/switch structure & add two Motor Operated Disconnects on line U-6. (ii) Replace one wood H-frame structure with a 6-column, 2 bay switch/bus structure & add two Motor Operated Disconnects on line S-8. ISD May 2006	Recommended for approval by NEPOOL RC on December 10, 2002. ISO approval letter sent on December 17, 2002.	NEP-04-TCA-T15 NEPOOL RC recommended approval on October 5, 2004. ISO determination letter sent on December 21, 2004.	2	\$0.962		\$0.962				
Raynham 115 kV Substation in Raynham, MA (National Grid) (i) Replace one double-circuit steel tower with a two-column line/switch structure & add two Motor Operated Disconnects on line U-6. (ii) Replace one wood H-frame structure with a 6-column, 2 bay switch/bus structure and add two Motor Operated Disconnects on line S-8. ISD May 2006 (Delay due to working taking longer than expected on the U-6 Line)	Not required	NEP-04-TCA-T15 Rev 1 RC recommended approval on July 19, 2006. ISO determination letter sent on October 11, 2006.	2	\$0.135	New total including Rev 1 \$1.097M	\$0.135				
Upgrade 9 miles of 115 kV overhead line, X-176 from Palmer, MA to NU border (National Grid) Re-conductor 9 miles of the 115 kV line, X-176 and upgrade terminal equipment. ISD Spring 2005	Accepted as a Level I, Information Only by NEPOOL RC on October 5, 2004. ISO approval letter sent on October 8, 2004.	NEP-04-TCA-T14 NEPOOL RC recommended approval on October 5, 2004 (Post-100th Amendments) ISO determination letter sent on December 21, 2004.	2	\$4.145		\$4.145				
SWRI Reliability Project (National Grid) Extend the 115 kV line L190 from Davisville/Old Baptist Rd tap to the West Kingston Substation, and install terminal equipment. ISD June 2007	NEP-04-T24 through NEP-04-T26 NEPOOL RC recommended approval on November 1, 2004. ISO approval letter sent on November 10, 2004.	NEP-04-TCA-T17 NEPOOL RC recommended approval on November 1, 2004. ISO determination letter sent on March 29, 2005.	3	\$10.141		\$10.141				
SWRI Reliability Project (National Grid) Reconductoring of Lines 1870N and 1870 at the West Kingston No. 63 substation and Wood River substation. ISD June 2008	NEP-04-T27 and NEP-04-T28 NEPOOL RC recommended approval on January 18, 2005. ISO approval letter sent on January 28, 2005.	NEP-04-TCA-18 RC recommended approval on January 18, 2005. ISO determination letter sent on March 29, 2005.	2	\$3.304		\$3.304				
SWRI Reliability Project (National Grid) Extend the 115 kV line L190 from Davisville/Old Baptist Rd tap to the West Kingston Substation, and install terminal equipment. ISD June 2008	NEP-04-T24 through NEP-04-T26 Rev 1 submitted to RC for review at April 2007 meeting.	NEP-04-TCA-17 Rev 1 NEPOOL RC Recommended approval on April 4, 2007. ISO determination letter sent on May 23, 2007.	3	\$11.064	New total including Rev 1 \$21.205M	\$11.064				

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SWRI Reliability Project (National Grid) Reconducting of Lines 1870N and 1870 at the West Kingston No. 63 substation and Wood River substation. ISD June 2008	NEP-04-T27 and NEP-04-T28 Rev 1 submitted to RC for review on April 2007.	NEP-04-TCA-18 Rev 1 RC recommended approval on April 4, 2007. ISO determination letter sent on May 23, 2007.	2	\$3.321	New total including Rev 1 \$6.625M	\$3.321				
North Shore Upgrades (National Grid) (i) Ward Hill substation ISD June 2006 (ii) Salem Harbor substation ISD December 2005 (iii) Reconducting the B154 & C155 115 kV Lines ISD December 2005	NEP-04-T20 and NEP-04-T21 Approved July 27, 2004. NEP-05-T07, T08, X01, X02 and X03 ISO approval letter sent on July 29, 2005. Note: For the Ward Hill S/S Project - Reconducting the B154 & C155 Lines is a level I application. The addition of transformers and changing the taps to a ring bus configuration is a level III application.	NEP-05-TCA-04, North Shore Upgrades for 2005. Discussed at the 8/30/05 RC meeting. RC recommended approval on October 4, 2005. ISO determination letter sent on August 28, 2006.	4	\$70.100		\$67.455		\$2.610		
Monadnock Plan (NU) Provides transmission upgrades over a three-state area comprising southeastern VT, southwestern NH and north-central MA. ISD 2009	NU-06-T06 through NU-06-T11, NEP-06-T03, NEP-06-T04, VELCO-06-T01, and VELCO-06-T02. Approved March 14, 2006	NU-09-TCA-02 /NEP-09-TCA-03 TCA Application submitted on December 2, 2009 Presentation to RC on December 15, 2009 for information only. Several questions on valuation year for alternatives and cost increase from 2003. NU/NEP to prepare answers and present again in January and look for a vote on the TCA Application RC recommended approval on January 19, 2010. ISO determination letter sent on June 16, 2011.	4	\$104.600		\$104.600				
Pequomock-Seaview Cables (UI) Costs associated with maintaining the stated ratings of the 1710/1730 lines presently limited by their underwater cable sections. ISD October 2004	UI-04-T03 Accepted as a Level I, Information only by NEPOOL RC on November 1, 2004. ISO approval letter sent on November 8, 2004.	UI-04-TCA-02 RC recommended approval on December 13, 2004. ISO determination letter sent on March 31, 2005.	2	\$1.100		\$1.100				

2005

Central Mass Reinforcement - Wachusett Project (National Grid) This project addresses: Thermal loading on 115 kV transformers at Millbury, Ayer and 345 kV transformers at Sandy Pond, as well as voltage in Central MA. Work to be completed in multiple sub-projects. ISD Fall 2006 (Note: some projects scheduled to be finished as soon as spring & summer 2005)	NEP-04-T01 through NEP-04-T13 NEPOOL RC recommended approval on May 4, 2004 and on January 18, 2005. Initial ISO approval letter sent on April 8, 2004. Due to revisions made to the project scope, second approval letter sent on January 28, 2005.	NEP-05-TCA-T01 RC recommended approval on 1/18/05. Additional information request was sent out April 5, 2006 and the response was received 4/13/06. ISO determination letter sent on April 24, 2006.	4	\$54.800		\$54.700		\$0.085		
Central Mass Reinforcement - Wachusett Project (National Grid) This project addresses: Thermal loading on 115 kV transformers at Millbury, Ayer and 345 kV transformers at Sandy Pond, as well as voltage in Central MA. Work to be completed in multiple sub-projects. ISD Fall 2006 (Note: some projects scheduled to be finished as soon as spring & summer 2005)	NEP-04-T01 through NEP-04-T13 NEPOOL RC recommended approval on May 4, 2004 and on January 18, 2005. Initial ISO approval letter sent on April 8, 2004. Due to revisions made to the project scope, second approval letter sent on January 28, 2005.	NEP-05-TCA-T01 REV 2 NEP submitted a revised TCA on May 27, 2009 requesting an additional \$55.052M in PTF costs associated with the project, due to increases in materials and labor. Presentation at June 16, 2009 RC meeting for information only. Several questions were brought up regarding cost drivers and also work done on the 69 kV side. NEP is anticipated to look for a vote at the August 2009 RC meeting ISO Data Request sent on September 28, 2009. NEP responded on October 19, 2009 RC recommended approval on October 20, 2009 ISO determination sent on December 28, 2010	3	\$69.750		\$69.750				

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Rebuild and Reconnector Line 67 from Rebel Hill to Boggy Brook (BHE) Costs associated with reconstruction and reconnector of 13.7 miles of BHE 115 kV transmission. ISD July 2007	BHE-04-T02 NEPOOL RC approved on December 13, 2004. ISO approval letter sent on December 17, 2004.	BHE-04-TCA-T02 RC recommended approval on December 13, 2004. ISO determination letter sent on March 31, 2005.	2	\$2.800		\$2.800				
Rebuild and Reconnector Line 66 from Graham to Boggy Brook (BHE) Costs associated with reconstruction and reconnector of 13 miles of BHE 115 kV transmission. ISD July 2007	BHE-04-T01 NEPOOL RC approved on December 13, 2004. ISO approval letter sent on December 17, 2004.	BHE-04-TCA-T03 RC recommended approval on December 13, 2004. ISO determination letter sent on March 31, 2005.	2	\$2.700		\$2.700				
Line 433-507 Relocation onto new structures Project (NSTAR) Relocation of a 115 kV transmission line (Line 433-507) from a double circuit tower structure onto a set of new structures. ISD June 2005	NSTAR-05-T01 NEPOOL RC recommended approval on January 18, 2005. ISO approval letter sent on January 28, 2005.	NSTAR-05-TCA-01 RC recommended approval on January 18, 2005. ISO determination letter sent on March 31, 2005.	2	\$1.760		\$1.760				
PSNH Pine Hill 115 kV Substation (NU) Addition of a second Xfmer and 115 kV Bkr to the PSNH Pine Hill 115 kV Substation. ISD June 2003	NU-03-T25 NEPOOL RC recommended approval on November 13, 2003. ISO approval letter sent on November 19, 2003.	NU-05-TCA-01 RC recommended approval on January 18, 2005. ISO determination letter sent on March 29, 2005.	2	\$2.768		\$1.963		\$0.800		
Sherman Rd Substation (National Grid) Addition of a 345 kV breaker in series with existing breaker #140 at the Sherman Rd substation. ISD May 2004	NEP-03-T02 NEPOOL RC recommended approval on June 24, 2003. ISO approval letter sent on August 7, 2003.	NEP-04-TCA-16 RC recommended approval on November 1, 2004. ISO determination letter sent on March 31, 2005.	2	\$0.917		\$0.917				
E-183 Project (National Grid) Relocation of 1.2 miles of Narragansett Electric Company's (NEC) 115KV overhead transmission line (designated E-183) associated with the Rhode Island Department of Transportation (RIDOT) relocation of the interstate highway. ISD May 2006	NEP-05-T04 Accepted as a Level 1, Information Only by NEPOOL RC on March 1, 2005. ISO approval letter sent on March 10, 2005.	NEP-05-TCA-02 On April 5th the RC voted to recommend that the ISO include \$600,000 as PTF. NEP requested reconsideration by the NPC at their meeting on 5/8/05. The NPC has asked the RC to reconsider & re-vote on this application at their June meeting. On June 14th the RC discussed and a re-voted the TCA application. The RC voted to recommend that the ISO included \$1.5M as PTF, which supersedes their previous vote of \$600,000 as PTF. ISO determination letter sent on February 6, 2006.	2	\$16.725		\$1.500	Original request \$3.775M Per ISO determination letter RC recommended \$1.5M	\$2.275	\$12.950	Original request \$12.9M Total localized costs are: \$15.224M where, Local agencies to pay \$12.949M and ISO found \$2.275M as local costs
Pleasant Substation Project (NU) Addition of third transformer and two breakers at the 115 kV Pleasant Substation in Lee, MA due to increased load. ISD May 2005	NU-04-T12 NEPOOL RC recommended approval on May 7, 2004. ISO approval letter sent on May 7, 2004.	NU-05-TCA-02 RC recommended approval on March 1, 2005. ISO determination letter sent on March 29, 2005.	2	\$0.795		\$0.795				

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Pleasant Substation Project (NU) Addition of third transformer and two breakers at the 115 kV Pleasant Substation in Lee, MA due to increased load. ISD September 2005	Not required	NU-05-TCA-02 Rev 1 RC recommended approval on December 06, 2006. ISO determination letter sent on January 26, 2007.		\$0.100	New total including Rev 1 \$0.895M	\$0.100	New total including Rev 1 \$0.895M			
Todd Substation Project (NU) Installation of 115-13.8 kV transformer and 115 kV Circuit Breaker at Todd Substation in Wolcott, CT. ISD November 2004	NU-04-T36 ISO approval letter sent on November 10, 2004.	NU-05-TCA-04 RC recommended approval on March 16, 2005. ISO determination letter sent on March 29, 2005.	2	\$1.224		\$1.224				
PSNH Chester Substation Project (PSNH/NU) Addition of 2nd transformer and 115kv circuit breaker at Chester substation in New Hampshire. ISD July 2004	NU-04-T19 ISO approval letter sent on June 1, 2004.	NU-05-TCA-06 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$1.416		\$1.416				
PSNH Rochester Substation Project (PSNH/NU) Addition of 2nd transformer and 115kv circuit breaker at Rochester substation in New Hampshire. ISD July 2004	NU-04-T34 ISO approval letter sent on September 3, 2004.	NU-05-TCA-07 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$4.543		\$4.543				
New England East-West Solution (NEEWS) (NGrid/NU) This Plan includes several Projects to improve New England reliability by increasing transfer limits of three critical interfaces, including Connecticut Import Limit. ISD 2011	NU-08-T11 to -T39, NU-08-T49 to -T67, NEP-08-T44 to -T57 & -T59 & -T60 ISO approval letter sent on September 24, 2008	TCA yet to be submitted. Multiple Submissions. Springfield advanced projects are expected to be submitted in fourth quarter of 2008.	4		\$1.7B (First Estimate)					
Southington 4C Substation (NU) Addition of a second 47 MVA, 115/13.8-kV transformer and 2) one 115-kV Circuit Breaker/Disconnect Switches. ISD June 2004	NU-03-T17 ISO approval letter sent on September 10, 2003.	NU-05-TCA-03 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$0.942		\$0.942				
Portsmouth Substation (NU) Addition of a new radial transmission line to supply Portsmouth substation and associated work at Schiller and Ocean Road substations. ISD July 2004	NU-04-T11 ISO approval letter sent on May 7, 2004.	NU-05-TCA-08 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$1.800		\$1.800				
Y25S Line Reconductor (National Grid) Reconductor Y-25S line between Deerfield 5 and Harriman substations (NEP). ISD December 2005	NEP-05-T02 ISO approval letter sent on February 8, 2005.	NEP-05-TCA-03 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$0.850		\$0.850				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Beebe River & Monadnock substation breaker replacement (PSNH/NU) Replace breakers at Beebe River (2 each) and Monadnock (1 each) substations. ISD December 2004	Not required	NU-05-TCA-05 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$1.043		\$0.780			\$0.261	
CL&P system breaker replacement (NU) Replace obsolete and overstressed breakers at various substations on the CL&P system. ISD December 2004	Not required	NU-05-TCA-09 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	3	\$6.750		\$6.750				
WMECO system breaker replacement (NU) Replace obsolete and overstressed breakers at various substations on the WEMCO system. ISD December 2004	Not required	NU-05-TCA-10 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$4.103		\$4.103				
PSNH system breaker replacement (PSNH/NU) Replace obsolete and overstressed breakers at various substations on the PSNH system. ISD December 2004	Not required	NU-05-TCA-11 RC recommended approval on April 5, 2005. ISO determination letter sent on June 8, 2005.	2	\$1.002		\$1.002				
Farmington (1C) Substation upgrade (NU) Addition of two 115 kV breakers and a 115/23 kV transformer at the Farmington Substation. ISD June 2005	NU-04-T17 ISO approval letter sent on November 8, 2004.	NU-05-TCA-14 RC recommended approval on June 15, 2005. ISO determination letter sent on October 11, 2005.	2	\$1.131		\$1.131				
1750 line breaker addition at Cos Cob substations (NU) Install a line breaker and upgrade terminal equipment on the 1750 line at Cos Cob RR35 and Cos Cob 11R substations, respectively. ISD June 2005	NU-04-T13 ISO approval letter sent on May 7, 2004. NU-05-T10 ISO approval letter sent on June 24, 2005.	NU-05-TCA-13 RC recommended approval on June 15, 2005. ISO determination letter sent on October 11, 2005.	2	\$0.996		\$0.996				
Fore River Substation (CMP) Construct a new 115 kV to 12.47 kV Fore River Distribution Substation on the Portland peninsula. ISD July 2005	CMP-04-T02 ISO approval letter sent on November 8, 2004.	CMP-05-TCA-01 RC recommended approval on August 30, 2005. ISO determination letter sent on October 25, 2005.	2	\$11.300		\$4.200			\$7.100	
Three Rivers Substation (PSNH/NU) Addition of a 115-kV circuit breaker to the PSNH Three Rivers 115 kV Substation, located in Eliot, ME. ISD May 2004	NU-05-T11 RC recommended approval on July 15, 2005. ISO approval letter sent on July 25, 2005.	NU-05-TCA-15 RC recommended approval on August 30, 2005. ISO determination letter sent on October 25, 2005.	2	\$0.582		\$0.582				

¹NECPUC to be involved in category 4.5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Dover Substation (NSTAR) Elimination of the 115 kV transmission line "bypass" and upgrade of the 115 kV bus, breakers and disconnects at Dover Station 456 located in West Walpole, MA. ISD December 2005	NSTAR-05-T03 ISO approval letter sent on March 21, 2005.	NSTAR-05-TCA-02 RC recommended approval on July 15, 2005. ISO determination letter sent on October 11, 2005.	2	\$2.940		\$0.599			\$2.341	
Dover Substation (NSTAR) Elimination of the 115 kV transmission line "bypass" and upgrade of the 115 kV bus, breakers and disconnects at Dover Station 456 located in West Walpole, MA. ISD December 2005	Not required	NSTAR-05-TCA-02 Rev 1 RC recommended approval on November 1, 2006. ISO determination letter sent on January 22, 2007.	2	\$1.000	New total including Rev 1 \$3.94M	\$0.438	New total including Rev 1 \$1.037M		\$0.562	New total including Rev 1 \$2.903M
Bennington Substation & Y-25 Line Upgrades (VELCO) Replace the Bennington 20MVA 115/69 kV transformer and reconductor 10 miles of the Y-25 line from the Bennington SS to the NGRID. ISD Summer 2006	VELCO-05-T01 ISO approval letter sent on February 8, 2005.	VELCO-05-TCA-01 RC recommended approval on July 28, 2005. ISO determination letter sent on December 30, 2005.	2	\$2.450		\$2.450				
Manchester-Hopewell 1767 Line Upgrade (NU) Reconductor the 115 kV Manchester to Hopewell transmission Line. ISD May 2005 (original 15.5 application date). Revised ISD April 2007	NU-03-T15 NEPOOL approved July 2003.	NU-03-155-T15 RC recommended approval on November 13, 2003. ISO determination letter sent on August 23, 2003. Revised TCA submitted - NU-03-155-T15 Rev.1 RC recommended approval on May 15, 2007. ISO determination letter sent on June 22, 2007.	2	\$5.000	New total including 2003 TCA & Rev 1 \$8.00M	\$5.000	New total including 2003 TCA & Rev 1 \$8.00M			
Shunock Substation (NU) Build a new 115 kV substation, Shunock, in N. Stonington, CT. ISD May 2005	NU-02-T04 Rev. A NEPOOL approved May 7, 2004.	NU-05-TCA-12 (replaces previously submitted application NU-02-155-T04, which was approved on June 11, 2002) RC approved October 4, 2005. ISO determination letter sent on December 30, 2005.	2	\$3.190		\$3.190	Original application indicated \$1.96M			Original application indicated \$2.26M and \$0.00M in the revised application
2nd Nantucket Interconnection Project (NSTAR) Expand the Barnstable SS, install a redundant bus tie breaker, install shunt capacitors at Falmouth SS& Orleans SS, install type III SPS at Barnstable SS, and install new 115 V OH line from Barnstable SS to Merchants Way SS. ISD December 2005	NSTAR-050T02 and NSTAR-05-X01 ISO approval letter sent in March 2005.	NSTAR-05-TCA-03 RC recommended approval on October 4, 2005. ISO determination letter sent on December 30, 2005.	2	\$6.736		\$4.362			\$2.374	
Portland SS Upgrade (NU) Install a 115 kV tie breaker at the Portland 21H Substation, Portland CT. ISD May 2006	NU-04-T39 ISO approval letter sent on January 28, 2005.	NU-05-TCA-16 RC recommended approval on October 4, 2005. ISO determination letter sent on October 25, 2005.	2	\$1.370		\$1.370				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
364 Line Terminal Upgrades at Haddam Neck & Montville SS (NU) Upgrade the 364 line terminals at Haddam Neck and Montville substations to match the full conductor ratings. ISD May 2005	NU-02-T17 NEPOOL approved August 12, 2002.	NU-05-TCA-17 RC recommended approval on October 4, 2005. ISO determination letter sent on December 30, 2005.	2	\$1.520		\$1.520				
Shaw Hill SS Upgrades (NU) Install a 115 kV breaker and relaying work at the Shaws Hill and Frost Bridge Substations. ISD February 2006	NU-04-T33 NEPOOL approved September 3, 2004.	NU-05-TCA-18 RC recommended approval November 1, 2005. ISO determination letter sent on December 30, 2005.	2	\$0.970		\$0.970				
Branford Capacitor Bank (NU) Install a 115-kV 37.8 MVAR capacitor bank at CL&P's Branford 11J substation in Branford, CT. ISD May 2006	NU-03-T14 NEPOOL approved July 2003.	NU-03-155-T14 Rev 1 RC recommended approval on December 15, 2005. ISO determination letter sent on December 30, 2005.	2	\$1.200		\$1.200				
CL&P Breaker Replacements (NU) Various Substations. ISD November 2005	Not required	NU-05-TCA-20 RC recommended approval on January 17, 2006. ISO determination letter sent on March 6, 2006.	3	\$10.756		\$10.756				
PSNH Breaker Replacements (NU) Various Substations. ISD November 2005	Not required	NU-05-TCA-21 RC recommended approval on January 17, 2006. ISO determination letter sent on March 6, 2006.	2	\$1.942		\$1.942				
WEMELCO Breaker Replacements (NU) Various Substations. ISD November 2005	Not required	NU-05-TCA-22 RC recommended approval on January 17, 2006. ISO determination letter sent on March 6, 2006.	2	\$3.569		\$3.569				
362 Line Terminal Upgrades (NU) Upgrade Terminals at Haddam Neck 14B and Southington 4C Substations. ISD December 2006	NU-05-T51 Approved November 1, 2005.	NU-05-TCA-23 RC recommended approval on November 1, 2005. ISO determination letter sent on December 20, 2005.	2	\$1.890		\$1.890				
Tioga Power Project (NU) New 115/34.5-kV S/S in Bedford NH. Two new 115-kV lines from North Merrimack to Bedford Road & Huse Road. Rebuild 1158 line from Huse Road s/s to Scobie s/s. ISD July 2005 except for the Huse Road to Scobie line. This line will be placed in service in the summer of 2006.	NU-05-T04 Approved June 24, 2005. ISO approval sent on December 27, 2005.	NU-05-TCA-25 RC recommended approval on February 14, 2006. ISO determination letter sent on March 6, 2006.	3	\$14.399		\$14.399				

2006

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Green Hill S/S Upgrades (NU) Install a new 115kV circuit breaker and relaying work at Green Hill substation. ISD June 2006	NU-05-T21 Approved November 8, 2005. ISO approval letter sent on November 8, 2005.	NU-06-TCA-01 RC recommended approval on April 4, 2006. ISO determination letter sent on April 24, 2006.	2	\$1.308		\$1.308				
Green Hill S/S Upgrades (NU) Install a new 115kV circuit breaker and relaying work at Green Hill substation. ISD June 2006	Not required	NU-06-TCA-01 Rev 1 Revised due to increase of actual costs higher than estimated costs by 10%. RC recommended approval on July 10, 2007. ISO determination letter sent on September 10, 2007.	1	\$0.637	New total including Rev 1 \$1.945M	\$0.637				
Pleasant 16B and Woodland 17G 115 kV Capacitors (NU) Install at each substation: Two (2) 14.4 MVAR 115 kV Capacitor Banks; One (1) 115 kV circuit breaker; Two (2) 115 kV circuit switchers, one for each capacitor bank; Two (2) current-limiting reactors, one in series with each capacitor bank; Surge Arresters; The associated protection, controls, SCADA, and other equipment. ISD for Pleasant S/S: 07/01/06 and for Woodland S/S: 06/01/06	NU-05-T14 ISO approval letter sent on July 25, 2005.	NU-06-TCA-03 RC recommended approval on April 4, 2006. ISO determination letter sent on April 24, 2006.	3	\$9.350		\$9.350				
Stepstone S/S Upgrades (NU) Install a new 115kV circuit breaker and relaying work at the new Stepstone substation. ISD June 2007	NU-05-T20 ISO approval letter sent on November 8, 2005.	NU-06-TCA-02 RC recommended approval on April 4, 2006. ISO determination letter sent on April 24, 2006.	2	\$4.466		\$4.466				
Stepstone S/S Upgrades (NU) Install a new 115kV circuit breaker and relaying work at the new Stepstone substation. ISD June 2007	NU-05-T20 ISO approval letter sent on November 8, 2005.	NU-06-TCA-02 Rev 1 Presentation and Vote expected at October RC Meeting RC recommended approval on October 20, 2009 ISO determination letter sent on April 13, 2010	2	\$6.080		\$6.020				
Deerfield S/S Upgrades (NU) Install a new 345kV circuit breaker at the Deerfield substation. ISD June 2006	Not required	NU-06-TCA-05 RC recommended approval on May 2, 2006. ISO determination letter sent on June 2, 2006.	2	\$1.700		\$1.700				
Dooley 30K Circuit Breaker (NU) Install a new 115kV circuit breaker and relaying work at Dooley 30K substation. ISD June 2006	NU-06-T13 ISO approval letter sent on May 10, 2006.	NU-06-TCA-06 RC recommended approval on May 2, 2006. ISO determination letter sent on June 2, 2006.	2	\$0.895		\$0.895				
South End Breaker Replace existing 6T circuit breaker with new SF6 breaker. Install an additional new SF6 breaker in series with the replaced 6T breaker. ISD December 2006	NU-06-T02 ISO approval letter sent on February 17, 2006	NU-06-TCA-07 RC recommended approval on June 7, 2006. ISO determination letter sent on July 12, 2006.	2	\$0.799		\$0.799				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>Colburn Substation (NSTAR)</p> <p>Construction of new 115/14 kV Colburn substation. The station will connect to 115 kV cables 110-510 and 110-511. ISD June 2005 / June 2007</p>	<p>NSTAR-04-T07</p> <p>ISO approval letter sent on December 13, 2004.</p>	<p>NSTAR-06-TCA-01</p> <p>RC recommended approval on June 7, 2006.</p> <p>ISO determination letter sent on July 12, 2006.</p>	3	\$28.700		\$6.500			\$22.200	
<p>N. Cambridge Substation (NSTAR)</p> <p>Installation of a new 345 kV, 160 MVAR regulating shunt reactor at North Cambridge substation. ISD June 2005 / June 2007</p>	<p>NSTAR-05-T05</p> <p>ISO approval letter sent on May 3, 2005.</p>	<p>NSTAR-06-TCA-02</p> <p>RC recommended approval on June 7, 2006.</p> <p>ISO determination letter sent on July 12, 2006.</p>	2	\$4.300		\$4.300				
<p>Norwalk Harbor Control Relocation (NU)</p> <p>Removal of the existing protection and control equipment from NRG's Norwalk Harbor generating station control house to a new control house that will house the Long Island Replacement Cable transmission equipment and the equipment removed NRG's control house. ISD December 2007</p>	<p>Not required</p>	<p>NU-06-TCA-04</p> <p>At the July 19, 2006 RC meeting there were many questions specifically whether this project was triggered by a transmission need, or whether these were changes NU should have made before/during its sale of this plant to NRG. NU requested that the RC refrain from voting at this time and NU would be coming back to the RC with additional information. NU sent a new version of the TCA application to the RC on September 26, 2006, which addresses all questions raised at the July 19, 2006 meeting.</p> <p>RC recommended approval on November 1, 2006.</p> <p>ISO determination letter sent on January 22, 2007.</p>	2	\$4.857		\$4.857				
<p>Wilton 35A Substation (NU)</p> <p>Construct a 115/13.8-kV substation I Wilton, CT. ISD December 2007</p>	<p>NU-05-T04</p> <p>ISO approval letter sent on June 24, 2005.</p>	<p>NU-06-TCA-09</p> <p>RC recommended approval on August 29, 2006.</p> <p>ISO determination letter sent on October 20, 2006.</p>	2	\$3.828		\$3.828				
<p>Northeast Connecticut Reliability Project (Killingly) (NU)</p> <p>Construct the new 345/115-kV substation Killingly 2G, in Killingly, CT. Sectionalize the 345-kV line #347, terminating the ends at the Killingly substation. Install two 345-kV and eight 115-kV circuit breakers and disconnect switches at Killingly. Install three single phase 345/115 kV, 200 MVA autotransformers at Killingly and tap them via a 345-kV circuit breaker into the Killingly-Lake Road 345-kV line. Install a new 345-kV circuit breaker at the Card 11F substation, in series with the existing Card 11F-2T-2 circuit breaker, in Lebanon, CT. ISD December 2006</p>	<p>NU-04-T20 Rev 1</p> <p>ISO approval letter sent on January 28, 2005.</p> <p>NU-04-T21</p> <p>ISO approval letter sent on August 4, 2004.</p>	<p>NU-06-TCA-10</p> <p>At the October 3, 2006 RC meeting, NU requested that the application be pulled off of the agenda. NU re-submitted its application on October 26, 2006. The new application includes new, lower estimated costs, that reflect actual costs tracked to date.</p> <p>RC recommended approval on December 06, 2006.</p> <p>ISO determination letter sent on February 12, 2007.</p>	4	\$28.902		\$28.635			\$0.267	

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Auburn St. 345kV breaker addition (National Grid) Install a 345kV gas circuit breaker and associated equipment on line #335 at Auburn St. substation. Replace the existing 345kV gas circuit breaker on line #342 at Auburn St. substation. ISD Summer 2007	NEP-06-T09 ISO approval letter sent on October 24, 2006.	NEP-06-TCA-02 RC recommended approval on October 3, 2006. ISO determination letter sent on October 18, 2006.	2	\$1.580		\$1.580				
Scobie 115-kV Substation Reconfiguration (NU) Upgrade the 115-kV Scobie substation to a breaker-and-half configuration and comply with NPCC criteria for classification as part of the Bulk Power System. ISD June 2006	NU-02-T06 ISO approval letter sent on April 9, 2002.	NU-02-155-T06 RC recommended approval on May 7, 2002. NU-02-155-T06 Rev 1 The revised applications for \$11.261M but withdrawn by NU after submitted on 10/15/07.	3	\$9.500		\$9.500				
CL&P circuit breaker replacements (NU) Circuit breaker replacements at the Millstone (345-kV), Manchester (115-kV), Newington (115-kV) and West Side (115-kV) substations. ISD December 2006	Not required	NU-06-TCA-15 RC recommended approval on December 06, 2006. ISO determination letter sent on January 26, 2007.	2	\$3.894		\$3.894				
PSNH circuit breaker replacements (NU) Circuit breaker replacements at the Deerfield (345-kV) and Pennigewassett (115-kV) substations. ISD December 2006	Not required	NU-06-TCA-16 RC recommended approval on December 06, 2006. ISO determination letter sent on January 26, 2007.	2	\$0.917		\$0.917				
WMECO circuit breaker replacements (NU) Circuit breaker replacements at the Berkshire (115-kV) substation. ISD December 2006	Not required	NU-06-TCA-17 REPLACEMENT IN KIND RC recommended approval on December 06, 2006. No action is required from the ISO.		\$0.250		\$0.250				
Lexington 345 KV Reactor Project (NSTAR) Installation of a new 345 kV, 160 MVAR regulating shunt reactor at Lexington substation. ISD May 2006	NSTAR-05-T09 ISO approval letter sent on December 15, 2005.	NSTAR-06-TCA-03 RC recommended approval on December 06, 2006. ISO determination letter sent on January 26, 2007.	2	\$3.800		\$3.800				
Sudbury 115 kV Capacitor Bank (NSTAR) Installation of a new 118 kV, 52.5 MVAR capacitor bank at Sudbury substation. ISD June 2006	NSTAR-06-T06 ISO approval letter sent on May 10, 2006.	NSTAR-06-TCA-07 RC recommended approval on December 06, 2006. ISO determination letter sent on January 26, 2007.	2	\$1.250		\$1.250				

2007

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Long Island Replacement Cable ("LIRC") (NU) Install three new three-phase 138-kV cables between the Norwalk Harbor Substation in Norwalk, Connecticut and the Northport Substation in Northport, New York and remove the existing seven single-phase cables. ISD December 2008	NU-02-T26 ISO approval letter sent on December 17, 2002.	NU-07-TCA-01 A draft application was sent to the ISO for review on November 12, 2006. The ISO emailed comments back to NU on January 8, 2007. NU sent its final application to the RC on January 29, 2007. RC recommended approval on February 13, 2007. ISO sent an additional information request letter on March 13, 2007. NU responded on April 11, 2007. The ISO sent a second request on April 20, 2007 for which NU replied on May 7, 2007. ISO determination letter sent on June 19, 2007.	4	\$71.744		\$71.744				
Mystic Station 115 kV Breaker Replacement Project (NSTAR) Replacement of nineteen 115 kV, circuit breakers at Mystic Station. ISD December 2008 (three in 2006, three in 2007 and thirteen in 2008)	Not required	NSTAR-07-TCA-01 (This was originally TCA application NSTAR-06-TCA-06, which was withdrawn on February 8, 2007). REPLACEMENT IN KIND This application replaced the NSTAR-06-TCA-06 application. According to the most recent version of PP-4, effective January 5, 2007, this TCA does not require action from the RC or the ISO. NSTAR-07-TCA-01 was presented at the RC for information only on February 13, 2007. No action required but ISO sent letter on March 6, 2007.	2	\$4.700		\$4.700				
Brentwood Substation Modifications (NU) Add new 115 kV Breaker & switches to connect new Brentwood substation to the R193 line. ISD May, 2007	NU-06-T03 ISO approval letter sent on February 17, 2006.	NU-07-TCA-04 RC recommended approval on April 4, 2007. ISO determination letter sent on May 23, 2007.	2	\$2.107		\$2.107				
New Oxford Substation (NU) Construction of new 115/13.8 kV Substation in 26 N. Oxford, CT. ISD May 2008	NU-05-T52 ISO approval letter sent on January 26, 2006.	NU-07-TCA-03 RC recommended approval on May 15, 2007. ISO determination letter sent on June 21, 2007.	3	\$5.710		\$5.710				
East Avenue Loop Project (VELCO) New and replacement of existing 115 kV lines. Expansion of East Avenue substation to 115 kV ring bus with 3 new local distribution transformers. ISD August 2010	VELCO-06-T03 & VELCO-06-T05 ISO approval letter sent on October 24, 2006.	VELCO-07-TCA-01 RC recommended approval on April 4, 2007. ISO determination letter sent on May 23, 2007.	4	\$40.024		\$25.142		\$14.882		
Mystic to Chelsea Line Upgrade (NSTAR) Thermal Upgrade of 115 kV Line 488-518/P-168(Mystic to Chelsea) and Chelsea station upgrade. ISD January 2006	NSTAR-05-T06 ISO approval letter sent on August 30, 2005.	NSTAR-07-TCA-02 RC recommended approval on May 15, 2007. ISO determination letter sent on June 21, 2007.	2	\$1.480		\$1.480				
Chelsea Substation Upgrade (NSTAR) Construct a six breaker 115 kV ring bus at Chelsea substation. ISD November 2006	NSTAR-06-T01 ISO approval letter sent on May 2, 2006.	NSTAR-07-TCA-03 RC recommended approval on May 15, 2007. ISO determination letter sent on June 22, 2007.	2	\$3.700		\$3.700				

¹NECPUC to be involved in category 4 & 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Oak Hill Substation Upgrade (NU) Add two 115kV Breakers and associated switches to sectionalize the P145 line at Oak Hill substation. ISD June 2007	NU-06-T18 ISO approval letter sent on September 11, 2006.	NU-07-TCA-09 RC recommended approval on May 15, 2007. ISO determination letter sent on June 22, 2007.	2	\$2.709		\$2.709				
Weare Substation Reliability Project (NU) Add two 115 kV breakers at Weare substation. Additional remote terminal works at Greggs substation and 115 kV 28.8 MVar Capacitor bank at Jackman substation ISD June 2008	NU-07-T02 ISO approval letter sent on April 11, 2007.	NU-07-TCA-12 RC recommended approval on May 15, 2007. The project cost estimates were higher compared to other NU projects in NH. ISO requested additional information and breakdown of costs by letter sent on June 19, 2007. NU responded on July 16, 2007, stating the cost of this project is comparable to current NU projects in the PSNH region. Second ISO additional information request letter sent on August 24, 2007 and response received on September 17, 2007. ISO determination letter sent on February 7, 2008.	3	\$11.633		\$11.633				
Millstone Substation SPS Upgrade (NU) Replacement of the Special Protection System (SPS) Sever Line Outage Detection (SLOD) with new microprocessor based system. ISD June 2007	NU-07-X01 ISO approval letter sent on February 13, 2007.	NU-07-TCA-08 RC recommended approval on July 10, 2007. ISO determination letter sent on October 3, 2007.	2	\$1.500		\$1.500				
Timber Swamp 345/34.5 kV SS Expansion (NU) Add four 345 kV breaker ring bus, additional transformation and remote relay changes at Newington & Seabrook Substations. ISD June 2007	NU-06-T19 ISO approval letter sent on August 31, 2006.	NU-07-TCA-10 RC recommended approval on July 10, 2007. ISO determination letter sent on September 27, 2007.	3	\$9.007		\$9.007				
Ludlow Substation 345 kV Breaker Addition (NU) Adding one 345 kV breaker 6T to reduce severity of stuck breaker contingency of breaker 5T, with associated protection & SCADA. ISD May 2008	NU-07-T05 ISO approval letter sent on June 15, 2007.	NU-07-TCA-15 RC recommended approval on August 8, 2007. ISO determination letter sent on September 27, 2007.	2	\$1.644		\$1.644				
Barbor Hill Substation Reliability (NU) 600MVA 345/115kV Autotransformer & twelve 115kV Breaker ring bus in breaker and a half configuration to reterminate lines 1100,1200, 1606 and 1724. ISD June 30, 2008	NU-06-T15 ISO approval letter sent on April 4, 2007.	NU-07-TCA-07 RC recommended approval on September 19, 2007. ISO determination letter sent on February 7, 2008.	4	\$48.940		\$48.940		\$4.787		

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Lamoille County Transmission Expansion (VELCO) 115 kV Breaker addition at Middlesex, 115 kV Transmission lines to Duxbury, Middlesex and Stowe substations with SCADA controls. ISD December 2007	VELCO-07-T01 VELCO-07-T02 VELCO-07-T04 ISO approval letter sent on August 16, 2007.	VELCO-07-TCA-02 RC recommended approval on September 19, 2007. ISO determination letter sent on February 7, 2008.	2	\$41.905		\$41.905	Requested \$4.857M		\$37.048	
Rood Avenue Substation (NU) New 115 kV Bus with tie breaker for looping 1751 line and to install a 46.7 MVA two winding transformer in the new Rood Avenue substation. Also breaker and half bay with relay upgrade and wave traps at Manchester. ISD June 2009	NU-07-T12 RC approval on September 19, 2007	NU-07-TCA-17 RC recommended approval on September 19, 2007. ISO determination letter sent on February 7, 2008.	3	\$9.162		\$9.162	Requested \$9.162M			
Kimball Road Substation (CMP) Installation of two 30 MVAR capacitor banks at Kimball Road Substation in Harrison, ME, and related work. ISD Dec 2008 / Dec 2009	CMP-05-T01 Rev. 2 RC recommended approval on November 7, 2007	CMP-07-TCA-01 RC recommended approval on November 7, 2007 ISO determination letter sent April 2, 2008	2	\$5.367		\$2.441			\$2.926	
Norwalk-Glenbrook Cables (NU) Install two new 115-kV cables from Norwalk to Glenbrook (accommodate 345 kV class cable). Expand and upgrade to BPS and remove SPS at Glenbrook 115 kV substation. Replace two 115-kV circuit breakers at Cos Cob. ISD 2008	NU-05-T09 Approved August 3, 2005	NU-07-TCA-24 Initial presentation to the RC on January 16, 2008. ISO sent an additional information request letter sent on January 29, 2008 and responses received March 10, 2008. RC recommended approval on March 18, 2008 A Stakeholder meeting was held on May 30, 2008. A second additional information request sent on May 30, 2007 and a third sent on June 17, 2008. ISO-NE is awaiting a response for both the second and third requests. A ISO determination letter yet to be sent. A third additional information request sent on July 24, 2009 focusing on cost "adders" and also vaults and vault locations off of Route 1. ISO-NE received responses to both questions sets on September 1, 2009. A fourth additional information request was sent on December 27, 2009 focusing on any new uses for the spare duct bank that was installed as part of the project. NU responded on February 1, 2010. Draft determination letter posted on May 2, 2010 for 30 day comment period. Comments should be sent to TCApps@iso-ne.com ISO Determination sent on September 14, 2010	4	\$234.203		\$203.668		\$30.535		Localized costs associated with 3rd underground duct bank and cable and trench routing along Rt. 1.
Mammoth Road 2nd Transformer (NU) Split the R187 line between Watts Brook SS & Scobie SS to install two breakers and accommodate a second autotransformer. ISD May 2008	NU-07-T11 RC recommended approval on July 22, 2007	NU-07-TCA-19 RC recommended approval on December 19, 2007 ISO determination sent June 13, 2008	2	\$4.522		\$4.522				

¹NECPUC to be involved in category 4.5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Western MA Reinforcements 2007-2017 (National Grid) 115kV line upgrades, Reconnector E-2050W for 120C operation, Breaker installation at numerous substations, 69kV to 115kV conversion at East Longmeadow ISD June 2009 - 2011	NEP-07-T14 through NEP-07-T42 RC recommended approval on November 7, 2007	NEP-07-TCA-02 and NEP-07-TCA-02 Rev. 1 RC initial review at the November 7, 2007 meeting. Application updated as the result of this meeting and TCA resubmitted on December 4, 2007. RC recommended approval on December 19, 2007. ISO sent an additional information request letter sent on May 12, 2008 and awaiting a response. National Grid responded to the ISO's data request on August 14, 2008 National Grid Withdrew this TCA for consideration on November 6, 2008.	4		\$125.25		Requested \$108.747M		\$16.503	
unused										
Berkshire 2nd Autotransformer (NU) Installation of a second 450 MVA 345/115 kV autotransformer. ISD June 2008	NU-07-T14 (level 1)	NU-07-TCA-22 Withdrawn February 8,2008	3		\$9.156		Requested \$9.156M			
Down East Reliability Project (BHE) New 115 kV transmission line tapping the L57 line near Ellsworth Substation and connecting to the Harrington Substation ISD 1st Qtr 2012	BHE-06-T06 ISO approval letter sent on April 2006	BHE-07-TCA-01 RC recommended approval on December 19, 2007 An additional information request letter to be sent March 27, 2008 regarding ROW. ISO determination sent out June 13, 2008	3	\$67.900		\$66.100			\$1.800	
Raymond Substation Upgrades (CMP) Replace two 115 kV automatic sectionalizing switches with circuit breakers. ISD December 2006	CMP-06-T02 ISO approval letter sent on June 19, 2006	CMP-07-TCA-02 RC recommended approval on December 19, 2007 ISO determination sent out June 13, 2008	2	\$1.523		\$1.523			\$1.932	
2008										
Q-169 Upgrade (NGrid) Upgrade the 115 kV line between the Golden Hills and Lynn Substations with circuit breakers. ISD December 2009	NEP-05-T09 ISO approval letter sent on September 2, 2005	NEP-08-TCA-02 (formerly submitted as NEP-07-TCA-03) RC recommended approval on February 14, 2008 ISO determination sent out June 13, 2008	3	\$12.390		\$12.390				
Q-168 Upgrade (NGrid) Upgrade the NGrid portion of the Q-168 line between Mystic and Chelsea Substations with circuit breakers. ISD January 2006	NSTAR-05-T06 (filed by NSTAR not Ngrid) ISO approval letter sent on August 30, 2005	NEP-08-TCA-01 RC recommended approval on February 14, 2008 ISO determination sent out June 13, 2008	2	\$1.975		\$1.975				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Taft's Corner Substation (VELCO) Add 3 new 115kV Breakers at Tafts Corner Substation ISD July 2009	VELCO-07-T05 ISO approval letter sent on February 7, 2008	VELCO - 08-TCA-01 RC recommended approval on April 15, 2008 ISO determination letter sent out June 23, 2008	2	\$9.250		\$2.250			\$7.000	
Maguire Road Project (CMP) Upgrade of the Maguire Road and Buxtun Substations and associated transmission line upgrades. ISD 2008	CMP-06-T05 through T11 and CMP -06-T05 Rev 1 RC Recommended Approval June 2006 and December 2006 (Revision) ISO determination letter yet to be sent.	CMP-08-TCA-01 Presentation to the RC on May 21, 2008 and June 17, 2008. RC recommended approval on June 17, 2008 Additional Information request sent on July 28, 2008. ISO Determination letter sent out on January 9, 2009	4	\$49.500		\$49.500				
Rutland Substation (NEP) Build new 115kV/13kV substation connected to the B-128 line ISD 2009	NEP-08-T13 RC Recommended Approval May 21, 2008 ISO approval letter sent on June 25, 2008	NEP-08-TCA-03 RC recommended approval on August 20, 2008 ISO determination letter sent December 17, 2008	2	\$4.750		\$2.504			\$2.246	
Shunt Capacitor Installations (NSTAR) Install 3 new 115 kV capacitor banks and upgrade 3 existing banks ISD 2007	NSTAR-07-T04 RC Recommended Approval May 15,2007 ISO approval letter sent on June 5, 2007	NSTAR-08-TCA-01 RC recommended approval on August 20, 2008 ISO determination letter sent December 17, 2008	2	\$3.230		\$2.039			\$1.191	
Newcastle Substation Upgrades (CMP) Replace 2-115 kV automatic sectionalizing switches with circuit breakers ISD December 2008	CMP-08-T02 RC Recommended Approval August 18, 2008 ISO approval letter sent on August 18, 2008	CMP-08-TCA-06 RC recommended approval on August 20, 2008 ISO determination letter sent December 17, 2008	2	\$3.640		\$1.310			\$1.370	
Scobie Substation 3rd Autotransformer (NU) Install 450MVA 345/115 kV autotransformer and two 345 kV IPT circuit breakers ISD November 2008	NU-07-T10 RC Recommended Approval July 16, 2007 ISO approval letter sent on July 27, 2007	NU-08-TCA-02 RC recommended approval on September 16, 2008 ISO determination letter sent December 17, 2008	3	\$12.948		\$12.948				
Scobie-Hudson Corridor Project (NU) Rebuild 11 miles of 115 kV, install 11 miles new 115 kV, add 4th bay to Scobie S/S and construct new breaker-and-a-half substation at Power St. ISD May 2008	NU-06-T17 RC Recommended Approval July 17, 2006 ISO approval letter sent on July 25,2006	NU-08-TCA-03 RC recommended approval on October 15, 2008 ISO Determination letter sent out on January 9, 2009	4	\$30.179		\$29.082			\$1.097	
Trumbull Substation (UI) Construction of a new 115kV substation with 3-115kV SF6 breakers ISD 2008	UI-08-T01 RC Recommended Approval March 13, 2008 ISO approval letter sent on March 13, 2008	UI-08-TCA-02 RC recommended approval on October 15, 2008 Data Request sent out on January 12, 2009 Data Request responses received January 28, 2009 ISO determination letter sent July 24, 2009	3	\$11.933		\$9.190			\$2.936	
Macy's - Bucksport (CMP) Replace two existing, over current- relay based/ SPS schemes with a New SPS with high speed transfer-trip channels ISD September 2007	UI-06-X01 ISO approval letter sent on March 14, 2008	CMP-08-TCA-03 RC recommended approval on October 15, 2008 ISO determination letter sent February 6,2009	3	\$6.464		\$6.464				
Lower SEMA short term Upgrades (NSTAR) Work associated with the Settlement Agreement executed May 18, 2007 to resolve issues surrounding dispatch cost of the two Canal generating units. ISD June 2008-June 2009	NSTAR-07-T08,NSTAR-07-T09, NSTAR-07-T10, NSTAR-07-T11, NSTAR-07-T12(1),NSTAR 07-12(2) ISO approved August 17, 2007 NSTAR-07-T12(2) to be presented at December RC Meeting for revision	NSTAR-08-TCA-03 NSTAR to present to RC in November for information looking for a vote at Decembers RC meeting RC approval December 18, 2008 Additional information request sent on July 24, 2009 focusing on choice of SVC over a STATCOM device. NSTAR responded to data request on August 14,2009. ISO Determination letter sent on May 4, 2010	4	\$86.591		\$86.590				

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Auburn Street Substation (NEP) Install two new 115 kV breakers and associated equipment. ISD Summer 2008	NEP-07-T12 ISO approval letter sent on August 17, 2007	NEP-08-TCA-14 NEP to present to RC in November as part of NSTAR's Lower SEMA short term upgrades TCA. Presentation in November for information only, looking for vote at Decembers RC meeting RC recommended approval on December 18, 2008 Additional Information Letter sent to NSTAR on their portion of the project on July 24, 2009. NSTAR responded to data request on August 14,2009. ISO Determination letter sent on January 10, 2011	2	\$3.282		\$3.282				
Bridgewater Substation #355 (NEP) Line relay change to support looping at Carver Substation (NSTAR substation) ISD April 2009	NSTAR-07-T08 ISO approval letter sent on August 17, 2007	NEP-08-TCA-15 NEP to present to RC in November as part of NSTAR's Lower SEMA short term upgrades TCA. Presentation in November for information only, looking for vote at Decembers RC meeting RC recommended approval on December 18, 2008 Additional Information Letter sent to NSTAR on their portion of the project on July 24, 2009 PTF amount under 1 Million dollars no action by the ISO needed	1	\$0.780		\$0.780				
Keene Rd Substation (BHE) New 345/115 kV autotransformer and related equipment at the Keene Rd 115 kV Switching Station. ISD 2010	BHE-08-T03 RC Approval November 21, 2008	BHE-08-TCA-01 RC recommended approval December 18, 2008 TCA revised in January 2011	4	\$30.000		\$29.000		\$1.000		
Keene Rd Substation (BHE) New 345/115 kV autotransformer and related equipment at the Keene Rd 115 kV Switching Station. ISD 2010	BHE-08-X1,BHE-10-T01, BHE-10-T-02, BHE-10-T01 RC Approval October 20, 2010 ISO approval letter sent on October 22, 2010	BHE-08-TCA-01 REV 1 Introductory presentation at January 20, 2011 RC meeting RC recommended approval February 15, 2011 Additional Information request sent on March 22,2011 for clarification on the Normally Opened breaker at the Keene Rd substation. April 4,2011 BHE responded to the ISO 's additional information request ISO determination letter sent June 16, 2011	4	\$38.000		\$37.000		\$1.000		
Frost Bridge 345/115 kV Autotransformer Replacement (NU) Replace 345/115 kV Autotransformer and install a 2% series Reactor at North Bloomfield. ISD December 2007 - Auto ISD Fall 2009 - Reactor	NU-07-T15 & NU-07-T17 ISO approval letter sent on October 10, 2007	NU-08-TCA-07 NU presented project at December 18, 2008 RC RC recommended approval on December 18, 2008 ISO determination letter sent June 16, 2009	2	\$3.106		\$3.106				
Southern Loop (Velcro) 53 Miles of new 345 kV transmission. 2 New Substations- Newfane and Vernon. Vernon substation to connect to Vermont Yankee. ISD June 2011	VELCO-08-T01 through VELCO-08-T13 and VELCO-08-T01 REV 1 through VELCO-08-T13 REV 1 ISO approval letter sent on October 1, 2008	VELCO-08-TCA-02 Velcro made and information only presentation to the RC on December 18, 2008. Velcro to present at a Stakeholder meeting on January 29, 2009 ISO Data Request sent out on February 13, 2009 . RC recommended approval on February 24, 2009 Velcro responses to ISO-NE Data Request March 24, 2009 VELCO presented in front of PAC on April 21, 2009 discussing project cost with new CEWG template ISO Determination letter posted on March 23, 2010 for a 30 day comment period. Comments to be sent to TCApps@iso-ne.com ISO determination letter sent on May 17, 2010	4	\$264.231		\$241.481				State siting is complete. State of Vermont has issued Certificate of Public Good to VELCO

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018

ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>Merrimack Valley/ North Shore (NEP)</p> <p>New 345/115 kV Wakefield Jct. Substation, upgrade of the O-167 line, reconductor the i-161 and A-153 lines. Reconfigure 345 kV bus at Sandy Pond and add 345 kV bay and upgrade the G-133W line.</p> <p>ISD 2009 - 2012</p>	<p>NEP-05-T11, NEP-07-T02, NEP-08-T07 through NEP-08-T12, NEP-08-T33 through NEP-08-T38</p> <p>ISO approval letter sent on October 10,2008</p>	<p>NEP-08-TCA-04,NEP-08-TCA-06 through NEP-08-TCA-11</p> <p>Information only presentation to RC on December 18, 2008.</p> <p>Part of Stakeholder discussion on January 29, 2009</p> <p>ISO Data Request sent out on February 13, 2009 .</p> <p>NEP response to ISO-NE Data Request on March 13, 2009</p> <p>RC recommended approval on March 17, 2009</p> <p>ISO- Determination letter sent on June, 1, 2012</p>	4	173.595		\$173.60				NEP withdrew TCA NEP-08-TCA-08 at an estimated cost of \$43.5M
<p>Heywood Rd Substation (CMP)</p> <p>Installation of new 115 kV Substation and re-rate of line section 67A</p> <p>ISD March 2009</p>	<p>CMP-06-T13 Rev 1</p> <p>RC approval January 26, 2008</p> <p>ISO determination March 20, 2009</p>	<p>CMP-08-TCA-02</p> <p>Information only presentation on December 18, 2008 to RC</p> <p>RC recommended approval on January 26, 2009</p> <p>ISO determination letter sent July 24, 2009</p>	3	\$8.588		\$7.040				
2009										
<p>Maine Power Reliability Program (MPRP) (CMP)</p> <p>350 Miles of 345 kV and 115 kV transmission Facilities, 20 substation projects.</p> <p>ISD March 2009</p>	<p>CMP-08-T03 through CMP-08-T37 & CMP-08-X01</p> <p>ISO determination letter sent on July, 31, 2008</p>	<p>CMP-09-TCA-01</p> <p>Information only presentation on December 18, 2008 and January 26, 2009 to RC</p> <p>Part of Stakeholder discussion on January 29, 2009</p> <p>ISO Data Request sent out on February 16, 2009 .</p> <p>RC recommended to not approve TCA application with a vote of 64% in favor</p> <p>A 4th additional information request sent on July 24, 2009 focusing on cost adders, book value of the 34.5 kV underground cable and the like in kind replacement of the 34.5 kV underground cable.</p> <p>ISO draft Determination draft letter posted September 24, 2009 for 30 day comment period. Comments were received form CMP, NU and Mass Attorney Generals office.</p> <p>ISO Determination letter sent out on January 29, 2010</p>	4	\$1,550.000		\$1,375.904				Section 254 was removed from consideration in this TCA application because a decision was not made on the construction that should be used for that section. It was latter recommend from the ISO that the section be built and operated at 115-kV
<p>White Mountains Upgrades - Y138 Closing (NU)</p> <p>Addition of +52°/-52° 115 kV phase angle regulator, three capacitor banks, 3 circuit breakers and three circuit switchers.</p> <p>ISD 2009</p>	<p>NU-08-T55, NU-05-T56 and NU-05-T57</p> <p>ISO determination letter sent on January 17, 2006</p>	<p>NU-08-TCA-05</p> <p>RC recommended approval on February, 24, 2009</p> <p>ISO additional information request sent out on July 24, 2009 focusing on the impacts this project will have on other transmission projects and clarification of valuation year of the costs. NU responded to these questions on September 1, 2009</p> <p>RC recommended approval on November 13, 2009</p> <p>ISO determination letter Sent on April 13, 2010</p>	4	\$27.775		\$27.750				
<p>Section 241 (CMP)</p> <p>Construct 38.8 Miles of 115 KV parallel to the existing Section 83. Install one 115 kV breaker at Wyman Hydro Substation.</p> <p>ISD December 2012</p>	<p>CMP-09-T01</p> <p>ISO determination letter sent on January 26, 2009</p>	<p>CMP-09-TCA-02</p> <p>Information only at March 17,2009 RC meeting</p> <p>RC recommended approval on April 21, 2009</p> <p>ISO determination letter sent December 28, 2010</p>	3	\$19.574		\$19.519				
<p>Section 241 (CMP)</p> <p>Construct 38.8 Miles of 115 KV parallel to the existing Section 83. Install one 115 kV breaker at Wyman Hydro Substation.</p> <p>ISD December 2012</p>	<p>CMP-09-T01</p> <p>ISO determination letter sent on January 26, 2009</p>	<p>CMP-09-TCA-02 Rev 1</p> <p>Information only at January 19,2010 CMP presented a revised cost for the project and explained why the cost had increased.</p> <p>RC recommended approval on February 26, 2010</p> <p>ISO determination letter sent December 28, 2010</p>	3	\$13.260		\$13.260				

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
						Local as per ISO	Non PTF as per TO			
Devens Commerce Center (NEP) Conversion of two 69 kV lines (U-21E and V-22E) to 115 kV and construction of a new 115 kV switching station at the Devens Commerce Center ISD December 2011	NEP-09-T01 RC Recommended Approval April, 20, 2009 ISO approval letter forthcoming PPA withdrawn July, 27, 2010	NEP-09-TCA-01 Discussed at April 21, 2009 RC meeting. Several questions were asked in regards to the actual load forecast and year of need for the project. NEP withdrew the TCA Application vote from the meeting agenda. On Hold for revised TCA Withdrawn	3	\$9.200		Requested 9.2				
Upgrade the O-167 115kV Line (NSTAR Line # 423-515) NSTAR Rebuilding the underground section of line with two sets of parallel conductors using 2250 kcmil Cu HPFF cable and modification of the Mystic gas-insulated substation bus terminal ISD June 2010	NEP-08-T33 ISO approval letter sent on October 10,2008	NSTAR-09-TCA-01 NSTAR's work that is required to complete the NEP Merrimack Valley North Shore Upgrades RC recommended approval on March 17, 2009 ISO Determination letter sent on January 10, 2011	3	\$7.300		\$7.300				
Reconfigure Golden Hills Substation (NSTAR 345kV Line # 349) (NSTAR) Re-terminate the NSTAR 345kV underground line # 349 at National Grid's Golden Hills Substation and upgrade the protection system on line # 349 at NSTAR's Mystic Substation. ISD June 2009	NEP-08-T07 thru NEP-08-T11 ISO approval letter sent on October 10,2008	NSTAR-09-TCA-02 NSTAR's work that is required to complete the NEP Merrimack Valley North Shore Upgrades RC recommended approval on March 17, 2009 ISO Determination letter sent on January 10, 2011	2	\$1.700		\$1.700				
Bloomington - Vernon Hill Cable (NEP) Construction of the 3.7 mile Underground 115 kV Cable from Bloomington Substation to Vernon Hill Substation ISD December 2013	NEP-08-T62 ISO determination letter sent on February 27,2009	NEP-09-TCA-01 RC recommended approval on April 21, 2009 Additional information request sent on January 8, 2010. NEP response to additional information request received on May 19, 2010 ISO Determination letter sent on July 15, 2011	4	\$31.060		\$30.813	\$0.247		\$247,000, the amount for the spare conduit was deemed to be local per the ISO	
Union Ave Substation (UI) 1-115 kV GIS Breaker, 4-115 kV disconnect switches creating 2-115 kV line terminating positions a the existing Water Street - West River 8700 UG line ISD April 2011	UI-08-T04 ISO determination letter sent on January 7,2009	UI-09-TCA-01 Expected presentation and vote at June 16, 2009 RC meeting. RC recommended approval on June 16, 2009. Additional information request sent on July 24, 2009 focusing on customer contribution and ROW cost. UI responded August 12, 2009 to this data request. ISO Determination letter sent on November 10, 2009	3	\$11.650		\$10.540				
Union Ave (UI) One (1) 115-kV gas-insulated circuit breaker, four (4) 115-kV disconnect switches and associated bus, creating two 115-kV line termination positions interconnecting to the existing Water Street - West River 8700 underground line, a low-pressure oil-filled 115-kV underground cable that is located adjacent to the planned substation site. This new configuration will segment the existing 8700 underground line into two underground transmission lines, the Water Street - Union Avenue 8700 Line (2000' in length) and the Union Avenue - West River 8702 Line (3980' in length). ISD 2012	UI-08-T04 ISO determination letter sent on January 7,2009	UI-09-TCA-01-Rev 1 Presentation and vote at the August 23, 2011 RC meeting ISO Determination letter sent on December 16, 2011	2	\$16.50		\$13.50		2.800		
Line 64 Re-build (BHE) Rebuild approximately 44 miles of 115 kV transmission with bundled 795 ACSR conductor ISD	BHE-08-T07 RC Approval December 18, 2008 ISO Approval Pending/1.3.9 Part of Keene Rd. Substation (BHE-08-T03)PPA	BHE-09-TCA-01 RC recommended approval on September 18, 2009. ISO Determination letter sent on June 16, 2011	3	\$37.626		\$37.626				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Line Kiln Substation (VELCO) Construct a 3 breaker 115 kV ring bus on current K-23 line between VELCO's East Avenue and Tafts Corners substations ISD: June 2011	VELCO-06-T04-Rev 1	VELCO-09-TCA-01 RC recommended approval on November 13, 2009 ISO determination letter sent on April 13, 2010	2	\$32.694		\$12.054			\$20.639	
Lyndonville Substation (VELCO) Construct a 4 breaker 115 kV ring bus on current K-28 line between VELCO's Irasburg and St. Johnsbury substations with two 12.5 MVAR, 115 kV capacitor banks ISD: June 2011	VELCO-09-T02 ISO determination letter sent on June 1, 2009	VELCO-09-TCA-02 Information only presentation to RC at November 13, 2009 meeting. RC recommended approval on December 15, 2009 ISO determination letter sent on April 13, 2010	2	\$15.513		\$8.950			\$6.562	
Woodstock Substation (CMP) Build a new Woodstock breaker-and-a-half substation. Rebuild line Section 211 to 1113 ACSR conductor. ISD: March 2009	CMP-07-T03 ISO determination letter sent on November 30, 2007	CMP-09-TCA-03 Information only presentation to RC at January 19, 2010 Meeting. RC recommended approval on February 26, 2010. ISO determination letter sent on March 25,2011	2	\$18.802		\$15.298			\$3.504	
2010										
E205-E Rehabilitation Project (NEP) Wood pole replacement and lightning improvements on the E-205E 230-Kv Transmission line between the Connecticut River and Pratts Junction Substation ISD August 2010	No PPA needed	NEP-10-TCA-01 Information only presentation at the March 17, 2010 RC meeting with a future vote. RC recommended approval on May 24, 2010. Additional Information request sent on June 24, 2010. NEP responded to the ISO's additional information request on May 26, 2011. ISO determination letter sent on September 7, 2011	3	\$43.600		\$43.600				
Central Western MA Reinforcements Group 1 (NEP) 115kV line upgrades, Reconductor E-2050W for 120C operation, Breaker installation at numerous substations, 69kV to 115kV conversion at East Longmeadow ISD	NEP-07-T14 through NEP-07-T19 and NEP-07-T27	NEP-10-TCA-02 Information only presentation at the March 17, 2010 RC meeting with a future vote. Additional Information request sent on January 7, 2011. NEP responded to the ISO's additional information request on August 16, 2011 ISO determination letter sent on February 20,2012	3	\$37.990		\$37.990				Original TCA Application , NEP-07-TCA-02 withdrawn on November 6, 2009. The project will be broken up into 7 separate TCA's based on electrical connectivity and timing.
310/368 DCT Line Separation (NU) Reconstruct the 345 kV Millstone -Manchester 310 line on separate structures. ISD December 2010	NU-08-T04 and NU-08-T05 ISO determination letter sent on July 18, 2008	NU-10-TCA-02 Initial presentation to be made at the July 19, 2010 RC meeting. RC recommended approval on July 19, 2010. ISO determination letter sent on March 25,2011	2	\$15.510		\$15.510				
Three Rivers Switching Station (NU) Construction of new 345 kV Switching Station located in close proximity to the Three Rivers Substation. Part of MPRP. ISD December 2013	NU-09-T01 ISO determination letter sent on February 26, 2009	NU-10-TCA-05 Initial presentation to be made at the July 19, 2010 RC meeting. RC recommended approval on July 19, 2010. ISO determination letter sent on April 14,2011	3	\$36.000		\$36.000				

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Littleton Reconfiguration Project (NU) The project includes the addition of (3) 115-kV circuit breakers; re-termination of the Littleton 230/115-kV autotransformer from the 115-kV Bus #1 to a new 115-kV bay position; and associated disconnect switches, protective relays and controls. ISD June 2011	NU-09-T16 ISO determination letter sent on October 20, 2009	NU-10-TCA-03 Initial presentation and vote at the September 20, 2010 RC Meeting RC recommended approval on September 20, 2010. ISO determination letter sent on April 14,2011	2	\$6.590		\$6.590				
Sherwood 18P 115/13.8 kV Substation (NU) The Project involves looping the existing 115-kV 1890 line into the new substation with a tie breaker and requires new fiber optic communications for line protection relaying. ISD January 2010	NU-08-T07 ISO determination letter sent on January 7, 2009	NU-10-TCA-04 Presentation and vote at the November 17, 2010 RC Meeting RC recommended approval on November 17, 2010 ISO determination letter sent on April 14,2011	2	\$10.969		\$10.969				
Section 254 (CMP) Section 254 is a new 54.8-mile-long 115 kV transmission line between the Orrington and Coopers Mills substations ISD May 2014	CMP-08-T03 R2 ISO determination letter sent on July 31, 2008	CMP-10-TCA-01 Introduction presentation at the October 20, 2010 RC Meeting Presentation and vote at the November 17, 2010 RC Meeting RC recommended approval on November 17, 2010 ISO determination letter sent on June 16,2011	4	\$96.839		\$96.839				
Starks Substation (CMP) Construct a new Starks Switching Station in the town of Starks, Maine. This new switching station will sectionalize Section 63 about one-third of a mile South of the Section 63B Tap point. This yard will be constructed in the existing Section 63 right-of-way. ISD December 2012	CMP-10-T02 ISO determination letter sent on September 28, 2010	CMP-10-TCA-02 Presentation and vote at the November 17, 2010 RC Meeting RC recommended approval on November 17, 2010 ISO determination letter sent on March 25,2011	2	\$10.746		\$9.746		\$1.000		
Mystic 345 kV, 160 MVAR Reactor Project Installation of a 160 MVAR, 345 kV regulation shunt reactor, 345 kV circuit breaker with aSynchronous Switching Controller and the installation of approximately 600' XLPE underground cable to connect the new breaker and reactor. ISD April 2009	NSTAR-08-T07 ISO determination letter sent on August 20,2008	NSTAR-10-TCA-04 Presentation and vote at the November 17, 2010 RC Meeting RC recommended approval on November 17, 2010 ISO determination letter sent on March 25,2011	2	\$6.748		\$6.748				Actual Costs. Work completed in 2009
Deerfield Second Auto Transformer (NU) Add second Deerfield 345/115-kV autotransformer and add three 345-kV circuit breakers. ISD December 2011	NU-09-T02 - T07, T20 ISO determination letter sent on June 16, 2009	NU-10-TCA-06 Presentation and vote at the December 15, 2010 RC Meeting RC recommended approval on December 15, 2010 ISO determination letter sent on July 15, 2011	4	\$62.50		\$51.97				
2011										
A127/B128 line Refurbishment (NEP) The project includes the A127/ B128 circuits between Harriman Station in Readsboro, VT and Tower 510 in Millbury, MA. ISD April 2013	NEP-07-T23/NEP-11-T01 ISO determination letter sent on December 17, 2007	NEP-11-TCA-01 Presentation at the December 15, 2010 RC meeting for information only. Clarification of questions received at the December 15,2010 RC meeting and vote at the January 20,2011 RC meeting RC recommended approval on January 20, 2011. ISO issued and additional Information request to NEP on NEP responded to the ISO's additional information request on ISO determination letter sent on December 16, 2011	4	\$82.70		\$82.70				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Orrington Substation Shunt Capacitor (BHE) Reconfigure Orrington Shunt Capacitor to connect both to 115 kV busses so that loss of one bus does not eliminate the capacitor. ISD December 2010	BHE-08-T06 ISO determination letter sent on October 22, 2010	BHE-11-TCA-01 Information only presentation at the January 20,2011 RC Meeting Presentation and vote at the February 14,2011 RC Meeting RC recommended approval February 14, 2011 ISO determination sent on June 16, 2011	1	\$2.26		\$2.26				
Orrington Series Breaker Addition (BHE) Add a series 345kV breaker to Bangor Hydro's Orrington Substation. Requires moving an existing breaker to make room for new breaker. ISD December 2012	BHE-10-T03 ISO determination letter sent on October 22, 2010	BHE-11-TCA-02 Information only presentation at the January 20,2011 RC Meeting Presentation and vote at the February 14,2011 RC Meeting RC recommended approval February 14, 2011 ISO determination sent on June 16, 2011	1	\$1.76		\$1.76				
Highgate Converter (VELCO) Replacement of the control and cooling systems at the Highgate DC converter station ISD November 2012	N/A (Replacement in Kind)	VELCO-11-TCA-01 Information only presentation at the February 15 RC Meeting TCA presented and discussed at the March 5 and April 12 RC meetings RC recommended approval on April 12, 2011 ISO determination letter sent on August 9,2011	3	\$35.56		\$35.56				
Grand Avenue 115 kV Switching Station Rebuild Project (UI) Construction of a new 115 kV Grand Avenue Switching Station, adjacent to the existing 115 kV Grand Avenue Switching Station ISD May 2010	UI -08-T05 and UI -08-T05 Rev 1 ISO determination letter sent on January 7, 2009 ISO determination letter sent on November 22, 2010	UI-11-TCA-01 Presentation at the April 12, 2011 RC meeting. RC recommended approval on May 25, 2011 Additional information request sent to UI on June 16, 2011 UI's response received on July 13, 2011 ISO determination letter sent on October 20, 2011	4	\$69.99		\$69.99				
Tremont Street BPS Upgrade (NSTAR) Control and protection upgrades at Tremont Street. Upgrades included addition of a prefabricated control house, a new trench, conduit and cable control system. ISD December 2010	N/A	NSTAR-11-TCA-01 Presentation at the April 12, 2011 RC meeting. RC recommended approval on May 25, 2011 ISO determination letter sent on July 15, 2011	2	\$8.79		\$8.28		0.502		
Seabrook 5 Breaker Project (NHT) Replacement of 4 existing GIS Circuit breakers and installation of a fifth. While most of the work being performed is PTF the applicant is looking for recovery on only part of that amount. ISD 2011	FPLC-08-T01nd FPLC-08-T01 Rev 1 ISO determination letter sent on November 20, 2008	NHT-11-TCA-01 Informational Presentation at the September 20, 2012 RC meeting ISO additional Information Request sent to NHT on September 12, 2012. This request focused on breaker 52, PP-9 adherence and alternatives. NHT responded to the ISO's additional information request on October 11, 2011. Presentation and discussion of responses to ISO at the October 19,2012 RC meeting. Applicants look for a vote at the November 15,2012 RC meeting RC voted to recommend on November 15, 2011 ISO determination letter sent on June 22, 2012	3	\$68.89		\$31.58		3.330		
Rumford - Ripley (CMP) Expand Rumford Industrial Park Substation in a double breaker/bus configuration, add a new 115 kV line from Rumford Industrial Park Substation to Rumford 115 kV Substation. Also add a 30 MVar capacitor at Riley Substation. ISD July 2011	CMP-07-T02-Rev 1 Approval May 4,2010	CMP-11-TCA-01 RC voted to recommend on August 23, 2011 ISO determination letter sent on September 27, 2011	2	\$15.99		\$15.24		0.745		

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
NSTAR 310-507/508 (NSTAR) - Reconductoring 5.2 miles each on two existing 115kV transmission lines using 795 ACSS conductor. - Replace sixty existing structures and install one new structure on the ROW. - Replace hardware, insulators and grounds on the existing lines. - Replace three station termination structures. - Replace the terminal disconnect cable risers ISD December 2011	NSTAR-11-T02 Approval February 2,2011	NSTAR-11-TCA-03 RC voted to recommend on August 23, 2011 ISO determination letter sent on December 16, 2011	2	\$9.60		\$9.60				
NEP Advance NEEWS (NEP) 1. NEP-11-TCA-02 Expand Kent County Substation 2. NEP-11-TCA-03 Construct a New 345/115 kV Berry Street Substation In Plainville MA 3. NEP-11-TCA-04 Upgrade 115kV West Farnum Substation Terminal Equipment 4. NEP-11-TCA-05 Reconductor T7 115kV Line between Pawtucket-Somerset Substations ISD 2011	NEP-08-T15 thru NEP-08-T18 ISO determination letter sent on April 4, 2008	NEP-11-TCA-02 thru Nep-11-TCA-05 NEP presented an introduction on the Project to the RC at the May 25,2011 meeting. RC voted to recommend on August 23, 2011 ISO determination letter sent on June 7,2012	4	\$147.90		\$147.90				
Long Term Lower SEMA (NSTAR) Expansion of the Carver 345 kV Substation and installation of a new overhead 345 kV line from Carver to the Bourne Substation area, about 18 miles in length; In the vicinity of the Bourne Substation the new 345 kV line will be cut into Line 120, the Canal to Bourne section of Line 120 will be connected to the Bourne 115 kV Substation; Installation of a new 6-breaker 115 kV Substation along Line 120, Installing a 345/115 kV auto-transformer at the new substation; Looping of Line 115 in and out of the new 115 kV substation; Separating the existing 345 kV double circuit tower crossing of the Cape Cod Canal (Lines 342 and 322) to separate structures. ISD 2012	NSTAR-09-T05, NSTAR-09-T08, NSTAR-11-T07, NSTAR-11-T08 and NSTAR-11-X01. Approval on November 2009 and July 2010	NSTAR-11-TCA-01 Presentation at the September 20, 2011, RC meeting. RC recommended approval on October 19, 2011, meeting ISO determination letter sent on December 16, 2011	4	\$106.30		\$106.30				
Long Term Lower SEMA Rev 1 Expansion of the Carver 345 kV Substation and installation of a new overhead 345 kV line from Carver to the Bourne Substation area, about 18 miles in length; In the vicinity of the Bourne Substation the new 345 kV line will be cut into Line 120, the Canal to Bourne section of Line 120 will be connected to the Bourne 115 kV Substation; Installation of a new 6-breaker 115 kV Substation along Line 120, Installing a 345/115 kV auto-transformer at the new substation; Looping of Line 115 in and out of the new 115 kV substation; Separating the existing 345 kV double circuit tower crossing of the Cape Cod Canal (Lines 342 and 322) to separate structures. ISD 2012	NSTAR 11-T08 Rev 1 and NSTAR -211-X01 Rev 1 Approval on February 11, 2014	NSTAR-11-TCA-01 Rev 1 TCA submitted on December 9, 2014 RC voted to recommend on January 27,2014 ISO issued an additional information request on December 29, 2015 and NU responded to that request on January 25,2015 ISO determination pending	4	\$102.89		\$100.95	Requested: 102.89 \$	1.945		Actual Project came in less than the original TCA Applications. Revision required because of a scope change at the West Barnstable substation where the design changed from a 6 breaker substation to an 8 breaker substation. Localized costs for Visual Mitigation and additional breakers that were installed.
Eagle Switching Station (NU) 115 kV switching station that consists of 4 circuit breakers and associated equipment. ISD June 2012	NU-10-T12 ISO determination letter sent on July 27, 2010	NU-11-TCA-01 Presentation and vote expected as the December 13th RC meeting RC voted to recommend on December 13, 2011 ISO determination letter sent on February 20, 2012	3	\$22.80		\$21.50				\$1.30M identified as non-PTF by the Applicant
Needham 115 kV Substation BPS Upgrades (NSTAR) Upgrade the Needham Substation to BPS standards as required per the NPSS A-10 implementation plan. ISD December 2011	Not required	NSTAR-11-TCA-04 Presentation and vote at the December 13th RC meeting RC voted to recommend on December 13, 2011 ISO determination letter sent on December 28, 2011	1	\$6.78		\$6.71				\$75,000.00 identified as non-PTF by the Applicant

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Jay Substation (VELCO) Construction of a new 4-breaker ring substation connecting two 115 kV lines and two 115/46 kV step-down transformers. The substation will be located on the K-41 line, approximately 13 mi west of the Moshers Tap. ISD December 2012	VELCO-11-T01 ISO determination letter sent on January 18,2011	VELCO-11-TCA-01 Presentation at the February 14, 2012 RC meeting RC voted to recommend on February 14, 2012 ISO determination letter sent on April 7,2012	2	\$16.47		\$6.99		9.477		
2012										
Chester SVC Upgrade (BHE) ISD December 20	Not Required	BHE-12-TCA-01 Presentation at the March 13, 2012 RC meeting RC voted to recommend on March 13, 2012 ISO determination letter sent on March 13, 2012	2	\$8.03		\$8.03				
East Shore OCB and Disconnect Replacement Project (UI) The Project consists of the following : 1) Replace 10 - 115 kV oil circuit breakers with gas insulated circuit breakers; replace all ten (10) circuit breaker foundations. 2) Upgrade various control cables, conduits and relaying associated with the ten (10) new gas circuit breakers. 3) Replace 30 - 115 kV circuit breaker disconnect switches and 1- 115 kV motor operated line switch. ISD - May 2013	Not Required	UI-12-TCA-01 Anticipated presentation and vote at the April 17 RC meeting ISO- Determination letter sent on May 16,2012	2	\$14.70		\$14.70				
Agawam - West Springfield Line Separation Project (NU) Separates two 115-kV transmission circuits that currently exist on a common line of towers. Placing each circuit on an independent line of structures by rebuilding the 115-kV 1311 and 1412 circuits between the West Springfield and Agawam Substations on individual and separate monopole structures using 1272-kcmil ACSS conductors. ISD - April 2011	NU-08-T-2 and NU-08-T03 ISO determination letter sent on June 27,2008	NU-12-TCA-02 Anticipated presentation and vote at the June 20, 2012 RC meeting RC voted to recommend on June 20,2012 ISO Determination letter sent on September 20,2012	3	\$21.17		\$27.12			Cost are 2011	
Reconfiguration of the 8300 115 kV Line Project (UI) 1) Installation of a new fifth breaker and one half bay to the gas insulated switchgear (GIS) at Grand Avenue 115 kV Switching Station in New Haven, CT 2) Relocation of the Mill River Substation end of the existing 8300 115 kV line from Quinipiac Substation into a new terminal position at Grand Avenue 3) Installation of a new 260 ft. 115 kV line between the 8300 line terminal at Mill River and a new terminal at Grand Avenue. The reconfigured Grand Avenue - Quinipiac 8300 line and the new Mill River - Grand Avenue line will be conventional overhead construction between Grand Avenue and Mill River, consisting of five (5) monopole steel structures ISD - September 2013	UI-12-T01 through T03 ISO determination letter sent on February 3,2012	UI-12-TCA-02 Anticipated presentation at the July 17, 2012 RC meeting RC voted to recommend on July 17,2012 ISO Determination letter sent on September 20,2012	2	\$17.40		\$17.40			Cost are 2012	

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>Upgrade Waltham 115 kV Substation to BPS Standards (NSTAR)</p> <p>Control and protection upgrade and Waltham Station #282 and at the remote substations that terminate lines from Waltham Station.</p> <p>ISO- December 2012</p>	NA	<p>NSTA-12-TCA-01</p> <p>RC voted to recommend on October 16,2012</p> <p>ISO Determination letter sent on December 13,2012</p>	2	\$17.75		\$17.75				Cost are 2012
<p>Upgrade st Pratts Junction Substation (NEP)</p> <p>Replace T8 230-115 kV transformer (150 MVA) with 333 MVA transformer. Install 230 kV breaker on high side of transformer. Reconductor 115 kV main busses #1 and #2 and upgrade two 115 kV breakers form 2000 A to 3000 A.</p> <p>ISD December 2012</p>	<p>NEP-07-T28</p> <p>ISO Determination letter sent on December 17, 2007</p>	<p>NEP-12-TCA-02</p> <p>Anticipated presentation at the July 17, 2012 RC meeting</p> <p>RC voted to recommend on July 17,2012</p> <p>ISO Determination letter sent on September 20,2012</p>	1	\$9.00		\$8.80		0.200		
<p>E-205W Line Refurbishment (NEP)</p> <p>upgrades to the E-205W 230 kV transmission line between Bear Swamp substation and Rotterdam NY. Reconductor 3.5 mi of the E-205W overhead line between Bear Swamp and the NY State border</p> <p>ISD 2011</p>	<p>NEP-07-T25</p> <p>ISO Determination letter sent on December 17, 2007</p>	<p>NEP-12-TCA-03</p> <p>Anticipated presentation at the July 17, 2012 RC meeting</p> <p>RC voted to recommend on July 17,2012</p> <p>ISO Determination letter sent on September 20,2012</p>	2	\$9.10		\$9.10				
<p>Upgrades at Webster St.</p> <p>Add two new in-line 115 kV breakers at Webster St Substation. Replace existing 115 kV breaker due to asset condition issues.</p> <p>Replace six disconnect switches for 115 kV breakers due to asset condition issues</p> <p>New 115kV conductor and bus between 115 kV breakers (double 795 Al)</p> <p>A separate control house for all 115kV controls in the 115kV yard with new control cables being installed from the new control house to the 115kV equipment. The existing control house can't accommodate the additional equipment required.</p> <p>ISD Spring 2013</p>	<p>NEP-07-T32</p> <p>ISO Determination letter sent on December 17, 2007</p>	<p>NEP-12-TCA-04</p> <p>Anticipated presentation at the July 17, 2012 RC meeting</p> <p>RC voted to recommend on July 17, 2012</p> <p>ISO Determination letter sent on September 20,2012</p>	2		8.12	\$3.04			5.080	
<p>Upgrades at Webster St.</p> <p>Add two new in-line 115 kV breakers at Webster St Substation. Replace existing 115 kV breaker due to asset condition issues.</p> <p>Replace six disconnect switches for 115 kV breakers due to asset condition issues</p> <p>New 115kV conductor and bus between 115 kV breakers (double 795 Al)</p> <p>A separate control house for all 115kV controls in the 115kV yard with new control cables being installed from the new control house to the 115kV equipment. The existing control house can't accommodate the additional equipment required.</p> <p>ISD Spring 2013</p>	<p>NEP-07-T32</p> <p>ISO Determination letter sent on December 17, 2007</p>	<p>NEP-12-TCA-04 Rev 1</p> <p>TCA submitted on September 7, 2017</p> <p>RC voted to recommend on September 19, 2017</p> <p>ISO review on going</p>	2	\$11.64			Requested: \$3.80		7.840	

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>345 kV Reactors (VELCO)</p> <p>Installation of three 345 kV variable (34 MVAR to 60 MVAR) reactors and relocation of one 60 MVAR fixed reactor from New Haven to Vernon. At the end of the project, there will be one variable reactor at New Haven, two variable reactors at Coolidge, and one fixed reactor at Vernon.</p> <p>ISD December 2012</p>	<p>VELCO-11-T02 through T04</p> <p>ISO Determination letter sent on March 23, 2011</p>	<p>VELCO-12-TCA-02</p> <p>TCA submitted on September 28th, 2012</p> <p>RC voted to recommend on October 16, 2012</p> <p>ISO Determination letter sent on December 13,2012</p>	2	\$19.62		\$19.62				
<p>Ascutney Substation (VELCO)</p> <p>Construction of a new 6-breaker ring substation connecting four 115 kV lines and a non-PTF transformer networked through the 46 kV sub transmission system. The project involves the construction of 115kV Tap lines in and out of the new substation and rearrangement of the 115kV lines at the existing substation which will be partially decommissioned (115kV Yard). The substation will be located about one mile south-east of the existing Substation.</p> <p>ISD March 2013</p>	<p>VELCO-10-T05</p> <p>ISO Determination letter sent on November 22, 2010</p>	<p>VELCO-12-TCA-04</p> <p>TCA submitted on October 3, 2012</p> <p>RC voted to recommend on October 16, 2012</p> <p>ISO Determination letter sent on December 13,2012</p>	2	\$22.33		\$16.68		5.650		
<p>Georgia Substation (VELCO)</p> <p>Construction of a new 6-breaker ring substation connecting four 115 kV lines and one capacitor bank. All these components are PTF facilities as well and will undergo some modification to connect to the new station (structure tap lines into the new station). The substation will be located right next to the existing Georgia which minimized the cost of connecting the existing line back to the substation.</p> <p>ISD October 2012</p>	<p>VELCO-10-T04</p> <p>ISO Determination letter sent on November 22, 2010</p>	<p>VELCO-12-TCA-03</p> <p>TCA submitted on September 7, 2012</p> <p>RC voted to recommend on September 19, 2012</p> <p>ISO Determination letter sent on December 13,2012</p>	2	\$15.90		\$15.90				
<p>Millstone DCT Separation and SLOD Retirement (NU)</p> <p>This project separates the 348/310 and 383/371 345-kV circuits that are currently on double circuit towers (DCTs) between Millstone 15G and Hunts Brook Junction. This will be accomplished by building two independent single circuit H-Frames in the center of the right-of-way, installing new, bundled 1272 kcmil ACSS conductor for the 310 Line and installing new, bundled 954 kcmil ACSS conductor for the 371 Line. In addition, the Severe Line Outage Detection (SLOD) Special Protection System (SPS) will be retired.</p> <p>ISD January 2013</p>	<p>NU-10-T20</p> <p>ISO Determination letter sent on November 2, 2010</p>	<p>NU-12-TCA-01</p> <p>TCA submitted on December 4, 2012</p> <p>RC voted to recommend on December 18, 2012</p> <p>Additional Information Request sent on April 5, 2013</p> <p>ISO Determination letter sent on July 26, 2013</p>	3	\$38.70		\$38.70				
<p>Rebuild and reconductor 115kV line 66 (BHE)</p> <p>Rebuild and reconductor 115kV line 66 between Rebel Hill Switching station and Deblois Switching station. Rebuild consists of replace or modify 54 structures (less than half) and replacement of conductor (replace 4/0 with 795kCM).</p> <p>ISD December 2013</p>	<p>BHE-08-T08</p> <p>ISO Determination letter sent on October 2010</p>	<p>BHE-12-TCA-02</p> <p>TCA submitted on December 4,2012</p> <p>RC voted to recommend on December 18, 2012</p> <p>ISO Determination letter sent on January 9, 2013</p>	2	\$17.50		\$17.50				
2013										

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Rebel Hill Switching Station (BHE) Install breakers at Rebel Hill to enable automatic line segmentation during fault conditions, retaining service to customers and the system. ISD December 2013	BHE-08-T09 ISO Determination letter sent on October 2010	BHE-13-TCA-01 TCA submitted on January 4, 2013 RC voted to recommend on February 14, 2013 ISO Determination letter sent on February 27, 2013	2	\$9.30		\$9.30				
Greater Springfield Reliability Project (NU) Build new 345-kV lines from Ludlow Substation to Agawam Substation and from Agawam Substation to North Bloomfield Substation. Rebuild 115-kV lines: Ludlow to Shawinigan circuit 1845; Ludlow to Cadwell (East Springfield) circuit 1481; Rebuild various 115-kV lines on separate structures: Chicopee to Fairmont and Piper Road to Fairmont circuits; Piper Road to Agawam circuit 1230 and Chicopee to Agawam circuit 1314; Agawam to South Agawam Junction line 1782; Agawam to South Agawam Junction line 1781. Reconfigure the existing 115-kV system by disconnecting the Southwick 115-kV line 1768 and both South Agawam 115-kV lines 1821/1836 from the North Bloomfield Substation. Build new Cadwell 50F Switching Station, new Agawam 345-kV Substation, new North Bloomfield 345-kV Substation and new Fairmont 115-kV Switching Station. Upgrade Ludlow 345-kV Substation, Ludlow 115-kV Substation, Agawam 115-kV Substation, North Bloomfield 115-kV Substation, South Agawam 115-kV Substation, Southwick 115-kV Substation, Shawinigan 115-kV Switching Station, Breckwood 115-kV Substation, Orchard 115-kV Substation, Woodland 115-kV Substation, Piper Road 115-kV Substation, Chicopee 115-kV Substation and East Springfield 115-kV Substation. The Manchester to Meekville Project (MMP) is made up of the following work. Build new 345-kV line structures and conductors for approximately 2.7 miles from Manchester Substation to Meekville Junction. Then reconfigure the existing three-terminal 345-kV line into two, two-terminal lines—one from Manchester to North Bloomfield and the other from Manchester to Barbour Hill. This Project includes an upgrade of the existing Agawam 115-kV switchyard to comply with NPCC BPS requirements. ISD December 2013	NU-08-T11-Rev.01, NU-08-T12-Rev.01, NU-08-T14-Rev.01, NU-08-T15-Rev.01, NU-08-T16-Rev.01, NU-08-T17-Rev.01, NU-08-T18-Rev.01, NU-08-T19-Rev.01, NU-08-T20-Rev.01, NU-08-T21-Rev.01, NU-08-T22-Rev.01, NU-08-T23-Rev.01, NU-08-T24-Rev.01, NU-08-T25-Rev.01, NU-08-T26-Rev.01, NU-08-T29-Rev.01, NU-08-T30-Rev.01, NU-08-T31-Rev.01, NU-08-T32-Rev.01, NU-08-T33-Rev.01, NU-08-T34, NU-08-T39-Rev.01, NU-08-T60-Rev.01, NU-08-T66, NU-12-T10, NU-12-T11, and NU-12-T12	NU-13-TCA-01 TCA submitted on February 20, 2013 Informational Presentation at the April 25th RC meeting ISO additional information request sent to NU on May 23, 2013. NU responded to the information request on June 11, 2013 RC voted to recommend on June 18, 2013 with \$17.1M categorized as localized costs for visual mitigation and split phasing. ISO determination letter sent on February 25, 2014.	5	\$759.02		\$736.96		17.602	4.460	
Lakewood Substation expansion (CMP) Add four 115 kV circuit breakers in a ring bus configuration at the existing Lakewood Substation. Install a second 115/34.5 kV 20/37 MVA transformer at the existing Lakewood Substation. Construct 4 miles of new 115 kV Bluejay (1113 45/7) conductor from the Section 241 corridor to the Lakewood Substation in the existing Section 241B Right-of-Way. Also, rebuild the existing 115 kV line Section 241B with Bluejay (1113 45/7) conductor (4 miles). ISD June 2015	CMP-11-T02 ISO Determination letter sent on March 5, 2012	CMP-13-TCA-01 TCA Submitted on August 1, 2014 RC voted to recommend on September 18, 2013 ISO determination letter sent on December 5, 2013	3	\$24.85		\$17.10			7.480	non-PTF per TO
Auburn Area Projects (CMP) <ul style="list-style-type: none"> Upgrades at the Auburn Street substation include construction a new 115 kV yard with the addition of a second 345/115 kV transformer, rebuild the 345 kV yard to an eight breaker ring bus layout and upgrade to BPS standards. Upgrades at the Bridgewater substations include replacing two 345kV circuit breakers, upgrade the G18 and F19 terminal equipment and upgrade to BPS standards. Upgrades at the DuPont Substation include upgrades to the G18 and C2 lines terminal equipment, install a second high speed protection system and upgrade to BPS Standards. ISD June 2015	NEP-07-T48, NEP-08-T46, and NEP-10-T47 Rev 1 ISO Determination letter sent on January 28, 2008 and February 10, 2010	NEP-13-TCA-01 - NEP-13-TCA-03 TCA Submitted on October 4, 2013 RC voted to recommend on November 19, 2013 ISO issued an additional information request on December 17, 2013. NEP responded to additional information request on January 18, 2014. ISO determination letter sent on February 4, 2014	4	\$127.28		\$119.13	Requested \$119.800	0.675	7.480	non-PTF per TO
Shelton Substation (UI) Construct the proposed 115/13.8 kV Shelton Substation located in Shelton, Connecticut consisting of two 115 kV line terminal structures, one 115 kV 50 kA SF6 gas insulated circuit breaker, four vertical-break disconnect switches and 115 kV bus work, interconnecting two 118/14.9 kV 30/40/50 MVA power transformers with load tap changers (LTC's). ISD June 2015	UI-09-T01 ISO Determination letter sent on November 15, 2009	UI-13-TCA-01 TCA Submitted on October 16, 2013 RC voted to recommend on November 19, 2013 ISO issued an additional information request on December 26, 2013. UI responded to additional information request on January 31, 2015. ISO Determination letter sent on March 16, 2014.	3	\$23.50		\$19.60	Requested \$19.80	0.200	3.740	\$0.14 listed by TO as result of local, state or other regulatory/legislative requirements. \$3.6 listed as Non-PTF by the TO. Local costs associated with the costs increase to build to the 500 year flood level instead of the 100 year flood level.

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)	PTF \$(Millions)	LOCAL \$\$ (Millions)		Comments	
						Local as per ISO	Non PTF as per TO		
2014									
Western Massachusetts Projects (NEP) The Z-126 project consists of a new 115 kV single circuit transmission line extending from the Millbury substation #2 to Tower 510, a distance of approximately 7 miles. The new line is located within an existing right-of-way (with the exception of minor additional right-of-way needs for one new structure) and will be adjacent to the existing A-127/B-128 115 kV transmission line Reconductor the A127/B128 transmission line (4/0 Cu) with 795 ACSS conductor between Millbury and Tower 510 (Auburn MA) for approximately 7 miles. Install second 115-69 kV transformer (56 MVA) in parallel with the existing 115-69 kV autotransformer at Deerfield #4 substation. ISD	NEP-07-T22,NEP-07-T24, NEP-07-T30 and NEP-07-T31 ISO Determination letter sent on December 17, 2007	NEP-14-TCA-01 through NEP - 14- TCA-03 TCA Submitted on January 2, 2014 RC voted to recommend on January 21, 2014 ISO Determination letter sent on April 23,2014.	2	5.5	19.6 12.90	\$37.40		0.600	Vegetative screening installed along ROW as required by MA DPU
Western Massachusetts Projects (NEP) The Z-126 project consists of a new 115 kV single circuit transmission line extending from the Millbury substation #2 to Tower 510, a distance of approximately 7 miles. The new line is located within an existing right-of-way (with the exception of minor additional right-of-way needs for one new structure) and will be adjacent to the existing A-127/B-128 115 kV transmission line	NEP-07-T22,NEP-07-T24, NEP-07-T30 and NEP-07-T31 ISO Determination letter sent on December 17, 2007	NEP-14-TCA-01-Rev1 TCA submitted on September 7, 2017 RC voted to recommend on September 19, 2017 ISO review on going	3	\$23.87			Requested: \$23.87		
Western Massachusetts Projects (NEP) The Z-126 project consists of a new 115 kV single circuit transmission line extending from the Millbury substation #2 to Tower 510, a distance of approximately 7 miles. The new line is located within an existing right-of-way (with the exception of minor additional right-of-way needs for one new structure) and will be adjacent to the existing A-127/B-128 115 kV transmission line	NEP-07-T22,NEP-07-T24, NEP-07-T30 and NEP-07-T31 ISO Determination letter sent on December 17, 2007	NEP-14-TCA-02-Rev1 TCA submitted on September 7, 2017 RC voted to recommend on September 19, 2017 ISO review on going	2	\$17.93			Requested: \$17.63		
Salem Harbor NPR Projects (NEP) Reconductor S-145 / T-146 lines 9.3 miles each from Tewksbury Substation to North Reading Tap from 4/0 Cu to 636 ACSS conductor Reconductor B-154N / C-155N lines 14.5 miles each from King Street Tap to South Danvers Substation from 795 ACSR & AL to 1590 ACSR conductor Reconductor Y-151 line 8.2 miles each from Tewksbury Junction to West Methuen Substation from 795 ACSR to 1590 ACSS conductor ISD 2013/2014	NEP-11-T07(rev1), NEP-11-T08 and NEP-11-T09 ISO Determination letter sent on n July 28,2011 and March 7, 2013 for the revision to NEP-11-T07	NEP-14-TCA-04, NEP-14-TCA-05 and NEP-14-TCA-07 TCA Submitted on January 3, 2014 RC voted to recommend on January 21, 2014 ISO determination letter sent on March 12, 2014.	3	\$47.54		\$47.54			
Bellow Falls (NEP) Rebuild 115kV and 46kV switchyards at Bellows Falls, install new 115kV capacitor bank, upgrade 46kV lines leaving Bellows Falls, and install OPGW on I-135N line ISD December 2014	NEP-06-T06 ISO Determination letter send on May 10, 2006	NEP-14-TCA-07 TCA Submitted on January 31, 2014 RC voted to recommend on February 18, 2014 ISO determination letter sent on March 12, 2014.	3	\$33.00		\$7.76		25.240	
Y-177 Asset Replacement (NEP) The project includes the Y-177 circuit between Harriman Substation in Whitingham, VT and Montague Substation in Montague, MA and is 25.8 miles long - The condition of many of the poles and wood crossarms that have not been replaced previously on the line have deteriorated so that they now require replacement. The original wood poles were installed in 1959. ISD December 2014	NA - Replacement in Kind	NEP-14-TCA-16 RC voted to recommend on April 16, 2014 ISO determination letter sent on May 19, 2014.	2	\$8.37		\$8.37			

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>D-21 Line Reconductoring (NEP & NU) Reconductor Line D21 with 1590 ACSR conductor for 5.4 circuit miles (4.2 miles for National Grid and 1.2 miles for NSTAR) consisting of 54 H frames structures.</p> <p>Upgrade 4 Disconnect switches, 1 Wave Trap and 115 kV wire bus at High Hill substation.</p> <p>ISD May 2013</p>	<p>NEP-09-T04</p> <p>ISO Determination letter sent on November 5, 2009</p>	<p>NEP-14-TCA-14/NU-14-TCA-01</p> <p>Is additional information request sent on June 30, 2014 for clarification on labor charges.</p> <p>National Grid responded to the information request on August 14, 2014 and Northeast Utilities responded on August 28, 2014.</p> <p>ISO determination letter sent on September 18, 2014.</p>	2	\$7.15		\$7.15				
<p>Pequonock 115 kV Disconnect Switch & Bus Upgrade Project (UI)</p> <p>Replace the following eleven (11) 115 kV circuit breaker disconnects Replace both line and generator bus (bays 10 through 40) from 2.5" copper to 4" copper. Replace majority of line terminals to 5" aluminum bus. Replace post insulators and support brackets associated with above bus upgrades.</p> <p>ISO December 2014</p>	<p>NA - Replacement in Kind</p>	<p>UI-14-TCA-01</p> <p>TCA Submitted on July 17, 2014</p> <p>RC voted to recommend on August 11, 2014</p> <p>ISO determination letter sent on September 5, 2014.</p>	2	\$6.08		\$6.08				
<p>South End Substation Project</p> <p>Install two 115-kV circuit breakers (1G-7T-2 and 1G-8T-2) with associated ancillary equipment (disconnect switches, etc) and complete the associated protective relaying schemes to convert the South End Substation from a straight bus configuration to a five breaker ring bus.</p> <p>ISD June 2014</p>	<p>NU-11-T10</p> <p>ISO Determination letter sent on June 9,2011</p>	<p>NU-14-TCA-02</p> <p>TCA submitted on September 29,2014</p> <p>RC voted to recommend on October 21,2014</p> <p>ISO determination letter sent on December 9,2014</p>	2	\$5.67		\$5.67				
<p>1042 line reconductoring and North Bloomfield series reactor replacement</p> <p>Reconductor the 115-kV 1042 line (formerly 1784) from the North Bloomfield Substation to Northeast Simsbury Substation. At the North Bloomfield 115-kV Substation, replace the existing 115-kV 1042 line series reactor with a new 2% reactor.</p> <p>ISD December 2013</p>	<p>NU-12-T13</p> <p>ISO Determination letter sent on May 04,2013</p>	<p>NU-14-TCA-03</p> <p>TCA submitted on September 29,2014</p> <p>RC voted to recommend on October 21,2014</p> <p>ISO determination letter sent on December 9,2014</p>	2	\$3.63		\$3.63				
<p>Northeast Simsbury Substation Project</p> <p>Add a 115-kV circuit breaker with associated disconnect switches to split the former 1784 line into two separate lines: 1042 to North Bloomfield and 1256 to Canton. This project requires expansion of the substation footprint and fence to loop the 115-kV 1042 and 1256 lines into the substation, and the installation of a new control house. Install two new standard line structures (with foundations) and 2.6 miles of OPGW from Northeast Simsbury to North Bloomfield Substation, on the new 115-kV 1042 line.</p> <p>ISD December 2013</p>	<p>NU-04-T26 Rev1</p> <p>ISO Determination letter sent on September 7,2011</p>	<p>NU-14-TCA-04</p> <p>TCA submitted on September 29,2014</p> <p>RC voted to recommend on October 21,2014</p> <p>ISO determination letter sent on December 9,2014</p>	2	\$9.96		\$9.96				
<p>South Meadow BPS Upgrade</p> <p>Upgrade the South Meadow 115-kV Substation to NPCC BPS requirements: expand the existing relay and control enclosure; install new redundant protective relaying systems/cabinets; install a new redundant DC system; upgrade duct bank systems and modify wiring and equipment.</p> <p>ISD December 2013</p>	<p>NU-11-T03</p> <p>ISO Determination letter sent on March 30,2011</p>	<p>NU-14-TCA-05</p> <p>TCA submitted on September 29,2014</p> <p>RC voted to recommend on October 21,2014</p> <p>ISO determination letter sent on December 9,2014</p>	2	\$17.29		\$17.29				
<p>Beseck 345 kV Shunt reactor</p> <p>Install a new 345-kV 75-150 MVAR variable shunt reactor and one 345-kV circuit breaker at the Beseck 9F Substation.</p> <p>ISD July 2013</p>	<p>NU-12-T14</p> <p>ISO Determination letter sent on May 4, 2012</p>	<p>NU-14-TCA-06</p> <p>TCA submitted on September 29,2014</p> <p>RC voted to recommend on October 21,2014</p> <p>ISO determination letter sent on December 9,2014</p>	2	\$6.53		\$6.53				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>Tewksbury 22A rebuild</p> <p>Replace existing substation with a 6 breaker GIS substation that is expandable to 16 breakers.</p> <p>ISD December 2016</p>	<p>NEP-14-T04</p> <p>ISO Determination letter sent on July 17,2014</p>	<p>NEP-14-TCA-17</p> <p>TCA submitted on October 21,2014</p> <p>RC voted to recommend on November 19,2014</p> <p>ISO issued an additional information request on December 19,2014.</p> <p>NEP responded to additional information request on January 20,2015.</p> <p>ISO Determination letter issues on April 30, 2014.</p> <p>NEP responded to the ISO determination letter sating they had more information on the items that were localized and improved costs estimates. The ISO reviewed the NEP information and issued a new determination letter on February 5, 2015 changing the localized amount from \$1.4M to 0.20496M for the space for the 4th bay. On April 5, 2016 NEP issued the ISO a letter to dispute the ISO's finding of localized costs. The ISO and NEP are meeting to discuss the dispute</p>	3	\$45.38		\$45.18		0.200		Extra Bay
<p>312 Line structure Replacement</p> <p>This project replaces 28 wooden transmission line structures due to the deterioration of the wooden poles and cross arms. The replacement structures are steel.</p> <p>ISD December 2013</p>	<p>NU-11-T03</p> <p>ISO Determination letter sent on March 30,2011</p>	<p>NU-14-TCA-07</p> <p>TCA submitted on November 5, 2015</p> <p>RC voted to recommend on December 16,2015</p> <p>ISO issued an additional information request on January 12,2015</p> <p>Applicant replied on February 24, 2015</p> <p>ISO determination letter sent on April 17,2015</p>	2	\$8.92		\$8.92				
<p>354 Line Structure Replacement</p> <p>Replaced 52 wooden structures with significant degradation from woodpecker and other age-related damage on the 345-kV Ludlow- Northfield 354 line. Of the 52 structures replaced on this project 47 were straight one-for-one replacements with no practical alternative to replacement. This project also replaced 5 structures within a large DEP regulated beaver pond, with 3 steel structures, with greater span length to minimize new structures in this pond area.</p> <p>ISD April 2012</p>	<p>NA - Replacement in Kind</p>	<p>NU-14-TCA-08</p> <p>TCA submitted on November 5, 2015</p> <p>RC voted to recommend on December 16,2015</p> <p>ISO issued an additional information request on January 12,2015</p> <p>Applicant replied on February 24, 2015</p> <p>ISO determination letter sent on April 17,2015</p>	2	\$23.39		\$23.39				
<p>1421 Line structure Replacement</p> <p>This project replaces 64 wooden transmission line structures with 64 steel structures due to the deterioration of the wooden poles and cross arms.</p> <p>ISD December 2013</p>	<p>NA - Replacement in Kind</p>	<p>NU-14-TCA-09</p> <p>TCA submitted on November 5, 2015</p> <p>RC voted to recommend on December 16,2015</p> <p>ISO issued an additional information request on January 12,2015</p> <p>Applicant replied on February 24, 2015</p> <p>ISO determination letter sent on April 17,2015</p>	2	\$14.51		\$15.51				
<p>1512 Line structure Replacement</p> <p>This project replaces 45 wooden transmission line structures with 45 steel/composite structures due to the deterioration of the wooden poles and cross arms. A few structures of composite material were utilized on this line an a trial basis.</p> <p>ISD December 2011</p>	<p>NA - Replacement in Kind</p>	<p>NU-14-TCA-10</p> <p>TCA submitted on November 5, 2015</p> <p>RC voted to recommend on December 16,2015</p> <p>ISO issued an additional information request on January 12,2015</p> <p>Applicant replied on February 24, 2015</p> <p>ISO determination letter sent on April 17,2015</p>	2	\$9.21		\$9.21				
<p>Haddam Neck 345 kV, 75-150 MVAR shunt reactor</p> <p>Install two new 345 kV circuit breakers in the ring but at Haddam Neck 14B to create a new ring buss position and also install a new 345-kV variable shunt reactor.</p> <p>ISD September 2014</p>	<p>NU-13-T07</p> <p>ISO Determination letter sent on July 2,2013</p>	<p>NU-14-TCA-11</p> <p>TCA submitted on December 9,2014</p> <p>RC voted to recommend on January 27,2014</p> <p>ISO determination letter sent on February 20,2015</p>	2	\$9.43		\$9.43				

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>South Norwalk Electric & Water Substation interconnection</p> <p>Build a new 115/13.8-kV substation located in South Norwalk, CT connecting CL&P's former 1890 line between CL&P's Sherwood Substation and the Ely Avenue Tap. This includes 115-kV circuit breaker, bus, switches, and associated protective relaying.</p> <p>ISD December 2013</p>	<p>NU-12-T27</p> <p>ISO Determination letter sent on December 7,2012</p>	<p>NU-14-TCA-12</p> <p>TCA submitted on December 9, 2014</p> <p>RC voted to recommend on January 27, 2014</p> <p>ISO determination letter sent on February 20, 2015</p>	2	\$10.75		\$10.75				
<p>New Memorial Drive 7P Substation</p> <p>Construction on new Memorial 7P substation (115 to 13.8 kV) loop of 115 kV Line No. 1904 (Piper to Fairmont) and construction of parallel overhead lines/circuits from NU riser/dead-end structures to new CEL 7P Substation - designated the 1904 (Piper to Memorial) and 1638 (Memorial to Fairmont) lines.</p> <p>ISD December 2013</p>	<p>CEL-12-T01 & NU-12-T28</p> <p>ISO Determination letter sent on October 9,2012</p>	<p>NU-14-TCA-14/CEL-TCA-01</p> <p>TCA submitted on December 9, 2014</p> <p>RC voted to recommend on January 27, 2014</p> <p>ISO determination letter sent on April 17, 2015</p>	2	\$7.64		\$7.64				
2015										
<p>Milvon to Devon Tie 88005A - 89005B Line Upgrade Project</p> <p>Install monopoles along both the northern and southern railroad right of way corridors between UI's Milvon 115/13.8 kV Substation and Devon Tie 115 kV Switching Station (1.4 miles) in Milford, CT (88005A and 89005B 115 kV lines). Install 1590 kcmil ACSS 115 kV conductors on the new monopoles. Remove existing 795 kcmil ACSR 115 kV conductors along railroad catenary system between Milvon and Devon Tie stations.</p> <p>ISD December 2016</p>	<p>UI-12-T12 & UI-12-T13</p> <p>ISO Determination letter sent on August 27,2012</p>	<p>UI-15-TCA-01</p> <p>TCA Submitted on January 29,2015</p> <p>RC voted to recommend on February 17,2015</p> <p>ISO determination letter sent on April 17,2015</p>	2	\$30.90		\$30.90				
<p>Rhode Island Reliability Project</p> <p>Construction of a new 345 kV line from the West Farnum Substation to the Kent County substation, expansion and upgrade of the West Farnum 345 kV substation, Installation of a 345 kV breaker-and-half bay and a 345/115 kV 448 MVA autotransformer at the Kent County substation along with substation and terminal upgrades at the Drumrock and Hartford Ave substations, and reconductoring of a segment of the 115 kV T-172S and S-171 lines.</p> <p>ISD various</p>	<p>NEP-08-T51-Rev 1, NEP-08-T53-Rev 1, NEP-08-T56-Rev 1,NEP-08-T49, NEP-08-T52, NEP-08-T54, NEP-08-T55, NEP-08-T57, NEP-08-T59, and NEP-08-T60</p> <p>ISO Determination letter sent on May 4, 2012</p>	<p>NEP-15-TCA-01 -NEP-15-TCA-06 and NEP-15-TCA-14</p> <p>TCA Submitted on January 15,2015</p> <p>RC voted to recommend on May 20,2015</p> <p>ISO determination letter sent on December 17, 2015</p>	5	\$361.99		\$361.99				
<p>115 kV Line Rehabilitation</p> <p>The Project rehabilitates two 115 kV wooden H-frame transmission lines located on a common 3.2 mile long right-of-way from the Eversource (formerly NSTAR) tap in Sharon to the Dean St. #495 substation in Norwood.</p> <p>ISD November 2017</p>	<p>NMLD-15-T01</p> <p>ISO Determination letter sent on February 25, 2015</p>	<p>NMLD-15-TCA-01</p> <p>TCA Submitted on March 23, 2015</p> <p>RC voted to recommend on April 20, 2015</p> <p>ISO determination letter sent on April 30, 2015</p>	2	\$12.70		\$12.70				
<p>Add a Second 230/115 kV Littleton Autotransformer</p> <p>The project consists of installing a second 230/115-kV autotransformer (ID# TB138) at the Public Service Company of New Hampshire's Littleton Substation. The proposed project includes the construction of a new 115-kV bay position with two (2) - 115-kV circuit breakers. The autotransformer connects to the National Grid 230-kV C203 line via one (1) - 230-kV circuit breaker.</p> <p>ISD December 2014</p>	<p>NU-12-T44 Rev 1</p> <p>ISO Determination letter sent on December 22, 2014</p>	<p>ES-15-TCA-01</p> <p>TCA Submitted on April 8, 2015</p> <p>RC voted to recommend on April 20, 2015</p> <p>ISO determination letter sent on August 4, 2015</p>	2	\$8.98		\$8.98				
<p>Loop 1560 line into Pootatuck Substation</p> <p>The overhead 1560 line was sectionalized by looping it into the new United Illuminating Pootatuck 115/13.8 kV substation</p> <p>ISD June 2015</p>	<p>UI-09-T01</p> <p>ISO Determination letter sent on November 5, 2009</p>	<p>ES-15-TCA-03</p> <p>TCA Submitted on April 7, 2015</p> <p>RC voted to recommend on April 20, 2015</p> <p>ISO determination letter sent on August 4 , 2015</p>	1	\$0.89		\$0.89				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Fitch Substation The Third Taxing District (TTD) has built a new substation to improve the reliability of their distribution system. Eversource installed two new dead-end structures in the transmission ROW to support looping the former 1416 line into the new 115-kV substation ISD December 2013	NU-12-T26 ISO Determination letter sent on July 17, 2012	ES-15-TCA-04/CTMEEC-15-TCA-01 TCA Submitted on April 8, 2015 RC voted to recommend on April 20, 2015 ISO determination letter sent on August 4, 2015	2	\$8.89		\$5.13			3.669	
Replace 1990 Lattice Structures Replace the double-circuit steel lattice towers and double-circuit steel monopoles of the 115-kV 1990 line; reconductor the line with 1590 ACSS . ISD December 2014	NU-12-T42 ISO Determination letter sent on January 18, 2013	ES-15-TCA-06 TCA Submitted on April 15,2015 RC voted to recommend on April 20,2015 ISO determination letter sent on September 25 ,2015	3	\$58.91		\$58.91				
Reconductor line 372 - Mystic to Kingston Reconducting of approximately 3.1 miles of the 345-kV 372 line from the Mystic to Kingston Substations ISD December 2015	ES-15-T69 ISO Determination letter sent on May 1, 2015	ES-15-TCA-12 TCA Submitted on May 11,2015 RC voted to recommend on April 20,2015 ISO determination letter sent on September 25 ,2015	2	\$18.53		\$18.53				
Tap C-203 line to Eversource Littleton Substation Construct a 0.2 mile long, 230 kV C-203 tap line with 795 ACSR to Eversource' s Littleton Substation and upgrading relay equipment at Comerford and Moore Substations. ISD November 2014	NEP-12-T20 ISO Determination letter sent on March 7, 2013	NEP-15-TCA-09 TCA Submitted on May 27 ,2015 RC voted to recommend on June 17, 2015 ISO determination letter sent on August 4, 2015	1	\$1.99		\$1.99				
Mashpee Double Ending Modify existing Mashpee Substation # 946 to accommodate the installation of a second distribution transformer and switchgear ISD December 2016	NU-13-T04 ISO Determination letter sent on March 20, 2014	ES-15-TCA-13 TCA Submitted on May 18, 2015 RC voted to recommend on June 17, 2015 ISO determination letter sent on October 2, 2015	2	\$18.55		\$7.71			10.840	
Montville Autotransformer Replacements Replace both Montville 18X and 19X 345/115-kV autotransformers and associated facilities. ISD December 2015	NU-14-T18 ISO Determination letter sent on August 8, 2014	ES-15-TCA-05 TCA Submitted on May 18,2015 RC voted to recommend on April 20,2015 ISO determination letter sent on August 4 ,2015	2	\$16.98		\$16.98				
Peaslee Switching Station New 115-kV Peaslee Switching Station in Kingston, NH. Work consists of constructing a five-breaker ring bus and associated equipment. Also, a new 115-kV line (V103, Scobie Pond to Peaslee), approximately 5.5 miles in existing ROW, terminating into the new Peaslee Switching Station. ISD June 2016	NU-12-T23 ISO Determination letter sent on March 7, 2013	ES-15-TCA-15 TCA Submitted on May 29,2015 RC voted to recommend on April 20,2015 ISO determination letter sent on August 4 ,2015	3	\$28.20		\$27.57			0.630	
Stamford Reliability Cable Project Construct a new 115-kV underground cable from the Glenbrook Substation to the South End Substation, approximately 1.5 miles of 3500 kcmil XLPE cable along with associated terminal work. ISD November 2014	NU-12-T25 ISO Determination letter sent on July 17, 2012	ES-15-TCA-08 TCA Submitted on May 19,2015 RC voted to recommend on August 19, 2015 ISO information request sent on November 5, 2015 & December 28, 2015. ES response on December 4, 2015 & January 27, 2016 ISO determination letter sent on May 13 ,2016	3	\$37.70		\$37.47		0.227		
West Hampden Substation Interconnection 115-kV line work and related work (Ludlow Substation in Massachusetts and Scitico Substation in Connecticut), is to accommodate National Grid's new West Hampden Substation. ISD October 2014	NEP-07-T39-Rev 1 ISO Determination letter sent on March 29, 2011	ES-15-TCA-10 TCA Submitted on May 28, 2015 RC voted to recommend on June 9, 2016 ISO determination letter sent on October 4, 2016	1	\$3.23		\$3.23				
Interstate Reliability Project approximately 75 total miles of new 345-kV overhead transmission lines from Eversource's existing Card Street and Lake Road Substations to the CT/RI border, continuing to National Grid's existing West Farnum and Millbury Substations. The Project also includes the rebuild and reconductor of the existing 345-kV 328 Line from Sherman Road Substation to the West Farnum Substation and upgrades to the Card, Lake Road, Sherman Road, West Farnum and Millbury 345-kV substations and the Woonsocket, Riverside and Hartford Avenue 115-kV substations ISD December 2014	NU-08-T52,T54,T59 and NEP-08-T45 Rev 1 ISO Determination letters sent on December 22, 2014 and May 4, 2012	ES-15-TCA-09 and NEP-15-TCA-08 - NEP-15-TCA-13 TCAs Submitted on May 28, 2015 (ES) and June 17, 2015 (NEP) RC voted to recommend on September 15, 2015 ISO determination letter sent on December 17, 2015	5	\$485.41		\$481.38			4.080	

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>Southern Region Project Upgrades (Part of NH 10 Year Plan)</p> <p>Upgrade the Merrimack 230/115 kV Substation and relocate existing capacitor banks to Bus 1 and Bus 3; Addition of two new 115 kV Circuit Breakers at Merrimack Substation; Replacement of 115 kV Circuit Breaker Q171 at Merrimack Substation; Install a new six breaker 115 kV Substation (Farmwood) and split line V182</p> <p>ISD June 2015</p>	<p>NU-12-T08, NU-12-T55 and T56</p> <p>ISO Determination letters sent on May 16, 2012 and March 7, 2013.</p>	<p>ES-15-TCA-17</p> <p>TCA Submitted on June 2, 2015</p> <p>RC voted to recommend on August 19, 2015</p> <p>ISO determination letter sent on October 2, 2015</p>	3	\$34.98		\$34.98				
<p>Seacoast Area Project Upgrades (Part of NH 10 Year Plan)</p> <p>New 115-kV A184 Line Scobie Pond-Pulpit Rock (Chester); Pulpit Rock - new five-breaker 115-kV Switching Station; Scobie Pond - add 115-kV circuit breaker; Three Rivers -add 115-kV circuit breaker; Schiller - add six 13.3-MVAR, 115-kV capacitor banks and three 115-kV circuit breakers; H141 Line - upgrade Chester-Great Bay 115-kV Line; and R193 Line - upgrade Scobie-Kingston 115-kV Line Tap.</p> <p>ISD December 2015</p>	<p>NU-12-T59, NU-12-T60, NU-12-T61, NU-12-T62, and NU-12-T63</p> <p>ISO Determination letters sent on March 7, 2013</p>	<p>ES-15-TCA-14</p> <p>TCA Submitted on July 7, 2015</p> <p>RC voted to recommend on September 15, 2015</p> <p>ISO determination letter sent on October 2, 2015</p>	4	\$53.22		\$53.22				
<p>381 Line Structure Replacements</p> <p>345 kV Northfield Mountain to New Hampshire border (portion of) Line 381: Replace (33) wood pecker damaged 345 kV wood pole structures with steel structures. The existing structures to be replaced include (27) wood pole H frame structures and (6) wood 3-pole structures.</p> <p>ISD May 2015</p>	N/A	<p>ES-15-TCA-07</p> <p>TCA Submitted on July 21, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	2	\$14.15		\$14.15				
<p>354 Line Structure Replacements</p> <p>345-kV Northfield Mountain to Ludlow (portion of) 354 Line - Replace 37 woodpecker damaged structures located in Pelham, Belchertown, and Amherst MA.</p> <p>ISD May 2015</p>	N/A	<p>ES-15-TCA-18</p> <p>TCA Submitted on July 21, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	2	\$13.52		\$13.52				
<p>312 Line Structure Replacements</p> <p>345-kV Northfield Mountain to Berkshire (portion of) Line 312 - Replace (17) wood pecker damaged structures of Western Massachusetts Electric Company (14) wood pole H frame structures and (3) wood 3-pole structures with new steel structures.</p> <p>ISD July 2014</p>	N/A	<p>ES-15-TCA-02</p> <p>TCA Submitted on July 21, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	2	\$8.13		\$8.13				
<p>Add second Auto at Haddam Substation(Part of GHCC)</p> <p>Add a 2nd 345/115 kV autotransformer at Haddam substation and reconfigure the 3-terminal 345 kV 348 line into 2 two-terminal lines</p> <p>ISD December 2016</p>	<p>ES-15-T18</p> <p>ISO Determination letter sent on April 16, 2015</p>	<p>ES-15-TAC-21</p> <p>TCA Submitted on July 16, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	3	\$46.73		\$46.73				
<p>Manchester - Barbour Hill Area Upgrade Project</p> <p>1. Add a new 345/115-kV Autotransformer and associated equipment at Barbour Hill Substation in South Windsor, CT. 2. Reconnector the 115 kV 1763 line between Manchester and Barbour Hill. 3. Add a 345 kV circuit breaker in series with breaker 24T at the Manchester 345 kV switchyard.</p> <p>ISD December 2016</p>	<p>ES-15-T01, T01 and T03</p> <p>ISO Determination letter sent on April 16, 2015</p>	<p>ES-15-TCA-16</p> <p>TCA Submitted on May 21, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	3	\$46.85		\$46.85				
<p>Hopwell capacitor (Part of GHCC)</p> <p>Add a 37.8 MVAR capacitor bank at Hopewell 115 kV substation.</p> <p>ISD January 2016</p>	<p>ES-15-T20</p> <p>ISO Determination letter sent on April 16, 2015</p>	<p>ES-15-TCA-24</p> <p>TCA Submitted on August 10, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	1	\$4.30		\$4.30				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>Central New Hampshire Area Project Upgrades</p> <p>At Webster Substation, install 4 - 115-kV 26.6 MVAR capacitor banks and 2 - 115-kV circuit breakers. At Saco Valley Substation, install 2 - 25 MVAR 115 kV dynamic VAR devices and 2 - 115 kV circuit breakers.</p> <p>ISD December 2016</p>	<p>NU-12-T45 and NU-12-T46</p> <p>ISO Determination letter sent on March 7, 2013</p>	<p>ES-15-TCA-11</p> <p>TCA Submitted on April 30, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	2	\$26.42		\$26.42				
<p>Line 136 Replacement</p> <p>The project will refurbish the 16.1 mile 115kV Line 136 between Falmouth Tap (924) and West Barnstable (921) Substations.</p> <p>ISD December 2015</p>	N/A	<p>ES-15-TCA-22</p> <p>TCA Submitted on May 21, 2015</p> <p>RC voted to recommend on October 21, 2015</p> <p>ISO determination letter sent on November 25, 2015</p>	3	\$27.02		\$20.27		6.750		
<p>Norwalk-Plumtree, New Haven, and Naugatuck Valley Area Project Upgrades (Part of SWCT)</p> <p>Addition of 345 kV voltage 11T Series Breaker at East Devon Upgrade 115 kV 1876 line terminal equipment at Newtown Substation Replace two Freight 115 kV breakers with new breakers having 63 kA interrupting capability.</p> <p>ISD December 2015</p>	<p>NU-12-T40 and ES-15-T41</p> <p>ISO Determination letters sent on December 7, 2012 and May 16, 2015</p>	<p>ES-15-TCA-19</p> <p>TCA Submitted on July 9, 2015</p> <p>RC voted to recommend on March 23, 2016</p> <p>ISO determination letter sent on April 15, 2016</p>	1	\$3.05		\$3.05				
<p>Housatonic River Crossing 115 kV Line Rebuild Project</p> <p>Install fourteen (14) single circuit monopoles along with .5 miles of 2156 kcmil ACSS 115 kV conductor.</p> <p>ISD August 2016</p>	<p>UI-14-T01 and UI-14-T02</p> <p>ISO Determination letter sent on July 7, 2014</p>	<p>UI-15-TCA-02</p> <p>TCA Submitted on September 4, 2015</p> <p>RC voted to recommend on September 15, 2015</p> <p>ISO issued a request for information on November 5, 2015 and UI responded on November 20, 2015</p> <p>ISO determination letter sent on December 17, 2015</p>	2	\$19.75		\$19.75				
<p>Scotia Street</p> <p>The project consist of installing two new 115-kV breakers on the 329-512 and 329-513 lines along with replacing the 110A and 110B circuit switchers and switches S790 and 791 with 115-kV circuit breakers. This project will install six 115-kV breakers in total. The project also installed stop joint technology on each line to limit the flow of dielectric fluid, which did not exist at the time of original installation.</p> <p>ISD June 2013</p>	<p>NSTAR-12-T05 & NU-13-T01</p> <p>ISO Determination letter sent on may 30, 2012 and April 4, 2013</p>	<p>ES-15-TCA-32</p> <p>TCA Submitted on September 25, 2015</p> <p>RC voted to recommend on November 20, 2015</p> <p>ISO issued a request for information on</p> <p>ISO determination letter sent on July 17, 2017</p>	2	\$27.06		\$21.17				
<p>Hawthorne Capacitor Bank Addition</p> <p>Addition of two 20-MVAR 115-kV Capacitor Banks, and associated land, at the Hawthorne Substation.</p> <p>ISD March 2016</p>	<p>UI-12-T20 Rev 1</p> <p>ISO Determination letter sent on February 27, 2014</p>	<p>UI-15-TCA-03</p> <p>TCA Submitted on October 7, 2015</p> <p>RC voted to recommend on November 20, 2015</p> <p>ISO determination letter sent on December 17, 2015</p>	2	\$9.56		\$9.46		0.104	0.88 Local Siting and 0.016 Non-PTS+F	
<p>Southern Region Project Upgrades Group 2</p> <ul style="list-style-type: none"> Construction of a new 345 kV Eagle Substation Addition of circuit breakers at Scobie Pond and Huse Road Substations Construction of a new 115 kV circuit from Scobie Pond Substation to Huse Road Substation Upgrade of the 345 kV line 326 from Scobie Pond to the MA/NH Border Rebuilds on sections of the K165, W157 tap(renamed H123),D115 and H137 115 kV lines Uprate of sections of the G146 and P145 115 kV lines <p>ISD December 2016</p>	<p>NU-12-T23, NU-12-T47 through NU-12-T54, and NU-12-T57</p> <p>ISO Determination letter sent on March 7, 2013</p>	<p>ES-15-TCA-26</p> <p>TCA Submitted on October 5, 2015</p> <p>RC voted to recommend on December 16, 2015</p> <p>ISO determination letter sent on January 7, 2016</p>	4	\$101.81		\$101.81				
<p>Pittsfield Greenfield Area Project Group 1</p> <ul style="list-style-type: none"> Modification of the Northfield Mountain 16R Substation including installation of a 345/115 kV autotransformer Construction of a three breaker Switching Station at Erving Construction of a new 115 kV line from Northfield Mountain to the new Erving Switching Station Installation of a capacitor bank at Cumberland Substation Rebuilding of the 1361, Cumberland to Montague 115 kV line Removal of sag limitation on the 115 kV 1512 line from Blandford Substation to Grandville Junction <p>ISD December 2016</p>	<p>NU-12-T29 – NU-12-T38 and NU-12-T41</p> <p>ISO Determination letter sent on December 7, 2012</p>	<p>ES-15-TCA-27</p> <p>TCA Submitted on October 5, 2015</p> <p>RC voted to recommend on January 20, 2016</p> <p>ISO determination letter sent on February 11,2016</p>	4	\$113.44		\$109.12		4.319		

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
New Hampshire Western Area • Construction of a new 345 kV Eagle Substation • Addition of circuit breakers at Scobie Pond and Huse Road Substations • Construction of a new 115 kV circuit from Scobie Pond Substation to Huse Road Substation • Upgrade of the 345 kV line 326 from Scobie Pond to the MA/NH Border • Rebuilds on sections of the K165, W157 tap(renamed H123),D115 and H137 115 kV lines • Uprate of sections of the G146 and P145 115 kV lines ISD December 2016	NU-12-T41, T64, T66, T67 ISO Determination letter sent on December 7, 2012	ES-15-TCA-20 TCA Submitted on October 5, 2015 RC voted to recommend on November 20, 2015 ISO determination letter sent on December 17, 2015	2	\$25.56		\$25.56				
North Keene Substation Project Construct a New North Keene Substation, and loop in the L163 line with two 115 kV breakers. ISD December 2017	ES-15-T84 ISO Determination letter sent on November 5, 2015	ES-15-TCA-33 TCA Submitted on November 10, 2015 RC voted to recommend on December 16, 2015 ISO determination letter sent on January 7, 2016	2	\$10.45		\$10.45				
Rimmon Substation Project Rebuild Rimmon Substation, loop in 115 kV line J114, add 3 115 kV circuit breakers, and 2 115 kV 13.3 MVAR capacitor banks . Install a series 115 kV breaker at Greggs substation. ISD June 2016	ES-15-T83 ISO Determination letter sent on November 10, 2015	ES-15-TCA-34 TCA Submitted on November 12, 2015 RC voted to recommend on December 16, 2015 ISO determination letter sent on January 7, 2016	2	\$12.49		\$12.49				
Oxford Substation Capacitor Bank (Part of SWCT) Install a 115 kV 25.2 MVAR capacitor bank at Oxford Substation on 1319 line terminal. ISD March 2016	ES-15-T42 ISO Determination letter sent on April 16, 2015	ES-15-TCA-35 TCA Submitted on December 18, 2015 RC voted to recommend on March 23, 2016 ISO determination letter sent on April 15, 2016	1	\$2.89		\$2.89				

2016

G-185S Reconductoring - Kent County to Davisville Tap Replace 5.3 miles of 795 ACSR conductor with 954 ACSS conductor ISD May 2015	NEP-12-T02 ISO Determination letter sent on December 27, 2010	NEP-16-TCA-02 TCA Submitted on January 27, 2016 RC voted to recommend on February 16, 2016 ISO determination letter sent on February 17, 2016	2	\$6.62		\$6.62				
115-kV 1570 Line Clearance Remediation Project Repaired or replaced structures or structure elements on the 1570 line as identified to mitigate clearance discrepancies noted in NERC review. ISD September 2014	N/A	ES-16-TCA-04 TCA Submitted on February 29, 2016 RC voted to recommend on April 19, 2016 ISO determination letter sent on December 16, 2016	2	\$6.44		\$6.44				
1779 Line Partial Rebuild Partial Line rebuild of the 1779 115 kV transmission line ISD December 2017	ES-15-T25 ISO Determination letter sent on February 25, 2015	ES-16-TCA-10 TCA Submitted on March 10,2016 RC voted to recommend on April 19, 2016 ISO determination letter sent on June 30, 2016	3	\$26.59		\$26.59				
V-148N Reconductoring Washington to Woonsocket Substations Replace approximately 4.2 circuit miles of 795 AL conductor with 795 ACSS conductor and associated relay work at Woonsocket substation. ISD May 2016	ES-15-T42 ISO Determination letter sent on April 16, 2015	NEP-16-TCA-03 Rev1 TCA Submitted on May 5, 2015 RC voted to recommend on May 17, 2016 ISO determination letter sent on June 30, 2016	2	\$5.74		\$5.74				
Norwalk-Plumtree, New Haven, and Naugatuck Valley Area Project Upgrades (Part of SWCT) Install a 115 kV circuit breaker (63 kA interrupting capability) in series with the existing 29T breaker at Plumtree Substation. ISD May 2016	ES-15-T38 ISO Determination letter sent on April 16,2015	ES-16-TCA-11 TCA Submitted on April 14, 2016 RC voted to recommend on May 17, 2016 ISO determination letter sent on June 30, 2016	1	\$2.77		\$2.77				

Summary of ISO-NE Reviewed TCA Applications under Schedule 12C of the Tariff - Status as of 12/31/2018
ISO-NE PUBLIC

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
<p>S-145/T-146 UG cables</p> <p>Removal and replacement of the 115kV underground cables, S-145 and T-146, as well as upgrades to the associated terminal equipment at the Salem Harbor and Canal Street substations. The existing cables will be removed. The four circuit breakers associated with the S-145 and T-146 cables at the Salem Harbor Substation will be replaced. All equipment at the Canal Street Substation will be replaced except for structures.</p> <p>ISD June 2016</p>	<p>NEP-13-T11</p> <p>ISO Determination letter sent on February 22, 2014</p>	<p>NEP-16-TCA-01</p> <p>TCA Submitted on May 6, 2016</p> <p>RC voted to recommend on May 17, 2016</p> <p>ISO determination letter sent on December 16, 2016</p>	4	\$62.43		\$62.43				
<p>Comerford 230 kV breakers and add 230 kV bus tie breaker</p> <p>Replace 230kV equipment and associated protection and control systems at Comerford</p> <p>ISD August 2014</p>	<p>NEP-08-T14</p> <p>ISO Determination letter sent on April 1, 2008</p>	<p>NEP-16-TCA-07</p> <p>TCA Submitted on May 6, 2016</p> <p>RC voted to recommend on May 17, 2016</p> <p>ISO determination letter sent on June 30, 2016</p>	3	\$38.08		\$36.63		1.450		
<p>Northwest Connecticut Area Project Upgrades (Part of GHCC)</p> <p>• Add a new 10.35 mile, 115 kV line from Frost Bridge to Campville and associated terminal equipment. • Separation of 115 kV DCT corresponding to the Frost Bridge to Campville (1191) line and the Thomaston to Campville (1921) line and add a 115 kV breaker at Campville substation. • Upgrade terminal equipment on the 115 kV line between Chippen Hill to Lake Avenue Junction (1810-3). Reconductor the 115 kV line between Southington to Lake Avenue Junction (1810-1) – 5.2 miles.</p> <p>ISD June 2018</p>	<p>ES-15-T04-T06</p> <p>ISO Determination letter sent on April 16, 2015</p>	<p>ES-16-TCA-14</p> <p>TCA Submitted on May 6, 2016</p> <p>RC voted to recommend on June 9, 2016</p> <p>ISO determination letter sent on October 4, 2016</p>	4	\$63.14		\$63.14				
<p>West Hampden Substation</p> <p>- Conversion of O-15S 69 kV line (10 mi) to 115 kV between Palmer and new West Hampden substation. - Installation of new 115 kV breaker at Palmer substation and reconductor of 115 kV buswork and asset condition upgrades. - Construction of new 115/69 kV substation in Hampden MA (W Hampden substation).</p> <p>ISD fall 2015</p>	<p>NEP-07-T37 Rev 1, NEP07-T38 and NEP-07-T39 Rev 1</p> <p>ISO Determination letter sent on March 29, 2010</p>	<p>NEP-16-TCA-04</p> <p>TCA Submitted on May 12, 2016</p> <p>RC voted to recommend on June 9, 2016</p> <p>ISO determination letter sent on October 4, 2016</p>	3	\$48.50		\$63.75		11.750	\$0.75 visual mitigation and \$11.00 Non-PTF	
<p>W-175 115 kV Line</p> <p>Reconductor and Refurbish W-175 115 kV line between W Charlton and Palmer (16 mi).</p> <p>ISD Fall 2016</p>	<p>NEP-07-T20</p> <p>ISO Determination letter sent on December 17, 2007</p>	<p>NEP-16-TCA-05</p> <p>TCA Submitted on May 12, 2016</p> <p>RC voted to recommend on June 9, 2016</p> <p>ISO determination letter sent on October 4, 2016</p>	3	\$28.00		\$28.00				
<p>Sandy Pond Control House</p> <p>Construction of a new control house containing all primary and secondary systems to the west of the original control house. These systems include the AC system, DC system, protection, control, digital fault recorder and SCADA. Specific key primary 345kV, 115kV, and 23 kV assets will also be replaced.</p> <p>ISD June 2018</p>	N/A	<p>NEP-16-TCA-06</p> <p>TCA Submitted on October 6, 2016</p> <p>RC voted to recommend on</p> <p>ISO determination letter sent on July 17, 2017</p>	3	\$33.84		\$26.63		7.210	Non-PTF Portion of control house	
<p>C-181/D182 Line Refurbishment Project</p> <p>This project will replace 268 wood structures, cross bracing on 24 structures, insulator strings on 39 structures, and refurbish an additional 51 structures. The scope will also include the installation of 27 miles of OPGW, removal of vegetation growth on structures and the installation of pole caps as identified in the field.</p> <p>ISD December 2017</p>	N/A	<p>NEP-16-TCA-08</p> <p>TCA Submitted on September 8, 2016</p> <p>RC voted to recommend on September 20, 2016</p> <p>ISO determination letter sent on December 16, 2016</p>	3	\$24.93		\$24.93				
<p>Mount Support Substation Project</p> <p>Loop the W-149N line into Mount Support Substation and install one 115 kV in-line breaker and associated disconnects at Mount Support Substation. Install one high speed protection system on the W-149N and W-149 lines.</p> <p>ISD October 2016</p>	<p>NEP-13-T02</p> <p>ISO Determination letter sent on April 4, 2013</p>	<p>NEP-16-TCA-10</p> <p>TCA Submitted on September 26, 2016</p> <p>RC voted to recommend on October 18, 2016</p> <p>ISO determination letter sent on December 16, 2016</p>	2	\$10.43		\$8.51				
<p>Baird to Congress 8809A-8909B 115 kV Line Upgrades Project</p> <p>Install monopoles along both the northern and southern railroad right of way corridors between Baird and Congress 115/13.8 kV substations and install 1590 kcmil ACSS 115 kV conductors on the new monopoles while removing existing 795 kcmil ACSR 115 kV conductors along railroad catenary system between Baird and Congress substations.</p> <p>ISD December 2018</p>	<p>UI-12-T05 & UI-12-T06</p> <p>ISO Determination letter sent on August 12, 2012</p>	<p>UI-16-TCA-01</p> <p>TCA Submitted on June 7, 2016</p> <p>RC voted to recommend on July 12, 2016</p> <p>ISO determination letter sent on October 4, 2016</p>	4	\$73.30		\$73.30				

¹NECPUC to be involved in category 4 5 TCA apps that require siting.

PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
The Mix Avenue 115 kV Capacitor Bank - Series Reactor Addition Project Install two (2) 20 MVar 115 kV capacitor banks at Mix Avenue Substation on the 1610 115 kV line terminal. Install a 7.5 ohm series reactor at Mix Avenue Substation on the 1610 115 kV line terminal. Expand 115 kV Control House at Mix Avenue Substation. ISD January 2017	UI-12-T15-Rec 1 and UI-12-T16 ISO Determination letter sent on November 8, 2012 and April 16, 2015	UI-16-TCA-02 TCA Submitted on September 20, 2016 RC voted to recommend on October 18, 2016 ISO determination letter sent on December 16, 2016	3	\$21.70		\$21.70				
Replace Medway Station #65 Control House A new control house will be purchased and delivered to Medway and installed within the existing substation footprint. Included in the purchase of the control house will be redundant batteries and relay systems. ISD June 2019	ES-16-T01 ISO Determination letter sent on January 26, 2016	ES-16-TCA-02 TCA Submitted on November 2, 2016 RC voted to recommend on December 13, 2016 ISO determination letter being drafted ISO Determination letter sent July 17, 2017	2	\$12.29		\$12.29				
345 kV 3419 Line Asset Condition/Storm Hardening project Replace or modify 345 kV line structures determined to be inadequate based on structural analysis performed as part of ongoing Storm Hardening project: replace 30 wood pole H-frames with direct-embed-steel, wood pole equivalents or wood. ISD June 2016	N/A	ES-16-TCA-03 TCA Submitted on August 1, 2016 RC voted to recommend on September 20, 2016 ISO information request sent on March 15, 2017 for clarification on difference between "Asset Condition" and "Storm Hardening" ES response to ISO information request on April 12, 2017 ISO Determination letter sent January 3, 2018	2	\$11.01		\$11.01				
X176 Line Rebuild Replace 37 H-frame structures with steel equivalents and replace existing conductor with 1272 ACSS ISD February 2017	N/A	ES-16-TCA-13 TCA Submitted on August 10, 2016 RC voted to recommend on September 20, 2016 ISO determination letter sent on December 16, 2016	2	\$8.93		\$8.93				
I231/I242 NERC Alert Project This project mitigates the discrepancies in facility ratings observed between design and actual field conditions. ISD December 2015	N/A	ES-16-TCA-17 TCA Submitted on August 10, 2016 RC voted to recommend on September 20, 2016 ISO determination letter sent on December 16, 2016	2	\$13.80		\$13.80				
Blair Pond Substation Construction of a new 115/13.8 kV GIS Substation to support load in Belmont. ISD December 2016	ES-15-T33 ISO Determination letter sent on April 16, 2015	ES-16-TCA-18 TCA Submitted on June 24, 2016 Initial RC presentation on July 12, 2016 RC voted to not recommend on November 15, 2016. Vote was 25.65% in favor ISO information request sent on September 8, 2016 with a response from Eversource Energy on October 6, 2016 ISO additional information request sent on February 16, 2017. ISO review is on-going	4	\$72.34			Requested: 70.702	\$1.64	Non PTF work includes (1) the associated GIS components for the two transformer connections to the 115kV circuit switchers and (2) the 115kV bus between the 115kV ring and the 115kV circuit switchers.	
Electric Avenue Substation New substation with twelve 115kV gas insulated breakers. Approximately 3,600 feet of new 2000 Cu pipe-type cable, new control and protection equipment for the twelve 115kV breakers, four 115kV lines and two 115kV end buses. System designed to required BPS standards. ISD December 2018	ES-16-T41 ISO Determination letter sent on June 30, 2016	ES-16-TCA-28 TCA Submitted on October 6, 2016 RC voted to recommend on November 15, 2016 ISO determination letter sent on July 17, 2017	4	\$56.18		\$53.46		\$2.72		
Framingham BPS Upgrade Upgrades at Framingham Station #240 to bring the station up to NPCC BPS Standards ISD December 2018	N/A	ES-16-TCA-30 TCA Submitted on November 1, 2016 RC voted to recommend on December 13, 2016 ISO determination letter sent on July 17, 2017	2	\$11.80		\$11.80				

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
3424 Line Asset Condition/Storm Hardening Project Replace or modify 30 wood pole structures with direct embed, light duty steel poles to meet NESC design load and storm hardening requirements. The 3424 line runs from Kleen substation in Middletown to Manchester substation, both in Connecticut. ISD December 2016	N/A	ES-16-TCA-27 TCA Submitted on December 5, 2016 RC voted to recommend on January 17, 2017 ISO information request sent on March 15, 2017 for clarification on difference between "Asset Condition" and "Storm Hardening" ES response to ISO information request on April 12, 2017 ISO Determination letter sent January 3, 2018	2	\$5.92		\$5.92				
1211 Line Structure Replacement Project The portion of the 1211 Line proposed for replacement contains a total of 44 structures (from Doreen 19A to Oswald Junction). ISD July 2017	ES-16-TCA-63 ISO Determination letter sent on December 16, 2016	ES-16-TCA-12 TCA Submitted on December 5, 2016 RC voted to recommend on January 17, 2017 ISO Determination letter sent January 3, 2018	2	\$14.80		\$14.80				
2017										
CT River Valley Project for reconducting the K31 Coolidge - Ascutney 115 kV line to 1351 ACSS. Install a 50 MVAR SVC and add a third bay at the Ascutney substation. Split the Hartford 25 MVAR 115 kV capacitor bank into two 12.5 MVAR capacitor banks. In addition, rebuild the Chelsea 115 kV tap substation into a three-breaker ring substation. ISD May 2018	VELCO-15-T01 to T04 ISO Determination letter sent on April 16, 2015	VELCO -17-TCA-01 TCA Submitted on January 9, 2017 RC voted to recommend on February 15, 2017 ISO Determination letter sent December 1, 2017	4	\$104.85		\$94.55			\$10.30	Non-PTF work related to 46 kV Asset Condition work
Cabot Taps - W-177 (Pittsfield/Greenfield) 1: Separate and reconductor the Cabot Taps (A-127W and Y-177 115kV lines between Cabot Jet and Montague substation). This involves use of 795 ACSS conductor for the Y-177 line and 1590 ACSS conductor for the A-127W tap line. (2.7 miles each) 2: Loop the A-127W line in and out of the new Erving Substation (Eversource). 3: Reconductor of A-127W line between Erving switchyard and Cabot Tap with 2-477 ACCR. (5.6 miles) ISD Spring 2017	NEP-12-T14 ISO Determination letter sent on December 7,2012	NEP-17-TCA-02 TCA Submitted on January 8, 2017 RC voted to recommend on March 21, 2017 ISO determination letter sent on July 17, 2017	3	\$23.29		\$23.29				
Harriman Station (Pittsfield/Greenfield) 1: Harriman Station - Installation of 115 kV tie breaker with associated buswork, reconductor of buswork and new control house. (part of Pittsfield/Greenfield reliability upgrades) 2: Harriman Station - Breaker replacement and terminal equipment upgrades (Asset Condition) ISD Spring 2017	NEP-12-T13 ISO Determination letter sent on December 7,2012	NEP-17-TCA-03 TCA Submitted on January 8, 2017 RC voted to recommend on March 21, 2017 ISO determination letter sent on July 17, 2017	2	\$12.71		\$12.71				
Kingston Street #514 Asset Condition 345 kV GIS breaker replacements at Kingston Street #514 ISD February 2016	NA	ES-17-TCA-01 TCA Submitted on January 26,2017 RC voted to recommend on February 15, 2017 ISO determination letter sent on May 11, 2018	3	\$22.21		\$22.21				
Greater Hartford/Central Connecticut (GHCC) Transmission Upgrade The Greater Hartford and Central Connecticut (GHCC) Area Transmission 2022 Needs Assessment, dated May 2014 identified thermal and voltage violations in the four subareas that comprised the GHCC study area. The four subareas are Greater Hartford, Middletown, Manchester-Barbour Hill, and Northwestern Connecticut. The violations were typically caused by lack of generation and tripping of transmission sources into the subareas. ISD December 2015 - December 2018	ES-15-T07-ES-15-T17, ES-15-T19, ES-15-T21- ES-15-T23 and ES-15-T25 ISO Determination letter sent on April 16, 2015	ES-17-TCA-03 TCA Submitted on February 15, 2017 RC voted to recommend on April 18, 2017 ISO reviewing responses from information request and continuing to review the Project	4	\$194.77		Requested: \$194.774				

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
Refurbishment of the Essex STATCOM's Refurbishment of: <ul style="list-style-type: none"> • STATCOM Control System • STATCOM inverters and associated equipment • Cooling Systems • Harmonic Filters ISD May 2017	N/A	VELCO-17-TCA-02 TCA Submitted on March 27, 2017 RC voted to recommend on April 18, 2017 ISO determination letter sent on August 13, 2017	3	\$28.40		\$27.56		\$0.85		
VELCO Structure Replacement Program Replacement of existing Pool Transmission Facilities (PTF) transmission structures under a program of work throughout Vermont's transmission network including: <ul style="list-style-type: none"> • Approximately (1,120) 115 kV Structures • Approximately (80) 230 kV Structures • Approximately (250) 345 kV Structures ISD December 2019	N/A	VELCO-17-TCA-03 TCA Submitted on March 31, 2017 Introductory presentation at April 18, 2017 RC Meeting RC voted to recommend on May 23, 2017 ISO determination letter sent on December 1, 2017	4	\$165.00		\$160.12		\$4.88		
1620 and 1975 115-kV Structure Replacement Project Replace 64 laminated wood pole structures with direct embed light duty weathering steel poles; the two and three pole structures are light duty steel. The 115-kV 1620 Line runs from Middletown 5A to Haddam 11C via Oxbow Junction. The 115-kV 1975 Line runs from East Meriden 21P to Haddam 11C via Oxbow Junction. The portion of these lines from Haddam 11C to Oxbow Junction shares structures for approximately 8 miles.	N/A	ES-17-TCA-02 TCA Submitted on April 25, 2017 RC voted to recommend on May 23, 2017 ISO determination letter sent on December 1, 2017	2	\$11.09		\$11.09				
Thames River Crossing Structure Replacement Project Replace four steel lattice structures (7012, 7013, 7014, and 7015) with engineered galvanized steel poles on concrete foundations and install new conductor, shield wire, and OPGW from structure 7012 to structure 7015.	N/A	ES-17-TCA-08 TCA Submitted on April 13, 2017 RC voted to recommend on May 23, 2017 ISO determination letter being drafted ISO determination letter sent on December 1, 2017	2	\$6.47		\$6.47				
Greater Boston Transmission Project The Project consist of: 7 - new 115 kV or 345 kV lines, 9 - 115 kV line reconductoring and 2 115 kV line upgrades 4 - new or replacement autotransformers and stations 6- reconfigured substations, and numerous circuit breaker addition and reconfigurations along with other elements such as shunt devices, capacitor banks and BPS upgrades	See TCA Applications	ES-17-TCA-04, NEP-17-TCA-1, CMP-17-TCA-01 and HLPD-17-TCA-01 TCA's submitted May 1, 2017 by Eversource Energy, April 17, 2017 by National Grid, April 7, 2017 by Central Maine Power and March 10, 2017 by Hudson Light and Power. Introductory presentation at May 23, 2017 RC Meeting RC voted to recommend on June 20, 2017 ISO review on going	5	\$822.43			Requested: \$818.043	\$4.38		
New West Medway Control House and Equipment Upgrade Installation of a new control house that consists of redundant batteries, relay systems, and control systems for the 345kV and 230kV equipment in the substation to meet NPCC Bulk Power System (BPS) standards. In addition to the control house vintage insulators, disconnect switches, and CCVT's will be replaced.	N/A	ES-17-TCA-06 TCA Submitted on April 7, 2017 RC voted to recommend on April 18, 2017 ISO determination letter sent on December 1, 2017	2	\$18.87		\$18.87				
County Road Substation Construct a new substation that sectionalizes Section 241 by adding four 115 kV circuit breakers in a ring bus configuration. Construct 6.5 miles of new 115 kV conductor from the Section 241A tap point to the new County Road Substation.	CMP-14-T01 ISO Determination letter sent on March 20, 2014	CMP-17-TCA-02 TCA Submitted on May 17, 2017 RC voted to recommend on June 20, 2017 ISO determination letter sent on September 13, 2017	3	\$38.26		\$24.84				
Construct New Highland Park Substation -Reconductor 2.2 miles of 115 kV J16 line -Replace two 115 kV switches and associated buswork -Loop 115 kV J16 line in and out of new station and install new 115 kV in-line circuit breaker -Replace two 115 kV circuit breakers, eight 115 kV switches, and upgrade tap line and buswork	NEP-12-T15 and NEP - 12-T16 ISO Determination letter sent on January 1, 2013	NEP-17-TCA-05 TCA Submitted on June 28, 2017 RC voted to recommend on July 18, 2017 ISO determination letter sent on January 3, 2018	2	\$11.73		\$8.00				
Replace structures and install OPGW from Ludlow Substation to Barbour Hill Substation Project Install new 48 fiber OPGW from Ludlow Substation in Ludlow, MA to Barbour Hill Substation in South Windsor, CT (approximately 26 miles) via the 3419 (345-kV) line. Replace 27 wood pole structures with direct embed light duty steel poles along this right of way.	N/A	ES-17-TCA-09 TCA Submitted on June 29, 2017 RC voted to recommend on July 18, 2017 ISO determination letter sent on January 3, 2018	2	\$13.42		\$13.42				

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)	PTF \$(Millions)	LOCAL \$\$ (Millions)		Comments
						Local as per ISO	Non PTF as per TO	
Baird 115/13.8 kV Substation Rebuild Project Construct a new 115/13.8 kV Baird substation east of the existing substation ISD May 2018	UI-12-T07 and UI-14-T04 ISO Determination letters sent on August 27, 2012 and September 9, 2014	UI-17-TCA-01 TCA Submitted on August 7, 2017 RC voted to recommend on August 24, 2017 ISO determination letter sent on January 3, 2018	3	\$33.32	\$17.82			
Bear Swamp Substation Upgrades Reliability Upgrades: Install a second 230/115 kV, 333 MVA autotransformer and one new 115 kV breaker. Replace three existing 115 kV breakers and upgrade E-131 terminal equipment at Bear Swamp. Install one 115 kV, 50 MVAR capacitor bank and one new 115 kV breaker. Install one POTT protection scheme on the 115 kV E-131 line. Asset Condition Upgrades: Replace existing four 230 kV breakers and associated equipment. ISD October 2017	NEP-07-T29 ISO Determination letter sent on December 17, 2007	NEP-17-TCA-04 TCA Submitted on September 1, 2017 RC voted to recommend on September 19, 2017 ISO determination letter sent on April 17, 2018	3	\$20.47	\$20.47			
K Street Station #385 Control House Build a new 115-kV control house to fully comply with NPCC Directory 4 criteria. ISD - 2021	N/A	ES-17-TCA-16 TCA Submitted on July 31, 2017 RC voted to recommend on September 19, 2017 ISO determination letter sent on April 17, 2018	2	\$18.40	\$18.40			
Brighton Station #329 Control House Build a new 115-kV control house to fully comply with NPCC Directory 4 criteria. ISD 2020	N/A	ES-17-TCA-17 TCA Submitted on July 31, 2017 RC voted to recommend on September 19, 2017 ISO determination letter sent on April 17, 2018	3	\$21.00	\$21.00			
Mystic Station #250 Control House Retrofit existing control building including changes to the AC station service. Remove all existing equipment including asbestos containing material. The BPS protection systems at the station will be upgraded to fully comply with NPCC Directory 4 criteria. ISD 2024	N/A	ES-17-TCA-18 TCA Submitted on July 31, 2017 RC voted to recommend on September 19, 2017 ISO determination letter sent on April 17, 2018	3	\$23.90	\$23.90			
1261/1598 Line Structure Replacement and OPGW Project Replace or modify 17 double circuit structures on the 1261/1598 line and install new OPGW to replace existing shield wire on the 1598 Line from Bokum 15L Substation to Haddam 11C Substation. ISD December 2017	N/A	ES-17-TCA-15 TCA Submitted on July 27, 2017 RC voted to recommend on September 19, 2017 ISO determination letter sent on April 17, 2018	2	\$7.55	\$7.55			
New Seafood Way #99 Substation Install twelve 115kV, 63 kA gas insulated breakers. Interconnect to the Mystic - K St 115kV lines 250-516/517. Approximately 1.3 miles of new 2500 Cu pipe-type cable, new control and protection equipment for the twelve 115kV breakers, four 115kV lines and two 115kV end buses. The Protection and Control system is designed to BPS standards. The systems will be physically and electrically separated. ISD - March 2017	ES-16-T43 ISO Determination sent on July 19, 2016	ES-17-TCA-20 TCA Submitted on September 14, 2017 RC voted to recommend on November 15, 2017 Additional Information request sent to ES on 9/15/2017 with response sent on 10/24/2017 and a second information request sent on 9/11/2018 with a response sent on 10/29/2018. ISO is drafting a determination letter on this application	4	\$91.26		Requested: \$52.616		
Devon Control House Modifications Project Expand the existing Eversource owned control house to accommodate Eversource equipment located in the Devon controlled areas. ISD December 2018	N/A	ES-17-TCA-10 TCA Submitted on September 13, 2017 RC voted to recommend on October 17, 2017 ISO determination letter sent on April 17, 2018	2	\$9.35	\$9.35			
Replace failed Scobie Pond TB30 transformer and install two 115-kV 40Mvar shunt reactors Replace Scobie Pond TB30 345/115-kV autotransformer and install two 115-kV 40Mvar shunt reactors. ISD December 2017	ES-17-T20 ISO Determination sent on May 24, 2017	ES-17-TCA-13 TCA Submitted on September 11, 2017 RC voted to recommend on October 17, 2017 ISO determination letter sent on August 24, 2018	2	\$14.10	\$14.10			

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PROJECT DESCRIPTION	RELIABILITY REVIEW	TRANSMISSION COST ALLOCATION REVIEW	TCA CATEGORY *	TOTAL PROJECT COST \$(Millions)		PTF \$(Millions)		LOCAL \$\$ (Millions)		Comments
								Local as per ISO	Non PTF as per TO	
PV20 Cable Replacement Project The work consists of the replacement of the existing submarine cables between Grand Isle, Vermont and Cumberland Head, New York. Specifically, this TCA includes costs associated with the New England portion of the project scope, which includes: <ul style="list-style-type: none"> • New Terminal in Grand Isle, Vermont • Transmission line Structure reconfiguration (K20 line) • Installation of three (3) new cables, operated at 115kV, constructed at 230kV beneath Lake Champlain to the New York/Vermont border ISD January 2018	VELCO-14-T01 ISO Determination sent on October 21, 2014	VELCO-17-TCA-04 TCA Submitted on September 27, 2017 RC voted to recommend on October 17, 2017 ISO issued an information request to VELCO for further clarification on the equipment built to 230 kV on August 23, 2018. VELCO responded to the ISO information request on September 19, 2018 and the ISO is reviewing those responses and preparing a determination letter.	4	\$98.97			Requested: \$45.978			
Pootatuck 115 kV Ring Bus Expansion and Capacitor Bank Addition Project Install three (3) 115 kV 63 kA SF6 gas circuit breakers, six (6) 115 kV breaker disconnect switches, 115 kV bus work into a ring bus configuration with the existing 115 kV circuit breaker at Pootatuck substation. <ul style="list-style-type: none"> • Install two (2) 115 kV motorized line disconnect switches and loop the existing 1570 115 kV line in and out of Pootatuck 115 kV expanded ring bus. The 1570 115 kV line in and out of Pootatuck will become the 1483 and 1808 115 kV lines after the Pootatuck bus expansion project goes into service. • Install 30 MVAR 115 kV capacitor bank, 115 kV 63 kA SF6 gas circuit breaker and two (2) 115 kV breaker disconnect switches on the 1808 115 kV line terminal. ISD July 2018	UI-15-T04 ISO Determination sent on April 16, 2015	UI-17-TCA-02 TCA Submitted on October 5, 2017 RC voted to recommend on October 17, 2017 ISO determination letter sent on January 3, 2018	2	\$11.04		\$11.04				
Southwestern Connecticut Project Upgrades Close the normally open 115 kV 2T circuit breaker at Baldwin Substation, Reconductor the 1887 line between West Brookfield and West Brookfield Junction (1.4 miles), Install 2 x 14.4 MVAR capacitor banks at West Brookfield Substation on 1618 line terminal, Install a new 115 kV line from Plumtree to Brookfield Junction (3.4 miles), Relocate the existing 37.8 MVAR capacitor bank from 115 kV B bus to 115 kV A bus at Plumtree Substation, Reduce 12Y-10K (25.2 MVAR) capacitor cans at Rocky River to 14.4 MVAR, Loop the 1570 line in and out of Pootatuck Substation, Rebuild a portion of 1682 line from Wilton to Norwalk and upgrade Wilton Substation terminal equipment (1.5 miles), Reconductor the 1470-1 line from Wilton to Ridgefield Junction (5.1 miles), Reconductor the 1470-3 line from Peaceable to Ridgefield Junction (0.04 miles), Reconductor the 1575 Line (Bunker Hill – Baldwin Junction; 3.0 miles), Relocate 22K 115 kV capacitor bank (37.8 MVAR) to the same side as the 10K (25.2 MVAR) capacitor bank at Stony Hill, Reconfigure 1887 line into a three-terminal line (Plumtree - W. Brookfield - Shepaug) and Reconfigure 1770 line into 2 two-terminal lines between Plumtree - Stony Hill and Stony Hill - Bates Rock, Install a synchronous condenser (+25/-12.5 MVAR) at Stony Hill. ISD December 2018	Refer to TCA Application	ES-17-TCA-07 TCA Submitted on October 25, 2017 RC voted to recommend on December 19, 2017 ISO review on going	4	\$105.71			Requested: \$105.71			
354 Line Structure Replacements Project Remove 45 Single Circuit H-Frame wood structures and replace with light duty weathering steel H-frames. Remove three dead end corner wood structures and replace with light duty weathering steel poles. Remove two running angle wood structures and replace with light duty weathering steel poles. Install new hardware and insulators. ISD March 2018	N/A	ES-17-TCA-21 TCA Submitted on November 29, 2017 RC voted to recommend on December 19, 2017 ISO determination letter sent on October 16, 2018	2	\$10.15		\$10.15				
2018										
Ansonia 115 kV Capacitor Bank Additions Project 1) Install 25 MVAR 115 kV capacitor bank, 115 kV SF6 gas circuit breaker and two (2) 115 kV breaker disconnect switches on the 1560 115 kV line terminal. 2) Install 25 MVAR 115 kV capacitor bank, 115 kV SF6 gas circuit breaker and two (2) 115 kV breaker disconnect switches on the 1594 115 kV line terminal. ISD December 2018	UI-15-T05 ISO Determination sent on April 16, 2015	UI-18-TCA-01 TCA Submitted on January 17, 2018 RC voted to recommend on February 13, 2018 ISO determination letter sent on August 24, 2018	2	\$10.00		\$9.70				
1231/1242 Structure Replacement Project Install fifteen 115-kV double circuit and four single circuit light duty weathering steel structures to replace fifteen existing double circuit lattice towers and four existing single circuit lattice towers. ISD September 2017	N/A	ES-18-TCA-01 TCA Submitted on January 19, 2018 RC introduction on February 13, 2018 Presented at March RC but not voted on due to questions. ISO issued questions to ES. ISO is currently reviewing those responses.	2	\$7.97			Requested: \$7.966			

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								Local as per ISO	Non PTF as per TO	
Pittsfield/Greenfield Area – Group II Transmission Upgrade Project 1) Install a 115 kV 20.6 MVAR capacitor at Doreen substation 2) Build a new Atwater Switching Station (3-breaker ring bus) adjacent to Pochassic 37R. Add a new terminal at the 115-kV Buck Pond Substation. Add a new 115-kV circuit from Atwater Switching Station to Buck Pond on existing DCTs. Reroute and loop in/out the 1512 Line to the new Atwater Switching Station. 3) Install a 75-150 MVAR variable reactor at Northfield substation 4) Install a 75-150 MVAR variable reactor at Ludlow substation ISD December 2019	ES-16-T02, ES-16-T03, ES-16-T04, ES-16-T28, ES-16-T29, ES-16-T30 ISO Determination sent on January 26, 2016	ES-18-TCA-02 TCA Submitted on January 29, 2018 RC introduction on February 13, 2018 RC voted to recommend on March 14, 2018 ISO review ongoing.	4	\$56.64			Requested: \$56.64			
1508 Line Structure Replacement an OPGW Installation Project 1508 Line structure replacement and OPGW Project: replace 58 wood H-frame structures with Light Duty Tubular Steel structures and install 5.6 miles of OPGW from Stepstone Substation to Green Hill Substation. ISD June 30, 2018	N/A	ES-18-TCA-03 TCA Submitted on February 12, 2018 RC introduction on March 14, 2018 RC voted to recommend on March 14, 2018 ISO determination letter sent on August 24, 2018	2	\$15.88		\$15.88				
Breaker Removal and Bus Upgrade Removal of obsolete / aged equipment and upgrade Bus segments as follows: Phase 1: Remove Breaker 22 and Bus 4 and Bus 4 CCVT; Upgrade Section of Bus 2 from 3000A CGIT GIB to 4000A GIB; Remove/modify Protection and Control systems accordingly; Phase 2: Remove old Breaker 11 (previously disabled, locked closed and converted to a Gas Zone (GS-11)); Upgrade Section of Bus 1 from 3000A CGIT GIB to 4000A GIB. ISD - November 2017	NHT-16-T01 ISO Determination sent on February 23, 2016	NHT-18-TCA-01 TCA Submitted on March 31, 2018 RC introduction on April 24, 2018 RC voted to recommend on April 24, 2018 ISO determination letter sent on September 11, 2018	2	\$11.20		\$11.20				
Crystal Lake Substation <ul style="list-style-type: none"> • Replacement of three 69 kV breakers along with six sets of 69 kV disconnect switches , • Installation of Eight Capacitor voltage transformers, • Installation of two steel deadend structures along with 220' of 477 kcmil ACSR conductor, • Removal of twenty four structures between the Park St and Crystal Lake substations ISD October 2016	NEP-16-T06 ISO Determination sent on May 5, 2016	NEP-18-TCA-01 TCA Submitted on April 11, 2018 RC introduction on April 24, 2018 RC voted to recommend on April 24, 2018 ISO determination letter sent on October 10, 2018	2	\$27.44		\$7.63				
Frost bridge OCB Replacment Replace 12 Oil Circuit Breakers (OCB) and one circuit breaker isolation swith at Frost Bridge 115 kV Substation. ISD December 2018	NA	ES-18-TCA-07 TCA Submitted on April 6, 2018 RC introduction on April 24, 2018 RC voted to recommend on April 24, 2018 ISO determination letter sent on August 24, 2018	2	\$6.35		\$6.35				
Card-Tunnel-Montville Asset Condition and OPGW Replacment Install approximately 26 miles of OPGW from Card Street Substation to Fort Hill Farms Substation and to Tunnel Substation; replace 146 structures with direct embed, light duty steel poles. ISD December 2019	NA	ES-18-TCA-08 TCA Submitted on February 27, 2018 RC introduction on April 24, 2018 RC voted to recommend on May 16, 2018 ISO determination letter sent on October 16, 2018	3	\$54.96		\$54.96				
Mt Tom Control House Transmission modifications, including construction of a new control house. ISD October 2018	NA	ES-18-TCA-09 TCA Submitted on May 9, 2018 RC introduction on June 12, 2018 RC voted to recommend on June 12, 2018 ISO determination letter sent on October 16, 2018	2	\$6.66		\$6.66				
Adams Substation Install two new 115 kV breakers to complete a ring-bus configuration at the Adams substation. Relocate the E-131 and Q-117 line terminations at the Adams substation. Replace two existing 115 kV breakers at the Adams substation. Upgrade relay protection scheme for the E-131 line. ISD October 2018	NEP-07-T26 Rev.1 ISO Determination sent on December 7, 2012	NEP-18-TCA-02 TCA Submitted on May 25, 2018 RC introduction on June 12, 2018 RC voted to recommend on June 12, 2018 ISO determination letter sent on October 16, 2018	2	\$17.25		\$16.90		0.350		

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							Local as per ISO	Non PTF as per TO	
Seabrook GIS Switchyard Breaker and Line Replacement These replacements include replacing (4) GIS 345kV circuit breakers (Breakers 163 and 632 which terminate/protect the Seabrook-Scobie Pond 363 line, and Breakers 294 and 941 which terminate/protect the Seabrook-Ward Hill/West Amesbury 394 line), with (4) new GIS 345kV circuit breakers, and replacing (9) GIL that comprise approx. 1,000 ft. sections of the (3) 345kV lines (363, 369 and 394 lines) that extend from the transition yard ISD December 2019,2020 and 2021	NA	NHT-18-TCA-02 TCA Submitted on July 2, 2018 RC introduction on July 11, 2018 RC voted to recommend on August 7, 2018 ISO drafting additional information request.	4	\$87.74		Requested: \$87.42			
Somerset Asset Condition Project Build a new 5-bay breaker and a half AIS Switchyard across the street from the existing Somerset switchyard. ISD January 2020	NEP-18-T11 ISO Determination sent on May 1,2018	NEP-18-TCA-03 TCA Submitted on August 23, 2018 RC introduction on September 26, 2018 RC voted to recommend on September 26, 2018 ISO review ongoing	3	41.85		Requested: \$41.85			
1342 115 kV Line Structure Replacement & Install OPGW Replace 116 structures with light duty steel structures and install approximately 11.6 miles of OPGW. ISD June 2018	NA	ES-18-TCA-10 TCA Submitted on September 21, 2018 RC introduction on October 16, 2018 RC voted to recommend on October 6, 2018 ISO review ongoing	3	\$27.56		Requested: \$27.56			