

**STATE OF NEW HAMPSHIRE  
PUBLIC UTILITIES COMMISSION**

**DE 08-003**

**NEW ENGLAND POWER COMPANY  
D/B/A NATIONAL GRID**

**Petition for License to Construct and Maintain Electric Lines Over and Across Public  
Waters in the Towns of Walpole and Surrey, New Hampshire**

**Order *Nisi* Granting License**

**ORDER NO. 24,956**

**April 8, 2009**

On January 16, 2008, New England Power Company d/b/a National Grid (National Grid or Company) filed a petition for a license to construct and maintain electric lines over and across the Connecticut River and the Cold River in Walpole and the Ashuelot River in Surry. National Grid filed the petition pursuant to New Hampshire RSA 371:17, which requires a utility to obtain a license from the Commission before constructing utility facilities across any public water.

Following the initial filing, Staff and its consultant, The Liberty Consulting Group (Liberty) held several technical sessions with the Company to discuss the deficiencies in the petition and corrective measures to address these deficiencies. In addition, Staff and Liberty conducted a field visit to one of the proposed crossings. As a result of these discussions, National Grid filed a revised petition on February 13, 2008. With its revised filing, National Grid included locational geographic maps, plan and profile drawings for the crossings, site review findings and clearances, and construction detail for the structure and foundation modifications.

In its revised petition, National Grid states that it operates and maintains two 115 kV transmission lines (I-135N and J-136N) between Flagg Pond Substation in Fitchburg,

Massachusetts and Bellows Falls Substation No. 14 in Rockingham, Vermont. According to the Company, the I-135N line was constructed in 1927 and crosses the Connecticut River between the Bridge Street crossing to the north and the Bellows Falls Hydroelectric Station to the south. In addition, the I-135N line crosses the Cold River approximately 2,400 feet northwest of the Route 12A Bridge and the Asheulot River in Surry, New Hampshire.

National Grid stated that, to improve the reliability of its electric transmission system, the Company proposes to re-conductor the I-135N line. The Company said that a low voltage situation currently occurs as a result of a double circuit tower outage on the I-135S and J-126 S lines on the system between the Flagg Substation and Pratts Junction. At present, the low voltage problem is managed by load shedding. In addition, voltage and thermal issues can result from the outages of the 345/115kV transformer at Vermont Yankee, the K-186 115kV line from Vermont Yankee to Public Service Company of New Hampshire or the 345 kV line between the Vermont Yankee and the Coolidge substations in Vermont. To address these issues, the Company will re-conductor the I-135N line with 795 kcmil ACSR, 26/7 "Drake" phase conductors at a rating of 284 degrees Fahrenheit. The Company states that one of the two 7/16 inch HS galvanized steel shieldwires will be replaced with a new shield wire containing fiberoptics (OPGW) equivalent to 3/8 inch extra high strength galvanized steel. National Grid states that the re-conductoring of the I-135N 115kV line will allow National Grid to meet the reasonable requirements of service to the public in the southwestern region of New Hampshire.

According to its revised petition, National Grid owns easements for its lines and facilities on both sides of the public waters at all of the proposed crossing locations and that each crossing will be constructed within the limits of those easements. The construction of the crossings, as described by National Grid, will consist of reinforced dead end structures and foundations. As

designed, the phase conductors will be horizontally configured with a single OPGW acting as a static conductor positioned above and centered between two of the phase conductors.

The Company investigated a multitude of weather and loading conditions for its design. The design condition that produced the maximum sag for the phase conductors was operation at 284 degrees Fahrenheit. The design condition that produced the maximum sag for the OPGW cable was at 105 degrees Fahrenheit. The Company used these design conditions to determine the minimum clearance of the phase conductors and the OPGW cable to the water surfaces of the crossings and to land surfaces. To determine the minimum distances between the phase conductors and the OPGW communication cable, National Grid assumed the phase conductors were at 30 degrees Fahrenheit without ice and the static wires were at 30 degrees Fahrenheit with 3/4 inch of radial ice and 4 pounds per square foot of wind.

As designed by National Grid, the three 795 MCM 26/7 ACSR conductors at the Connecticut, Cold and Asheulot River crossings will be constructed in a horizontal configuration and tensioned to 8,800 pounds, 8,000 pounds and 8,500 pounds, respectively, at National Electrical Safety Code (NESC), American National Standards Institute (ANSI) C2-2007 Heavy Load Conditions. Similarly, the OPGW communications cable at the Connecticut, Cold and Asheulot River crossings will be tensioned to 4,900 pounds, 4,500 pounds and 4,500 pounds, respectively, at the NESC ANSI C2-2007 Heavy Load Conditions.

National Grid used the 10-year flood levels contained in the Federal Emergency Management Agency (FEMA) flood data in its design at the Connecticut and Cold River crossing locations. For the Surry Mountain Lake Dam crossing associated with the crossing of the Asheulot River, the Company used the design high water elevation established in the 1929 relocation agreement with the U.S. Army Corps of Engineers. Because the crossing at the Surry

Mountain Lake Dam does not meet the NESC clearance requirements, the Company agreed to maintain the required 18.6 feet of clearance up to a water elevation of 560 feet by initiating operating restrictions. At 556 feet of water elevation, the crossing meets the clearance requirement. Therefore, beginning at water elevations of 556 feet, the Company will operate the line to assure a clearance of 18.6 feet from the surface of the water to the conductors.

With respect to all other water crossings for the I-135N line, National Grid's design assures that clearances to water exceed the requirements of NESC Rule 232.C.1.a. In addition, the design criteria for the location of the static and the phase conductors, and the location of the OPGW relative to the phase conductors exceed the requirements of NECS Table 235-6.2a.

National Grid also stated 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 line crossings.

Staff filed its recommendation on April 7, 2009. With its recommendation, Staff filed the following attachments: the field report of the I-135N Crossing of the Connecticut River south of the Bellows Falls Hydroelectric Station identified as Attachment A; a correlation of existing and current petition information identified as Attachment B; location descriptions of the crossings identified as Attachment C; structure and span information identified as Attachment D; phase wire water clearance information identified as Attachment E; phase wire land clearance information identified as Attachment F; and minimum clearance between phase and static conductors identified as Attachment G, all of which are incorporated by reference in this order. Staff recommended that the Commission grant the license for the reconductoring of the I-135 N line requested by National Grid's revised petition.

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 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 3713:17, 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 regards the parts of the Connecticut River, the Cold River and the Asheulot River under the proposed aerial electric lines as “public waters” under RSA 371:17.

Based on the information presented by National Grid and Staff’s recommendation, we find that such crossing for purposes of reconductoring the I-135N line is necessary for National Grid to meet the reasonable requirements of reliable service to the public within National Grid’s franchise area and that the requested license may be exercised without substantially affecting the public rights in the waters of the Connecticut, Cold and Asheulot River. We find that the crossing is in the public good and 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, New England Power Company d/b/a National Grid is authorized, pursuant to RSA 371:17 et seq., to construct, maintain and operate the aerial electric lines over and across the Connecticut, Cold and Asheulot Rivers in the Towns of Walpole and Surry, New Hampshire for purposes or reconductoring the I-135N line as described in National Grid’s revised petition and depicted in the attached figures, appendices and exhibits; and it is

**FURTHER ORDERED**, that National Grid shall construct, maintain and operate these crossings in conformance with the NESC and, in the case of the crossing of the Surry Mountain

Lake Dam, institute an operational constraint to meet NESC's minimum clearance requirements; and it is

**FURTHER ORDERED**, that National Grid shall provide a copy of this order (1) to the clerks of the affected municipalities, (2) the Attorney General, and other owners of land parcels bordering on public waters at and immediately upstream and downstream of the location of each crossing, (3) the New Hampshire Department of Transportation, the Office of Secretary, U.S. Department of Commerce, and (4) the United States Army Corps of Engineers, by first class mail, no later than April 13, 2009, and to be documented by affidavit filed with this office on or before April 20, 2009; 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 13, 2009 and to be documented by affidavit filed with this office on or before April 20, 2009; 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 17, 2009 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 20, 2009; and it is

**FURTHER ORDERED**, that this Order *Nisi* shall be effective April 21, 2009, 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.

By order of the Public Utilities Commission of New Hampshire this eighth day of April,  
2009.

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Thomas B. Getz  
Chairman

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Graham J. Morrison  
Commissioner

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Clifton C. Below  
Commissioner

Attested by:

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Debra A. Howland  
Executive Director & Secretary