

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

PETITION OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, DOING BUSINESS AS EVERSOURCE ENERGY, FOR LICENSE TO CONSTRUCT AND MAINTAIN ELECTRIC LINES OVER AND ACROSS THE NEWFOUND RIVER IN THE TOWN OF BRISTOL, 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 Newfound River in the Town of Bristol, 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 proposes to construct and maintain a three-phase 12.47 kV distribution line, designated as the 20W2 circuit, in Bristol, New Hampshire, which will be an integral part of PSNH’s electric distribution system in the area. This is a new line for a new circuit. PSNH’s existing 18W1 circuit is being split into two smaller circuits (20W1 and 20W2) to help correct reliability issues that have arisen from such a large individual circuit. Automation is being installed as well, in order to isolate and restore power for the customers in a timelier manner.
2. The new 20W2 line circuit will cross over the Newfound River in Bristol approximately 59’ northwest of the Pleasant Street/Route 104 bridge.
3. The location of this proposed crossing of the Newfound River is shown on the attached location map, marked as Figure 1.
4. The design and proposed construction of the crossing is shown on the attached PSNH Energy Delivery Plan and Profile Drawing entitled “20W2 LINE (12.5KV), NEWFOUND RIVER WATER CROSSING, PLAN & PROFILE, BRISTOL, NEW HAMPSHIRE”, marked as Figure 2.
5. The required technical information provided in this petition is based on the 2007 National Electrical Safety Code (NESC) C2-2007.
6. The proposed crossing will occur between two wood structures with a span length of approximately 184 feet. The structure on the southwest side of the river, structure # 20W2/2, is a medium corner structure, constructed with a single class 2, 50’ foot tall CCA pole. The structure on the northeast side of the river, structure #1/18X, is a large corner structure, constructed with a single class 2, 50’ foot tall CCA pole with a

push brace. The construction details for these structures are attached to this petition as Figures 3, 4 and 5 respectively. 477 ACSR cable with 18/1 stranding will be used for the conductors. The neutral will be 4/0 ACSR cable with 6/1 stranding. The conductors will be sagged using NESC Heavy Loading conditions (0° F, 4 pounds psf wind loading, ½” radial ice) at a maximum tension of 3,000 pounds. The neutral will be sagged using NESC Heavy Loading conditions (0° F, 4 pounds psf wind loading, ½” radial ice) at a maximum tension of 2,000 pounds.

7. Flood water elevations for the Newfound River in this area are identified on Flood Insurance Rate Map, Grafton County, New Hampshire, Panel 1178 of 1185, Map Number 33009C1178E, effective date February 20, 2008 issued by the Federal Emergency Management Agency (FEMA). Additional information is found in the Flood Insurance Study, Volume 2 of 2, Grafton County, New Hampshire issued by FEMA on February 20, 2008. The 10-year flood elevation for the river in this location is approximately 455 feet. This elevation is based on the National Geodetic Vertical Datum of 1929 (NGVD 29).

8. The surface area of the Newfound River at the design flood level as defined by NESC (note 19 to Table 232-1) is approximately 44± acres. For the purposes of calculating surface area for clearance the 10-year flood area was used since it is readily available.

9. Using the above design criteria, the maximum sags of the phase and neutral wires 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 clearance to land is 41.6’; the minimum clearance to the 10 year flood level is 44.0’.
- B. Minus 20° F, Phase Wire – For the sag on the phase wires under this condition, the minimum clearance to land is 41.6’. The minimum clearance to the 10 year flood level is 44.9’.
- C. 212° F, Phase Wire – For the sag on the phase wires under this condition, the minimum clearance to land is 41.6’. The minimum clearance to the 10 year flood level is 41.8’.
- D. NESC Heavy, Neutral Wire – For the sag on the neutral wire under this condition, the minimum clearance to land is 31.6’. The minimum clearance to the 10 year flood level is 36.6’.
- E. Minus 20° F, Neutral Wire – For the sag on the neutral wire under this condition, the minimum clearance to land is 31.6’. The minimum clearance to the 10 year flood level is 38.6’.
- F. 120° F, Neutral Wire - For the sag on the neutral wire under this condition, the minimum clearance to land is 31.6’. The minimum clearance to the 10 year flood level is 34.8’.

- G. Minimum Clearance, Phase Wire – The 212° F, Phase Wire conditions (item C above), results in the minimum clearance for phase conductors. The minimum clearances expected under those conditions are 41.6’ to land and 41.8’ 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 232-1.7.b, is 28.5’. The crossing design as proposed exceeds the NESC requirements.
- H. Minimum Clearance, Neutral Wire – The 120° F, Neutral Wire conditions (item F above), results in the minimum clearance for the neutral wire. The minimum clearances expected under that condition is 31.6’ to land and 34.8’ 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 232-1.7.b, is 25.5’. 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 a winter condition with the phase wires at NESC Heavy Loading (item A above) and the neutral at -20° F (item E above). This could occur after an ice storm if the neutral shed ice before the conductors. Under those conditions the phase to neutral clearance would be 4.9’. Based on NESC Table 235-6.2.a, the minimum clearance required is 12 inches.

10. There are no NH Department of Environmental Services or NH Department of Transportation permits necessary specifically for the construction of this crossing.

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

12. Proposed structure# 20W2/2 on the westerly side of the crossing is to be located within property owned in fee by PSNH. Proposed structure #1/18X on the easterly side of the crossing is to be located within the municipal street right of way (Lake Street) for the Town of Bristol. PSNH has made application to the Town to secure a pole license for this structure, which is pending. Additionally, on the easterly side of the crossing, the crossing wires will pass aerially over a parcel of private property identified as Bristol Tax Map 113, Lot 20, before reaching proposed structure #1/18X. PSNH is currently working with the landowner to acquire permanent easement rights for the wires over this location.

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 Newfound 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:

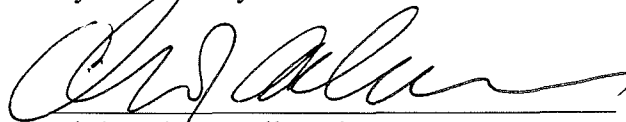
- a. Find that the license petitioned for herein may be exercised without substantially affecting the public rights in the public waters which are the subject of this petition;
- b. Grant PSNH a license to construct and maintain electric lines over and across the public waters of the Newfound River in Bristol, New Hampshire, as specified in the petition; and
- c. Issue an Order Nisi and orders for its publication.

Dated at Manchester, NH, this 10th day of June, 2015.

Respectfully submitted,

PUBLIC SERVICE COMPANY OF NEW
HAMPSHIRE DOING BUSINESS AS
EVERSOURCE ENERGY

By Its Attorney



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