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|  | © ISO New England, Inc. 2026 | Master/LCC Procedure No. 18 – New England System Restoration Plan, Attachment C |
| | | Revision Number: 15 Revision Date: March 18, 2026 |
| Owner: System Restoration Working Group (SRWG) Chair | | Approved by: M/LCC Heads |
| | | Review Due Date: March 18, 2027 |

Attachment C - Charging of 345 kV Circuits in New England

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Table 1 - Charging of 345 kV Circuits in New England

NOTE

All MVAR values are at nominal voltage.

A circuit # followed by an asterisk (*) indicates a 345 kV cable that has one (1) or more reactors simultaneously switched upon cable energization; MVAR charging values listed indicates gross/net charging to account for reactor compensation. These are calculated values only and they do **not** account for additional reactive Resources available to further compensate cable charging.

NOTE

All Lines that terminate in more than 1 Local Control Center (LCC) or Reliability Coordinator Area (RCA) jurisdiction are listed in each LCC and are **bolded**. The jurisdictional LCC or RC for the remote terminal is listed after the terminal name.

NOTE**

The 349 Line [Sections 4 and 5 with circuit #s followed by a double asterisk (**)] overhead segment between Wakefield Junction and Golden Hills (NGRID) **cannot** be in-service without the Golden Hills - Mystic 349 XY (or 349X or 349Y) underground cable segment(s) (NGRID – NSTAR) also being in-service.

**Section 1 - CONVEX**

| Circuit # | Terminals | Charging (MVar) |
|------------------|--|------------------------|
| 1X-Line | Northfield - Northfield 1X Transformer | 10.6 |
| 3X-Line | Northfield - Northfield 3X Transformer | 10.6 |
| 301 | Ludlow - Carpenter Hill (NGRID) | 20.9 |
| 310 | Millstone - Manchester | 41.3 |
| 312 | Berkshire - Northfield Mountain | 31.7 |
| 321 | Long Mountain - Plumtree | 15.8 |
| 329 | Frost Bridge - Southington | 8.6 |
| 330 | Card - Lake Road | 25.2 |
| 334 | Ludlow - Stony Brook | 3.8 |
| 341 | Lake Road - West Farnum (RIE) | 22.0 |
| 347 | Killingly - Sherman Road (RIE) | 13.3 |
| 348 | Millstone - Haddam | 23.1 |
| 352 | Long Mountain - Frost Bridge | 13.9 |
| 354 | Ludlow - Northfield Mountain | 25.1 |
| 362 | Haddam Neck - Beseck | 16.1 |
| 364 | Haddam Neck - Montville | 19.6 |



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| Circuit # | Terminals | Charging (MVar) |
|------------------|--|------------------------|
| 368 | Manchester - Card | 14.1 |
| 371 | Millstone - Montville | 10.6 |
| 376 | Haddam Neck - Scovill Rock | 4.3 |
| 381 | Northfield Mountain - Vernon VT (VELCO) | 17.1 |
| 383 | Millstone - Card | 24.8 |
| 384 | Laurel Energy - Scovill Rock | 2.2 |
| 387 | East Shore - Halvarsson - Scovill Rock | 26.9 |
| 393 | Berkshire - Alps (NYISO) | 20.0 |
| 398 | Long Mountain - Cricket Valley (NYISO) | 6.0 |
| 3041 | Scovill Rock - Southington | 16.7 |
| 3165* | Singer - East Devon | 102.6 / 2.6 |
| 3196 | Ludlow - Agawam | 15.6 |
| 3216 | Agawam - North Bloomfield | 17.2 |
| 3252 | Beseck - Haddam | 13.9 |
| 3271 | Lake Road - Card | 25.8 |
| 3280* | Singer - Norwalk | 186.4 / 0.0 |
| 3348 | Killingly - Lake Road | 0.5 |



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| Circuit # | Terminals | Charging (MVar) |
|------------------|---|------------------------|
| 3403* | Plumtree - Norwalk (one cable in service) | 241.9 / 91.9 |
| 3419 | Barbour Hill - Ludlow | 17.1 |
| 3424 | Manchester - Kleen | 11.2 |
| 3533 | Scovill Rock - Kleen | 3.2 |
| 3557 | Barbour Hill - Manchester | 5.3 |
| 3619* | Singer - East Devon | 102.5 / 2.5 |
| 3642 | Manchester - North Bloomfield | 14.4 |
| 3754 | Beseck - Southington | 10.4 |
| 3827 | Beseck - East Devon | 41.9 |
| 3921* | Singer - Norwalk | 186.4 / 0.0 |
| | | |

**Section 2 - Maine**

| Circuit # | Terminals | Charging (MVar) |
|-----------------|---|-----------------|
| 374 | Buxton - Surowiec | 22.7 |
| 375 | Surowiec - Maine Yankee | 25.5 |
| 377 | Surowiec - Maine Yankee | 25.6 |
| 378 | Mason - Maine Yankee | 3.0 |
| 385 | Buxton - Deerfield (New Hampshire) | 42.1 |
| 386 | Buxton - South Gorham | 5.9 |
| 388 | Coopers Mills Road - Orrington | 47.3 |
| 390/3016 | Orrington - Point Lepreau (NBPSO) | 124.2 |
| 391 | Buxton - Scobie Pond (New Hampshire) | 58.0 |
| 392 | Maine Yankee - Coopers Mills Road | 22.9 |
| 396 | Orrington - Keene Road | 43.0 |
| 3001 | Keene Road - Keswick (NBPSO) | 83.2 |
| 3015 | Keene Road - Chester SVC | 0.1 |
| 3020 | Surowiec - Raven Farm | 11.5 |
| 3021 | Maguire Road - South Gorham | 18.3 |
| 3022 | Maguire Road - Eliot (New Hampshire) | 17.5 |



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| Circuit # | Terminals | Charging (MVar) |
|------------------|------------------------------------|------------------------|
| 3023 | Orrington - Albion Road | 52.1 |
| 3024 | Albion Rd - Coopers Mills Road | 18.4 |
| 3025 | Coopers Mills Road - Larrabee Road | 31.2 |
| 3026 | Larrabee Road - Surowiec | 14.2 |
| 3027 | Coopers Mills Road - Maine Yankee | 23.6 |
| 3038 | Buxton - Surowiec | 22.8 |
| 3039 | Raven Farm - Yarmouth | 5.7 |
| 3040 | South Gorham - Raven Farm | 15.6 |
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Section 3 - New Hampshire

| Circuit # | Terminals | Charging (MVar) |
|-------------|---|-----------------|
| 307 | Deerfield - Eliot | 16.7 |
| 361 | Newington - Newington Energy | 1.2 |
| 326 | Scobie Pond - Lawrence Road - Sandy Pond (NGRID) | 25.8 |
| 363 | Seabrook - Scobie Pond | 26.8 |
| 367 | Fitzwilliam - Amherst | 27.2 |
| 369 | Seabrook - Timber Swamp Road | 3.7 |
| 373 | Scobie Pond - Deerfield | 16.0 |
| 379 | Fitzwilliam - Vernon VT (VELCO) | 17.4 |
| 380 | Eagle - Scobie Pond | 8.3 |
| 385 | Deerfield - Buxton (Maine) | 42.1 |
| 391 | Scobie Pond - Buxton (Maine) | 58.0 |
| 394 | Seabrook - West Amesbury - Ward Hill (NGRID) | 22.3 |
| 3022 | Eliot - Maguire Road (Maine) | 17.5 |
| 3124 | Scobie Pond - Tewksbury (NGRID) | 21.7 |
| 3135 | Newington - Timber Swamp Road | 11.1 |
| 3176 | Newington - Eliot | 5.4 |



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| Circuit # | Terminals | Charging (MVar) |
|------------------|------------------|------------------------|
| 3195 | Amherst - Eagle | 5.6 |
| | | |



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Section 4 - NGRID

| Circuit # | Terminals | Charging (MVar) |
|------------|---|-----------------|
| 301 | Carpenter Hill - Ludlow (CONVEX) | 20.9 |
| 302 | Carpenter Hill - Millbury No. 3 | 13.1 |
| 303 | Berry Street - ANP Bellingham | 7.5 |
| 308 | Millbury No. 3 - Wachusett | 11.0 |
| 313 | Millbury No. 3 - Wachusett | 11.2 |
| 314 | Wachusett - Sandy Pond | 20.4 |
| 315 | Brayton Point - West Farnum (RIE) | 33.6 |
| 323 | Millbury No. 3 - West Medway (NSTAR) | 13.4 |
| 326 | Sandy Pond - Lawrence Road - Scobie Pond (New Hampshire) | 25.8 |
| 327 | Brayton Point - Berry Street | 21.0 |
| 335 | Holbrook - Auburn Street (NSTAR) | 6.6 |
| 337 | Tewksbury - Sandy Pond | 13.9 |
| 338 | Tewksbury - Woburn (NSTAR) | 11.5 |
| 339 | Wakefield Junction - Tewksbury | 13.6 |
| 342 | Auburn Street - Pilgrim - Canal (NSTAR) | 41.8 |
| 343 | Wachusett - Sandy Pond | 19.7 |



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| Circuit # | Terminals | Charging (MVar) |
|------------------|---|------------------------|
| 344 | Bridgewater - West Medway (NSTAR) | 25.3 |
| 349** | Wakefield Junction - Golden Hills | 2.2 |
| 349X** | Golden Hills - Mystic (NSTAR) | 140.2 |
| 349Y** | Golden Hills - Mystic (NSTAR) | 140.2 |
| 356 | Bridgewater - Carver (NSTAR) | 12.8 |
| 357 | Millbury - West Medway (NSTAR) | 13.6 |
| 366 | West Farnum (RIE) - Millbury | 18.1 |
| 394 | Ward Hill - West Amesbury - Seabrook (New Hampshire) | 22.3 |
| 397 | Ward Hill - Tewksbury | 13.7 |
| 3124 | Tewksbury - Scobie Pond (New Hampshire) | 21.7 |
| 3136 | Wakefield Junction - Woburn (NSTAR) | 130.9 |
| 3520 | ANP Bellingham - West Medway (NSTAR) | 1.8 |
| | | |

**Section 5 - NSTAR**

| Circuit # | Terminals | Charging (MVar) |
|---------------|--|-----------------|
| 316 | Holbrook - Stoughton | 5.2 |
| 319 | Woburn - Lexington | 7.5 |
| 322 | Canal - Carver | 13.4 |
| 323 | West Medway - Millbury No. 3 (NGRID) | 13.4 |
| 324 | Mystic - Kingston Street | 87.5 |
| 325 | West Medway - West Walpole | 6.6 |
| 331 | Carver - West Walpole | 22.4 |
| 335 | Holbrook - Auburn Street (NGRID) | 6.6 |
| 336 | West Medway - NEA Bellingham - ANP Blackstone | 7.1 |
| 338 | Woburn - Tewksbury (NGRID) | 11.5 |
| 342 | Canal - Pilgrim -Auburn Street (NGRID) | 41.8 |
| 344 | West Medway - Bridgewater (NGRID) | 25.3 |
| 346 | North Cambridge - Woburn | 120.4 |
| 349** | Golden Hills - Wakefield Junction (NGRID) | 2.2 |
| 349X** | Golden Hills - Mystic (NGRID) | 140.2 |
| 349Y** | Golden Hills - Mystic (NGRID) | 140.2 |



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| Circuit # | Terminals | Charging (MVar) |
|------------------|---|------------------------|
| 351 | Mystic - North Cambridge | 103.4 |
| 355 | Pilgrim - Carver | 13.2 |
| 356 | Carver - Bridgewater (NGRID) | 12.9 |
| 357 | West Medway - Millbury (NGRID) | 13.6 |
| 358 | Mystic - North Cambridge | 91.4 |
| 365 | North Cambridge - Woburn | 120.4 |
| 372 | Mystic - Kingston Street | 77.2 |
| 389 | West Medway - West Walpole | 8.8 |
| 399 | Carver - West Barnstable | 27.4 |
| 3136 | Woburn - Wakefield Junction (NGRID) | 129.1 |
| 3161 | Stoughton - West. Walpole | 8.3 |
| 3162* | Stoughton - K Street | 383.5 / 223.5 |
| 3163* | Stoughton - K Street | 383.5 / 223.5 |
| 3164* | Stoughton - Hyde Park | 245.4 / 85.4 |
| 3361 | ANP Blackstone - Sherman Road (RIE) | 9.3 |
| 3520 | West Medway - ANP Bellingham (NGRID) | 1.8 |
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Section 6 - RIE

| Circuit # | Terminals | Charging (MVar) |
|-------------|--|-----------------|
| 315 | Brayton Point (NGRID) - West Farnum | 33.6 |
| 328 | West Farnum - Sherman Road | 7.5 |
| 332 | West Farnum - Kent County | 17.7 |
| 333 | Ocean State – Sherman Road | 0.1 |
| 341 | West Farnum - Lake Road (CONVEX) | 22.2 |
| 347 | Sherman Road - Killingly (CONVEX) | 12.9 |
| 359 | Kent County - West Farnum | 18.7 |
| 366 | West Farnum – Millbury (NGRID) | 18.1 |
| 3361 | Sherman Road - ANP Blackstone (NSTAR) | 12.1 |
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Section 7 - VELCO


| Circuit # | Terminals | Charging (MVar) |
|------------|---|-----------------|
| 340 | Vernon VT - Coolidge | 43.7 |
| 350 | Coolidge - West Rutland | 23.6 |
| 370 | West Rutland - New Haven | 30.7 |
| 379 | Vernon VT - Fitzwilliam (New Hampshire) | 17.4 |
| 381 | Vernon VT - Northfield Mountain (CONVEX) | 17.1 |
| 3320 | Newfane - Vernon VT | 15.1 |
| 3321 | Newfane - Coolidge | 30.4 |
| 3340 | Vermont Yankee - Vernon VT | 0.2 |
| 3381 | Vermont Yankee - Vernon VT | 0.2 |
| | | |

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M/LCC 18 Attachment C Revision History

Document History (This document was created from the retired OP- 6 Appendix C)

| Rev. No. | Date | Reason |
|----------|----------|--|
| -- | 10/30/18 | For previous revision history, refer to Rev 10.1 available through Ask ISO |
| 11 | 10/30/18 | Annual review by procedure owner; Globally, replaced “REMVEC/NGRID” with “NGRID” and re-ordered Tables 4 and 5 to remain alphabetical by LCC; Truncated the Revision History per SOP-RTMKTS.0210.0010 Section 5.6 This revision is not the result of a BES change and does not necessitate a change to the implementation of the Restoration Plan and does not result in changes to roles or tasks performed by identified entities in the Plan. |
| 12 | 07/17/19 | Annual review by procedure owner; identified new owner, Section 1, modified terminal and charging date for 398 Line; This revision is the result of a permanent planned or unplanned BES modification. This revision does not change the ability, through roles or specific tasks of one or more entities identified in the restoration plan, to implement the approved restoration plan. This revision does not impact the ability of ISO-NE to monitor and direct restoration efforts. |
| 12.1 | 06/09/20 | Annual review by procedure owner. No need for changes noted. This revision is not the result of any permanent planned or unplanned BES modification. This revision does not change the ability, through roles or specific tasks of one or more entities identified in the Plan, to implement the approved Plan. This revision does not impact the ability of ISO-NE to monitor and direct restoration efforts. |
| 12.2 | 03/25/21 | Annual review by procedure owner requiring no changes; This revision is not the result of a permanent planned or unplanned BES modification. This revision does not change the ability, through roles or specific tasks of one or more entities identified in the Plan, to implement the approved Plan. This revision does not impact the ability of ISO-NE to monitor and direct restoration efforts |
| 13 | 03/03/22 | Annual review by procedure owner; identified new owner, Sections 4 & 5, modified charging data for 349X and 349Y Lines; Section 5: modified charging data for 372 Line Re-titled main document; changed document owner. Edits for conforming nomenclature. This revision is not the result of any permanent planned or unplanned BES modification. This revision does not change the ability, through roles or specific tasks, of one or more entities identified in the Plan, to implement the approved Plan. This revision does not impact the ability of ISO-NE to monitor and direct system restoration efforts. |
| 13.1 | 03/01/23 | Annual review by procedure owner requiring no intent changes. Section 4: Removed NSTAR designation for Golden Hills substation in 349 row. This revision is not the result of any permanent planned or unplanned BES modification. This revision does not change the ability, through roles or specific tasks, of one or more entities identified in the Plan, to implement the approved Plan. This revision does not impact the ability of ISO-NE to monitor and direct system restoration efforts. |
| 14 | 02/28/24 | Annual review by procedure owner; Updated MVAR charging values in all sections per NX9 database; Added 3136 Line entries to Sections 4 and 5; This revision is the result of a permanent planned BES modification; This revision does not change the ability, through roles or specific tasks, of one or more entities identified in the Plan, to implement the approved Plan; This revision does not impact the ability of ISO-NE to monitor and direct system restoration efforts. |

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| 14.1 | 05/20/24 | Annual review by procedure owner; Added Table 6 for RIE inclusion; Moved items from Table 4 NGRID to Table 6 RIE as needed; This revision is not the result of any permanent planned or unplanned BES modification; This revision does not change the ability, through roles or specific tasks, of one or more entities identified in the Plan, to implement the approved Plan; This revision does not impact the ability of ISO-NE to monitor and direct system restoration efforts. |
| 14.2 | 03/24/25 | Annual review by procedure owner requiring no changes. This revision is not the result of any permanent planned or unplanned BES modification; This revision does not change the ability, through roles or specific tasks, of one or more entities identified in the Plan, to implement the approved Plan; This revision does not impact the ability of ISO-NE to monitor and direct system restoration efforts. |
| 15 | 03/18/26 | Annual review by procedure owner. Added 3027 Coopers Mills Road – Maine Yankee; Updated MVAR charging values in all sections per NX9 database; This revision is not the result of any permanent planned or unplanned BES modification; This revision does not change the ability, through roles or specific tasks, of one or more entities identified in the Plan, to implement the approved Plan; This revision does not impact the ability of ISO-NE to monitor and direct system restoration efforts. |
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