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 AND STATIC WIRES OVER AND ACROSS THE OYSTER RIVER AND BELLAMY RIVER IN THE TOWN OF BARRINGTON, THE BEAN RIVER, NORTH RIVER AND LITTLE RIVER IN THE TOWN OF NOTTINGHAM, AND THE ISINGLASS RIVER IN THE CITY OF ROCHESTER, 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 and static wires at seven locations over and across public waters in the Towns of Barrington and Nottingham, and in the City of Rochester, 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 115 kV transmission line, designated as line C-129. The C-129 line runs between PSNH's Deerfield Substation in Deerfield, New Hampshire, and PSNH's Rochester Substation, in Rochester, New Hampshire, and is an integral part of the PSNH transmission system and the overall New England transmission grid. The C-129 line, as presently constructed, crosses public water bodies at seven locations. Two crossings are in the Town of Barrington over the Oyster River and the Bellamy River. Three crossings are in the Town of Nottingham, over the Bean River, North River and Little River. Two crossings are over the Isinglass River in the City of Rochester. None of the seven existing overhead crossings of the C-129 line have been previously licensed by the Commission.[1]

2. In order to continue to meet the reasonable requirements of service to the public, PSNH has determined it is necessary to upgrade the C-129 line conductors to increase the power transfer capability of the line. This need is a result of load growth in the seacoast area of New Hampshire and an additional autotransformer being installed at Deerfield Substation in Deerfield, New Hampshire. The in-service date for this transformer will be no later than December 2012. To support this date, the upgraded C-129 line will need to be in-service by December, 2011, with a proposed construction start date for the C-129 line upgrade project of approximately September 5, 2011. The C-129 line upgrade project has two aspects which relate to the crossings. The first of these

[1] The C-129 line crossings identified were apparently not previously licensed due to either oversight or to the application of navigability or other crossing license criteria at the time of original construction. The upgrade of the C-129 crossings at each of these river locations will be newly licensed under this petition.

involves replacement of the C-129 conductors and static wires at four of the crossings. At the other three crossings, the existing C-129 conductors and static wires will not be replaced but the conductors will be operationally up-rated in current carrying capacity, which will result in new, lower sag clearances.

3. As presently existing, an 8.51 mile length of the C-129 line between Deerfield and Rochester Substations (from structure 3 to structure 113) is constructed with 477 18/1 ACSR conductor. The other portions of this line, from Deerfield Substation to structure 3, and from structure 113 to Rochester Substation, are constructed of 795 ACSR 36/1 conductor. The replacement aspect of this project will remove all of the existing 477 ACSR 18/1 (conductor) and 3#6 Alumoweld (static wire) and install new 795 ACSR 26/7 (conductor) and 19#10 Alumoweld (static wire) for the 8.51 mile length of the line between structures 3 and 113. Replacing this conductor will remove an overload condition that will occur when the new transformer at Deerfield Substation is placed in service. On the other portions of the C-129 line with existing 795 ACSR 36/1 conductor, the conductor and static wires will remain but will be up-rated for operation. Upgrading conductors and up-rating the C-129 line in this manner will allow PSNH to continue to provide reliable electric service to its customers in this area of the State.

4. The necessary conductor upgrade of the C-129 line between structures 3 and 113 will require that the line and its associated water crossings at four locations be rebuilt within the right-of-way corridor that it presently occupies.

5. The reconductoring of the C-129 line will require upgrading of four new overhead crossings at the following public water body locations: one location (structures 21-22) on the Bean River in the Town of Nottingham, one location (structures 47-53) on the North River in the Town of Nottingham, one location (structures 77-79) on the Little River in the Town of Nottingham, and one location (structures 104-105) on the Oyster River in the Town of Barrington. Even though PSNH will not be replacing conductor over the other three crossings, PSNH is still petitioning to license these three locations because of the up-rate and resulting different sag clearances. One location (structures 148-149) is on the Bellamy River in the Town of Barrington, and the other two locations (structures 208-209, and structures 210-211) are on the Isinglass River in the City of Rochester. The location plan, plan and profile drawing, and required clearance calculations for each of the new crossings are attached to this petition as Appendices A through F, with associated Exhibits 1 through 12. A table of crossings to be licensed has been attached as Table 1 of this petition.

6. The required technical information provided in this petition is based on the 2007 National Electrical Safety Code (NESC) C2-2007 (which meets and/or exceeds the 2002 NESC).

7. All public water bodies will be spanned using round-wood structures. These structures will be two pole tangent structures (Type D, Type A with bayonet bracket, Type A without bayonet bracket, and Type RAX) and three pole deadend structures (Type DA). A detail design specification for structure Types D, A (with

bayonet bracket) , RAX, DA, and Type A (without bayonet bracket) is shown in FIGURES 1 through 5 respectively, attached to this petition. A detail of the bayonet static support bracket is included as FIGURE 1A. As shown on FIGURE 1 (Type D), the three phase wires have a separation of 14' horizontally. On the existing Type D structures, the static wire is carried on the structure by a support bracket (FIGURE 1A) attached to the top of each pole, with the wire approximately 7'-3" above vertically and 6'-0" horizontally from the closest phase wire. As shown on FIGURE 2 (Type A), the phase wires are spaced 14' horizontally. On the existing Type A structures, the static wire is carried on the structure by a support bracket (FIGURE 1A) attached to the top of each pole, with the wire approximately 6'-10" above vertically and 6'-0" horizontally from the closest phase wire. As shown on FIGURE 3 (Type RAX), the phase wires are spaced 14' horizontally. The static wire is carried on the structure above the phase wires approximately 10'-9" vertically and 6'-0" horizontally to the closest phase wire. As shown in FIGURE 4 (Type DA) and FIGURE 4A the phase wires have an approximate separation of 14' horizontally. The static wire is carried on the structure above the phase wires approximately 7' 6" vertically and 7' horizontally from the closest phase wire. As shown in FIGURE 5, the phase wires are spaced 14' horizontally. The static wire is carried on the structure above the phase wires by two support bayonets approximately 5'-6" vertically and 7'-0" horizontally to the closest phase wire.

8. Flood water elevations for the crossings were based on information contained in flood insurance rate maps and studies obtained from FEMA. Table 232-1, note 18 of the NESC states that the minimum clearance over a water body must be based on a 10-yr flood elevation. At some water crossing locations, the 100-yr flood elevation was used because it was the only flood information available. It should be noted that the 100-year elevations would be well above the 10-year flood elevation. All FEMA flood insurance rate maps and studies regarding a particular river are listed in their respective Appendix. Details of each map and study include map number, study number, panel number, and effective date.

9. 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 (100-yr flood for the purpose of this petition) for water bodies suitable for sail boating is 20.5' (for waters less than 20 acres), and 28.5' (for waters 20-200 acres). NESC Rule 232.C.1.a states that an additional clearance of 1.6-ft or [(69.7 kV-22 kV) x 0.4] is needed for 115 kV, which brings the total required minimum clearance to 22.1' and 30.1' respectively. For overhead shield/surge protection wires that meet NESC Rule 230.E.1, the minimum clearance to the water surface at the normal flood level is 17.5' and 25.5' respectively for those water bodies. 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 232-1.2 of the NESC, for open supply conductors 750 V to 22 kV to ground, the minimum clearance to roads subject to truck traffic is 18.5'. With the additional 1.6' of clearance required for 115 kV, the total required clearance is 20.1'. Based on Table 232-1.6 of the NESC, for open supply conductors 750 V to 22kV to ground, the minimum clearance to water areas not suitable for sail boating is 17.0'. With the additional 1.6' of clearance required for 115kV, the total required clearance is 18.6'

10. The four water crossing locations that are being reconductored will have a total of three 795 ACSR 26/7 phase wires and two 19#10 Alumoweld static wires, while the three water crossing locations that are being up-rated will have three 795 ACSR 36/1 phase wires and two 7#8 Alumoweld static wires. All three 795 ACSR 26/7 phase conductors and the static wires 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 795 ACSR 26/7 conductors will be sagged using a maximum tension of 7,000 pounds from structures 3 to 79, and 6,000 pounds from structures 79 to 113 at NESC Heavy Load conditions. The 19#10 Alumoweld static wire will be sagged using a maximum tension of 5,000 pounds at NESC Heavy Load conditions. There will not be any work completed at the Bellamy River and Isinglass River crossing locations. The up-rate to a higher current carrying capacity line rating will, however, result in lower sag clearances at these locations. The sags and clearances to the water surface for each of the proposed crossings are provided in the attached Appendices.

11. The proposed crossings have been designed and will be constructed, maintained and operated by PSNH in accordance with the applicable requirements of the NESC.

12. Replacement of existing structure 49 will occur within the protected shoreland of the North River as defined by RSA 483-B. While RSA 483-B:5-b(1)a requires a shoreland permit for construction, excavation or filling activities within the protected shoreland, Administrative Rule Env-Wq 1406.04(d)(7) exempts from these requirements the replacement of utility poles and guy wires using mechanized equipment, provided that appropriate siltation and erosion controls are used and all temporary impacts are restored. PSNH will comply with this Administrative Rule in the installation of replacement structure 49.

13. Replacement of structure 49 will also occur within jurisdictional wetlands as defined by RSA 482-A. RSA 482-A:3(I)(a) requires a permit for the excavation, removal, fill, dredge or construction of any structures within jurisdictional wetlands. PSNH is currently applying to New Hampshire Department of Environmental Services (NHDES) for a wetlands permit for replacement of structure 49.

14. There will be no additional crossing structures that will need to be set inside of jurisdictional wetlands or other areas that require NHDES permitting or any other regulatory agency permitting at the crossing locations.

15. PSNH owns permanent easements, not less than 150' wide, for its lines and facilities on both sides of the public water bodies at all of the proposed crossing locations. Each of the crossings will be constructed and maintained within the limits of those easements.

16. PSNH submits that the license 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 all water surfaces and affected shorelines will be maintained at all times. The use and enjoyment by the public will not be diminished in any material respect as a result of the overhead line and wire 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 and static wires 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 5TH day of APRIL, 2011.

Respectfully submitted,

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