

# STATE OF NEW HAMPSHIRE

## Inter-Department Communication

DATE: July 8, 2013  
AT (OFFICE): NHPUC

ML

**FROM:** Michael Ladam, Assistant Director, Telecommunications

**SUBJECT:** DT 12-215 Sovernet Fiber Corp. Petition for Authority to Construct and Maintain Telecommunications Lines Over and Across the Mascoma River and the Connecticut River in the Town of Lebanon

**TO:** Commissioners  
Debra Howland, Executive Director

On July 17, 2012, Sovernet Fiber Corp. (Sovernet) filed a petition pursuant to RSA 371:17 seeking approval for a license to construct and maintain fiber optic communications cables over and across two rivers in the town of Lebanon. The application is for four water crossings located at:

- The Mascoma River in Lebanon, parallel to the north side of Route 4 opposite Glen Road, between utility pole N/GP 44; FP 82 on the western side of the river and utility pole N/GP 45; FP 291-1 on the eastern side (Glen Road crossing)
- The Mascoma River in Lebanon, across Buckingham Place parallel to the south side of Route 4, between utility pole N/GP 291/35; FP 311/132 on the western side and utility pole N/GP 157/47; FP 311/133 on the eastern side (Buckingham Place crossing)
- The Mascoma River in Lebanon, parallel to the north side of Route 4 between Foundry Street and Water Street, from utility pole N/GP 53/2; FP 60 on the western side to utility pole N/GP 53/1; FP 60/5 on the eastern side (High Street crossing)
- The Connecticut River parallel to the southern side of Bridge Street in Lebanon between Commercial Street in Lebanon and Prospect Street in White River Junction Vermont, from utility pole FP 311/8 on the eastern side and utility pole FP 311/5 on the western side (Bridge Street crossing)

The Mascoma River at these three locations is listed as public water in the Department of Environmental Services' official list of public waters and therefore requires a license pursuant to RSA 371:17. The Connecticut River is listed as public water in the Department of Environmental Services' official list of public waters and therefore requires a license pursuant to RSA 371:17. This crossing further requires United States Army Corps of Engineers approval.

Sovernet states in its petition that no New Hampshire Department of Environmental Services or New Hampshire Department of Transportation permits are needed for any of these four crossings.

The Glen Road crossing, in addition to crossing the Mascoma River, crosses a state-owned railroad line. Sovernet has informed Staff that it will separately seek approval for the railroad crossing.

#### **Review of public need and public impact.**

In its petition Sovernet states that the new line will promote the public good “as the fiber are part of an 800 mile network that will connect over 340 schools, libraries, hospitals and government facilities in Vermont, as well as several adjoining areas of New Hampshire and Massachusetts.” Sovernet further states that the “use and enjoyment of the public of each waterway will not be diminished in any material respect as a result of the overhead line crossing.”

#### **Review of NESC code requirements.**

Staff reviewed the project documents attached to the petition and discovered several discrepancies in pole numbering and apparent inconsistencies with National Electrical Safety Code (NESC) standards. Staff reported these concerns to Sovernet and the pole owner, Northern New England Telephone Operations, LLC (FairPoint). In response FairPoint and Sovernet undertook a field inspection of the sites and filed revised project documentation. The attached worksheets summarize the results of Staff’s review of the project documentation as revised.

Sovernet reports that none of the four river crossing locations are suitable for sailing. The plans maintain required clearance above the ten-year flood plain requirement for each location.

Staff was unable to confirm whether other utility crossings at these locations are licensed and also comply with the NESC.

#### **Recommendations and Conclusions.**

Based upon Staff’s analysis, the proposed crossings will not substantially affect the public rights in the waters and lands, and Staff concludes that Sovernet has demonstrated a public need for the proposed crossings. Accordingly, Staff recommends that the Commission grant the licenses for the Sovernet crossings in this petition, with the following conditions:

1. Sovernet obtain Army Corps of Engineers approval for the Bridge Street crossing of the Connecticut River and file a copy of said approval with the Commission.

2. Sovernet ensure that all make ready work is performed pursuant to the submitted drawings.
3. Sovernet maintain proper clearances between its cables and those adjacent to it at all times across each entire span pursuant to NESC 235C2b and 235H.
4. Sovernet construct, operate and maintain the attachments at all times in accordance with both the 2002 and 2007 editions of the NESC as required by NH Admin. Code Puc 433.01 and 1303.07.

*Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.*

## Telecommunications Fiber Optic Cable<sup>1</sup> Water Crossing Checklist

Docket #: 12-215

Applicant: *Sovernet*

Date: *May 28, 2013*

Analyst: *Michael Ladam*

Location: #1: *Mascoma River at Glen Rd, Lebanon*

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1	Y	Is water body on DES list: <a href="http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf">http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf</a>
2	N/A	If Merrimack River from the MA-NH State line to Concord, NH; Lake Umbagog within NH; or the Connecticut River to Pittsburg, NH., has Army Corps of Engineers approved?
3	<i>Not Needed</i>	Does petition indicate DOT or DES approvals needed?
4	N/A	If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected?
5	Y	Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, water body.
6	<i>Unk</i>	Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted.
7	Y	Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC?
8	<i>Unk</i>	Are existing attachments licensed? If not, notify existing attachers in writing and request license application.
9		If lowest attachment is not licensed, verify minimum water clearances plus

<sup>1</sup>As defined by NESC 230 F 1e and NESC 230 F 2

*Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.*

	<b>OK*</b>	one foot per attachment beneath proposed attachment are met under Heavy Load conditions and recommend conditional approval. (e.g if water is not suitable for sailing and there are 2 existing attachments below proposed, add 2 feet to 14 foot clearance requirement and determine if proposed attachment with maximum sag is greater than 16 feet from water surface). If water suitable for sailing, use 10 year flood elevation.
10	<b>Unk</b>	If lowest attachment is licensed, does make ready indicate lowest attachment will be moved closer to water? (If no, skip to step 15. If yes, what is max sag of lowest attachment at 0 deg F, 0.5 inch ice, 4 psf wind?)
11	<b>N</b>	Is water suitable for sailing?
12	<b>Unk</b>	If not suitable for sailing is there <b>14 feet</b> clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions? (preferably measured from water surface at 10 year flood elevation, but not required)  NESC Table 232-1, 6
13	<b>N/A</b>	If suitable for sailing is there appropriate clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions at 10 year flood elevation. Size of rivers and streams based upon largest surface area of any 1 mile segment that includes the crossing (circle applicable standard) <ul style="list-style-type: none"> <li>a. Less than 20 acres: <b>17.5 feet</b></li> <li>b. Over 20 to 200 acres: <b>25.5 feet</b></li> <li>c. Over 200 to 2000 acres: <b>31.5 feet</b></li> <li>d. Over 2000 acres: <b>37.5 feet</b></li> </ul> NESC Table 232-1, 7 and notes 18 and 19.
14	<b>Y</b>	Is there a minimum of <b>40 inches</b> between electric neutral and proposed attachment on each pole?  NESC Table 235-5 1a
15	<b>Unk</b>	Is there a minimum 75% of distance required at supports at every point in the span ( <b>30 inches</b> between electric neutral and proposed attachment) under all conditions?  NESC 235C2b
16	<b>17.01'</b>	What is maximum sag of proposed attachment under Heavy Load Conditions?  NESC Table 250-1
17	<b>OK 16.73'</b>	Run tension numbers to verify maximum sag calculation.

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18	Y	Is there a minimum <b>12 inch</b> clearance between proposed attachment and adjacent communications attachments at each pole?  NESC 235H1
19	Unk	Is there a minimum <b>4 inch</b> clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions?  NESC 235H2

NOTE: If the crossing is within 10 feet horizontally of an existing bridge structure that may already limit use of the waterway, a simplified drawing may be submitted with vertical distances measured to the bridge deck. If bridge deck is 15 feet above water surface, water is not suitable for sailing, and height of lowest crossing is above the bridge deck, clearance to water does not need to be measured. In this instance, flood elevation information is not required.

NOTES:

*9. Bridge deck is 69' over water at ten-year flood; not suitable for sailing. Under Heavy Load, maximum sag places new cable at 58.4' above water, with lowest cable estimated at 55.4' above water.*

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## Telecommunications Fiber Optic Cable<sup>1</sup> Water Crossing Checklist

Docket #: 12-215

Applicant: *Sovernet*

Date: *May 28, 2013*

Analyst: *Michael Ladam*

Location: #2: *Mascoma River at Buckingham Place, Lebanon*

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1	Y	Is water body on DES list: <a href="http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf">http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf</a>
2	N/A	If Merrimack River from the MA-NH State line to Concord, NH; Lake Umbagog within NH; or the Connecticut River to Pittsburg, NH., has Army Corps of Engineers approved?
3	<i>Not Needed</i>	Does petition indicate DOT or DES approvals needed?
4	N/A	If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected?
5	Y	Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, water body.
6	<i>Unk</i>	Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted.
7	Y	Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC?
8	<i>Unk</i>	Are existing attachments licensed? If not, notify existing attachers in writing and request license application.

<sup>1</sup>As defined by NESC 230 F 1e and NESC 230 F 2

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

9	OK*	If lowest attachment is not licensed, verify minimum water clearances plus one foot per attachment beneath proposed attachment are met under Heavy Load conditions and recommend conditional approval. (e.g if water is not suitable for sailing and there are 2 existing attachments below proposed, add 2 feet to 14 foot clearance requirement and determine if proposed attachment with maximum sag is greater than 16 feet from water surface). If water suitable for sailing, use 10 year flood elevation.
10	Unk	If lowest attachment is licensed, does make ready indicate lowest attachment will be moved closer to water? (If no, skip to step 15. If yes, what is max sag of lowest attachment at 0 deg F, 0.5 inch ice, 4 psf wind?)
11	N	Is water suitable for sailing?
12	Unk	If not suitable for sailing is there <b>14 feet</b> clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions? (preferably measured from water surface at 10 year flood elevation, but not required)  NESC Table 232-1, 6
13	N/A	If suitable for sailing is there appropriate clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions at 10 year flood elevation. Size of rivers and streams based upon largest surface area of any 1 mile segment that includes the crossing (circle applicable standard) <ul style="list-style-type: none"> <li>a. Less than 20 acres: <b>17.5 feet</b></li> <li>b. Over 20 to 200 acres: <b>25.5 feet</b></li> <li>c. Over 200 to 2000 acres: <b>31.5 feet</b></li> <li>d. Over 2000 acres: <b>37.5 feet</b></li> </ul> NESC Table 232-1, 7 and notes 18 and 19.
14	Y	Is there a minimum of <b>40 inches</b> between electric neutral and proposed attachment on each pole?  NESC Table 235-5 1a
15	Unk	Is there a minimum 75% of distance required at supports at every point in the span ( <b>30 inches</b> between electric neutral and proposed attachment) under all conditions?  NESC 235C2b
16	11.64'	What is maximum sag of proposed attachment under Heavy Load Conditions?  NESC Table 250-1
17	OK 11.5'	Run tension numbers to verify maximum sag calculation.



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18	Y	Is there a minimum <b>12 inch</b> clearance between proposed attachment and adjacent communications attachments at each pole?  NESC 235H1
19	Unk	Is there a minimum <b>4 inch</b> clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions?  NESC 235H2

NOTE: If the crossing is within 10 feet horizontally of an existing bridge structure that may already limit use of the waterway, a simplified drawing may be submitted with vertical distances measured to the bridge deck. If bridge deck is 15 feet above water surface, water is not suitable for sailing, and height of lowest crossing is above the bridge deck, clearance to water does not need to be measured. In this instance, flood elevation information is not required.

NOTES:

9. *Bridge deck is 13' over water at ten-year flood; not suitable for sailing. Under Heavy Load, maximum sag places new cable at 19' above water, with lowest cable estimated at 15' above water.*

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## Telecommunications Fiber Optic Cable<sup>1</sup> Water Crossing Checklist

Docket #: 12-215

Applicant: Sovernet

Date: June 28, 2013

Analyst: Michael Ladam

Location: #3: Mascoma River at High Street and Highway 4, Lebanon

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1	Y	Is water body on DES list: <a href="http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf">http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf</a>
2	N/A	If Merrimack River from the MA-NH State line to Concord, NH; Lake Umbagog within NH; or the Connecticut River to Pittsburg, NH., has Army Corps of Engineers approved?
3	N	Does petition indicate DOT or DES approvals needed?
4	N/A	If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected?
5	Y	Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, water body.
6	Unk	Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted.
7	Y	Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC?
8	Unk	Are existing attachments licensed? If not, notify existing attachers in writing and request license application.
9		If lowest attachment is not licensed, verify minimum water clearances plus

<sup>1</sup>As defined by NESC 230 F 1e and NESC 230 F 2

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

	OK*	one foot per attachment beneath proposed attachment are met under Heavy Load conditions and recommend conditional approval. (e.g. if water is not suitable for sailing and there are 2 existing attachments below proposed, add 2 feet to 14 foot clearance requirement and determine if proposed attachment with maximum sag is greater than 16 feet from water surface). If water suitable for sailing, use 10 year flood elevation.
10	N	If lowest attachment is licensed, does make ready indicate lowest attachment will be moved closer to water? (If no, skip to step 15. If yes, what is max sag of lowest attachment at 0 deg F, 0.5 inch ice, 4 psf wind?)
11	N	Is water suitable for sailing?
12	Y (27')	If not suitable for sailing is there <b>14 feet</b> clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions? (preferably measured from water surface at 10 year flood elevation, but not required)  NESC Table 232-1, 6
13	N/A	If suitable for sailing is there appropriate clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions at 10 year flood elevation. Size of rivers and streams based upon largest surface area of any 1 mile segment that includes the crossing (circle applicable standard) <ul style="list-style-type: none"> <li>a. Less than 20 acres: <b>17.5 feet</b></li> <li>b. Over 20 to 200 acres: <b>25.5 feet</b></li> <li>c. Over 200 to 2000 acres: <b>31.5 feet</b></li> <li>d. Over 2000 acres: <b>37.5 feet</b></li> </ul> NESC Table 232-1, 7 and notes 18 and 19.
14	Y	Is there a minimum of <b>40 inches</b> between electric neutral and proposed attachment on each pole?  NESC Table 235-5 1a
15	Unk	Is there a minimum 75% of distance required at supports at every point in the span ( <b>30 inches</b> between electric neutral and proposed attachment) under all conditions?  NESC 235C2b
16	8.16'	What is maximum sag of proposed attachment under Heavy Load Conditions?  NESC Table 250-1
17	OK 7.86'	Run tension numbers to verify maximum sag calculation.

*Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.*

18	Y	Is there a minimum <b>12 inch</b> clearance between proposed attachment and adjacent communications attachments at each pole?  NESC 235H1
19	Unk	Is there a minimum <b>4 inch</b> clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions?  NESC 235H2

NOTE: If the crossing is within 10 feet horizontally of an existing bridge structure that may already limit use of the waterway, a simplified drawing may be submitted with vertical distances measured to the bridge deck. If bridge deck is 15 feet above water surface, water is not suitable for sailing, and height of lowest crossing is above the bridge deck, clearance to water does not need to be measured. In this instance, flood elevation information is not required.

NOTES:

- 9. Bridge deck is 16' over water at ten-year flood; not suitable for sailing. Under Heavy Load, maximum sag places new cable at 27' above water, with lowest cable estimated at 22' above water.*

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

## Telecommunications Fiber Optic Cable<sup>1</sup> Water Crossing Checklist

Docket #: 12-215

Applicant: *Sovernet*

Date: *June 28, 2013*

Analyst: *Michael Ladam*

Location: #4: *Connecticut River at Bridge Street, Lebanon*

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1	Y	Is water body on DES list: <a href="http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf">http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf</a>
2	N*	If Merrimack River from the MA-NH State line to Concord, NH; Lake Umbagog within NH; or the Connecticut River to Pittsburg, NH., has Army Corps of Engineers approved?
3	Not Needed	Does petition indicate DOT or DES approvals needed?
4	N/A	If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected?
5	Y	Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, water body.
6	Unk	Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted.
7	Y	Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC?
8	Unk	Are existing attachments licensed? If not, notify existing attachers in writing and request license application.
9	OK*	If lowest attachment is not licensed, verify minimum water clearances plus one foot per attachment beneath proposed attachment are met under Heavy Load conditions and recommend conditional approval. (e.g if water is not suitable for sailing and there are 2 existing attachments below proposed, add 2 feet to 14 foot clearance requirement and determine if proposed attachment with maximum sag is greater than 16 feet from water surface). If water suitable for sailing, use 10 year flood elevation.

<sup>1</sup>As defined by NESC 230 F 1e and NESC 230 F 2

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

10	N	If lowest attachment is licensed, does make ready indicate lowest attachment will be moved closer to water? (If no, skip to step 15. If yes, what is max sag of lowest attachment at 0 deg F, 0.5 inch ice, 4 psf wind?)
11	N	Is water suitable for sailing?
12	OK (19')	If not suitable for sailing is there <b>14 feet</b> clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions? (preferably measured from water surface at 10 year flood elevation, but not required)  NESC Table 232-1, 6
13	N/A	If suitable for sailing is there appropriate clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions at 10 year flood elevation. Size of rivers and streams based upon largest surface area of any 1 mile segment that includes the crossing (circle applicable standard) <ul style="list-style-type: none"> <li>a. Less than 20 acres: <b>17.5 feet</b></li> <li>b. Over 20 to 200 acres: <b>25.5 feet</b></li> <li>c. Over 200 to 2000 acres: <b>31.5 feet</b></li> <li>d. Over 2000 acres: <b>37.5 feet</b></li> </ul> NESC Table 232-1, 7 and notes 18 and 19.
14	N/A (no power)	Is there a minimum of <b>40 inches</b> between electric neutral and proposed attachment on each pole?  NESC Table 235-5 1a
15	Unk	Is there a minimum 75% of distance required at supports at every point in the span ( <b>30 inches</b> between electric neutral and proposed attachment) under all conditions?  NESC 235C2b
16	20.24'	What is maximum sag of proposed attachment under Heavy Load Conditions?  NESC Table 250-1
17	OK (20.24')	Run tension numbers to verify maximum sag calculation.

*Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.*

18	Y	Is there a minimum <b>12 inch</b> clearance between proposed attachment and adjacent communications attachments at each pole?  NESC 235H1
19	Unk	Is there a minimum <b>4 inch</b> clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions?  NESC 235H2

NOTE: If the crossing is within 10 feet horizontally of an existing bridge structure that may already limit use of the waterway, a simplified drawing may be submitted with vertical distances measured to the bridge deck. If bridge deck is 15 feet above water surface, water is not suitable for sailing, and height of lowest crossing is above the bridge deck, clearance to water does not need to be measured. In this instance, flood elevation information is not required.

NOTES:

2. *Application submitted to Army Corps of Engineering; will file copy of approval with PUC when received*
9. *Bridge deck is 26' over water at ten-year flood; not suitable for sailing. Under Heavy Load, maximum sag places new cable at 19' above water, with lowest cable estimated at 17' above water.*