Joseph J. DeVirgilio, Jr.

Position:	President, Suncoast Management Consultants, LLC Senior Consultant, Willoughby Consulting Senior Consultant, River Consulting Group, Inc. Former Gas & Electric Utility Executive
Years of Experience:	51
Education:	B.E./1973/Electrical Engineering/Stevens Institute of Technology, Hoboken, NJ M.E./1981/ RPI, Troy, NY

Key Qualifications:

***Joseph J. DeVirgilio, Jr.*,** Senior Consultant**,** is president of Suncoast Management Consultants, LLC, and a utility consultant with River Consulting Group, Inc. and Willoughby Consulting. He has been part of consulting teams performing management audits, reviews of emergency plans, capital spending reviews, vegetation management programs and operations improvement initiatives. He is a retired senior utility executive and has been working in the natural gas and electric utility industry for over 51 years. His experience spans a wide variety of consulting and executive responsibilities in both the regulated natural gas and electric T&D business and the unregulated energy business, including H/R, natural gas and electric T&D operations, construction and maintenance, work management planning, and reporting, process re-engineering and I/T. He has 25 plus years of experience as an H/R executive with responsibility for all aspects of the function. He has 13 plus years of experience in field engineering, metering and testing, field crew management, operations management, vegetation management and executive responsibility for the T&D operations and customer services organization. For 20+ years, he has held the CIO role and lead the Utility I/T Steering Committee responsible for the review and approval of all I/T projects and the capital and expense annual budgets. Several of the proposed projects included electric and gas O&M planning and tracking. He has formal training in mentoring and mediation. He formerly held a Professional Engineering license in NYS for 30 years and has a Master of Electric Power Engineering Degree.

Selected Professional Experience:

Management Audits

Joe has participated in broad management audits for regulatory commissions and led the study teams in the subject areas of HR, IT, Call Center Operations, Collections, Billing, Meter Reading,

Field Operations, and others for clients including Eversource's Public Service of New Hampshire Management Audit, 2021-2023; Southern Connecticut Gas, Management Audit, 2016; Connecticut Natural Gas, Management Audit, 2016; and Yankee Gas, Connecticut, Management Audit, 2014-2015.

He also has 20+ years of experience in participation, planning, preparation, and execution of the utility side of management audits in both general and subject-specific audits. He has been the executive responsible for the utility response for over 15 years.

Engineering Support and Capital Projects & Programs Evaluations

Currently providing Engineering Support Services for the New Hampshire DOE as part of the RCG contract. Such work has included reviews of vegetation management, project planning and execution, and system reliability.

Performed an in-depth evaluation of a major mid-Western Urban Electric utility's CapEx processes and planning efforts. The Utility, at the time, had planned a multi-year capital program to build new transmission and upgrade its distribution system to improve overall reliability and position it to accept distributed energy resources. Their plan was multi-billion dollar program. The Utility wanted to make sure that the plans and programs put forward were the most appropriate solutions for their T&D systems and would be found reasonable by any outside entities. Our findings indicated they had constructed a capital programs/projects process that fully vetted each project for both need and cost extremely well. The Company used multiple layered challenge processes for both the technical designs/needs and financial requirements. Our team identified opportunities to improve the layered challenge process to minimize resource "burn-out" and opportunities to reduce company crew expenses on projects. The Company had a solid plan for managing contractor crews.

For a large Eastern combination electric and gas utility, we review their capital program and processes associated with its response to Zero-Carbon Emissions. The Company had made good progress in developing its capital processes in response to the initiative.

Electric T&D Operations, Engineering, and Management

Joe has 13 plus years of experience performing hands-on design and installation management of electric T&D systems and O&M management.

Corporate Mission, Objectives, Goals, and Planning

Joe has been a member of a corporate Strategic Planning Committee and has several years of experience developing a strategic plan and ensuring goal alignment throughout the utility and other business unit organizations.

Capital & O&M Budgeting

Joe has had more than 25 years of operations support services responsibility, including supply chain, stores, transportation, security, and building services and maintenance.

Capital & O&M Budgeting

Joe has had more than five years of P&L business responsibility and 30+ years of capital and O&M budget development and execution responsibility for the various management and executive areas of a utility business. He also has extensive labor management experience and the impact of labor/contractor decision management on-budget outcomes.

Program and Project Planning

As an operations manager and again as the I/T executive, Joe has had many years of experience in long-term program and project planning and outcome assessment. His experience with the impact of planning on Capital & O&M Budget controls will add value to this assessment.

Performance & Result Management

Joe has 10+ years of experience as the lead executive responsible for utility performance improvement and the work management system. He has training in Q/P Assessment, Q/P Team Leadership and Making Quality Happen at the first levels.

I/T

Joe has had over 20+ years of experience as the utility's CIO and the Chair of the utility I/T Steering Committee. In these roles, he has had review and approval responsibility for all I/T projects and the annual capital and expense budgets and expenditure reviews. This Committee also approves the 5-year I/T strategic plan.

Human Resources

He has 25 plus years of experience as an H/R executive responsible for staffing, labor and employee relations, executive and salaried employee compensation and benefits, and safety. He was the plan administrator for the pension and 401k plans. He has selected and implemented third-party providers for both plans. He has implemented a new executive incentive plan and has administered it since its inception. He has put in place EEO/AAP plans and successfully implemented the plans. He has identified and implemented a successful "high potential employee" (HPE) selection and development program including executive mentoring.

Professional Experience:

2011 - Present	**Suncoast Management Consultants, LLC:** President
2024 – Present	**Willoughby Consulting:** Senior Consultant
2011 - Present	**River Consulting Group, Inc.:** Senior Consultant
2013 – 2022	**Sarasota Memorial Healthcare System:** Board member, former Chairman
2010	**United Way of Dutchess County:** CEO
1973 - 2010	**CH ENERGY GROUP, INC.** **CENTRAL HUDSON GAS & ELECTRIC CORPORATION** **CENTRAL HUDSON ENTERPRISES CORPORATION (CHEC)** 284 South Avenue, Poughkeepsie, NY 12601
1/05 -12/10	**Executive Vice President - Corporate Services and Administration** Senior Corporate Officer and member of the Executive Team of CH Energy Group, Inc. Director of Central Hudson Gas & Electric Corp ("Central Hudson") and Central Hudson Enterprises Corp ("CHEC") Executive Responsibility for Griffith Energy Services, Inc., a wholly-owned fuel oil distribution subsidiary. Executive responsible for establishing and executing corporate policy and objectives and associated implementation of the related processes for the following areas of responsibility for Central Hudson: Information Technology; Corporate Communications, Media Relations, Governmental Affairs, and Economic Development; Human Resources Purchasing & Stores; Fleet Management; Office Services; Facility Operation & Maintenance; and Corporate Quality and Process Re-engineering. **Corporate Executive Committee membership**: Chairperson: I/T Steering Committee. Member of the Capital Resource Allocation Committee.
03/05 -12/10	**Director, Central Hudson Gas & Electric Corp**
03/02 -12/10	**Director and Executive Vice President – CHEC, Griffith Energy Services and SCASCO**
11/98 -12/24	**Senior Vice President - Corporate Services and Administration**

Corporate Executive Committee membership: Chairperson: I/T Steering Committee and the Retirement Income, 401K, and VEBA Plans Administrative Committees. Member of the Capital Resource Committee.

5/88 -11/98 **Vice President -- Human Resources and Administration**

4/86-5/88 **Assistant Vice President – Gas & Electric Customer Services & T&D Operation**

3/84-4/86 **Manager – Corporate Services & I/T**

3/82-3/84 **Manager – Gas & Electric Customer Services Field and Call Center Operation**

3/79-3/82 **District Superintendent – Catskill Gas & Electric T&D Operation**

6/73-3/79 **Engineering Assignments – Gas and Electric Field Engineering, Gas Meter Engineer, and Gas Testing facility supervisor**

Professional Affiliations:

3/80 – 12/11 **Professional Engineer**, New York State, License No. 057637

1994 - 2000 **Marketing Executives Conference** -- member 1994; Executive Committee 1995; Program Chairperson 1997.

1993 -2004 **Council of Industry of Southeastern New York** -- Board of Directors.

1988 -1999 **New York State Regional Utility Group** -- Central Hudson's Representative

1982 -1998 **American Gas Association (AGA)** -- Central Hudson Gas & Electric's Representative; Customer Services Committee (1982-1988); Human Resources Committee (1988 to 1998).

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: May 13, 2025 **Date of Response: May 28, 2025**
Data Request No. DOE TS-003 **Page 1 of 1**

Request from: Department of Energy

Witness: Newell, Bradley D

Request:

a) Please describe the NESC requirements that each of the five structures will not meet if the conductor size is increased to 1272 ACSS?
b) Is vertical clearance the only requirement the existing structures cannot meet?
c) For each structure, how much additional vertical clearance is needed to meet the code requirements?
d) Can this vertical clearance be achieved if poles of identical height as the existing structures are use in a two-pole side post insulator configuration with a pole-top static wire?

Response:

a) The existing wood structures would not meet NESC 250B and would be 138% over utilized on average. Or stated another way, these structures under the NESC 250B weather case are, on average, 38% over their design capabilities. All other weather cases would then be irrelevant.

b) No. In addition to not being able to meet vertical clearance requirements, the existing structures with new conductor would be on average 138% over utilized.

c) The structures are being raised to provide vertical clearance required to meet NESC requirements and Eversource clearance standards to ground, as well as to meet current industry standards for lightning shielding angle.

d) No. A horizontal post configuration would not achieve this desired result.

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: May 13, 2025 **Date of Response: May 28, 2025**
Data Request No. DOE TS-007 **Page 1 of 1**

Request from: Department of Energy

Witness: Newell, Bradley D

Request:

If the Company does not receive a waiver of the Town's height limit, how much line capacity will be reduced due to the five sections of the existing 795 ACSR?

Response:

The U199 Normal Summer rating (capacity) will be reduced by approximately 44% if the existing 795 ACSR conductor remains in service after upgrading the remainder of the line outside of Bethlehem with 1272 ACSR conductor.

If the Company were to maintain the existing height of the five existing structures, which in turn would require the addition of four new mid-span H frame structures that meet the 40-foot height limitation, using 1272 ACSR conductor, the capacity of the U199 line would not be reduced.

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: April 16, 2025 **Date of Response: May 02, 2025**
Data Request No. DOE 1-001 **Page 1 of 3**

Request from: Department of Energy

Witness: Newell, Bradley D

Request:

For each U199 pole structure in the town of Bethlehem:

a. Please provide a detailed description with pictures of the pole structure to be replaced showing damage and current pole height.
   i. Please provide when and how the damage was identified and by whom (contractor or employee).
   ii. What temporary repairs have been made or contemplated?

b. Why is there a 40ft height restriction?
   i. Which designs meet the 40ft height restriction and the associated costs?
   ii. If no replacement designs meet the 40ft height restriction, what are the limiting factors?

c. Please provide representative design diagrams and/or pictures of the recommended replacement structure solution, e.g., H-frame, single-pole.
   i. Please specify construction materials to be used, e.g., wood, steel.
   ii. Please specify the type of footing to be installed, e.g., prefabricated Carson footing.
   iii. Please provide all internal work papers supporting the Company's recommended solution for the replacement of U199 pole structures in the Town of Bethlehem.

d. Please provide potentially viable alternative structure designs and associated costs.
   i. Which designs meet the 40ft height restriction and the associated costs?
      i. What are the design requirements and limitations of each?
      ii. If no replacement designs meet the 40ft height restriction, what were the limiting factors?
   ii. What alternative designs were considered, e.g., undergrounding?
      i. What were the reasons for not choosing an alternative?

Response:

a. Existing structures 95-99 are located in Bethlehem, NH and are detailed below.

-Str 95: 50-ft Type A2 (double crossarm) 2-pole H-Frame tangent

- Rating B, no/min damage found, structure not being replaced due to condition. No picture provided

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: April 16, 2025 **Date of Response: May 02, 2025**
Data Request No. DOE 1-001 **Page 2 of 3**

-Str 96: 50-ft Type A2 (double crossarm) 2-pole H-Frame tangent
- Rating B, pole top rot found, structure not being replaced due to condition. No picture provided

-Str 97: 60-ft Type DA 3-pole Deadend
- Rating B, no/min damage found, structure not being replaced due to condition. No picture provided

-Str 98: 55-ft Type A (single crossarm) 2-pole tangent
- Rating B, no/min damage found, structure not being replaced due to condition. No picture provided

-Str 99: 50-ft Type A2 (double crossarm) 2-pole H-Frame tangent
- Rating B, no/min damage found, structure not being replaced due to condition. No picture provided

i. Eversource structures are inspected by an outside firm (MESA) using an unmanned aerial drone. After evaluation by MESA, Eversource then forwards the pictures and reports to RLC Engineering for additional review and verification. These results are then forwarded to Eversource's Asset Management Department where internal employees review all "C" and "D" rated structures to ensure adherence to the relevant standards. The U199 was last inspected in 2024.
ii. As a result of the 2024 inspections, no temporary repairs needed to be made to structures in Bethlehem.

b. The fortyfoot height restriction was adopted by the Town of Bethlehem and not by Eversource.
   i. None of the structure replacement designs meet the 40-foot height restriction.
   ii. The limiting factors to meeting this height restriction are the National Electrical Safety Code (NESC) minimum ground clearance for 115 kV lines at maximum operating temperature, industry standard lightning protection, and OSHA working clearances for transmission maintenance personnel.

c. See Attachment DOE 1-001, Eversource standard H-Frame transmission structure.
   i. Weathering steel structures will be used for the five replacement structures.
   ii. The majority of the line will be direct embed poles set in a corrugated steel casing (sleeve) with no foundations, including all of the structures in Bethlehem.
   iii. Given the age and condition of the existing structures, and in the interest of mitigating potential environmental and costs impacts by avoiding repeated deployment of equipment and resources, the decision was made to replace the

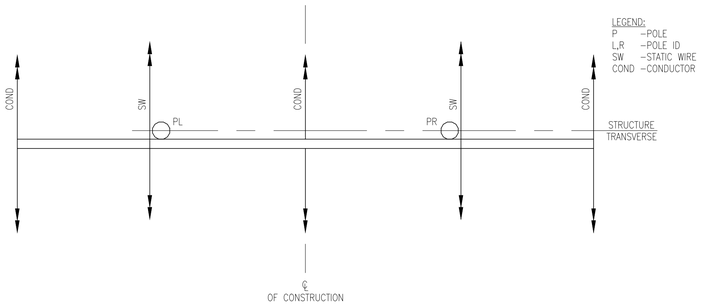
Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: April 16, 2025 **Date of Response: May 02, 2025**
Data Request No. DOE 1-001 **Page 3 of 3**

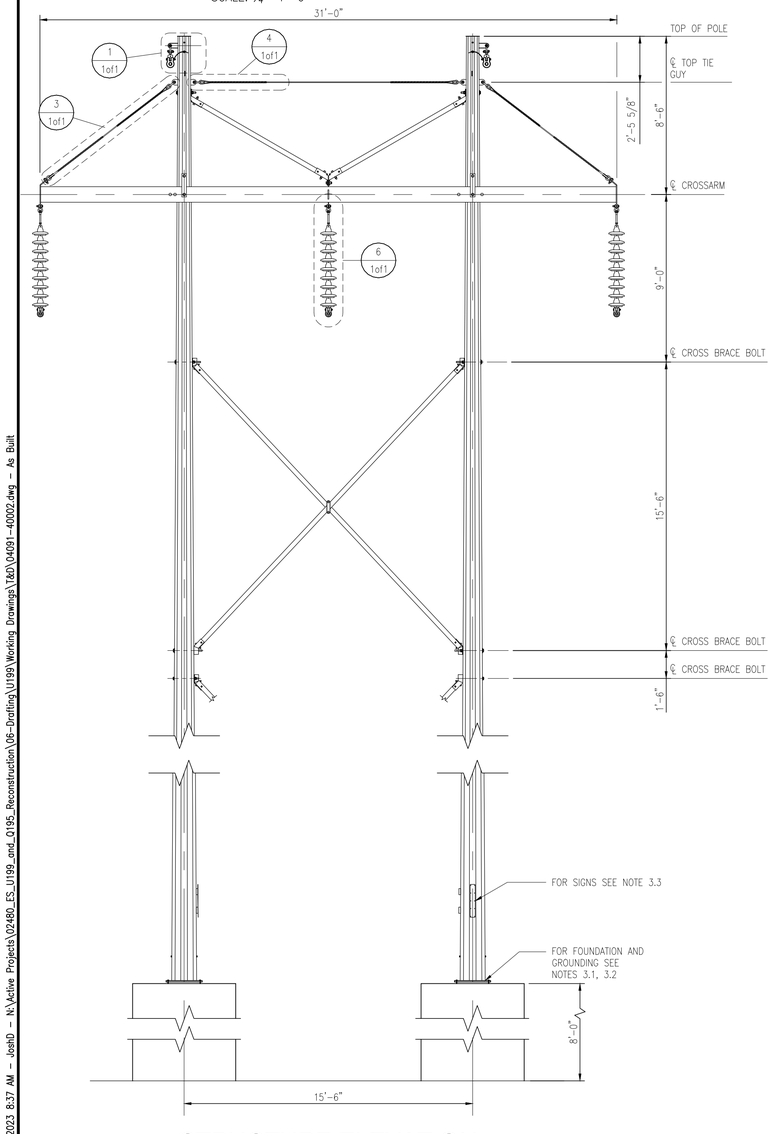
five structures at this time. Replacement of those structures in Bethlehem at a future date would re-disturb environmental resources areas for either access and/or structure installation, whereas replacement of the structures in the present scope capitalizes on efficiencies of scale, avoiding duplicative access and mobilization costs, as well as inflationary risk, for replacing these aged and aging wood structures piecemeal at potentially multiple future dates. There are no internal workpapers specific to the Bethlehem structures that are directly associated with the broader decision to adopt the structure replacement plan as described.

d. The steel H-Frame design proposed by Eversource is Eversource's standard for the construction of 115 kV transmission lines and is the lowest industry standard structure type available. No other alternatives were evaluated.
    i. No designs would meet the 40-ft height restriction.
        i. See above.
        ii. See (b.ii) above.
    ii. No other alternatives were considered. See response to OCA 1-005. In particular, underground construction through rights of way in northern New Hampshire would be cost-prohibitive and would greatly increase the cost of the project multiple times.
        i. See above

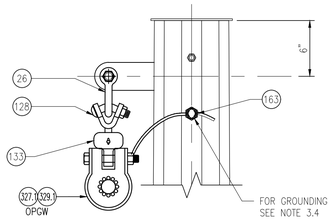
ES VER: 05/2015



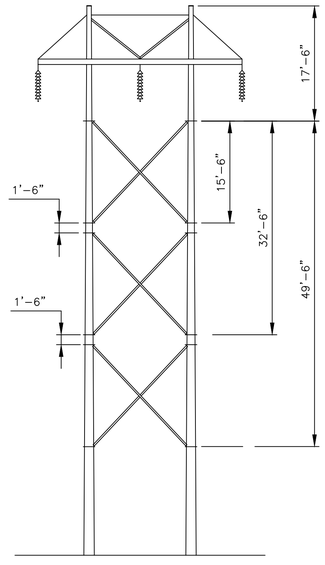
STRUCTURE PLAN
SCALE: ¼"=1'–0"



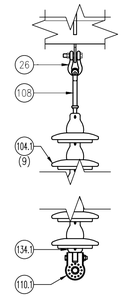
STRUCTURE ELEVATION
SCALE: ¼"=1'–0"



OPGW CONNECTION 1
SCALE: 1½"=1'–0" TYP BOTH POLES



X-BRACING DIAGRAM B
SCALE: NTS 1of2

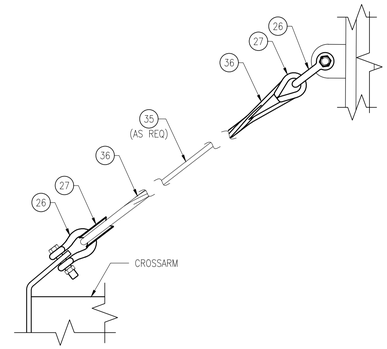


CONDUCTOR ATTACHMENT 2
SCALE: 1½"=1'–0" TYP 3 PLACES

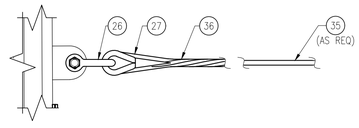
STEEL POLE BILL OF MATERIAL			
WEATHERING POLE STRUCTURE BILL OF MATERIAL			
ITEM	**QTY**	**DESCRIPTION**	**Maximo Item Number**
162	1	COMPOUND, RTV, SEALANT, ONE PART, SILICONE, CLEAR, 10.1 OZ CARTRIDGE	501128
SHIELD WIRE BILL OF MATERIAL			
26	2	SHACKLE, ANCHOR, 3/4 IN, BOLT/NUT / KEY, GALVANIZED, 60,000 LBS	538429
327.1	2	SUSPENSION, ARMOR GRIP, ASSY FOR FIBER OPTIC GW, OPGW	515171
329.1	4	DAMPER,VIBRATION, SPIRAL, FOR FIBER OPTIC GROUND WIRE	504668
163	2	CONNECTOR, GROUND, SERVIT POST, #2 - 2/0 STR CU	501130
128	2	BALL, Y CLEVIS, SHORT, GALV STEEL, 30000 LB	539938
133	2	EYE, SOCKET, GAL STEEL, 1/2 IN TONGUE, 16M	540100
CONDUCTOR AND HARDWARE BILL OF MATERIAL			
26	3	SHACKLE, ANCHOR, 3/4 IN, BOLT/NUT / KEY, GALVANIZED, 60,000 LBS	538429
104.1	27	GLASS, INSULATOR, 10 IN, 30000 LB, M AND E RATED, 53-5	521662
110.1	3	GRIP ASSY SUSPENSION, PREFORMED, ARMOR, 1272 "PHEASANT" ACSS	510008
108	3	BALL, CLEVIS, Y, HOT LINE TYPE, GALV STEEL, 30000 LB	539951
134.1	3	EYE-SOCKET FOR ACSR/ACSS AGS UNITS & YOKE PLATES, GALV., CONDUCTOR SIZE 1272 "PHEASANT" ACSS	500364
TOP TIE BILL OF MATERIAL			
26	6	SHACKLE, ANCHOR, 3/4 IN, BOLT/NUT / KEY, GALVANIZED, 60,000 LBS	538429
27	6	THIMBLE, WIRE ROPE, GALVANIZED, 1/2 IN STRAND, HEAVY CABLE THIMBLE	560889
35	60	CABLE, BARE ALUMOWELD 19#10	513360
36	6	GRIP, PREFORMED TYPE FOR 19#10 ALUMOWELD GUY STRAND	566594

GENERAL NOTES:

1. APPLY SILICONE SEALANT (SC 501128) TO ALL FIELD DRILLED HOLES.
2. ERECT STEEL STRUCTURE PER DTRM 260.
3. FOR MORE DETAILS ON ITEMS NOTED GO TO:
   - 3.1. FOUNDATION, SEE FOUNDATION CONSTRUCTION DETAILS DRAWING, 04091–60001.
   - 3.2. STRUCTURE COUNTERPOISE, SEE GROUNDING AND COUNTERPOISE DOUBLE BROKEN, TYPE D DRAWING 04091–61001.
   - 3.3. AERIAL, STRUCTURE ID, LINE ID, AND DANGER SIGNS SEE SIGNS, LINE AND STRUCTURE AERIAL AND BASE MARKERS DRAWING 04091–40010.
   - 3.4. OPGW GROUNDING, SEE OPGW DRAWINGS 09000–70021.
4. CONTRACTOR TO COORDINATE THE INSTALLATION OF STEP RUNG WITH INSTALLATION OF CROSS ARM.
5. FOR THE ENGINEER: RUN STRUCTURE CHECK REPORTS IN YOUR PLS–CADD MODEL TO VERIFY THAT POLE, CROSS ARM, BRACE, GUY, CABLE, INSULATOR USAGES, AND INSULATOR SWINGS ARE BELOW 100% FOR ALL LOAD CASES.
6. STEEL POLE VENDOR TO SUPPLY CROSSARM, KNEE BRACES, CROSS BRACES AND ASSOCIATED HARDWARE FOR ATTACHMENTS.



CROSSARM SUPPORT 3
SCALE: 1½"=1'–0" TYP BOTH SIDES



TIP GUY CONNECTION 4
SCALE: 1½"=1'–0" TYP BOTH SIDES

STRUCTURE REPLACEMENT SCHEDULE		
REPLACEMENT YEAR	PROJECT NUMBER	STRUCTURE NUMBER
2024 STR REPLACEMENTS	T1391U01	72

KATIE JEAN DUMAS No. 16630 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
12/28/2023

NO.	DATE	AS BUILT REVISIONS	BY	CHK	APP
1	12/29/23	ISSUED FOR CONSTRUCTION PN T1391U01	JJD	KJD	KJD

EVERSOURCE ENERGY

TITLE: U199, (TYPE T) TANGENT
SINGLE CIRCUIT H– FRAME 115kV ENGINEERED STEEL STRUCTURE

BY	CHKD	APP
JJD	CRP	KJD
DATE 12/15/21	DATE 12/15/21	DATE 12/15/21
H-SCALE AS SHOWN	SIZE D	FIELD BOOK & PAGES
V-SCALE	V.S.	R.E. DWG
R.E. PROJ. NUMBER		DWG NO. 04091-40002

12/22/2023 8:37 AM – JoshD – N:\Active Projects\02480_ES_U199_and_Q195_Reconstruction\06–Drafting\U199\Working Drawings\T&D\04091–40002.dwg – As Built

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: May 13, 2025 **Date of Response: May 28, 2025**
Data Request No. DOE TS-001 **Page 1 of 1**

Request from: Department of Energy

Witness: Newell, Bradley D

Request:

a) Please confirm that the five structures in the Town of Bethlehem would not need to be replaced at this time if the line was not being rebuilt.

Response:

a) Please see DOE TS 1-6 below. But for the current U199 line reconstruction project, based on the most recent inspection results from 2025 showing a combination of pole top rot and uplift, all five of the structures on the U199 line in Bethlehem would be replaced in 2026 due to asset condition.

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: May 13, 2025 **Date of Response: May 28, 2025**
Data Request No. TS-001 **Page 1 of 2**

Request from: Office of Consumer Advocate

Witness: Newell, Bradley D

Request:

Referring to the responses to OCA 1-002 and OCA 1-005. Page 2 of the response to OCA 1-002 refers to an "extensive system-wide analysis for non-wires and grid enhancing technologies," but no analysis was provided in the response. OCA 1-005 requested information on "the use of non-wires alternatives, grid enhancing technologies... or other innovations" for the U-199 and no analysis was provided. Please provide any and all analyses, including relevant portions of the "system-wide analysis," pertaining to the U-199 line and any consideration of non-wires, or other alternatives, for that line. If no such analyses exist, please explain why not.

Response:

Eversource conducted an overall strategy study in 2007, involving review of multiple alternatives to respond to the energy-related data communications for SCADA, relaying, and other discipline needs, taking into consideration compliance with the regulation requirements and secure and reliable network performance. The recommendations were to use the fiber optic network to enhance performance and achieve compliance for such applications and traffic. Fiber provides the necessary bandwidth for physical security monitoring and triaging of alarms for BES Cyber Systems at medium and low impact substations.

Analysis for the use of non-wires solutions for such applications was not recommended for the simple reason that wireless solutions cannot reliably achieve the acceptable latency and network availability necessary for optimal performance of the electrical system. Wireless connectivity is vulnerable to multiple external factors affecting the reliability and performance of such networks.

Eversource's private telecommunications network strategy is built predominantly on the physical foundation of OPGW (Wired), thereby reducing reliance on leased services and wireless networks for protection. Using a stable and secure private network isolates it from security threats that are possible when connecting to external network elements, thus maximizing the reliability and security of the network supporting BES and CEII Cyber systems.

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: May 13, 2025 **Date of Response: May 28, 2025**
Data Request No. TS-001 **Page 2 of 2**

The 2007 study generally evaluated transmission-related telecommunications strategy for the Eversource system overall but does not contain any specific U-199 line information and analysis within the scope of the question as presented. Accordingly, the Company is not providing that study or any excerpts from the study in this response.

The U-199 line was selected for fiber due to the need to ensure reliable and stable connectivity to the Eversource Transmission substations in the area, including Streeter Pond Tap and Littleton Substation. This fiber path will also support future connectivity and the MPLS network with National Grid's 15 Mile Falls and Comerford substations.

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: May 13, 2025 **Date of Response: May 28, 2025**
Data Request No. DOE TS-005 **Page 1 of 1**

Request from: Department of Energy

Witness: Newell, Bradley D

Request:

If the Company does not receive a waiver of the Town's height limit, what are the next steps or alternatives?

Response:

If Eversource were not to receive the requested exemption from the Town height restriction, the current Eversource design would be revised to replace the existing wooden structures 94-98 with lower steel H-frame structures. Four new midspan structures would need to be installed to meet NESC ground clearances to the conductor and to remove uplift on the static and conductor. A total of nine new steel structures would be installed to replace the existing five structures. It should be noted that these new non-standard structures would have a reduced lightning protection angle due to the proximity of the static wire to the conductor, leaving this section of the line more susceptible to lightning strikes.

This construction of four additional structures would result in additional cost and increased environmental impacts, and would require amendment of the existing permits.

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: May 13, 2025 **Date of Response: May 28, 2025**
Data Request No. DOE TS-004 **Page 1 of 1**

Request from: Department of Energy

Witness: Newell, Bradley D

Request:

Recognizing that part of the support for the line rebuild is to create a dedicated communication path along this line, can this be achieved by either replacing the static wire on the existing structures or bypassing the last five structures using the distribution system pole route?

Response:

Please refer to DOE TS 1-005 and 1-006. Based on the most recent inspection results for the five U199 structures in Bethlehem showing pole top rot and uplift, Eversource would not install larger static wires on these wooden structures and the structures would be replaced. Installing larger static wire on these wooden poles, given the current inspection results, and the overloading explained in DOE TS-003, would only increase the likelihood of a structure failure. Bypassing this section and using a street side route would not be feasible and would incur a significant increase in project costs.

Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. DE 24-087

Date Request Received: April 18, 2025 **Date of Response: May 02, 2025**
Data Request No. OCA 1-002 **Page 1 of 3**

Request from: Office of Consumer Advocate

Witness: Newell, Bradley D

Request:

Please explain in detail how the proposed U-199 project addresses each of the issues/factors identified on page 18 of the Commission's March 3, 3025 order in Docket No. DE 24-087.

Response:

The Commission's Order No. 28,108 (March 3, 2025) at 18 determined that the scope of relevant inquiry in Docket No. DE 24-087 includes the following issues:

(1) Whether it is reasonably necessary for Eversource to replace the [five U199] existing poles with higher structures within Bethlehem;

(2) What are the alternatives to Eversource replacing the existing poles with higher structures, including the cost of any alternatives;

(3) Are there local concerns related to the proposed higher structures (such as: health and safety, aesthetics, noise, impacts on property values, and environmental impacts); and

(4) What are the advantages and disadvantages of Eversource replacing the existing poles with higher structures.

The Company addresses each of these issues below:

Need to Replace Existing Poles with Higher Structures in Bethlehem

Eversource has determined that the five wooden U199 transmission line structures in the Town of Bethlehem are in need of replacement and that replacement should be effected on a like-for-like basis, but with accommodation of updated code requirements and industry best practices. For example, the National Electrical Safety Code ("NESC") minimum ground clearance for 115 kV lines at maximum operating temperature, industry standard lightning protection, and OSHA

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working clearances for transmission maintenance personnel all support the conclusion that higher supporting structures are required to be installed to replace the existing five structures.

It also should be noted that the existing U199 transmission structures in the Town all currently exceed 40 feet in height, but are grandfathered from the zoning ordinance restriction based on the time of their installation. If they were to be replaced without any increase in their current height, a zoning ordinance waiver or variance from the Town or exemption for the Commission would still be required.

Alternatives to Replacement of Existing Poles with Higher Structures and Related Costs

The Company has adopted a like-for-like structure replacement strategy where like structures are installed at or very near to the existing structure locations and height increases are minimized to the greatest extent possible. H-Frame structure designs, as exist and are proposed to be utilized for the replacements, provide a combination of the shortest, most economical transmission structures in the utility industry.

An Eversource consultant performed an extensive system-wide analysis for non-wires and grid enhancing technologies. For the U199 Line two fiber optic paths were chosen that would meet both internal and industry standards. Dual OPGW provides redundancy on the system, because having two separate fiber paths allows for a failure in one path while maintaining communication via the other.

Eversource notes that any underground construction through rights of way in northern New Hampshire would be cost-prohibitive and would greatly increase the cost of this project multiple times. And as noted above, simply replacing the existing U199 wooden structures with exact replicas of those in place today would still be inconsistent with the Town′s current height ordinance, as the existing structures exceed 40 feet in height, but such approach would not meet best practices, as well as code requirements and other regulatory considerations.

Local Concerns Related to Proposed Higher Structures
(health and safety, aesthetics, noise, impacts on property values, and environmental impacts)

Eversource is not aware of any specific local issues regarding health and safety, aesthetics, noise, impacts on property values, and environmental impacts related to the five U199 transmission line structures. The U199 transmission line has occupied this 150 foot wide right-of-way through Bethlehem since 1971. Also, as confirmed in the response to OCA 1-001, Eversource has received

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all necessary environmental and land use permits and approvals to proceed with replacement of the five U199 structures, with the single exception of the Bethlehem zoning ordinance exemption requested in this proceeding.

Advantages and Disadvantages of Replacement of Existing Poles with Higher Structures

Based on recent physical inspections and engineering analysis of Eversource's transmission infrastructure, it was observed that many of the existing U199 line wooden structures are in need of replacement due to their age, woodpecker damage, insect damage, and pole rot. Other factors which supported performing a full rebuild of the U199 line instead of selective structure replacement include the interest in minimizing scheduled outages for maintenance work, mitigation of environmental impacts from repeated equipment deployment for selective replacements, specialized resource limitations and achieving efficient deployment of resources in locations along much of the U199 line's rights-of-way where access is challenging owing to mountainous topography and certain remote locations. Selective structure replacement of only the most degraded structures would ultimately require repeated entry into the rights-of-way for additional needed replacements, as the remaining structures' inspection ratings decline, which is more disruptive to the environment, abutters and host communities compared to a full rebuild.

In addition, pursuant to updates to the NESC standards adopted since the U199 line was originally constructed, all of the replacement structures must increase in height to varying degrees over the heights of the existing wooden structures to be in compliance with current safety clearance criteria, and also to accommodate industry and Eversource best practices for transmission line design, as well as to accommodate needs for vegetation maintenance and facility maintenance and repair access.

As a result of those considerations, Eversource determined that full replacement of the five existing wooden U199 transmission support structures in Bethlehem with taller weathered steel structures that meet those needs and requirements was the only reasonable alternative. Even if there may be perceived aesthetic or other impacts associated with increasing structure heights, any such concerns are greatly outweighed by the system reliability and associated public safety interests resulting from the structure and wire replacements.