

STATE OF CONNECTICUT

SITING COUNCIL

<p>DOCKET NO. 424 - The Connecticut Light & Power Company application for a Certificate of Environmental Compatibility and Public Need for the Connecticut portion of the Interstate Reliability Project that traverses the municipalities of Lebanon, Columbia, Coventry, Mansfield, Chaplin, Hampton, Brooklyn, Pomfret, Killingly, Putnam, Thompson, and Windham, which consists of (a) new overhead 345-kV electric transmission lines and associated facilities extending between CL&P's Card Street Substation in the Town of Lebanon, Lake Road Switching Station in the Town of Killingly, and the Connecticut/Rhode Island border in the Town of Thompson; and (b) related additions at CL&P's existing Card Street Substation, Lake Road Switching Station, and Killingly Substation.</p>	<p>DOCKET NO. 424</p> <p>May 21, 2012</p>
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DIRECT TESTIMONY OF LOUISE F. MANGO

**CONCERNING ENVIRONMENTAL FEATURES, IMPACTS, AND
MITIGATION MEASURES OF THE
CONNECTICUT PORTION OF THE INTERSTATE RELIABILITY PROJECT**

TABLE OF CONTENTS

	<u>Page No.</u>
1. <u>INTRODUCTION</u>	1
2. <u>ENVIRONMENTAL DATA COLLECTION APPROACH</u>	7
3. <u>ENVIRONMENTAL FEATURES ALONG THE PROPOSED ROUTE</u>	14
4. <u>POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES</u>	27
5. <u>THE MANSFIELD HOLLOW AREA</u>	51
6. <u>ROLE OF THE D&M PLAN IN MITIGATING ENVIRONMENTAL EFFECTS</u>	57
7. <u>CONCLUSIONS</u>	60

1 **1. INTRODUCTION**

2 **Q. Would you please identify yourself and summarize your background**
3 **regarding environmental matters associated with the Connecticut portion of the**
4 **Interstate Reliability Project (“Interstate” or “the Project”)?**

5 A. I am Louise Mango, an environmental consultant from Phenix
6 Environmental, Inc. A copy of my resume is being filed separately. Working as a
7 consultant to The Connecticut Light and Power Company (“CL&P”), I have been
8 involved in environmental aspects of the Project since approximately 2004, when I
9 assisted in the initial planning for and review of CL&P’s Southern New England
10 Transmission Reliability Project (SNETR), which, based on preliminary analyses, was
11 contemplated to follow a similar alignment as the Connecticut portion of Interstate. I
12 have been part of CL&P’s Interstate team since 2008, focusing primarily on alternative
13 routing studies and environmental matters. In addition, I worked with others on CL&P’s
14 Interstate team to prepare the 2008 Municipal Consultation Filing (“MCF”) and the July
15 2011 Supplemental MCF, as well as the December 23, 2011 Application to the
16 Connecticut Siting Council (“Council”) for a Certificate of Environmental Compatibility
17 and Public Need (“Application”) that is the subject of this Docket 424.

18 I also am assisting CL&P in the preparation of the Project’s application to the
19 U.S. Army Corps of Engineers (“USACE”) for a Section 404 Permit pursuant to the
20 federal Clean Water Act. This USACE application is being prepared by CL&P and the
21 two National Grid subsidiaries that will construct, own, and operate the Rhode Island and
22 Massachusetts portions of the Project (i.e., respectively, The Narragansett Electric
23 Company [“TNEC”] and the New England Power Company [“NEP”]).

1 **Q. Have you served in a similar capacity on other recent CL&P projects?**

2 A. Yes. I performed similar functions during the planning, application, and
3 permitting phases for the Greater Springfield Reliability Project (“GSRP”), the
4 Manchester-Meekville Junction Project (“MMP”), the Middletown-to-Norwalk (“MN”) Project,
5 and the Glenbrook Cables (“Glenbrook”) Project. I served as an environmental
6 inspector during the construction of both the MN and Glenbrook projects. In addition,
7 for the past year, I have assisted CL&P and its project management and engineering
8 consultant, Burns & McDonnell, Inc. (Burns & McDonnell) in designing and
9 implementing environmental training programs for personnel involved in the ongoing
10 construction of the GSRP and MMP, as well as in reviewing environmental aspects of the
11 GSRP / MMP construction programs.

12 **Q. What personal responsibilities did you have regarding the**
13 **preparation of CL&P’s Application for the Project, which was submitted to the**
14 **Council on December 23, 2011?**

15 A. Working with others on CL&P’s Interstate team, I principally drafted or
16 coordinated the preparation of portions of the Application relating to environmental
17 resources (including recreation and visual resources), route variations, and the
18 transmission line configuration options across the 1.4 miles of federally-owned lands in
19 the towns of Mansfield and Chaplin. I also coordinated with specialized consultants
20 regarding the analyses of water resources, biological resources, threatened and
21 endangered species, breeding birds, and cultural resources, and reviewed the detailed
22 reports concerning specific environmental resource areas that are included as appendices
23 to the Application. In addition, I coordinated with Burns & McDonnell to prepare the

1 Visual Resource Analysis in Volume 8, and reviewed the Volume 9 and 11 map volumes
2 with respect to environmental features.

3 **Q. Are there any other personnel who may respond to cross examination**
4 **regarding environmental matters for the Project?**

5 A. Yes. Jeffrey Martin, CL&P's Manager for Permitting and Compliance for
6 the Project, will be available to respond to inquiries regarding CL&P environmental
7 policies and procedures.

8 Further, the compilation and analysis of environmental information for the
9 Interstate Application involved a number of specialized engineering and environmental
10 consultants, any of whom I could call upon to support this testimony by providing
11 responses to inquiries about particular environmental or environmental resource-related
12 topics.

13 For example, Burns & McDonnell, worked on the construction engineering
14 (constructability) factors that affect environmental planning, alternatives design, line
15 configurations, and the Project construction "footprint" (e.g., limits of vegetation
16 clearing, vegetation clearing routes, temporary and permanent access roads, culverts,
17 work pads) within the Project rights-of-way ("ROWs"). Burns & McDonnell personnel
18 also conducted constructability reviews in the field, performed certain environmental
19 analyses (e.g., descriptions of soils along the ROWs), and arranged for photo-simulations
20 for visual resource analyses.

21 AECOM, Environment ("AECOM"), a national environmental consulting firm,
22 conducted baseline research and field investigations of water resources (wetlands and
23 watercourses), vernal pools, amphibians, and biological resources (including certain

1 threatened and endangered species surveys) along the Project ROWs. AECOM also
2 prepared reports and drafted portions of the Application regarding these environmental
3 resources. In addition, working with Burns & McDonnell and CL&P representatives,
4 AECOM met with representatives of the Connecticut Department of Energy and
5 Environmental Protection (“CT DEEP”) to obtain baseline environmental information
6 regarding the Project area.

7 The University of Connecticut, Center for Conservation Biology, represented by
8 Dr. David Wagner and Mr. Ken Metzler, conducted field investigations of Lepidoptera
9 (moths, butterflies) along the Project ROWs and prepared a detailed report regarding the
10 study results (presented in Volume 4 of the Application).

11 In addition, the Public Archaeology Laboratory, Inc. (“PAL”) is the cultural
12 resource consultant for the Project. PAL conducted reconnaissance of the Project ROWs
13 and performed cultural resource field studies. Working with Burns & McDonnell and
14 CL&P, PAL also has been coordinating with representatives of the involved Native
15 American Tribes, the State Historic Preservation Office (“SHPO”), and the USACE
16 cultural resources personnel. In the future, PAL will conduct more detailed
17 investigations of archaeological sites that warrant further field testing.

18 **Q. What is the purpose of your testimony?**

19 A. The purpose of this testimony is to:

- 20 • Summarize the environmental and social/cultural factors that were
21 considered during the analysis of routing and configuration alternatives
22 and the development of plans for the Project in order to avoid, minimize,
23 or mitigate adverse effects on environmental and cultural resources.
24
25 • Describe how such environmental considerations will continue to be
26 important as the final design, certification, permitting, and construction

1 phases of the Project proceed, and during the operation and maintenance
2 of the Project facilities.

- 3
4 • Update environmental resource information presented in the Application
5 to reflect the current status of Project planning (i.e., incorporating the
6 results of 2012 consultations with the USACE and CT DEEP and analyses
7 completed after the publication of the Application in December 2011).
8

9 **Q. Does your testimony address the environmental factors that were**
10 **considered in CL&P's analyses of configuration options for the alignment of the**
11 **new 345-kV transmission line across the federally-owned properties in the towns of**
12 **Mansfield and Chaplin?**

13 A. Yes. CL&P devoted considerable effort, spanning almost four years and
14 including environmental and cultural resource investigations, to identify and compare
15 options for avoiding or minimizing adverse effects associated with the alignment of the
16 new 345-kV transmission line across two segments, totaling the 1.4 miles, of federally-
17 owned land in Mansfield and Chaplin (referred to herein as the "Mansfield Hollow
18 area"). My testimony complements that of Robert E. Carberry, John C. Case, and
19 Anthony P. Mele concerning the analyses of the transmission line configurations in the
20 Mansfield Hollow area.

21 **Q. Does your testimony describe how environmental factors were**
22 **considered in the identification and evaluation of transmission line route**
23 **alternatives for the Project and compared in the analyses of the variations to**
24 **specific portions of the proposed transmission line route?**

25 A. No. CL&P's Application devotes an entire volume (Volume 1A) to
26 alternatives, describing the iterative alternatives evaluation process, the alternatives
27 considered, and how environmental factors were incorporated into these analyses.

1 Volume 1A, Section 15 presents environmental resource information for each of the
2 variations that were identified as potential options to portions of the proposed
3 transmission line route. Further, the testimony of Mr. Carberry, Mr. Case, and Mr. Mele
4 addresses alternatives and route variations, and includes any updates to the information
5 presented for the variations in Volume 1A, Section 15 of the Application. I concur with
6 the environmental analyses presented in Volume 1A and in the testimony of Mr.
7 Carberry, Mr. Case, and Mr. Mele.

8 **Q. How is your testimony organized?**

9 A. My testimony is organized by the following primary topics:

- 10 • Approach used to compile baseline environmental data for the Project,
11 including field investigations
- 12
- 13 • Review of environmental resources along the 36.8-mile Interstate
14 Proposed Route between Card Street Substation, Lake Road Switching
15 Station, Killingly Substation, and the interconnection to the proposed
16 National Grid USA (“National Grid”) 345-kV transmission line at the
17 Connecticut / Rhode Island border
- 18
- 19 • Discussion of potential environmental effects and mitigation measures for
20 the Project, including any changes to the estimated impacts as a result of
21 the 2012 constructability reviews
- 22
- 23 • Review of the environmental resources and configuration options
24 considered for the federally-owned properties in the Mansfield Hollow
25 area, and CL&P’s ongoing coordination with the USACE regarding
26 environmental resources in this area
- 27
- 28 • The role of Development and Management (“D&M”) Plans in
29 environmental impact mitigation
- 30
- 31 • Conclusions

1

2 **2. ENVIRONMENTAL DATA COLLECTION APPROACH**

3 **Q. What approach was used to characterize existing environmental**
4 **conditions for the Project?**

5 A. Existing environmental and land-use features along and in the vicinity of
6 the Project ROWs were compiled and characterized in accordance with the Council's
7 *Application Guide for Electric Transmission and Fuel Transmission Line Facility (April*
8 *2010)*. These existing conditions were characterized using a combination of baseline
9 research, field investigations, aerial photo-interpretation, and consultations with
10 representatives of environmental agencies. Primary published sources consulted were the
11 Geographic Information System ("GIS") database maintained by the CT DEEP, soil
12 surveys, U.S. Geological Survey ("USGS") topographic maps, Federal Emergency
13 Management Agency ("FEMA") maps, National Wetland Inventory ("NWI") maps
14 published by the U.S. Fish and Wildlife Service ("USFWS"), the USGS's National
15 Hydrography Dataset, and state and town land-use and recreation plans. Environmental
16 information regarding the Mansfield Hollow area, including Mansfield Hollow State
17 Park, Mansfield Hollow Dam, Mansfield Hollow Lake, and the Mansfield Hollow State
18 Wildlife Management Area ("WMA") was compiled from both the USACE and the CT
19 DEEP. In addition, data regarding public recreational, scenic, and open space areas,
20 including trails, was compiled from documents and on-line information maintained by
21 CT DEEP, the Connecticut Department of Transportation ("ConnDOT"), and the 11
22 towns traversed by the Project ROWs, as well as groups such as the Connecticut Forest
23 and Parks Association ("CFPA"), The Last Green Valley, Inc. ("TLGV"), the non-profit

1 group that manages the Quinebaug-Shetucket Rivers Valley National Heritage Corridor
2 [“NHC”]), Joshua’s Land Trust, Wolf Den Land Trust, and the Wyndham Land Trust.

3 **Q. Where in the Application are the existing environmental conditions**
4 **along the Project ROWs described?**

5 A. The existing environmental resources in the Project area are described in
6 Volume 1, Section 5 of the Application and are depicted on the maps in Volumes 9 and
7 11. Detailed reports regarding water resources, breeding birds, vernal pools and
8 amphibians, and insects (moths / butterflies) are included in Volumes 2 and 4 of the
9 Application. The cultural resource assessment survey is provided in Volume 3, and the
10 visual resources report (including photographs and photo-simulations) is included in
11 Volume 8.

12 **Q. Please describe the environmental field investigations that have been**
13 **performed along the Interstate ROWs to date and indicate whether the results of**
14 **these studies are reflected in the Application to the Council.**

15 A. Over the past four years, approximately, CL&P commissioned a variety of
16 environmental and cultural resource field investigations of the Project ROWs. These
17 investigations are summarized briefly as follows; unless otherwise indicated, the results
18 of these field investigations are included in the Application, Volumes 1, 2, 3, 4, and /or 8.

19 **Wetlands and Watercourse Delineations.** Wetlands and watercourse field
20 investigations were initially performed along the Interstate ROWs from January through
21 April 2008. These field studies were designed to identify all water resources within the
22 width of CL&P’s existing ROWs (not just those portions of the ROWs that would
23 potentially be affected by the proposed Interstate facilities).

1 In the spring of 2009, additional field studies of water resources were conducted
2 of the potential ROW expansion along the two segments of federally-owned property in
3 the Mansfield Hollow area, as well as of certain potential off-ROW access roads located
4 on CL&P-owned property. In November 2011 and May 2011, additional field
5 investigations were conducted to reconfirm the accuracy of the 2008 and 2009
6 delineation studies and to verify the continued concurrence of the delineations with new
7 guidance regarding federal jurisdictional wetland delineations published by the USACE
8 after the completion of the initial water resource studies (i.e., the USACE's October 2009
9 *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual:*
10 *Northcentral and Northeast Region*).

11 **Vernal Pools and Amphibian Breeding Habitat.** Field investigations for
12 amphibians and vernal pools were performed in the spring of 2008 and 2011, in
13 conjunction with the wetland delineation studies. All wetlands with potentially suitable
14 vernal pool or amphibian breeding habitat were investigated.

15 **Avian Surveys.** Pursuant to CT DEEP recommendations, CL&P commissioned
16 surveys of portions of the Project ROWs to assess the presence / absence of certain state-
17 listed bird species. These surveys were conducted principally in 2008, with supplemental
18 surveys conducted in the summer of 2011.

19 **Insect (Moth / Butterfly Surveys).** The UCONN Center for Conservation
20 Biology conducted surveys of the Project ROWs for insects, principally during the spring
21 / early summer of 2008 and 2009, with additional field surveys conducted in early 2010.
22 The focus of these surveys was to determine the presence / absence of the state-listed
23 moth and butterfly species reported to inhabit the Project vicinity (based on historical

1 records) and to identify the presence / absence of the host-plant types that each species
2 typically uses. Thus, the surveys centered on both the collection of Lepidoptera species
3 at key sites and on the assessment of plant community types known to host the state-
4 listed Lepidoptera species.

5 **Visual Resource Survey and Photo-Simulations (Leaf-off and Leaf-on).**

6 Visual resources along and in the vicinity of the Project were investigated pursuant to the
7 Council's December 23, 2009 memorandum to routine applicants / participants,
8 concerning, among other issues, the consideration of scenic quality and aesthetic
9 attributes of land that might be affected by projects under the Council's jurisdiction. In
10 this memorandum, the Council advised applicants to use photographs of aesthetic areas,
11 particularly for use in photo-simulations, which depict the environmental setting in the
12 absence of deciduous vegetation (i.e., under "leaf off" conditions, which would tend to
13 represent "worst case" (or maximum) views of potential project facilities).

14 Accordingly, CL&P first identified potential scenic, recreational, open space, and
15 historic properties in the vicinity of the Project and subsequently conducted "leaf off"
16 field inspections of such areas. Field investigations were performed to photo-document
17 sites in April 2010, with follow-up field visits performed in December 2010, as well as
18 March and April 2011. Further, for comparative purposes, "leaf on" field investigations
19 and photo-documentation were conducted of the same sites in May, June, and August
20 2011. During certain of these field investigations, I was accompanied by Burns &
21 McDonnell personnel, who used special camera equipment to take photographs that were
22 then used to prepare photo-simulations of sites under both "leaf off" and "leaf on"
23 conditions.

1 **Cultural Resource Studies.** An assessment survey of cultural resources in the
2 Project vicinity was conducted in 2007-2008; the results of this study are reflected in the
3 cultural resources report included in the Application, Volume 3. In 2009-2010, an initial
4 reconnaissance survey, including field testing, was performed along approximately 90%
5 of the ROW areas that would be affected by Project facilities. In 2011-early 2012,
6 additional field investigations of the Project ROWs were performed, including
7 reconnaissance of the entire 36.8-mile Project route with Native American Tribal
8 representatives. The results of the more detailed field investigations are not provided for
9 public review in order to protect the integrity of cultural resource sites or areas of interest
10 to the Native American Tribal representatives. Instead, these survey results are provided
11 to the SHPO and the USACE.

12 **Constructability Reviews.** In early 2012, CL&P commissioned additional
13 constructability reviews of the Interstate ROWs. The purpose of these reviews was to
14 reassess the proposed locations and dimensions of potential clearing crew access routes,
15 construction access roads, and work pads (including structure sites, wire pulling sites, and
16 guard structure sites), taking into consideration the terrain and accessibility along the
17 Interstate route and recent experience with construction contractors on the GSRP and
18 MMP. These constructability reviews also were intended to verify and / or update
19 construction assumptions for CL&P's use in estimating temporary, permanent, and
20 secondary water resource impacts, which is critical for designing compensatory
21 mitigation, as required by the USACE.

1 The results of the 2012 constructability reviews affect certain of the
2 environmental impact analyses included in the December 2011 Application to the
3 Council. Subsequent sections of this testimony update these analyses, as appropriate.

4 **Q. In identifying and evaluating environmental resources in the Project**
5 **area, did CL&P consult with the public or representatives of the municipalities in**
6 **which the Project would be located?**

7 A. Yes. CL&P solicited public and agency input during the 2008 MCF and
8 2011 Supplemental MCF processes, as well as during other public forums, including
9 public meetings, open houses, and pre-application meetings with agencies such as the
10 USACE and CT DEEP. Environmental resource issues identified through such venues
11 have been and continue to be taken into consideration in the ongoing planning for the
12 Project, and in the environmental impact and mitigation analyses included in the
13 Application (Volume 1, Section 6).

14 **Q. Since the publication of the Application in December 2011, have other**
15 **consultations been held with any involved agencies regarding environmental**
16 **resource issues?**

17 A. Yes. On February 29, 2012, CL&P met with representatives of the
18 USACE and CT DEEP and conducted a field review of the ROW configuration options
19 across the federally-owned properties in the Mansfield Hollow area. In addition, in April
20 2012, CL&P and National Grid met with representatives of the USACE and U.S.
21 Environmental Protection Agency to discuss aspects of the Project's Application to the
22 USACE for a Section 404 Permit, pursuant to the Clean Water Act. CL&P anticipates
23 that the Section 404 application will be submitted to the USACE in May or June 2012.

1 **Q. Based on your work on the Section 404 permit application for the**
2 **Project, for the Connecticut portion of the Project, how does the environmental**
3 **information in that application compare to the information provided to the Council**
4 **in the December 23, 2011 Application?**

5 A. The USACE Section 404 Clean Water Act application necessarily focuses
6 on the Project's potential impacts to water resources. However, the baseline
7 environmental data presented for Connecticut in both applications is either the same or
8 very similar. In fact, the Connecticut portion of the Section 404 permit application
9 references CL&P's Application to the Council. The primary difference in the USACE
10 permit application is the inclusion of more specific water resource impact analyses, based
11 on the results of the constructability reviews performed along CL&P's Project ROWs in
12 the months subsequent to the submission of the Application to the Council. In addition,
13 the USACE permit application reflects the results of agency consultations conducted in
14 2012. This testimony serves to update the Council regarding these environmental
15 matters.

1

2 **3. ENVIRONMENTAL FEATURES ALONG THE PROPOSED ROUTE**

3 **Q. Please describe generally the Proposed Route of the Connecticut**
4 **portion of the Project and the predominant vegetative characteristics of the route.**

5 A. The 345-kV lines in the Connecticut portion of the Project are proposed
6 for location in an overhead configuration within CL&P's existing ROWs, all of which are
7 presently occupied by existing 345-kV transmission lines and, in some locations, 115-kV
8 and 69-kV transmission lines and 23-kV distribution lines. Along these existing ROWs,
9 the primary segments of the Proposed Route include:

- 10 • Card Street Substation in the Town of Lebanon to Babcock Hill Junction in the
11 Town of Coventry (2.8 miles);
- 12
- 13 • Babcock Hill Junction to Day Street Junction in the Town of Brooklyn
14 (approximately 21.4 miles, through portions of the towns of Coventry, Mansfield,
15 Chaplin, Hampton, and Brooklyn and including the two segments (totaling 1.4
16 miles) across the federally owned lands in the Mansfield Hollow area of
17 Mansfield and Chaplin);
- 18
- 19 • Day Street Junction to Lake Road Junction in the Town of Killingly (4.9 miles,
20 through portions of the towns of Brooklyn, Pomfret, and Killingly);
- 21
- 22 • Lake Road Junction to Lake Road Switching Station (0.2 mile in the Town of
23 Killingly); and
- 24
- 25 • Lake Road Switching Station to the Town of Thompson, Connecticut / Rhode
26 Island border interconnection to the proposed 345-kV transmission facilities to be
27 constructed, owned, and operated by The Narragansett Electric Company at the
28 Connecticut – Rhode Island (7.5 miles).
- 29

30 These ROWs vary in width from 250 to 400 feet, except for two segments that are 150
31 feet wide in the Mansfield Hollow area, and encompass approximately 1,386 acres.¹

¹ CL&P's existing Card Street and Killingly Substations and Lake Road Switching Station are located on upland sites devoted to utility purposes. Because the areas within the station fence lines do not provide habitat, the acreages presented in this discussion exclude these station areas.

1 Along portions of the ROWs, CL&P routinely manages vegetation to ensure consistency
2 with existing transmission line use and clearance requirements. The managed portions of
3 the ROWs range in width from approximately 100 feet to 350 feet, for a total of
4 approximately 456 acres that are under active CL&P management to promote scrub-
5 shrub or other low-maturing vegetative communities. The remaining 930 acres within
6 CL&Ps existing ROWs are currently unmanaged.

7 In addition to the 1,386 acres within CL&P's existing ROWs, 4.8 acres are contained
8 within the proposed expanded easement on the federally owned properties in the
9 Mansfield Hollow area. The vegetation within these 4.8 acres consists predominantly of
10 upland forest, with some open field / shrubland and forested wetlands located within the
11 proposed easement expansion areas in the Mansfield Hollow State Park in the Town of
12 Mansfield and within the Mansfield Hollow State WMA in the Town of Chaplin,
13 respectively.

14 Overall, the existing CL&P ROWs within which the Project route is located encompass
15 approximately 1,391 acres, including the approximately 4.8-acre proposed ROW
16 expansion in the Mansfield Hollow area. Of this total, approximately 498 acres (36%)
17 are presently forested (upland and wetland), including approximately 494 acres of
18 wooded areas within the existing, unmanaged portions of CL&P's ROWs and
19 approximately 4 acres of forest lands (upland and wetland) located within the proposed
20 area of ROW expansion on the federally owned property in the towns of Mansfield and
21 Chaplin. The remaining approximately 893 acres consists of open (old)-field, scrub-
22 shrub, agricultural, or other non-forested lands, including the vegetation along the
23 presently managed portions of CL&P's ROWs.

1 **Q. Please describe the principal types of environmental, land use, and**
2 **cultural resources that have been identified along the 36.8-mile Connecticut portion**
3 **of the Project.**

4 A. The maps in Volumes 9 and 11 of the Application illustrate the location of
5 the proposed 345-kV transmission facilities along CL&P’s ROWs, and identify features
6 along and in the vicinity of these ROWs, including CL&P-owned properties, principal
7 vegetation types, water resources, land uses, and transportation and utility corridors.
8 Other environmental and land-use data identified on the aerial photographs and/or
9 described in the Application are:

- 10 • Areas of steep slopes and rock outcrops;
- 11 • Residential, commercial, and industrial uses;
- 12 • Municipal boundaries;
- 13 • Municipal zoning classifications;
- 14 • Wetlands, watercourses, and floodplains;
- 15 • Public recreational, scenic, open space, and other protected areas, including
16 forests, parks, water supplies, hunting/wildlife management areas;
- 17 • Schools and community facilities; and
- 18 • Existing infrastructure facilities, including roads, railroads, pipelines, and
19 cable crossings.

20 **Q. Please describe the salient environmental features along the Proposed**
21 **Route in Connecticut.**

22 A. The proposed 345-kV transmission lines would be located predominantly
23 within CL&P’s existing ROWs, which are characterized by both shrub-scrub cover types
24

1 (consistent with utility use) and forested upland and wetland areas. For the most part, the
2 Interstate ROWs extend through undeveloped or sparsely populated areas. Land uses in
3 the vicinity of the ROWs consist predominantly of forested areas, interspersed with
4 agricultural land and scattered residential uses. The principal highways that intersect the
5 transmission line ROWs are U.S. Route 6; State Routes 66, 32, 195, 97, 169, and 101;
6 Interstate 395; State Routes 12 and 21; and U.S. Route 44.

7 The transmission line ROWs extend across 104 water bodies; of these, 54 are
8 perennial (including 13 lakes or ponds) and 50 are intermittent. The largest watercourse
9 along the route is the Quinebaug River, which the ROW traverses three times in the
10 towns of Killingly, Pomfret, and Putnam. The longest water crossing is the proposed
11 span of Mansfield Hollow Lake (approximately 600 feet). The Project ROW also crosses
12 the state-designated Stream Channel Encroachment Lines (“SCELS”) along the
13 Willimantic River, which forms the boundary between the towns of Coventry and
14 Mansfield.

15 In addition, the CL&P ROWs and the proposed 4.8-acre easement expansion in
16 the Mansfield Hollow area encompass 227 federal and state jurisdictional wetlands.
17 Along the Project ROWs, the boundaries of the federal and state jurisdictional wetlands
18 coincide in all but five wetlands; these five wetlands meet only state jurisdictional
19 wetland criteria.²

20 Because the construction, operation, and maintenance of the new 345-kV
21 transmission lines will not affect the entire width of the CL&P ROWs, not all of the 227
22 delineated wetlands will potentially be affected by the Project. Descriptions of all

² The state and federal wetland boundaries do not coincide in wetlands W20-5, W20-162, W20-164, W20-172, and W20-178; these wetlands are depicted on the Volume 9 and 11 maps.

1 wetlands and watercourses along CL&P’s ROWs are included in the *Inventory and*
2 *Delineation of Wetlands and Watercourses Report*, which is included in Volume 2 of the
3 Application.

4 **Q. Why were federal jurisdictional wetlands delineated?**

5 A. The boundaries of federal jurisdictional wetlands (the criteria for which
6 are slightly less stringent than the criteria for Connecticut jurisdictional wetlands) were
7 delineated as required for CL&P’s and National Grid’s Section 404 Application to the
8 USACE, New England District. This permit application is expected to be submitted to
9 the USACE in May or June 2012.

10 **Q. How many of the identified wetlands were identified as vernal pools**
11 **or support amphibian breeding habitat?**

12 A. During the field studies performed in both the spring of 2008 and 2011, a
13 total of 88 vernal pools and 29 amphibian breeding habitats were identified within and
14 adjacent to CL&P’s ROWs. The principal species observed in these areas included
15 spotted salamanders, spring peepers, gray tree frogs, green frogs, wood frog, fingernail
16 claims, and fairy shrimp. Table 5-5 in Volume 1, Section 5 of the Application lists the
17 species observed in each vernal pool and amphibian breeding habitat.

18 As described in the *Inventory of Vernal Pools and Amphibian Breeding Habitat*
19 report (included in Volume 4 of the Application) and as summarized in Volume 1,
20 Section 5.1.3.2.3 of the Application, the majority (80) of the 88 vernal pools located
21 along the Project ROWs are found in five towns: Mansfield (19 vernal pools), Brooklyn
22 (19 vernal pools), Putnam (15 vernal pools), Chaplin (14 vernal pools), and Hampton (13

1 vernal pools). Likewise, of the 29 amphibian breeding habitats identified, the majority
2 (19) are located along the ROWs in Chaplin (seven), Hampton (six), and Brooklyn (six).

3 **Q. How many of the identified vernal pools and amphibian breeding**
4 **habitats are located within the managed portions of CL&P’s ROWs?**

5 A. As illustrated on the Volume 11 maps, of the 88 vernal pools identified
6 during the field studies, 59 are located in whole or in part along portions of CL&P’s
7 ROWs that are presently managed. Of these 59 vernal pools, 10 are traversed by or
8 directly adjacent to CL&P’s existing on-ROW access roads. In addition, of the 88 vernal
9 pools, six vernal pools are located off the CL&P ROWs. The remaining 23 of the 88
10 vernal pools are located within portions of the ROWs that are not presently incorporated
11 into CL&P’s vegetation management program.

12 Likewise, of the 29 amphibian breeding habitats identified, 20 are located in
13 whole or in part along managed portions of CL&P’s ROWs. One amphibian breeding
14 habitat is located off-ROW near a proposed access road in the Day Street Junction
15 vicinity. Existing on-ROW access roads traverse seven amphibian breeding habitat areas.

16 **Q. Were any state-listed threatened, endangered, or amphibian species of**
17 **concern identified during the field surveys of vernal pools and amphibian breeding**
18 **habitats?**

19 A. No. Two obligate vernal pool species, the Eastern spadefoot toad and the
20 Jefferson salamander, are state-listed species. However, as described in Volume 1,
21 Section 5.1.3.2.3 (footnotes on pp. 5-32 and 5-23), neither of these species was observed
22 during the field investigations of the Project ROWs. Further, consultations with the CT

1 DEEP indicate that there are no known occurrences of either of these species in the
2 Project vicinity.

3 **Q. Are the Project ROWs in the vicinity of any federally designated**
4 **threatened or endangered species?**

5 A. No, based on consultations with the USFWS, no federally listed species
6 occur in the Project vicinity. However, the USFWS did indicate the New England
7 cottontail (*Sylvilagus transitionalis*), a candidate species³, is known to occur in the Town
8 of Lebanon. The New England cottontail inhabits scrub-shrubland habitats such as those
9 found on utility ROWs. Thus, the creation of additional shrubland habitat, as would
10 occur from the development of the new 345-kV transmission lines, would increase the
11 available habitat for this species.

12 **Q. Are any state-listed species known to occur in the Project vicinity? If**
13 **so, please summarize these and the status of CL&P’s consultations with CT DEEP**
14 **regarding such species.**

15 A. As a result of the initial consultations with the CT DEEP Natural Diversity
16 Data Base (“NDDB”), 26 state-listed species were identified as potentially occurring
17 within the Connecticut Project area. These included species of birds, moths, butterflies,
18 turtles, snakes, an aquatic snail, and dragonfly (as listed in Volume 1, Section 5 of the
19 Application). No state-listed amphibian species were reported to occur in the Project
20 vicinity (based on the NDDB data), and none were found during the vernal pool /
21 amphibian breeding habitat surveys conducted in 2008 and 2011.

³ The USFWS completed a status assessment for the New England cottontail and determined that federal listing is “warranted, but precluded”; i.e., the status of the species indicates that it should be listed but the listing is superseded by higher listing actions.

1 As recommended by CT DEEP, CL&P commissioned field surveys for moths,
2 butterflies, and birds; these surveys were conducted during 2008-2011. The results of the
3 surveys are summarized in the Application, Volume 1, Section 5. Survey reports are
4 included in Volume 4 of the Application.

5 As described in the Application, during the 2008 bird surveys, another state-listed
6 bird species of special concern (the Brown Thrasher) was identified in the vicinity of the
7 Project route; this species was not previously identified by the CT NDDB as occurring in
8 the Project vicinity. As a result of the moth / butterfly surveys, two additional state-
9 protected invertebrate species were found in the Project area: a butterfly species, the
10 *Persius duskywing (Erynnis persius)*, and buck moth (*Hemileuca maia*).

11 In January 2012, CL&P representatives consulted via teleconference with the CT
12 DEEP NDDB to review CL&P's data-sharing agreement with CT DEEP and to discuss
13 the process whereby the information obtained could be used to better determine potential
14 Project impacts and construction best management practices to mitigate such impacts.
15 The data-sharing agreement allows the NDDB to provide detailed, location data (in GIS
16 format) to CL&P regarding specific protected species found along CL&P ROWs.
17 However, procedures had to be worked out to allow the Interstate biologists to review the
18 detailed NDDB data, while assuring that species-specific locational information would
19 not be disseminated publicly in order to protect the species habitat.

20 Based on an initial review of the data-sharing information, it appears that fewer
21 species than the 26 originally identified species now may be known to inhabit areas that
22 overlap with the Project ROWs. CL&P is in the process of compiling additional
23 information regarding the status of the state-listed species in the Project area and

1 anticipates a coordination meeting with CT DEEP NDDDB representatives to assess the
2 need, if any, for further field studies and to discuss the types of construction BMPs and
3 mitigation measures most appropriate to protect state-listed species during the
4 construction of the Project.

5 **Q. Please summarize the designated public recreational use areas**
6 **traversed by the Project ROWs (e.g., state parks, state forests, WMAs, and trails).**

7 A. Along CL&P's ROWs, the new 345-kV transmission lines will traverse various
8 forests, parks, open space lands, recreational areas (including trails), and public trust lands.
9 These areas are described generally below.

- 10 • **Quinebaug and Shetucket Rivers Valley (The Last Green Valley) National**
11 **Heritage Corridor.** In 1994, Congress designated the Quinebaug and Shetucket
12 Rivers Valley a National Heritage Corridor, recognizing the region as a unique
13 national resource. In 1999, Congress enlarged the heritage corridor to include
14 Quinebaug and Shetucket River Valley towns in both Massachusetts and
15 Connecticut. As a result, the heritage corridor now encompasses 35
16 municipalities (26 in Connecticut). In 2009, Congress reauthorized the heritage
17 corridor designation through September 30, 2015. The heritage corridor is
18 managed by a non-profit organization, The Last Green Valley, Inc. ("TLGV").⁴
19 According to the National Park Service ("NPS"), the National Heritage Corridor
20 encompasses approximately 695,000 acres of land in northeastern Connecticut
21 and south-central Massachusetts. Within the National Heritage Corridor, citizens,
22 businesses, nonprofit cultural and environmental organizations, local and state
23 governments, and the NPS work together to preserve the region's cultural,
24 historical, and natural heritage (NPS 2006). The heritage corridor encompasses
25 the entire towns of Lebanon, Coventry, Mansfield, Chaplin, Hampton, Brooklyn,
26 Pomfret, Killingly, Putnam, and Thompson. Thus, along the Connecticut portion
27 of the Project, only the Town of Columbia is located outside the designated
28 heritage corridor.
29

⁴ The Quinebaug and Shetucket Rivers Valley of northeastern Connecticut and south-central Massachusetts also is referred to as "The Last Green Valley" in the sprawling metropolitan Boston-to-Washington corridor. This designation was coined because at night, the region appears distinctively dark amid the urban and suburban glow when viewed from satellites or aircraft. In the daytime, the green fields and forests confirm the rural character of the 1,085-square-mile area defined by the Quinebaug and Shetucket Rivers systems and the rugged hills that surround them. Forest and farmland make up approximately 78% of its 695,000-acres.

1 Connecticut has similarly designated this area as a state heritage corridor. The
2 state heritage corridor was designated in July 2009, pursuant to Public Act No.
3 09-221, which identifies a state heritage corridor as a place within Connecticut
4 that has historic, recreational, cultural, natural, and scenic resources that form an
5 important part of the state’s heritage. State agencies must take the resources of
6 the heritage areas into consideration in planning and project-decision making.
7

- 8 • **Airline State Park Trail.** The Airline State Park Trail, which is managed by CT
9 DEEP, is a 50-mile multi-use trail following the corridor of the former Airline
10 Railroad. It was declared a national recreational trail in 2001 and provides hiking,
11 biking and horseback riding opportunities. The trail stretches across 11 towns in
12 eastern Connecticut, extending from the Town of East Hampton to the Town of
13 Thompson. The Project route crosses the trail twice – once in Lebanon and once
14 in Hampton.
15
- 16 • **Hop River State Park Trail.** The Hop River State Park Trail, which is managed
17 by CT DEEP, is approximately 15 miles long, extending from the Andover town
18 line to the Willimantic River in the Town of Windham. The trail, which is
19 aligned along the Hop River through the towns of Coventry and Columbia,
20 provides opportunities for hiking, biking, horseback riding, and skiing. The
21 Project ROW crosses this trail in the Town of Coventry.
22
- 23 • **Mansfield Hollow State Park and WMA.** Mansfield Hollow State Park and
24 WMA, which are owned by the federal government (USACE) but managed by
25 CT DEEP, offer a variety of recreational opportunities, including fishing, hiking,
26 biking, and picnicking, as well as – in the WMA – hunting and dog training.
27 Mansfield Hollow Lake, located within the park, is the result of the dam built by
28 the USACE to control flooding in the Thames River Basin. The lake
29 encompasses approximately 460 acres and offers public boating and fishing
30 activities. The Project route follows CL&P’s existing ROW across approximately
31 0.8 mile of the park and 0.1 mile of the WMA within the Town of Mansfield, and
32 approximately 0.5 mile of the WMA in the Town of Chaplin. Because CL&P’s
33 existing ROW across these federally-owned properties is only 150 feet wide,
34 CL&P proposes to acquire additional easements from the USACE in order to
35 expand the ROW by 25 feet through Mansfield Hollow State Park and WMA in
36 the Town of Mansfield and by 35 feet through the WMA in the Town of Chaplin,
37 thereby allowing the development of the new 345-kV transmission line adjacent
38 to the existing 330 Line.
39
- 40 • **Nipmuck Trail.** The 14-mile Nipmuck Trail is part of the Connecticut Forest and
41 Parks Association’s Blue Blazed Hiking Trail, a system of 800 miles of trails.
42 The Connecticut portion of the Project crosses two branches of the trail in the
43 Town of Mansfield. The western branch of the trail crosses the ROW
44 approximately 9.3 miles west of State Route 195, while the eastern branch of the
45 trail is traversed within the Mansfield Hollow WMA on the east side of Mansfield
46 Hollow Lake.

- 1
- 2 • **Natchaug State Forest.** The Natchaug State Forest encompasses several
3 thousand acres, with the principal recreation area located approximately 5 miles
4 north of CL&P’s Project ROW in the Town of Eastford. CL&P’s Project ROW
5 crosses a small portion of one such Natchaug State Forest parcel in the Town of
6 Chaplin (near the Airline State Park Trail, Northern Section), and is located near
7 other isolated state forest parcels in both Chaplin and the Town of Putnam.
8
- 9 • **State Route 169.** State Route 169 is identified as a National Scenic Byway. The
10 National Scenic Byways Program is part of the U.S. Department of
11 Transportation, Federal Highway Administration. Under the program, the U.S.
12 Secretary of Transportation recognizes certain roads as National Scenic Byways
13 or All-American Roads based on their archaeological, cultural, historic, natural,
14 recreational, and scenic qualities. There are 125 such designated Byways in 44
15 states. The Project route crosses State Route 169 in the Town of Brooklyn.
16
- 17 • **Quinebaug River Trail.** This trail is located on CL&P-owned land in the Town
18 of Brooklyn near CL&P’s Brooklyn Substation and Day Street Junction. The trail
19 extends southeast of, and does not cross, the Project ROW.
20
- 21 • **Tracey Road Trail.** The Tracey Road Trail is a paved sidewalk-type urban trail,
22 identified by both CT DEEP and ConnDOT as a public trail, that extends adjacent
23 to Tracy Road in Killingly and Park Road in Putnam. The ROW spans the trail
24 along Park Road.
25

26 The Project ROWs also cross several state-designated greenways. The Willimantic
27 River, which was designated as a Connecticut Greenway in 2003, extends through nine
28 towns along the 25-mile length of the river. The CL&P transmission lines span the river
29 at the boundary of the towns of Coventry and Mansfield. The greenway is intended to
30 link existing open spaces and extend hiking trails and bicycle routes along the river. The
31 Hop River State Park Trail, Airline State Park Trail, Natchaug River, and Fivemile River,
32 which the ROWs cross, also are state-designated greenways.

33 **Q. Is the Project located within the state-designated coastal boundary?**

34 **A. No.**

1 **Q. Does the Project traverse any designated wild and scenic or protected**
2 **rivers?**

3 A. No.

4 **Q. Please summarize the status of the cultural resource studies of the**
5 **Proposed Route.**

6 A. CL&P initially commissioned a baseline cultural resource assessment
7 survey of the proposed Project, which was published in May 2008 (Raber Associates) and
8 submitted to the Connecticut SHPO and to the USACE [as part of the National Historic
9 Preservation Act, Section 106 Consultation process]. The study is included in Volume 3
10 of the Application, and also was provided in the 2008 MCF.

11 In 2011, CL&P retained PAL⁵ to perform archaeological field testing along the
12 Project ROWs and to assist in coordinating with representatives of potentially affected
13 Native American Tribes. In addition, between the late fall 2011 and the first quarter of
14 2012, CL&P representatives and archaeologists conducted field reconnaissance of the
15 entire 36.8-mile Project route with Native American Tribal representatives. Further,
16 CL&P coordinated with representatives of the Quinebaug-Shetucket Rivers Valley
17 National Heritage Corridor.⁶

18 As a result of the initial cultural resource investigations, a National Scenic Byway
19 (i.e., State Route 169 in the Town of Brooklyn) and 21 individual structures or historic
20 sites were identified within approximately 0.25 mile of the proposed Project ROWs.
21 Based on digital topographic profiles and simulations, adverse visual effects on these

⁵ PAL also is the cultural resources consultant for The Narragansett Electric Company and the New England Power Company on the Project.

⁶ Of the 11 towns along the Proposed Route, only the Town of Columbia is located outside of the heritage corridor.

1 cultural resources appear unlikely (simulations are shown in the 2008 *Historical and*
2 *Archaeological Assessment* report).

3 Subsurface archaeological reconnaissance investigations and surface inspections
4 along the CL&P ROWs that were conducted through the summer of 2010 identified
5 approximately 115 Native American sites, seven Euro-american sites, and five
6 unidentified human-built stone piles, walls, or rings. In consultation with the USACE,
7 the Connecticut SHPO, The Last Green Valley, Inc., (representing the Quinebaug-
8 Shetucket Rivers Valley National Heritage Corridor), and interested Native American
9 Tribes, CL&P is in the process of conducting additional archaeological investigations to
10 determine whether any of these sites are significant and thus potentially eligible for
11 listing on the National Register of Historic Places (“NRHP”)/State Register of Historic
12 Places (“SRHP”) and/or are of interest to the Native American Tribes. Reports
13 concerning the results of all additional archaeological investigations will be submitted to
14 the SHPO and the USACE. Such documents are not provided for public review due to
15 the sensitivities regarding the protection of cultural sites.

1 **4. POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES**

2 **Q. Please describe how the potential environmental effects of the Project**
3 **were identified and evaluated.**

4 A. The Project was evaluated in terms of the potential effects associated with
5 both construction activities (typically, short-term) and the operation and management of
6 the transmission lines and ROWs (typically, long-term). Both positive and negative
7 effects were identified and evaluated. For example, the removal of forested vegetation
8 along the ROWs will constitute a long-term change in habitat. As noted in the
9 Application (Volume 1, Section 6.1.3.1.1, p. 6-31), CL&P estimates that most of the
10 forest vegetation to be removed for the Project will consist of trees with diameter at
11 breast heights of greater than 5- to 6 inches (in total, approximately 56,000 trees).
12 However, the resulting conversion of such forested areas to shrubland, and the continued
13 management of the ROWs for such shrubland, will have a long-term positive effect on
14 the species that rely on this habitat type for food, cover, and nesting.

15 Potential Project impacts on environmental resources were estimated by applying
16 standard constructability assumptions regarding access routes through wetlands needed
17 for clearing crews, permanent and temporary on-ROW access roads, and anticipated
18 work pad (i.e., crane pads, pulling site pads, and guard structure pads) locations and
19 dimensions. These constructability assumptions were developed based on CL&P's recent
20 experiences in constructing other 345-kV transmission lines and taking into consideration
21 the specific characteristics of the Interstate ROWs. In general, the Interstate ROWs
22 extend through less developed areas, with fewer intersecting public roads, and larger
23 wetland complexes. In some areas, these features also coincide with challenging

1 topography. Further, along most of the Interstate ROWs, the new 345-kV transmission
2 lines will be aligned adjacent to the existing 345-kV lines, in never-managed portions of
3 the ROW. As a result, along most of the Interstate ROW segments, new on-ROW access
4 roads will have to be extended to reach new structure sites.

5 **Q. In the Application (Volume 1, Sections 3 and 6), CL&P describes how**
6 **impacts to environmental resources, especially wetlands and watercourses, were**
7 **avoided or minimized during the Project planning process. Since the publication of**
8 **the Application, have CL&P's constructability reviews resulted in any modifications**
9 **to the Project to further reduce impacts?**

10 A. Yes. Based on the results of the constructability reviews performed in
11 2012, CL&P anticipates that new 345-kV transmission line structures will be located in
12 only 19 wetlands. CL&P's previous analyses determined that of the 57 new transmission
13 line structures originally planned for location in wetlands, 33 could be relocated to
14 uplands. CL&P has now evaluated the 24 remaining structures that were planned for
15 siting in wetlands and determined that five of those could be relocated to uplands. In
16 total, the foundations for the 19 structures will result in less than 0.1 acre of permanent
17 fill in wetlands. The relocation of 38 structures to uplands avoids the placement of
18 approximately 0.05 acre of permanent fill in wetlands, as well as an additional amount of
19 fill that could have been required to establish permanent access roads to at least some of
20 these structure locations.

21 Along with these additional structure shifts to avoid wetlands, CL&P's Interstate
22 team also reviewed three proposed structure locations, which based on the Volume 11
23 maps, appeared to be oriented over small streams. These are at new 345-kV transmission

1 line structure Nos. 15 (Columbia), 135 (Hampton); and 291 (Putnam). Based on further
2 field constructability reviews, CL&P determined that these new structures could be sited
3 to avoid the stream channels at each location.

4 In addition, based on input received in early 2012 from the CT DEEP and
5 USACE, CL&P incorporated the 4.8-Acre Minimal ROW Expansion configuration into
6 the Proposed Route across the federally-owned lands in the Mansfield Hollow area. The
7 adoption of this configuration, rather than the 11-Acre ROW Expansion included in the
8 Application to the Council, minimizes the amount of additional easement required from
9 the USACE and reduces the amount of additional forested upland and wetland clearing
10 from approximately 11.2 acres to 6.9 acres. The environmental features of the 4.8-Acre
11 Minimal ROW Expansion option are described in greater detail in Section 5 of this
12 testimony.

13 **Q. What potential effects would the Project have on topography, geology,**
14 **and soil resources?**

15 A. The construction and operation of the new 345-kV transmission lines will
16 have negligible effects on topography and geology, and only minor, generally short-term,
17 and highly localized effects on soils. These effects will be concentrated in the vicinity of
18 work sites along the ROWs, or where earth-moving activities, if any, are required at off-
19 ROW Project support areas (e.g., off-ROW access roads, staging areas).

20 Generally, the construction of the Project will result in minor, localized changes
21 in elevation only at locations where grading and filling are required, such as at structure
22 sites where work pads must be established, or along access roads that must be improved
23 or developed to safely support construction equipment. Grading will not be required, in

1 most instances, where the terrain along the ROWs is relatively level, where no access
2 road improvements or new access roads are needed, or where the conductors span the
3 underlying terrain.

4 However, all activities involving soil disturbance will be performed in accordance
5 with the CL&P and state requirements (including CL&P's *2011 Connecticut Best*
6 *Management Practices Manual* and the *2002 Connecticut Guidelines for Soil Erosion*
7 *and Sediment Control*, as well as the CT DEEP's *General Permit for the Discharge of*
8 *Stormwater and Dewatering Wastewaters from Construction Activities*). CL&P will
9 prepare Project-specific *Stormwater Pollution Control Plans* that would incorporate these
10 requirements, including specifications for the deployment and maintenance of temporary
11 erosion and sedimentation control measures during construction.

12 Temporary erosion and sedimentation controls (e.g., silt fence, hay or straw bales,
13 water bars, or equivalent) will be installed, maintained, and routinely inspected during
14 construction. After the completion of structure and conductor installation along segments
15 of the ROWs, CL&P will implement permanent erosion controls, as appropriate to site-
16 specific conditions. Such measures may include not only re-seeding and mulching, but
17 also the use of biodegradable or other erosion control netting, installation of permanent
18 diversion berms, etc. The objective will be to stabilize the disturbed portions of the
19 ROW through revegetation and, if necessary, structural practices.

20 **Q. Will the Project affect soils classified as prime farmland soils or**
21 **farmlands of statewide importance?**

22 A. Yes. CL&P's existing ROWs along which the new 345-kV transmission
23 lines will be located encompass approximately 24 acres of soils considered to be prime

1 farmland (mostly in Pomfret, Hampton, and Columbia) and 30 acres of soils identified as
2 farmlands of statewide importance (mostly in Putnam, Killingly, Brooklyn, and
3 Hampton, and Mansfield). However, the Project will affect only portions of CL&P's
4 ROWs. As a result, approximately 20 acres of prime farmlands and 25.6 acres of
5 farmlands of statewide importance are expected to be temporarily affected by Project
6 construction. Because prime farmland soils or farmlands of state-wide importance are
7 typically characterized by minimal slopes, so, construction activities in such areas (e.g.,
8 access roads, crane pads) are expected to require minimal grading. New transmission
9 line structure foundations will result in permanent effects to approximately 0.1 acre of
10 prime farmland and 0.1 acre of farmlands of state-wide importance.

11 **Q. How will the Project impacts on these agricultural soils be minimized?**

12 A. As referenced in Volume 1, Section 4.1.8.1 (p. 4-23), during restoration of
13 work sites in actively used agricultural fields, soils may be decompacted by disking or
14 using equivalent methods.

15 **Q. What potential effects would the Project have on water resources**
16 **(wetlands, watercourses, and lakes)?**

17 A. Through Project design and construction planning, CL&P has attempted to
18 avoid or minimize the potential for adverse direct and indirect effects to wetlands and
19 other water resources to the extent practicable. As a result, most potential effects to
20 wetlands associated with the development of the new 345-kV transmission lines will be
21 short-term and highly localized, with the exception of tree removal within forested
22 wetlands, unavoidable structure placement within wetlands, and permanent access roads
23 (either new permanent roads or existing on-ROW access roads that must be expanded)

1 across wetlands. The Project also could cause short-term adverse effects on water quality
2 associated with the installation, use, and removal of these equipment / construction
3 vehicle access roads, as well as from potential erosion and sedimentation from upland
4 portions of the ROW into water resources.

5 Tree removal within forested wetlands (as required to allow construction and
6 thereafter to maintain safe distances between vegetation and the transmission line
7 conductors) will not represent any loss of wetland habitat, but will constitute a long-term
8 effect by converting the wetland cover type from forested to scrub-shrub and / or
9 emergent. In contrast, both the unavoidable placement of new transmission line
10 structures within wetlands and the development of permanent access roads across certain
11 wetlands and streams would involve fill, resulting in a long-term loss of wetlands

12 All of the watercourses that will be crossed by the Project are already spanned by
13 CL&P's existing overhead transmission lines. However, to construct the new 345-kV
14 transmission lines, temporary access roads (e.g., consisting of timber mats, culverts, or
15 equivalent) must extend across certain smaller watercourses. In addition, in some areas,
16 crane pads or other work pads will have to be placed over small streams. To maintain the
17 Project, in certain areas permanent access roads and culverts will be required. All
18 culverts (temporary and permanent) will be installed according to CL&P's BMPs. The
19 culverts will be sized to maintain normal downstream flows and avoid flooding.
20 Appropriate erosion and sedimentation control measures will be employed to avoid
21 and/or minimize impacts at watercourse crossings where temporary or permanent culverts
22 are proposed.

1 During construction, CL&P would require its construction contractors to adhere
2 to specific procedures designed to avoid or minimize adverse effects to water resources,
3 and to conform to the Project-specific conditions of the Council’s Certificate, CT DEEP
4 permits and certificates, and USACE Section 404 permit. The mitigation measures that
5 CL&P has identified thus far to minimize adverse effects on water resources are
6 described in Volume 1, Sections 4 and 6 of the Application.

7 The operation of the Project would not affect water resources, with the exception
8 of locations where transmission line structures or permanent access roads must be
9 unavoidably located in floodplains, across streams, or in wetlands. In such areas, the fill
10 associated with these facilities would represent a long-term effect. CL&P will coordinate
11 with the involved regulatory agencies (e.g., CT DEEP, USACE) to define appropriate
12 compensatory mitigation for such effects.

13 **Q. Have the potential Project effects on water resources been quantified?**

14 A. Yes. Table 6-2 in the Application summarized the temporary and
15 permanent effects to water resources, as well as secondary effects in terms of the
16 conversion of forested wetlands to scrub-shrub or emergent wetland cover types.
17 However, based on the 2012 constructability reviews, CL&P recently updated these
18 impact analyses.

19 **Q. Why did these impact analyses have to be updated?**

20 A. After reviewing the results of the 2012 constructability reviews of the
21 Interstate ROWs (performed by environmental and construction contractor personnel
22 involved in GSRP and MMP), CL&P determined that the construction footprint
23 assumptions presented in Section 4 of the Application should be modified to better reflect

1 the situations that could to be encountered during construction. The ability to safely
2 install the new 345-kV transmission lines, while working next to live 345-kV and other
3 high-voltage lines, is of paramount concern. Other factors that must carefully be
4 considered are terrain issues (e.g., need for grading to create safe, level work pads and
5 access roads), stability of wetlands (e.g., cohesiveness of wetland soils for supporting
6 equipment using planned access roads), and the provision of access / space for
7 construction equipment movements along the ROWs, including through wetlands as
8 needed, and particularly in remote areas.

9 **Q. What are the key construction assumptions that have changed**
10 **regarding potential water resource impacts?**

11 A. The primary changes to the assumptions presented in the Application
12 (Volume 1, Section 4 and Section 6.1.2.2) are as follows:

- 13
- 14 • Temporary impacts have be estimated for the use of on-ROW “access routes”
15 (e.g., timber mats or equivalent) to be used only by clearing crews to traverse
16 emergent marsh and scrub-shrub wetlands (where other access roads are not
17 developed). Such access routes will be needed for clearing crews to reach some
18 areas along the ROWs where forest vegetation must be removed. Such temporary
19 access routes are now assumed to be 20 feet wide. The temporary impact
20 estimate for clearing access routes across emergent and scrub-shrub wetlands was
21 requested by the CT DEEP and USACE.
22
 - 23 • Access roads (temporary and permanent) are assumed to have a 20-foot-wide
24 travelway and a total 25-foot-wide footprint (including road shoulders). In the
25 Application, a minimum travel surface of 12 to 16 feet, with a total impact area of
26 20 feet, was assumed. The wider access road impact area of 25 feet is assumed to
27 account for terrain (principally slope and wetland) issues along the Interstate
28 ROWs, and to allow a conservative estimate of water resource impacts in
29 particular. CL&P does not anticipate that all access roads will necessarily have an
30 impact area of 25 feet wide.
31
 - 32 • Typical (tangent) crane pad dimensions are assumed to be 100 feet by 120 feet,
33 rather than the 100 feet by 100 feet dimensions assumed in the Application.
34

- Guard structures are assumed to require temporary work pads of approximately 50 feet by 80 feet, with an associated 20-foot-wide temporary access road. In the Application, an impact area was assumed only for the placement of a temporary guard structure (i.e., pole area of 10 feet by 10 feet), without accounting for the potential need for a work pad.

Q. How do the revised constructability assumptions affect the estimated Project impacts on water resources?

A. The revised assumptions change the estimated temporary and permanent water resource impacts, as presented in the Application, Volume 1, Table 6-2. The primary changes are to the temporary water resource effects that will result from the increased dimensions of the access roads and work pads.

Table 6-2, with changes incorporated, is reproduced as follows:

Estimated Surface Area of Waters of the United States Potentially Affected by the Proposed Transmission Lines (Temporary and Permanent Effects) and Total Secondary Effects of Forested Wetland Conversion to Scrub-Shrub or Emergent Wetland Types

PROJECT ACTIVITY	ESTIMATED TEMPORARY EFFECT (ACRES)	ESTIMATED PERMANENT EFFECT (ACRES)
Access Roads	8.4	1.0
Work Pads**	18.0	0
Guy Easements	0.9	<0.1
Vegetation Clearing Access Routes	7.6	
Structure Foundations	<0.001	<0.1
Total Estimated Primary Wetland Effects (Fill)	35.1	1.1
Total Estimated Secondary Wetland Effects: Conversion of Existing Forested Wetlands to Scrub-Shrub or Emergent Marsh Habitat from vegetation removal and management for the Life of the Project		38 acres (federal wetlands) 1.9 acres (state wetlands)

Notes:

This table provides estimates of (1) permanent effects (e.g., permanent fill at structure sites and for new and expanded access roads) and (2) temporary effects (e.g., work pads, temporary access roads, or temporary guy easements). Vegetation removal is a secondary effect and all of the permanent and temporary effects, as noted above in (1) and (2) were subtracted to obtain this estimated secondary effect (i.e., acres of forested wetland clearing not otherwise accounted for in other impact categories).

** No work pads are anticipated to be left in wetlands. In addition to effects to Waters of the United States, an estimated 0.4 acre of state wetlands would be temporarily affected as a result of the installation of crane pads. Portions of the following wetlands do not meet the three-parameter criteria for federal jurisdictional wetlands, and are solely state jurisdictional: W20-5, W20-162, W20-164, W20-172, and W20-178 as shown on the maps in Volumes 9 and 11.

1

2 **Secondary impacts.** Based on the 2012 constructability analyses, the Project will
3 result in approximately 38 acres of secondary impacts in terms of forested vegetation
4 clearing. This 38 acres consists of forested wetlands within which trees must be
5 removed, but will not otherwise be affected by the Project. Approximately 12 acres of
6 forested wetland vegetation will be cleared in areas that will subsequently be used for
7 temporary construction work areas or affected permanently by structure foundations or
8 access roads. These 12 acres of forested wetland vegetation effects are accounted for
9 under the permanent and temporary impact categories. Overall, approximately 50 acres
10 of forested wetland vegetation will be removed along the Project ROWs. This will not
11 represent a net loss of wetland habitat, but rather a long-term change in wetland cover
12 type as these existing forested wetlands will be managed as scrub-shrub or emergent
13 wetland types.

14 **Q. Why did CL&P modify these constructability assumptions and,**
15 **therefore, the water resource impact estimates?**

16 A. Given the terrain and water resources along the Interstate ROWs, CL&P
17 wanted to provide a basis for quantifying realistic, yet conservative, water resource
18 impacts. Water resource impacts must be defined to provide a basis for the design of an
19 appropriate compensatory water resource mitigation program to offset the Project's
20 potential permanent, temporary, and secondary effects. CL&P's compensatory
21 mitigation program for the Connecticut portion of the Project will be developed in
22 accordance with federal and state requirements.

1 **Q. In your opinion, will all of the Project’s access roads, crane pads, and**
2 **guard structure sites (in both upland and wetland areas) be constructed pursuant to**
3 **the new constructability assumptions?**

4 A. Not necessarily. The dimensions of access roads, crane pads, and other
5 work pads will vary, based on site-specific conditions. Some of these temporary work
6 areas will likely be smaller than indicated in the assumptions, whereas others may have to
7 be larger. This type of detailed design information will be provided in the Project D&M
8 Plans.

9 **Q. If the constructability assumptions are applied throughout the**
10 **Project, what are the changes from the impacts to water resources estimated in the**
11 **Application?**

12 A. CL&P’s additional constructability reviews resulted in a decrease in
13 permanent water resource impacts (fill) from 1.5 acres to 1.1 acres. However, potential
14 temporary water resource impact estimates increased from 8.9 acres in the Application to
15 35.1 acres, as presented in the new constructability assumptions. All temporary water
16 resource impacts will be limited in duration, with all affected wetlands and watercourses
17 restored as the final phase of Project construction.

18 **Q. How will the Project affect the SCEL along the Willimantic River?**

19 A. The new 345-kV transmission line will span the Willimantic River SCEL.
20 No new 345-kV structures or access roads will be located within this SCEL. As a result,
21 the Project will not result in the placement of any permanent fill within the SCEL. Forest
22 vegetation along the ROW will have to removed, however, along both sides of the SCEL.

1 **Q. Overall, how much forested vegetation will have to be cleared for the**
2 **Project?**

3 A. After incorporating the 4.8-Acre ROW Expansion in Mansfield Hollow
4 (which reduces forest clearing by approximately 5 acres), the Project will entail the
5 removal of an estimated 268 acres of forested vegetation (upland and wetland). This
6 includes approximately 218 acres of upland forest and 50 acres of palustrine (mostly
7 deciduous) wetland forest.

8 **Q. You stated that an estimated 56,000 trees with diameter breast height**
9 **greater than 5-6 inches will be removed as a result of the Project. Please clarify how**
10 **this number of trees relates to the forested area in Connecticut as a whole.**

11 A. As described in the Application (Volume 1, Section 6, p. 6-31),
12 Connecticut has approximately 1.8 million acres of forest, with 225 million trees
13 estimated to be over 5 inches diameter breast height. The trees that would be removed as
14 are result of the Project represent 0.015% of the state's total trees.

15 **Q. How will the conversion of these forested areas affect vegetation and**
16 **wildlife resources?**

17 A. Because the Project would be along existing ROWs, the effects on
18 vegetation and wildlife resources would be limited and in some respects would be
19 positive. Although certain vegetation would have to be removed to safely accommodate
20 the construction and operation of the new 345-kV transmission lines, the vegetation types
21 found along the ROWs are common in the region and vegetation removal would
22 represent a negligible overall impact on wildlife habitats and populations.

1 Further, the creation of additional shrubland habitat (and the preservation of such
2 existing habitat) along the managed CL&P ROWs would represent a long-term positive
3 effect because shrubland habitat (like any other early successional habitats) is otherwise
4 declining in New England as a result of various factors (e.g., development, ecological
5 succession, absence of fire). In Connecticut, transmission line ROWs are considered a
6 major source of shrubland habitat.

7 **Q. What effect would the Project have on vernal pools?**

8 A. The locations of vernal pools along the Project ROWs are illustrated on
9 the Volume 11 maps. Tables 5-5 and 6-5 in Volume 1 of the Application describe the
10 species observed in vernal pools and the potential effects to vernal pools, respectively.
11 However, based on the 2012 constructability reviews, CL&P has attempted to further
12 minimize potential impacts to vernal pools. These effects are summarized in Table LFM-
13 1. As this table indicates, no new transmission line structures will be located in vernal
14 pools. However, existing on-ROW access roads requiring improvements for construction
15 will impact four vernal pools. Permanent on-ROW access road improvements are
16 proposed in MA-6-VP and CH-14-VP. Temporary work pads for Project construction
17 will affect four vernal pool habitats (BR-13-VP, BR-14-VP, BR-19-VP, and PU-10-VP).
18 Additionally, tree removal along the ROW will be required in or near 30 vernal pools.

Table LFM-1: Summary of Potential Effects to Vernal Pools

Town and Volume 2A Mapsheet Number	Wetland Number	Vernal Pool (VP) Number ¹	Existing Conditions		CL&P's Proposed Project Facilities and Tree Removal			
			Structures or Guy Anchors Located in Vernal Pool	Access Roads Located in Vernal Pool	Temporary Work Pad Located in Vernal Pool	Permanent Structures or Guy Anchors Located in Vernal Pool	Access Road Impacts Located in Vernal Pool	Tree Removal (Secondary Impact) Required in Vernal Pool (acres)
Columbia								
5	W20-9	CO-2-VP						<0.01
Mansfield								
18	W20-43	MA-2-VP						<0.01
18	W20-43	MA-3-VP						0.05
19	W20-43	MA-6-VP		Yes			Yes Permanent	<0.01
19	W20-43	MA-7-VP						<0.01
22	W20-50	MA-9-VP						0.04
23	W20-53	MA-10-VP						0.10
31	W20-64	MA-17-VP						<0.01
Chaplin								
38	W20-70	CH-1-VP						0.24
38	W20-72/73	CH-2-VP						0.03
41	W20-81	CH-6-VP						0.24
41	W20-81	CH-7-VP		Yes			Yes Temporary	
41	W20-81	CH-8-VP		Yes			Yes Temporary	
42	W20-83	CH-9-VP		Yes			Yes Temporary	
45	W20-87	CH-13-VP						0.01
46 and 47	W20-89	CH-14-VP		Yes			Yes Permanent	
Hampton								
50	W20-94	HA-1-VP						0.17

Town and Volume 2A Mapsheet Number	Wetland Number	Vernal Pool (VP) Number ¹	Existing Conditions		CL&P's Proposed Project Facilities and Tree Removal			
			Structures or Guy Anchors Located in Vernal Pool	Access Roads Located in Vernal Pool	Temporary Work Pad Located in Vernal Pool	Permanent Structures or Guy Anchors Located in Vernal Pool	Access Road Impacts Located in Vernal Pool	Tree Removal (Secondary Impact) Required in Vernal Pool (acres)
52 and 53	W20-98	HA-2-VP		Yes			Yes Temporary	
53	W20-100	HA-3-VP						0.18
59	W20-113	HA-7-VP						0.02
Brooklyn								
66	W20-123	BR-1-VP						0.02
66	W20-125	BR-3-VP						0.07
68	W20-127	BR-4-VP						0.01
70	W20-130	BR-6-VP						0.48
72	W20-137	BR-8-VP						0.01
72	W20-138	BR-11-VP						0.09
74	W20-140	BR-13-VP			Yes			0.02
74	W20-140	BR-14-VP			Yes			<0.01
74	W20-143	BR-15-VP						0.13
83	W20-154	BR-17-VP						0.04
86	W20-158	BR-19-VP			Yes			
Putnam								
118	W20-188	PU-6-VP						0.04
120	W20-192	PU-8-VP						0.14
122	W20-195	PU-10-VP			Yes			0.17
124	W20-197	PU-13-VP						0.03
124	W20-197	PU-14-VP						0.70

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1 **Q. What effect would the Project have on amphibian breeding habitat?**

2 A. As described for vernal pools, CL&P has attempted to minimize adverse
3 effects to amphibian breeding habitat to the extent practicable. However, as illustrated on
4 the Volume 11 maps, certain of the amphibian breeding habitats encompass large wetland
5 complexes, which extend along and across the Project ROWs and therefore cannot be
6 avoided entirely. Table LFM-2 summarizes the potential effects to amphibian breeding
7 habitat, based on the 2012 constructability reviews.

Table LFM-2: Summary of Potential Effects to Amphibian Breeding Habitats

Town and Volume 11 Mapsheet Number	Wetland Number	Amphibian Breeding Habitat (ABH) Number ¹	Existing Conditions		CL&P's Proposed Project Facilities		
			Structures or Guy Anchors Located in ABH	Access Roads Located in ABH	Temporary Work Pad Located in ABH	Permanent Structures or Guy Anchors Located in ABH	Access Road Impacts Located in ABH
Coventry							
12/13	W20-30	CV-1-ABH					
13	W20-31	CV-2-ABH					
Chaplin							
36/37	W20-68	CH-1-ABH					
40	W20-77	CH-2-ABH	Yes (9099 / 9100)		Yes		Yes
41	W20-81	CH-3-ABH		Yes			Yes
44	W20-86	CH-4-ABH					
46	W20-88	CH-5-ABH		Yes			Yes
47	W20-89	CH-6-ABH		Yes			Yes
47/48	W20-91	CH-7-ABH	Yes 9119		Yes		
Hampton							
54	W20-100	HA-1-ABH			Yes		Yes
54	W20-100	HA-2-ABH					
58/59	W20-112	HA-3-ABH					Yes
59	W20-116	HA-4-ABH					
60	W20-117	HA-5-ABH					
Brooklyn							
63/64	W20-120	BR-1-ABH				Yes	
65	W20-122	BR-2-ABH		Yes			Yes
65	W20-122	BR-3-ABH		Yes	Yes	Yes	Yes
73	W20-139	BR-4-ABH					
81/82	W20-153	BR-5-ABH					Yes
Pomfret							
95	W20-162	PO-1-ABH					Yes

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Killingly							
99/100	W20-169	KI-1-ABH					Yes
Putnam							
118	W20-188	PU-1-ABH					
119	W20-191	PU-3-ABH			Yes	Yes	Yes
126	W20-198	PU-4-ABH					
Thompson							
127-129	W20-203	TH-1-ABH		Yes	Yes		Yes

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1 **Q. In your opinion, does the probable environmental impact of the**
2 **Interstate facilities alone and cumulatively with other existing facilities, conflict with**
3 **the policies of the state concerning, the natural environment, ecological balance,**
4 **public health and safety, scenic, historic and recreational values, forests and parks,**
5 **air and water purity and fish, aquaculture and wildlife?**

6 A. No, for the reasons discussed in my testimony.
7

8 **Q. Will the proposed Project be consistent with land-use plans and**
9 **policies?**

10 A. Yes.

11 **Q. Have you reviewed the consistency of the Project with the Federal**
12 **Power Commission’s (now the Federal Energy Regulatory Commission’s)**
13 **“Guidelines for the Protection of Natural Historic Scenic and Recreational Values in**
14 **the Design and Location of Rights-of-way and Transmission Facilities”?**

15 A. Yes. The Guidelines advocate the collocation of new transmission lines
16 on existing ROWs; the avoidance or minimization of environmental impacts where
17 practical; and the use of good utility practice in the design and construction of overhead
18 transmission lines. The proposed Project is consistent with these guidelines, which are
19 incorporated into the Council’s regulations and standards adopted pursuant to
20 Connecticut General Statutes Section 16-50t.

21 **Q. How would CL&P minimize effects on recreational areas along the**
22 **ROWs as a result of the Project construction and operation?**

23 A. As discussed in the Application, CL&P will consult with the
24 representatives of the affected recreational areas to identify site-specific mitigation

1 measures, including possible scheduling of construction work to avoid key recreational
2 use periods and ROW restoration measures appropriate to the recreational uses.

3 **Q. What effects would the Project have on visual resources?**

4 A. To assess the potential effects of the new 345-kV transmission lines on the
5 visual environment, CL&P conducted extensive visual resource analyses, during different
6 seasons under both “leaf off” and “leaf on” conditions. These analyses included photo-
7 graphic documentation, as well as the preparation of photo-simulations of the ROWs with
8 the new 345-kV lines installed.

9 As described in detail in the Application (Volume 1, Sections 5 and 6; Volume 8),
10 in general, the impact of the new lines on visual resources would be incremental because
11 the proposed Project would be aligned along existing ROWs (where the overhead
12 transmission lines have been part of the landscape for decades) and because – for the
13 most part -- the new structures are expected to be similar in appearance to the existing
14 structures. For the most part, views of the proposed transmission line structures from
15 designated scenic areas and public recreational use areas will be limited as a result of the
16 combination of distance from the ROW, topography, dense vegetative cover, and/or
17 intervening land development.

18 The long-term effect on visual resources in any particular area also would depend
19 on various factors, such as:

- 20 • The appearance (type and height) of the transmission structures that
21 presently occupy the ROWs compared to the new 345-kV line structures
22
- 23 • The extent to which vegetation presently screens the ROW and existing
24 structures from view
25
- 26 • The amount of vegetation clearing that would be required to accommodate
27 the new transmission line facilities

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- The extent to which topographic conditions limit views of the ROWs
- The land uses near the ROWs
- Individual public perceptions concerning views of the transmission line ROWs and lines

9 The photo-simulations prepared for the Project illustrate that the new transmission
10 lines will have a focused, incremental effect on the visual environment at certain visual
11 sites that are crossed by the CL&P ROWs. Because of the juxtaposition of the ROW
12 alignment, topography, and vegetation, views of the new transmission lines (and the
13 ROW in general) will be most apparent in the foreground at the actual ROW crossing,
14 whereas distant views will be blocked.

15 **Q. What is your opinion regarding the visual effects of the Project?**

16 A. Changes to the landscape are largely a matter of individual perceptions
17 and value judgments. However, the new 345-kV transmission lines would alter views
18 from certain specific locations, particularly where the ROW crosses public roads.
19 Vegetation clearing required for the new 345-kV line will make portions of the existing
20 and new transmission line structures more visible in some locations. During the growing
21 season, when trees are leafed out, the structures will generally be less visible than in the
22 winter months. In addition, at certain vantage points, particularly where taller delta or
23 vertically-configured monopole structures are proposed, the transmission line structures
24 will be more visible from a panoramic landscape perspective. Generally, however, due to
25 the location of the existing ROWs, and the screening afforded by topography and
26 vegetation, the development of the new 345-kV transmission lines will not be apparent as
27 a new dominant landscape element.

1 **Q. What effect will the construction and operation of the Project have on**
2 **transportation and traffic patterns?**

3 A. The construction of the Project would result in limited and localized
4 effects on transportation patterns associated with the movement of construction
5 equipment and vehicles to and from the ROWs. The operation of the Project would have
6 no effect on transportation or traffic.

7 For the most part, the public road network in the Project region affords access to
8 the ROWs for construction vehicles and equipment. During the construction period,
9 construction workers traveling to and from work sites, as well as the movement of
10 construction equipment, would cause temporary and localized increases in traffic
11 volumes on local roads near the transmission line ROW. CL&P would employ police
12 personnel as necessary to direct traffic at construction work sites along roads (e.g., where
13 the ROWs cross public roads), as needed, and would erect appropriate traffic signs to
14 indicate the presence of construction work zones.

15 In general, equipment and vehicular movements along the ROWs would be via
16 on-ROW access roads. These existing access roads are depicted in the maps in Volumes
17 9 and 11.

18 The proposed transmission line conductors (wires) would span various roads.
19 None of these overhead spans would affect traffic patterns, except possibly during the
20 limited times when the conductors are installed. To install the conductors over public
21 roads safely, guard structures (or vehicles) would be positioned on either side of the
22 crossing.

1 **Q. How would CL&P minimize or avoid adverse Project effects on**
2 **cultural resources?**

3 A. CL&P is committed to conformance to federal and state regulatory
4 requirements for protecting significant cultural resources sites. Accordingly, CL&P and
5 its consultants (e.g., PAL) will continue to work with the SHPO, USACE, and the Native
6 American Tribes to avoid or minimize adverse effects on significant sites. As PAL
7 conducts more intensive cultural resource field surveys to determine the significance of
8 sites identified along the ROWs, some modifications to construction plans (e.g., work pad
9 dimensions, access road configurations) may be required to avoid or minimize impacts to
10 NRHP/SRHP sites. Similarly, some modifications may be necessary to address Native
11 American concerns regarding tribal areas of interest.

12 **Q. Please summarize how potential noise effects would be minimized**
13 **during the construction and operation of the Project.**

14 A. The construction of the Project will result in short-term and highly
15 localized increases in sound levels associated primarily with the operation of construction
16 equipment, truck movements, earth moving activities, structure foundation preparation,
17 structure installation, and work associated with the modifications of the Card Street
18 Substation, Lake Road Switching Station, and Killingly Substation. Such construction-
19 generated noise will be localized to the vicinity of construction work sites and typically
20 will occur during the daytime. Construction contractors will be required to properly
21 maintain vehicles to prevent excessive noise emissions. However, some construction
22 activities, such as heavy equipment operation in general and any uses of imploding

- 1 connectors in certain areas will result in short-term and localized increased in ambient
- 2 sound levels.

1 **5. THE MANSFIELD HOLLOW AREA**

2 **Q. Please describe your involvement in the environmental analyses for**
3 **the Mansfield Hollow area of the Project.**

4 A. I have been involved in analyzing the configuration options across the
5 Mansfield Hollow area, as well as the route variations that would avoid the Mansfield
6 area entirely (i.e., the Willimantic South Variations) since 2008. I initially assisted in the
7 analysis of the environmental resources along the route variations, as well as along the
8 ROW through the federally-owned lands in Mansfield Hollow. In addition, I worked
9 with CL&P representatives to compile preliminary information regarding the routing
10 options and transmission line design configurations for Mansfield Hollow for submission
11 to the USACE.

12 Subsequently, I have been involved in the environmental aspects of the Mansfield
13 Hollow evaluations, which are chronicled in the Application, Volume 1, Section 10.3. In
14 February, 2012, I was part of the Interstate team that conducted a field review of the
15 Mansfield Hollow area with representatives of the USACE and CT DEEP, and I have
16 since been working with CL&P, Burns & McDonnell, and the USACE to compile
17 information for the USACE's Environmental Assessment of the proposed 4.8-Acre
18 Minimal ROW Expansion.

19 **Q. From an environmental perspective, how does the 4.8-Acre Minimal**
20 **ROW Expansion compare to the 11-Acre Easement Expansion that was presented**
21 **as part of the Proposed Route in the Application?**

22 A. The 4.8-Acre option will result in fewer overall environmental impacts,
23 due simply to the fact that it will require less acreage and less forested vegetation

1 removal. The option will result in slightly less impacts to water resources; however, any
2 of the Mansfield Hollow configuration options would result in some unavoidable impacts
3 to wetlands and watercourses along the 0.5-mile segment through the WMA in Chaplin.

4 Because the 4.8-Acre option will still allow the new 345-kV transmission line to
5 be installed parallel to the existing 330 Line (without taking the 330 Line out of service
6 and relocating it), the time required for construction within the Mansfield Hollow State
7 Park and WMA will be approximately the same as for the 11-Acre Easement Expansion.
8 Thus, any temporary effects on recreational users would be similar. In contrast, the No
9 ROW Expansion Option presented in Volume 1, Section 10 of the Application would
10 take approximately twice as long to construct due to the more complicated sequence of
11 construction activities that would be required.

12 The potential environmental effects associated with the 11-Acre ROW Expansion
13 Option and the 4.8-Acre Minimum ROW Expansion Option were compared in the
14 Application, Section 10, Table 10-12. This comparison was based on preliminary design
15 information for both configurations. Table 10-2 has been updated to reflect the use of the
16 4.8-Acre Minimal ROW Expansion as the proposed option and is included here as Table
17 LFM-3 for ease of reference.

18 As this table shows, compared to the 11-Acre ROW Expansion Option, the 4.8-
19 Acre option will minimize both the additional easement acreage required from the
20 USACE and the removal of forested vegetation needed to install the new 3271 Line.
21 Compared to the 4.8-Acre Expansion, the use of the 11-Acre ROW Expansion Option
22 would require 6.2 additional acres of easement from the USACE, would result in slightly

1 greater temporary effects on wetlands, and would involve the conversion of
 2 approximately 1.2 more acres of forested wetlands to scrub-shrub wetlands.

3 **Table LFM-3 (updates Table 10-12): Comparison of Proposed Action (4.8-Acre Minimal ROW**
 4 **Expansion) and 11-Acre ROW Expansion Option**

Factor	Segment 1		Segment 2	
	11-Acre ROW Expansion Option	Proposed Action	11-Acre ROW Expansion Option	Proposed Action
Location, Design, and Appearance				
Length (miles)	1.0 (0.9 mile federal land)	1.0 (0.9 mile federal land)	0.5	0.5
New ROW Required (acres)	5.8 acres	2.6 acres	5.2 acres	2.2 acres
Structure Height Range (feet) (Existing 330 Line Structure Height Ranges = 106-137 feet Segment 1; 68-81 feet Segment 2)	115-145	125-155	70-85	115-135
Environmental Resources				
Water Resources				
Waterbody crossings (number)	1 (Mansfield Hollow Lake)	1 (Mansfield Hollow Lake)	3 Natchaug River (S20-22); S20-23; S20-24	2 Natchaug River (S20-22); S20-24
Wetlands, Temporary Effects (acres)	0	0	0.4 acre	0.3 acre
Wetlands, Permanent Effects (fill) (acres)	0	0	< 0.1 acre	< 0.1 acre
Vegetation				
Wetlands, Forested Vegetation Removal (acres)	< 0.1 acre	< 0.1 acre	2.7 acres	1.5 acres
Wetlands, Scrub-Shrub Vegetation Potentially Affected (acres)	< 0.1 acre	< 0.1 acre	2.3 acres	2.3 acres
Upland Forested Vegetation Removal (acres)	6.0 acres	3.7 acres	3.5 acres	1.7 acres
Upland Scrub-Shrub Vegetation Potentially Affected (acres)	7.6 acres	7.3 acres	4.7 acres	4.7 acres
Open Field Upland Vegetation Potentially Affected (acres)	2.3 acres	2.1 acres	0	0
Biological Resources				
Vernal Pools Potentially Affected	0	0	2 (CH-1-VP, CH-2-VP)	2 (CH-1-VP, CH-2-VP)
State-listed Species Habitat Traversed	1	1	1	1
Visual Resources				
Difference in existing and proposed structure heights (feet)	7 feet shorter to 24 feet taller	7 feet shorter to 43 feet taller	13 shorter to 13 feet taller	27 to 59 feet taller

5
 6 Notes: Potential environmental effects are estimated based on preliminary locations of structures, work pads, and access roads, as
 7 well as on estimated vegetation removal limits and the use of standard-sized access roads and work pads. Vegetation types were
 8 determined by land use data and delineated wetland boundaries. Both the Proposed Action and the 11-Acre ROW Expansion Option
 9 impact analyses assume that the existing 330 Line is left in place, and that the forested areas south of Line 330 (totaling approximately
 10 3.5 acres) would not be affected.

1 **Q. Have any additional environmental analyses been performed to**
2 **compare the 4.8-Acre and 11-Acre configuration options?**

3 A. Yes. Because the 4.8-Acre ROW Expansion and the 11-Acre ROW
4 Expansion Option would be comparatively similar in terms of cost, in 2012, CL&P
5 conducted additional constructability reviews of each configuration. These
6 constructability reviews involved field investigations of the Segment 1 and Segment 2
7 ROW to assess site-specific requirements for work pads, pulling site pads, and access
8 roads (locations and width), based on ROW terrain and grades, equipment turning radii,
9 presence of wetlands and watercourses, and the anticipated structure sites for the
10 implementation of the two configuration options. The new constructability assumptions,
11 as discussed previously in this testimony, were applied as appropriate to the site-specific
12 terrain along Segments 1 and 2.

13 These constructability reviews determined that whereas no permanent or
14 temporary impacts to water resources would occur along Segment 1, under either
15 configuration option, the following temporary construction effects would occur along the
16 ROW in Segment 2:

- 17
- 18 • Access road widths would have to be approximately 30 feet in some locations,
19 including across wetlands;

 - 20 • A pulling site pad would have to be located in wetland W20-76; and

 - 21 • Work pads for transmission line structures would have to be located partially
22 within wetland W20-76.

23 Taking these constructability factors into consideration, the 11-Acre ROW Expansion
24 Option would result in approximately 1.3 acres of temporary impacts to wetlands,

1 whereas the 4.8-Acre Minimal ROW Expansion would result in approximately 1 acre of
2 temporary impacts. For either configuration, two structures would have to be located in
3 wetland W20-76, resulting in permanent impacts associated with the fill for structure
4 foundations. The permanent fill impacts under either configuration would be minor (less
5 than 0.1 acre).

6 Table LFM-4, below, summarizes the environmental effects of the use of the 4.8-
7 Acre Minimal ROW Expansion through the Mansfield Hollow area, incorporating the
8 results of the more detailed 2012 constructability reviews. As this table shows, compared
9 to the 11-Acre ROW Expansion Option, this option will avoid or minimize
10 environmental impacts to the extent feasible.

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Table LFM-4: Summary of Environmental Impacts: 4.8-Acre Minimal ROW Expansion

3

ENVIRONMENTAL FEATURE	POTENTIAL ENVIRONMENTAL EFFECTS, BY SEGMENT		TOTAL
	1	2	
Location, Design, and Appearance			
ROW Length (miles)	1.0 (0.9 federal property)	0.5	1.5
ROW Expansion Width (feet)	25	35	-
ROW Expansion (total acres)	2.6	2.2	4.8
Structure Height Range (feet)	125-155	115-135	
Environmental Resources			
Water Resources			
Waterbody Crossings (number)	1 span Mansfield Hollow Lake	2 Natchaug River (S20-22); S20-24; 2 temporary culverts	3
Wetlands			
Number Affected	1 (W20-66, Mansfield Hollow Lake border, tree trimming or removal)	6 (W20-70, W20-72/73, W20-74, W20-75, W20-76, W20-77)	7
Wetlands, Temporary Effects (estimated acres)	0	1 acre	1 acre
Wetlands, Permanent Fill Effects (estimated acres)	0	<0.1 acre	<0.1 acre
Vegetation			
Forested Upland Vegetation Removal (Permanent)	3.7 acres	1.7 acres	5.4 acres
Forested Wetland Vegetation Removal (Permanent)	<0.1 acre	1.5 acres	1.5 acres
Scrub-shrub Upland Vegetation Potentially Affected	7.3 acres	4.7 acres	12.0 acres
Open Field Upland Vegetation Potentially Affected	2.1 acres	0	2.1 acres
Scrub-shrub Wetland Vegetation Potentially Affected	< 0.1 acre	2.3 acre	2.3 acres
Biological Resources			
Vernal Pools Affected (number)	0	2 (CH-1-VP, CH-2-VP)	2
State-listed Species Habitat Traversed (number)	1	1	2
Land Uses			
Recreational Areas (linear miles traversed along ROW)			
• Mansfield Hollow State Park	0.8 mile	0	0.8 mile
• Mansfield Hollow WMA	0.1 mile	0.5 mile	0.6 mile
• Trails	2 Red Trail (within Park) Nipmuck Trail East Branch (within WMA)	0	2
Visual Resources			
Structure Appearance	Monopoles with vertically-configured conductors; galvanized steel finish; 115-155 feet in height		

4

Notes:

5

1. The wetland bordering Mansfield Hollow Lake (Wetland W20-66) would be spanned. Trees in this wetland would be cut or trimmed to maintain clearance from conductors.

6

2. Wetland effects based on constructability field reviews and locations of work pads, pulling sites, and access roads as depicted on the maps in Appendix A.3.

7

8

1 **6. ROLE OF THE D&M PLAN IN MITIGATING ENVIRONMENTAL**
2 **EFFECTS**
3

4 **Q. How will the impact mitigation measures identified in Section 6 of the**
5 **Application be incorporated into the construction plans for the Project?**

6 A. After Council certification of the Project, CL&P will prepare D&M Plans
7 for the Project, consistent with the Council’s requirements. As has been the case for
8 other recent CL&P transmission line projects, for construction purposes, the Project
9 ROWs may be subdivided into segments, with a separate D&M Plan prepared for each.
10 Likewise, separate D&M plans may be prepared for Card Street Substation, Lake Road
11 Switching Station, and Killingly Substation.

12 The D&M Plans will incorporate detailed engineering design and the
13 environmental mitigation measures proposed in the Application, as well as conformance
14 to the applicable conditions of the Council’s approval. The D&M Plans will be
15 submitted to the Council for review and approval, prior to the commencement of
16 construction of a particular Project segment.

17 **Q. What information will be included in the D&M Plans?**

18 A. The exact contents of each D&M Plan will conform to the D&M Plan
19 requirements and will reflect the Council’s Decision and Order for the Project.
20 Typically, each D&M Plan can be expected to include information concerning the Project
21 facilities and land requirements; environmentally- and culturally-sensitive resource areas
22 (e.g., locations of state-listed species of concern, areas of archaeological sensitivity, areas
23 of interest to Native American Tribes); procedures for defining and using vegetative
24 clearing access routes, access road development, and water resource crossings; general
25 construction procedures; construction scheduling; work site and public safety during

1 construction; traffic control at road crossings; requirements for erosion and sedimentation
2 controls; requirements for excavation dewatering; and procedures for excess spoil
3 disposition, among other topics.

4 Typically, D&M Plans are prepared in advance of the receipt of permits and
5 approvals from other state and federal agencies, such as the CT DEEP and USACE.
6 However, approvals from these and other agencies (as applicable) will be part of
7 construction contracts for the Project.

8 **Q. How will environmental compliance with the D&M Plans be**
9 **monitored?**

10 A. In conjunction with the construction of GSRP and MMP, CL&P
11 developed and is implementing a comprehensive environmental training and compliance
12 monitoring program. This program adopts a pro-active approach toward environmental
13 compliance by:

- 14
- 15 • Using signs, flagging, snow fencing, etc. to clearly demarcate
16 environmental features (e.g., wetlands, streams, sensitive areas) along the
17 ROW prior to the commencement of construction
 - 18
 - 19 • Conducting basic training and distributing environmental hand-outs to
20 inform all workers of Project-specific environmental and cultural resource
21 features and regulatory requirements
 - 22
 - 23 • Providing more detailed environmental training to all construction
24 supervisory and environmental personnel
 - 25
 - 26 • Providing copies of regulatory requirements, including D&M Plans (text
27 and maps), to all construction contractors and environmental personnel
 - 28
 - 29 • Assuring that CL&P representatives / environmental inspectors are
30 available in the field, full-time, to monitor compliance, to respond to
31 questions concerning environmental compliance, and to address issues as
32 they may arise.
 - 33

1 CL&P anticipates that a similar type of environmental training and compliance program
2 will be implemented for Interstate.

3 CL&P also would be willing to hire, if directed by the Council, an independent
4 environmental inspector to conduct periodic (typically weekly) inspections of
5 environmental aspects of the construction, as detailed in the D&M Plans.

1

2 **7. CONCLUSIONS**

3 **Q. Based on your past experience with transmission line construction**
4 **projects and analyses and knowledge of the Interstate ROWs, what are your**
5 **conclusions regarding the potential environmental effects of the Project as proposed**
6 **by CL&P?**

7 A. As proposed by CL&P, the Interstate project maximizes the use of existing
8 ROWs that are presently and have historically been dedicated to utility use. Along
9 approximately 96% of the 36.8-mile Proposed Route, the new 345-kV lines will be
10 located within existing CL&P easements. Only the 1.4-mile ROW segment through the
11 Mansfield Hollow area will require easement expansion and, with the adoption of the 4.8-
12 Acre Minimal ROW Expansion Option, the amount of additional easement required from
13 the federal government has been limited to the extent practicable.

14 Considerable effort has been devoted to designing and planning the construction
15 of the Project so as to avoid or minimize adverse effects on environmental resources.
16 Permanent environmental impacts (e.g., fill in wetlands) have been avoided or minimized
17 wherever practical. Further, in all cases, environmental impacts have been balanced with
18 safety considerations, taking into account the provision of appropriately-dimensioned
19 access roads work pads for the safe operation of construction equipment and the
20 maintenance of appropriate clearances from the adjacent live overhead transmission lines.

21 Overall, the Project will result in minimal permanent or long-term adverse
22 environmental impacts. Short-term (temporary) impacts will be minimize by adherence
23 to Project-specific plans, the conditions of certificate and permit requirements, and to
24 CL&P's Best Management Practices for construction. Soil erosion and sedimentation

1 will be avoided or minimized by adherence to Project-specific plans and conformance to
2 CT DEEP permit requirements for stormwater management during construction.
3 Similarly, CL&P will avoid or mitigate adverse effects to significant cultural resource
4 sites, implementing measures approved by the SHPO and the USACE, as appropriate.
5 Further, CL&P expects to continue to consult with representatives of the involved Native
6 American Tribes to devise and implement an effective approach for avoiding or
7 minimizing impacts to Tribal areas of interest during the construction process.

8 Compensatory mitigation will be used to offset any unavoidable adverse effects
9 on water resources, such as permanent filling in wetlands as a result of structure
10 foundations, etc. CL&P is in the process of evaluating compensatory mitigation sites,
11 and expects to coordinate with the CT DEEP and the USACE to obtain approval for a
12 mitigation site (or sites) that will compensate for the permanent, temporary, and
13 secondary impacts to water resources.