



Operating Procedures

ISO New England Operating Procedure No. 17

*Load Power Factor Correction – Appendix A –
Area Definitions*

Effective Date: October 21, 2010
Revision No. 12

APPENDIX A - AREA DEFINITIONS

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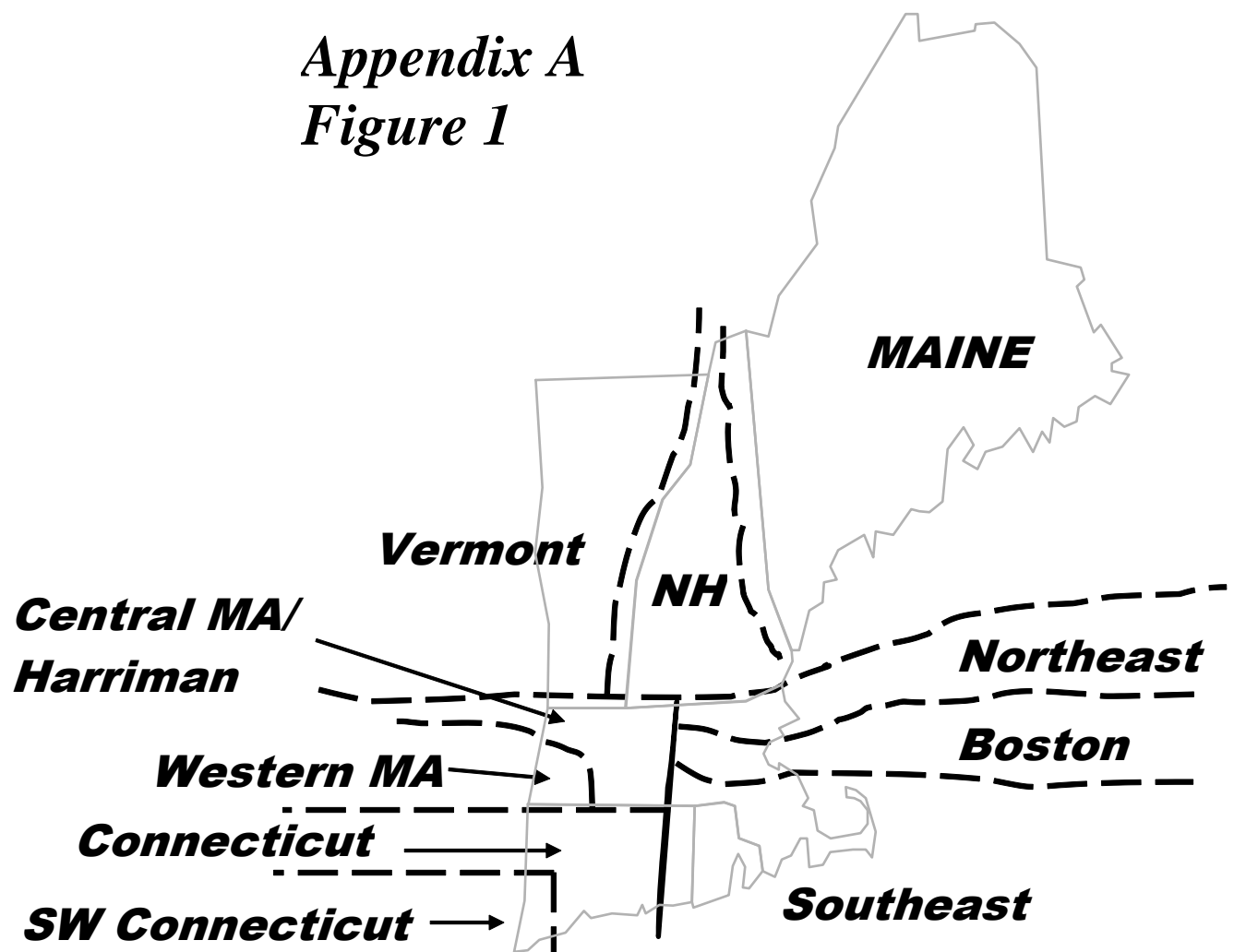
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I. Background

The ISO New England Reliability Coordinator Area/Balancing Authority Area (RCA/BAA) is currently divided into 10 areas based on voltage/reactive performance, the number and strength of interconnections between voltage levels, and physical characteristics such as length of transmission lines, overhead or underground construction, etc. These 10 area definitions contained in the following tables may be updated from time to time, as system changes dictate. The 10 areas are shown below in Figure 1.



II. ISO New England RCA/BAA Voltage/Reactive Area Definitions

The 10 area descriptions are as follows:

Maine Area

Transmission Element Description	Terminals	Voltage
3001 line	Keswick - Keene Rd	345 kV
390 line	Point Lepreau - Orrington	345 kV
391 line	Scobie - Buxton	345 kV
385 line	Deerfield - Buxton	345 kV
250 line	Three Rivers - Maguire	115 kV
197 line	Three Rivers – Quaker Hill	115 kV
214-3 line	Saco Valley – Lovell	115 kV

Bolt Hill load is supplied from New Hampshire and Maine
Bolt Hill LPF compares to Maine area LPF Standard

New Hampshire Area

Transmission Element Description	Terminals	Voltage
391 line	Buxton – Scobie	345 kV
385 line	Buxton – Deerfield	345 kV
250 line	Maguire – Three Rivers	115 kV
197 line	Quaker Hill – Three Rivers	115 kV
214-3 line	Lovell – Saco Valley	115 kV
394-1 line	West Amesbury – Seabrook	345 kV
326-2 line	Sandy Pond – Lawrence	345 kV
379 line	Vernon_VT – Fitzwilliam	345 kV
Y151-5 line	Pelham – Power Street	115 kV
A201 line	N.Litchfield – Comerford	230 kV*
B202 line	N.Litchfield – Dunbarton Tap	230 kV
F206 line	Granite – Comerford	230 kV
K174 line	Ascutney – North Road	115 kV
I135N-4 line	Monadnock Tap – Monadnock	115 kV
60 line	St.Johnsbury - Littleton	115kV
B-49 line	Manchester - Bromley	46 kV
K186 line	Vernon_VT – Vernon Tap	115 kV
T3 transformer	Newfane	115/46 kV
3316 line	Barnet – Comerford	34.5 kV
3318 line	Monroe – Comerford	34.5 kV

Bolt Hill load is supplied from New Hampshire.

Bolt Hill LPF compares to Maine area LPF Standard

*Granite Ridge CT1 & CT2 units located in NEMA area on 230 kV lines, ST unit located in NH area on 115 kV line

Vermont Area

Transmission Element Description	Terminals	Voltage
1400 line	Stanstead – Derby (Derby load is normally fed radially out of Quebec but maybe switched to the VELCO system.)	120 kV
Highgate Converter	Highgate (like a resource within the VT area)	HVDC
PV-20-2 line	Plattsburgh – Grand Isle	115 kV
K37-4 line	Whitehall – Blissville	115 kV
60 line	Littleton – St.Johnsbury	115kV
340 line	Vernon_VT – Coolidge	345 kV
3320 line	Vernon_VT - Newfane	345 kV
I135N-1 line	Monadnock Tap – Bellows Falls	115 kV
J136N-1 line	East Winchendon Tap – Bellows Falls	115 kV
K174 line	North Road – Ascutney	115 kV
F206 line	Comerford – Granite	230 kV
3316 line	Comerford – Barnet	34.5 kV
3318 line	Comerford – Monroe	34.5 kV
T3 transformer	Newfane	115/46 kV

Northeast MA Area

Transmission Element Description	Terminals	Voltage
394-1 line	Seabrook – West Amesbury	345 kV
338 line	Woburn - Tewksbury	345 kV
326 line	Lawrence – Sandy Pond	345 kV
Y151 line	Power Street – Pelham	115 kV
A201 line	Comerford – N.Litchfield *	230 kV
B202 line	Dunbarton Tap – N.Litchfield *	230 kV
K137 line	Ayer – Sandy Pond	115 kV
L138W-1 line	Laurel Circle – Sandy Pond	115 kV
314 line	Wachusett – Sandy Pond	345 kV
343 line	Wachusett – Sandy Pond	345 kV
M139-4 line	North Woburn Tap – Pinehurst	115 kV
N140-2 line	North Woburn Tap – Pinehurst	115 kV
349X+Y line	Mystic – Golden Hill	345 kV
O167/423-515 line	Mystic – Everett	115 kV
P168/128-518 line	Chelsea – Revere	115 kV
Phase II	Sandy Pond (like a resource within the NEMA area)	HVDC

*Granite Ridge CT1 & CT2 units located in NEMA area on 230 kV lines, ST unit located in NH area on 115 kV line

Central MA/Harriman Area

Transmission Element Description	Terminals	Voltage
I135N-4 line	Monadnock – Monadnock Tap	115 kV
J136N-1 line	Bellows Falls – East Winchendon Tap	115 kV
B-49 line	Bromley - Manchester	46 kV
K6 line	Hoosick – Bennington	115 kV
E205W line	Rotterdam – Bear Swamp	230 kV
F132 line	Partridge – Adams	115 kV
B128-2 line	Montague/Cabot – Montague Tap	115 kV
Y177 line	Montague/Cabot – Sherman/Harriman Tap	115 kV
301 line	Ludlow – Carpenter Hill	345 kV
X176 line	Ludlow – Thorndike	115 kV
R144 line	Whitins Pond – Millbury	115 kV
Q143 line	Whitins Pond – Millbury	115 kV
C129N-1 line	Hopkinton – Millbury	115 kV
D130 line	Hopkinton – Millbury	115 kV
323 line	West Medway – Millbury	345 kV
357 line	West Medway – Millbury	345 kV
D156/513-507 line	West Framingham – Northboro Road	115 kV
314 line	Sandy Pond – Wachusett	345 kV
343 line	Sandy Pond – Wachusett	345 kV
K137 line	Sandy Pond – Ayer	115 kV
L138W-1 line	Sandy Pond – Laurel Circle	115 kV

Western MA Area

Transmission Element Description	Terminals	Voltage
340 line	Coolidge – Vernon_VT	345 kV
3320 line	Newfane – Vernon_VT	345 kV
K186 line	Vernon Tap – Vernon_VT	115 kV
379 line	Fitzwilliam – Vernon_VT	345 kV
393 line	Alps – Berkshire	345 kV
F132 line	Adams – Partridge	115 kV
B128-2 line	Montague Tap – Montague/Cabot	115 kV
Y177 line	Sherman/Harriman Tap – Montague/Cabot	115 kV
301 line	Carpenter Hill – Ludlow	345 kV
X176 line	Thorndike – Ludlow	115 kV
3419 line	Barbour Hill – Ludlow	345 kV
1768 line	North Bloomfield – Southwick	115 kV
1821 line	North Bloomfield – S. Agawam	115 kV
1836 line	North Bloomfield – S. Agawam	115 kV

Boston Area

Transmission Element Description	Terminals	Voltage
338 line	Tewksbury – Woburn	345 kV
456-522 line	West Walpole – Dover	115 kV
274-509 line	Medway – Sherborn	115 kV
240-601 line	West Medway – Framingham	230 kV
282-602 line	West Medway – Waltham	230 kV
D156/513-507 line	Northboro Road – West Framingham	115 kV
M139-4 line	Pinehurst – North Woburn Tap	115 kV
N140-2 line	Pinehurst– North Woburn Tap	115 kV
349X+Y line	Golden Hills – Mystic	345 kV
O167/423-515 line	Everett – Mystic	115 kV
P168/128-518 line	Revere – Chelsea	115 kV
517-524 line	North Quincy – Dewar Street (normally open)	115 kV
517-525 line	North Quincy – Dewar Street (normally open)	115 kV
345A transformer	Hyde Park – 345A	345/115 kV
345A transformer	K Street – 345A	345/115 kV
345B transformer	K Street – 345B	345/115 kV

Southeast Area

Transmission Element Description	Terminals	Voltage
1870S line	Shunock – Wood River	115 kV
330 line	Card – Lake Road	345 kV
2X transformer	Killingly 2X	345/115 kV
R144 line	Millbury – Whitins Pond	115 kV
Q143 line	Millbury – Whitins Pond	115 kV
C129N-1 line	Millbury – Hopkinton	115 kV
D130 line	Millbury – Hopkinton	115 kV
323 line	Millbury – West Medway	345 kV
357 line	Millbury – West Medway	345 kV
456-522 line	Dover –West Walpole	115 kV
274-509 line	Sherborn – Medway	115 kV
240-601 line	Framingham – West Medway	230 kV
282-602 line	Waltham – West Medway	230 kV
517-524 line	Dewar Street – North Quincy (normally open)	115 kV
517-525 line	Dewar Street – North Quincy (normally open)	115 kV
345A transformer	Hyde Park - 345A	345/115 kV
345A transformer	K Street – 345A	345/115 kV
345B transformer	K Street - 345B	345/115 kV

Connecticut Area

Transmission Element Description	Terminals	Voltage
398 line	Pleasant Valley – Long Mountain	345 kV
690 line	Smithfield – Salisbury	69 kV
3419 line	Ludlow – Barbour Hill	345 kV
1821 line	South Agawam – North Bloomfield	115 kV
1836 line	South Agawam – North Bloomfield	115 kV
1768 line	Southwick – North Bloomfield	115 kV
330 line	Lake Road – Card	345 kV
2X transformer	Killingly 2X	345/115 kV
1870S line	Wood River – Shunock	115 kV
Cross Sound Cable	Cross Sound Cable (like a resource within the CT area)	HVDC

Southwest CT Area

Transmission Element Description	Terminals	Voltage
321 line	Long Mountain – Plumtree	345 kV
3827 line	Beseck – E.Devon	345 kV
1445 line	Frost Bridge – Shaws Hill	115 kV
1990-1 line	Frost Bridge – Baldwin Tap	115 kV
1721 line	Frost Bridge – Freight	115 kV
1238 line	Frost Bridge – Carmel Hill	115 kV
1550-1 line	Frost Bridge – Noera Tap	115 kV
1163-1 line	Frost Bridge – Noera Tap	115 kV
1910 line	Southington – Todd	115 kV
1950 line	Southington – Canal	115 kV
1208 line	Southington – Wallingford	115 kV
1610 line	Southington – Glen Lake Jct.	115 kV
5X transformer	Southington	115/13.8 kV
6X transformer	Southington	115/13.8 kV
11X transformer	Southington	115/27.6 kV
8100 line	East Shore – Grand Ave.	115 kV
8200 line	East Shore – Grand Ave.	115 kV
1460 line	East Shore – Branford RR	115 kV
1738 line	Stepstone - Branford	115 kV

III. OP 17 Appendix A Revision History

Document History (This Document History documents action taken on the equivalent NEPOOL Procedure prior to the RTO Operations Date as well revisions made to the ISO New England Procedure subsequent to the RTO Operations Date.)

Rev. No.	Date	Reason
Rev 1	03/07/03	
Rev 2	02/01/05	Updated to conform to RTO terminology
Rev 3	06/02/05	Update for changes resulting from VTF meetings
Rev 4	09/07/06	Update for changes resulting from VTF meetings
Rev 5	10/23/06	Revised 148-522X+Y to 456-522
Rev 6	07/09/07	Update for changes resulting from VTF meetings
Rev 7	03/03/08	Revised to update for changes resulting from VTF meetings including: deleted K-41, N133 and 1690 lines; added K60 line; corrected names and sequencing for terminal listings for various lines; provided asterisks and applicable supporting information for various lines; changed Killingly 2x to 2X & added kV to Killingly 345/115; and deleted numbering for each geographic area.
Rev 8	07/18/08	Western MA Area changed 395 line to 3419 and Meeksville Junction to Barbour Hill Boston Area changed 3162 line to 345A and Stoughton to 345A; added 345A line K Street to 345A 345/115 kV; changed 3164 line to 345B and Stoughton to 345B (future) Southeast Area changed 3162 line to 345A and Stoughton to 345A; added 345A line K Street to 345A 345/115 kV; changed 3164 line to 345B and Stoughton to 345B (future) Connecticut changed 395 line to 3419 and Meeksville Junction to Barbour Hill Southwest CT Area added 3827 line Beseck – E.Devon 345 kV
Rev 9	01/26/09	Changes in Maine Area: Y-138 - White Lake – Saco Valley 115 kV Changes in New Hampshire Area: 394 - Ward Hill – Seabrook 345 kV 379 - Vermont Yankee – Fitzwilliam 345 kV Y151 - Pelham – Power Street 115 kV F206 -Granite – Comerford 230 kV K174 -Ascutney – North Road 115 kV 3316 - Barnet – Comerford 34.5 kV 3318 - Monroe – Comerford 34.5 kV Changes in Northeast MA Area: Y151 - Power Street - Pelham 115 kV Changes in Western MA Area: 379 - Fitzwilliam – Vermont Yankee 345 kV
Rev 10	06/05/09	Changes in Maine Area: Changed Y-138 White Lake – Saco Valley to 214 Saco Valley – Lovell and deleted (Normally Open, Saco Valley is New Hampshire load that is fed radially from Maine; Changes in New Hampshire Area: Changed Y-138 Saco Valley – White Lake to 214-3 Lovell – Saco Valley and deleted (Normally Open, Saco Valley is New Hampshire load that is fed radially from Maine; Changes in Southwest CT Area: Deleted 12X Southington 115/27.6 kV Transformer
Rev 11	12/15/09	Changes in Northeast MA Area: Line # 338 Tewksbury – Woburn to Woburn – Tewksbury Changed Central MA/Harriman Area: Line # F132 from Adams – Partridge to Partridge – Adams; Line # D156/153/507 from Northboro Road – West Framingham to West Framingham – Northboro Road; Changes in Southeast Area: Line # 1870 from Wood River - Shunock to Shunock – Wood River

Rev. No.	Date	Reason
Rev 12	10/21/10	<p>Globally reformatted entire document, changed font to Arial, added TOC, Added Uncontrolled disclaimer to 1st page footer & Hard Copy is Uncontrolled to all footers, Replaced page numbering with X of Y Pages, Created major sections, Modified text and converted data text to be in table form, Modified data to be consistent, Biennial review by procedure owner</p> <p>Maine Area: 396 line: replaced 396 with 3001 and Chester with Keene Rd; 390 line: Added "Point" in the terminal description 214 line: replaced with 241-3 line and added kV to voltage description</p> <p>New Hampshire Area: 394 line: added "-1" and replaced "Ward Hill" with "West Amesbury" 326 line: added "-2" 379 line: replaced "Vermont Yankee" with Vernon_VT" Y151 line: added "-5"; I135N line: added "-4" K60 line: deleted "K" 4X transformer: deleted T-3 transformer: added with new data</p> <p>Vermont Area: PV-20 line: added "-2" K7 line: replaced with "K37-4" K60 line: deleted "K" 340 line: replaced "Vermont Yankee" with "Vernon_VT" 3320 line: added with new data I135N line: added "-1" J136N line: added "-1" Added T3 transformer</p> <p>Northeast MA Area: 394 line: added "-1" and replaced "Ward Hill" with "West Amesbury" K137W line: deleted "W" with "-1" L138W line added "-1" M139 line: added "-4", deleted "(Billerica Tap)" from "Pinehurst", added "Tap" to "North Woburn" N140 line" added "-2", deleted "Tap" from "Pinehurst" & added "Tap" to "North Woburn" deleted "Tap" from "Pinehurst"</p> <p>Central Mass/Harriman Area: I135N line: added "-4" J135N line: added "-1" B128 line: added "-2", replaced "Indeck" with "Montague Tap" R144 line: Replaced "Woonsocket" with "Whitins Pond" D156/153-507 line: replaced with "D156/513-507" K137W line: deleted "W" L138W line: added "-1" K137W line: deleted "W"</p> <p>Western MA Area: 340 line: replaced "Vermont Yankee" with "Vernon_VT" 3320 line: added new line and data; 4X transformer: deleted K186 line added new line and data; 379 line: replaced "Vermont Yankee" with "Vernon_VT" B128 line: added "-2" and replaced "Indeck" with "Montague Tap"</p> <p>Boston Area: M139 line: added "-4" and replaced "Billerica Tap" with "Pinehurst" N140 line: added "-2" and deleted "Tap" from "Pinehurst" Both 517 – 524 & 517 – 525 lines: added comments "normally open" 345A (at Hyde Park) and 345A, 345B (at K Street): added "transformer" to all 3</p> <p>Southeast Area: 2X added transformer; R144 line: replaced "Woonsocket" with "Whitins Pond" C129N-1 line: added "N-1"; 345A (at Hyde Park) and 345A, 345B (at K Street): added "transformer" to all 3</p> <p>Connecticut Area: 2X: added "transformer"</p> <p>Southwest CT Area: 1990 line: added "-1" and replaced "Jct" with "Tap" 5X, 6X & 11X: added "transformer" 1738 line: Added new line and data, Stepstone – Branford, 115 kV</p>