

In Re: Petition of New England Power Company
d/b/a National Grid for Licenses to Construct and
Maintain Electric Lines Over and Across Public
Waters in the Towns of Walpole and Surry,
New Hampshire

EXHIBIT F

J-136N COLD RIVER CROSSING

1. Statement of Need

The J-136N Line is a part of NEP's electric transmission system in southwestern New Hampshire, and is operated in conjunction with the I-135N Line between Bellows Falls Substation and Flagg Pond Substation to serve loads in New Hampshire, Massachusetts, and Vermont. The J-136N Line, approximately 80 years old, will continue to be operated as currently configured.

2. National Electric Safety Code

The existing crossing meets or exceeds the 2007 Edition of the National Electrical Safety Code, (NESC) C2-2007.

3. Specific Electrical and Physical Description

Voltage: 115kV, 3-phase, 60 Hertz

Conductor: 4/0 Copper, 7 strand

Structures: Reuse existing double circuit lattice steel towers with the conductors in a horizontal configuration

Shieldwires: Located above the conductors consist of one 7/16" HS Galvanized steel.

Horizontal Distance between conductors: 12 feet

Vertical Distance at the tower between the conductors and the shieldwire: 10 feet

4. Elevation of Water Level

The water surface elevation of the Cold River used for design at the crossing was 234.0 feet (on August 20, 2003) above MSL based on NGVD of 1929. The 100-year flood elevation at the same location is 255.0 based on FEMA Maps dated May 23, 2006.

5. **Rounding**

All elevations have been rounded to the nearest one-tenth of a foot.

6. **Applicable Area of Water Body**

The Route 12A bridge over the Cold River is located downstream of the J-136N line and obstructs sailboats coming up from the Connecticut River. Under normal conditions, the area under this wire crossing is shallow, making the area unsuitable for sailboats.

7. **Maximum Sag and Clearance (each span)**

The governing case is maximum sag and clearance to both water and land with phase conductors at maximum quantity temperature of 212°F.

8. **Condition Producing Minimum Clearance for Phase Conductors – expected and NESC clearance**

The governing case is maximum sag and clearance to both water and land with phase conductors at maximum operating temperature.

With the conductor at maximum sag, which occurs at the maximum operating temperature of 212°F, the NESC clearance requirement to the water is 18.6 feet, based on water areas not suitable for sailboating or where sailboating is prohibited.

The minimum clearance at the existing crossing is 40.0 feet at 212°F.

9. **Conductor Producing Minimum Clearance for Neutral/Static Conductors – expected and NESC clearance**

- a. Expected Clearance: 40.0 feet at maximum conductor sag
- b. NESC Clearance Requirement: 18.6 feet at maximum conductor sag
Based on the NESC clearance requirement to the water areas not suitable for sailboating or where sailboating is prohibited.

10: **Combinations of Conditions Between Phase and Neutral/Static Conductors**

Governing condition: Shieldwire at NESC Heavy, and conductor at 0F bare.

- a. Expected clearance: 30.0 feet
- b. NESC clearance requirement: 4.8 feet
Based on the NESC clearance for span wires parallel to the line

11. **Minimum Clearance for Phase Conductors to Both Water and Land**

The minimum clearance at the existing crossing is 40 feet at 212°F.

12. Permits and Approvals

None required.

13. Maintenance and Operation of Crossing

The Crossing will be maintained and operated in compliance with NESC at all times.

14. Easement Rights

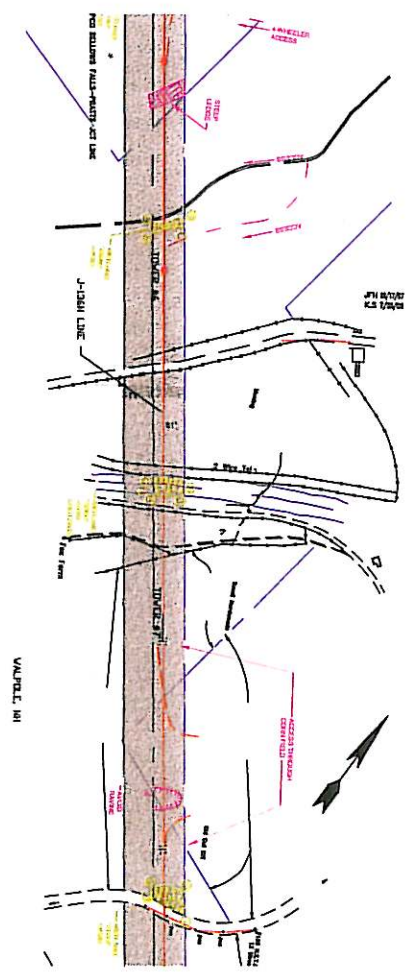
The line is located within an existing easement.

15. Public Rights on Public Water or Lands

The public's use and enjoyment of the Cold River will not be diminished in any material respect as the result of the J-136N crossing subject to this Petition.

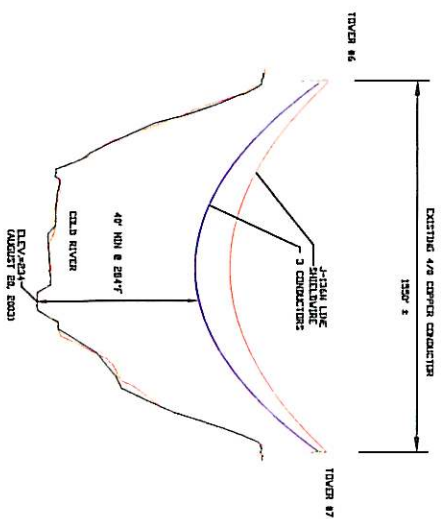
16. Plan Requirements

Please see attached Plan of J-136N Cold River Crossing.



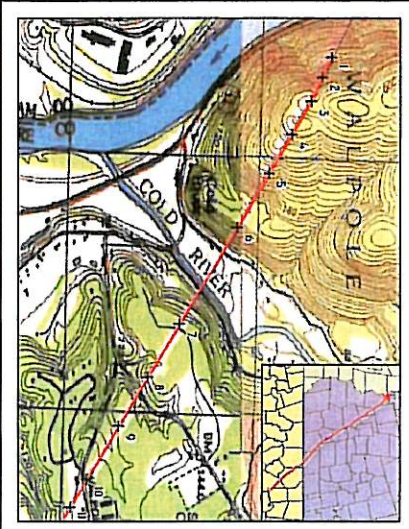
PLAN

SCALE: 1"=50'
SCALE OF FEET
0 25 50 100 200



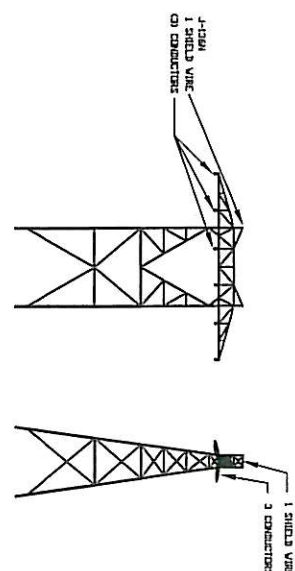
PROFILE

HORIZONTAL: 1"=50'
VERTICAL: 1"=100'



KEY MAP

MAP SOURCE - USGS TOPOGRAPHIC IMAGE
SCALE - 1"=24,000
0 0.125 0.25 0.5 0.75 1 1.25
MILES



ELEVATION
SCALE: 1"=20'
SIDE ELEVATION
SCALE: 1"=20'

(August 20, 2003) = Date Flown

LEGEND

Tower Location
 Existing Conductor to be Replaced

New England Power Company
Plan Showing Location of
J-136N Transmission Line
Over and Across
Cold River
Walpole, New Hampshire
Scale: As Shown
Date: October 2007

115KV LINE
LINE CROSSING OF THE COLD RIVER
IN WALPOLE, NH
PLAN & PROFILE
SCALE: 1:50

ORIGINAL NAME	DATE
DESIGNED BY	1/7/07
CHECKED BY	
REVIEWED BY	
APPROVED BY	

nationalgrid

REV	DATE	REVISION DESCRIPTION	DRAWN	CHECKED	APPROVED	REASON
1	1/7/07	115KV LINE CROSSING OF THE COLD RIVER IN WALPOLE, NH				

INCHES ON ORIGINAL