

**THE STATE OF NEW HAMPSHIRE  
BEFORE THE  
PUBLIC UTILITIES COMMISSION**

PETITION OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, D/B/A  
EVERSOURCE ENERGY, FOR LICENSE TO CONSTRUCT AND MAINTAIN  
ELECTRIC LINES OVER AND ACROSS THE WARNER RIVER IN THE TOWN OF  
WEBSTER AND IN THE TOWN OF SUTTON, NEW HAMPSHIRE.

TO THE PUBLIC UTILITIES COMMISSION:

Public Service Company of New Hampshire, doing business as Eversource Energy (“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 over and across the public waters of the Warner River in two separate locations, in the Town of Webster, New Hampshire, and in the Town of Sutton, New Hampshire, and in support of its petition states as follows:

1. In order to meet the reasonable requirements of service to the public, PSNH currently operates and maintains an overhead electric utility line across the Warner River at two separate locations, one in the Town of Warner, and the other in the Town of Sutton, New Hampshire. The line is designated as the 317 line, and runs between PSNH’s Davisville tap in the Town of Webster, and PSNH’s Bradford Substation tap in Sutton. The existing 317 line is a three phase 34.5 kV distribution line, comprised of three 336 ACSR 26/7 conductor wires.

2. Recent PSNH inspections of the 317 line have identified a number of poles and crossarms that require repair and/or replacement. These locations were primarily grouped in six areas, or sections, of the line. Rather than replace individual poles along the line, PSNH has determined that these sections of the 317 line will be rebuilt in their entirety using new construction, in the approximate same location. Two of the six sections of the 317 line to be rebuilt involve the two water crossing locations which are the subject of this petition; the specific revisions to each of the water crossings are explained in more detail in paragraph 7 of this petition below.

3. Both of the existing 317 line crossings of the Warner River have existed since at least 1936, when the easement rights for the existing right of way corridor and the line were acquired by PSNH from the New Hampshire Power Company. PSNH has been unable to locate any previous water crossing licenses granted by the Commission for the existing Warner River crossings; however, these crossings will be newly licensed by the Commission under this petition.

4. The location of the proposed crossings of the Warner River are shown on the attached USGS location maps, marked as Exhibit 1 for Webster and Exhibit 2 for Sutton.

5. The design and proposed construction of the crossings are shown on the attached PSNH Distribution Business Plan and Profile Drawings entitled “PSNH 317 Line, Warner River Water Crossing, Plan and Profile”, marked as Exhibit 3 for Webster and Exhibit 4 for Sutton.

6. The required technical information provided in this petition is based on the 2012 National Electrical Safety Code (NESC) C2-2012.

7. River Crossing Descriptions:

A. Warner River Crossing, Webster:

- The existing Warner River crossing in Webster consists of two spans between three round-wood pole structures, Structures 1108, 1111 and 1112. The middle structure, 1111, is located on a sand bar at the side of the river. The span lengths are approximately 238 feet and 266 feet. At high water times, the area around the Structure 1111 is inundated, and the structure is not accessible.
- The proposed Warner River replacement crossing in Webster will occur between two round-wood structures with a total span length of approximately 504 feet. The intent of the revised crossing is to completely eliminate the existing middle pole structure 1111, and to span over the entire length of river. The 317 line in this location will be rebuilt with three 477 ACSR 18/1 phase conductor wires and one 4/0 ACSR 6/1 neutral wire. The structure on the east side of the river, number 1112, is a three pole structure, constructed with two class 2, 65’ western red cedar (WRC) poles, and one class 2, 70’ western red cedar (WRC) pole. The structure on the west side of the river, number 1108, is a three pole structure, constructed with three class 2, 55’ western red cedar (WRC) poles. Pole and connection details to be used for this crossing location are shown on the attached drawing entitled “PSNH 313 Line, Structure 1108 & Structure 1112, Construction Details”, marked as Exhibit 5.

B. Warner River Crossing, Sutton:

- The existing Warner River crossing in Sutton consists of three spans between four round-wood pole structures, Structures 846, 847, 848 and 849. The two middle structures, 847 and 848, are located on the finger of land surrounded by the oxbow of the river. The span lengths are approximately 260 feet, 160 feet and 170 feet. PSNH has no formal rights to cross over private property to get to the finger of land, and at high water times, the area around structures 847 and 848 can be inundated.

- The proposed Warner River crossing in Sutton will occur between two round-wood structures with a total span length of approximately 642 feet. The intent of the revised crossing is to completely eliminate the existing two middle pole structures 847 and 848, and to span over the entire length of the oxbow in the river. The 317 line will be rebuilt with three 477 ACSR 18/1 phase conductor wires and a 4/0 ACSR 6/1 neutral wire. The structure on the east side of the river, number 849, is an H frame structure, constructed with two class H1, 70' WRC poles. The structure on the west side of the river, number 846, is a vertical angle structure, constructed with a single class H1, 70' WRC pole. The phase conductors roll from vertical to horizontal configuration over the Warner River.

8. 10 Year Flood Water Elevations:

- A. The Warner River Crossing in Webster is identified in Flood Insurance Study, Volume 2 of 2, Merrimack County, Exhibit 1 – Flood Profiles, Warner River, Panel 93P, Flood Insurance Study Number 33013CV002A, effective date April 19, 2010, issued by the Federal Emergency Management Agency (FEMA). The 10-year flood elevation for the river in this location is approximately 359.0 feet. This elevation is based on the North American Vertical Datum of 1988 (NAVD 88).

The water area in this section of river includes a bridge, approximately 1,500 feet up-stream, and a series of steep rapids between the bridge and the wire crossing. The water area in this section of river also includes a large area of flood plain deposits that are not passable via boat. It has no public access, and because of the heavily forested banks and flood areas, has a very limited unobstructed surface area. For these reasons, the water is unsuitable for sail boating.

- B. The Warner River Crossing in Sutton is identified in Flood Insurance Study, Volume 2 of 2, Merrimack County, Exhibit 1 – Flood Profiles, Warner River, Panel 98P, Flood Insurance Study Number 33013CV002A, effective date April 19, 2010, issued by the Federal Emergency Management Agency (FEMA). The 10-year flood elevation for the river in this location is approximately 505.0 feet. This elevation is based on the North American Vertical Datum of 1988 (NAVD 88).

The water in this section of river is confined by two bridges, approximately 2,000 feet apart. It has no public access, and because of the heavily forested banks and flood areas, has a very limited, unobstructed surface area. For these reasons, the water area is unsuitable for sail boating.

9. Conductor Clearances:

- A. For the Warner River in Webster, the required clearances to water areas not suitable for sailboating in NESC Table 232-1.6, for phase conductors and neutral wires are 17.0' and 14.0', respectively. The required clearances to ground for phase conductors and neutral wires in NESC Table 232-1.2, are 18.5' and 15.5', respectively. Using the above design criteria, the maximum sags of the phase conductors and minimum clearances for the crossing have been determined and designed as follows:
- a. NESC Heavy, Phase Wire – For the sag on the phase wires under this condition, the minimum proposed clearance to land is 40.0'; the minimum proposed clearance to the 10 year flood level is 35.0'.
  - b. Minus 20° F, Phase Wire – For the sag on the phase wires under this condition, the minimum proposed clearance to land is 42.0'. The minimum proposed clearance to the 10 year flood level is 37.0'.
  - c. 212° F, Phase Wire – For the sag on the phase wires under this condition, the minimum proposed clearance to land is 34.0'. The minimum proposed clearance to the 10 year flood level is 29.0'.
  - d. NESC Heavy, Neutral Wire – For the sag on the neutral wire under this condition, the minimum proposed clearance to land is 27.0'. The minimum proposed clearance to the 10 year flood level is 22.0'.
  - e. Minus 20° F, Neutral Wire – For the sag on the neutral wire under this condition, the minimum proposed clearance to land is 25.0'. The minimum clearance to the 10 year flood level is 20.0'.
  - f. 120° F, Neutral Wire - For the sag on the neutral wire under this condition, the minimum proposed clearance to land is 23.0'. The minimum proposed clearance to the 10 year flood level is 18.0'.
  - g. Minimum Clearance, Phase Wire – The 212° F conditions (item c above), results in the minimum clearance for phase conductors. The minimum proposed clearances expected under those conditions are 34.0' to land and 29.0' to the 10 year flood level. The required minimum clearance from the phase wires to land based on NESC Table 232-1.2 is 18.5'.

The required minimum clearance from phase wire to the 10 year flood based on NESC Table 232-1.6, is 17.0'. The crossing design as proposed exceeds the NESC requirements.

- h. Minimum Clearance, Neutral Wire – The 120° F conditions (item f above), results in the minimum clearance for the neutral wire. The minimum proposed clearances expected under that condition is 23.0' to land and 18.0' to the 10 year flood level. The required minimum clearance from the neutral to land based on NESC Table 232-1.2 is 15.5'. The required minimum clearance from the neutral wire to the water surface based on NESC Table 232-1.6, is 14.0'. The crossing design as proposed exceeds the NESC minimum requirements.
- i. Minimum Phase to Neutral Clearance – The conditions which would result in the minimum clearance between these lines is with the phase wires on the 317 line operating at 212°F and the neutral at 60° F. Under those conditions the proposed phase to neutral clearance would be 10.0'. Based on NESC Table 235-6.2.a, the minimum clearance should be 26.3 inches (2.2 feet)

B. For the Warner River in Sutton, the required clearances to water areas not suitable for sailboating in NESC Table 232-1.6, for phase conductors and neutral wires are 17.0' and 14.0', respectively. The required clearances to ground for phase conductors and neutral wires in NESC Table 232-1.2, are 18.5' and 15.5', respectively. Using the above design criteria, the maximum sags of the phase conductors and minimum clearances for the crossing have been determined and designed as follows:

- a. NESC Heavy, Phase Wire – For the sag on the phase wires under this condition, the minimum proposed clearance to land is 34.8'; the minimum proposed clearance to the 10 year flood level is 33.8'.
- b. Minus 20° F, Phase Wire – For the sag on the phase wires under this condition, the minimum proposed clearance to land is 36.7'. The minimum proposed clearance to the 10 year flood level is 35.7'.
- c. 212° F, Phase Wire – For the sag on the phase wires under this condition, the minimum proposed clearance to land is 27.6'. The minimum proposed clearance to the 10 year flood level is 26.6'.

- d. NESC Heavy, Neutral Wire – For the sag on the neutral wire under this condition, the minimum proposed clearance to land is 24.3'. The minimum proposed clearance to the 10 year flood level is 23.3'.
- e. Minus 20° F, Neutral Wire – For the sag on the neutral wire under this condition, the minimum proposed clearance to land is 26.2'. The minimum proposed clearance to the 10 year flood level is 25.2'.
- f. 120° F, Neutral Wire - For the sag on the neutral wire under this condition, the minimum proposed clearance to land is 21.9'. The minimum proposed clearance to the 10 year flood level is 20.9'.
- g. Minimum Clearance, Phase Wire – The 212° F conditions (item c above), results in the minimum clearance for phase conductors. The minimum proposed clearances expected under those conditions are 27.6' to land and 26.6' to the 10 year flood level. The required minimum clearance from the phase wires to land based on NESC Table 232-1.2 is 18.5'. The required minimum clearance from phase wire to the water surface based on NESC Table 232-1.6, is 17.0'. The crossing design as proposed exceeds the NESC requirements.
- h. Minimum Clearance, Neutral Wire – The 120° F conditions (item f above), results in the minimum clearance for the neutral wire. The minimum proposed clearances expected under that condition is 21.9' to land and 20.9' to the 10 year flood level. The required minimum clearance from the neutral to land based on NESC Table 232-1.2 is 15.5'. The required minimum clearance from the neutral wire to the water surface based on NESC Table 232-1.6, is 14.0'. The crossing design as proposed exceeds the NESC requirements.
- i. Minimum Phase to Neutral Clearance –The conditions which would result in the minimum clearance between these lines is with the phase wires on the 317 line operating at 212°F and the neutral at 60° F. Under those conditions the proposed phase to neutral clearance would be 3.96'. Based on NESC Table 235-6.2.a, the minimum clearance should be 26.3 inches (2.2 feet)

10. 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.

11. The proposed crossing has been designed and will be constructed, maintained and operated in accordance with the NESC.

12. The poles associated with these crossings are located within easements owned by PSNH.

13. PSNH submits that the license petitioned for herein may be exercised without substantially affecting the rights of the public in the public waters of the Warner River. Minimum safe line clearances above the river surface and affected shorelines will be maintained at all times. The use and enjoyment by the public of the river will not be diminished in any material respect as a result of the overhead line crossing.

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 over and across the public waters of the Warner River in Webster and Sutton, New Hampshire, as specified in the petition; and
- c. Issue an Order Nisi and orders for its publication.

Dated at Manchester this 16<sup>th</sup> day of March, 2015.

Respectfully submitted,

PUBLIC SERVICE COMPANY OF NEW  
HAMPSHIRE d/b/a EVERSOURCE  
ENERGY

By Its Attorney



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