


STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: November 12, 2019
AT (OFFICE): NHPUC

FROM: Randall Knepper, Director, Safety Division 

SUBJECT: Docket No. DE 19-094 Public Service New Hampshire d/b/a Eversource Energy
Petition for Licenses to Construct and Maintain Electric Lines and Communication Cables over and across the Squamscott River in the Towns of Stratham and Exeter, New Hampshire, and Over and Across Land (former rail corridor) owned by the State in the Town of Sandown, New Hampshire.
Staff Recommendation

TO: Debra Howland, Executive Director
Thomas Frantz, Director, Electric Division
Richard Chagnon, Assistant Director, Electric Division
Mary Schwarzer, Staff Attorney

CC: Paul Kasper, Assistant Director – Safety Division

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

- Petition contents and history;
- Applicable State Statute;
- Review of the existing crossings: water crossing licensed by the PUC and land crossing not previously licensed by the PUC;
- Review of land ownership and shoreline ownership of existing pole structures;
- Review of NESC code requirements as described in Puc 300;
- Review of public need and public impact, including applicability of other State regulations; and
- Conclusions and Recommendations.

1. Petition contents and history

On May 13, 2019, Public Service Company of New Hampshire d/b/a Eversource Energy (ES), filed a petition pursuant to RSA 371:17 for licenses to re-construct, maintain and operate the Eversource H141 line, which is a 115 kV transmission line. ES is undertaking a project to modify or rebuild (4) four structures on its existing H141 transmission line that affect public waters and lands. The existing wooden structures are being replaced with steel structures. No conductors, shield wire or neutral wire will be replaced in the

project. All wires shall be transferred from existing structures to new structures replaced in the vicinity of the existing locations.

All four of the subject H141 line structures and associated transmission components are approximately 19 (Structure #138 on the west side of the Squamscott River) and 69 years old (Structure #137 on the east side of the Squamscott River and Structures #270 and #271) at the rail corridor. According to ES, the H141 circuit has been subject to environmental damage and requires replacement of the line to continue to function safely and reliably. According to ES, these structure replacement and repairs is part of a capital reliability project necessary for the H141 line to continue to meet current as well as future projected electricity demands. See NHPUC Safety Division map/schematic in Attachments A and B of this recommendation for locations of the structures.

Water Crossing:

The proposed crossing span across the Squamscott River between Structure #137 and Structure #138 is 763.90 feet for the 115 kV H141 transmission line. In this location, the river forms the boundary between the towns of Exeter and Stratham.

In ES Exhibit #2, ES proposes that Structure #137 be constructed with 3-80 ft. class H1 LD steel poles embedded approximately 10 feet each. The structure will have conductors consisting of (3) 336.4 kcmil ACSR Linnet 26/7 cables and (1) #8 Alumoweld 7 stranding shield wire. The communication cable will be a fiber optic cable will be (1) Overhead Power Ground Wire (OPGW)-84 Fiber and will be vertically attached above the conductors. The conductors will be sagged using 285 degree F conditions at a maximum tension of 14,100 pounds. In its petition, ES provides sufficient detail to show how all required clearances from the lowest phase wire to the surface of the water will be maintained at 33.9 feet. The Safety Division verified the computed sags with SAG 10 commercial software using inputs as stated in the petition. The NESC Table 232-1 requires only 18.6 ft, so the proposed clearance will be greater than the minimum required. Because of the attachment points above the electric conductors, both the shield wire and OPGW are not the governing scenarios for clearances

In ES Exhibit #2 Structure #138 is constructed with two 90 foot tall T CL H1 steel poles embedded approximately 11 feet. The structure will have conductors for the 115 kV H141 transmission line consisting of (3) 336.4 kcmil ACSR Linnet 26/7 cables and (1) #8 Alumoweld 7 stranding neutral wires. The fiber optic cable will be (1) OPGW-84 Fiber and will be vertically attached above the conductors. The conductors will be sagged using 285 degree F conditions at a maximum tension of 14,100 pounds. In its petition, ES provides sufficient detail to show how all required clearances from the lowest phase wire to the surface of the water will be maintained at 33.9 feet. Staff verified the computed sags with SAG 10 commercial software using inputs as stated in the petition. Only 18.6 ft. is required by the NESC Table 232-1, so the proposed clearance will be greater.

The water clearances are taken from the projected 100-year flood levels. This is more conservative than the 10-year flood levels required by the NESC (note 12 to Table 232-i).

ES uses floodwater elevations for the Squamscott River in Rockingham County that are identified on FEMA flood map #33015C0245E. The 100-year flood elevation for the river in this location is approximately 5.7 feet, and is based on the North American Vertical Datum of 1929 (NAVD88). The Safety Division verified the 5.7-foot flood level from the FEMA flood map.

Land Crossing:

The crossing span across State Land in Sandown is between Structure #270 and Structure #271 is 408.79 feet for the 115 kV H141 transmission line. The land is part of the NH Department of Transportation's Rail Trail used for recreational purposes, as it is a former rail corridor now owned by the State. For purposes of review, Staff reviewed clearance requirements as if the rail existed or may potentially someday be reconstructed in place.

In ES exhibit #3, structures #270 and #271 are constructed with two 70 foot tall tangential horizontally braced THS CL H1 Steel Poles. The structures will have conductors consisting of (3) 336.4 kcmil ACSR Linnet 26/7 cables and (1) #8 Alumoweld 7 stranding shield wire. The fiber optic cable will be (1) OPGW84 Fiber and will be vertically attached above the conductors. The conductors will be sagged using 285 degree F conditions at a maximum tension of 14,100 pounds. In its petition, ES provides sufficient detail to show how all required clearances from the lowest phase wire to the surface of the water will be maintained at 32.6 feet. Staff verified the computed sags with SAG 10 commercial software using inputs as stated in the petition. Only 22 feet is required by the NESC Table 232-2 for rail clearance consistent with RSA 373:39, so the proposed clearance will be greater.

2. New Hampshire statute referenced in petition

Section 371:17 Licenses for New Poles. - 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. 2013, 82:1, eff. June 19, 2013.

3. Review of existing license and permissions previously granted by the PUC for this location of the Squamscott River and State Rail Trail

River Crossing:

The existing H141 Line crossing of the Squamscott River was originally licensed by the Commission, under Order No. 6668, dated August 31, 1955, issued in Docket D-E 3442 for a 740 foot span between two 65 foot tall supporting structures with three 336.4 kcmil ACSR conductors and two #6 copper wires used for shield wires. Structure #138 was rebuilt in 2000 but ES did not file a petition to amend the license.

The Squamscott River, Junction of the Little and Exeter Rivers is listed under the category "Public Rivers And Streams" in the *Official List of Public Waters (OLPW)*, under the category: "List of freshwater Public Rivers and Streams." The entire list of public waters can be accessed through the following web link:

<https://www.des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf>

A New Hampshire Department of Environmental Services (NHDES) Shoreland Permit by Notification application is required for construction activities in the vicinity of the Squamscott River. A permit application must be submitted to and accepted by NHDES as part of this project.

A NHDES Standard Wetlands Permit is required for construction activities which involve the alteration of nontidal wetlands, nontidal surface waters, and banks adjacent to nontidal surface waters in excess of 20,000 square feet in the aggregate, and is applicable to this Squamscott River crossing. A permit application was submitted and accepted by NHDES (see NHDES File# 2018-01688).

Land Crossing:

The existing H141 Line crossing of the State's land parcel in the Town of Sandown, New Hampshire has not been previously licensed, as this parcel was in private ownership when the H141 Line was originally constructed and no Commission license was required at that time.

It is not anticipated that abutters on either side of the Squamscott River or State land crossings will be affected by this petition, as the H141 Line is an existing line, and all crossing structures are being replaced and rebuilt within Eversource's existing utility corridor. The existing utility corridor on each side of the Squamscott River and of the State land, and the location of each of the crossing structures being replaced, are comprised of existing easements owned by Eversource to operate and maintain transmission lines. There is also an active Boston and Maine Corporation railroad bed on the westerly side of the Squamscott River crossing (Exeter), situated between the River and Structure 138, for which Eversource has an existing crossing license agreement with the Boston and Maine for its H141 Line.

4. Review of land ownership of proposed pole structures for the land crossing in Sandown and Squamscott River in Exeter and Stratham

In its petition, ES specifies that the re-construction of the land crossing is on the State of New Hampshire (Department of Transportation) owned land in the Town of Sandown, New Hampshire

Review of NESC code requirements as described in Puc 300

N.H. Code of Administrative Rules Puc 306.01 requires in relevant part that:

(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....

ES states that the current crossings have been designed and will be re-constructed, maintained and operated in accordance with 2017 National Electrical Safety Code C2-2017.

Staff reviewed the specifications related to the design and re-construction of this crossing project as provided in the petition, the attachments, and all supplemental support documents, and found them to be in conformance with the applicable sections of NESC Code C2-2012 and Puc 300.

For the Squamscott River in Exeter and Stratham, the structures will be situated in an existing 225 foot private right of way in an existing easement owned by Eversource. The same easement will also apply to the land crossing (former rail) in Sandown.

5. Review of public need and public impact

In order to meet the reasonable requirements of electric service to the public, ES proposes to re-construct and maintain a three-phase 115 kV transmission line, designated as the H141 line and a fiber optic cable over and across the Squamscott River and over and

across Land owned by the State in the Town of Sandown, New Hampshire. This transmission line is an integral part of ES's electric transmission system in this area.

ES asserts in the petition that the proposed licenses for these crossings may be exercised without substantially affecting the rights of the public in the State lands in the Town of Sandown and without substantially affecting the rights of the public in the public waters of the Squamscott River. Minimum safe line clearances above the river surface and affected shorelines will be maintained at all times. The use and of which is the subject of this petition. Minimum safe line clearances above the land surfaces will be maintained at all times. The use and enjoyment by the public of these lands will not be diminished in any material respect as a result of the modification and replacement of the existing overhead line crossings.

This land crossing does not require use and occupancy agreements be in place prior to construction of this crossing from the New Hampshire Department of Transportation.

Staff concludes the impact to the public will be *de minimis* and not measurable. The crossings do not appear to affect the rights of the public in the State lands because minimum safe line clearances above the land surface will be maintained at all times.

Staff Recommendation:

Based on the results of its review of the petition, its attachments, and all other supporting documents filed to this docket, the Safety Division recommends that the Commission:

- 1) Find that the licenses ES requests in this docket may be exercised without substantially affecting the public rights in State lands and public waters which are the subject of the petition;
- 2) Grant ES a license to construct, operate and maintain electric line H141 including shield wire and fiber optic communication cable over and across the State lands in the Town of Sandown New Hampshire, as specified in the petition; and
- 3) Find that the license ES requests in this docket may be exercised without substantially affecting the public rights in the public waters which are the subject of the petition;
- 4) Grant ES a license to construct, operate and maintain electric line H141, including shield wire and fiber optic communication cable over and across the public waters of the Squamscott River, in the Towns of Stratham and Exeter, New Hampshire (where the river is the boundary between the two towns), as specified in the petition;
- 5) Issue an Order Nisi and orders for its publication.

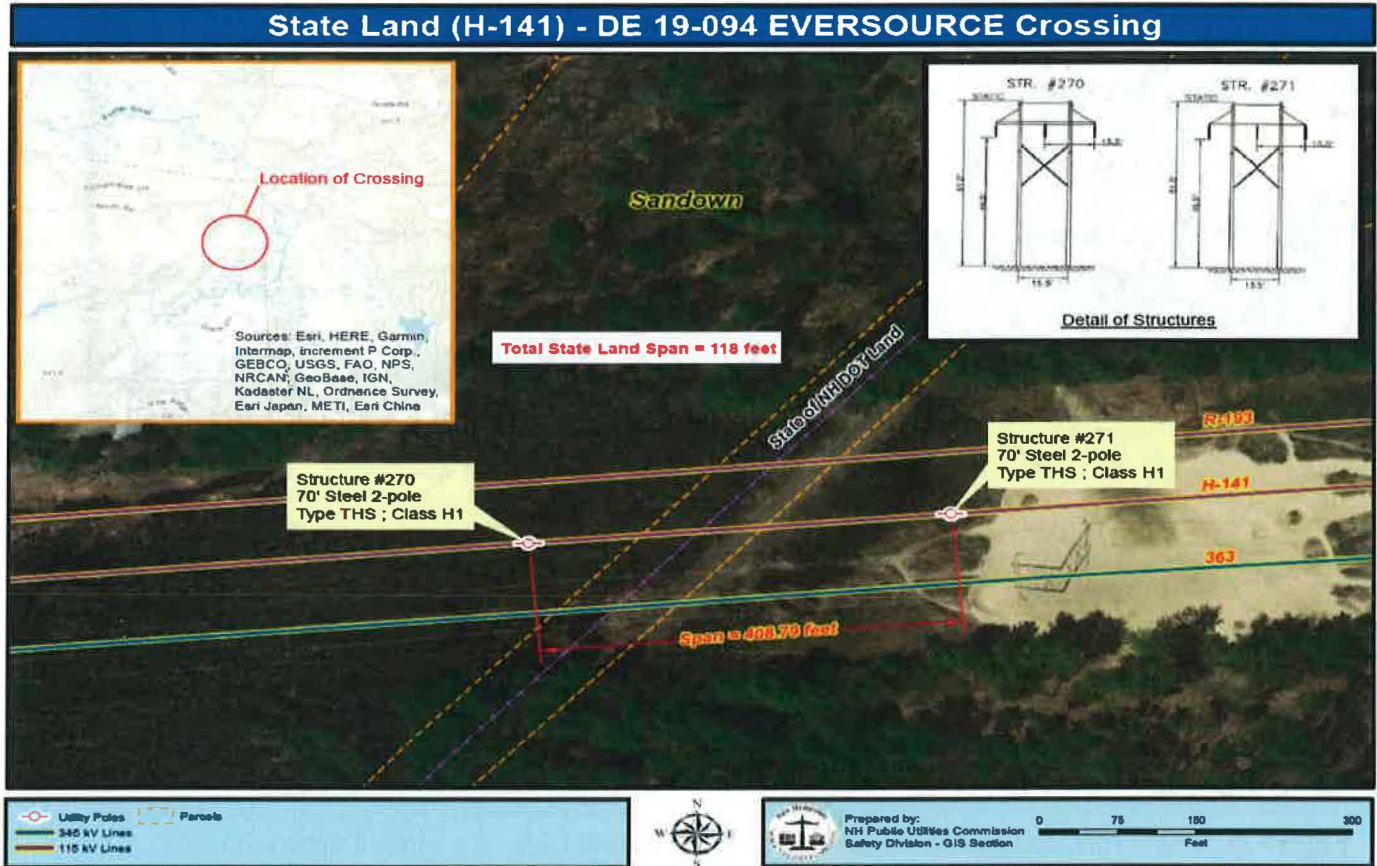


Figure 1: Public Land that is State owned is shown above and used as a recreation trail that was formerly part of the State’s rail system. The parcel is located in the Town of Sandown. The project will require the Commission to grant a public land-crossing license related to this parcel. The license will be for the 115 kV H141 transmission line from Structure #270 to Structure #271 crossing approximately 138 feet of State owned land in the Town of Sandown, NH. The 138 feet is skewed.

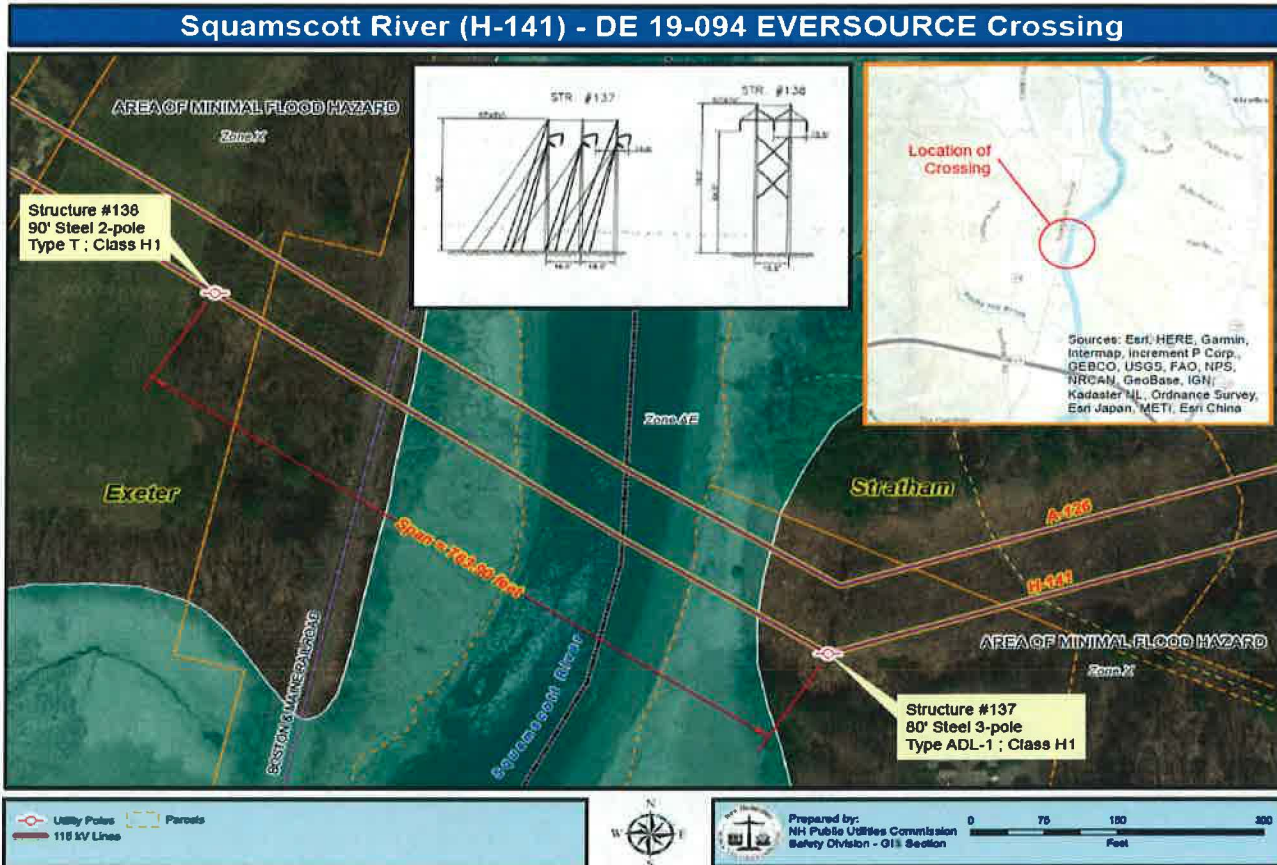


Figure 2: 115kV line, designated as the H141 Transmission Line, is a span of approximately 763.90 feet between structures #137 and #138, across the Squamscott River in the Towns of Stratham and Exeter, NH. The river crossing is approximately 206 feet.

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