STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: March 28, 2013
AT (OFFICE): NHPUC

FROM: Randy Knepper RSK
Director of Safety

SUBJECT: Review of PSNH Petition for Revision to an Existing 34.5kv (Line 386 A) and 115kv (Y170) Crossing of the Cocheco River, Rochester, NH
Docket No. DE 12-345

TO: Debra Howland, Executive Director
Tom Frantz, Director, Electric Division
Steve Mullen, Assistant Director, Electric Division
Suzanne Amidon, 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 November 30, 2012, Public Service Company of New Hampshire filed a petition to alter an existing crossing of the Cocheco River in Rochester, New Hampshire by replacing an existing support structure of a 34.5kv subtransmission line (Line 386A) and raising the height of the support structures from 60 feet on the eastern side to 110 feet and 70 feet on the westerly side to 110 feet above grade On the westerly side, the new support structure will be a steel pole dead end structure (SPDE-DA) that will now support 2 circuits, the existing 34.5kv and a newly installed Y170 (115kv). This is replacing an existing wooden structure. On the easterly side the new support will be a wooden pole tangential WT-2 DC-SB that will also support 2 circuits, the existing 34.5kv and a newly installed Y170 (115kv). This replaces an existing wooden structure.

- The Y 170 circuit will consist of three 795kcm ACSR conductors (26 cables surrounding 7 configuration) vertically spaced, and will be tensioned to 7,000 pounds. There will be a single shield wire consisting of 24 fiber optical cable OPGW

tensioned at 5300 pounds which will be located above the phase wires PSNH provided sufficient detail to show all required clearances from phase wires as well as the surface of the water will be maintained. The OPGW cable serves as both a communication wire as well as a static wire to protect from lightning strikes.

- The 386 A circuit will slightly altered to 477kcm ACSR (26/7 configuration) and will have a 4/0 ACSR (6/1) neutral wire installed below the phase wire configurations. It will be vertically spaced and will be tensioned to 5,000 pounds. All clearance requirements were met under a multitude of scenarios that PSNH provided in sufficient detail.
- The span of the crossing (both circuits) will be 629 feet which is slightly larger than the span (607 feet) from the previously licensed crossing. The river span itself is approximately 360 feet.
- All water clearances are conservatively taken from the 100 year flood level that was derived by PSNH based on NAVD 88 datum and FEMA flood map and #33017C0203D (panel 203) for the Cocheco River.
- On February 11, 2013, PSNH contacted the Safety Division to state that they were scheduled to begin construction on the circuit in mid-March 2013. The work is extensive on each side of the river crossing as it involves constructing two new substations, one of which involves a land purchase.

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 Cocheco River Crossing in Rochester, NH and ownership of lands.**

On March 9, 2004, the PUC issued Order No. 24,491 granting a license to Public Service Company of New Hampshire to construct and maintain electric transmission lines over and across the Cocheco River in Rochester. The order referenced the crossing as Line 326, a 34.5kv 3 phase circuit but it has subsequently been renamed and is now designated as Line 386A.

This order was the result of a petition filed under Docket No. DE03-220 by PSNH.

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

Both crossings are located in an approximate 135 feet right of way that PSNH owns through a paid fee has obtained a permanent easement for its lines and facilities on both the east and west sides of the Cocheco River. The orientation, structures and distances from the edge of right of way will be to have the new 115kv circuit (Y15) orientated on the side of the pole that is closest to the center of the ROW. The structures are to be located approximately 45 feet from the edge of the ROW. Directly adjacent to the river crossing is a residential neighborhood located on St James Terrace.

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

N.H. Code of Administrative Rules PART Puc 306 requires 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 C2-2002…

PSNH in its petition states that the 2007 National Electrical Safety Code C2-2007 was used for compliance. The Safety Division reviewed the differences between the C2-2007 and C2-2002 edition for section 23 Clearances and found the differences were mainly additional clarity in the later edition, but no clearance values were adjusted that would have an impact on this crossing.

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.

The new water crossing structures will be set within the protected shoreland of the Cocheco River as defined by RSA 383-B. Installation of the new structures within the protected shoreland was approved by the NH Department of Environmental Services (NHDES) on September 7, 2012 in Shoreland File #2012-02463. In addition, a Standard Dredge and Fill permit as defined by RSA 482-A is required by NHDES for temporary impacts to wetlands that will result from access to the new water crossing structure locations. This permit application was filed with NHDES on September 9, 2012 and has been approved March 15 2013 *see DES wetland permit file #2012-02452.*

The Safety Division reviewed 14 supporting statements contained in the petition, the five statements in Appendix A, Figures 1 and 2, Exhibits 1, 2, 3 and 4 and found them to be in conformance with the applicable sections of the NESC code C2-2002. 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 crossing is an integral part of the PSNH transmission system and the overall New England transmission grid. PSNH further states the electrical system operation requirements in the greater Rochester and Seacoast area are approaching the system's limits, with load growth expected to increase by 3% annually primarily from additional industrial and commercial loads. In order to address potential electric system reliability issues that will result from this projected growth, PSNH intends to construct a new 115kV line (line Y170) in the existing 386A and 386 rights of way, from Rochester to Milton will alleviate potential reliability overloads on the existing distribution system and allow for future commercial and industrial growth in the greater Rochester and seacoast area of New Hampshire. This crossing is part of a larger overall project.

PSNH states "the proposed transmission lines will not substantially affect the rights of the public in the public water of the Cocheco River. 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 Cocheco River will not be diminished in any material respect as a result of the overhead line and cable 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 both the 2002 and 2007 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

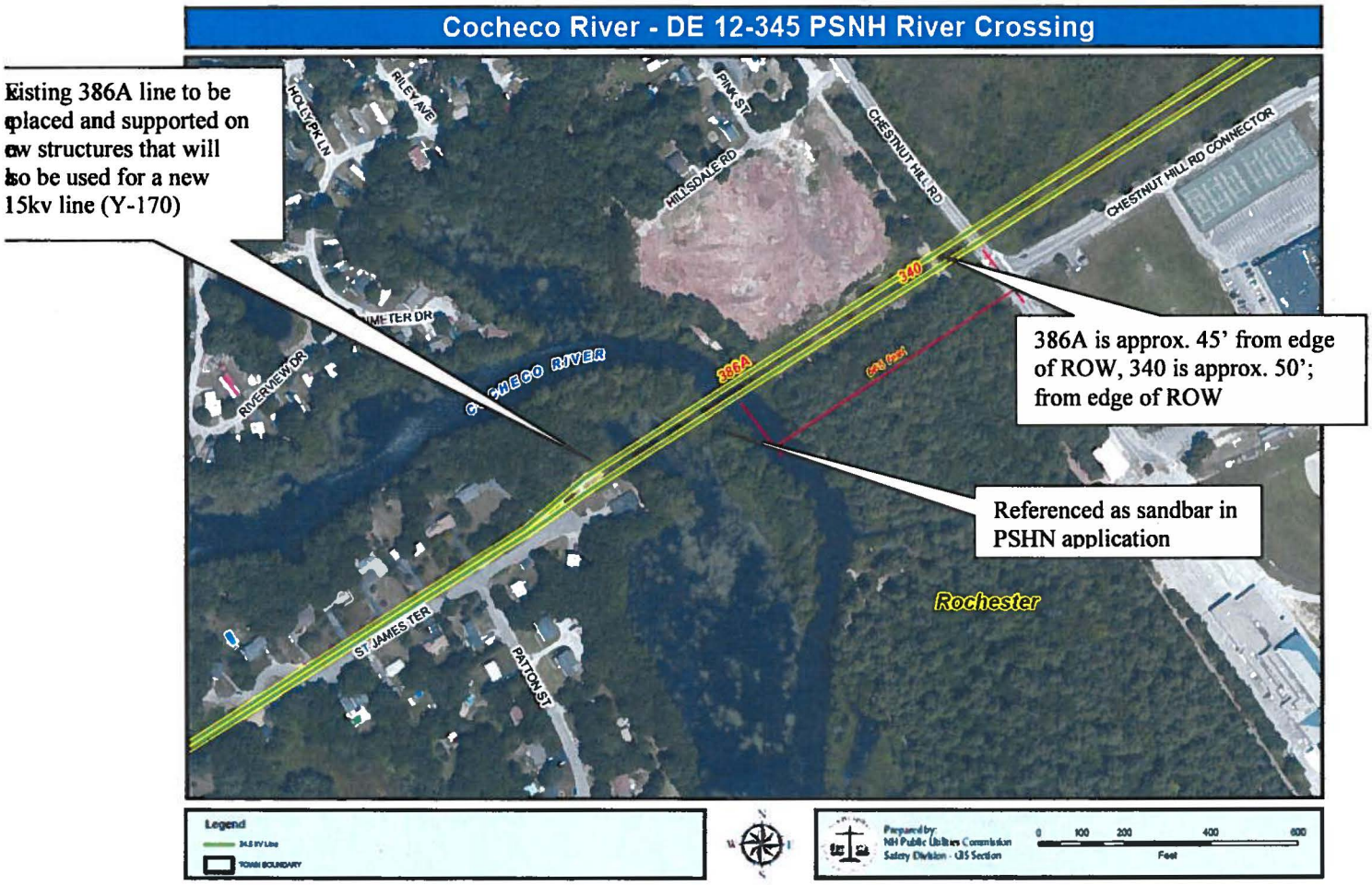

Figure 1. Overall View of Cocheco River Crossing Rochester, NH. Note: Line 340 is not part of the petition but is located in the existing 135 ft right of way. A new 115kv (Y170) circuit will be added to the 386A line

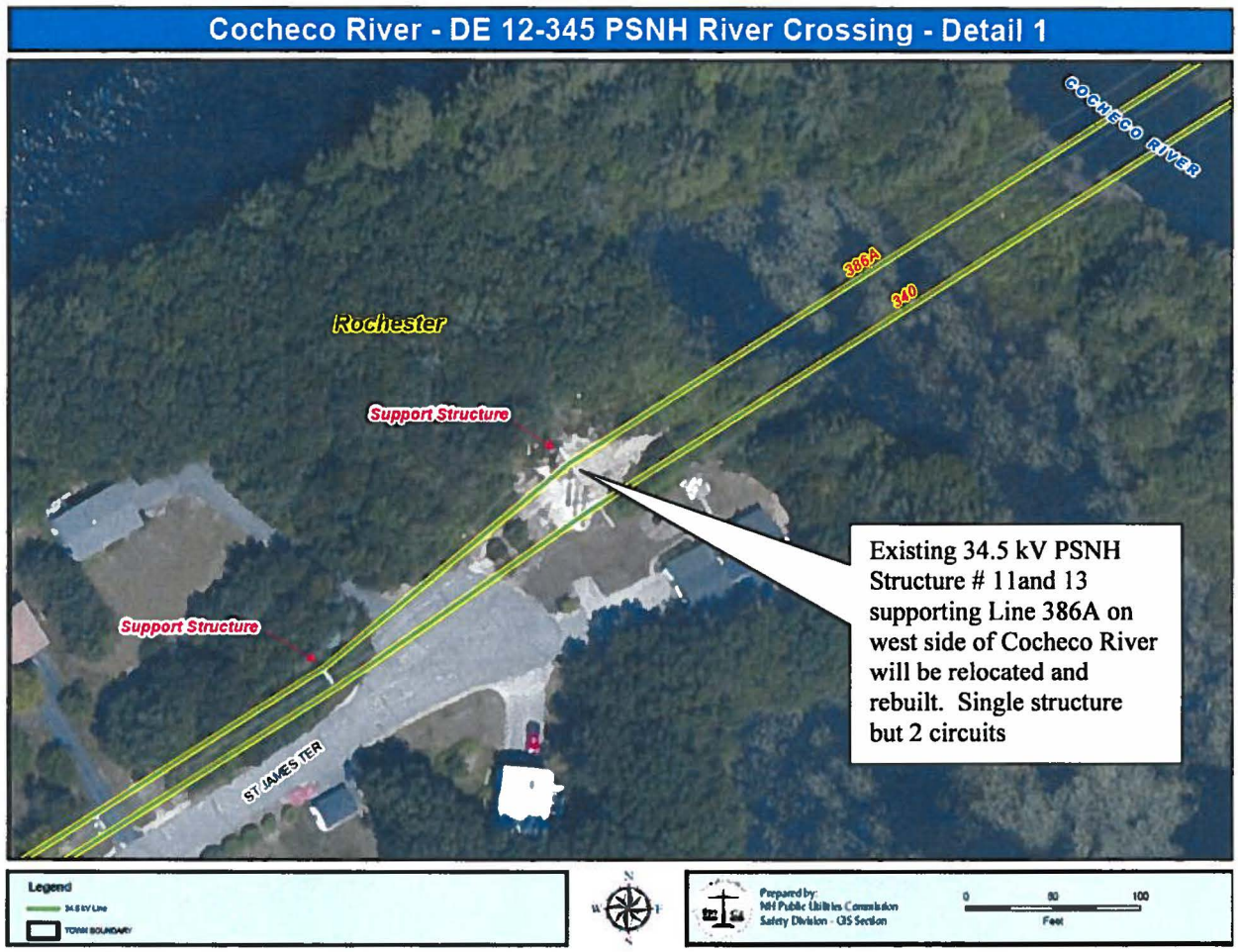

Figure 2. View of Cocheco River Crossing, Rochester, NH. Note span for Line 386A is approximately feet and river width (with sandbar) is approximately feet. 2 PSNH spans are shown for 340 (34.5kV) – furthest south, Line 386A (34.5 kV) north. The span is being increased to 629 feet from a current span of 607 feet.

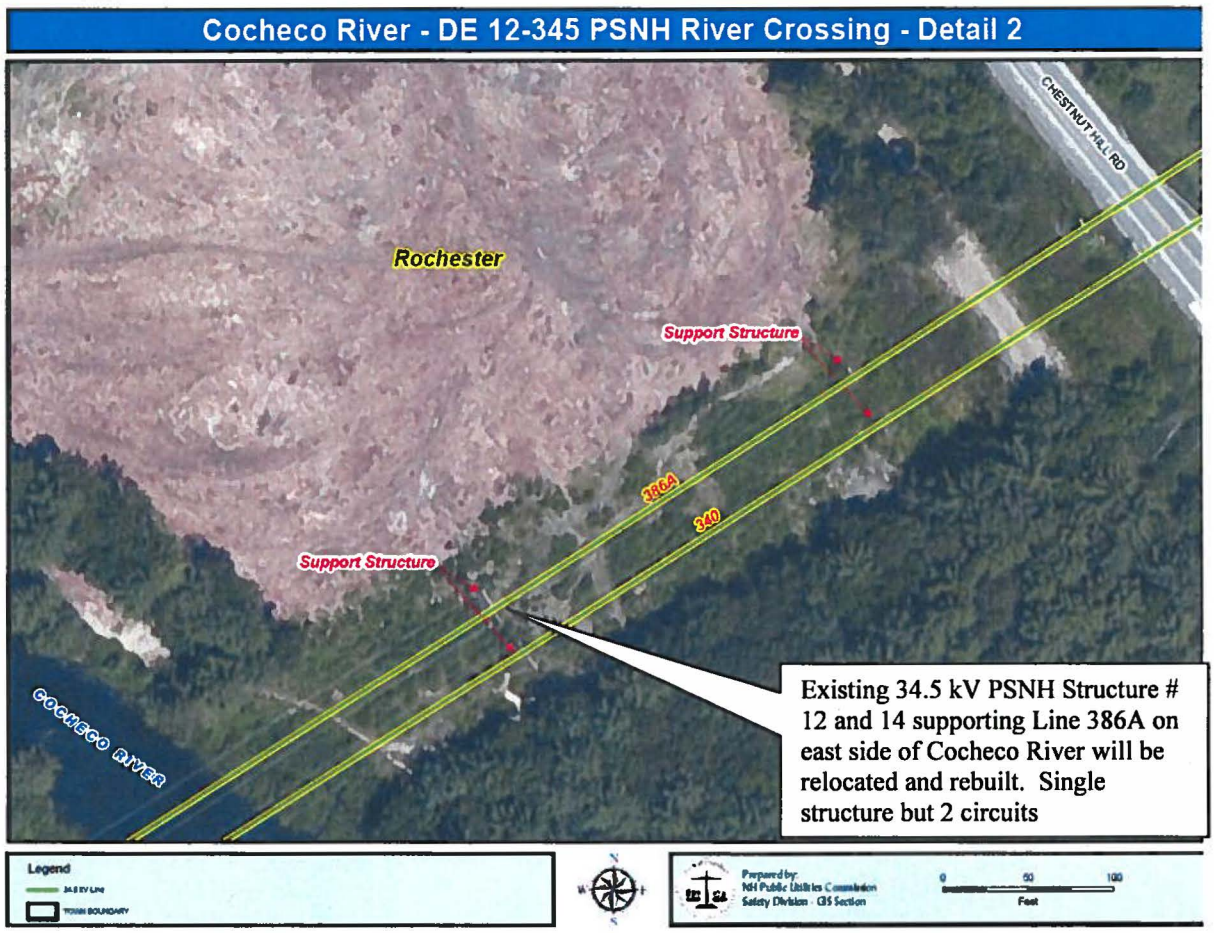

Figure 3. Eastern Bank of Cocheco River Crossing, Rochester, NH