

# STATE OF NEW HAMPSHIRE

Inter-Department Communication

NHPUC 2009PR15aw11:49

DATE: April 20, 2015

AT (OFFICE): NHPUC

*Randy S. Knepper*

**FROM:** Randy Knepper  
Director of Safety & Security

**SUBJECT:** Review of PSNH Petition for Revision to two Existing 34.5kV (Line 317) Crossings at two separate locations namely the Warner River, in Webster and the Warner River in Sutton, New Hampshire  
Docket No. DE 15-088

**TO:** Debra Howland, Executive Director  
Tom Frantz, Director, Electric Division  
Les Stachow, Assistant Director, Electric Division  
Rorie Patterson, 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 March 16, 2015, Public Service Company of New Hampshire d/b/a as Eversource Energy filed a petition to alter two existing crossings for the 317 circuit which operates as a 34.5 kV (3 phase) sub transmission line. The entire circuit is located in previously acquired Right of Ways, which had placed pole structures and conductors. The 317 circuit from the Davisville tap in Webster to the Bradford Substation in Sutton is currently energized but is in need of rebuilding. PSNH states that six segments of the existing circuit will require rebuilding and replacing poles and conductors. Two of those six segments involve portions of the Warner River. The two river crossings are comprised of the Warner River near Roby Road in Sutton, and the Warner River near Dustin Rd in Webster. Each crossing will be rebuilt including replacement of conductors and existing poles will be removed. The spans of the crossings will increase significantly. The following will occur:

- Warner River Crossing near Roby Rd in Sutton: The Warner River has an existing energized 317 circuit over it. It crosses the Warner River in two locations as the river has an oxbow bend in it. The existing four pole arrangement consists of 3 spans between Structures 846 and 847 (span 1); Structure 847 and Structure 848 (span 2) and Structure 848 and 849 (span 3). These spans are proposed to be replaced with a single span that is significantly longer and spans the Warner in two locations between Structures 846 and 849. Essentially this eliminates the two interior pole structures and any need to access the poles on private property when maintenance is required. The pole on the easterly side of the river will be replaced with a single pole H Frame type 70 ft tall western red cedar with 2 round poles that would carry 1 set of conductors. The proposed Warner River crossing will occur between two round-wood structures with a span length of approximately 642 feet and will roll from a horizontal configuration on the west side to a vertical configuration on the westerly side of the river (Structure 846). This structure will also be a 70 ft tall western red cedar class 2 but will have a vertical configuration. The 317 line will be built comprised of three 417 ASCR phase conductor wires (18/1) and one 4/0 ACSR 6/1 neutral wire.
- Warner River Crossing near Dustin Rd in Webster: The Warner River has an existing energized 317 circuit over it. It crosses the Warner River in two locations as the river has two protrusions within it in this vicinity. The existing three pole arrangement consists of 2 spans between Structures 1108 and 1111 (span 1); Structure 1111 and Structure 1112 (span 2). These spans are proposed to be replaced with a single span that is significantly (555 ft) longer and is approximately 50 ft longer than the aggregate of the previous two spans. The proposed alteration spans the Warner in two locations between Structures 1108 and 1109. Essentially this eliminates the interior pole structure and any need to access the pole on private property when maintenance is required. The pole on the easterly side of the river will be replaced with a three pole dead end structure all consisting of class 2 poles, a 70 ft tall western red cedar and two 65 ft western red cedar poles. The easterly structure will consist of 3 round poles that would carry 1 set of conductors. The proposed Warner River crossing will occur between three round-wood structures with a span length of approximately 555 feet. The structure on the westerly side of the river will also be a three pole dead end structure all consisting of class 2 poles that are 55 ft tall western red cedar. The 317 line will be built comprised of three 417 ASCR phase conductor wires (18/1) and one 4/0 ACSR 6/1 neutral wire. This is an upgrade from the existing 317 line which is comprised of 336 ASCR phase conductor wires (26/7) and one neutral. The conductors will be crossing the Warner River space in a horizontal configuration with 10 feet of separation between phases.
- The Warner River in Sutton clearances over the 10 year flood level is 23.4 feet for the neutral wire. Clearance above the Warner River in Webster 10 year Flood Levels is 17.9 ft for the neutral. The NESC requirement for an

unsailable river is 14 ft for the neutral wire. The phase wires which are at a higher elevation also easily meet the required 17 ft.

- All clearance requirements were met using the NESC heavy conditions and at 120 deg F. The neutral wire in the 120 deg F scenario was the governing condition which yielded the greatest sags and lowest clearances. PSNH provided cross sections in sufficient detail that showed the various scenarios. PSNH provided Exhibits 3, 4 and 5 which detailed the clearance scenarios.
- There are more than ample clearances above those required by the NESC.
- Both water clearances are from the 10 year flood level that was derived by PSNH based on NAVD 88 datum and FEMA flood maps. The Warner River in Sutton (flood elev 505 ft) used Map # 33013CV002A, (panel 98p eff. 4/19/2010). The Warner River in Webster (flood elev 359 ft) used Map # 33013CV002A, (panel 98p eff. 4/19/2010).
- In its March 2015, PSNH contacted the Safety Division to state that they were scheduled to begin construction on the circuit in the spring of 2015. The work is extensive on this circuit and approval of each of the river crossings will enable to PSNH to efficiently reconstruct the circuit.

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

### 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 Warner River Crossing in Webster, and Warner River Crossing in Sutton and ownership of lands.**

The existing two crossings were never originally licensed as stated within the petition. A review by the staff of river crossings at these locations did not find any licenses existed.

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

Both crossings are located in a right of way of multiple widths that PSNH owns through a paid fee has obtained a permanent easement for its lines and facilities along the 317 circuit. The structures are to be located approximately in the centerline from the edge of the ROW. There are no other circuits or known utilities located within the ROW.

**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...

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

This crossing does not meet the applicable activities that trigger an individual permit nor a general programmatic permitting review from the Army Corps of Engineers.

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, Exhibits 1, 2, 3, 4 and 5 and found them to be in conformance with the applicable sections of the NESC code C2-2012. PSNH 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.**

PSNH states the crossings are needed because large portions of the circuit needs rebuilding and eliminating intermediate poles will allow for easier access outside of lands prone to flooding. This will improve system reliability by adding additional capacity between the Bradford Substation in Sutton to the Davisville Substation in Webster.

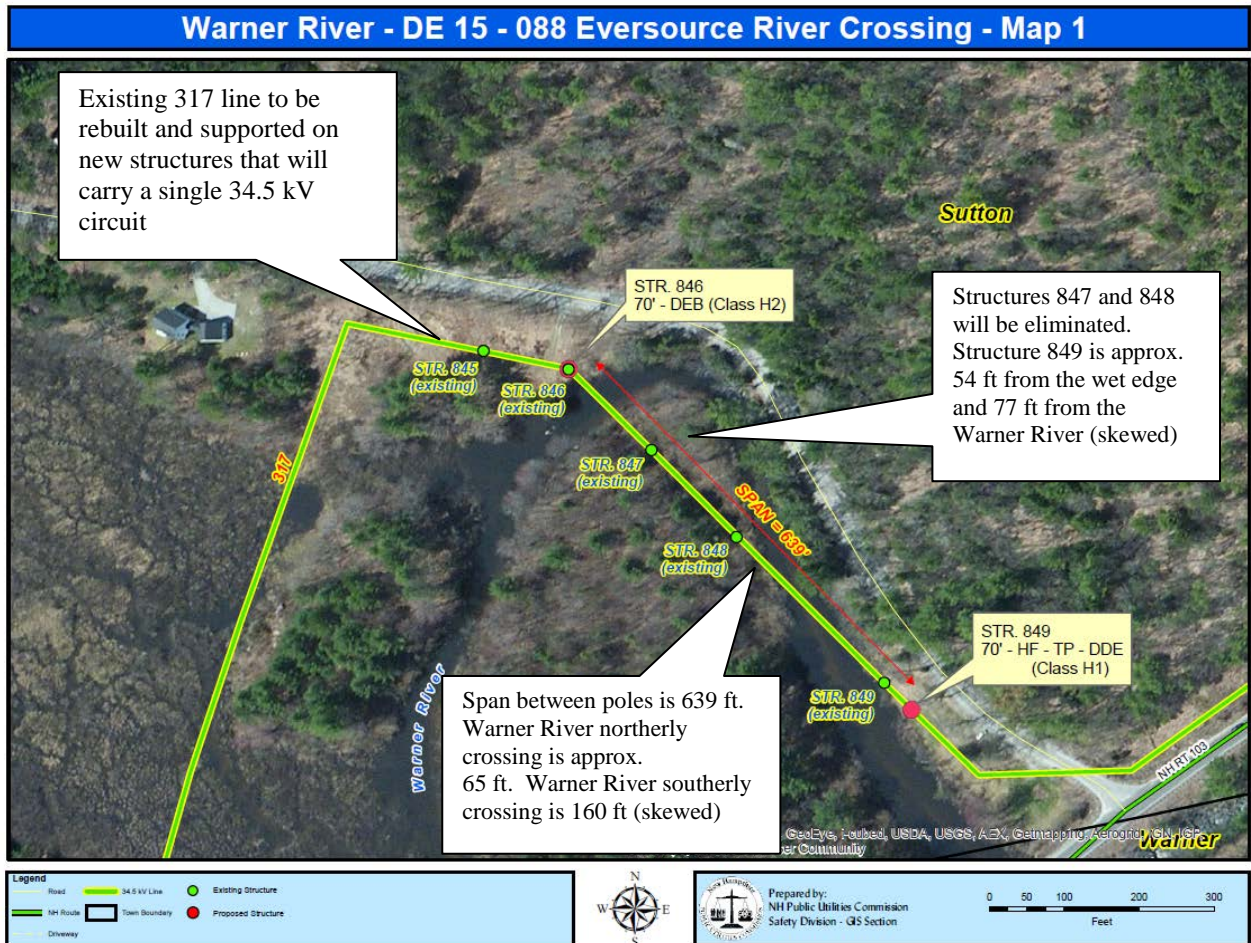
PSNH states the proposed lines and licenses “may be exercised without substantially affecting the rights of the public in the public waters of the Warner River in both Webster and Sutton. Minimum safe line clearances above the water surface and affected shorelines will be maintained at all times. The use and enjoyment by the public of the rivers will not be diminished in any material respect as a result of the overhead line crossings.”

**7. Recommendations and Conclusions.**

The Safety Division recommends approval of PSNH’s petition to the Commission with the following conditions:

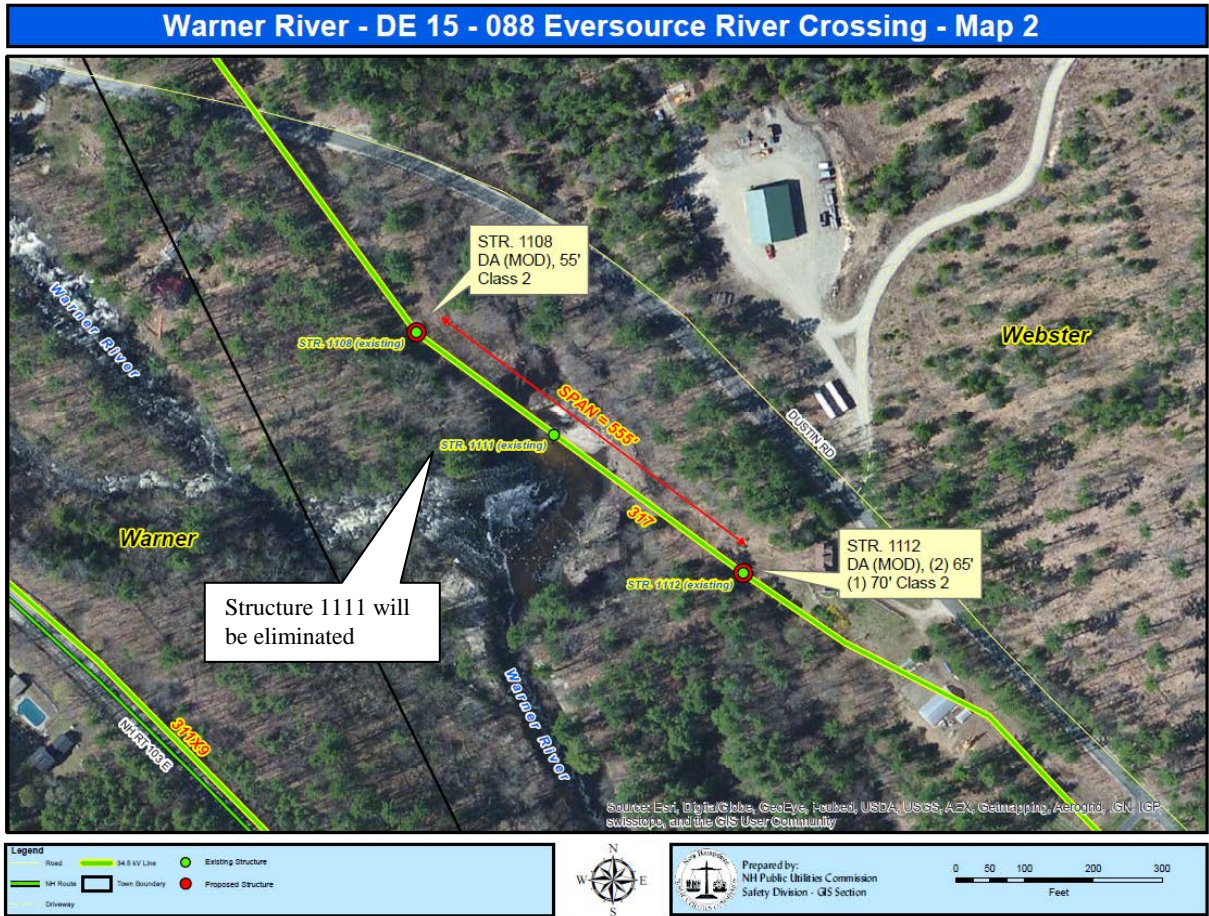
- a. The Commission should require that all future alterations that may impact the public to the crossing conform to the requirements of the 2012 editions of the NESC and be resubmitted to the Commission 60 days prior to the alteration.
- b. PSNH should be required to maintain and operate the crossings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

# Appendix A



**Figure 1.**

Overall View of Warner River Crossing Sutton, NH. Clearance above the Warner River 10 year Flood Levels for the neutral wire is assumed to be 23.4 ft which is greater than the minimum clearance of 14 ft.



**Figure 2.**

View of Warner River Crossing, Webster, NH. Note span for Line 317 is approximately 555 feet and river width (without 10 yr flood level) is approximately 83 feet. Clearance above the Warner River 10 year Flood Levels is 17.9 ft for the neutral

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

---

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

Executive.Director@puc.nh.gov

amanda.noonan@puc.nh.gov

christopher.allwarden@nu.com

ocalitigation@oca.nh.gov

randy.knepper@puc.nh.gov

robert.wyatt@puc.nh.gov

rorie.patterson@puc.nh.gov

Docket #: 15-088-1      Printed: April 20, 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.