



800 Boylston Street, P1700
Boston, Massachusetts 02199-8003

NSTAR Electric Company

Mary E. Grover, Esq.
Direct Dial: (617) 424-2105
Facsimile: (617) 424-2733
E-mail: mary.grover@eversource.com

June 30, 2021

Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: *NSTAR Electric Company*
CWIP Supplement to Annual Informational Filing:
Docket Nos. ER07-549-000, ER09-1243-000

Dear Secretary Bose:

NSTAR Electric Company (“NSTAR”) files herewith the “CWIP Supplement” to its Annual Informational Filing for the true-up of billings under Schedule 21-NSTAR¹ to Schedule II of the ISO New England Inc. Transmission, Markets and Services Tariff for the 2020 Service Year, which covers the time period January 1, 2020 through December 31, 2020.

This CWIP Supplement is filed in accordance with Sections 4.1(i) and 4.1(ix) of Schedule 21-NSTAR as added and supplemented by Article 4.2 of a Settlement Agreement approved by the Commission on June 19, 2008 (“Settlement”). Pursuant to those provisions, this CWIP Supplement completes the Annual Informational Filing² that was originally filed for informational purposes with the Commission, exclusive of the CWIP Supplement, on May 28, 2021. The CWIP Supplement is provided primarily on a project-specific basis.

In accordance with Section 4.1(ix) of Schedule 21-NSTAR and Article 4.2 of the Settlement, the CWIP Supplement includes:

- A “CWIP Work Order/Project Reference Aid” or “Reference Aid” that is prepared on a project-by-project basis. The Reference Aid (i) tags a project as “new” or “pre-existing,” (ii) provides project-related ISO-NE and NSTAR information, and (iii) uses a format that correlates the ISO-NE and NSTAR information related to a project. The ISO-NE information, if applicable, consists of a short description of the project, the year the project was approved through the ISO-NE process, and the ISO-NE project identification number. The NSTAR information identifies the most recent construction forecast that describes the project, the page of the plan at which that

¹ Consistent with Schedule 21-NSTAR, all references to NSTAR in this Filing shall mean NSTAR (East), denoting NSTAR Electric Company’s eastern Massachusetts geographic region, and specifically shall exclude NSTAR (West), its western Massachusetts geographic region formerly owned by Western Massachusetts Electric Company.

² *NSTAR Electric Company*, 123 FERC ¶ 61,270 (2008). Pursuant to a new Settlement Agreement and related filings approved by the Commission in Docket Nos. ER20-2054-000 and ER20-2054-001, Schedule 21-NSTAR will no longer be an effective tariff record and the requirement to file the Annual Informational Filing will cease as of January 1, 2022. *ISO New England, et al.*, 173 FERC ¶ 61,270 (2020) and delegated letter order in Docket No. ER20-2054-001, dated February 24, 2021. As such, the instant filing is the last Annual Informational Filing pursuant to Schedule 21-NSTAR.

Ms. Bose, Secretary

June 30, 2021

Page 2

description begins, NSTAR's numeric designation and description for the project, the project work orders, and a description of each work order. (The CWIP Reference Aid for the 2020 Service Year appears as Exhibit A);

- NSTAR's most recent annual construction forecast (Exhibit B);
- detailed accounting information for each project included in rate base showing the actual amounts of CWIP for each project by category, and the related amounts (Exhibit C);
- a demonstration of the effect of including CWIP and AFUDC in rate base on NSTAR's revenue requirement (Exhibit D);
- a description of any CWIP or AFUDC accounting changes in order to ensure that any such changes do not erode the protections against accrual of AFUDC on CWIP balances included in rate base (there were no such accounting changes affecting the Service Year data) (Exhibit E);
- to the extent not stated in the construction forecast, a detailed statement of the reasons for undertaking any "new projects," the benefits to be derived from such projects and the alternatives to or consequences of not undertaking the projects (Exhibit F); and
- an update on the status of any "pre-existing project," any material change in the estimated project cost, the project's estimated in-service date, and whether there is any change in the need for the project or in the alternatives to the project (Exhibit G).

The CWIP Supplement includes NSTAR's 2020 long-range construction forecast in Exhibit B, which is a ten-year assessment of NSTAR's transmission system. This assessment provides the results of NSTAR's electrical model and analysis of its transmission system, identifying details of potential weaknesses at specific geographic locations. Furthermore, certain project descriptions in Exhibits A, B, C, and G identify detailed design information about proposed or existing critical infrastructure. Thus, these materials consist of "Critical Energy/Electric Infrastructure Information (CEII)" under 18 C.F.R. § 388.113 and should be placed in a non-public file. The balance of the filing consists exclusively of "public" information. The need for protection of such CEII from public disclosure should not lapse because the information about utility infrastructure will not change for decades. There is no basis for assuming that the threat to public safety that may result from disclosure of the CEII will abate after a set period of time. Accordingly, the Company respectfully requests that the Commission take such actions as may be necessary or appropriate to accord permanent protection to the CEII.

NSTAR thanks the Commission for its consideration of this filing. In the event that additional information is required, please contact the undersigned.

Very truly yours,

/s/ Mary E. Grover

Mary E. Grover
Attorney for NSTAR Electric Company

Enclosure

Index Supplemental Exhibits

NSTAR Electric Company (East) Service Year 2020

- 1. Exhibit A** – "CWIP Work Order/Project Reference Aid" or "Reference Aid" that is prepared on a project-by-project basis. The Reference Aid (i) tags a project as "new" or "pre-existing," (ii) provides project-related ISO-NE and NSTAR information, and (iii) uses a format to correlate the ISO and NSTAR information related to a project.
- 2. Exhibit B** – the Company's most recent annual construction forecast

(Please note the ISO-NE Regional Plan may be accessed through the ISO-NE website):
<https://www.iso-ne.com/system-planning/system-plans-studies/rsp>
- 3. Exhibit C** – detailed CWIP accounting information including detail of AFUDC Regulatory Liability recorded during the Service Year for each project included in rate base showing the actual amounts of CWIP for each project by category, and the related accounts.
- 4. Exhibit D** – a demonstration of the effect of including CWIP and AFUDC in rate base on the Company's revenue requirement in the Service Year (impacted values are highlighted).
- 5. Exhibit E** – a description of any CWIP or AFUDC accounting changes in order to ensure that any such changes do not erode the protections against accrual of AFUDC on CWIP balances included in rate base (there were no such accounting changes affecting the Service Year data).
- 6. Exhibit F** – Information for "new projects," *i.e.*, projects estimated for inclusion in rate base for the first time during the Service Year.
- 7. Exhibit G** – Information updated for "pre-existing projects," *i.e.*, projects previously included in rate base.

NSTAR Electric Company (East)

Exhibit A

CWIP Work Order/Project Reference Aid

**CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE
INFORMATION (“CEII”) has been Redacted**

[illegible]

Column	Description
Col. A	Year project approved by ISO-NE (blank = not in ISO-NE plan, or not yet approved)
Col. B	Description of project per ISO-NE Regional System Plan (RSP)
Col. C	Project identifier number per ISO-NE RSP
Col. D	Project name as it appears on the planning forecast in which the project appeared
Col. E	Page number where the project is described in NSTAR (East) plan
Col. F	Project number assigned by NSTAR (East) when construction starts
Col. G	NSTAR (East) Project Description per FERC Form 1 p. 216-216.2
Col. H	Work Order number assigned by NSTAR (East) when task starts
Col. I	Order identifier assigned by NSTAR (East)
Col. J	CWP (Cost per Work Order)
Col. K	Amount per Form 1 page 216-216.2

NSTAR Electric Company (East)

Exhibit B

Construction Forecast

Public Version

**Pages 2 through 9 and 14 through 15
contain CEII information, therefore,
have been Redacted**



dba

NSTAR Electric Company

Transmission Forecast for the Period 2021-2030

March 31, 2021

Table 3-3: Major NSTAR Substation and Transmission Projects completed in 2020

Station \ Line	Description
Mystic - Chelsea 488-519 Line	New 115kV underground line from Mystic to Chelsea
3rd 115kV Line Holbrook- Walpole	Install a new 115 kV circuit on spare side of the 345 kV towers from Walpole Sta. to Holbrook Sta. The new line will be an extension of existing line 146-502
Sharon Switching Station	Construct a new switching station between Norwood and Canton taps to sectionalize the two existing 115 kV circuits and new 115 kV circuit between W.Walpole and Holbrook
323 Line Upgrade	Upgrade line rating - replace disconnect switches and eight line structures
115kV Circuit Breaker Replacements , Medway Sta. 65	115kV Circuit Breaker Replacements

Table 3-4: Major NSTAR Substation and Transmission Projects expected to be placed in-service from 2021-2023

Station \ Line	Project Title	Description	Needs Justification	Project Status
110-522 & 240-510	110-522/240-510 Mitigation	Mitigate the 110-522 and 240-510	Greater Boston 2023 Needs Assessment	Under Construction
Chelsea 115-kV Station	Chelsea Substation	Construct Chelsea 115-kV Station	Greater Boston 2016 PPA Study	Under Construction
Mystic Station	Mystic Series Breaker	Install a 115kV breaker in series with existing breaker 4 at Mystic	Greater Boston 2028 Solutions	Under construction
West Medway #446 Substation	345-kV Circuit Breaker Replacements	345-kV Circuit Breaker Replacements	SEMA/RI 2018 PPA Study	Under construction
Mystic-Woburn	Mystic-Woburn Transmission Project	Add a 2 nd Mystic-Woburn 115-kV cable to create a bifurcated 211-514 Mystic-Woburn 115-kV circuit	Greater Boston 2023 Needs Assessment	Under Construction
Woburn – Wakefield	Woburn to Wakefield Line Project	Add a 2 nd Mystic-Woburn 115-kV cable to create a bifurcated 211-514 Mystic-Woburn 115-kV circuit	Greater Boston 2023 Needs Assessment	Under Construction
Separate the 122/135	The Barnstable Reliability Project	122/135 W. Barnstable to Barnstable	SEMA/RI 2026 Study	Under construction
Retire Barnstable SPS	Retire Barnstable SPS	Retire Barnstable SPS	SEMA/RI 2026 Study	Under construction
346 and 365 lines	345kV series breakers	Install 11.9 ohm series reactors on Lines 346 and 365	Greater Boston 2028 Solutions	Proposed
Canal 115-kV Substation	Canal Substation	Construct Canal 115-kV Station	Asset Condition/ Compliance	Under construction
Line 114 Industrial Park Tap to NGrid	Fall River to Acushnet Reliability Project	Extend #114 Line Industrial tap to NGRID Border	SEMA/RI 2026 Study	Planned
High Hill and Wing Lane Substation	High Hill and Wing Lane Capacitor Bank Installation	Install a 35 MVAR 115-kV capacitor bank	SEMA/RI 2026 Study	Under construction
Lexington 115/345-kV Station	Lexington Substation Upgrade Project	Construct Lexington 115/345-kV Station	Asset Condition/Compliance	Under construction
Line 111	Extend 111 Line	Extend the 111 Line from Cross Rd to Fisher Rd.	System Reliability	Planned
Andrew Square to Dewar St.	New 115-kV underground line	Install a new underground 115-kV line between the Andrew Sq. and Dewar St. substations	Eversource Planning Criteria	Planned
Bourne 115-kV Substation	Rebuild Bourne Substation	Construct Bourne 115-kV station	Asset Condition/Compliance	Under construction

Table 3-4: Major NSTAR Substation and Transmission Projects, which are expected to be in-service from 2021-2023 (Cont'd.)

Station \ Line	Project Title	Description	Needs Justification	Project Status
New 147 Carver to Kingston	Kingston Reliability Project	New Carver to Kingston Line 147, overhead 115-kV Line	SEMA/RI 2026 Study	Planned
Kingston Substation	Kingston Substation Project	Install a new Bay position at Kingston for the 147 overhead 115-kV Line	SEMA/RI 2026 Study	Planned
Kingston #735 Substation	Kingston #735 Substation	Reconfigure Kingston Substation to eliminate breaker failure outage of both 117 and 191 lines	System Reliability/Asset Condition	Planned
Falmouth Tap Substation	Falmouth Tap Substation	Reconfigure Falmouth Tap to eliminate breaker failure outage of both 107 and 136 lines	System Reliability	Concept
Lines 250-516/517	Reconductor section of 250-516/517 lines	Reconductor a section of the 250-516/517 lines over the North Washington Bridge due to bridge replacement project.	Municipal/Regulatory Requirement	Proposed
New 144 Line Bourne – West Barnstable	Mid-Cape Reliability Project	New overhead 115-kV Line from Bourne to W. Barnstable, Line 144	SEMA/RI 2026 Study	Planned
Sudbury – Hudson	115-kV Line Sudbury – Hudson	Install a new 115-kV line from Sudbury to Hudson Municipal Station	Greater Boston 2023 Needs Assessment	Planned
201-502 Line	Loop 201-502 line into Medway #65	Loop 201-502 line into Medway #65	SEMA/RI 2026 Study	Planned
Fairmont-Montague Corridor Project	Fairmont-Montague Corridor Project	Fairmont-Montague Corridor Transmission supply upgrade project	System Reliability/Asset Condition	Planned
East Eagle	East Eagle Substation Project	New 115-kV substation including two 115/13.8-kV transformers	System Reliability	Planned

Table 3-5: Potential Major NSTAR Substation and Transmission Projects, which are expected to be in-service in 2027

Station \ Line	Project Title	Description	Needs Justification	Project Status
East Cambridge	East Cambridge – new substation	Install four 90 MVA 115/14-kV transformers	System Reliability	Proposed

NSTAR Electric Company (East)

Exhibit C

**Detail of Transmission CWIP and AFUDC Regulatory
Liability**

**CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE
INFORMATION (“CEII”) has been Redacted**

CWIP Supplement Filing
Detail of Annual Transmission CWIP
Service Year 2020

Line #	WO#	WO Description	Project Description	Benefits	Labor	Materials	Other	Outside Services	Overhead	Overtime	Vehicle	AFUDC	Total CWIP	AFUDC	Regulatory Liability
1	01936814	TLCONS SOM PRELIM ENG SURVEY PE	Line 115KV Underground Woburn to Mystic	370,325	649,834	6,078	(485,470)	51,856,910	1,458,873	17,927	59,484	6,594,240	60,538,212	1,528,302	
2	02015125	TLCONS NTA ANALYSIS MYSTIC TO WOB	Line 115KV Underground Woburn to Mystic	39	102,153	-	108,991	474,745	87,233	-	-	180,063	86,1324	27,436	
3	02096647	STTCONS STA 250 Line 211-514 BRUR	Line 115KV Underground Woburn to Mystic	24,087	111,510	6,154,856	31,401	2,202,225	63,618	32,344	-	1,960,306	10,594,849	2,70,681	
4	02109467	STTCONS NEW 115KV PTC MYSTIC TO W	Line 115KV Underground Woburn to Mystic	8,024	32,647	2,074,233	(685,439)	227	116,043	297	1,820	141,944	1,689,316	42,034	
5		FFI Page 216.1, Line 40, Col. (b)		402,475	804,244	8,235,188	(1,030,517)	54,334,107	1,725,768	50,468	75,917	8,876,552	73,674,302	1,868,433	
6	02163814	TLCONS W. ROXBURY-NEEDHAM RELIABI	West Roxbury to Needham Reliability	81,523	201,855	4,138,167	36,264	20,995,821	273,001	3,785	18,705	1,594,703	27,343,823	1,594,703	
7	02204136	TLCONS Line 110-522 W. ROX NEEDHA	West Roxbury to Needham Reliability	113,966	602,009	56,704	72,320	1,838,584	18,275	11,503	4,763	180,986	2,226,188	62,323	
8		FFI Page 216.1, Line 41, Col. (b)		313,966	262,664	4,194,871	58,584	22,834,405	291,277	15,288	23,468	1,775,689	29,570,211	62,730	
9	01905240	TLPW WOB INSTALL 345KV CABLE C	Line 345KV Woburn Station 211 to Wakefield	419,793	637,770	822,438	(2,599,691)	20,443,650	1,447,342	330	47,598	3,807,465	25,126,694	655,303	
10		FFI Page 216.1, Line 42, Col. (b)		419,793	637,770	822,438	(2,599,691)	20,443,650	1,447,342	330	47,598	3,807,465	25,126,694	655,303	
11	02014481	TLCONS SUBURBY - HUDSON 115KV UN	New Line 115KV Suburb to Hudson	609,567	890,731	2,788	365,884	12,473,468	654,535	-	35,488	3,003,662	18,036,123	550,432	
12	02289417	STTCONS STA 342 SUBURBY - HUDSON 1	New Line 115KV Suburb to Hudson	16,194	56,241	4,999	17,080	143,560	2,687	32,881	1,262	5,836	280,040	2,897	
13		FFI Page 216.2, Line 1, Col. (b)		625,761	946,972	7,688	382,964	12,617,028	657,222	32,881	36,750	3,009,498	19,316,763	553,330	
14	02154123	STTCONS STA 514T Line 385-513 - PH	Station 514 Replace 115KV Breakers	323	1,382	1,009,369	304	144,734	9,795	-	151	44,939	1,271,196	13,469	
15	02154125	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	323	1,382	1,009,369	304	144,734	9,795	-	151	44,939	1,271,196	13,469	
16	02154139	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	269	1,068	1,009,369	264	100,370	8,388	-	126	64,150	1,243,332	23,075	
17	02154159	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	215	855	1,160,995	203	29,596	11,859	-	101	47,158	1,224,719	13,133	
18	02154176	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	-	-	1,160,995	-	29,596	11,859	-	-	47,106	1,250,980	15,793	
19	02154178	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	103	509	1,160,995	98	29,596	11,859	-	91	46,789	1,249,288	15,769	
20	02154179	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	-	-	1,160,995	-	29,596	11,859	-	-	47,106	1,251,621	16,527	
21	02154181	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	130	485	1,160,995	65	29,596	11,859	-	36	47,106	1,249,288	15,769	
22	02154183	STTCONS STA 514T Replace 115KV GCB	Station 514 Replace 115KV Breakers	435	1,912	1,160,995	441	111,401	18,336	348	-	203,816	1,251,354	16,543	
23	02199726	STTCONS ALL 1 TEMP TRANSFER ST	Station 514 Replace 115KV Breakers	12,843	54,273	114,721	13,297	116,363	3,874	1,001	-	258,423	372,319	52,431	
24		FFI Page 216.2, Line 2, Col. (b)		14,840	61,183	10,696,036	15,615	719,975	217,974	4,659	1,656	854,522	12,586,280	254,408	
25	03187238	STTIMPRV FOUNDATIONS	FOUNDATIONS	24,431	57,338	2,033,743	65,863	1,377,883	180,945	16,023	2,591	232,190	3,970,104	97,902	
26	03187239	STTIMPRV FOUNDATIONS	FOUNDATIONS	88,902	366,713	1,611,023	147,144	6,414,342	281,218	134,477	36,838	176,080	7,516,481	70,219	
27		FFI Page 216.2, Line 3, Col. (b)		123,333	423,511	2,185,044	213,027	7,792,330	462,164	149,499	39,429	398,270	11,786,585	167,781	
28	02238669	STTCONS STA 817 BOURNE REBUILD SUB	Rebuild Bourne Substation	72,489	363,704	3,613,238	31,866	5,997,815	609,204	10,661	5,723	483,372	11,187,613	136,773	
29	02363025	TLCONS BOURNE STATION RELOCATION,	Rebuild Bourne Substation	33,307	118,371	40,555	84,835	204,957	14,954	56,472	28,960	28,495	61,036	14,217	
30		FFI Page 216.2, Line 4, Col. (b)		105,796	482,075	3,653,283	116,701	6,202,772	624,159	67,133	34,233	511,868	11,798,518	150,940	
31	02320279	STTCONS [REDACTED] CONTROL	Canal Asset Condition Upgrade	168,195	458,254	5,627,335	213,927	2,615,680	450,586	256,847	60,000	477,872	10,328,697	227,855	
32		FFI Page 216.2, Line 5, Col. (b)		168,195	458,254	5,627,335	213,927	2,615,680	450,586	256,847	60,000	477,872	10,328,697	227,855	
33	01988022	STTCONS STA 131 NEW TRANSMISSION P	Station 131 East Boston - Transmission Station	65,123	852,78	-	226,514	5,782,210	695,932	-	10,406	1,367,423	8,232,886	202,409	
34	01988017	STTCONS STA 131 TRANSMISSION CONTR	Station 131 East Boston - Transmission Station	-	-	-	-	53,115	7,881	-	-	1,196	62,911	-	
35	02104340	STTCONS STA 131 TRANSMISSION US CO	Station 131 East Boston - Transmission Station	81	384	-	68	110	110	-	67	10	721	-	
36	02104341	STTCONS STA 131 TRANSMISSION STATI	Station 131 East Boston - Transmission Station	33	6,249	-	28	41,091	4,915	-	-	3,577	55,893	1,255	
37	02348020	STTCONS STA 131 TRANSMISSION 115KV	Station 131 East Boston - Transmission Station	122	529	180,000	98,662	164,299	15,956	-	-	29,869	489,436	5,246	
38		FFI Page 216.2, Line 6, Col. (b)		65,359	92,440	180,000	325,272	6,040,714	724,793	-	10,473	1,402,075	8,841,236	208,911	
39	02055461	TLCONS EXTEND LINE 111 FROM CROSS	Line 111 Ext from Cross Road-Fisher Road	114,724	215,067	1,338,658	75,778	4,227,755	14,766	14,766	9,054	314,049	6,670,678	81,096	
40		FFI Page 216.2, Line 7, Col. (b)		114,724	215,067	1,338,658	75,778	4,227,755	14,766	14,766	9,054	314,049	6,670,678	81,096	
41	01940478	TLPW FAL MID CAPE RELIABILITY P	Line 115 Mid Cape	132,771	353,307	-	57,723	2,668,283	389,405	-	9,209	843,114	4,453,811	126,260	
42	02062830	TLCONS MID-CAPE ENGINEERING LINES	Line 115 Mid Cape	103,210	171,233	-	32,830	457,452	214,403	2,188	4,309	172,618	1,158,243	32,852	
43		FFI Page 216.2, Line 8, Col. (b)		235,980	524,541	-	90,552	3,125,735	603,808	2,188	13,518	1,015,732	5,612,054	159,112	
44	02128649	STTIMPRV STA 385 REPLACE AUX METRI	Transmission Station Improvements North	4,200	3,956	-	1,827	-	1,126	5,817	2,003	419	19,348	-	
45	02152776	STTCR STA 961 REPLACE CONTROL HO	Transmission Station Improvements North	-	-	-	-	3,212	224	-	-	40	3,476	-	
46	02196693	STTCR STA 416 IN 416-526 & 527 R	Transmission Station Improvements North	304	1,119	-	275	4,400	389	1,095	145	107	6,835	-	
47	0206720	STTCR STA 12 XPMR 1100 REPLACE S	Transmission Station Improvements North	5,405	12,988	10,156	6,473	78,972	4,846	8,326	2,031	30,609	159,116	-	
48	02210944	STTIMPRV STA 831 INSTALL SHARK METE	Transmission Station Improvements North	7,082	19,913	-	6,288	11	2,655	10,773	3,751	1,530	52,003	-	
49	02222399	STTCR STA 455 REPLACE 38 DISCON	Transmission Station Improvements North	1,544	3,966	14,315	3,370	3,370	2,147	3,323	645	1,069	32,078	-	
50	02225040	STTCR STA 211 REPLACE 345KV BROW	Transmission Station Improvements North	14,919	30,700	713,517	11,843	1,690	27,405	28,892	5,783	59,770	894,519	-	
51	02234977	STTCR STA 478 RELAY REPLACEMENT	Transmission Station Improvements North	1,151	4,554	7,820	1,075	1,075	4,129	1,002	621	497	20,849	-	
52	02234985	STTCR STA 407 RELAY REPLACEMENT	Transmission Station Improvements North	2,075	9,229	6,242	1,965	6,242	8,878	985	1,061	569	31,004	-	
53	02234987	STTCR STA 309 RELAY REPLACEMENT	Transmission Station Improvements North	159	782	-	146	-	661	-	72	24	1,843	-	
54	02234992	STTCR STA 330 RELAY REPLACEMENT	Transmission Station Improvements North	1,386	4,966	-	1,139	-	4,032	2,525	61	219	14,419	-	
55	02234994	STTCR STA 342 RELAY REPLACEMENT	Transmission Station Improvements North	20	97	-	18	19,566	7,977	-	13	511	28,022	-	
56	02246830	STTCR STA 385 REPLACE SHARK METE	Transmission Station Improvements North	169	771	-	138	270	270	-	86	33	1,467	-	
57	02261384	STTCR STA 320 REPLACE 5770	Transmission Station Improvements North	4,451	11,449	156,134	3,674	6,995	7,763	7,197	1,531	14,850	214,043	-	
58	02266330	STTCR STA 980 CANAL REPLACE 3421	Transmission Station Improvements North	499	2,390	-	12,441	448	3,745	165	111	137	19,936	-	
59	02267485	STTCR STA 917 REPLACE (7) DISCON	Transmission Station Improvements North	48	47	-	53	-	198	188	28	7	988	-	
60	02281118	(ENGINEER)WAL STA 282 REPLACE T701	Transmission Station Improvements North	107	507	53	-	118	151	-	44	20	1,001	-	
61	02284878	(CONSTRUCT)WAL STA 514 REPLACE ANNU	Transmission Station Improvements North	2,307	11,243	-	17,091	1,939	9,602	117	-	1,587	51,095	-	
62	02284878	(CONSTRUCT)WAL STA 514 REPLACE ANNU	Transmission Station Improvements North	-	-	-	2,134	86,472	17,813	-	1,420	374	105,756	-	
63	02284878	STTCR STA 646 CRISTAL SPRINGS RE	Transmission Station Improvements North	-	-	-	-	1,077	7,602	-	-	1,471	105,756	-	
64	02285821	STTCR STA 385 REPLACE RELAT UN S	Transmission Station Improvements North	259	451	-	256	-	823	161	-	40	3,066	-	
65	02286434	(ENGINEER)STA 250 REPLACE AC O	Transmission Station Improvements North	1,490	7,068	-	1,219	1,143	235	169	714	696	1,486	-	
66	02286434	(CONSTRUCT)STA 126 IN 476-508 R	Transmission Station Improvements North	-	-	-	-	3,383	1,69	-	-	696	1,486	-	
67	02297023	STTCR STA 478 REPLACE 345KV BROW	Transmission Station Improvements North	424	384	-	49,883	57,326	1,631	232	714	1,033	54,939	-	
68	02303385	(CONSTRUCT)STA 250 REPLACE LIGH	Transmission Station Improvements North	-	-	-	-	10,699	10,699	-	-	714	1,033	-	
69	02303385	(CONSTRUCT)H-P STA 498 REPLACE BATT	Transmission Station Improvements North	4,469	121,89	81,858	3,896	22,380	10,039	8,235	2,188	11,799	157,932	-	

CWP Supplement Filing
Detail of Annual Transmission CWP
Service Year 2020

Line #	WO#	WO Description	Project Description	Benefits	Labor	Materials	Other	Outside Services	Overhead	Overtime	Vehicle	AFUDC	Total CWP	AFUDC	Regulatory Liability
70	02307571	STTCR STA 926 REPLACE SECO CONT (ENGINE)MDW STA 309 IN 338 REPLA	Transmission Station Improvements North	3,285	13,659	31	15,803	-	2,387	3,052	1,587	1,959	41,763	-	-
71	02311166	STTCR STA 148 IN 240-510 REPLACE	Transmission Station Improvements North	1,554	2,381	-	1,466	98	2,080	3,594	576	333	12,822	-	-
72	02311168	STTCR STA 148 IN 240-510 REPLACE	Transmission Station Improvements North	556	2,030	-	564	-	119	989	-	60	4,318	-	-
73	02311170	(ENGINE)W-R STA 110 IN 240-510 R	Transmission Station Improvements North	1,776	5,400	-	1,690	-	2,537	3,034	1,075	289	15,802	-	-
74	02311529	STTCR STA 509 345KV YARD DUCT BA	Transmission Station Improvements North	237	946	-	190	-	335	260	161	30	2,159	-	-
75	02316173	(CONSTRUC)CVR STA 726 LINE 322 INS	Transmission Station Improvements North	735	3,228	(3,639)	39,766	38	594	420	436	3,042	44,619	-	-
76	02320570	(CONSTRUC)FRA STA 240 REPLACE WATE	Transmission Station Improvements North	720	822	-	145	-	347	-	49	38	2,121	-	-
77	02320573	(CONSTRUC)SUD STA 342 REPLACE WATE	Transmission Station Improvements North	1,108	1,862	-	222	17,267	4,111	4,809	79	674	24,724	-	-
78	02320584	(CONSTRUC)LEX STA 533 BATTERY REPL	Transmission Station Improvements North	4,353	17,908	20,230	70,408	-	2,328	4,371	2,328	6,996	135,587	-	-
79	02321058	STIMPV STA 917 BOURNE	Transmission Station Improvements North	8,595	35,735	-	7,145	-	11,470	4,370	3,995	3,116	74,425	-	-
80	02321893	STTCR STA 611 FINE ST REPLACE L	Transmission Station Improvements North	3,704	17,211	-	3,040	8,684	7,201	4,701	1,714	2,856	44,411	-	-
81	02321895	STTCR STA 612 ACUSHNET REPLACE L	Transmission Station Improvements North	2,117	10,051	-	1,775	2,685	3,006	-	978	782	21,394	-	-
82	02321897	STTCR STA 624 WING LANE REPLACE L	Transmission Station Improvements North	139	659	-	116	-	756	-	59	47	1,988	-	-
83	02321899	STTCR STA 636 INDUSTRIAL PK REPL	Transmission Station Improvements North	1,171	5,561	-	982	1,808	1,977	-	502	409	12,411	-	-
84	02321900	STTCR STA 644 HIGH HILL REPLACE	Transmission Station Improvements North	179	769	-	136	40	231	-	100	21	1,476	-	-
85	02321901	STTCR STA 646 CRYSTAL SPRINGS RE	Transmission Station Improvements North	536	2,307	-	407	-	670	-	300	60	4,380	-	-
86	02322862	(ENGINE)BOS STA 514 REPLACE LIGH	Transmission Station Improvements North	277	1,192	-	211	-	346	-	155	31	2,212	-	-
87	02323428	(CONSTRUC)BOS STA 3857 REPLACE LIG	Transmission Station Improvements North	134	577	-	102	679	189	-	75	23	1,778	-	-
88	02323429	STTCR STA 5097 REPLACE LIGHTS WI	Transmission Station Improvements North	134	577	-	102	-	167	-	75	15	1,070	-	-
89	02323854	(CONSTRUC)W-R STA 110 PHASE SHIFTE	Transmission Station Improvements North	-	-	-	6,953	6,051	1,397	-	-	584	14,986	-	-
90	02328551	STTCR STA 831 REPLACE OUTDOOR LI	Transmission Station Improvements North	845	4,012	-	709	2,253	1,640	-	361	260	10,080	-	-
91	02329514	(CONSTRUC)SOW STA 402 REPLACE FIRE	Transmission Station Improvements North	-	-	-	-	-	(18)	-	-	184	166	-	-
92	02329642	(CONSTRUC)BOS STA 385 & STA 330 LN	Transmission Station Improvements North	2,407	4,659	-	2,424	-	3,176	5,966	1,040	1,229	20,902	-	-
93	02329522	STTCR STA 132 REPLACE BATTERY CH	Transmission Station Improvements North	28,968	90,467	27,073	26,203	1,066	40,298	47,274	13,977	4,383	254,222	-	-
94	02329522	STTCR STATIONS SOUTH BATTERY REP	Transmission Station Improvements North	3,681	15,635	-	3,210	5,274	5,274	1,921	1,970	4,383	67,887	-	-
95	02330048	STTCR STA 385 REPLACE ORNAMENTAL	Transmission Station Improvements North	668	2,613	337,472	578	-	1,316	557	159	5,735	352,077	-	-
96	02334064	(CONSTRUC)CIA STA 230 REPLACE 345K	Transmission Station Improvements North	648	2,574	4,301	484	30,011	7,688	-	237	1,323	47,737	-	-
97	02335612	STTCR STA 726 CANEER REPLACE SWI	Transmission Station Improvements North	256	1,116	-	215	-	348	-	45	29	2,109	-	-
98	02340164	STTCR STA 726 CANEER REPLACE SWI	Transmission Station Improvements North	8,814	16,993	109,900	17,912	6,990	10,895	16,299	3,111	11,165	192,980	-	-
99	02341364	(CONSTRUC)FRA STA 433 REPLACE (B)	Transmission Station Improvements North	152	638	44,488	119	-	898	-	26	912	46,846	-	-
100	02341807	STTCR STA 350 REPLACE CS 772	Transmission Station Improvements North	-	-	89,800	-	-	-	-	-	2,681	93,779	-	-
101	02346126	(ENGINE)MDW STA 309 REPLACE 1901	Transmission Station Improvements North	406	863	10,454	561	-	201	1,948	252	221	14,906	-	-
102	02346297	(CONSTRUC)LEX STA 533 REPLACE CS77	Transmission Station Improvements North	341	1,033	-	313	-	573	584	213	241	13,751	-	-
103	02347638	(CONSTRUC)HRK STA 478 REPLACE 3A D	Transmission Station Improvements North	-	-	15,653	-	-	133	-	-	223	16,008	-	-
104	02348657	(CONSTRUC)W-R STA 110 REPLACE 5B D	Transmission Station Improvements North	-	-	-	-	-	-	-	-	-	-	-	-
105	02348658	(CONSTRUC)W-R STA 110 REPLACE 701	Transmission Station Improvements North	-	-	-	-	-	-	-	-	-	-	-	-
106	02348660	(CONSTRUC)W-R STA 110 REPLACE 12B	Transmission Station Improvements North	92	526	10,454	98	-	109	-	6	290	11,575	-	-
107	02350024	STTCR STA 71 XPMR A & B REPLACE	Transmission Station Improvements North	2,039	8,343	-	2,146	62,778	2,305	2,719	1,315	1,757	83,401	-	-
108	02350440	(CONSTRUC)FRA STA 455 REPLACE 130V	Transmission Station Improvements North	764	2,392	19,813	695	5,926	2,877	1,237	478	739	34,921	-	-
109	02351180	STTCR STA 509 REPLACE ANNUNCIATO	Transmission Station Improvements North	157	747	-	15,630	-	482	-	82	332	17,430	-	-
110	02351282	(CONSTRUC)CAN STA 330 REPLACE BATT	Transmission Station Improvements North	3,150	12,120	66,040	4,348	1,040	1,467	9,676	2,146	2,006	101,594	-	-
111	02363203	STTCR STA 509 XPMR 345A REPLACE	Transmission Station Improvements North	1,467	4,345	27,270	14,940	450	2,759	1,483	552	1,592	54,829	-	-
112	02365667	STTCR STA 99 REPLACE FIRE SUPPRE	Transmission Station Improvements North	171	679	-	128	-	1,892	-	64	153	10,439	-	-
113	02370280	(CONSTRUC)BOS STATIONS CENTRAL -A	Transmission Station Improvements North	-	-	353	-	73,353	377	-	-	349	14,542	-	-
114	02373454	STTCR STA 385 & STA 329 REMOVE /	Transmission Station Improvements North	448	2,155	8,042	472	-	1,512	278	-	1,678	48,358	-	-
115	02375907	(CONSTRUC)ACU STA 624 WING LANE RE	Transmission Station Improvements North	529	2,871	33,748	536	-	93	-	-	321	11,210	-	-
116	02378775	(CONSTRUC)SAN STA 980 CANAL REPLAC	Transmission Station Improvements North	410	2,227	31,819	416	-	283	-	293	1,798	51,578	-	-
117	02378777	(CONSTRUC)SAN STA 980 CANAL REPLAC	Transmission Station Improvements North	-	-	-	8,841	3,621	102	-	-	1,766	49,873	-	-
118	02378788	(CONSTRUC)FAL STA 924 FALMOUTH TAP	Transmission Station Improvements North	-	-	-	-	-	8841	244	-	74	3,796	-	-
119	02378789	STTCR STA 917 BOURNE REPLACE DRI	Transmission Station Improvements North	-	-	-	-	-	225	-	-	177	9,265	-	-
120	02378791	STTCR STA 921 BARNSTABLE REPLACE	Transmission Station Improvements North	-	-	-	-	-	388	-	-	326	14,618	-	-
121	02378792	(CONSTRUC)NEW STA 292 REPLACE CVOT	Transmission Station Improvements North	267	1,075	-	279	-	1,008	371	192	94	4,027	-	-
122	02381432	(CONSTRUC)ACU STA 612 ACUSHNET RET	Transmission Station Improvements North	-	-	-	25,239	-	222	-	-	150	7,716	-	-
123	02381890	(CONSTRUC)NEB STA 636 INDUSTRIAL P	Transmission Station Improvements North	-	-	-	31,051	-	267	-	-	939	32,257	-	-
124	02382530	(CONSTRUC)BOS FIELD ENGINEERING PU	Transmission Station Improvements North	-	-	-	126,684	-	1,082	-	-	2,968	130,660	-	-
125	02386250	(CONSTRUC)HYA STA 961 HYANNIS REPL	Transmission Station Improvements North	2,269	9,473	154,095	2,053	-	1,982	1,348	434	2,827	174,482	-	-
126	02387559	STTCR STA 651 CROSS ROADS REPLACE	Transmission Station Improvements North	-	-	-	5,421	-	47	-	-	107	5,575	-	-
127	02389939	(CONSTRUC)W-R STA 110 REPLACE DVE	Transmission Station Improvements North	-	-	-	-	-	6,069	-	-	3,072	22,032	-	-
128	02390408	STTCR STA 624 WING LN INSTALL XF	Transmission Station Improvements North	-	-	16,335	62,982	-	8,303	28,189	9,107	15,217	358,159	-	-
129	02392722	STTCR STA 446 REPLACE SHARK WETE	Transmission Station Improvements North	-	-	-	5,690	-	62	-	-	116	5,869	-	-
130	02394248	STTCR STA 450 REPLACE CS774 WITH	Transmission Station Improvements North	1,316	6,702	14,732	1,334	-	552	441	210	606	28,667	-	-
131	02394248	STTCR STA 106 XPMR 110C REPLACE	Transmission Station Improvements North	-	-	-	11,661	-	352	-	-	169	12,183	-	-
132	02396550	STTCR STA 980 CANAL REPLACE LIGH	Transmission Station Improvements North	1,287	6,536	-	1,382	-	299	672	772	271	11,220	-	-
133	02406335	STTCR STA 916 SANDWICH REPLACE B	Transmission Station Improvements North	13,590	3,599	26,137	3,673	11,767	1,426	539	1,836	1,592	69,558	-	-
134	02406335	STTCR STA 455 REPLACE CVOT'S CAP	Transmission Station Improvements North	2,573	6,462	-	2,807	-	569	7,156	369	385	21,362	-	-
135	02407007	STTCR STA 211 XPMR 110A REPLACE	Transmission Station Improvements North	6,472	17,812	16,839	11,602	105,792	5,251	24,456	3,696	799	192,220	-	-
136	02406788	STTCR STA 875 REPLACE LIGHTING &	Transmission Station Improvements North	948	4,340	-	994	3,632	328	918	387	229	11,795	-	-
137	02406788	Sta 99 - New Dell Docking Station 5	Transmission Station Improvements North	-	-	-	(7,555)	-	(76)	-	-	-	(7,530)	-	-
138	80000951	Sta 961 Hyannis Junction - Replace	Transmission Station Improvements North	97	408	-	134	40,144	1,280	263	69	125	42,522	-	-
139	80001003	Sta 975 Orleans - Replace Roof	Transmission Station Improvements North	66	408	-	86	30,058	957	51	47	93	31,766	-	-
140	8004793	Sta 99 - Purchase Site Trailer	Transmission Station Improvements North	180,790	59,016	2,090,081	594,255	1,790,759	298,426	256,138	82,410	235,851	5,519,225	-	-
141	0212769	TLCONS STA 153 LINE 385-510,	Preliminary Engineering Transmission Lines	-	-	1,148	65	-	15	-	-	16	1,244	-	-
142	02136080	TLCONS LINES 295-310 / 511, ANNOC	Preliminary Engineering Transmission Lines	-	-	-	5,560	49,422	18,139	-	-	8,954	82,136	-	-
143	02136896	TLCONS LINE 351 TERMINATION RELOC	Preliminary Engineering Transmission Lines	12,494	26,689	52,351	68,237	40,508	75,997	33,701	11,391	213,351	573,804	-	-
144	02177935	TLCONS LINE 111 (OLD 118) REPLACE	Preliminary Engineering Transmission Lines	-	-	946	133	-	147	-	13,650	448	15,324	-	-

CWIP Supplement Filing
Detail of Annual Transmission CWIP
Service Year 2020

Line #	WO#	WO Description	Project Description	Benefits	Labor	Materials	Other	Outside Services	Overhead	Overtime	Vehicle	AFUDC	Total CWIP	AFUDC Regulatory Liability
149	02208346	TLCONS SEMA RI PPA JOINT PREPARAT	Preliminary Engineering Transmission Lines	-	-	-	160,941	49,200	9,337	-	-	-	45,825	265,033
150	02244511	TLCONS INSTALL OPGW LINES 447-508	Preliminary Engineering Transmission Lines	2,075	11,715	41,833	-	80,158	23,800	253	510	21,101	183,192	-
151	02269796	TLCONS SUDBURY TO HUDSON 115KV PR	Preliminary Engineering Transmission Lines	2,213	8,915	-	1,597	-	2,609	-	-	936	16,270	-
152	02205215	TLCONS 478-502 & 478-503 FOREVER	Preliminary Engineering Transmission Lines	242	649	-	203	-	342	583	88	29	2,134	-
153	02346755	(CONSTRUC)BOS CABLE SPARE PROGRAM	Preliminary Engineering Transmission Lines	399	2,121	3,022,704	394	-	23,515	-	-	170,266	3,219,399	-
154	02359812	(CONSTRUC)BOS KENMORE SQUARE 329-5	Preliminary Engineering Transmission Lines	25	1,367	-	25	-	5	3	-	3	195	-
155	02380769	(CONSTRUC)BRIK INSTALL RECTIFIER &	Preliminary Engineering Transmission Lines	1,456	3,997	-	1,181	-	339	2,014	458	134	9,579	-
156	02326182	TLCONS MYSTIC FUNNEL REPAIR WORK	Preliminary Engineering Transmission Lines	28,510	77,700	-	26,900	927,115	99,645	58,385	18,816	62,675	1,299,745	-
157	02204921	TLCONS LINES 324 & 372 STEEL PLAT	Preliminary Engineering Transmission Lines	29	158	-	29	35,556	1,080	-	27	836	37,715	-
158		FFI Page 216.2, Line 10, Col. (b)		47,444	132,079	3,126,976	267,704	1,181,959	255,059	94,536	44,940	524,776	5,675,873	-
159	02330969	STTCONS STA 976 WELFLEET REPLACE	Welfleet Transformer Replacement & ACU	104,599	309,135	2,759,406	114,237	890,918	89,168	277,546	50,527	125,985	4,721,521	-
160		FFI Page 216.2, Line 11, Col. (b)		104,599	309,135	2,759,406	114,237	890,918	89,168	277,546	50,527	125,985	4,721,521	-
161	02144390	TLCONS LINES 250-316 NORTH WASH S	North Washington Bridge Reconnector	7,197	177,58	39,845	73,783	419,321	163,723	-	414	153,469	875,510	285,47
162	02170075	TLCONS LINES 250-317 NORTH WASH S	North Washington Bridge Reconnector	4,206	29,159	-	1,100	3,311,493	213,728	-	213	254,151	3,818,051	96,596
163		FFI Page 216.2, Line 12, Col. (b)		11,404	46,517	39,845	74,884	3,770,814	377,451	-	626	411,620	4,693,461	125,143
164	01286499	ONCHPEL LINE 148-522 CORRECTIVE MAI	Transmission Line North	-	-	-	-	0	-	-	-	-	0	-
165	01686276	TLCONS BOURNE LINE 522 REPLACE AER	Transmission Line North	331	605	-	3,682	3,210	1,162	928	138	22,739	4,510	-
166	02320314	TLCONS LINE 456-522, INSTALL LIGH	Transmission Line North	10,009	23,600	76	7,002	165,913	30,881	10,210	7,131	186,119	271,667	-
167	02344662	TLCONS LINE 282-521 WORK	Transmission Line North	292	331	-	58	128	154	37	-	1,492,220	1,492,220	-
168	0245138	(CONSTRUC)CAM 351 358 PTC MH INSPE	Transmission Line North	422	1,485	-	372	399,767	86,388	520	378	23,344	512,655	-
169	02322224	(CONSTRUC)CAM 346-365 PTC MH INSPE	Transmission Line North	10	30	-	9	42,541	3,636	-	17	1,879	48,341	-
170	02375745	TLMPRV PTC 232-522/223 MH INSPECT	Transmission Line North	10	198	-	37	299,058	8,782	-	78	16,783	324,986	-
171	02380772	(CONSTRUC)ST LINE 3162, 3163, 316	Transmission Line North	527	2,458	-	534	187,147	5,527	-	893	8,425	205,510	-
172	02380782	(CONSTRUC)ST LINE 3162, 3163, 316	Transmission Line North	293	1,386	-	297	1,462,873	44,160	527	27,853	27,853	1,534,773	-
173	02380794	(CONSTRUC)BRIK LINE 396-510/511	Transmission Line North	-	-	-	-	-	-	-	-	-	-	-
174		FFI Page 216.2, Line 12, Col. (b)		11,934	30,774	27,390	11,990	3,718,810	365,993	11,658	28,297	291,342	4,497,789	-
175	0239096	TLCONS 345KV 349V RECONDUCTORING	Mystic to Golden Hills Reliability Improvements	1,587	7,700	486,042	3,398	439,480	7,419	2,288	1,048	4,398	873,640	2,198
176	02400128	TLCONS PD MONITORING PROJECT	Mystic to Golden Hills Reliability Improvements	10	56	-	-	10	2	-	-	-	-	-
177	02474030	345KV 349V Phase II reconnector	Mystic to Golden Hills Reliability Improvements	1,649	7,350	1,610,455	1,368	2,709,454	70,128	-	1,072	32,409	4,433,885	16,205
178	18347402	Line 349XV Fiber ID Damage Repair	Mystic to Golden Hills Reliability Improvements	56	299	-	-	-	16	90	35	-	2	570
179		FFI Page 216.2, Line 14, Col. (b)		3,303	15,405	2,016,496	4,849	3,148,934	77,566	2,378	2,155	36,810	5,307,955	18,404
180	02097077	TLCONS TRANSMISSION ANALYSIS FOR	East Cambridge Area Solution (f/n/a Station 802.5) - T Line	9,155	123,799	-	57,612	643,036	105,369	-	171	84,120	1,023,463	22,233
181	02274930	TLCONS STA 802.5 NEW SUBSTATION BU	East Cambridge Area Solution (f/n/a Station 802.5) - T Station	7,208	18,313	-	109,342	977,446	137,801	-	13	91,691	1,342,414	31,660
182	02380685	TLCONS STA 802.5 FULKERSON USTL RO	East Cambridge Area Solution (f/n/a Station 802.5) - T Line	26,087	381,335	-	7,058	1,588,874	82,751	594	609	42,745	1,786,533	17,907
183		FFI Page 216.2, Line 15, Col. (b)		42,450	180,448	-	174,012	3,209,356	325,921	594	792	218,556	4,152,229	71,801
184	01988012	STTCONS STA 802.5 NEW TRANSMISSION	East Cambridge Area Solution (f/n/a Station 802.5) - T Station	337,821	626,704	-	78,810	1,138,273	262,564	-	4,502	426,789	3,075,462	84,078
185	02274975	STTCONS STA 802.5 NEW SUBSTATION BU	East Cambridge Area Solution (f/n/a Station 802.5) - T Station	4,940	6,656	-	110,949	719,196	124,869	-	29	90,044	1,056,683	27,597
186	02390686	STTCONS STA 329 REMOTE END WORK FO	East Cambridge Area Solution (f/n/a Station 802.5) - T Station	170	216	-	145	14	-	14	-	1	470	-
187	02390692	STTCONS STA 87.5 REMOTE END WORK FO	East Cambridge Area Solution (f/n/a Station 802.5) - T Station	105	416	-	145	23	156	69	13	927	927	6
188		FFI Page 216.2, Line 16, Col. (b)		343,037	633,992	-	189,973	2,057,469	387,470	156	4,600	516,846	4,133,442	111,682
189	02295663	TLCONS BOS 106-483 XLPE	Andrew Square Dewar St 115 KV Line	111,328	151,189	-	151,564	2,836,588	446,400	-	3,465	328,150	4,028,584	98,765
190	17382101	Andrews Sq. to Dewar Land Easement	Andrew Square Dewar St 115 KV Line	725	4,013	-	77,225	-	772	-	-	-	77,997	-
191	17382102	Savin Hill Condo Trust Easement	Andrew Square Dewar St 115 KV Line	-	-	-	87,892	-	880	-	-	-	88,872	-
192		FFI Page 216.2, Line 17, Col. (b)		111,328	151,189	-	316,781	2,836,588	448,052	-	3,465	328,150	4,195,513	98,765
193	02276514	TLCONS BAR, SEPARATE LINE 122 / L	SEMA RI Solution 122/135	76,492	260,872	1,554,760	32,361	1,093,446	159,135	3,226	4,508	142,318	3,327,116	47,004
194		FFI Page 216.2, Line 18, Col. (b)		76,492	260,872	1,554,760	32,361	1,093,446	159,135	3,226	4,508	142,318	3,327,116	47,004
195	02305419	STTCONS STA 250 CONTROL HOUSE MATE	Station 250 Upgrade Control House	220	780	1,904,065	7,795	7,764	10,193	223	104	188,525	2,119,658	17,991
196	02391804	STTCONS STA 250 BOARD POSITION CUT	Station 250 Upgrade Control House	16,266	4,226	-	15,738	57,274	20,270	36,744	5,085	14,886	208,889	5,589
197	02395301	STTCONS STA 250 EAST BUS #4 CUTONE	Station 250 Upgrade Control House	4,075	9,987	22,666	5,597	53,230	2,971	16,827	902	1,497	117,651	748
198		FFI Page 216.2, Line 19, Col. (b)		20,561	53,933	1,936,721	29,130	118,268	33,434	53,793	6,091	204,908	2,446,198	24,338
199	02288922	TLCONS LINE 147 NEW LINE CARVER	Carver to Kingston 118KV Line 147	94,011	151,966	-	53,302	1,344,419	345,297	334	5,152	218,285	2,212,766	63,343
200	17376726	LN 147 Terminal @ STA 726	Carver to Kingston 118KV Line 147	725	4,013	-	1,047	-	206	1,005	224	46	7,766	23
201		FFI Page 216.2, Line 20, Col. (b)		94,736	155,979	-	54,349	1,344,419	345,503	1,340	5,376	218,331	2,220,932	63,366
202	01939521	TLCONS STA 131 TRANSMISSION PERMI	Station 131 East Boston - Transmission Line	14,930	18,142	-	115,533	1,268,932	208,024	-	992	374,026	2,000,277	63,357
203	02104118	TLCONS STA 131 TRANSMISSION LINE	Station 131 East Boston - Transmission Line	-	-	-	68	-	21,149	-	-	51,873	73,090	18,119
204		FFI Page 216.2, Line 21, Col. (b)		14,930	18,142	-	115,601	1,268,932	229,172	-	992	425,899	2,073,467	81,476
205	02290796	TLCONS LINE 114, INSTALL EXT FROM	Extend 115 KV Line 114 from Tap	93,465	140,732	-	51,127	1,119,660	338,970	-	3,655	262,073	2,009,181	64,937
206		FFI Page 216.2, Line 22, Col. (b)		93,465	140,732	-	51,127	1,119,660	338,970	-	3,655	262,073	2,009,181	64,937
207	02211788	STTCONS STA 735 STATION EXPANSION	Kingston Station 735 Rebuild	44,258	144,671	-	60,075	1,320,638	113,079	8,820	4,319	155,167	1,851,028	64,651
208		FFI Page 216.2, Line 23, Col. (b)		44,258	144,671	-	60,075	1,320,638	113,079	8,820	4,319	155,167	1,851,028	64,651
209	02330740	STTCONS STA 990 IEC 61850 - NEW TR	IEC 61850 Transmission Simulator	84,072	193,331	885,206	44,035	392,019	57,019	44,536	465	67,572	1,768,375	-
210		FFI Page 216.2, Line 24, Col. (b)		84,072	193,331	885,206	44,035	392,019	57,019	44,536	465	67,572	1,768,375	-
211	02395201	ENGINEERING FOR BROWN GLASS PROGRAM	Brown Glass Insulator Replacement Program	26,029	168,958	-	9,310	1,336,562	46,418	3,401	443	58,834	1,649,854	29,274
212	02395205	STA 646 Brown Glass L4 Repl	Brown Glass Insulator Replacement Program	-	-	-	-	8,214	248	-	-	120	8,342	60

CWIP Supplement Filing
Detail of Annual Transmission CWIP
Service Year 2020

Line #	WO#	WO Description	Project Description	Benefits	Labor	Materials	Other	Outside Services	Overhead	Overtime	Vehicle	AFUDC	Total CWIP	AFUDC Regulatory Liability
209	BGE3P508	STA 657 Brown Glas Insulators Repl	Brown Glas Insulator or Replacement Program	-	-	-	-	12,260	370	-	-	184	1,214	92
210	BGE3P515	STA 146 Brown Glas Insulators Repl	Brown Glas Insulator or Replacement Program	-	-	-	-	9,062	274	-	-	133	9,468	66
211	BGE3P516	STA 713 Brown Glas Insulators Repl	Brown Glas Insulator or Replacement Program	-	-	-	35.4	-	4	-	-	-	357	-
212	FF1 Page 216.2, Line 25, Col (b)			26,029	168,958	-	9,664	1,386,097	47,313	3,401	443	59,271	1,681,176	29,492
213	01877865	STIMPVSTA 479 ROADWAY IMPROVE PAV	Preliminary Engineering Transmission Station	-	15	-	-	85	(107)	-	-	-	-	(6)
214	01875941	STTCNS STA 726 INSTALL SOUND WALL	Preliminary Engineering Transmission Station	-	526	-	-	8,823	-	-	-	184	9,533	-
215	02027673	STTCNS STA 968 INSTALL OVER VOLTA	Preliminary Engineering Transmission Station	-	846	2,297	29,857	5,761	1,387	32	388	1,822	45,603	-
216	02027674	STTCNS STA 961 INSTALL OVER VOLTA	Preliminary Engineering Transmission Station	-	-	9,229	801	5,761	526	-	-	768	17,085	-
217	02027680	STTCNS STA 624 INSTALL OVER VOLTA	Preliminary Engineering Transmission Station	-	-	2,297	199	5,761	433	-	-	417	9,108	-
218	02027690	STTCNS STA 533 INSTALL OVER VOLTA	Preliminary Engineering Transmission Station	1,016	1,943	-	-	5,831	817	2,460	430	649	16,469	-
219	02133670	STTCNS STA 211 GENERATOR CAPACITY	Preliminary Engineering Transmission Station	13,729	41,594	349,629	56,523	22,252	31,876	28,566	5,763	107,596	657,474	-
220	02148390	STTCNS STA 65 GENRATOR INTERCONN	Preliminary Engineering Transmission Station	22,975	58,728	144,100	73,690	(413,798)	57,794	46,980	-	-	-	(327)
221	02208622	STTCNS STA 715 VALLEY INSTALL ZOM	Preliminary Engineering Transmission Station	57,580	169,178	48,601	58,063	185,667	30,917	75,447	36,576	128,865	791,094	-
222	02242393	STTCNS STA 446 INSTALL (9) RELAYS	Preliminary Engineering Transmission Station	1,702	6,755	32,102	-	1,590	7,335	1,639	965	1,610	53,698	-
223	02316679	STTCNS STA 385 LN 385-510 MOV	Preliminary Engineering Transmission Station	9,748	41,887	-	8,199	4,149	12,151	3,683	4,838	7,086	91,840	-
224	02316877	(ENGINEER)NEW STA 70 FREEMONT	Preliminary Engineering Transmission Station	216	239	-	-	5,785	632	-	-	351	7,265	-
225	02349068	STTCNS STA 106 PURCHASE STORAGE C	Preliminary Engineering Transmission Station	831	4,012	113,418	17,732	8,451	2,241	116	418	5,212	152,432	-
226	02403706	STTCNS STATIONS CENTRAL PURCHASE	Preliminary Engineering Transmission Station	-	-	-	-	-	-	-	-	88	4,532	-
227	02424249	FF1 Page 216.2, Line 25, Col (b)		-	-	-	-	-	707	-	-	183	651,28	-
228	FF1 Page 216.2, Line 25, Col (b)			108,643	327,629	772,608	247,722	(135,471)	146,753	159,723	59,087	254,831	1,920,226	-
229	01895234	STTCNS STA 385T CUTOVER 576-534 T	Station 385 Control House and Cutovers	376	11,030	-	315	190,899	18,495	-	161	26,894	248,70	6,834
230	01895235	STTCNS STA 385T CUTOVER 576-535 T	Station 385 Control House and Cutovers	199	461	1,769	-	175,167	15,075	-	108	9,506	202,90	5,941
231	01895237	STTCNS STA 385T CUTOVER 385-510 T	Station 385 Control House and Cutovers	1,360	6,073	-	1,036	161,254	17,210	-	741	23,883	212,157	5,745
232	01895251	STTCNS STA 385T CUTOVER CAP11-1	Station 385 Control House and Cutovers	12,249	20,032	-	-	511,096	55,963	398	2,352	74,415	681,126	15,265
233	02146914	STTCNS STA 385T CUTOVER 880-241 T	Station 385 Control House and Cutovers	49	-	328	-	32,817	3,401	-	-	6	36,601	-
234	02186878	STTCNS STA 385 W31 BUS13 CUTOVE	Station 385 Control House and Cutovers	8,466	31,694	-	11,439	30,580	15,811	15,811	1,550	3,744	16,959	1,872
235	FF1 Page 216.2, Line 27, Col (b)			15,020	69,992	61,405	25,495	1,101,295	113,592	16,329	4,921	138,846	1,546,974	33,677
236	02134800	STIMPVSTA 385T CUTOVER 576-534 T	Fencing	19,404	29,566	-	36,203	350,311	27,715	501	1,973	91,004	586,678	16,900
237	02187133	STIMPVSTA 385T CUTOVER 576-535 T	Fencing	34,303	82,026	3,758	17,522	466,005	68,469	11,365	3,764	43,951	720,642	16,107
238	FF1 Page 216.2, Line 28, Col (b)			53,707	111,592	3,758	53,725	816,316	96,184	11,866	5,337	134,955	1,287,340	33,027
239	02322669	STTCR STA 478 REPLACE 345KV BROW	Lexington Upgrade	1,389	4,250	59,899	1,207	352	830	1,767	-	4,167	73,860	841
240	02358666	STTCNS STA 446 BREAKER UPGRADE	Lexington Upgrade	25	69	-	32	212,740	1,505	104	-	140	214,616	70
241	02358702	STTCNS STA 446 REPLACE 345KV BROW	Lexington Upgrade	-	-	-	-	165,665	5,172	-	-	484	171,320	242
242	02358704	STTCNS STA 478 REPLACE 345KV BROW	Lexington Upgrade	-	-	-	-	108,064	3,374	-	-	314	111,753	157
243	02358717	STTCNS STA 478 REPLACE 345KV BROW	Lexington Upgrade	106	701	-	131	108,064	3,403	-	18	319	112,743	159
244	02358721	STTCNS STA 478 REPLACE 345KV BROW	Lexington Upgrade	34,739	106,457	-	49,594	4,603	8,779	95,601	17,967	5,767	323,456	2,883
245	02369781	STTCNS STA 478 REPLACE 345KV BROW	Lexington Upgrade	87	406	196,320	76	-	1,969	-	11	5,273	204,741	2,636
246	FF1 Page 216.2, Line 29, Col (b)			36,345	111,884	256,819	51,040	599,488	24,981	97,472	17,996	16,463	1,212,488	6,989
247	02302515	STTCNS STA 446 BREAKER UPGRADE	Station 446 Breaker Upgrade	1,393	6,551	204,066	1,430	34,283	3,365	1,009	21	3,605	255,723	1,802
248	02302516	STTCNS STA 446 BREAKER UPGRADE	Station 446 Breaker Upgrade	256	54,087	213,673	2,026	41,108	4,734	104	-	3,717	319,705	1,857
249	02311032	STTCR STA 446 REPLACE 345KV BROW	Replace Brown Glas Ins Station 446	3,118	-	15,698	90,160	9,317	128,436	-	(553)	260,870	506,845	35,132
250	02311428	STTCR STA 478 REPLACE 345KV BROW	Replace Brown Glas Ins Station 446	-	-	-	-	13,163	1,624	-	-	991	15,777	418
251	02311036	STTCR STA 478 REPLACE 345KV BROW	Brown Glas Replace Station 478	11,157	20,065	548,093	103,311	63,505	12,958	16,551	2,833	143,440	92,1513	28,703
252	02306082	STIMPVSTA 250 MYSTIC 115KV	ID5	6,183	9,949	-	7,411	176	9,087	194	2,396	40,671	76,006	4,764
253	02306084	STIMPVSTA 250 MYSTIC 115KV	ID5	3,820	-	-	(67)	3,866	4,844	-	-	53,142	68,001	6,828
254	02306093	STIMPVSTA 385T CUTOVER 576-534 T	ID5	220	-	-	340	176	(2,125)	-	(421)	1,518	(292)	41
255	02386429	STIMPVSTA 330 BES BATTERY MONITO	EMA Battery Monitoring	-	-	-	28,888	176	652	-	-	419	30,660	84
256	02386598	STIMPVSTA 496 BES BATTERY MONITO	EMA Battery Monitoring	-	-	-	29,268	176	652	-	-	419	30,660	84
257	02287618	STTCNS STA 65 RECONFIGURE TO LOOP	Medway 65 201-502 Loop T Station SRI	370	1,188	-	29,268	138,089	1,133	297	171	491	32,518	92
258	02290719	TLCONS LOOP LINE 201-502 INTO STA	Medway 65 201-502 Loop T Station SRI	13,665	34,589	-	6,575	54,686	2,930	996	996	32,977	284,505	8,739
259	02287710	STTCNS STA 106 MODIFICATIONS FOR	Andrew Square Dower St 115KV Station	31,149	65,984	-	11,386	433,623	54,888	4,450	2,780	35,079	639,338	9,799
260	02287711	STTCNS STA 106 MODIFICATIONS FOR	Andrew Square Dower St 115KV Station	1,735	6,195	-	1,744	51,637	(9,535)	2,825	370	6,740	61,711	984
261	02287712	STTCNS STA 483 MODIFICATIONS FOR	Chelsea Substation Project	15,042	32,445	-	25,897	115,494	62,931	13,420	2,072	32,069	299,570	8,336
262	17266012	TLCONS LINE 325/ LINE 344	325/344 SRI	-	-	-	-	211,365	2,182	-	-	3,145	216,692	1,572
263	01894076	TLPW ORL ORLEANS TO WELFLEET N	2nd Line Orleans - Wellfleet	-	-	-	-	-	-	-	-	-	-	(58,727)
264	02010122	TLCONS ORL ORLEANS TO WELFLEET TR	2nd Line Orleans - Wellfleet	-	-	-	-	-	-	-	-	-	-	(81,646)
265	02096088	TLCONS LINE 125 ORLEANS TO WELFL	2nd Line Orleans - Wellfleet	-	-	-	-	-	-	-	-	-	-	(1,371)
266	Projects under \$1,000,000 Not in Plan			858,126	3,883,691	9,895,359	1,334,433	(13,139,387)	5,572,094	585,149	255,700	647,808	9,892,773	275
267	FF1 Page 216.2, Line 30, Col (b)			946,234	4,114,945	10,876,690	1,642,901	(12,023,587)	5,901,954	626,931	268,697	1,266,680	13,621,445	(34,357)
268	FF1 Page 216.2, line 30 - Individual Projects Under \$1,000,000 Subject to 80% CWIP			88,108	231,254	981,330	308,467	1,115,800	329,861	41,781	12,997	618,873	3,728,472	(34,632)
269	Grand Total			4,860,880	12,877,102	63,338,999	2,028,100	16,138,878	17,799,214	2,263,702	951,695	28,480,843	294,175,123	5,789,333
270	Grand Total Transmission Projects subject to 50 percent CWIP			3,465,193	7,403,837	43,781,972	(586,278)	167,501,271	11,014,702	834,596	430,270	26,332,679	260,178,341	5,789,079

Note:
(e) AFUDC Regulatory Liability agrees to FF1 p. 278 line 6 col. (e)

Name of Respondent NSTAR Electric Company		This Report Is: (1) <input checked="" type="checkbox"/> An Original (2) <input type="checkbox"/> A Resubmission	Date of Report (Mo, Da, Yr) 04/16/2021	Year/Period of Report End of 2020/Q4
Document Accession #: 20210420-8021				
CONSTRUCTION WORK IN PROGRESS - - ELECTRIC (Account 107)				
1. Report below descriptions and balances at end of year of projects in process of construction (107) 2. Show items relating to "research, development, and demonstration" projects last, under a caption Research, Development, and Demonstrating (see Account 107 of the Uniform System of Accounts) 3. Minor projects (5% of the Balance End of the Year for Account 107 or \$1,000,000, whichever is less) may be grouped.				
Line No.	Description of Project (a)	Construction work in progress - Electric (Account 107) (b)		
1	ROW Line 4-94A Relocation Orleans	1,775,903		
2	EMA GM Feeder program STA 831	1,377,828		
3	Repair OS 112466	1,358,928		
4	Congress St Tunnel Project	1,355,907		
5	CONVERT 344-04 TO 13.8KV	1,182,331		
6	Fulkerson STA 8025 - Dist STA	1,179,252		
7	BPR Weston OH to UG	1,319,417		
8	Replace 4KV Oil Switches Grid Mod	1,211,280		
9	Dedham Sta 20 Replace 24/24kv trans	1,139,075		
10	Reconductor Logan Line 592-70H	1,126,789		
11	EMA IEC 61850 Simulator (Dist)	1,100,890		
12	BU 4kv conversion (multi year)	1,088,169		
13	Framingham Center Civil Structures	1,009,810		
14	Comm Ave BRI DOT 606284	1,007,936		
15	Projects Under \$1,000,000	57,147,027		
16	Subtotal East Distribution \$330,195,038			
17				
18	East General Plant			
19	Small Tools MA East	3,126,806		
20	Storm Quiana Feb 24-27, 2019	3,045,935		
21	Somerville Renovation	3,240,098		
22	Mass Ave Physical Sec Updates	2,410,966		
23	E MASS ANNUAL TELECOM PROJECT	2,104,746		
24	MA East Distrib Vehicle Purchase	1,763,849		
25	MA-East Vehicle Purchases Distrib	1,684,544		
26	Verizon Copper retirement	1,636,527		
27	EMA Station Grounding kits	1,589,273		
28	Somv Gen & Switchgear	1,095,081		
29	2020 Modern Desktop - NStar Elec-D	1,057,984		
30	Projects Under \$1,000,000	6,283,066		
31	Subtotal East General Plant \$29,038,874			
32				
33	East Intangible Plant			
34	CX Solar Transformation	4,114,805		
35	EMA Field Collection System	2,789,959		
36	Projects Under \$1,000,000	1,042,538		
37	Subtotal Intangible Plant \$7,947,302			
38				
39	East Transmission Plant			
40	Line 115kV Underground Woburn to Mystic	73,674,202		
41	West Roxbury to Needham Reliability	29,570,211		
42	Line 345kV Woburn Station 211 to Wakefield	25,126,694		
43	TOTAL	726,949,603		

Name of Respondent NSTAR Electric Company		This Report Is: (1) <input checked="" type="checkbox"/> An Original (2) <input type="checkbox"/> A Resubmission	Date of Report (Mo, Da, Yr) 04/16/2021	Year/Period of Report End of 2020/Q4
Document Accession #: 20210420-8021				
CONSTRUCTION WORK IN PROGRESS - - ELECTRIC (Account 107)				
1. Report below descriptions and balances at end of year of projects in process of construction (107) 2. Show items relating to "research, development, and demonstration" projects last, under a caption Research, Development, and Demonstrating (see Account 107 of the Uniform System of Accounts) 3. Minor projects (5% of the Balance End of the Year for Account 107 or \$1,000,000, whichever is less) may be grouped.				
Line No.	Description of Project (a)	Construction work in progress - Electric (Account 107) (b)		
1	New Line 115kV Sudbury to Hudson	18,316,763		
2	Station 514 Replace 115KV Breakers	12,586,260		
3	██████████ Fencing	11,786,585		
4	Rebuild Bourne Substation	11,798,519		
5	Canal Asset Condition Upgrade	10,328,697		
6	Station 131 East Boston - Transmission Station	8,841,126		
7	Line 111 Ext from Cross Road - Fisher Road	6,670,678		
8	Line 115 Mid Cape	5,612,054		
9	Transmission Station Improvements North	5,519,625		
10	Preliminary Engineering Transmission Lines	5,675,873		
11	Wellfleet Transformer Replacement & ACU	4,721,521		
12	North Washington Bridge Reconductor	4,693,561		
13	Transmission Line North	4,497,789		
14	Mystic to Golden Hills Reliability Improvements	5,307,895		
15	Station 8025 - Transmission Line	4,152,529		
16	Station 8025 - Transmission Station	4,133,542		
17	Andrew Square Dewar St 115 KV Line	4,195,553		
18	SEMA RI Solution 122/135 ██████████	3,327,116		
19	Station 250 Upgrade Control House	2,446,198		
20	Carver to Kingston 115kV Line 147	2,220,032		
21	Station 131 East Boston - Transmission Line	2,073,667		
22	Extend 115 KV Line 114 from Tap	2,009,181		
23	Kingston Station 735 Rebuild	1,851,028		
24	IEC 61850 Transmission Simulator	1,768,375		
25	Brown Glass Insulator Replacement Program	1,681,176		
26	Preliminary Engineering Transmission Station	1,920,926		
27	Station 385 Control House and Cutovers	1,546,674		
28	██████████ Fencing	1,287,340		
29	Lexington Upgrade	1,212,488		
30	Projects Under \$1,000,000	\$3,728,472	13,621,445	
31	Subtotal East Transmission Plant \$294,175,323			
32				
33	West Distribution			
34	WMECO Storm Capital Cost	5,921,757		
35	Longmeadow Load Relief	3,070,168		
36	General Expense Transactions	1,121,520		
37	18G6 Getaway Cable Replacement	2,167,878		
38	East Springfield 5J-6X Replacement	1,763,093		
39	18K2-18C2 Circuit Tie	1,415,833		
40	30B5-15E1 Circuit Tie	1,387,678		
41	Doreen 19A-1X Transformer Repl	1,352,045		
42	ADD A TRANSFORMER AT ORCHARD SUBSTA	1,338,014		
43	TOTAL	726,949,603		

Name of Respondent NSTAR Electric Company		This Report Is: (1) <input checked="" type="checkbox"/> An Original (2) <input type="checkbox"/> A Resubmission		Date of Report (Mo, Da, Yr) 04/16/2021		Year/Period of Report End of 2020/Q4	
Document Accession #: 20210420-821							
OTHER REGULATORY LIABILITIES (Account 254)							
1. Report below the particulars (details) called for concerning other regulatory liabilities, including rate order docket number, if applicable. 2. Minor items (5% of the Balance in Account 254 at end of period, or amounts less than \$100,000 which ever is less), may be grouped by classes. 3. For Regulatory Liabilities being amortized, show period of amortization.							
Line No.	Description and Purpose of Other Regulatory Liabilities (a)	Balance at Beginning of Current Quarter/Year (b)	DEBITS		Credits (e)	Balance at End of Current Quarter/Year (f)	
			Account Credited (c)	Amount (d)			
1	Federal income tax rate change	1,071,174,421	Footnote	27,185,012		1,043,989,409	
2							
3	FASB ASC 740 regulatory liability	10,234,113	190	386,700		9,847,413	
4							
5	AFUDC recorded on transmission						
6	construction work in progress	27,195,795	407.4	742,637	5,789,353	32,242,511	
7							
8	Transition reconciliation						
9	D.P.U. 96-23, 97-111, 97-120						
10	This mechanism defers the difference between						
11	costs incurred related to the transition charge						
12	and the amounts actually billed to customers.	11,570,515	182.3	135,660	12,721,049	24,155,904	
13							
14	Transmission reconciliation D.P.U. 06-40, 97-120						
15	This mechanism defers the difference between						
16	costs incurred related to the transmission charge						
17	and the amounts actually billed to customers.	76,489,118	565	124,942,357	48,453,239		
18							
19	Pension and PBOP						
20	D.P.U. 03-47, 06-55						
21	This mechanism defers pension and PBOP						
22	expense that exceeds the current rate recovery.						
23	Each year's deferred amount is amortized over						
24	the subsequent three year period.	30,582,800	456/926	11,931,263		18,651,537	
25							
26	Pension and PBOP ASC 715	72,244,107			253,363	72,497,470	
27							
28	SMART solar D.P.U. 17-140	7,870,274	407.3	20,016,084	17,988,922	5,843,112	
29							
30	Deferred net metering costs D.P.U. 12-116	3,545,095	456/555	130,973,227	127,428,132		
31							
32	Gain on sale of property	752,385				752,385	
33							
34	Tax act credit factor differential D.P.U. 18-15	1,327,303	407.3/407.4	10,590,262	9,262,959		
35							
36	Basic service adjustment D.P.U. 17-05				836,841	836,841	
37							
38							
39							
40							
41	TOTAL	1,312,985,926		326,903,202	222,733,858	1,208,816,582	

NSTAR Electric Company (East)

Exhibit D

**LNS Filing excluding CWIP and AFUDC to
Demonstrate effect on Revenue Requirement**

NSTAR Electric Company (East)
ISO New England Inc Transmission, Markets and Services Tariff, Section II
Annual Local Network Service Revenue Requirement per Attachment D of Schedule 21-NSTAR
For the period of January 1 - December 31, 2020
Summary Sheet

1	Total LNS Revenue Requirement		\$	102,267,252	Sheet 1, Line 35, Col (c)
2	Total LNS Revenue Requirement with CWIP		\$	111,972,042	per ER07-549/ER09-1243 filed on 5/28/21
3	Effect of CWIP's Inclusion in Rate Base		\$	(9,704,790)	
4	Total Retail LNS Revenue Requirement		\$	100,434,641	Sheet 1, Line 42, Col (c)
5	Total Retail LNS Revenue Requirement with CWIP		\$	110,139,431	per ER07-549/ER09-1243 filed on 5/28/21
6	Effect of CWIP's Inclusion in Rate Base		\$	(9,704,790)	
7	Average 12 CP				
8	Sum of Monthly Peaks (kW)			48,371,000	FF1 page 400.1(b) thru 400.16(b) *1000
9	Average Peak			4,030,917	Line 8 / 12
10	Annual Rate per kW		\$	25.3707	Line 1 / Line 9
11	Monthly Rate per kW		\$	2.1142	Line 10 / 12
12	Weekly Rate per kW		\$	0.4879	Line 10 / 52
13	Daily Rate per kW		\$	0.0695	Line 10 / 365
14	Hourly Rate per kW		\$	0.0029	Line 10 / 8760

NSTAR Electric Company (East)
ISO New England Inc Transmission, Markets and Services Tariff, Section II
Annual Local Network Service Revenue Requirement per Attachment D of Schedule 21-NSTAR
Service Year Ended December 31, 2020
Sheet 1

Line	(a) Description	(b) Section	(c) Amount	(d) Reference
1	<u>Investment Base</u>	II.A.1		
2	Transmission Plant	II.A.1.a	\$ 3,128,427,502	Sheet 3, Line 1, Col (f)
3	Transmission Related Intangible & General Plant	II.A.1.b	58,709,883	Sheet 3, Line 4, Col (f)
4	Transmission Plant Held for Future Use	II.A.1.c	27,049,274	Sheet 3, Line 5, Col (f)
5	Transmission Related Construction Work in Progress	II.A.1.d	-	Sheet 3, Line 6, Col (f)
6	Total Plant		3,214,186,659	Sum Lines 2 thru 5
7	Transmission Related Depreciation and Amortization Reserve	II.A.1.e	(771,651,227)	Sheet 3, Line 12, Col (f)
8	Transmission Related Accumulated Deferred Taxes	II.A.1.f	(285,478,600)	Sheet 3, Line 20, Col (f)
9	AFUDC Regulatory Liability	II.A.1.g	-	Sheet 3, Line 21, Col (f)
10	Total Net Plant		2,157,056,832	Sum Lines 6 thru 9
11	Transmission Related Gain/Loss on Reacquired Debt	II.A.1.h	3,058,989	Sheet 3, Line 22, Col (f)
12	Other Transmission Related Regulatory Assets/Liabilities	II.A.1.i	(212,824,344)	Sheet 3, Line 28, Col (f)
13	Transmission Prepayments	II.A.1.j	66,334,681	Sheet 3, Line 29, Col (f)
14	Transmission Materials & Supplies	II.A.1.k	11,697,794	Sheet 3, Line 30, Col (f)
15	Transmission Related Cash Working Capital	II.A.1.l	7,402,797	Sheet 3, Line 35, Col (f)
16	Total Investment Base		\$ 2,032,726,749	Sum Lines 10 thru 15
17	<u>Revenue Requirement</u>			
18	Investment Return and Income Taxes	II.A.2	\$ 197,083,022	Sheet 2, Line 39, Col (c)
19	Transmission Depreciation and Amortization Expense	II.B	71,803,644	Sheet 4, Line 7, Col (f)
20	Amortization of Gain/Loss on Reacquired Debt	II.C	201,139	Sheet 4, Line 8, Col (f)
21	Transmission Related Amort. of Investment Tax Credits	II.D	(507,448)	Sheet 4, Line 9, Col (f)
22	Transmission Related Municipal Tax Expense	II.E	47,421,839	Sheet 4, Line 10, Col (f)
23	Transmission Related Payroll Tax Expense	II.F	572,549	Sheet 4, Line 11, Col (f)
24	Transmission Operation & Maintenance Expense	II.G	37,688,856	Sheet 4, Line 29, Col (f)
25	Transmission Related Administrative and General Expense	II.H	16,830,311	Sheet 4, Line 40, Col (f)
26	Transmission Related Integrated Facilities Charges	II.I	-	Sheet 5 (WP A5), Line 6, Col (d)
27	Transmission Support Revenues	II.J	(3,438,085)	Sheet 5 (WP A5), Line 52, Col (d)
28	Transmission Support Expense	II.K	4,703,205	Sheet 5 (WP A5), Line 64, Col (d)
29	Transmission Related Expense from Generators	II.L	-	Sheet 5 (WP A5), Line 67, Col (d)
30	Transmission Rents Received from Electric Property	II.M	(4,654,045)	Sheet 5 (WP A5), Line 73, Col (d)
31	Short-Term and Non-Firm P-T-P Service Revenues	II.N	-	Sheet 5 (WP A5), Line 76, Col (d)
32	Regional Network Services (RNS) Revenues	II.O	(259,597,545)	Sheet 5 (WP A5), Line 80, Col (d)
33	Through or Out Revenues	II.P	(269,328)	Sheet 5 (WP A5), Line 83, Col (d)
34	ISO-NE Scheduling and Dispatch Revenues	II.Q	(5,570,862)	Sheet 5 (WP A5), Line 87, Col (d)
35	Total LNS Revenue Requirement		\$ 102,267,252	Sum Lines 18 thru 34
36	Wholesale LNS Revenues Received:			
37	Massachusetts Bay Transportation Authority		(593,903)	Sheet 5 (WP A5), Line 46, Col (c)
38	Concord Municipal Light - LNS		(90,440)	Sheet 5 (WP A5), Line 47, Col (c)
39	Massachusetts Port Authority		(726,700)	Sheet 5 (WP A5), Line 48, Col (c)
40	National Grid - Nantucket Cable		(421,568)	Sheet 5 (WP A5), Line 49, Col (c)
41	Total Wholesale LNS Revenue		\$ (1,832,611)	Sum Lines 37 thru 40
42	Total Retail LNS Revenue Requirement		\$ 100,434,641	Line 35 + Line 41
43	Total Retail LNS Revenue Requirement with CWIP		\$ 110,139,431	per ER07-549/ER09-1243 filed on 5/28/21
44	Effect of CWIP's Inclusion in Rate Base		\$ (9,704,790)	Line 42 - Line 43
45	Average 12 CP			
46	Sum of Monthly Peaks (kW)		48,371,000	FF1 page 400.1(b) thru 400.16(b) *1000
47	Average Peak		4,030,917	Line 46 / 12
48	Annual Rate per kW		\$ 25.3707	Line 35 / Line 47
49	Monthly Rate per kW		\$ 2.1142	Line 48 / 12
50	Weekly Rate per kW		\$ 0.4879	Line 48 / 52
51	Daily Rate per kW		\$ 0.0695	Line 48 / 365
52	Hourly Rate per kW		\$ 0.0029	Line 48 / 8760

NSTAR Electric Company (East)
ISO New England Inc Transmission, Markets and Services Tariff, Section II
Annual Local Network Service Revenue Requirement per Attachment D of Schedule 21-NSTAR
Service Year Ended December 31, 2020
Investment Return and Income Taxes
Sheet 2

Line	(a) Description	(b) Tariff Section	(c) Balance	(d) Capitalization Ratio	(e) Cost	(f) Weighted Cost	(g) Equity Cost	(h) Reference
1	Weighted Cost of Capital	II.A.2.a						
2	Long Term Debt	II.A.2.a.i	\$ 3,033,335,899	44.43%	3.74%	1.66%		FF1 page 112.24(c) FN
3	Preferred Stock	II.A.2.a.ii	43,000,000	0.63%	4.56%	0.03%	0.03%	FF1 page 112.3(c) FN
4	Common Equity	II.A.2.a.iii	3,751,206,129	54.94%	10.57%	5.81%	5.81%	FF1 page 112.16(c) FN - FF1 page 112.3(c) FN
5	Total		\$ 6,827,542,028			7.50%	5.84%	Sum Lines 2 thru 4
ROE per ISO New England Inc. Transmission, Markets and Services Tariff, Schedule 21-NSTAR Attachment D, Section II.A.2.(a)(iii), page 62 https://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_2/sch21/sch_21_nstar.pdf								
6	Investment Return	II.A.2						
7	Total Investment Base		\$ 2,032,726,749					Sheet 1, Line 16, Col (c)
8	Weighted Cost of Capital		7.50%					Line 5, Col (f)
9	Total Return on Investment		\$ 152,454,506					Line 7 * Line 8
10	Federal Income Tax	II.A.2.b						
11	A = Equity Cost		5.84%					Line 5, Col (g)
12	B = Transmission Amortization of ITC		\$ (507,448)					Sheet 1, Line 21, Col (c)
13	C = Equity AFUDC		520,460					FF1 page 336.7(b) FN + FF1 page 336.10(b) FN
14	Total B + C		13,012					Line 12 + Line 13
15	D = Investment Base		2,032,726,749					Line 7
16	(B + C) / D		0.0006%					Line 14 / Line 15
17	(A + [(C + B) / D])		5.8406%					Line 11 + Line 16
18	FT = Federal Income Tax Rate		21.00%					Federal corporate tax rate
19	1 - FT		79.00%					1 - Line 18
20	Federal Tax Factor		1.5526%					Line 17 * Line 18 / Line 19
21	Total Federal Income Taxes		\$ 31,560,116					Line 15 * Line 20
22	State Income Tax	II.A.2.c						
23	A = Equity Cost		5.84%					Line 5, Col (g)
24	B = Transmission Amortization of ITC		\$ (507,448)					Sheet 1, Line 21, Col (c)
25	C = Equity AFUDC		520,460					FF1 page 336.7(b) FN + FF1 page 336.10(b) FN
26	Total B + C		13,012					Line 24 + Line 25
27	D = Investment Base		2,032,726,749					Line 7
28	(B + C) / D		0.0006%					Line 26 / Line 27
29	(A + [(C + B) / D])		5.8406%					Line 23 + Line 28
30	ST = State Income Tax Rate		8.00%					Massachusetts corporate tax rate
31	1 - ST		92.00%					1 - Line 30
32	Federal Tax Factor		1.5526%					Line 20
33	State Tax Factor		0.6429%					(Line 29 + Line 32) * Line 30 / Line 31
34	Total State Income Taxes		\$ 13,068,400					Line 27 * Line 33
35	Investment Return and Income Taxes	II.A.2						
36	Return on Investment		\$ 152,454,506					Line 9
37	Federal Income Taxes		31,560,116					Line 21
38	State Income Taxes		13,068,400					Line 34
39	Total Return and Income Taxes		\$ 197,083,022					Sum Lines 36 thru 38

NSTAR Electric Company (East)
ISO New England Inc Transmission, Markets and Services Tariff, Section II
Annual Local Network Service Revenue Requirement per Attachment D of Schedule 21-NSTAR
Service Year Ended December 31, 2020
Investment Base
Sheet 3

Line	(a) Description	(b) Tariff Section	(c) Total	(d) Allocator	(e) Factor	(f) LNS Amount	(g) Reference
1	Transmission Plant	II.A.1.a	\$ 3,128,427,502	Direct	100.0000%	\$ 3,128,427,502	FF1 page 204.58(g) FN
2	General Plant		395,591,962	W&S	13.1920%	52,186,492	FF1 page 204.99(g) FN
3	Intangible Plant		49,449,600	W&S	13.1920%	6,523,391	FF1 page 204.4(g) FN
4	Total Intangible & General Plant (Line 2 + Line 3)	II.A.1.b				<u>58,709,883</u>	
5	Transmission Plant Held for Future Use	II.A.1.c	27,049,274	Direct	100.0000%	27,049,274	FF1 page 214.31(a)
6	Transmission Related CWIP	II.A.1.d	-	CWIP	50.0000%	-	FF1 page 216.1.40(b) through 216.1.42(b) + FF1 page 216.2.1(b) through 8(b) + 12(b) + 14(b) through 23(b) + 25(b) + 27(b) through 30(b)
7	Transmission Related Depreciation & Amortization Reserve	II.A.1.e					
8	Transmission Accumulated Depreciation		(752,723,474)	Direct	100.0000%	(752,723,474)	FF1 page 219.25(c) FN
9	General Plant Accumulated Depreciation		(102,555,284)	W&S	13.1920%	(13,529,093)	FF1 page 219.28(c) FN
10	General Plant Accumulated Amortization		(8,507,372)	W&S	13.1920%	(1,122,293)	FF1 page 200.21(c) FN
11	Intangible Plant Accumulated Amortization		(32,416,366)	W&S	13.1920%	(4,276,367)	FF1 page 200.21(c) FN
12	Total Transmission Related Depreciation & Amortization Reserve (Sum Lines 8 thru 11)		<u>(896,202,496)</u>			<u>(771,651,227)</u>	
13	Transmission Accumulated Deferred Taxes	II.A.1.f					
14	Accumulated Deferred Taxes (190)		311,734,222		24.1312%	75,225,336	Sheet 8 (WP A8), Line 19, col (D)
15	Accumulated Deferred Income Taxes (281)		-			-	FF1 page 272.17(k) FN
16	Accumulated Deferred Taxes - Property (282)		(1,035,974,366)				FF1 page 274.9(k) FN
17	Less: Transition Property		-				FF1 page 274.4(k) FN
18	Net Acc. Def. Income Taxes - Other Property (282) (Line 16 + Line 17)		(1,035,974,366)	Plant	33.1558%	(343,485,589)	
19	Accumulated Deferred Income Taxes - Other (283)		(405,568,464)		4.2455%	(17,218,347)	Sheet 8 (WP A8), Line 37, col (D)
20	Total Transmission Accumulated Deferred Taxes (Line 14 + Line 15 + Line 18 + Line 19)					<u>(285,478,600)</u>	
21	AFUDC Regulatory Liability	II.A.1.g	-	Direct	100.0000%	-	FF1 page 278.6(f) FN
22	Transmission Related Gain/Loss on Reacquired Debt	II.A.1.h	9,226,106	Plant	33.1558%	3,058,989	FF1 page 110.81(c) FN + FF1 page 112.61(c)
23	Other Regulatory Assets	II.A.1.i					
24	FAS 106 (182.3 & 254)		-	W&S	13.1920%	-	FF1 Page 232
25	ASC 740 Asset (182.3 - FAS 109)		88,933,989	Plant	33.1558%	29,486,776	FF1 page 232.22(f) FN
26	Less ASC 740 Liability (254 - FAS 109)		(242,311,120)	Direct	100.0000%	(242,311,120)	FF1 page 278.1(f) FN
27	Net ASC 740 (182.3 & 254 - FAS 109) (Line 25 + Line 26)		<u>(153,377,131)</u>			<u>(212,824,344)</u>	
28	Total Other Regulatory Assets (Line 24 + Line 27)		<u>(153,377,131)</u>			<u>(212,824,344)</u>	
29	Transmission Prepayments	II.A.1.j	502,840,214	W&S	13.1920%	66,334,681	FF1 page 110.57(c) FN + FF1 page 232.29(f) FN
30	Transmission Materials & Supplies	II.A.1.k	11,697,794	Direct	100.0000%	11,697,794	FF1 page 227.5(c) FN + 227.8(c) FN
31	Cash Working Capital	II.A.1.l					
32	Operation & Maintenance Expense		37,688,856	WC	12.5000%	4,711,107	Sheet 1, Line 24, col (c)
33	Administrative & General Expense		16,830,311	WC	12.5000%	2,103,789	Sheet 1, Line 25, col (c)
34	Transmission Support Expenses		4,703,205	WC	12.5000%	587,901	Sheet 1, Line 28, col (c)
35	Total Cash Working Capital		<u>59,222,372</u>			<u>7,402,797</u>	Sum Lines 32 thru 34
36	Description	Allocation Factor	Reference				
37	Direct Allocation (Direct)	100.0000%					
38	Wages & Salary (W&S)	13.1920%	Sheet 6 (WP A6), Line 6(c)				
39	Plant Allocation (Plant)	33.1558%	Sheet 6 (WP A6), Line 14(c)				
40	Construction Work in Progress Allocation (CWIP)	50.0000%	Sheet 6 (WP A6), Line 15(c)				
41	Cash Working Capital (WC)	12.50%	Tariff Section II.A.1.l				

NSTAR Electric Company (East)
ISO New England Inc Transmission, Markets and Services Tariff, Section II
Annual Local Network Service Revenue Requirement per Attachment D of Schedule 21-NSTAR
Service Year Ended December 31, 2020
Transmission Expenses
Sheet 4

Line	(a) Description	(b) Tariff Section	(c) Total	(d) Allocator	(e) Factor	(f) LNS Amount	(g) Reference
1	Transmission Depreciation and Amortization Expense	II.B					
2	Transmission Depreciation Expense	II.B.i	\$ 68,896,214	Direct	100.0000%	\$ 68,896,214	FF1 page 336.7(b) FN
3	General Plant Depreciation and Amortization	II.B.ii	20,054,237	W&S	13.1920%	2,645,555	FF1 page 336.10(b) FN + 336.10(d) FN
4	Amortization of Transmission Related Intangible Plant		1,985,101	W&S	13.1920%	261,875	FF1 page 336.1(d) FN
5	Amortization of AFUDC Regulatory Credit		-	Direct	100.0000%	-	FF1 page 114.13(c) FN
6	Net Amortization of Transmission Related Intangible Plant (Line 4 + Line 5)		<u>\$ 1,985,101</u>			<u>\$ 261,875</u>	
7	Total Transmission Depreciation and Amortization Expense (Line 2 + Line 3 + Line 6)		<u>\$ 90,935,552</u>			<u>\$ 71,803,644</u>	
8	Amortization of Gain/Loss on Recquired Debt	II.C	\$ 606,648	Plant	33.1558%	\$ 201,139	FF1 page 114.64(c) FN + FF1 page 114.66(c) FN
9	Transmission Related Amortization of ITC	II.D	\$ (1,530,495)	Plant	33.1558%	\$ (507,448)	FF1 page 114.19(c) FN
10	Transmission Related Municipal Tax Expense	II.E	\$ 143,027,280	Plant	33.1558%	\$ 47,421,839	FF1 page 262.30(i) FN
							FF1 page 262.1n. 4(i) +6(i) +9(i) +14(i) +19(i) +21(i) +25(i) +34(i) +38(i) + FF1 page 262.1 n. 3(i) +7(i)
11	Transmission Related Payroll Tax Expense	II.F	\$ 4,340,122	W&S	13.1920%	\$ 572,549	+12(i) +16(i) +17(i)
12	Transmission Operation and Maintenance Expense	II.G					
13	Operation Supervision & Engineering (560)		\$ 5,965,957	Direct	100.0000%	5,965,957	FF1 page 320.99(b) FN
14	Load Dispatch - Reliability (561.1)		1,374,064	Internal Costs		1,374,064	FF1 page 320.85(b) FN
15	Load Dispatch-Monitor and Operate Transmission System (561.2)		1,368,837	Internal Costs		1,368,837	FF1 page 320.86(b) FN
16	Load Dispatch-Transmission Service and Scheduling (561.3)		626,760	Internal Costs		626,760	FF1 page 320.87(b) FN
17	Scheduling, System Control and Dispatch Services (561.4) - Note 2	II.G.ii	12,063,228	External Costs		-	FF1 page 320.88(b) FN
18	Reliability, Planning and Standards Development (561.5)		1,594,039	Internal Costs		1,264,968	FF1 page 320.89(b) FN
19	Transmission Service Studies (561.6)		537,411	Internal Costs		537,411	FF1 page 320.90(b) FN
20	Generation Interconnection Studies (561.7)		-	Internal Costs		-	FF1 page 320.91(b) FN
21	Reliability, Planning and Standards Development Services (561.8) - Note 2	II.G.ii	19,639	External Costs		-	FF1 page 320.92(b) FN
22	Station Expenses (562)		3,126,336	Direct	100.0000%	3,126,336	FF1 page 320.99(b) FN
23	Overhead Lines Expenses (563)		1,516,468	Direct	100.0000%	1,516,468	FF1 page 320.99(b) FN
24	Underground Lines Expenses (564)		(248,026)	Direct	100.0000%	(248,026)	FF1 page 320.99(b) FN
25	Miscellaneous Transmission Expenses (566)		3,298,138	Direct	100.0000%	3,298,138	FF1 page 320.99(b) FN
26	Rents (567)		40,421	Direct	100.0000%	40,421	Sheet 5, Line 3(d)
27	Transmission Maintenance (568 - 573)		18,817,532	Direct	100.0000%	18,817,532	FF1 page 320.111(b) FN
28	Regional Market Expense (575-576) - Note 2	II.G.ii	270,751	External Costs		-	FF1 page 320.121(b) FN
29	Total Transmission O&M Expense (Sum Lines 13 thru 28)	II.G	<u>\$ 50,391,555</u>			<u>\$ 37,688,866</u>	
30	Transmission Related A&G Expenses	II.H					
31	Administrative and General Expenses	I.B	\$ 119,880,774				FF1 page 320.197(b) FN
32	Property Insurance (924)		(918,595)				FF1 page 320.197(b) FN
33	Employee Pensions and Benefits (926)		19,790,888				FF1 page 320.197(b) FN
34	Regulatory Commission Expenses (928)		(14,460,991)				FF1 page 320.197(b) FN
35	General Advertising Expenses (930.1)		(179,160)				FF1 page 320.197(b) FN
36	Transmission Related A&G Expense Subtotal (Sum Lines 31 thru 35)	II.H.1	124,112,916	W&S	13.1920%	16,372,976	
37	Property Insurance (924)	II.H.2	918,595	Plant	33.1558%	304,568	Line 32
38	Employee Pensions and Benefits (926) - Note 1	II.H.1	(19,790,888)	W&S	13.1920%	(2,610,814)	Line 33
39	Regulatory Commission Expenses (928)	II.H.3	14,460,991	Footnote	19.1106%	2,763,581	Line 34
40	Total Transmission Related A&G Expenses (Sum Lines 36 thru 39)	II.H	<u>\$ 119,701,614</u>			<u>\$ 16,830,311</u>	
41	Regulatory Commission Expenses (928)	II.H.3					
42	Assessment Charged by the Massachusetts Department of Public Utilities		\$ 9,811,455			\$ -	FF1 page 350.3(d)
43	Proportionate share of expenses of FERC Assessment Order No. 472		1,898,735	Direct	100.0000%	1,898,735	FF1 page 350.7(d)
44	Rate cases and various other regulatory proceedings before FERC		864,846	Direct	100.0000%	864,846	FF1 page 350.10(d)
45	Rate cases and various other regulatory proceedings before State of MA - Distribution		1,885,956				FF1 page 350.14(d)
46	Total Regulatory Commission Expenses (Sum Lines 42 thru 45)	II.H.3	<u>\$ 14,460,992</u>		19.1106%	<u>\$ 2,763,581</u>	
47	Description	Allocation Factor	Reference				
48	Direct Allocation (Direct)	100.0000%					
49	Wages & Salaries Allocation (W&S)	13.1920% Sheet 6, Line 6(c)					
50	Plant Allocation (Plant)	33.1558% Sheet 6, Line 14(c)					
51	Note 1						
52	Included in the Employee Pension and Benefits Expenses are costs related to Post Retirement Benefits other than Pension (PBOP). PBOP costs are determined by an independent actuary as required by ASC 715. The Net PBOP expense included in Account 926 for 2020 was (\$15,833,000) compared to (\$13,138,000) in 2019 as shown on the FF1, page 323, footnote.						
53	Applying the labor allocator to the Net PBOP expense results in (\$2,088,689) of PBOP expense being recovered through the LNS Tariff in 2020 as compared to (\$1,698,940) in 2019.						
54							
55		2020	2019				
56	PBOP	\$ (40,382,000)	\$ (33,432,000)	FF1 page 320.187(b) FN			
57	Capitalized PBOP & Other impact adjustment	24,549,000	20,294,000	FF1 page 320.187(b) FN			
58	Net PBOP in account 926	\$ (15,833,000)	\$ (13,138,000)	Line 55 + Line 56			
59	Wages & Salaries Allocation (W&S)	13.1920%	12.9315%	Sheet 6, Line 6(c)			
60	LNS portion of PBOP	\$ (2,088,689)	\$ (1,698,940)	Line 57 x Line 58			
60	Note 2 - External Costs are charges to TOs by ISO-NE, therefore we do not include in our calculations as to avoid double-recovery (between tracker and LNS calculation)						

NSTAR Electric Company (East)

Exhibit E

CWIP Accounting Changes

Statement of Accounting Changes

During the 2020 Service Year, the Company made no accounting changes that affect the recording of Construction Work In Progress or the related AFUDC Regulatory Liability.

NSTAR Electric Company

Exhibit F

“New Projects” Description

New Projects

The following new project(s) were included in rate base during Service Year 2020.

Replace Brown Glass Insulators (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The replacement of the existing brown glass insulators will improve the station operation reliability. It will also improve the safety for the workers that work in the station as the insulator failures have resulted in the insulators and associated equipment falling to the ground in an unexpected and random mode.

Alternatives:

1. Leave the existing insulators in place and replace as they fail. This alternative continues the poor reliability at the station as a result of the insulator failures. The safety issues with the aged insulators would also not be addressed.
2. Replace switch insulators rather than the entire disconnect switch. This alternative would require a longer outage for each switch to replace. The switch would need to be removed and rebuilt, all during the outage. By replacing the switch entire, the switch can be built and prepared for installation prior to the actual outage.

The project consists of the following elements:

Replace brown glass insulators with new composite or porcelain insulators depending on location. Install additional insulators and install new structures within the station.

Project Description:

- Current Status: Under construction
- Material Changes to Project: none
- Projected In Service Date: 2020-2024
- Projected Project Cost: \$61.4 Million

NSTAR Electric Company (East)

Exhibit G

“Pre-Existing Projects” Description

**CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE
INFORMATION (“CEII”) has been Redacted**

Pre-Existing Projects

The following pre-existing project(s) were included in rate base during Service Year 2020.

Greater Boston – Central (ISO-NE Project ID 1356)

Benefits and Alternatives:

Benefits:

The new line will address a regional reliability need in the North Shore area and eliminate the potential need to shed a large amount of customer load under contingencies which currently overload the line.

Alternatives:

Alternatives investigated during the Greater Boston Solution Study included installing heat exchangers and reconductoring the existing line. However, these proposed solutions did not result in a large enough ratings increase to resolve the existing line overloads. ISO-NE also considered a solution package based on a HVDC line injection at Mystic station which would not require a new line between Mystic and Woburn to address the overload issues.

The project consists of the following elements:

Design, route, license and construct a new 115 kV underground line from NSTAR's Woburn Substation 211 to NSTAR's Mystic Substation 250. The new line will operate in parallel with the existing 211-514 line, effectively increasing the 211-514 line's capacity. Series reactors will be used at Woburn to balance power flow between the two cables.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Greater Boston – Central (ISO-NE Project ID 1355)

Benefits and Alternatives:

Benefits:

The Greater Boston Area Updated Transmission Needs Assessment Report issued January 30, 2015 by ISO-NE identified the reliability need for a project to relieve potential thermal overloads on the [REDACTED]

[REDACTED] The overloads occur [REDACTED]
[REDACTED] The preferred solution selected as part of the Greater Boston Solution Study is to [REDACTED]
[REDACTED]

Alternatives:

1. [REDACTED] Upon detailed review of the existing ROW it was determined that it was not wide enough for a portion of the route to allow [REDACTED]
2. Install a new underground line between Baker St. Station 110 and Needham Station 148, an approximate distance of five miles using public streets. This alternative was more expensive than the chosen solution.

The project consists of the following elements:

For nearly half its length, the new 115 kV line would be overhead within an existing Eversource ROW before transitioning to an underground design, primarily through public streets. Depending on the final routing design, the new transmission line will be between 4 and 6-miles long. Once the new 115 kV circuit is constructed, an existing circuit on the [REDACTED] (along with its support arms).

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Greater Boston – North (ISO-NE Project ID 1552)

Benefits and Alternatives:

Benefits:

This project provides additional transmission system capability to address various contingencies and brings the area into compliance with NERC Reliability Standard TPL-001-4.

Alternatives:

Installation of a new overhead 345kV line on an existing ROW between National Grid's Tewksbury Station and NSTAR's Woburn Station 211 and a new 345kV underground line (with reactors) from NSTAR's Woburn Station 211 to NSTAR's N. Cambridge Station 509.

The project consists of the following elements:

Design, routing, licensing and construction of a new 345 kV underground transmission line (and ancillary reactors) between NSTAR's Woburn Substation 211 and NGRID's Wakefield Junction Station.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Greater Boston – Western Suburbs (ISO-NE Project ID 1335)

Benefits and Alternatives:

Benefits:

Address a regional reliability need in compliance with NERC Reliability Standard TPL-001-4. Resolves line overloads and potential voltage collapse post N-1-1 contingencies

Alternatives:

Reconductoring and conversion from 69kV to 115kV of various alternative transmission lines. Rebuild several existing 69kV substations to 115kV substations.

The project consists of the following elements:

Design, route, license and build a new approximately 9 mile underground 115kV transmission line between NSTAR's Sudbury Station 342 and Hudson Municipal Light and Power's Station.

- Route Survey and associated tasks
- Environmental Permitting
- Transmission Planning Studies - I.3.9
- Engineering Support (substations)
- Community Outreach
- Legal

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Kingston Street #514 Substation Breaker Replacement (ISO-NE Project ID 28 – Asset Condition List)

Benefits and Alternatives:

Benefits:

The existing gas insulated breakers (GIS) at Station 514 are 25 years old. They need continual maintenance and replacement parts are not available. The Station has experienced 73 GIS related outage and maintenance events in the past five years.

Alternatives:

Continue to try to maintain the existing breakers. This is not an acceptable alternative as the GIS leaks lead to the need to take outages at this key transmission substation. Also, in 2012, the leaked SF6 emission reached over 500 pounds triggering MA Department of Environmental Protection reporting requirements.

The project consists of the following elements:

Replace 11 existing GIS 115kV breakers with new GIS breakers.

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

Rebuild Bourne Substation (ISO-NE Project ID 26 – Asset Condition)

Benefits and Alternatives:

Benefits:

The Bourne 115 kV Substation is a major substation with seven 115 kV transmission line terminations supplying the Cape Cod, Plymouth and New Bedford districts. It was initially constructed in the 1950's and is a straight-bus design with two bus sections connected with two bus tie breakers. Over the past several years the 115 kV disconnect switches have had numerous failures due to age and design of the disconnect switches. The ground grid was tested and does not meet present ground grid design standards. In 2015 the substation was classified [REDACTED]

Due to the substation straight-bus design performing maintenance can result in the outage of half the substation placing at risk the supply to the Cape Area. Also, due to its straight-bus configuration the substation can't be further expanded to accommodate terminating future transmission lines. The new substation will address all the above described deficiencies.

Alternatives:

Do nothing – this alternative is not acceptable as the station [REDACTED] as well as to interconnect a new planned transmission line.

The project consists of the following elements:

Upgrade substation to a breaker and ½ design. Install new control and protection equipment as necessary to support the re-designed substation [REDACTED]

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

Canal Station [REDACTED] and Asset Condition Upgrade Project (ISO-NE Asset Condition Project ID 90)

Benefits and Alternatives:

Benefits:

[REDACTED]
[REDACTED] Also,
the Project includes the asset condition replacement of brown glass insulators and supporting equipment that have reached the end of their useful life.

Alternatives:

[REDACTED]
[REDACTED] no alternatives can be considered.

The project consists of the following elements:

1. Install a new control enclosure which will have relay and control cabinets to replace the existing protection for two (2) 345kV lines, two (2) 345kV line leads, three (3) 115kV lines, ten (10) 345kV breakers, three (3) 115kV breakers, two (2) 22kV breakers (B1S12 & B2S12), and three (3) autotransformers.
2. Fifteen 345kV Disconnect Switches
3. Three 115kV Disconnect Switches
4. Four Line Terminal Ground Switches
5. Nine 345kV Capacitive Voltage Transformers
6. Six 345kV Lightning Arrestors
7. Three 115kV Lightning Arrestors
8. Three 25kV Lightning Arrestors (used for station service)
9. Thirty-Six 345kV Suspension Insulators
10. Twenty-Three 345kV Vertical Post Insulators
11. Twelve 345kV Horizontal Post Insulators
12. Three 115kV Vertical Post Insulators

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

Station 131 East Boston - Transmission Station (ISO-NE Project ID 1745)

Benefits and Alternatives:

Benefits:

The Greater Boston Study identified a “load pocket” of greater than 300 MW in the transmission system between Mystic and Wakefield junction substations. NSTAR has identified the need for a new substation in the East Boston area to serve growing loads in the area. The proposed project is intended to provide a reliable transmission supply to the new substation and reduce the load pocket (N-1-1) to less than 300 MW.

Alternatives:

The project alternative was to expand an existing distribution substation and add a fourth distribution transformer. An elevated platform would be installed above existing equipment and the substation reconfigured from air insulated breakers/bus to gas insulated equipment. There were significant cable getaway constraints which resulted in the inability of the needed distribution cables to support the fourth transformer and the new switchgear to be installed. So, this alternative was not selected.

The project consists of the following elements:

Interconnection to a new 115kV underground transmission line from Mystic to Chelsea substation. This line will be tapped and looped in and out of the new East Boston Substation. The project includes associated breaker and protection changes at all three substations.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Line 111 Ext from Cross Road – Fisher Road (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The extension of the #111 115kV line to Fisher Road Substation will prevent loss of load and loss of customers for [REDACTED]

[REDACTED] Under the existing configuration, [REDACTED] results in loss of 28.5 MW of peak load and 6,885 customers. Protracted distribution switching involving eighteen (18) individual switching actions will be avoided, as well as post [REDACTED]

There have been six (6) [REDACTED] outages involving this line since year 2000 which would have been avoided [REDACTED] [REDACTED] been in service.

The extension of the 2nd 115kV line will permit an ABR (auto bus restoral scheme) to be installed at Fisher Road Substation #657, which will automatically close the bus tie breaker and restore all load and customers interrupted for loss of either 115kV line.

The installation of the 2nd 115kV transmission line may permit a higher penetration level of distributed generation (DG) in the Dartmouth-Westport (MA) areas, as N-1 outage of the existing line is the limiting element.

Alternatives:

There are no reasonably cost effective or time-feasible upgrade alternatives to extension of the #111 Line to Fisher Road. It is the edge of NSTAR's service territory and there are no reasonable transmission and distribution alternative upgrades from another potential source.

The project consists of the following elements:

The proposed project is to provide a 2nd 115kV transmission source to Fisher Road Substation #657, a double-ended substation currently served by one (1) 115kV transmission line. The #111 Line will be extended from Cross Road Substation #651 to Fisher Road Substation #657 for 5.1 miles in 2017 by constructing a new 115kV line in the right-of-way, which is of sufficient width for a second transmission line, and with a package of substation work at Fisher Road Substation #657:

Line Construction:

Construct a 2nd 115kV transmission line on the East side of the easement of ROW #144 by extending the #111 115kV line for 5.1 miles from Cross Road Substation #651 to Fisher Road Substation #657, 795 ACSS conductor with H-frame construction. Due to the compact ROW arrangement and the proximity of the 13.2kV circuit to both the existing

#109 and the future #111 115kV lines, suspension insulators with restraints may be required to minimize conductor blowout.

The Company will need to re-apply for MDPU Chapter 72 approval for a 5.1 mile 115kV transmission line on an existing transmission ROW. Environmental permitting due to substantial wetland areas will also be required. The Company may need to provide a cost estimate for a 13.2kV “distribution only” alternative as part of the Chapter 72 filing.

Substation Construction:

Install two (2) 4.8 MVAR SCADA Switched Capacitor banks at Fisher Road Substation #657, one on each 13.2kV bus, for to improve post-contingency voltage support for loss of [REDACTED]. The need for improved transmission system voltage support has been previously identified for N-1 events on the ES and NGRID 115kV transmission system in the New Bedford – Dartmouth – Fall River area and is also required for local 13.2kV voltage support out of Fisher Road when the station is backed up from Cross Road.

Project Description:

- Current Status: Complete
- Material Changes to Project: None
- In Service Date: 4/30/2021
- Projected Project Cost: \$15 million

Southeast Massachusetts/ Rhode Island Reliability Project (ISO-NE Project ID 1725)

Benefits and Alternatives:

Benefits:

Improve the reliability of the Cape area by avoiding the loss of significant amount of load for critical N-1-1 contingencies.

Alternatives:

Rebuild Bourne Substation as a breaker and one-half layout and build a new 115 KV overhead Transmission line (≈ 10 miles) to Falmouth Tap Substation, Rebuild Falmouth Tap Substation as a ring bus and build a new 115 KV overhead line from Falmouth Tap Substation to West Barnstable Substation (≈ 15 miles). The voltage response and cost of this alternative is inferior due to almost twice the line length.

The project consists of the following elements:

Build a new 115 kV overhead line (≈ 12 miles) from Bourne to West Barnstable Substation. Create a new bus position at West Barnstable and Bourne by expanding the existing 115 kV bus.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

North Washington Bridge Reconductor (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The North Washington Street Bridge in Massachusetts is a major travel route over the Charles River. Under the bridge are two 115-kV circuits of Pipe Type Cable installed in the 1960's. The piping and supports have been exposed to the effects of atmospheric corrosion as well as chemical attack from road salts particularly at their support points for the last 56 years. These two pipe type cables have experienced dielectric fluid leaks resulting in environmental impacts on the Charles River below. Investigation of the leaks identified significant pipe corrosion at several support points causing substantial degradation of the pipe wall thickness and in some locations thru-wall leaks. The existing bridge is being replaced and the existing lines need to be relocated or new ones installed. Due to the condition of the existing lines new ones will be installed. This project will replace the two transmission circuits crossing the bridge by converting to a cross-link polyethylene insulated cable (XLPE - solid dielectric cable) in lieu of the current pipe type cable. This will improve the reliability of these transmission lines. The cable will be placed in high density polyethylene (HDPE) conduits and the dielectric fluid be routed separately in corrosion resistant piping to maintain the needed hydraulic system flow between substations. In addition, 4" valves will be installed on each of the dielectric fluid pipes at both ends of the bridge (beyond the bridge abutments) to provide isolation capability.

Alternatives:

Do nothing. This alternative is not acceptable as at a minimum the existing lines need to be moved to allow the construction of a new bridge. Rather than attempt to move the existing lines, which would result in a substantial risk of damage to the existing pipe, it was determined that the alternative to install new cable was the more reliable solution.

The project consists of the following elements:

This project will replace the two transmission circuits crossing the bridge by converting to a cross-link polyethylene insulated cable (XLPE - solid dielectric cable) in lieu of the current pipe type cable. The cable will be placed in high density polyethylene (HDPE) conduits and the dielectric fluid be routed separately in corrosion resistant piping to maintain the needed hydraulic system flow between substations. In addition 4" valves will be installed on each of the dielectric fluid pipes at both ends of the bridge (beyond the bridge abutments) to provide isolation capability.

New pipe supports will be installed to support the new HDPE conduits and oil piping along with specialized PTC / XPLE transition joints.

Project Description:

- Current Status: Under construction
- Material Changes to Project: None
- Projected In Service Date: 2022
- Projected Project Cost: \$8.8 Million

Mystic to Golden Hills Reliability Improvements (ISO-NE Asset Condition Project ID 107)

Benefits and Alternatives:

Benefits:

The existing cable experienced a failure in October 2016 and after that cable samples were taken to investigate the condition of the cable. The analysis identified looseness in the insulation structure and brittleness of tapes which make the continued reliability of the cable question. Replacing the cable will improve the reliability of the line. Also, the cable size will be increased which will increase the ratings of the line providing additional capacity.

Alternatives:

In addition to the Project, two other options were considered. They are as follows:

1. Reconductor only 349Y – this option would only address the cable condition issues on the 349Y cable, which has experienced a failure. But it would not address the 349X cable, which is of the same vintage and cable type. As the 349Y cable, and another 345kV cable on the system of the same vintage and type, have already experienced failure, the 349X cable cannot be depended upon for reliable operation moving forward. The company that performed the cable analysis recommended the replacement of both cables.
2. Rebuild the line using XLPE cable – this alternative would have substantial delay due to the need for siting, permitting and state approval process that would put the system at the risk of an in-service failure. There is also significant congestion of utilities and subsurface obstruction in this area which would lead to routing difficulties. This option would also be significantly more expensive than the preferred project.

The project consists of the following elements:

The scope of work consists of reconductoring 22 cable segments on Line 349X&Y, totaling approximately 12.2 single conductor circuit miles in length. Two sets of terminations on both cables will be replaced. New 345kV joints will be installed in each manhole (20 total). A 2500 kcmil Cu LPP conductor will be installed for Line 349X&Y to maximize the ratings. Additionally, relay setting will be reviewed and revised.

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

East Cambridge Area Solution (f/k/a Station 8025) - T Line (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The purpose of the project is to construct new 115kV underground transmission lines to interconnect with existing lines as part of supplying a new 115/14kV substation and distribution system to improve the reliability of service to an area currently served by both the East Cambridge Station #875 and Putnam Station #831. The new 115/14kV station will establish a foundation to reliably supply the anticipated increased capacity requirements for East Cambridge, Kendall Square and Technology Square regions of the City of Cambridge, Massachusetts. The 115kV line configuration for the new substation also addresses an existing transmission need to mitigate a load pocket.

Alternatives:

Various 115kV interconnection options were studied. There was one configuration which addressed the load pocket as well as being able to supply the new substation at full load. This was the selected solution.

The project consists of the following elements:

Interconnecting the existing 329-510/511 115kV transmission lines by looping them in and out of the new substation. Also loop the existing 831-538 line in and out of the new station. Then loop the existing 875-539 in and out of the new station as well.

Project Description:

- Current Status: In design
- Material Changes to Project: None
- Projected In Service Date: 2028
- Projected Project Cost: \$100 Million

East Cambridge Area Solution (f/k/a Station 8025) - T Station (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The purpose of the project is to construct a new 115/14kV substation and distribution system to improve the reliability of service to an area currently served by both the East Cambridge Station #875 and Putnam Station #831. The new 115/14kV station will establish a foundation to reliably supply the anticipated increased capacity requirements for East Cambridge, Kendall Square and Technology Square regions of the City of Cambridge, Massachusetts. The new substation configuration will also address an existing load pocket in Cambridge.

Alternatives:

- Do nothing – This option would result in Eversource not being in compliance with the internal criteria Sys Plan-010 (Bulk Distribution Substation Assessment Procedure). Upwards of 20-25 MVA of load shedding would be required for [REDACTED]
[REDACTED]
This option was not selected.
- Relieve East Cambridge Station #875 with load transfers to adjacent stations (Putnam Station #831 and Prospect Street Station #819 supplied by Somerville Station #402). To meet the East Cambridge Station #875 “2018-2019” load forecast requires a 20-25 MVA load transfer. The load transfers to either Putnam #831 or Prospect Street Station #819 (Somerville Station #402) would overload the station for an [REDACTED] This option was not selected.
- Develop a Prospect Street 115/14KV substation on NSTAR land in Cambridge Construct a 115/14kV station consisting of four 115kV bays of three gas insulated 115kV breakers totaling twelve 115kV breakers to interconnect the Mystic-Brighton 115kV lines 329-510 and 329-511, three 90 MVA 117/15kV LTC Transformers and two new sections of distribution switchgear. The 115/14kV station will be designed to integrate the new 15kV switchgear with the four existing sections of 15kV switchgear at Prospect Street Station #819. Upon further analysis of this option, significant constructability issues were discovered. This was due to the existing layout of the 13.8kV feeders throughout the station as well as the station get-aways. It was determined that the distribution feeders would need to be relocated to accommodate the new equipment. This resulted in the cost estimate for this alternative to be more expensive than the selected solution. This option was not selected.
- Develop a 115/14kV Substation at Hampshire Station #814:
Construct a 115/14kV station at the existing 4kV Hampshire Street Station #814 in Cambridge. The 115/14kV station would consist of a 115kV ring bus consisting of two bays of three gas insulated 115kV breakers totaling six 115kV breakers to interconnect two 115kV Lines, three 37/50/62.5 MVA 117/15kV LTC transformers and four new sections of distribution switchgear. The transmission supply would consist of extending the 115kV lines 831-538 and 831-540 to Hampshire Station #814. To develop a 115/14kV station at the Hampshire Street

#814 site would require constructing a multi-level enclosed station. The work plan for this option includes the conversion of 4kV load at Hampshire Station #814 prior to the use of the property for a 115/14kV station. The 4kV conversion work makes this alternative more costly and complex than the other options. This option was not selected.

The project consists of the following elements:

Develop a new 115/14 kV substation in the City of Cambridge. The station would potentially consist of a 115kV ring bus consisting of eight bays of three gas insulated 115kV breakers totaling thirty 115kV breakers to interconnect eight 115kV Lines, three 90 MVA 117/15kV LTC transformers and four new sections of distribution switchgear. The firm capacity would be approximately 180 MVA.

Project Description:

- Current Status: In design
- Material Changes to Project: None
- Projected In Service Date: 2028
- Projected Project Cost: \$110-130 Million

Andrew Square Dewar St 115kV Line & Andrew Square Dewar St 115kV Station (ISO-NE Project ID None)

Benefits and Alternative

Benefits:

The purpose of the project is to provide a third supply to both the Andrew Square and Dewar St Substations. This will prevent the loss of significant load under N-1-1 conditions for an extended duration.

Alternatives:

1. Do nothing – This option would not address the transmission supply reliability concerns for either Andrew Square Station #106 or Dewar Street Station #483. Upwards of 70-75 MVA of load shedding would be required for loss of [REDACTED] Upwards of 130 MVA of load shedding would be required for loss of [REDACTED] This option was not selected.
2. Re-establish wye configuration(s)-- Re-install the “wye joint” to reestablish the former 115kV line configuration to supply both Andrew Square Station #106 and Dewar Street Station #483 via the pair of 115kV lines 483-524/525; which would address the concern of continued reliance HPFF cable segments that may have reliability concerns. The estimated cost for this option is \$5.2 Million. With the reconfigured transmission system there is the potential for 10 MVA of load at risk for a “n-1” transmission contingency within the K Street-Andrew Square-Dewar Street region. This option would rely on a transfer of Eversource load to NGrid. With future regional load growth, the NGrid transmission system will not be able to support the Eversource load.
3. Reconfigure Transmission System -- Re-configure / crossover the transmission lines of the existing K Street to Andrew Square and K Street to Dewar Street 115kV Lines. This approach would establish one known reliable transmission source to each substation with the second source a line with potential reliability issues. The estimated cost for this option is \$5 Million. The approach does not reduce reliability exposure but shares it between Andrews Square and Dewar Street stations. For the peak summer load conditions, there would be no load at risk for any “n-1” transmission contingency within the K Street-Andrew Square-Dewar Street region.

The project consists of the following elements:

The total cable length will be 1.7 miles in length, depending on final routing. The cable size for the Andrew Square-Dewar 115kV line would be 1000 kcmil; which would be sufficient to support the firm capacity of Andrew Square Station #106 (134 MVA) or Dewar Street Station #483 (150 MVA). A hybrid AIS / GIS module consisting of two 115kV breakers in series will be installed at both Andrew Square Station 106 and Dewar Street Station #483 to support the termination of the new Andrew Square to Dewar Street 115kV line.

Project Description:

- Current Status: In design and siting
- Material Changes to Project: None
- Projected In Service Date: 2023
- Projected Project Cost: \$68.3 Million

Southeast Massachusetts/Rhode Island Reliability Project (ISO-NE Project ID 1726)

Benefits and Alternatives:

Benefits:

This scope of work addresses loss of approximately 392 MW of load under [REDACTED] conditions [REDACTED]. Area reliability will be improved by the elimination of this possible [REDACTED] loss of load.

Alternatives:

An alternative to the project was to install a third line between the two stations involved with the two existing lines. However, this would require new termination positions at each station resulting in a more expensive solution.

The project consists of the following elements:

The project scope includes [REDACTED] for one of the lines and installing new conductor and OPGW on a new set of 28 structures.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Mystic [REDACTED] 115-kV Control House (ISO-NE Project ID 44 – Asset Condition List)

Benefits and Alternatives:

Benefits:

The existing Mystic Station [REDACTED] It was designed [REDACTED]
[REDACTED] Over the years as the electric system has evolved and different construction projects have warranted changes to the control house. These changes varied from one another due to work being done and [REDACTED] Moreover, the initial construction of the existing 115kV control room was based on a vertically integrated operation and was also the control room for six (now retired) generating units that were constructed between the 1940's and 1960's. The generating buildings are no longer owned by the Company and are, for all intents and purposes abandoned facilities. As a result of the continued development the existing control house has become very difficult to trouble shoot and is prone to disturbance events and miss operation due to sneak feeds in control wiring. As part of a condition assessment a new enclosure is proposed [REDACTED]
[REDACTED]

Alternatives:

1. Do Nothing – Not acceptable due to [REDACTED] continued reliability issues associated with troubleshooting and analyzing disturbances.
2. Remove all the old relay and control panels and replace them with new stand-alone panels in the existing house. – Not acceptable as this would require working on and around systems in service. This would pose a risk to the system operation during construction. Having a house prewired and independent of the system requires less outage time and less risk.
3. Platform Mounted Control House NW of 14kV Switch House - existing 13.8kV underground duct banks are located at the proposed location and would need to be relocated.

The project consists of the following elements:

1. Retrofit recently purchased old 18kV building
2. Procure and deliver a new 115kV integrated control and relay panel skid. To include prewired and tested P1, P2 and control panels for 8 Lines, 29 breakers, 4 transformers, 3 Generators, 5 Buses, 1 Reactor and 1 Cap bank. To be installed in retrofitted 18kV building.
3. C&P Engineering services to produce drawings to support the build and delivery of the control and relay panel skids
4. SS foundation, duct banks, trenches fire protection etc.
5. Cable tray, AC System (Panels, station service etc.), DC system (Panels, Battery 1&2 etc.)

6. Engineering to support building retro fit
7. Demo and build up the existing 18kV equipment
8. Control and Protection construction packages for cutover work at Mystic Station
[REDACTED] from old house to new
9. All required upgrades and design at the remote stations
10. All labor and material required to cutover each element from the old house to the new house

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

Southeast Massachusetts/Rhode Island Reliability Project (ISO-NE Project ID 1728)

Benefits and Alternatives:

Benefits:

The Project consists of a new 115kV line from Kingston Substation to Carver Substation and will address existing thermal overloads in the SEMA/RI area.

Alternatives:

1. Alternative #1–
 - Reconductor the 117 line from Brook St to Kingston (3.1 miles)
 - Reconductor the 191 line from Auburn to Kingston (15.3 miles)
 - Replace terminal equipment at Kingston
2. Alternative #2–
 - Install new line from Manomet to Kingston (approximately 6.0 miles new, 9.2 miles existing)
 - Install breakers at Manomet to accommodate new line
 - Rebuild Kingston to a breaker and a half configuration
3. Alternative #3–
 - Install a parallel line from Brook St to Carver (4.9 miles)
 - Reconductor the 117 line from Brook St to Kingston (3.1 miles)
 - Replace terminal equipment at Kingston

The proposed Project, when combined with the Kingston Substation breaker and a half asset condition upgrade, provided the lowest cost and best performance of the alternatives considered.

The project consists of the following elements:

The project scope entails the construction of approximately 8 miles of 115 kV transmission line along existing ROW between Carver Substation and Kingston Substation. It also includes the development of an additional line position in the existing Carver 115 kV breaker and a half substation.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Station 131 East Boston – Transmission Line (ISO-NE Project ID 1745)

Benefits and Alternatives:

Benefits:

Eversource has identified the need for a new substation in the East Boston area to serve growing loads in the area. The proposed project is intended to provide a reliable transmission supply to the new substation.

Alternatives:

The project alternative was to expand an existing distribution substation and add a fourth distribution transformer. An elevated platform would be installed above existing equipment and the substation reconfigured from air insulated breakers/bus to gas insulated equipment. There were significant cable getaways constraints which resulted in the inability of the needed distribution cables to support the fourth transformer and the new switchgear to be installed. So, this alternative was not selected.

The project consists of the following elements:

Transmission conduit and manhole system to support the installation of solid dielectric cable for the transmission line extensions of the Mystic-East Eagle Street 115kV line and a new Chelsea- East Eagle Street 115kV line from the Chelsea Creek crossing to interconnect to the new East Eagle Street 115/14kV substation.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Southeast Massachusetts/Rhode Island Reliability Project (ISO-NE Project ID 1730)

Benefits and Alternatives:

Benefits:

The purpose of the project is to address thermal overloads and voltage collapse in the SEMA/RI area.

Alternatives:

The SEMARI Study considered several alternative combinations of projects to resolve the issues in this area including the construction of an underground/ underwater line in the National Grid Territory. All other combinations of solutions had a higher cost and were eliminated.

1. Alternative #1
 - Install a new undersea line from Bristol substation to a new switching station named Boyd's Lane in Portsmouth, RI (approximately 5.0 miles)
 - Reconductor F-184 115 kV line from Merriman Junction to Warren to Bristol (5.1 miles)
2. Alternative #2
 - [REDACTED] from Somerset to Sykes Road
 - Reconductor M13 and N12 from Somerset to Bell Rock (3.5 miles)
 - Loop the M13 line into Bell Rock
 - Reconfigure Bell Rock to a breaker and a half configuration
3. Alternative #3
 - Install a new line from Somerset to Bell Rock
 - Loop the M13 line into Bell Rock
 - Reconfigure Bell Rock to a breaker and a half configuration
4. Alternative #4
 - Extend the 114 line from the Industrial Park Tap to either High Hill or Bell Rock
 - High Hill (6.6 miles) and rebuild High Hill substation or
 - Bell Rock (approximately 12.0 miles) and convert Bell Rock to a breaker and a half configuration
 - Resolve M13/N12 thermal violations by reconductoring or bussing the lines together
 - Install reactive devices to address voltage violations
 - 37.5 MVAR capacitor at Bell Rock
 - 35.3 MVAR capacitor at High Hill
 - 35.3 MVAR capacitor at Wing Lane
 - Install a new breaker in series with the N12/D21 tie breaker at Bell Rock

When comparing the cost of all four combinations, the Alternative #2/#3 and Alternative #4 cost is lower than the next lowest combination (Alternative #1 and Alternative #2). Due to the large gap in cost between the solution alternatives, Alternative #2/#3 and

Alternative #4 is selected as the preferred solution. Note that this Project just covers a portion of the Alternative #4 work.

The project consists of the following elements:

The scope of this project is to extend the #114 line approximately 7.9 miles from the Industrial Park Tap, running parallel to and on the same ROW as the existing 112, 111, and D21 lines until reaching the border with National Grid. At that point National Grid will pick up construction running parallel to the D21 line for an approximate 4.2 miles and terminating at their Bellrock Rd Substation.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Kingston Substation #735 Asset Condition Replacement (ISO-NE Project ID 27 – Asset Condition)

Benefits and Alternatives:

Benefits:

The objective of this project is to rebuild Kingston Substation in a rigid bus, breaker and a half configuration. This configuration will allow each transmission line entering and leaving the substation to be independently relayed and controlled from its own bus position improving operability and area reliability. In addition, the breaker and a half configuration will accommodate the integration of a future transmission line from Carver Substation as proposed in the ISO-NE SEMA/RI Study. The addition of this 3rd supply to Kingston will resolve identified [REDACTED] and provide a supply for [REDACTED] contingencies.

Alternatives:

1. One alternative considered was to rebuild/ repair Kingston Substation on a direct one-for-one replacement basis keeping the existing configuration. This option was dismissed as it does not resolve the local reliability issues such as the loss of [REDACTED]
2. A second alternative which was also considered was adding a second series breaker to the above alternative. This increased the cost to approximately \$7.8M. This alternative improves the arrangement with three transformers on the 191 line and two transformers on the 117 line. A major drawback of remaining with a 'straight bus' arrangement is that it is difficult to expand to add additional line positions. Adding the proposed Carver to Kingston Line would likely require the use of gas insulated substation components (GIS) in a less than ideal configuration. For this reason, this alternative was also dismissed.

The project consists of the following elements:

1. Construct a new four bay, eight position, 115 kV rigid bus breaker and a half substation in an area generally to the north of the existing substation. Temporarily relocate the 191 and 117 lines heading towards Marshfield and Duxbury as necessary to allow for construction without interfering with the existing substation.
2. Breaker positions would be developed for the 191 Line from Auburn St (Ngrid); 117 Line from Brook St; 149 Line to Duxbury & Marshfield (formerly an extension of the 191 line); 148 Line to Duxbury (formerly an extension of the 117 Line); and two line position feeding the existing Kingston distribution transformers #1 and #2. A total of ten circuit breakers would initially be installed.
3. Interchange metering will be installed on the 191 Line tie with National Grid.
4. New relay and control house.
5. Purchase of a small parcel of land to the north of the existing Kingston Substation property is anticipated.
6. Removal of existing 115 kV substation equipment from the existing substation.

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

K Street #385 115-kV Control House (ISO-NE Project ID 43 – Asset Condition List)

Benefits and Alternatives:

Benefits:

- [REDACTED]
- Improves the existing design of the station so that there will be degree of duality for the control and protection systems
- [REDACTED]

Alternatives:

1. Do Nothing – Not acceptable [REDACTED]
2. Remove all the old relay and control panels and replace them with new stand-alone panels in the existing house. – Not acceptable as this would require working on and around systems in service. This would pose a risk to the system operation during construction. Having a house prewired and independent of the system requires less outage time and less risk.

The project consists of the following elements:

- Control and Protection upgrades at K St Station #385T
- A new control house installed at K St Station #385T to accommodate all the new 115 kV relay, control, and cable tray systems.
- New control house will be wired per current NSTAR [REDACTED] to improve troubleshooting and reduce mis-operations due to old wiring.

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

Lexington Station [REDACTED] Asset Condition Upgrade Project (ISO-NE Asset Condition Project ID 63)

Benefits and Alternatives:

Benefits:

[REDACTED]
[REDACTED]

Also, the Project includes the asset condition replacement of a 115kV circuit switcher, brown glass insulators and supporting equipment that have reached the end of their useful life.

Alternatives:

[REDACTED]
[REDACTED] no

alternatives can be considered.

The project consists of the following elements:

1. Installation of a new control house extension which will contain 345kV protection relays.
2. Installation of batteries in separate enclosures.
3. Replace eleven 345kV insulators and 57 115kV insulators.
4. Replace 115kV circuit switcher with a circuit breaker.
5. Brace the existing 345kV bus work by installing a new 345kV insulator, structural steel, foundation and ground grid modifications.

Project Description:

Refer to the last published Asset Condition List under Regional System Plan for current status, projected in-service date, and projected in-service costs.

Southeast Massachusetts/ Rhode Island Reliability Project (ISO-NE Project ID 1789)

Benefits and Alternatives:

Benefits:

Eight of the existing 345kV circuit breakers were found to exceed their interrupting duty during the evaluation performed for the SEMA/RI Solutions Study. The Project is required to maintain system reliability by replacing the breakers with higher duty breakers.

Alternatives:

The alternative considered in addition to the preferred Project was to install series reactors on the lines to reduce the fault current. One series reactor must be installed on each phase of a transmission line. Reactors may have to be installed on several lines to reduce breaker interrupting duty sufficiently. Because of cost and space considerations this alternative was not selected.

The project consists of the following elements:

The scope of work is to replace eight existing 345kV circuit breakers with higher interrupting rated circuit breakers. The Project also includes the evaluation of bus short circuit strength and ground grid capacity.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.

Replace Brown Glass Ins Station 446 (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The replacement of the existing brown glass insulators will improve the station operation reliability. It will also improve the safety for the workers that work in the station as the insulator failures have resulted in the insulators and associated equipment falling to the ground in an unexpected and random mode.

Alternatives:

1. Leave the existing insulators in place and replace as they fail. This alternative continues the poor reliability at the station as a result of the insulator failures. The safety issues with the aged insulators would also not be addressed.
2. Replace switch insulators rather than the entire disconnect switch. This alternative would require a longer outage for each switch to replace. The switch would need to be removed and rebuilt, all during the outage. By replacing the switch entire, the switch can be built and prepared for installation prior to the actual outage.

The project consists of the following elements:

Replace 192 brown glass insulators with new composite or porcelain insulators depending on location. Install 30 additional insulators, remove 18 rod gaps and install 30 new structures within the station.

Project Description:

- Current Status: Under construction
- Material Changes to Project: None
- Projected In Service Date: 2021
- Projected Project Cost: \$5.9 Million

Brown Glass Replace Station 478 (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The replacement of the existing brown glass insulators will improve the station operation reliability. It will also improve the safety for the workers that work in the station as the insulator failures have resulted in the insulators and associated equipment falling to the ground in an unexpected and random mode.

Alternatives:

1. Leave the existing insulators in place and replace as they fail. This alternative continues the poor reliability at the station as a result of the insulator failures. The safety issues with the aged insulators would also not be addressed.
2. Replace switch insulators rather than the entire disconnect switch. This alternative would require a longer outage for each switch to replace. The switch would need to be removed and rebuilt, all during the outage. By replacing the switch entire, the switch can be built and prepared for installation prior to the actual outage.

The project consists of the following elements:

Replace 60 brown glass insulators with new composite or porcelain insulators depending on location. Install 27 additional insulators and install new structures within the station.

Project Description:

- Current Status: Under construction
- Material Changes to Project: None
- Projected In Service Date: 2021
- Projected Project Cost: \$2.6 Million

IDS (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

The purpose of this project is to provide enhanced intrusion detection at certain transmission substations and to provide physical protection for certain transmission long lead time substation assets. This is driven by NERC Reliability Standard [REDACTED] Requirements. The initial stations selected are those that if compromised would result in cascading instability to the system.

Alternatives:

An alternative to protecting the stations and assets would be to reconfigure the system so that damage to these facilities would not result in system instability. As the system has developed over a period of decades into its current configuration this approach is not considered to be practicable for these facilities.

The project consists of the following:

The project consists of installing intrusion detection systems (IDS), perimeter fence protection and specific asset protection at various substations in Eastern Massachusetts.

Project Description:

- Current Status: Under construction
- Material Changes to Project: None
- Projected In Service Date: 2022
- Projected Project Cost: \$106 Million

EMA Battery Monitoring (ISO-NE Project ID None)

Benefits and Alternatives:

Benefits:

NERC PRC-005 outlines required battery maintenance and testing practices, one of which is the internal ohmic resistance test required every 18 months. Installation of battery monitoring systems will alleviate the testing requirements, yield more consistent data, and provide live monitoring capability of substation batteries.

Alternatives:

Alternatives considered consisted of evaluating various battery monitoring solutions.

The project consists of the following:

The project consists of installing 115 battery monitors at 54 substations.

Project Description:

- Current Status: Under construction
- Material Changes to Project: None
- Projected In Service Date: 2021
- Projected Project Cost: \$5.4 Million

Southeast Massachusetts/Rhode Island Reliability Project (ISO-NE Project ID 1732)

Benefits and Alternatives:

Benefits:

This scope of work addresses N-1-1 overloads on existing 115kV lines on the existing transmission system as well as low voltage at several substations.

Alternatives:

An alternative to the project was to reconductor/rebuild approximately 14 miles of existing 115kV transmission lines as well as installing new reactive devices. This alternative was not selected because it was more expensive than the selected project.

The project consists of the following elements:

The project scope includes the addition of a 4th bay of switchgear to the existing Medway Substation. The switchgear will include three 115kV circuit breakers along with six breaker isolation disconnect switches, two line end disconnect switches and two sets of line CCVTs. Two new revenue metering installations are required as well as the relocation of the termination points for two existing 115kV lines to avoid line crossings. Transmission structure additions and removals will be required to support the line termination relocations along with a short section of underground 115kV solid dielectric cable. Additional relays and controls will be installed.

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs

Greater Boston – [REDACTED] (ISO-NE Project ID 1738)

Benefits and Alternatives:

Benefits:

[REDACTED]

Alternatives:

[REDACTED] no

alternatives can be considered.

The project consists of the following elements:

1. Install 15'W x 65'L x 20'H relay house to house new P1 and P2 relays.
 - a. Due to proximity of the line 115kV bus the new relay house cannot be craned into place. New relay house must be rolled.
 - b. To install new relay house approximately half of the south bus and associated frames will need to be removed and reinstalled after the relay house is installed.
 - c. Cribbing will need to be placed around south bus foundations to roll the new relay house into the final location.
2. Install additional 20" wide precast trench throughout the yard
3. Install (38) conventional panels in new relay house
4. Install (2) SCADA/IT cabinets
5. Install P2 130VDC, 1020 AH battery system in existing control house as space is available from demo of equipment
6. Replace battery system in existing control house with a 130VDC, 1020 AH battery system. Monitoring for batteries will be done as part of this Project but the cost will be charged to the battery monitoring program.
7. Demo obsolete relay and control cabinets (P1 and P2) in existing control house after cutovers are complete

Project Description:

Refer to the last published Regional System Plan for current status, projected in-service date, and projected in-service costs.