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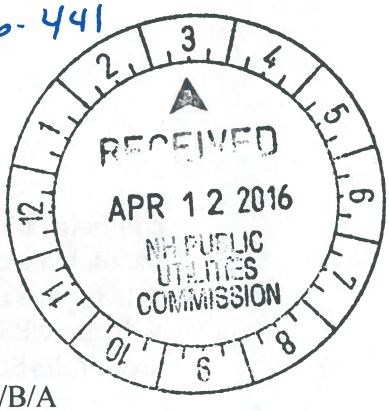

THE STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

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 THE PUBLIC WATERS OF THE OYSTER RIVER AND LITTLE BAY IN THE TOWN OF DURHAM, NEW HAMPSHIRE AND PICKERING BROOK AND LITTLE BAY IN THE TOWN OF 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 three locations over or under, and across, public waters 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. Additionally, on the National Oceanographic and Atmospheric Administration (NOAA) Chart #13285 there is an existing charted underwater cable corridor across Little Bay, which is located between the shoreline proximate to the 3162 Line right of way in Durham, and the shoreline proximate to the 3850 Line right of way in Newington. A copy of this NOAA Chart is attached to this petition as Exhibit 8. 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". 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.

3. The F107, as presently proposed, will cross public water bodies at two (2) locations in the Town of Durham, one over the Oyster River and one under Little Bay, and at two (2) locations in the Town of Newington, one over Pickering Brook and one under Little Bay.[1] The overhead Oyster River crossing will be double circuited with Line 380, which currently crosses the Oyster River at this location. The 3850 Line which currently crosses Pickering Brook at this location will be rebuilt offset from the existing location.[2] This will allow for the overhead Pickering Brook crossing of the F107 Line as a single circuit line, parallel to the 3850 Line, on separate structures. The crossing of Little Bay will be installed underwater in the existing cable crossing area. Four existing underwater cables were previously installed in this corridor, but were later de-energized and disconnected from existing circuits, and have been abandoned in place.

4. 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 F107 structures, which will cross the same public water bodies at the same locations as the F107 overhead crossings. In addition to communications capabilities, the OPGW will provide lightning protection over the conductors in the overhead configurations. Two ADSS (All Di-Electric Self Supporting) fiber optic cables will be installed with the underwater cable crossings in Little Bay to complete the communication path.

5. At the overhead crossings of the Oyster River and Pickering Brook, the existing 380 and 3850 line pole structures will be replaced with new double circuit or single circuit, single pole structures designed to handle the loads of supporting the 115 kV F107 and/or 34.5 kV 380 and 3850 lines. The F107 Line overhead crossing will be built with 1590 kcmil ACSR 45/7 conductor, and the 380 Line and 3850 Line 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. The F107 Line underwater crossing of Little Bay will be constructed with three 1400mm^2 cross link polyethylene (XLPE) , lead sheath, armored submarine cables with

[1] The town line between Durham and Newington bisects Little Bay, resulting in the location of the Little Bay underwater crossing in both Towns.

[2] Due to oversight or to the application of different public waters or navigability crossing criteria at the time of original construction, neither the existing 380 Line crossing of the Oyster River, nor the existing 3850 Line crossing of Pickering Brook have been previously licensed by the Commission; however, each of these crossings will be licensed under this petition.

one cable per phase. As noted above, F107 will support an optical ground wire (OPGW) for its entirety. At the underwater crossing of Little Bay the OPGW will be spliced with two ADSS cables to complete the submarine crossing.

6. The location maps, design and proposed construction plan and profile drawings, and required clearance calculations for each of the new crossings of the Oyster River, Pickering Brook and Little Bay are attached to this petition as Appendices A, B and C, respectively.

7. 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.

8. Each of the crossings will be spanned using steel structures, excepting the easterly side of the Little Bay crossing, which will terminate at a manhole structure, and the 34.5kV crossing of Pickering Brook, which will use wood pole structures. Detail designs of these crossings and structure details have been outlined in the Appendices A, B and C for each of the water crossings.

9. Flood water elevations for the crossings were based on information contained in flood insurance rate maps obtained from FEMA. Table 232-1 of the NESC states that the minimum clearance over a water body is based on a 10-yr flood elevation. All elevations provided are based on NAVD88 datum. All location information is based on NAD 83 datum.

10. Based on Table 232-1 of the NESC, for open supply conductors 750 V to 22 kV to ground, the minimum clearance to the water surface during normal flood level (10-yr flood, or as assumed, for the purpose of this petition) is 20.5 feet (for waters less than 20 acres), 28.5 feet (for waters 20-200 acres), and 34.5 feet (for waters 200-2000 acres). NESC Rule 232.C.1.a states that an additional clearance of 1.6 feet or [(69.7 kV-22 kV)x 0.4] is needed for 115 kV, which brings the total required minimum clearance to 22.1 feet, 30.1 feet, and 36.1 feet, respectively. For overhead shield/surge protection wires that meet NESC Rule 230.C.1, the minimum clearance to the water surface at the normal flood level is 17.5 feet and 25.5 feet respectively. As the static wires are located above the phase wires at all crossings, this NESC minimum clearance requirement will always be met. Based on Table 232-1 of the NESC, neutral conductors 0V to 300V shall have a clearance to ground of 15.5ft, and open supply conductors 750 V to 22 kV to ground shall have a minimum clearance to roads subject to truck traffic of 18.5 feet. With the additional 1.6' of clearance required for 115 kV, the total required clearance to roads subject to truck traffic is 20.1 feet. Based on Table 352-1 of the NESC, underground direct bury cable over 50kV shall have a burial depth of 42 inches. Section 351.C.5 of the NESC also states that "Submarine crossings should be routed, installed, or both, so they will be protected from erosion by tidal action or currents. They should not be located where ships normally anchor." Per Table 341-1 of the NESC, cable with a supply voltage of 50,001 V to 120,000 V shall be no closer than 12 inches, surface to

surface, in underground manholes and vaults. NESC Rule 341.B.1.c also requires cables to be at least 3 inches above the floor of a manhole or vault.

11. Based on Table 235-1[3] 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.

12. A total of three phase wires and one OPGW cable will span the overhead water crossings for F107. A total of three phase wires and one neutral wire will span the overhead water crossings for the 380 and 3850 lines. All three 1590 kcmil ACSR 45/7 phase conductors, all three 477 kcmil ACSR 18/1 phase conductors, shield wire 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 and the neutral wire will be sagged using a maximum tension of 2,500 pounds. The sags and clearances to the water surface for each of the proposed overhead crossings are provided in the attached Appendices.

[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.

13. The entire project is being permitted with the New Hampshire Department of Environmental Services (NHDES) and US Army Corps of Engineers (USACE). None of the new crossing structures will be set within jurisdictional wetlands, although two structures will be set in or near shoreland protection areas. The underwater cable crossing of Little Bay will also require NHDES and USACE wetlands permitting. The appropriate wetlands permits will be applied for and obtained by PSNH prior to the installation of any of the new structures associated with the crossings, in conjunction with PSNH's siting application. Wetland permits are required to gain access to several of the new crossing structures, such permits will likewise be obtained by PSNH prior to construction. The Line 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.

14. For each of the overhead crossings, PSNH owns a permanent, minimum 100 foot wide easement for its lines and facilities on both sides of the public water body at the proposed crossing locations. Each of the crossings will be constructed within the limits of those easements. On the westerly side of the Little Bay crossing, the riser pole structure will be located on PSNH fee-owned land which PSNH will acquire and own at time of construction approval.[4] The proposed crossing location of Little Bay will occur in an existing 1000 feet wide cable area as defined on the NOAA Chart #13285, Exhibit 8. On the easterly side of the Little Bay, the crossing will come ashore and terminate in a manhole structure within a permanent 100 foot wide easement which PSNH will acquire and own at time of construction approval.[5]

15. PSNH submits that the licenses petitioned for herein may be exercised without substantially affecting the rights of the public in the public waters listed in this petition. Minimum safe line clearances above and below all water surfaces and affected shorelines will be maintained at all times. The use and enjoyment by the public of the public waters of the Oyster River, Pickering Brook and Little Bay will not be diminished in any material respect as a result of the overhead line and underwater cable crossings.

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 waters which are the subject of this petition;

[4] PSNH has contracted with the shoreline landowner to acquire fee ownership of the westerly shore parcel, and therefore controls the necessary land rights in this location for the proposed crossing.

[5] PSNH has contracted with the easterly shoreline landowner for the purchase of the necessary easement rights, and therefore controls the necessary land rights in this location for the proposed crossing.

b. Grant PSNH licenses to construct and maintain electric lines, neutral wire and fiber optic cable over, under and across the public waters as specified in the petition; and

c. Issue an Order Nisi and orders for its publication; and,

d. Grant such other and further relief as may be just and equitable.

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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