

DE 05-036

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

**Petition for License to Construct and Maintain Electric Lines Over and Across
the Public Waters of the North Branch River in the Town of Stoddard, New Hampshire**

**Order *Nisi* Granting License to Construct and Maintain
Electric Lines Over and Across Public Waters**

ORDER NO. 24,444

March 24, 2005

On February 25, 2005, Public Service Company of New Hampshire (PSNH) filed a petition under RSA 371:17 with the New Hampshire Public Utilities Commission (Commission) for a license to construct and maintain electric lines over and across the North Branch River in the Town of Stoddard, New Hampshire. PSNH corrected and amended its petition on March 14, 2005. PSNH states that the new line is required to meet the reasonable requirements of service to the public in the Antrim-Stoddard area of New Hampshire.

PSNH proposes to build a new 34.5 kilovolt (kV) distribution line that will connect the existing Antrim Substation in Antrim, New Hampshire to the PSNH Stoddard Substation in Stoddard, New Hampshire. The new overhead line will be designated the 3140X1 line and will be constructed on the northerly side of, and parallel to, the existing L-163 115 kV line in an existing 225 foot PSNH right-of-way between the Antrim and Stoddard Substations. The new 3140X1 line crossing will be located approximately ¼ mile west of the Stoddard/Antrim Town boundary and approximately ¼ mile east of New Hampshire Route 9, and will consist of structures #68 and #69 (Petition of PSNH, Exhibit #1).

In support of its petition, PSNH submitted a location plan and a profile drawing of the crossing (Exhibits #1 and #2 respectively) and 34.5 kV construction standards (Figures #1

and #2). PSNH states that new construction is necessary due to increased electric use in the Stoddard area. Under the existing facilities, the W-13 12.47 kV distribution circuit is unable to continue to support the load or maintain required voltage at peak load conditions, and creates a safety concern as protective devices cannot properly be coordinated for fault isolation.

PSNH states that the 3140X1 distribution line will alleviate these problems as well as provide limited backup capability to the W-13 distribution line between PSNH's Emerald Street Substation in Keene, New Hampshire and New Hampshire Route 123 in Stoddard, New Hampshire, thus improving reliability in the Stoddard area.

The construction of the crossing will consist of structure #68, a new 50 foot class 3 single wood pole angle (Type DX) structure (Figure #1) on the westerly side of the crossing, and structure #69, a new 45 foot class 3 single wood pole tangent (Type A) structure (Figure #2) on the easterly side of the crossing. The span between these two structures will be 293.62 feet.

PSNH investigated a multitude of weather and loading conditions for its design. The conditions investigated were the National Electrical Safety Code (NESC), ANSI C2-2002 Heavy Loading conditions (0 degrees F, 4 pounds per square foot wind loading, and ½ inch radial ice), minus 20 degrees F conductor temperature, 212 degrees F conductor temperature, and 120 degrees F conductor temperature. PSNH used these design conditions and all possible combinations to determine the minimum clearance of the conductors to the water surface and the minimum distances between the phase conductors and the neutral conductor. The combinations are depicted in the plan and profile drawing, Exhibit 2.

The three-phase conductors will be 477 MCM 18/1 ACSR conductors, constructed in a horizontal configuration and 5 foot spacing, tensioned to 3,000 pounds, and

sagged to NESC, ANSI C2-2002 Heavy Loading conditions. The neutral conductor will be mounted on the pole and will be located 7 feet – 5½ inches below the center phase conductor and 6 feet – 2 inches below the lowest phase conductors. The neutral conductor will be tensioned to 2,000 pounds and also sagged to NESC, ANSI C2-2002 Heavy Load Conditions.

The maximum phase conductor sag of 10.0 feet will occur at a conductor temperature of 212 degrees F. At this elevated conductor temperature, the phase conductors remain 39.5 feet above the North Branch River 100 year flood level of 1214 feet as depicted on the Federal Emergency Management Agency flood insurance rate maps. PSNH has determined that according to NESC Table 232-1, Note 19, the design water surface area for the crossing is 10.9 acres. For water areas of less than 20 acres that are suitable for sailing, NESC (Table 232-1) requires that the primary conductor clearances to the water surface be 20.5 feet.

The maximum neutral conductor sag of 8.5 feet will occur at a conductor temperature of 120 degrees F. At this conductor temperature, the neutral conductor remains 34.7 feet above the North Branch River 100 year flood level of 1214 feet as depicted on the Federal Emergency Management Agency flood insurance rate maps. PSNH has determined that according to NESC Table 232-1, Note 19, the design water surface area for the crossing is 10.9 acres. For water areas of less than 20 acres that are suitable for sailing, NESC (Table 232-1) requires that the neutral conductor clearance to the water surface be 20.5 feet.

PSNH determined that the minimum distance between the phase conductors and the neutral conductor occurs when the phase conductors are at their emergency temperature of 164 degrees F (950 amperes) and the neutral conductor is at minus 20 degrees F. Under these conditions, the clearance would be 35.3 inches between the neutral and the phase conductor

directly above it. Due to the 5-foot spacing of the other phase conductors, their clearances would be greater. NESC Table 235-5, Section 2a requires that the minimum distance between the phase conductors and the neutral be 20.9 inches.

According to PSNH, there are no wetland or other permits required in connection with the construction of the crossing. PSNH has stated that PSNH owns permanent easement rights for the construction, operation, and maintenance of overhead electric lines where structures #68 and #69 will be constructed.

PSNH states that the use and enjoyment by the public of these waters will not be diminished in any material respect as a result of the proposed aerial line crossings. PSNH further attests that the construction of the aerial electric lines will be constructed, maintained, and operated in accordance with the requirements of the National Electrical Safety Code, ANSI C2-2002.

RSA 371:17 provides in part that whenever it is necessary, in order to meet the reasonable requirements of service to the public, that any public utility should construct a line of poles or towers and wires and fixtures thereon over or across any of the public waters of New Hampshire, it shall petition the Commission for a license to construct and maintain the same. “Public waters,” as defined in RSA 371:17, means “all ponds of more than ten acres, tidewater bodies, and such streams or portions thereof as the Commission may prescribe.” Based on the information presented, the Commission prescribes the part of the North Branch River under the proposed aerial electric lines as being “public waters” under RSA 371:17.

Based on the information presented by PSNH and Staff’s recommendation, we find this crossing necessary for PSNH to meet the reasonable requirements of reliable service to

the public within PSNH's authorized franchise area and the requested license may be exercised without substantially affecting the public rights in the waters of the North Branch River. We find that the crossing is in the public good and we will approve the petition on a *nisi* basis in order to provide any interested party the opportunity to submit comments on said petition or to request a hearing.

Based upon the foregoing, it is hereby

ORDERED *NISI*, that subject to the effective date below, PSNH is authorized, pursuant to RSA 371:17 et seq., to construct, maintain and operate the aerial electric lines over and across the North Branch River in Stoddard, New Hampshire described in its petition and depicted on plans and drawings submitted February 25, 2005, corrected and amended on March 14, 2005, and on file with this Commission; and it is

FURTHER ORDERED, that all construction and future reconstruction to these approved crossings shall conform to the requirements of the NESC and all other applicable safety standards in existence at that time; and it is

FURTHER ORDERED, that the Petitioner shall provide a copy of this order to the (i) Town Clerk of Stoddard, (ii) New Hampshire Attorney General and the owners of the land bordering on said public waters at the location of the river crossing, pursuant to RSA 371:19, and (iii) pursuant to RSA 422-B:13, New Hampshire Department of Transportation and the Office of Secretary, U.S. Department of Commerce, by first class mail, no later than April 4, 2005, and to be documented by affidavit filed with this office on or before April 25, 2005; and it is

FURTHER ORDERED, that the Petitioner shall cause a copy of this Order *Nisi* to be published once in a statewide newspaper of general circulation or of circulation in those

portions of the state where operations are conducted, such publication to be no later than April 4, 2005 and to be documented by affidavit filed with this office on or before April 25, 2005; and it is

FURTHER ORDERED, that all persons interested in responding to this Order *Nisi* be notified that they may submit their comments or file a written request for a hearing which states the reason and basis for a hearing no later than April 11, 2005 for the Commission's consideration; and it is

FURTHER ORDERED, that any party interested in responding to such comments or request for hearing shall do so no later than April 18, 2005; and it is

FURTHER ORDERED, that this Order *Nisi* shall be effective April 25, 2005, unless the Petitioner fails to satisfy the publication obligation set forth above or the Commission provides otherwise in a supplemental order issued prior to the effective date; and it is

By order of the Public Utilities Commission of New Hampshire this twenty-fourth day of March, 2005.

Thomas B. Getz
Chairman

Graham J. Morrison
Commissioner

Michael D. Harrington
Commissioner

Attested by:

Michelle A. Caraway
Assistant Executive Director and Secretary