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**STATE OF NEW HAMPSHIRE****Inter-Department Communication****DATE:** August 7, 2015**AT (OFFICE):** NHPUC

**FROM:** Randy Knepper *Randall S. Knepper*  
Director of Safety & Security

**SUBJECT:** Review of New England Power Company Petition for Revision to two Existing 34.5kV (Line 3315) Crossings at two separate locations namely the Connecticut River, in Littleton that forms a border with Waterford, VT and the Connecticut River near the Bill Little Brook confluence in Littleton, New Hampshire  
Docket No. DE 15-062

**TO:** Debra Howland, Executive Director  
Tom Frantz, Director, Electric Division  
Les Stachow, Assistant Director, Electric Division  
Michael Sheehan, Staff Attorney

The Safety Division review of the above petition consisted of the following elements:

- Petition contents and history
- Applicable State statute
- Review of existing crossing(s) already licensed by the PUC
- Review of land ownership of existing pole structures
- Review of NESC code requirements as described in Puc 300 rules
- Review of public need and public impact, including applicability of other State regulations
- Conclusions and Recommendations

**1. Petition contents and history.**

- On February 11, 2015, New England Power Company d/b/a as National Grid filed a petition to alter two existing crossings for the 3315 circuit which operates as a 34.5 kV (3 phase) sub transmission line.
- On May 6, 2015 The Staff sent a list of data requests indicating shortcomings and requesting clarity of conflicting information within the petition.
- On Friday June 19, 2015 New England Power Company (NEP) provided updates to Attachments and responses to Staff Data Requests.
- On July 17, 2015 NEP provided a further update showing the Connecticut River crossing and adjusted ROW.

- The entire circuit is located in previously acquired Right of Ways, which had placed pole structures and conductors. The 3315 circuit from the Moore Hydro Electric Generating Station near the Moore Dam in Littleton, NH to the Comerford Hydro Electric Generating Station in Monroe is currently energized but is in need of relocation and rebuilding. Large portions of this 8.3 mile circuit are located in Vermont as the circuit transverses the State border in two locations. NEP states that normal refurbishing is required for the existing circuit which has deteriorated over the last 90 years that requires rebuilding and replacing poles and conductors. Portions of the existing ROW associated with circuit 3315 will be abandoned and the circuit will be relocated to another existing ROW for the majority of the eastern portion of the circuit. The two river crossings are comprised of the Connecticut River north of NH Route 135 in Littleton but south of Lower Waterford Rd in Vermont and the Connecticut River near the confluence of Bill Little Brook in Littleton. See Appendices for location of each crossing. Each crossing will be newly constructed as they did not previously exist. New conductors and support structures will be placed. The spans of the crossings will be 910 feet and 660 ft respectively. The following will occur:
  - Connecticut River Crossing near Lower Waterford Rd, Waterford, VT: The Connecticut River has an existing energized 3315 circuit over it that is being relocated approximately 1 mile south on the Connecticut River (along the flow of the river). The proposed crossing will be between Structures WT2 and WT3 (span 910 feet). The pole structure on the northerly side of the river, WT3 will be set back approximately 50 feet from the river bank and will be a double pole H Frame dead end type 70 ft tall steel pole with 2 round poles that would carry 1 set of conductors maintaining a horizontal configuration. The pole structure on the southerly side of the river, WT2 will be set back 148 ft from the river bank and will be a double pole H Frame dead end type 50 ft tall steel pole with 2 round poles that would carry 1 set of conductors maintaining a horizontal configuration. The 3315 segment spanning the Connecticut River will be comprised of three 417 kcmil ASCR phase conductor wires (26 Al/7 St), two 3/8 inch diameter shield wires at the very top of the structure and one optical cable guide wire that will be used for communications by NEP
  - Connecticut River Crossing near Bill Little Brook confluence in Littleton: The proposed crossing will be in an existing ROW that is currently shared with 3 other circuits [451 DC Line, C203 and D204 230 kv AC lines owned by NEP] The proposed crossing will be between Structures #59 and #60 (span 666 feet). The pole structure on the westerly side of the river, #60, will be set back approximately 40 ft from the river bank and will be a double pole H Frame dead end type 75 ft tall wooden pole with 2 round poles that would carry 1 set of conductors maintaining a horizontal configuration. The pole structure on the easterly side of the river, #59 will be set back 25 feet from the river bank and will be a double pole H Frame dead end type 75 ft tall steel pole with 2 round poles that would carry 1 set of conductors maintaining a

horizontal configuration. The 3315 line will be built comprised of three 417 kcmil ASCR phase conductor wires (26 Al/7 St), and one fiber optical cable, ADSS type, that will be used for communications by NEP.

- The Connecticut River near the Waterford Rd in Littleton clearances over the 10 year flood level is 35.0 feet for the lowest wires, the conductors. The shield wires and OPGW wires will have even greater clearance levels from the surface waters. Clearance above the Connecticut River near Bill Little Brook 10 year Flood Levels is 31.5 ft for the fiber optic cable. The NESC requirement for a sailable river is 17.5 ft for the communication wires and 20.5 ft for the conductors
- All clearance requirements were met using the NESC heavy conditions and at 284 deg F. The conductor wire in the 284 deg F scenario was the governing condition which yielded the greatest sags and lowest clearances. NEP provided cross sections in sufficient detail that showed the various scenarios. NEP provided Attachments 2, and 3 which detailed the clearance scenarios.
- There are more than ample clearances above those required by the NESC.
- NEP did not provide the sources of the 10 year flood level but indicated the Connecticut River 100 food level of Vermont side is 655 ft. Staff reviewed the FEMA flood maps and found no base flood level elevations have been determined nor available for New Hampshire side of the Connecticut River. Staff concluded that since the flood data was not available that the high water mark of the Connecticut River would be sufficient to conservatively use as a clearance since lowest sage is approximately 15 ft above the prerequisite clearance listed in NESC.

## **2. New Hampshire statute referenced in petition.**

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### TITLE XXXIV PUBLIC UTILITIES CHAPTER 371 PROCEEDINGS TO ACQUIRE PROPERTY OR RIGHTS

#### Rights in Public Waters and Lands

**371:17 Petition.** – Whenever it is necessary, in order to meet the reasonable requirements of service to the public, that any public utility should construct a pipeline, cable, or conduit, or a line of poles or towers and wires and fixtures thereon, over, under or across any of the public waters of this state, or over, under or across any of the land owned by this state, it shall petition the commission for a license to construct and maintain the same. For the purposes of this section, "public waters" are defined to be all ponds of more than 10 acres, tidewater bodies, and such streams or portions thereof as the commission may prescribe. Every corporation and individual desiring to cross any public water or land for any purpose herein defined shall petition the commission for a license in the same manner prescribed for a public utility.

Source. 1921, 82:1. PL 244:8. RL 294:16. 1951, 203:48 par. 17. 1953, 52:1, eff. March 30, 1953.

3. **Review of existing license(s) and permissions previously granted by the PUC for the Connecticut River Crossing in Littleton near Waterford VT, and Connecticut River Crossing near Bill Little Brook and ownership of lands.**

The existing two crossings are new and this is the initial petition of the crossing as stated within the petition. A review by the staff of river crossings found the Right of Ways and depiction of property transversed as accurate.

4. **Review of land ownership of existing pole structures.**

Both crossings are located in a right of way of multiple widths that NEP owns obtained a permanent easement for its lines and facilities along the 3315 circuit. It is a shared ROW with other structures. The structures are to be located approximately 30 ft in the centerline from the edge of the ROW that crosses into Waterford, VT and 194 feet and 103 feet respectively from the edge of the ROW for the Bill Little Brook portion.

5. **Review of NESC code requirements as described in Puc 300.**

N.H. Code of Administrative Rules PART Puc 306 requires

- (a) each utility shall construct, install, operate and maintain its plant, structures and equipment and lines, as follows:
  - (1) In accordance with good utility practice;
  - (2) After weighing all factors, including potential delay, cost and safety issues, in such a manner to best accommodate the public; and
  - (3) To prevent interference with other underground and above ground facilities, including facilities furnishing communications, gas, water, sewer or steam service.
- (b) For purposes of this section, “good utility practice” means in accordance with the standards established by:
  - (1) The National Electrical Safety Code C2-2012...

NEP in its petition states that the 2012 National Electrical Safety Code C2-2012 was used for compliance.

This crossing may meet the applicable activities that trigger an individual permit or a general programmatic permitting review from the Army Corps of

Engineers. The Connecticut River is a jurisdictional and navigable river subject to the Army Corps of Engineers. The Staff recommends that NEP notify the Army Corps of Engineers about the project.

NHDES permits are not specifically required for the construction of these crossings to allow for tree clearing, temporary and permanent wetland impacts. A Utility Maintenance Notification for work on other areas of the line has been submitted to NHDES and filed as 2014-02776.

The Safety Division reviewed 13 supporting statements contained in the petition, Attachments 1, 2, 3, and found them to be in conformance with the applicable sections of the NESC code C2-2012. NEP provided sufficient detail to verify that no potential safety hazards will result from the alteration of the river crossing under a multitude of appropriate design scenarios.

**6. Review of public need and public impact.**

NEP states the crossings are needed because large portions of the circuit needs rebuilding and relocating the route to less remote areas, making the line easier to access for routine maintenance and in the event of an emergency, and the proposed relocation will reduce operation and maintenance expense and reduce vegetation management issues associated with the circuit.

NEP states the rights granted by the license sought in this petition can be exercised by NEP without affecting the rights of the public to use the waters of the Connecticut River or the property of the State, and the use and enjoyment by the public of the river and the property of the State will not be diminished..

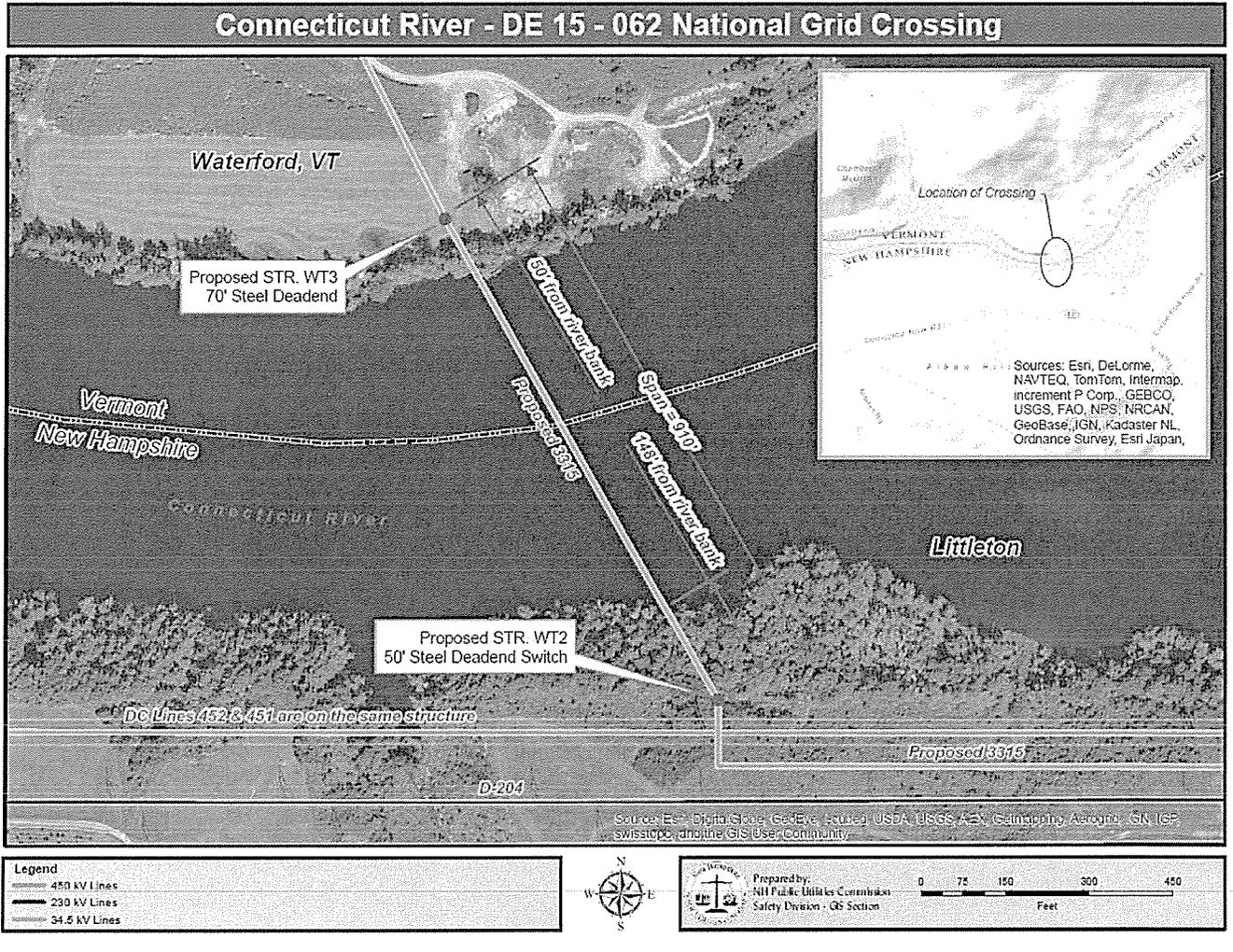
**7. Recommendations and Conclusions.**

The Safety Division recommends approval of NEP's petition to the Commission with the following conditions:

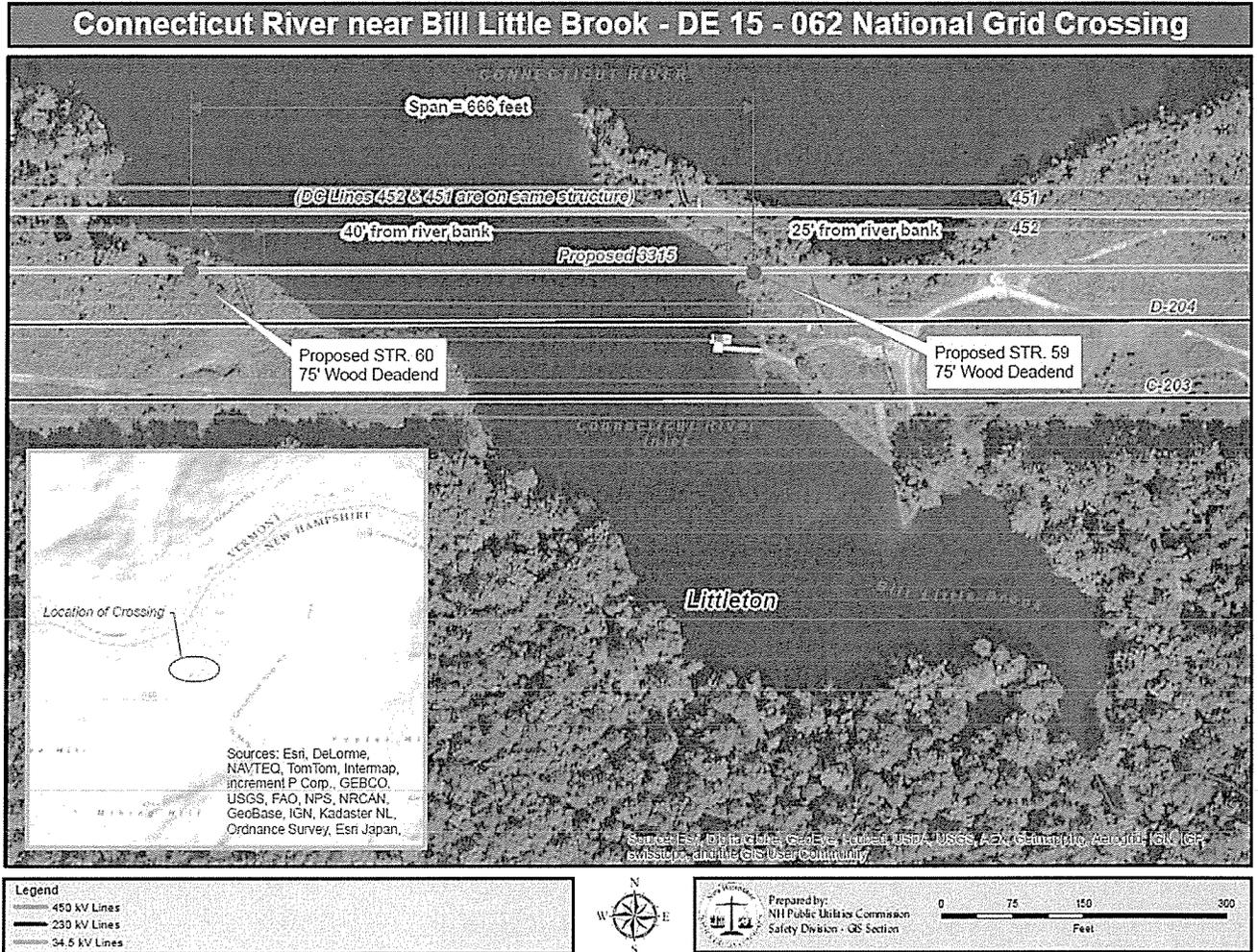
- a. The Commission should require that all future alterations that may impact the public to the crossing conform to the requirements of the 2012 editions of the NESC and be resubmitted to the Commission 60 days prior to the alteration.
- b. NEP should be required to maintain and operate the crossings in conformance with the NESC or risk future revocation of the license.

# Appendix A

Q:\Safety\DIVISIONAL INFORMATION\Dockets and Orders\12015\IDE 15-062 New England Power Connecticut River



**Figure 1.**  
Overall View of Connecticut River Crossing Littleton, NH to Waterford, VT. Clearance above the Connecticut River high water mark for the communication wire is assumed to be 35 ft which is greater than the minimum clearance of 17.5 ft.



**Figure 2.**

View of Connecticut River Crossing near Bill Little Brook, Littleton, NH. Note span for Line 315 is approximately 666 feet and river width (without 10 yr flood level) is approximately 600 feet. Clearance above the Connecticut River high water mark is 31.5 ft for the 3 phase conductors

**SERVICE LIST - EMAIL ADDRESSES - DOCKET RELATED**

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Pursuant to N.H. Admin Rule Puc 203.11 (a) (1): Serve an electronic copy on each person identified on the service list.

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Docket #: 15-062-1      Printed: August 07, 2015

**FILING INSTRUCTIONS:**

- a) Pursuant to N.H. Admin Rule Puc 203.02 (a), with the exception of Discovery, file 7 copies, as well as an electronic copy, of all documents including cover letter with:
- DEBRA A HOWLAND  
EXECUTIVE DIRECTOR  
NHPUC  
21 S. FRUIT ST, SUITE 10  
CONCORD NH 03301-2429
- b) Serve an electronic copy with each person identified on the Commission's service list and with the Office of Consumer Advocate.
- c) Serve a written copy on each person on the service list not able to receive electronic mail.