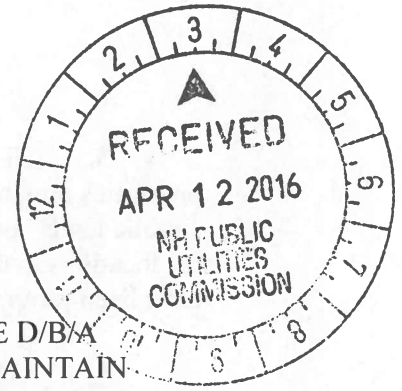


**THE STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION**



PETITION OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE D/B/A EVERSOURCE ENERGY FOR LICENSES TO CONSTRUCT AND MAINTAIN ELECTRIC LINES, NEUTRAL WIRE AND FIBER OPTIC CABLE OVER AND ACROSS PUBLIC LANDS OWNED BY THE STATE OF NEW HAMPSHIRE IN THE TOWNS OF DURHAM AND NEWINGTON, NEW HAMPSHIRE

TO THE PUBLIC UTILITIES COMMISSION:

Public Service Company of New Hampshire d/b/a Eversource Energy (“PSNH”), a public utility engaged in the generation, transmission, distribution and sale of electricity in the State of New Hampshire, hereby petitions the Public Utilities Commission (“Commission”), pursuant to RSA 371:17, for licenses to construct and maintain electric lines, neutral wire and fiber optic cable at five locations over and across public lands owned by the State of New Hampshire in the Towns of Durham and Newington, New Hampshire, and in support of its petition states as follows:

1. In order to meet the reasonable requirements of service to the public, PSNH has previously constructed and currently operates and maintains three 34.5 kV lines in the New Hampshire Seacoast Region, designated as Lines 380, 3162 and 3850. Line 380 runs between PSNH’s Madbury Substation in Madbury, New Hampshire to PSNH’s Packers Falls Substation in Durham, New Hampshire. Line 3162 runs from PSNH’s Packers Falls Substation to Little Bay in Durham, New Hampshire. Line 3850 runs from PSNH’s Portsmouth Substation in Portsmouth, New Hampshire to Little Bay in Newington, New Hampshire. Lines 380, 3162 and 3850 are an integral part of the PSNH distribution system serving the New Hampshire Seacoast Region.

2. In order to continue to meet the reasonable requirements of service to the public, PSNH has determined it is necessary to install a new 115kV line from the Madbury Substation in Madbury, New Hampshire to the Portsmouth Substation in Portsmouth, New Hampshire, to be designated as Line “F107”, also identified as PSNH’s Seacoast Reliability Project. Line F107 is needed to provide a parallel path to enhance the existing 115 kV loop between the Deerfield and Scobie Pond Substations in order to address reliability concerns in the New Hampshire Seacoast Region, which have previously been identified by the Independent System Operator – New England (“ISO-NE”). PSNH, working with ISO-NE, conducted a needs assessment study which concluded that the New Hampshire Seacoast Region requires additional transmission capacity to support the reliable delivery of electric power to meet the region’s current demand and future increased demand. The approximate in-service date for this new line is in the 4th Quarter of 2018. Installing this new transmission line will allow PSNH to continue to provide reliable electric service to its customers in this area of the State.

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3. The F107, as presently proposed, includes overhead crossings of properties now owned by the State of New Hampshire (hereinafter referred to as the “public lands” or “public land”) at three (3) locations in the Town of Durham and at two (2) locations in the Town of Newington. The general location plans of these crossings have been provided on Exhibits 1, 4, 6 and 8 of this petition.

4. In Durham, the first two locations are lands maintained by The New Hampshire Fish and Game Department (NHF&G) located just north of Bennett Road and west of NH Route 108 (see Exhibit 1). The third crossing location is also maintained by NHF&G and is located east of Sandy Brook Drive and north of Long Marsh Road (see Exhibit 4). The first overhead crossing involves the F107, 380 and 3162 Line spans, between Structures 46 and 58, which cross the public land located north of Bennett Road. This crossing also includes placement of Structures 47 through 57 on this public land. The second overhead crossing involves the F107 and 3162 Line spans, between Structures 59 and 61, which cross the public land located west of New Hampshire Route 108. This crossing also includes placement of Structure 60 on this public land. The third overhead crossing involves the F107 and 3162 Line spans, between Structures 74 and 80, which cross the public land located east of Sandy Brook Drive. This crossing also includes placement of Structures 75 through 79 on this public land.¹

5. In Newington, the overhead crossings are on two parcels maintained by The New Hampshire Department of Transportation (NHDOT), both located west of the Spaulding Turnpike (see Exhibits 6 and 8). The first overhead crossing involves the F107 and 3850 Line spans, between F107 Structures 123 and 129, and between 3850 Structures 9 and 15, which cross public land located west of the Spaulding Turnpike. This crossing also includes placement of F107 Structures 124 through 128, and placement of 3850 Structures 10 through 15, on this public land². The second overhead crossing involves the F107 Line spans, between F107 Structures 131 and 133, which cross other public land also located west of the Spaulding Turnpike. This crossing also includes placement of F107 Structure 132 on this public land.

6. In order to improve and enhance the reliability and capacity of the communications system used in its electric system operations, and thereby meet the reasonable requirements of service to the public, PSNH will also install and maintain an optical ground wire, known as OPGW cable, on its new overhead line structures, which will cross the same public lands at the same locations as the electric overhead crossings. In addition to communications capabilities, the OPGW will provide lightning protection over the conductors in the overhead configurations.

¹ Due to either oversight, or the fact that the lands involved were in private ownership at the time of original construction, neither the existing 380 Line crossing, nor the existing 3162 Line crossings of these public lands have been previously licensed by the Commission; however, each of these crossings will be licensed under this petition.

² Due to either oversight, or the fact that the lands involved were in private ownership at the time of original construction, the existing 3850 Line crossings of these public lands have not been previously licensed by the Commission; however, these crossings will be licensed under this petition.

7. At the overhead crossings of the existing 380 and 3162 Line in Durham, the existing pole structures will be replaced with new double circuit single pole or multi-pole structures designed to handle the loads of supporting both the 115 kV F107 and either the 34.5 kV 380 or 3162 Lines. At the overhead crossings of the existing 3850 Line in Newington, the existing pole structures will be replaced with separate single circuit, single pole structures each designed to handle the loads of supporting the 115 kV F107 Line and the 34.5 kV 3850 Line, respectively. The F107 Line overhead crossings will be built with 1590 kcmil ACSR 45/7 conductor, and the 380 line, 3162 Line and 3850 crossings will be built with 477 kcmil ACSR 18/1 conductor. The 380 line has also been designed to accommodate 795 ACSR 26/7 conductor, with no change in clearances, which may be required based on anticipated future needs that may coincide with the timing of this project. A portion on the 3162 Line near New Hampshire Route 108 in Durham will be constructed with 477 kcmil spacer cable attached to a 19#10 alumoweld messenger cable. As noted above, F107 will support an optical ground wire (OPGW) for its entirety.

8. The general location of the F107, 380, 3162 and 3850 Line crossings that are the subject of this petition are attached as Exhibit 1 to Appendix A and Appendix B, Exhibit 4 to Appendix C, Exhibit 6 to Appendix D, and Exhibit 8 to Appendix E of this petition, respectively.

9. The clearance of conductors to public lands for each of the proposed crossings are provided on the plan and profile drawings attached as Exhibit 2 and 3 to Appendix A, as Exhibit 3 to Appendix B, as Exhibit 5 to Appendix C, as Exhibit 7 and 10 to Appendix D, and as Exhibit 9 to Appendix E of this petition, respectively.

10. The required technical information provided in this petition is based on the 2012 National Electrical Safety Code (NESC) C2-2012. The proposed crossings have been designed and will be constructed, maintained and operated by PSNH in accordance with the applicable requirements of the NESC.

11. Each of the crossings will be spanned using steel structures. Single wood or steel poles will be used at some locations as extra support for the 34.5kV conductors. Detail designs of these crossings and structure details have been outlined in Appendices A, B, C, D and E. The detailed configurations for all crossing structures are shown on Exhibit 11 of this petition.

12. Based on Table 232-1 of the NESC, for areas subject to truck traffic, neutral conductors 0V to 300V shall have a clearance to ground of 15.5 feet, and open supply conductors 750 V to 22 kV, shall have a minimum clearance to 18.5 feet. With an additional 1.6 feet of clearance required for 115 kV, the total required ground clearance for 115kV is 20.1 feet.

13. Based on Table 235-1³ of the NESC for horizontal clearance at the supports for wires or conductors carried on the same supporting structure, 57.4 inches is required between 115kV conductors, 22.9 inches is required between 34.5kV conductors, 45.3 inches is required between 115kV and 34.5kV conductors, 36.9 inches are required between 115kV and 0kV neutral or static wires and 16.9 inches are required between 34.5kV and 0kV neutral or static wires. Based on Table 235-3 of the NESC for horizontal clearance along the span for wires or conductors carried on the same support 80.1 inches is required between 115kV conductors, 54.2 inches between 34.5kV conductors, 64.7 inches are required between 115kV and 0kV neutral or static wires, 49.8 inches are required between 34.5kV and 0kV neutral or static wires and 70.7 inches are required between 115kV and 34.5kV conductors. These horizontal clearances assume conductor or wire sag of 30 feet (360 inches) which exceeds any sag at the location of these crossings. Based on Table 235.5 of the NESC, the vertical clearance required at the supports for wires or conductors carried on the same supporting structure is 60.9 inches between 115kV conductors, 26.9 inches between 34.5kV conductors, 48.8 inches between 115kV and 34.5kV conductors, 40.4 inches are required between 115kV and 0kV neutral or static wires and 20.9 inches are required between 34.5kV and 0kV neutral or static wires. Based on Rule 235.C.b.1 of the NESC, the vertical clearance required in the span for wires or conductors carried on the same supporting structure is 52.8 inches between 115kV conductors, 20.2 inches between 34.5kV conductors, 40.7 inches between 115kV and 34.5kV conductors, 32.3 inches are required between 115kV and 0kV neutral or static wires and 15.7 inches are required between 34.5kV and 0kV neutral or static wires. Per Figure 235-1 of the NESC, conductors or wires cannot encroach the envelope formed by the horizontal and vertical clearances prescribed above.

14. A total of three phase wires and one OPGW cable will span the overhead public land crossings for F107. A total of three phase wires and one neutral wire will span the overhead public land crossings for the 380, 3162 and 3850 Lines. In some locations, spacer cable rated for 34.5kV will be installed as an alternative to open wire conductors due to right of way space constraints. This spacer cable will be 477 kcmil cable. All three 1590 kcmil ACSR 45/7 phase conductors, all three 477 kcmil ACSR 18/1 phase conductors phase conductors, shield wire, messenger cables and the neutral wire will be sagged using the NESC Heavy Loading (0 degrees F, 4 pounds per square foot wind loading, ½-inch radial ice) sag charts upon installation in the field. The 1590 kcmil ACSR 45/7 conductors will be sagged using a maximum tension of 11,400 pounds (unless stated otherwise), the 477 kcmil ACSR 18/1 conductors will be sagged using a maximum tension of 3,500 pounds (unless stated otherwise), the shield wire will be sagged using a maximum tension of approximately 4,500 pounds, the messenger cable used to support the spacer cable will be sagged using a maximum tension of 9,000 pounds and the neutral wire will be sagged using a maximum tension of 2,500 pounds. The 477 kcmil spacer cable hangs on the messenger cable using support brackets with slack tensions. The sags and clearances to the land surface for each of the proposed overhead crossings are provided in the attached Appendices A, B, C, D and E.

³ Table 235-1 of the NESC does not specify a horizontal clearance value for conductors of the same circuit above 50kV phase to phase. The values provided are based on values for supply conductors of a different circuit.

15. A wetlands permit from the New Hampshire Department of Environmental Services (NHDES) and the U.S. Army Corp of Engineers (USACE) is required for the installation of Structures 48 and Hen1 (see Appendix A), and Hen3 and Hen4 (see Appendix B), and for access during construction. The appropriate wetlands permits will be applied for and obtained by PSNH prior to the installation of any new structures in wetlands, in conjunction with PSNH's Seacoast Reliability Project siting application for the F107 Line. The F107 crossings are subject to approval and the issuance of a certificate of site and facility by the New Hampshire Site Evaluation Committee (NHSEC) as part of PSNH's Seacoast Reliability Project filing. All approvals as part of that process will be obtained prior to construction.

16. For all of the overhead crossings which are the subject of this petition, PSNH owns a permanent, minimum 100 foot wide easement or a 100 foot wide use and occupancy utility corridor for its lines and facilities on the public lands of the proposed crossing locations. Each of the overhead crossings will be constructed within the limits of those easements and corridors.

17. Aerial crossings of NH Route 108 are required as part of the crossing between structures 59 and 61 described in Appendix B of this petition. The appropriate NHDOT permission agreements will be applied for and obtained by PSNH prior to the installation of any new structure that will impact NHDOT jurisdictional areas, in conjunction with PSNH's Seacoast Reliability Project siting application.

18. All Seacoast Reliability Project structures in Newington, including all those proposed for the public land crossings which are the subject of this petition, will need an air obstruction determination from the Federal Aviation Administration (FAA) under Federal Aviation Regulation Part 77.9(b), due to proximity to the Portsmouth International Airport at Pease. Determinations will be requested from the FAA and appropriate measures will be taken by PSNH prior to the installation of any new structures that will impact FAA jurisdictional areas.

19. PSNH submits that the licenses petitioned for herein may be exercised without substantially affecting the rights of the public in the public lands covered in this petition. Minimum safe line clearances above all surfaces will be maintained at all times. The use and enjoyment by the public of the public lands will not be diminished in any material respect as a result of the overhead lines.

WHEREFORE, PSNH respectfully requests that the Commission:

- a. Find that the licenses petitioned for herein may be exercised without substantially affecting the public rights in the public lands of the State of New Hampshire which are the subject of this petition;

- b. Grant PSNH licenses to construct and maintain electric lines, neutral wire and fiber optic cable over and across the public lands of the State of New Hampshire as specified in the petition;
- c. Issue an Order Nisi and orders for its publication; and,
- d. Grant such other and further relief as may be just and reasonable.

Dated at Manchester this 9th day of March, 2016.

Respectfully submitted,

PUBLIC SERVICE COMPANY OF NEW
HAMPSHIRE d/b/a EVERSOURCE
ENERGY



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