

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

PETITION OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE FOR A LICENSE TO CONSTRUCT AND MAINTAIN ELECTRIC LINES, STATIC WIRE AND FIBER OPTIC CABLE OVER AND ACROSS THE EXETER AND POWWOW RIVERS, IN THE TOWNS OF DANVILLE, CHESTER, EAST KINGSTON, AND KINGSTON, NEW HAMPSHIRE.

TO THE PUBLIC UTILITIES COMMISSION:

Public Service Company of New Hampshire ("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 a license to construct and maintain electric lines, static wire, and fiber optic cable, at four locations over and across the public waters of the Exeter River in the Towns of Danville and Chester, New Hampshire, and the Powwow River in the Towns of East Kingston and Kingston, 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 a 345 kV transmission line, designated as Line 363. The 363 line connects Seabrook Nuclear Power Plant in Seabrook, New Hampshire and PSNH's 345kV Scobie Pond Substation in Derry, New Hampshire, and is an integral part of the PSNH transmission system and the overall New England transmission grid. The 363 line, as presently constructed, crosses over the public waters of the Exeter River in the Towns of Danville and Chester, New Hampshire, and the Powwow River in the Towns of East Kingston and Kingston, New Hampshire. The 363 line overhead crossing of the Powwow River in Kingston was licensed by the Commission in Order No. 11,267, dated January 29, 1974, in Docket D-SF6205, as part of the approval of the PSNH 345 kV lines associated with Seabrook Station.¹

2. In order to increase transmission system communications reliability in the southern and eastern part of the state, PSNH has determined it is necessary to upgrade and replace an existing static wire on the 363 line with a fiber optic communication wire. Currently, the 363 line contains three bundled conductors (2156 ACSR 84/19) and two shield wires (7 -16/7 EHS steel). This project will replace one of the two existing shield

¹ While the Site Evaluation Committee did approve the routes of the 345 kV lines related to Seabrook, including the 363 line, it appears that not all of the 363 line water crossings which are the subject of this petition were identified as requiring a crossing license from the Commission, due to either oversight or to the application of navigability or other crossing license criteria at the time of original permitting. The upgraded crossings of the 363 line at each of these four river locations will be licensed under this petition.

wires with a fiber optic cable optical ground wire (OPGW) for approximately 23 miles, between structures 7 and 178. The fiber optic cable will be installed at a height that is always greater than the height of the conductors, and the sag of the fiber optic cable will never be below the sag of the conductors. The existing 363 line conductor clearances over the public waters of the Exeter and Powwow Rivers will not change or be affected by this project. The existing 363 line structures at the locations of the four crossings, which are of steel H-frame type construction, will not change and are designed to handle the additional loading of the fiber optic cable installation. Installation of this project is currently planned to take place beginning in the month of May, 2013, coincident with a scheduled outage of the 363 line beginning on May 13, 2013 and ending on June 10, 2013.

3. The general location of the 363 line Exeter River and Powwow River crossings are shown on the U.S. Geologic Survey location plans attached hereto and marked as EXHIBITS 1, 3, 5, and 7, respectively.

4. The design and construction of the crossings are shown on the attached Public Service of New Hampshire Transmission Business plan and profile drawings entitled "363 LINE (345 KV) CROSSING BETWEEN STRUCTURES 58 & 60 POWWOW RIVER CROSSING, EAST KINGSTON, NEW HAMPSHIRE", marked as Exhibit 2; "363 LINE (345 KV) CROSSING BETWEEN STRUCTURES 76 & 80 POWWOW RIVER CROSSING, KINGSTON, NEW HAMPSHIRE", marked as Exhibit 4; "363 LINE (345 KV) CROSSING BETWEEN STRUCTURES 140 & 141 EXETER RIVER CROSSING, DANVILLE, NEW HAMPSHIRE", marked as Exhibit 6; and "363 LINE (345 KV) CROSSING BETWEEN STRUCTURES 175 & 176 EXETER RIVER CROSSING, CHESTER, NEW HAMPSHIRE", marked as EXHIBIT 8. The required clearance calculations for each of the new crossings are attached to this petition as Appendices A, B, C, and D, respectively.

5. The required technical information provided in this petition is based on the 2012 National Electrical Safety Code (NESC) C2-2012, which more than meets and/or exceeds the 2002 NESC.

6. The Powwow and Exeter Rivers are currently spanned using steel structures. These structures consist of two pole H-frame steel tangent structures, three pole steel angle structures, and three pole steel deadend structures. Detail design specifications for each of these structures are attached to this petition as FIGURE 1 FIGURE 2, and FIGURE 3, respectively.

7. Flood water elevations for the crossings are calculated based on information found on FEMA flood maps. Clearance is required to the 10-yr flood elevation in accordance with note 18 Section 232 of the NESC Code. Clearances will be above this level. All elevations are based on NAVD 88 datum.

8. Based on Table 232-1.7 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 for water bodies not suitable for sail boating is 17.0'. Minimum clearances to water bodies suitable for sail boating is 20.5'(for waters less than 20 acres), and 28.5' (for waters 20 to 200 acres). NESC Rule 232.C.1.a states that the minimum clearance increases by 0.4 inches for every kilovolt in excess of 22 kV. It also specifies that at voltages above 50 kV the minimum clearance is based on phase to ground voltage of the line. Based on this rule, an additional clearance of 5.9' or $(((199.2 \text{ kV} - 22 \text{ kV}) \times 0.4)/12]$ is needed for 345 kV, which brings the total required minimum clearance to 22.9' (for water bodies deemed not sailable), 26.4' (for sailable waters less than 20 acres), and 34.4'(for sailable waters 20 to 200 acres). For overhead shield/surge protection wires and OPGW cables that meet NESC Rule 230.E.1, the minimum clearance to the water surface at the normal flood level is 25.5'. As the static wire and fiber optic cable are located above the phase wires at all crossings, this NESC minimum clearance requirement will always be met. Minimum distances to the road for truck traffic, based on Table 232-1.2 of the NESC for open supply conductors for 750V to 22kV to ground is 18.5'. With the additional 5.9' of clearance required for 345 kV, the total required clearance is 24.4'.

9. The crossing locations detailed in this petition have a total of six phase wires and two shield wires spanning the water body. All six 2156 ACSR 84/19 phase conductors and static wires were sagged using the NESC Heavy Loading (0 degrees F., 4 pounds per square foot wind loading, ½-inch radial ice) sag charts upon original installation in the field. The 2156 ACSR conductors were sagged using a maximum tension of 7,000 pounds at NESC Heavy Load conditions. The 7/16 – 7EHS static wires were sagged using a maximum tension 4,000 pounds respectively at NESC Heavy Load conditions. As part of this project, one of the static wires will be removed and replaced with an OPGW fiber optic cable. The OPGW will be sagged using a maximum tension of 4,300 pounds at NESC heavy loading conditions. The tensions and clearances of the OPGW cable will be confirmed by survey at the time of the transfer to ensure the tensions have not been affected and will be retensioned to the original values if necessary. The sag and clearance to the water surface for the proposed crossings is provided in the attached Appendices. Again, it is important to note that the existing conductors, which hang lower than the future OPGW cable, will not be changed or affected during this project.

10. There will be no new crossing structures that need to be set inside of jurisdictional wetlands or other areas that require New Hampshire Department of Environmental Services (NHDES) permitting or any other regulatory agency permitting at the location of the crossing.

11. No new structures will be installed as part of this project.

12. An Army Corps permit is not required for any of the crossings listed above as they are not federally designated as navigable waters.

13. The proposed crossings will be maintained and operated by PSNH in accordance with the applicable requirements of the NESC.

14. PSNH owns permanent easements, not less than 320' wide, for its lines and facilities on the west and east sides of the Exeter River crossings in Chester, and in Danville. PSNH owns permanent easements, not less than 170' wide, for its lines and facilities on the west and east sides of the Powwow River crossings in Kingston, and in East Kingston. All four of the crossings have been constructed and are maintained within the limits of those easements.

15. PSNH submits that the license petitioned for herein may be exercised without substantially affecting the rights of the public in the public waters of the Powwow River and Exeter River. Minimum safe line clearances above all water surfaces and affected shorelines will be maintained at all times. The use and enjoyment by the public of these rivers will not be diminished in any material respect as a result of the overhead line and cable crossings.

WHEREFORE, PSNH respectfully requests that the Commission:

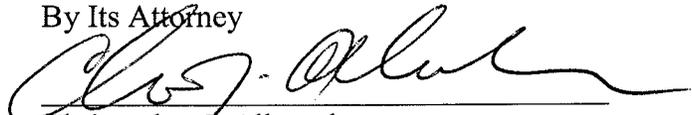
- a. Find that the license petitioned for herein may be exercised without substantially affecting the public rights in the public waters which are the subject of this Petition;
- b. Grant PSNH a license to construct and maintain electric lines, static wire and fiber optic cable over and across the public waters as specified in the Petition; and
- c. Issue an Order Nisi and orders for its publication.

Dated at Manchester this 14th day of January, 2013.

Respectfully submitted,

PUBLIC SERVICE COMPANY OF NEW
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By Its Attorney



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