www.vhb.com

September 30, 2020

Ref: 12970.00

Sudbury Historical Commission
Flynn Building
278 Old Sudbury Road
Sudbury, MA 01776

Re: Sudbury-Hudson Transmission Reliability Project
MHC #RC.62384, EEA #15703
Response to Comment Letter Dated July 23, 2020

Dear Members of the Sudbury Historical Commission,

On behalf of NSTAR Electric Company d/b/a Eversource Energy ("Eversource"), VHB is providing this supplemental information in response to the request for additional information dated July 23, 2020, from the Sudbury Historical Commission. Requests made in the letter are set in bold below, and responses are provided in plain text.

According to the VHB November 14, 2019 letter to the US Army Corps of Engineers, "An in-depth evaluation of eight alternatives was completed which considered several metrics … " and " … concluded that a new single-span bridge was the best alternative" to replace Bridge 127. The Commission requests a detailed description of each of the eight alternatives which were considered and why each alternative not chosen was not the "best" alternative, and why the "new single-span" alternate chosen was the "best alternative".

As described in the November 14, 2019, letter to the US Army Corps of Engineers, existing Bridge 127 is in poor condition and is partially submerged in water, causing deterioration. Specifically:

- The timber pile bents are deteriorated and would need to be replaced to safely support the proposed bike path and transmission line.
- The existing beams are not structurally adequate because of the severe deterioration of the piers and moderate deterioration of sections of the submerged bottom steel flange.
- The stream flow and ice pressures pose significant structural stability and utility risks if any components are left below flood water surface elevations.

The eight alternatives are described below and took into consideration the requirement of a safe bridge crossing of the Massachusetts Department of Conservation and Recreation's ("DCR") Mass Central Rail Trail ("MCRT"). The Project was designed to minimize ground disturbance and impacts to

101 Walnut Street
PO Box 9151
Watertown, Massachusetts 02471
P 617.924.1770
F 617.924.2286

wetlands and water resources while meeting DCR standards for trail grades, AASHTO specifications for pedestrian bridge designs, and AASHTO guidelines for bicycle facilities.

1. **Install Utility Only on Bridge**: Eversource considered installing only the transmission line on the existing bridge and doing no further work. This alternative would retain the existing structure but was not chosen because it would not provide DCR with a safe bridge for its MCRT, and it would potentially place the transmission line permanently under water and would pose an unacceptable utility risk.
2. **Install Utility and New Deck (No Repairs)**: This alternative would install the transmission line as well as a new deck on the existing bridge, with no repairs. This would retain the existing structure; however, as stated above, structural analysis determined that the existing steel and piers would not be able to safely support the MCRT, and like Alternative 1, this would leave the transmission line permanently submerged. Leaving the existing bridge submerged would also result in continued corrosion over time. This alternative was therefore dismissed from consideration.
3. **Install Utility and New Deck; Repair Piers**: Repairing the piers would address the structural deficiency and leave the rest of the structure intact, but would require in-stream work, resulting in additional impacts to water resources, potential disturbance to the stream bottom of this coldwater fishery resource, and additional permitting; and could result in a reduced hydraulic opening. In addition, like Alternatives 1 and 2, this alternative would leave the existing bridge submerged and pose a utility risk. For these reasons, this alternative was dismissed from consideration.
4. **Temporarily Raise Girders and Complete Steel Repairs**: This alternative would temporarily lift the bridge out of the water to complete steel repairs, then lower it back into the water once repairs were complete. This alternative would address the structural deficiency and retain the existing structure but was dismissed because it would still leave the bridge submerged and pose a utility risk.
5. **Permanently Raise Existing Bridge and Complete Steel Repairs**: This alternative would raise the existing bridge out of the water, repair and strengthen the steel, and install a large section of visible additional concrete on top of the existing abutments and new concrete wingwalls to meet and support the new bridge elevation. This would address the structural deficiency, remove the submergence risks, and retain the existing superstructure. This alternative was dismissed because it would require raising the profile of the MCRT by approximately 3 feet to meet the new elevation of the bridge, resulting in increased grading and wetland and waterway impacts along the approaches to the bridge as well as a steeper slope for trail users approaching the bridge. Installing the concrete on top of the existing abutments would also require in-stream work since the existing bridge seat is underwater and may require additional foundation work to support the added concrete, and to support the higher trail grade this alternative would require retaining walls extending approximately 5 feet above grade, and these walls would be necessary for an

extended length to allow for the trail design to meet existing grades on either side of the bridge while complying with trail slope requirements. The higher trail grade, new wingwalls, and extensive retaining walls would not be consistent with the Secretary of the Interior's Standards for Rehabilitation as they would significantly change the essential form and integrity of the environment around the bridge and would not be able to be removed in the future without significantly altering the environment again.

6. **Replace and Raise Superstructure**: This alternative would make use of the existing abutments for a new, raised superstructure that is no longer submerged. A new superstructure would not need to be as deep (top to bottom) as the existing bridge and could therefore reduce the change in grade needed at the approaches compared with Alternative 5. This alternative would provide a safe bridge for the MCRT and could be designed in accordance with the Secretary of the Interior's Standards and Guidelines for Rehabilitation by making it clearly distinguishable as a new structure in material, design, and bridge type, while keeping it "compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment." This alternative was dismissed because it would require more substantial modifications to the existing abutments than Alternative 7, would require in-stream work for these modifications, and would still require additional concrete on top of the existing abutments to raise the bottom of the structure out of the water since the existing bridge seat is underwater.
7. **Replace Entire Bridge (the proposed alternative)**: This alternative proposes to install a new superstructure on new abutments behind the existing abutments. This option was identified as the best alternative to address provide a safe bridge for the MCRT while avoiding the in-water work and the more significant abutment modifications that would be necessary for Alternatives 5 and 6. The new abutments are minimally visible behind the existing abutments compared with the very visible additional concrete that would be needed for Alternative 6. The new abutments also can support the new superstructure at grade, rather than having to connect at the existing bridge seat that is underwater, thereby avoiding additional grading and wetland and waterway impacts. The new retaining walls are much less visible than what would be needed for Alternative 5, and no wingwalls are needed, minimizing the amount of visible concrete. The new bridge is designed in accordance with the Secretary of the Interior's Standards and Guidelines for Rehabilitation by making it clearly distinguishable as a new structure in material, design, and bridge type, while keeping it "compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment."
8. **Horizontal Directional Drill ("HDD")**: This alternative would install the transmission line using a temporary drill rig that pulls the cables through two pipes that are pulled through bore holes under the Hop Brook crossing. While this alternative could avoid wetland and waterway impacts and would leave the existing bridge intact, it would not provide DCR with a safe bridge for the MCRT. In addition, HDD would require staging areas on both sides of the crossing that are at least 50 feet wide; at the entry side of the drill it would need to be 100 feet long, and at the exit side it

would need to be 50 feet long. Additional work area would also be required for pipe assembly (typically 20 to 25 feet wide and approximately the same length as the bore length, since the pipe must be pulled through in one pass). To provide sufficient staging space without causing wetland and waterway impacts and to avoid disturbing the existing bridge, the bore length at Bridge 127 would need to be approximately 1,300 linear feet, requiring an equally long pipe assembly area. Lastly, if a transmission line failure were to occur the failure would be harder to investigate, access, and repair. This alternative was therefore dismissed from consideration.

Also, please provide the Commission the following:

• Pre-Construction Notification filing with the US Army Corps of Engineers,

The Pre-Construction Notification filing with the US Army Corps of Engineers is attached.

• MassDEP Chapter 91 licenses submission filed May 17, 2020 for the bridge work - Hop Brook Bridges #128 (SUD.900) and #127 (SUD.901),

The MassDEP Chapter 91 license submission filed May 17, 2020, for the bridge work is attached.

• March 2020 DCR NOI Plans Sheet GW-05 (Boston and Maine Section Tool House - SUD.282),

The March 2020 DCR Plan Sheet GW-05 is attached.

• Current complete project sheet plans and specifications, including construction sheet plans, for the Eversource Sudbury-Hudson Transmission Reliability Project, as the plans previously provided to the Commission by Eversource are dated 2018,

The latest plan set for the Sudbury-Hudson Transmission Reliability Project as submitted to the Sudbury Conservation Commission is attached.

• Appendix I and Appendix II of the Archaeological Intensive (Locational) Survey which were not included in the redacted copy of the Survey we received from Eversource, and

Appendix I and Appendix II of the Archaeological Intensive (Locational) Survey are attached.

• Provide the "preliminary engineering review" of the Bridges #127 and #128 referred to in the April 21, 2017 ESFB Filing.

The preliminary engineering review referred to in the April 21, 2017, EFSB filing is attached. As noted in the document, this review was based solely on a preliminary visual inspection, which was conducted in 2016 and has since been superseded by the latest engineered design (provided in response to an above request).

The Historical Commission requests that Eversource facilitate permission from the appropriate parties for Commissioners, accompanied by a person with historical railroad knowledge of the Mass Central Railroad in Sudbury, to conduct a site visit of the Central Massachusetts Railroad

corridor along the route of the transmission line project in Sudbury to include surveying Hop Brook Bridges #128 (SUD.900) and #127 (SUD.901), the Boston and Maine Section Tool House (SUD.282) and railroad features along the ROW.

The Project Team looks forward to conducting the site visit with the Commission on Monday, October 5, 2020.

Sincerely,

Vivian Kimball

vkimball@vhb.com

CC: Denise Bartone, Eversource
Brooke Kenline-Nyman, Eversource
Paul Jahnige, DCR
Alan Anacheka-Nasemann, USACE
Brona Simon, Massachusetts Historical Commission