

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: November 22, 2010

AT (OFFICE): NHPUC

FROM: Kate Bailey, Director, Telecommunications Division *KMB*

SUBJECT: Staff Recommendation in DT 10-246

TO: Commission
Executive Director

On September 13, 2010, Freedom Ring, d/b/a BayRing Communications (BayRing) filed a petition with the Commission pursuant to RSA 371:17 for a license to construct and maintain a 216 strand fiber optic cable across the Suncook River, in Epsom, New Hampshire, between Unitil Poles CECO 39 and CECO 40. According to the petition, construction of the fiber optic cable is necessary to meet reasonable requirements of service to the public, to accommodate growth in demand and to improve reliability in the Epsom area. On November 12, 2010, BayRing filed a revised petition with additional information.

The petition was reviewed and analyzed by Mike Cannata with the Accion Group. Accion's report of its analysis, dated November 19, 2010, is attached. Accion determined that BayRing's proposed attachment met or exceeded all relevant standards of the 2007 edition of the National Electrical Safety Code (NESC) and recommended a license be granted.

In its review, Accion noted existing utility crossings of Unitil, Comcast and FairPoint at this location. Accion did not review the existing crossings, but recommended that each of these utilities be required to provide the Commission with evidence of a license and that the crossings comply with the National Electrical Safety Code and the Commission's Pole Attachment Rules, N.H. Admin Code Puc 1300.

The Telecom Division recommends a license be issued to BayRing for the proposed crossing and that the Commission require the crossing be installed and maintained in accordance with the National Electrical Safety Code. In addition, the Telecom Division recommends the Commission direct Unitil, FairPoint and Comcast to provide evidence that existing crossings at this location fully comply with RSA 371:17, Puc 1300 and the National Electrical Safety Code as specified in Accion's report.

**ACCION REVIEW OF THE FREEDOM RING COMMUNICATIONS L.L.C. D/B/A/
BAYRING COMMUNICATIONS
PETITION TO CROSS PUBLIC WATERS OF THE SUNCOOK RIVER
IN THE TOWN OF EPSOM, NEW HAMPSHIRE**

November 19, 2010

REVIEW SUMMARY

On September 13, 2010, Freedom Ring Communications L.L.C. d/b/a BayRing Communications (BayRing) filed a petition with the Commission pursuant to RSA 371:17 for a license to construct and maintain a fiber optic communication cable across the Suncook River in Epsom, New Hampshire. BayRing supplemented its filing on November 12, 2010, with additional information. The location of the crossing is on the northerly side of the New Hampshire Routes 4, 9, and 202 bridge across the Suncook River approximately 0.25 miles east of the Epsom traffic circle. BayRing states that the addition of its communication cable to an existing Concord Electric Company (CECO) crossing¹ is required to accommodate demand growth in the area, that the reasonable requirement of service to the public in the area cannot be met without the additional facilities, and that these facilities will allow a greater level of service reliability.

In support of its petition, BayRing submitted related exhibits as follows: a location plan depicting the geographic location of the proposed crossing; a plan and profile drawing depicting the location and projected elevations of the proposed crossing; pole loading analysis reports for the poles at the crossing; and sag calculations for the ambient and weather conditions analyzed.

BayRing states that the new communications crossing will have the same alignment as the existing electrical crossing and will use the existing poles at the crossing location. BayRing will add the new facilities to the existing poles. Additionally, BayRing states that no New Hampshire Department of Environmental Services or New Hampshire Department of Transportation permits are necessary for the construction of this crossing.

As designed by BayRing, the proposed crossing will consist of a single class four 45-foot wood pole tangent structure on the westerly side of the river (structure CECO 39) and a single class four 45-foot wood pole tangent structure on the easterly side of the river (structure CECO 40) with a span of 168 feet between them. The new BayRing cable will be pole mounted 45.8 inches below the CECO neutral conductor and 12 inches above the existing Comcast cable. In order to obtain these clearances, CECO will be required to raise its neutral conductor by 6

¹ Comcast and FairPoint also have facilities at the crossing location below BayRing's proposed facilities.

inches and re-tension to maintain proper National Electrical Safety Code (NESC) clearance at the pole. Comcast will be required to lower its facilities by 6 inches to maintain proper NESC clearance at the pole. There is currently sufficient distance between facilities to accommodate the required repositioning of the facilities and BayRing states that both Comcast and CECO have agreed to do so.

The 216 fiber optic cable will consist of two materials. An Extra High Strength steel 5/16 inch messenger cable will support the fiber optic cable. The fiber optic cable will be tensioned to a maximum of 2,007 pounds, and sagged to NESC, American National Standards Institute (ANSI) C2-2007 Heavy Load Conditions (0 degrees F, 4 pounds per square foot wind loading, and ½ inch radial ice).

BayRing obtained conductor information from the associated utility companies for input into its pole loading analyses. The BayRing pole loading analyses show that, as designed by BayRing, the proposed crossing will meet NESC Grade B construction standards under NESC Heavy Load Conditions.

BayRing determined that the 10-year flood level at this location of the Suncook River is 335.5 feet using the elevations contained in the Federal Emergency Management Agency Flood Insurance Study of Merrimack County, Volume 2 of 2, Page 74P, and with an effective date of April 19, 2010. The elevations in that study are based on the National Geodetic Vertical Datum of 1929.

BayRing made an assumption for conservatism that this area of the Suncook River was suitable for sail boating even though the proposed crossing is adjacent to the New Hampshire Routes 4, 9, and 202 bridge crossing the river. BayRing determined that the surface area of the water body was approximately 12 acres +/- according to application of Table NESC 232-1, Note 19. NESC Table 232-1.7a requires a minimum water surface clearance of 17.5 feet² for water bodies less than 20 acres for fiber optic cables that meet Rule 230F.1.b. BayRing states that clearances for truck traffic were not considered for this crossing as the crossing is located parallel to the state highway and is directly behind a guardrail and not suitable to sustain truck traffic. NESC Table 232-1.5 requires that the clearance to the land surface be 9.5 feet for fiber optic cables that meet Rule 230F.1.b not subject to truck traffic.

BayRing investigated many weather and loading conditions for its design. The conditions investigated included ANSI C2-2007 Heavy Load Conditions and a variety of ambient temperatures from minus 20 degrees F to 212 degrees F for the fiber optic cable conductor. BayRing used these design conditions to determine the minimum clearance of the fiber optic cable to the water and land surfaces. BayRing used combinations of an ambient of 32 degrees F, ½ inch of radial ice, and no ice to determine clearances between the fiber optic cable, the CECO

² The NESC expresses water clearances in terms of distances above the 10-year flood level.

neutral conductor, and the Comcast communication cable as well as the land and water surfaces.

As designed by BayRing, the maximum sag of the fiber optic cable would occur when the fiber optic cable is at NESC Heavy Load Conditions. At this condition, BayRing calculates that at minimum clearance, the fiber optic cable would remain 27.2³ feet above the 10-year flood level of 335.5 feet and 25.8 feet above the land on the east side of the river. As designed, all clearances exceed NESC requirements.

The NESC requires that the BayRing fiber optic cable located in the communication space be separated by 40 inches from the electric company neutral conductor at the pole according to NESC Table 235-5.1.a. BayRing exceeds this requirement with a separation of 45.8 inches. The NESC also requires that the BayRing fiber optic cable located in the communication space be separated by 12 inches from the adjacent communications conductor (Comcast) at the pole according to NESC Table 235-6.2.a. BayRing meets that clearance requirement with a separation of 12 inches.

The NESC requires that the BayRing fiber optic cable have a minimum separation of 30 inches from the electric utility company neutral at any point in the span according to NESC Table 238-1 and Rule 235.C.2.b. BayRing determined that the minimum clearance occurs when the BayRing fiber optic cable is without ice and the CECO neutral conductor is at 32 degrees F with ice. Under those conservative conditions, the minimum separation is 30.1 inches. The NESC also requires that the BayRing fiber optic cable have a minimum separation of 4.0 inches from the adjacent communications cable at any point in the span according to NESC Rule 235.H. Bay Ring determined under conservative assumptions that the minimum clearance occurs when the BayRing fiber optic cable is at 32 degrees F with one half inch of radial ice and the Comcast communications cable is at 32 degree F without ice. Under those conditions, the minimum separation is 6.5 inches. BayRing exceeds the NESC clearance requirement.

BayRing states that the use and enjoyment of these waters by the public will not be diminished in any material respect as a result of the proposed fiber optic communication cable crossing. BayRing further states that the construction of the crossing will be in accordance with the requirements of the NESC, ANSI C2-2007 for Grade B construction and attests that the crossing will be maintained and operated in accordance with the NESC.

³ Corrected from petition value of 30.7 feet via telephone.

CONCLUSIONS AND RECOMMENDATIONS

Accion reviewed the petition and associated technical information filed by BayRing in support of its petition and found that BayRing provided sufficient information and data to justify attachment of new fiber optic lines across public waters at this location.

Accion found the new overhead facilities described in the BayRing petition will be properly constructed in accordance with the requirements of the NESC, ANSI C2-2007 and BayRing attests that they will be operated and maintained in accordance with the NESC.

Accion concluded that if the proposed facilities are constructed, operated, and maintained as proposed in its filing, BayRing will provide safe and reliable service to the public based on sound engineering standards and that construction will be in accordance with the 2007 edition of the National Electrical Safety Code.

Accion notes that facilities of other utilities exist at this location. Accion did not review utility specific information with respect to the other attachments. Based on inspection of the materials submitted by BayRing, Accion concluded that the facilities of other utilities at this location appear to be in conformance with the National Electrical Safety Code.

Accion recommends that Staff recommend approval of BayRing's petition to the Commission.

Accion further recommends that the Staff recommend that the Commission include the following additional conditions in its order:

- Require that all future reconstruction to this approved crossing conform to the requirements of the National Electrical Safety Code and all other applicable safety standards in existence at that time.
- Require that Bay Ring maintain and operate this crossing in conformance with the National Electrical Safety Code.
- Require that Concord Electric Company, Comcast, and FairPoint certify to the Commission that their facilities at this crossing location are:
 1. In compliance with NH Admin Code Puc 1300;
 2. Licensed to cross public waters at this location by supplying the Commission Order Number and date; and
 3. Constructed in conformance with the National Electrical Safety Code that existed at the time the facilities were installed.
- Require that if the facilities at this crossing location of Concord Electric Company, Comcast, or FairPoint are not:

1. In conformance with the attachment requirements of Puc 1300;
2. Licensed with the Commission as a crossing of public waters, or
3. Constructed in conformance with the National Electrical Safety Code that existed at the time the facilities were installed;

That those deficiencies be brought into compliance with such requirements and the current requirements of the National Electrical Safety Code.