

**STATE OF CONNECTICUT  
SITING COUNCIL**

**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.

**DOCKET NO. 424**

July 10, 2012

**SUPPLEMENTAL  
DIRECT TESTIMONY OF ROBERT E. CARBERRY, JOHN C. CASE,  
LOUISE MANGO AND ANTHONY P. MELE  
CONCERNING COMMENTS OF THE DEPARTMENT OF ENERGY AND  
ENVIRONMENTAL PROTECTION**

**Q. On July 2, 2012, the Council asked that CL&P comment on each of the comments and recommendations made by the Department of Energy and Environmental Protection (DEEP) in its letter to the Council dated June 21, 2012. Please do so.**

**A. First, we would like to express our appreciation for DEEP's extraordinarily thoughtful and thorough comments, which reflect significant effort and expertise. In general, CL&P agrees with nearly all of DEEP's comments, conclusions, and recommendations.**

As suggested by Mr. Ashton at the June 26 hearing, we have formatted our response by annotating a copy of the DEEP letter. A copy of that annotated letter is attached to this testimony. The absence of a specific annotation responding to a DEEP conclusion, comment, or recommendation signifies that CL&P agrees with DEEP. We have included marginal comments to state a very few points of disagreement, correct minor errors, clarify our understanding of specific DEEP comments, and to provide additional information relevant to some comments.



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June 21, 2012

Robert Stein, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

RE: Interstate Reliability Project 345-kV Transmission Line  
Connecticut Light and Power Company  
Lebanon to Thompson, Connecticut  
Docket No. 370

Dear Chairman Stein:

Staff of this department have reviewed the above-referenced application for a Certificate of Environmental Compatibility and Public Need for the proposed 345-kV transmission line from Card Street Substation in Lebanon to the Rhode Island state line at Thompson, traversing the towns of Lebanon, Columbia, Coventry, Mansfield, Chaplin, Hampton, Brooklyn, Pomfret, Killingly, Putnam and Thompson. A field review of the full corridor was conducted. The alternative alignments listed as the Willimantic South Overhead Alternative, the Willimantic South Underground Alternative and the Brooklyn Overhead Alternative were not field reviewed. Based on these efforts, the following comments are offered to the Council for your use in this proceeding.

The Connecticut portion of the proposed line consists of 36.8 miles of 345-kV line to be constructed within existing CL&P right-of-way between Lebanon and Thompson with the possible exception of a 0.9 mile segment of widened ROW corridor crossing Mansfield Hollow State Park in Mansfield and a 0.5 mile segment of corridor crossing Mansfield Hollow Wildlife Management Area in Chaplin, where additional right-of-way width may be acquired from the U.S. Army Corps of Engineers to support the proposed new line. Improvements to support the new 345-kV line would also be made at Card Street Substation in Lebanon and the Lake Road Switching Station in Killingly.

Need for the Interstate Reliability Project

The Interstate Reliability Project is one component of the New England East-West Solution (NEEWS), a series of projects designed to improve system reliability and increase power flows between eastern and western New England, including thermal, voltage, and transfer import capabilities. The Connecticut NEEWS-related upgrades include:

- Greater Springfield Reliability Project, which increases the Connecticut import limit by 100 MW in 2014

- Interstate Reliability Project, which increases the Connecticut import limit by 800 MW in 2016
- Central Connecticut Reliability Project, which increases the Connecticut import limit by 200 MW in 2017

The Interstate Reliability Project will improve the access for generation from the combined cycle generators at Lake Road into the Connecticut electrical grid. These upgrades are planned to be fully online by January 2016. The following comments focus solely on the Interstate Reliability Project portion of the NEEWS Project.

DEEP notes that ISO-New England (ISO-NE) has repeatedly taken the position that NEEWS, which includes the Interstate Reliability Project, is needed to meet regional reliability criteria and to serve load throughout southern and eastern New England. As far back as 2004, ISO-NE began a study of deficiencies and interrelated reliability needs throughout the southern New England electric supply system, and, in 2006, it released a draft report later referred to as the "*Southern New England Transmission Reliability Report (SNETR) - Needs Analysis, January 2008*" (*the 2008 Needs Report*). Specifically, ISO-New England has reported that the Interstate Reliability Project will help to correct regional reliability problems associated with east-west/west-east power flow constraints in southern New England and to provide immediate reliability benefits to Connecticut and additional reliability to plan for any generator retirements or related events. To the extent that the Interstate Reliability Project reduces stress on the system, improves system resiliency, and enables new, renewable generation to replace dirty retiring units, DEEP strongly supports the continued development and progress of this project.

For Connecticut's review, as well as for ISO-NE, the Interstate Reliability Project has been relied upon to ensure that Connecticut, and the region, have sufficient resources to meet reliability requirements. DEEP also notes that as recently as April 2011, with ISO-NE's release of the needs assessment re-analysis of the Interstate Reliability Project, this component of NEEWS has been considered as part of ISO-NE's Regional System Plan. DEEP has also included the project in the "base case" for the 2012 Integrated Resource Plan (IRP). Moreover, the inclusion of Lake Road as a Connecticut resource has been used in IRP's basecase modeling for resource adequacy outlooks since the 2010 IRP.

In conclusion, DEEP supports the need for this project and believes it deserves Siting Council approval. DEEP is mindful that ISO-New England is again currently updating its needs assessment of this project. DEEP will monitor and engage ISO in those efforts and review any study results produced. DEEP's continued support of this project will depend on an analysis of the consequences of further modifications to the status of this project and its impact on reliability and any transmission constraints for the state.

#### Conversion of Forest Habitat to Open Field Habitat

As a result of increasing the maintained width of the CL&P right-of-way by an average of 90 feet, 273 acres of currently forested habitat will be converted to early successional types of habitat such as open field and shrub/scrub habitat. Up to an additional 11 acres of early successional habitat may be created at Mansfield Hollow State Park and Mansfield Hollow Wildlife Management Area if additional Corps of Engineers land at those areas is incorporated into the CL&P right-of-way.

While both the upland forest and old field/early successional environments possess habitat value, the old field and shrubland habitat that will be created within the right-of-way will benefit many of the wildlife species that are declining most rapidly in our state and region, including shrubland bird species. In addition, the early successional vegetative regime also provides excellent butterfly habitat. Much of this habitat type has been lost or is being lost as former agricultural land is being developed or as it reverts to woodland. The old field habitat created in the ROW will be maintained indefinitely in that state, and thus represents early successional habitat that is frozen in time. It will therefore continue to provide habitat value for critical species as long as the corridor is maintained for utility purposes. Also, it should be noted that the additional early successional habitat is created without fragmenting any existing upland forest blocks since the cleared right-of-way is already in existence.

The value of the habitat provided in and along the right-of-way would be maximized if herbicide applications and mechanical clearing activities can be conducted outside of nesting season for the potential resident species. In broadest terms, this would be accomplished by performing vegetative management activities between mid-September and April first. CL&P may contact the DEEP Wildlife Division for consultation on vegetation management in this or any other corridor when necessary. Jenny Dickson may be used as a contact at (860) 675-8130 in this regard. In addition, the Wildlife Management Division is available to consult on beneficial vegetative plantings appropriate to the right-of-way which would enhance habitat value.

CL&P should continue to work with DEEP to provide information and allow us to update the NDDDB with observations and data from this project. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern. Such information is incorporated into the NDDDB as it is made available from projects such as this one.

#### Comments on Proposed EMF Mitigation and on EMF Literature Review

Though DEEP does not have jurisdiction over 60Hz EMF and has only limited technical expertise in this area, the DEEP Radiation Division conducted a review of sections 7.5 and 7.6 of the application and offers the following comments on the applicant's review of current literature on EMF. This review did not find anything inconsistent with the report's assertion that recent studies do not provide evidence to alter the World Health Organization's 2007 status report on EMF. The literature search did appear to cover the six month gap in information identified in our Docket 370 comments. The recent pooled studies cited in the application continue to support a weak association between elevated electromagnetic field levels and childhood leukemia that is identified in the 2007 World Health Organization report.

#### Mansfield Hollow State Park and Wildlife Management Area

Connecticut Light and Power sets forth three options for crossing Mansfield Hollow State Park and Mansfield Hollow Wildlife Management Area in this application. As the right-of-way easement from the U.S. Army Corps of Engineers to CL&P for transmission line purposes is currently only 150' wide, CL&P developed these three alternatives due to uncertainty about the outcome of obtaining extra right-of-way width from the Corps.

DEEP has reviewed the three options developed by CL&P, namely the No ROW Expansion option which keeps the CL&P corridor at its existing width and requires the use of steel poles with vertically configured conductors for both the new and existing lines, the Minimal ROW Expansion option which increases the width of the right-of-way by 25' thereby allowing the existing line to stay in place and adding

**Comment [CL&P1]:** The MRE expansion is 25 feet in segment 1 and 35 feet in segment 2.

the new circuit with vertically configured conductors, and the initially proposed option which adds 55' of ROW width within Mansfield Hollow State Park and 85' within Mansfield Hollow Wildlife Management Area and allows the new line to match the geometry of the existing line in both units.

[DEEP] did provide a letter dated February 27, 2012 to Judith L. Johnson of the Corps of Engineers in response to a request to evaluate these three potential options for the line across the DEEP-leased Corps of Engineers property. In that letter, a preference for the Minimal ROW Expansion option was stated. This preference was based solely on an analysis of wetland impacts and did not reflect any coordination with the State Parks or Wildlife Divisions. While our State Parks and Wildlife Divisions have voiced a slight preference for the originally proposed alternative for reasons revolving around aesthetics and habitat types, respectively, DEEP finds either the originally proposed configuration or the Minimal ROW Expansion option to be acceptable. The No ROW Expansion option with both a greater number of taller structures and the additional disturbance of reconstructing the existing line would be the least desirable option.

Comment [CL&P2]: Specifically from the DEEP IWRD.

#### Permits and Approvals. Natural Diversity Data Base

The list of DEEP permits and approvals for the Interstate Reliability Project as shown on page ES-41 of the application is accurate. Of these, the Section 401 Water Quality Certification is the most significant and comprehensive. Two of the major components of the Section 401 WQC will be wetlands impact mitigation and invasive species control.

Unlike the process which was followed for the Greater Springfield Reliability Project (GSRP), DEEP will want to see at least a framework for the compensatory wetland mitigation plan in the 401 permit application. The lack of a compensatory mitigation framework slowed up the permit process for the GSRP. DEEP will prefer a single large parcel as a mitigation site as opposed to multiple smaller mitigation host sites.

Comment [CL&P3]: The 401 Water Quality Certification application, which CL&P expects to submit to DEEP at the end of July 2012, will include details regarding the proposed compensatory mitigation site to offset the Project's water resource impacts.

Invasive species control is an important issue both because of the presence of invasive species in the right-of-way now and because the disturbance of the construction activities for the new line will provide additional opportunities for the introduction and spread of invasive species. DEEP envisions the use of a special permit condition for invasive species management as opposed to approving an invasive species control plan. The later approach is more difficult to enforce. Language similar to the following paragraph is likely to be incorporated into the Section 401 Water Quality Certification. This language has been used in two recent permits issued to Northeast Utilities for a switchyard and circuit separation project at Millstone and a structure replacement project on transmission line 1990 in Watertown, Waterbury, Middlebury, Oxford and Monroe.

"The Permittee shall monitor all identified wetland and watercourse units located within the bounds of the project right-of-way (ROW) greater than 0.25 acres for the occurrence of those plant species identified in the list of invasive plants published and updated by the Invasive Plant Council pursuant to section 22a-381b of the General Statutes and which are or come to be present in the project ROW. The monitoring on the project ROW shall be performed at a frequency of not less than once every four years for the duration of the operation of the permitted facilities. Upon completion of a monitoring event, the Permittee shall implement measures to control invasive species within any identified wetland or watercourse unit where the extent of the vegetative cover of invasive species exceeds 25%, unless such measures are impracticable or imprudent due to restrictions or limitations on access or feasible control measures. Also, the implementation of invasive species control measures may be performed with cognizance of any restrictions or limitations

contained within existing easements or covenants applicable to lands within the project ROW provided that the restrictions or limitations are disclosed in writing to the Commissioner. The Permittee shall submit reports to the Commissioner on a four year cycle that summarizes activities conducted during the preceding four year period within the project ROW. The first report shall be submitted no later the four years from the date of issuance herein.”

The listing of the need for a Stream Channel Encroachment Line Permit on page ES-41 stems for the transmission line’s crossing of the Willimantic River. Though the supporting structures on both sides of the river would be outside of the established stream channel encroachment lines, past legal precedent has held that “over is in” and therefore the mere crossing of the designated SCEL zone at the Willimantic River triggers the need for this permit. Given that no structures are actually in the floodway, the review for this permit is very perfunctory and minimal and the application can be combined with that for the Section 401 Water Quality Certification.

**Comment [CL&P4]:** The 401 Water Quality Certification application will include information about the location of the Project in relation to the Willimantic River SCEL. No structures will be located within the SCEL.

Twenty-nine species listed in the DEEP Natural Diversity Data Base have either been identified from the data base itself or have been observed in the field along the proposed transmission line corridor. NDDDB staff biologists have been working closely with CL&P on this project. DEEP has a data sharing agreement with CL&P so that they have access to all NDDDB data as actual point data as opposed to the “blob” data format more generally available to the public. CL&P has been submitting their recommended mitigation measures for each listed species which may be potentially impacted for DEEP review and approval. Coordination between CL&P and NDDDB staff on this project began in 2007, with a substantial update of project data done in 2010.

Though all 29 listed species are fauna, protection of host plants for these species is an important concern.

Overall, there has been a very good record of cooperation with CL&P on this project. Coordination is continuing as specific species mitigation plans continue to be submitted and refined.

**Comment [CL&P5]:** CL&P will include additional information regarding state-listed species in the 401 Water Quality Certification application. CL&P also will continue to coordinate with DEEP regarding species-specific impact avoidance, minimization, or mitigation strategies.

#### Alignment Alternatives

The DEEP field review for this application focused on the proposed alignment which follows the existing transmission line corridor from Card Street Substation in Lebanon to the Rhode Island line at Thompson. The application contains two alternatives for the development of an overhead transmission line replacing the use of the existing right-of-way for portions of the proposed new line. Neither the Willimantic South Overhead Alternative nor the Brooklyn Overhead Alternative alignments were field reviewed by DEEP. While the addition of the proposed new transmission line to the existing corridor will involve a number of incremental impacts along the right-of-way to construct and accommodate the new line, these impacts pale in comparison to those of acquiring and developing a new ‘greenfield’ corridor. The justification for consideration of the Willimantic South Overhead alternative disappeared when it was determined that the transmission line right-of-way through Mansfield Hollow State Park and Mansfield Hollow Wildlife Management Area could accommodate the proposed new line even in the absence of additional right-of-way width being granted by the Corps of Engineers. So there was no purpose in considering and reviewing this alternative.

The Brooklyn Overhead Alternative alignment does avoid impacts to residential areas and, based solely on a review of USGS topographical maps, would be a feasible routing to avoid homes in the area of

Church Street. However, the acquisition and clearing of an entirely new section of transmission line corridor and the impacts of construction of a line in a completely new location would greatly exceed those of adding a new line to the existing alignment. Therefore, this alternative was not walked during the field review for this application.

The minor route variation being considered at Hawthorne Lane in Mansfield would reduce aesthetic impacts to homes at 21, 25, 27 and 28 Hawthorne Lane and can be accomplished without any environmental impacts though there are administrative and procedural obstacles to be overcome to effect this short realignment. Testimony submitted by CL&P attaches a cost of \$1.8 million to this route alternative, which translates to \$450,000 per affected home. Nevertheless, this change is probably more effective in providing a meaningful benefit to the proximal homes than are the changes considered in the five focus areas along the corridor.

BMP Focus Areas

The CL&P application evaluates five potential focus areas along the Interstate Reliability Project corridor where alternative conductor configurations on structures other than the baseline H-frame structures have been evaluated for their potential to reduce EMF levels at proximal homes and statutory facilities along the corridor. Though the structure choices and conductor configurations considered or proposed at these five locations were offered with the intent to reduce EMF levels at the edges of the right-of-way by at least 15%, it should be recognized that for all these calculated reductions, there is a non-calculated, very definite increase in the aesthetic impact of the line created because of taller tower structures which are proposed for consideration in the focus areas and the introduction of structures of a different visual nature than those of the existing line, which will increase the incremental visual impact of adding a second circuit above what it would be if matching structures are used. This consideration is mentioned because in terms of actual importance to homeowners and others along the line, the visual impact may likely be the effect of greater concern if the new line is approved and constructed.

Focus Area A is located between existing structures 9028 and 9048 of line 330 in the towns of Coventry and Mansfield. The use of 110' steel poles supporting the conductors in a delta configuration was identified as a potential EMF mitigation measure in this area of the line, which crosses Babcock Hill Road, Flanders River Road, Stafford Road and Highland Road. There is a very small number of homes at these crossings\* and no homes in between these roads. According to calculations on pages 52 and 53 of the Direct Testimony of Robert E. Carberry, John C. Case and Anthony P. Mele dated May 21, 2012 (Docket 424 Exhibit 17), the BMP measures for Focus A lower EMF levels on the north edge of the ROW by 28% while increasing them on the south side of the ROW by 12% compared to the base case design. However, these numbers translate to a 2.0 mG decrease at the northern edge and a 2.2 mG increase at the southern edge. Although the new line would be constructed in the northern portion of the ROW, there are at least an equal number of homes at the southern edge if you add up the affected street crossings. Similarly, the calculation on page 53 of Exhibit 17 shows that, at the closest home to the ROW edge, the BMP configuration yields a decrease of 1.8 mG at the closest home to the northern edge of the ROW relative to the baseline H-frame design but increases EMF levels by 2.1 mG for the nearest home on the south side of the ROW relative to the use of H-frame structures. These mixed results in combination with the greater visual impact of the taller steel poles and the increase in cost of the BMP design point to the need for the Council to carefully weigh these aspects before making a decision on employing the BMP option in this area.

**Comment [CL&P6]:** CL&P agrees. Pursuant to the BMP's, the Council will select a final configuration in the BMP areas after balancing this incremental visual impact against the EMF reduction achieved by taller/different towers in the BMP focus areas.

**Comment [CL&P7]:** This is a "typical" pole height for a delta line configuration. Individual poles in such a line will be taller and shorter than 110 feet.

**Comment [CL&P8]:** Percentage changes are with regard to the base-case H-frame line and not the pre-Project levels. The increase on the south side is to a level that is still lower than the pre-Project level.

**Comment [CL&P9]:** CL&P agrees. See CL&P Exhibit 17, page 53.



(\* At Babcock Hill Road, there are two homes, only one of which is significantly proximal to the transmission line corridor. That closer home is to the south of the right-of-way, while the closest home to the north is well off the right-of-way. There is only one home at Flanders River Road (#199), just north of the right-of-way on the east side of the road. At Route 32, there are two homes immediately south of the right-of-way, one of which is currently vacant and being gutted and remodeled, and two homes just to the north, one on each side of Route 32. The home on the east side of 170 Stafford Road would lose most or all of its visual screening with the clearing for the new line. There are no homes immediately adjacent to the corridor at Highland Road. In total, at the four road crossings in Focus Area A, there are three immediately proximal homes to the north of the line and three to the south.)

**Comment [CL&P10]:** The home to the north is as close to the proposed line as the home to the south is to the existing line.

**Comment [CL&P11]:** There are two homes on Highland Road immediately north of the ROW and two others on Stone Ridge Lane immediately south of the ROW near Highland Road. (See CL&P Application Volume 9, Exhibit 2, Mapsheet 6 of 40.)

**Comment [CL&P12]:** five

**Comment [CL&P13]:** five

**Comment [CL&P14]:** Symbol should be for feet, not inches. This is a "typical" pole height for a delta line configuration. Individual poles in such a line will be taller and shorter than 110 feet.

**Comment [CL&P15]:** Delta was one of several configurations that CL&P evaluated for this location in its Field Management Design Plan. CL&P did not recommend a delta line in Focus Area B. See CL&P Exhibit 17, page 36.

Focus Area B, in the area of Mansfield from Route 195 to Bassett Bridge Road, has also been evaluated by the applicant for the use of 110' steel poles and delta configuration conductors as opposed to the baseline H-frame structures in order to lower EMF levels. Three statutory facilities as defined by Connecticut General Statutes section 16-50p are located in this segment of the line: the Come Play With Me daycare facility, the Mount Hope Montessori School and the Green Dragon daycare facility. Testimony on page 53 of Exhibit 17 indicates that the Come Play with Me daycare facility may no longer be in operation. As noted later in the description of the DEEP field review, a conversation yesterday (June 20) with the homeowner at the hosting residence confirmed that the daycare center is no longer in operation. The Montessori School is located closest to existing structure 9076 and proposed new structure 77. Field review at this location showed that there is sufficient intervening distance between the new line location and the school to accommodate another building lot. The Green Dragon daycare center is fairly well removed from the proposed line, over 400' away at the closest point, and on the opposite side of the ROW from the new line. The benefits of using the taller steel poles in this area are also called into question if the EMF calculations on page 54 of Exhibit 17 are accurate in that they indicate lower magnetic field strength at these two facilities with the use of H-frame structures as compared to steel pole-supported delta configuration conductor.

**Comment [CL&P16]:** The nearest point of the daycare home is approximately 365 feet from the center of the proposed H-frame line.

Focus Area C corresponds to the Hawthorne Lane neighborhood discussed earlier. Changes in this area, if any, from the baseline design and existing alignment would be made for aesthetic reasons. The use of steel poles supporting the conductors in a delta configuration is reasonable in this area, especially if the alignment shift proposed by the homeowners on Hawthorne Lane is not implemented.

**Comment [CL&P17]:** CL&P agrees and considers that a vertical configuration is also reasonable in this area.

Focus Area D runs from existing structures 9210 to 9219 in the northeastern corner of Brooklyn. Homes east of Church Street, and to a lesser extent along Darby Road, would be the beneficiaries of any EMF reduction efforts in this area. As was the case in Focus Area A, the BMP option using 110' steel poles yields a 28% reduction in EMF levels on the northern edge of the right-of-way and a 12% increase to the south of the right-of-way. But the closest homes are along the northern edge of the corridor.

**Comment [CL&P18]:** This is a "typical" pole height for a delta line configuration. Individual poles in such a line will be taller and shorter than 110 feet.

Two daycare centers were identified in the application as being in this focus area. One of these is not particularly close to the ROW and is identified on page 56 of Exhibit 17 as being 497' from the edge of the ROW and experiencing magnetic field levels below 0.5 mG. The other facility is immediately adjacent to the ROW on the north side and east of Church Street. The home hosting this daycare center, at 350 Church Street, was advertised as being for sale as of the date of DEEP's field visit to this area on April 9, 2012. Therefore, this daycare center, if it is still in operation, may cease to be operating if the home is sold to new owners.

Other than the house at 350 Church Street, the closest homes to the line in this area are those at the end of Meadowbrook Drive, a cul-de-sac extending eastward from Church Street and then southward toward the transmission right-of-way. In a discussion with the owner of the closest of these homes, he expressed a preference for the selection of the Brooklyn Overhead Alternative but, failing this, he said he did not want to see the steel poles used in this area. Specific comments and recommendations on lessening impact in this area are included later in these comments in the observations and recommendations from the field review.

**Comment [CL&P19]:** DEEP has orally confirmed to CL&P that this statement means the landowner does not prefer a delta steel-pole line. (The poles of an H-frame line could also be steel poles.)

The final focus area is the Elvira Heights area of Putnam which is just east of US-44 and south of the CL&P right-of-way. In this area, an option of removing the existing H-frame structures and placing both the existing and new 345-kV lines on steel poles with the conductors in delta configuration was evaluated. For the Elvira Heights area, there is no development along the northern side of the right-of-way, the side on which the new line would be added. From the homes along Elvira Heights, the existing H-frame-based line is well screened by forest vegetation, even under leaf-off conditions, except perhaps for the single home at 32 Elvira Heights Road. The taller steel poles would likely be seen above the tree line from Elvira Heights. In return for the increased visibility and for the increased construction impacts of rebuilding the existing line, a magnetic field reduction of less than 1.0 mG is achieved at the nearest home on Elvira Heights (Exhibit 17, p. 58). The aesthetic impacts of the BMP option in this area appear to be more significant than the very limited reduction in EMF levels.

**Comment [CL&P20]:** CL&P also notes that rebuilding the existing line in the Elvira Heights Focus Area will result in greater impacts to water resources because two of the existing transmission line structures that would have to be removed and rebuilt in their existing locations (9306 and 9307) are located in wetland W20-197. See CL&P Exhibit 17, page 59.

DEEP believes that the lack of significant resource concerns identified for the construction of the new 345-kV transmission line attests to the proposed route being a logical and prudent solution for addressing the identified capacity and reliability issues which have been identified by ISO-New England and the utilities. The following discussion of conditions observed along the corridor contains some recommendations for impact mitigation at specific sites along it.

#### Field Review of the Interstate Reliability Project

The DEEP field review for the Docket 424 application occurred on nine days: March 23, 26, 27, and 30 and April 3, 9, 10, 13 and 16, 2012. In addition, a number of locations in the western end of the corridor were spot checked yesterday, June 20, to verify conditions in specific locations. The entire corridor was walked, progressing from its western end to the Rhode Island state line. Fourteen of the 337 structure locations were not accessed during the field review due to emergent wetlands, standing water, or lack of non-private land access. The non-accessed structures, based on structure numbers for the existing 330 line, were #9095 at the Natchaug River, #s 9202-9210 in Brooklyn (corresponding to new structures 203-211), and #s9316 and 9317 in Thompson (corresponding to new structures 320 and 321) just west of Quaddick Town Farm Road.

Three general observations concerning the 36.8-mile corridor are the surprisingly low level of residential or other development along such a long corridor, the prevalence of stone walls in or across the right-of-way, and the extent to which CL&P has been able to shift the locations of proposed new structures to avoid wetlands. These general observations (especially the stone walls) will be borne out repeatedly in the following site-specific comments on the corridor. The following summary of the proposed corridor, broken down by nine segments corresponding to the nine field days, is offered to the Council for the purpose of providing additional detail and understanding of the corridor, with apologies in advance for the length of this section of the comments.

*Card Street Substation to the Willimantic River (March 23)*

Card Street Substation in Lebanon is located in a sparsely developed area with little residential development and only one semi-adjacent home at 133 Card Street located east of the substation driveway. From the substation, which will not be expanded in footprint, the proposed line proceeds westward for a very short distance before leaving Lebanon. The existing 330 circuit, together with a 69-kV line and the proposed new line proceed downslope from the substation crossing the Airline Trail and descending to the Tenmile River, crossing a stone wall, a skunk cabbage swamp and a small pasture as the right-of-way makes its approach to the river.

Crossing the Tenmile into Columbia, there are new homes south of the ROW at structures 9007 and 9008 which are accessed by a shared driveway which crosses the ROW from Baker Hill Road. The home at structure 9007 has no vegetative screening between it and the transmission line corridor. On Baker Hill Road to the north, the home at 1 Baker Hill Road is also unscreened from the corridor but is across Baker Hill Road from the line and on the opposite side of the ROW from where the new line will be constructed. Other homes along this section of Baker Hill Road benefit from some degree of screening.

Proceeding westward, the home at the corner of Scalise Drive and Cards Mill Road maintains a portion of the ROW under the 69-kV line as lawn. A home north of the line at structure 9011 is screened by large trees. Three fully developed frogs were seen in a pool of standing water located at approximately 9014 ½ (midway between structures 9014 and 9015) which was surprising given the early March 23 date of this portion of the field review.

After the corridor crosses Old Willimantic Road near structure 9017, there is a shared driveway serving homes at 133 and 135 Old Willimantic Road which runs right under the new line. Indeed, a spray paint marking right on the centerline of the driveway indicates the proposed location of one of the poles for new structure 19. Immediately north from here, the home east of the line at 9013 ½ has very little screening and thus a direct view of the existing line and corridor.

From structure 9020, the corridor looks down to Route 66, the Hop River and the Route 6 bypass. North of Route 66 (Willimantic Road) is a large wetland system. New structure 23 would be located on an east-west ridge extending between wetlands 20-23 and 20-24. The corridor then crosses the Hop River and the Hop River Trail and then the very wide median between the eastbound and westbound barrels of US Route 6. Construction of the new line should have no permanent impact on the Hop River Trail, the Airline Trail, the Nipmuck Trail or any of the other smaller trails it crosses.

Shortly after traversing Route 6, the corridor reaches Babcock Hill Junction, where the 69-kV line leaves the project corridor. The ROW accesses and crosses between two wetlands just east of structure 9027, then heads out to Babcock Hill Road. There is much juniper in the ROW at structure 9028. Only one stake each marking the locations of structures 29 and 30 were found, presumably reflecting the proposed use of steel poles in the area which is part of BMP Focus Area A. There is one home on the east side of Babcock Hill Road north of the ROW and one home on the west side to the south of the corridor. East of Babcock Hill Road, an area of dense juniper and blackberry thicket occupies the ROW after structure 9031. The existing line, and the proposed new line, then drops down a huge slope to structure 9032 at Flanders Hill Road. At Flanders Hill Road, there is one home north of the right-of-way on the east side. Dirt bike use of the ROW is in evidence between Flanders Hill Road and structure 9033. The ROW is then maintained as lawn between structures 9033 and 9034 by the homeowner to the north. The ROW then

enters the floodplain of the Willimantic River. Structure 9034 is in the Willimantic River floodplain but is on high, dry ground under normal conditions. The new structure 35 would be located across (east of) the Willimantic River on high ground beyond the New England Central Railroad right-of-way and thus well out of the floodplain. The proposed new line would span the Willimantic River and its floodplain between structures 34 and 35. However, for purposes of the Stream Channel Encroachment Line (SCEL) program, "over is in"; thus the listing of this permit on page ES-41 of the application is appropriate.

*Willimantic River to Mansfield Hollow State Park (March 26)*

East of the Willimantic River the ROW crosses the New England Central Railroad tracks and an unofficial dirt bike area below and east of the tracks. Proceeding toward Stafford Road, a small dairy cattle pasture and an enclosure housing the largest pig this reviewer has ever seen are crossed. The corridor then crosses Stafford Road (Route 32) and enters the Highland Ridge Driving Range. Three structures (9037-9039) support line 330 across the driving range, and three new structures would similarly be sited on the driving range. A small wetland is located under the existing line at structure 9039 where the corridor transitions from the driving range to a small pasture. Another wetland occurs approaching structure 9041, an angle structure where the corridor takes a 90° turn to the east. Phragmites and spicebush in the corridor just after 9041 transition to autumn olive and juniper as the right-of-way ascends a hill up to structure 9042. From structure 9042 at the top of the hill, the right-of-way offers a nice agricultural view looking back to the west. Also from 9042, some homes are visible through the forest to the north.

Highland Road crosses the right-of-way just before structure 9043. Wetland 20-43, west of structure 9046, supports Phragmites, spicebush and alder. An access road crosses wetland 20-44 on an embankment. This embankment is in good condition but may need widening to be used for construction purposes. Two tires are laying at the edge of the access road at the east side of this wetland.

There is a small hillside seep wetland at structure 9052 and a more significant wetland of skunk cabbage and multifloral rose just west of structure 9054 before the corridor crosses a farmstead and reaches Mansfield City Road. All the wetlands mentioned above will be spanned by the new line from structures located outside their limits.

The home on the east side of Mansfield City Road maintains the right-of-way as part of its yard. The corridor leaves this yard and climbs a wall of large boulders to reach structure 9056. Aside for the two homes at Mansfield City Road, there is no development near the right-of-way after Highland Road.

On the day of the DEEP field review for this section, March 26, there was a Komatsu excavator on the north side of the right-of-way between structures 9058 and 9059 excavating rock that appeared to be within the right-of-way.

**Comment [CL&P21]:** This is not CL&P contractor equipment. CL&P is investigating this observation to confirm that the equipment and activity is authorized by the landowner and to evaluate if the activity is allowed by CL&P's easement.

From structure 9060, there is a broad view to the east to structure 9067. The right-of-way crosses Nipmuck Trail at structure 9064. Wetland delineation ribbons in this area extend well up the hillside from wetland 20-56 with no sign that this hillside is a wetland from its vegetation or drainage.

**Comment [CL&P22]:** Wetland W20-56 borders Sawmill Brook, whereas several other wetlands (W20-57, W20-58, and W20-59) were identified as extending across the ROW to the east. CL&P will verify the boundaries of these wetlands during constructability reviews.

The corridor offers its first view of Mansfield Hollow at structure 9068 with a clearer view by structure 9069. A new home north of the right-of-way at 9071 ½ is well off the right-of-way but will lose most of its screening when the new line is constructed.

The corridor descends from #9069 to Route 195. The Come Play With Me daycare facility is located at 385 Storrs Road (Route 195) south of the ROW on the west side of the road, across the street from another home at 388 Storrs Road. The new line would be constructed on the opposite (northern) half of the right-of-way. Testimony in Exhibit 17 called into question whether the Come Play With Me daycare facility was still in business. A visit to the hosting home at 385 Storrs Road yesterday and a conversation with the homeowner confirmed that the daycare center is no longer in operation.

Two more homes are located to the north of the right-of-way at Storrs Road. On the east side, a home at 408 Storrs Road is about 200' north of the right-of-way, while another home on the west side is just slightly farther north and is very well screened from the right-of-way.

Once across Storrs Road and the associated homes and yards, the right-of-way cuts across a cow pasture, up a berm, across another enclosed pasture, then across an open grassed field. The corridor passes the Mount Hope Montessori School just to the west, crosses Bassett Bridge Road, and passes the Green Dragon daycare to the east and town-owned open space to the west. The corridor then turns westward, crossing a field of 4' tall dead goldenrod stalks and then passing continuous white pine to the north before coming out into the Hawthorne Lane neighborhood. Multiple stakes labeled 'STR 80 ALT' appear to show CL&P was looking for the best location for placement of structure 80 to avoid a small slope and wetland. The line then crosses the driveways for the homes at 21, 25, 27 and 28 Hawthorne Lane, homes which would lose much of their existing vegetative screening to the new line. The line then enters Mansfield Hollow State Park, first crossing a dike, then an open field, and then running through a white pine forest until it reaches Mansfield Hollow Lake.

*Mansfield Hollow State Park to the Fin, Fur and Feather Club, Chaplin (March 27)*

Shortly after crossing Mansfield Hollow Lake, the ROW crosses the Nipmuck Trail which enters it from the north and runs within the ROW for a short distance before departing it southward at structure 9087. The ROW ascends a steep slope from Bassett Bridge Road to structure 9088, passing some homes to the north which are well off into the forest. Another home to the north at 9088 ¼ has a satellite dish at the edge of the right-of-way with the home maybe 50 yards into the woods. A dense stand of autumn olive occupies the right-of-way from South Bedlam Road to structure 9090, the last structure in Mansfield.

Five homes are visible at a distance off into the woods north of the right-of-way at structure 9091 in Chaplin.

Contrary to the indication on Map 10 of 40 in Volume 9 of the application, there is no access road from South Bedlam Road to structure 9091. The ROW crosses an agricultural field from just after structure 9091 to just after structure 9092. The access road resumes at structure 9093. Between structures 9091 and 9092, the existing 330 line crosses a wetland, but the new line will not. The corridor enters Mansfield Hollow Wildlife Management Area at structure 9094. Structure 9095, near the western bank of the Natchaug River, could not be accessed for this review.

The east bank of the Natchaug River is reached after a steep descent from structure 9096 to the east. A hemlock forest stretches along the east bank both north and south of the ROW, with the river sitting well below the east bank. Clearing of the trees immediately adjacent to the Natchaug River should be avoided in order to preserve shading for the river. The new line should be able to span over the existing trees from the high ground at structure 9096, as the existing line does.

**Comment [CL&P23]:** CL&P concurs. The maps in Volume 2A of the Project's Section 404 Permit Application to the U.S. Army Corps of Engineers identify a proposed access road in this area. Similarly, the maps that will be submitted with the 401 Water Quality Certification application will correctly identify the proposed access road in this area.

**Comment [CL&P24]:** The new line would also cross over a small wetland (W20-69) that extends linearly along stream S20-21.

**Comment [CL&P25]:** CL&P anticipates that the trees in this area can be spanned, as they are by the existing 330 Line conductors. However, some trees may have to be topped to provide acceptable clearances to conductors.

A small stream running parallel to the power line within the northern half of the right-of-way between structures 9096 and 9097 would be spanned by the new line between structures 97 and 98. Between structures 9097 and 9098, the existing access road crosses an embankment through a Phragmites wetland. New structure 99 would not be in the wetland.

**Comment [CL&P26]:** Current constructability and engineering plans indicate that Structure 99 will have to be located in wetland W20-76.

The south pole of structure 100 would be in a wetland. A 6' shift northward would get the southern pole out of the wetland and is recommended if possible.

**Comment [CL&P27]:** It may be possible to shift the structure some additional distance to get it out of the wetland. With the MRE option, this structure would have only one pole and would most likely be located outside of the wetland, pending final survey, without shifting its location.

After crossing Route 6, the right-of-way passes a greenhouse to the north. A wetland in the right-of-way on the access road just east of structure 9102 supported a large tadpole population on March 27. A 60' long pool of standing water in the access road between structures 9104 and 9105 similarly supported many tadpoles. These two pools are a function of the access road itself, resulting from depressions created by the road collecting and ponding water.

**Comment [CL&P28]:** CL&P's field reviews also identified amphibians in these areas, which are designated as vernal pools CH-7-VP, CH-8-VP, CH-9-VP, and CH-10-VP.

New structure 106 is offset east of existing structure 9105 to avoid placement in wetland 20-84. The right-of-way crosses property of the Fin, Fur and Feather Club between structures 9103 and Chewink Road. The right-of-way crosses a pond on the club's property between structures 9108 and 9109. Additional clearing for the new line should avoid removing the cedars wherever possible, such as in the area of structure 9109 east of this pond.

**Comment [CL&P29]:** Cedars in this area will be reviewed. Those that will interfere with the construction efforts (access or work-pad areas) will be removed, as will any with heights approaching too close to the line conductors. Other cedar trees will remain. Based on their growth, some may need to be removed or topped during future ROW maintenance.

*Eastern Chaplin to Eastern Hampton (March 30)*

From structure 9112 on the eastern edge of a large pond (wetland 20-86), one can see across to the Fin, Fur and Feather Club to the west and hear target practice going on at the club. A stone wall crosses the ROW immediately west of structure 9113 but should not be impacted by the placement of new structure 114 or, hopefully, by the construction of the line.

**Comment [CL&P30]:** The existing access road crosses through a gap in this wall; however, this road and the gap will have to be widened for construction. Further, a corner of the construction work pad for Structure 114 may impact this wall. It may be possible to avoid this impact by moving Structure 114 further to the east or by clipping the corner of the construction work pad. CL&P will evaluate these options and provide the results in its draft D&M Plan.

Dirt bike usage is in evidence at structure 9116 with a circular loop track there and tracks continuing to the west. Another very large open water wetland (20-91) is spanned between structures 9119 and 9120 with one of the longer spans of the line. A beaver lodge is seen in the pond just north of the right-of-way. The stakes for the location of structure 120 on the west side of the pond show that approximately 1 foot of elevation could be picked up by moving just 10' to the west from its current location virtually at pond level. Recognizing that this is a very long span, a similar suggestion on the east side of the pond for structure 121 will be withheld. Westward movement of structure 120 is more beneficial than the eastward shift of structure 121 to higher ground. Continuing to the east, a garden occupies part of the corridor between structures 9122 and 9123, complete with Halloween masks and a fake owl to scare birds away. The stakes for new structure 122 are offset from structure 9121 in a favorable placement to avoid a wetland and small watercourse. An enclosure on the north edge of the ROW at structure 9123 houses several pigs.

**Comment [CL&P31]:** CL&P is evaluating relocating proposed Structure 120 to the west, as suggested, and will provide the results in its draft D&M Plan.

The corridor then crosses South Brook Street and almost immediately crosses the Airline Trail for the second time. Two walls of huge boulders from the rock cut in which the former railroad sat line the banks of the trail as it crosses the right-of-way.

A collection of camouflage National Guard type vehicles and storage units are found on both sides of the right-of-way at structure 9125. Also in this collection are a small service van, a dump truck body, stacks of tires and several non-military derelict vehicles.

A pool supporting tadpoles is located at 9131 ¾ in the access road.

**Comment [CL&P32]:** CL&P proposes to use this existing access road during construction. The road does extend through amphibian habitat (designated as HA-2-VP).

A small beaver dam adjacent to structure 9135 has created a pond on the right-of-way and mucky conditions in the access road. Tadpoles are found in an adjacent smaller but similar pond.

Only one stake for structure 136 was seen and it was in the middle of a pond 10' wide by 20' long formed by another beaver dam of leaves and brush. Yet another beaver dam sits below the one at the stake for structure 136, in the northern portion of the right-of-way.

Movement of structure 136 to the east or west would not avoid the beaver wetland. If possible, a 10' northward shift would remove at least the pole represented by this stake out of the beaver pond.

**Comment [CL&P33]:** This structure has already been located to minimize impacts. The principal wetland impact of this structure will be from the placement of a construction work pad. That impact would not be avoided by moving the structure 10 feet northward. However, moving the structure to the north would create three angles in the line and would impinge on an area of the ROW that should be reserved for a future line.

The corridor crosses Route 97 where a thicket of roses and briars makes access to structure 9140 very difficult. CL&P has wisely put the new structure 141 near to the road instead of directly adjacent to existing structure 9140.

Crossing South Bigelow Road into the Bigelow Howard Valley Fish and Game Club, the corridor crosses a large field on the east side which has been the site of a controlled burn. Moving across Cedar Swamp Brook to another field, no stakes were found for new structure 145 but it would be in the field next to structure 9144 at a stone wall. There is a nice 33" dbh hickory tree at the stone wall but its location looks like it may be difficult to avoid removing that hickory for the new line.

After structure 9146, the Little River was crossed via a footbridge just downstream from the right-of-way. Proceeding east, structures 152 and 154 were both nicely offset from the existing structures to avoid wetland impacts.

*Brooklyn from Hampton Line to Pomfret Road, Route 169 (April 3)*

Structure 161, the easternmost new structure in Hampton, is located in wetland 20-120. There is no option to remove it from this wetland with an eastward or westward shift. Such was not the case for structure 162 which was offset eastward from line 330 structure 9161 to stay out of wetland 20-120.

A small southward flowing watercourse and associated Phragmites wetland are located just east of structure 9163, which is an angle structure. Two of the three poles of the new angle structure 164 have been successfully kept out of wetland 20-122, based on stake locations, but the northernmost pole would be in the wetland. As this is an angle structure, there is less flexibility to move its location and there does not appear to be any option to remove structure 164 completely from the wetland.

New structure 165 is offset from structure 9164 to avoid a wetland under the new line. A small watercourse crosses the access road just west of structure 9164, with standing water in the access road and an emergent wetland just to the north.

The right-of-way then crosses Stetson Road to new structure 167 which straddles a stone wall. The northern pole of structure 167 is in a nursery of small (3') Frazier firs and the structure will also encompass a large white pine. Although the white pine would require removal under any scenario, perhaps the stone wall could be saved, either in place or with a small shift of structure 167.

**Comment [CL&P34]:** As part of ongoing constructability reviews, CL&P is evaluating this structure shift. Avoiding the stone wall would require an approximate 100-foot shift in the structure location to the east and modification of its construction pad. This option would probably entail an increased structure height. CL&P will evaluate this option and provide the results in a draft D&M plan.

Another larger stone wall crosses the right-of-way just east of structure 9166, then angles off to the southeast edge of the right-of-way. It is under the existing line but not under the new one.

A logging or brush removal business is located to the north of the right-of-way at structure 9167. A home is visible to the north but is well off the right-of-way. An old dump truck is in the right-of-way under the new line with its tires embedded into the ground.

Another home on the north side of the right-of-way is seen at 9167 ½ but is well into the woods.

Structures 9168 and 9169 are at the top of a broad hill with an expansive 5-mile view to the east available from structure 9169.

A non-electrified electric fence crosses the right-of-way at 9169 ½.

The corridor takes a large drop in elevation after structure 9170 with access being maintained off the cleared portion of the corridor to get around this cliff. There is a very long span to transmission line from 9170 to 9171. A yellow home is seen to the north at structure 9172 but it is well off the right-of-way. A small stone wall crosses the right-of-way at 9172 ½. Another house, located north of the right-of-way at structure 9174, will lose about half of its screening with the clearing for the new line. Two more homes are north of the corridor at structure 9175.

Another older house north of the right-of-way at structure 9176 will lose much of its screening when the new line is added. Much of the area between this house and the edge of the right-of-way has recently been cleared. A slight shift, perhaps 40', of structure 177 to move it east of structure 9176 would make the new structure less conspicuous from this home. Structure 178 is in a wetland north of a stone wall separating the forested wetland from the residential yard which hosts structure 9177. While a westward shift of structure 178 by maybe 30' would again shorten the 177-178 span affected by the previous move, it would pick up a small amount of elevation and take structure 178 from being in the wetland to being at the edge of it.

The right-of-way corridor then crosses Windham Road and passes a collection of very antique (rusty) tractors at new structure 179 on a grassed area next to Windham Road and just off a residential yard by existing structure 9178. More old equipment is seen in the backyard of this same home. One structure later, at 9179, the right-of-way takes a 90° turn to the north, proceeding to and crossing Route 6 for the last time.

After the right-of-way takes an abrupt eastward turn at 9182, it passes a house just south of the corridor at structure 9183. Structure 9184 is mis-numbered as 9284 in the field, but nonetheless offers a view of a church spire and town hall tower in downtown Brooklyn. After a struggle to get through a winged euonymus stand at 9184 and another dense thicket at 9185, the corridor crosses Laurel Hill Road. No stakes were seen for structure 188 but it would be in the dense shrubs at this location and not in any wetland.

Structure 191, immediately east of Wolf Den Road, butts up directly against a stone wall. A shift of a couple of feet would avoid impacts to this wall.

**Comment [CL&P35]:** The recent clearing was not by CL&P, and CL&P has concluded that the current structure location should be maintained. Structure 177 was located west of structure 9176 to avoid a wetland. The suggested shift of the structure back east would cause impacts to the wetland. To reduce the visibility of structure 177 from the house, and also avoid impacts to the wetland, the structure would have to be moved at least 100 feet east into an open field where it would be visible to a development to the south.

**Comment [CL&P36]:** CL&P's current plans indicate that Structure 178 is located in upland, slightly west of wetland W20-132.

**Comment [CL&P37]:** CL&P is evaluating a structure move of approximately 25 feet to the northeast in this area. However, given the presence of the relatively steep, rocky, slope, it is unlikely that all impacts to the stone wall can be avoided. CL&P will provide the results of this evaluation in its draft D&M Plan.



Despite what is indicated on Map 21 of 40 in Volume 9, there is no access road, functional or otherwise, from Costello Road to structure 9193, a span which ascends a very steep, overgrown slope. Yet another stone wall crosses the right-of-way between structures 9196 and 9197. No stakes were found for the location of structure 199 but it would be in a good location in the area of 9198. The line then passes a home to the north of the right-of-way at 9198 and drops steeply to Pomfret Road (Route 169). Structure 200 is at the edge of an area of lawn on the east side of Pomfret Road but not close to any associated home.

Structures 201 and 202 were not accessed until April 16 as they required a difficult traverse across multifloral roses and swamp. There are no issues with the location of these two structures but it was noted that both existing structures 9200 and 9201 are labeled as 9200.

*Church Street, Brooklyn to Lake Road, Killingly (April 9)*

Beginning from Church Street in Brooklyn and moving first to the west, structure 215 is in a field used mostly for the storage of farm equipment, while structure 214 is adjacent to an area maintained as the backyard of a home to the north on Darby Road. By the point of new structure 213, the line is well offset from Darby Road. Structure 212 is closer to a home to the north than is 213. There are four foundations built between this home and the CL&P corridor, all of which have been there for some time and do not appear to be part of any active construction project. West of structure 9211, there is no access road as the right-of-way descends into the expansive wetland system 20-157. Map 24 of 40 in Volume 9 indicates an access road here but none was to be found. Two attempts to get through or around this wetland were unsuccessful. Therefore, existing structures 9210 back to 9202 were not accessed.

**Comment [CL&P38]:** CL&P's current plans indicate that a new access road is needed in this area.

From Church Street heading east, a large yellow home shown in the application as hosting a residential day care center is immediately north of the corridor. As mentioned earlier, real estate signs indicated this house at 350 Church Street was for sale as of April 9.

No stakes for structures 216 or 217 were located in the field but the application shows them as directly adjacent to structures 9215 and 9216, respectively. Based on an assumed location for structure 217 directly adjacent to 9216, a shift of structure 217 to the east of the stone wall and out of the yard and direct view of the yellow home (350 Church Street) is recommended. This would accomplish two things. First, only the actual transmission lines but no structures would be in the front yard of 350 Church Street. Second, from the closest home on Meadowbrook Drive (#33), moving structure 217 to the east would give that home a more oblique, less direct viewing angle to it.

**Comment [CL&P39]:** This structure is at a ROW angle location. Moving it would affect next structure designs, would reduce the remaining unused ROW width here and would increase MF levels at the nearest homes.

No stakes were found for structure 218 but it is not in a sensitive location.

Existing structure 9219 and new structure 220 are at Day Street Junction in a cornfield which the corridor entered at 9218. From Day Street Junction northward, the new line would run between the existing 345-kV line 330 to the west and two 115-kV lines on H-frames to the east. At structure 9220, the corridor descends from the top of a big bank upon which the structure rests into a dense vegetative tangle.

The corridor enters Pomfret at structure 9223 and enters the first of several cornfields at 9225. This section of right-of-way is generally well drained and devoid of wetlands. The agricultural use of the right-of-way extends northward to structure 9235, simplifying both the field review and ultimately the construction of the proposed line.

The right-of-way descends into wetland 20-162 after structure 9235. This is a large wetland adjacent to the Quinebaug River. Proposed structure 237 initially looked to be inaccessible but is sited on a peninsula which extends southward into the wetland from higher ground off Route 101. Signs of beaver activity in this area include several trees with chew marks. Although the proposed site of structure 237 is offset northward from corresponding structure 9236, it is still in a low-lying wetland location. Any additional northward shift would be beneficial. A shift of 100', though still leaving structure 237 in the wetland, would put it on noticeably higher grade. Structure 238, just south of Route 101, is on a bank above the wetland and river.

**Comment [CL&P40]:** CL&P will evaluate a northward shift of 50 to 100 feet to obtain the additional height afforded by a small knoll. CL&P will provide the results of this evaluation in its draft D&M Plan.

Structure 239, the last structure in Pomfret, sits just north of Route 101 in a stand of white pine.

Structure 240, which was accessed from Lake Road as it is across the Quinebaug River from structure 239, sits in the middle of a large wetland but is actually on a high, dry site, though not an easily accessed one. The right-of-way ascends a steep slope up to the location of structure 241, an angle structure at which the corridor turns eastward.

Curiously, there is no structure 242, either in the application (Volume 9, Map 28 of 40) or in the field.

**Comment [CL&P41]:** Structure 242 was a proposed structure in the preliminary Project design. Additional engineering analyses revealed that Structure 242 was not needed and so it was eliminated. By the time that Structure 242 was eliminated, however, various Project data had been keyed to the proposed structure numbers such that renumbering the new structures to the east could have caused confusion.

The right-of-way crosses Lake Road just before structure 9242 and then angles north at structure 9243. A stone wall crosses the right-of-way 50' north of structure 9245. Structure 248 is offset from structure 9146 to avoid a wetland. Structure 249 sits just at the edge of a wetland, with its western pole right on the edge. At first glance, it did not appear that a small shift could remedy this but there is a subtle east-west ridge 30' north of structure 249 that is probably worth pursuing as a structure site.

**Comment [CL&P42]:** CL&P will evaluate a small shift in location for structure 249 to further reduce wetland impacts. CL&P will provide the results of this evaluation in its draft D&M Plan.

After structures 250 and 9248, the corridor reaches its second crossing of Lake Road.

*Lake Road Crossing #2 to Route 12, Putnam (April 10)*

From Lake Road to the Quinebaug River, the new line would continue to run between the existing 345-kV line to the west and the two 115-kV lines to the east. Other than one home on the north side of Lake Road to the west of the right-of-way, there is no development on either side of the corridor between Lake Road and the Quinebaug River crossing that occurs after structure 9253. New structures 251-255 in this segment have no wetland impacts.

The corridor enters Putnam upon crossing the Quinebaug River. This Putnam section of the right-of-way is accessed from River Road in Putnam. New structures 256, 257 and 258 are in a cornfield above the Quinebaug River. The right-of-way then passes the Putnam ash landfill which towers over it. The line then passes by a sand stockpile and a sand excavation area at new structures 260 and 261 before descending back to the Quinebaug River and recrossing it into Killingly.

Back on the Killingly side of the river, structure 9260 (labeled in the field as 9260A) appears to be on the edge of the Quinebaug River floodplain though mapped as being in it. New structure 262 is 5' lower in elevation than 9260 and is obviously in the floodplain. Based on the stakes, a 20' eastward shift of structure 262 would move one of the two poles of 262 up 5' in elevation, and a 40' eastward shift would get both poles of this structure up 5', above the area which, based on visual appearance, functions as the floodplain.

**Comment [CL&P43]:** A slight shift of structure 262 is being evaluated by CL&P, as well as its construction work pad configuration, to minimize wetland impacts. CL&P will provide the results of this evaluation in its draft D&M Plan.

The corridor continues eastward ascending from the river to the Lake Road Switching Station, which is located just south of the right-of-way. The line continues eastward crossing Interstate 395 and then the Providence and Worcester Railroad right-of-way. New structure 270, immediately west of the Providence and Worcester tracks, is in a stand of Phragmites but not in a wetland. The right-of-way then passes the impressively large Staples warehouse to the south before reaching the Killingly Substation. The stakes for structure 271 say 171 on them but the location is fine, in a thin corridor of 8" dbh white pine located between the 115-kV and 345-kV lines.

After crossing Park Road on the Killingly-Putnam town line, the corridor continues to ascend. A collection of painting-related debris is on the corridor at structures 274/9270 and a makeshift camp/campfire area, complete with folding tables and chairs and tiki lamps, is in the northern edge of the right-of-way at 9270 ½. Structure 281 is offset from structure 9277 to successfully avoid wetland impacts. The right-of-way is otherwise unremarkable as it continues on to Route 12 in Putnam.

*Route 12 to Elvira Heights, Putnam (April 13)*

A single distribution line runs on the north side of the corridor, as it has beginning from Killingly Substation. No stakes were found to mark the location of structure 283 but it would be in a grassed field. Several turkeys were observed crossing the right-of-way at 9279 ½. A stone wall crosses the right-of-way diagonally at 9279 ¾ separating the agricultural field from an impenetrable thicket. Stakes were also missing for structure 287 but its location would not offer any issues. Heritage Road is crossed just after structure 9285. Structure 290 is well placed, just beyond the edge of a wetland at the north side of Heritage Road. Structure 291 is an angle structure located in a red maple swamp. Due to its function as an angle structure and being on the outside of the existing line at this abrupt eastward turn, there is no good option to relocate it out of the swamp.

**Comment [CL&P44]:** The distribution line is a 23-kV double-circuit line that begins from Tracy Substation. Tracy Substation is located just to the north of Killingly Substation.

The corridor then crosses Tourtellotte Road, traversing a small cornfield and then a forested wetland. Structure 294 is in a large wetland extending to structure location 295. If structure 294 was moved 15-20' to the west, though still in the wetland, it would be on slightly higher ground, but the 294-295 span is already a long one and the improvement in location would be minimal. After exiting the right-of-way to get around this large wetland via Pitkin Road and Route 21, the location of structure 295 was reached. No stakes were found there but the location is fine. After passing structures 9292 and 9293 between Route 21 and Aldrich Road, the corridor again becomes impassible due to wetland 20-190.

The next section of the right-of-way was accessed from Fox Road. Again contrary to what is shown on Map 35 of 40 in Volume 9, there is no access road remaining to structure 9294 and new structure 298, though a very much overgrown embankment which was probably the old access road was located. Although no stakes for structure 298 were found, this structure would be in wetland 20-190/191 with no apparent option to do otherwise. The stakes for structure 299 are offset well to the north of existing structure 9295 to avoid siting it in wetland 20-191. Structure 300 would be next to the Putnam Department of Public Works storage yard. At structure 301 on the southwest side of Fox Road, a home to the north will lose about half of its existing screening, perhaps 60' of the existing 120', to the new line.

**Comment [CL&P45]:** CL&P's updated mapping (for the Section 404 Permit and 401 Water Quality Certification applications) identifies new access roads as needed to reach Structure 298 via the ROW from Fox Road.

After the corridor crosses Fox Road, a stone wall crosses the right-of-way at 9298 ¼. Structure 306 would be in wetland 20-195, which cannot be avoided. Continuing eastward, this wetland reaches to structure 307, which would be located just outside of it. Orange plastic fencing installed by CL&P to

**Comment [CL&P46]:** Structure 307 is a three-pole angle structure; two of the poles would be located in wetland W20-195.

control access to the wetland crosses the right-of-way at this point. A home in the woods northwest of structure 9304 will retain about ¾ of its forest screening after the new line is built.

The right-of-way crosses US-44 with homes semi-adjacent to the corridor in the northwest and southeast quadrants of the intersection of the powerline corridor and the highway. A Phragmites wetland was skirted to reach structure 310, which is right at the edge of wetland 20-197. The eastern pole of structure 310 is in the wetland by about 7' with a shift perpendicular to the right-of-way needed to remove it. A similar situation exists at structure 311 but a larger shift, probably impractical, would be required here since the western pole of the new structure is at the wetland edge, thereby necessitating a perpendicular shift by the complete width of the structure.

A wooden footbridge across the stream labeled as S20-62 in Volume 9 provided access toward structure 312, which, like the following four structures, is outside of any wetland. A home seen to the east of structure 9309 is well screened. The fact that this home was noted points to the lack of visibility of the other homes along Elvira Heights Road from the location of the proposed new line.

A stone wall crosses the right-of-way at structure 9310 and another one does so at 9311. A third stone wall crosses just after structure 9312.

Though this stretch east of US-44 along Elvira Heights Road is BMP Focus Area E, two stakes were in place for new structures 309 through 314, indicating H-frame structures in this segment. Only one stake was seen for structure 315. As noted in the earlier discussion of Focus Area E, a walk along Elvira Heights Road showed the existing 345-kV line, which is closer to these homes than the new one would be, is only marginally visible even under leaf-off conditions. Only from the home at 32 Elvira Heights Road was an H-frame structure clearly visible.

*Five Mile River to Rhode Island State Line (April 16)*

An extremely large wetland system (wetland 20-203) stretches from the Putnam-Thompson town line to structure 9318. New structure 322 sits just at the eastern edge of this wetland. Attempts to access structures 320 and 321 during the field review were unsuccessful due to a lack of any way to cross this wetland. The great blue heron rookery mentioned in the application is within this wetland with herons observed on nests, on branches and in flight on April 16. Structure sites 318 and 319 were accessed via residential driveways and yards off Munyan Road and do not have any wetlands involvement. The crossing of wetland 20-203 to reach structure site 321 may present some constructability difficulties.

At Quaddick Town Farm Road, a small home north of the line on the west side of that road is maybe 40 yards off the right-of-way and is only partially screened. Structure 324 is currently sited at the edge of a residential yard on the eastern side of Quaddick Town Farm Road but it is my understanding that this structure may be relocated to the west side of that road. There are no resource implications to such a relocation, which would benefit the home east of Quaddick Town Farm Road but increase the visibility of this structure for the home on the west side of the road.

After structure 324/ 9320, the corridor ascends a small hill to angle structures 325 and 9321. From here to the Rhode Island line, the right-of-way is generally well drained and all proposed new structure locations are in upland sites. The first existing structure in Rhode Island, labeled as 9334 on Map 40 of 40 in Volume 9, is labeled as structure 1A on its northern pole and as 01 on its southern pole, but not as 9334.

**Comment [CL&P47]:** The structure stakes at these two locations reflect H-frame structures which would be built if the Council chose the baseline design at this location rather than the EMP BMP proposal that employs delta steel monopoles for the existing and new lines. (See Comment CL&P 20 on page 8.) Recognizing the need for construction work pads and the large extent of the wetlands on the ROW, the suggested structure shifts are unlikely to significantly reduce wetland impacts. They would create new angle points in the line and increase clearing.

Miscellaneous Application Commentary

CL&P mentions (p. 6-62) that work within the Mansfield Hollow Wildlife Management Area may necessitate the temporary suspension of hunting activities or that there may be a need for temporary trail closures in Mansfield Hollow State Park. Should the former situation develop or appear likely, CL&P should contact Rick Jacobson, Director of the Wildlife Division, at (860) 424-3482 to discuss and coordinate a suspension of hunting including methods to best notify the public. Impacts to Mansfield Hollow State Park should be coordinated through Tom Tyler, Director of the State Parks Division, at (860) 424-3099.

Graphics in pp. 3A-2, 3A-4, 3A 6-10 and 3A 13-15 show the H-frames supporting the new transmission line as uniformly 5' taller than those of the existing line (85' vs. 80'), and for Mansfield Hollow State Park, p. 3A-5 shows the proposed steel poles as 10' taller (125' vs. 115') than those for the existing line. Has there been a change in industry standards since the time the existing line was constructed? If not, what is the reason for this minor but consistent variance in structure height for lines of matching design?

On page 6-26, line 3, it appears that the word 'not' was omitted from a sentence which reads "The excavations required for the installation of the overhead transmission line structures are expected to be above any aquifers used for potable water supply."

The three charts on page 7B-18 show lower magnetic field strengths on the north ROW edge for the Alt. 2 delta configuration than for the delta + 20' configuration of Alt. 3. If this is due to enhanced cancellation effects with the existing line when the new line is at a lower height, why is this same effect not seen for the vertical configuration (Alt. 4) as compared to the vertical+20' configuration (Alt. 5)?

Lastly, comparing Tables 15 and 16 on pages 7B-24 and 7B-25, why is the magnetic field strength lower at the nearest home with Alternative 9 as compared to Alternative 8 (Table 16) when it is higher at the nearest edge of the right-of-way for Alternative 9 as compared to Alternative 8?

Thank you for the opportunity to review this application and to submit these comments to the Council. Should you, other Council members or Council staff have any questions, please feel free to me at (860) 424-4110.

Respectfully yours,

Frederick L. Riese  
Senior Environmental Analyst

cc: Commissioner Daniel C. Esty

**Comment [CL&P48]:** CL&P will coordinate with the DEEP Wildlife and State Parks Division, as well as with the U.S. Army Corps of Engineers, regarding the construction schedule in Mansfield Hollow State Park and WMA. To the extent practicable, efforts will be made to schedule construction to minimize impacts to recreational activities in these areas.

**Comment [CL&P49]:** As explained at the June 26 hearing, although a larger and different type of conductor will be used on the new line (with a different tension), and although some clearance requirements have increased since 1970, CL&P expects that the increase in average pole heights will be less than 5 feet, perhaps even 0 feet, in the final design. Because some new structures will be taller than the adjacent line structures, and these representations are shared with the public, CL&P opted to show the 5-foot average difference in order to avoid under-representing the height of any new structure.

**Comment [CL&P50]:** This error has been corrected by virtue of a revised page 6-26, which was submitted to the Council on June 26, 2012.

**Comment [CL&P51]:** The nearest line to the north ROW edge in these two alternatives is centered at 140 feet from the edge when delta and 155 feet from the edge when vertical. This difference alone for just the new line would lead to a vertical line having slightly lower MFs at and beyond the north ROW edge than a delta line. At these distances from the new line to the ROW edge, an extra 20 feet of conductor height in either type of line would cause only a very small MF reduction by itself. To the extent that the results on these charts on page 7B-18 (and the associated curves in Figure 6 on page 7B-17) reflect small differences from these expected results, those differences are entirely attributable to the relative effectiveness of MF cancellation with the existing line. The exact positioning of the new line's conductors in relation to those of the existing line, and their phasing, controls the effectiveness of cancellation.

**Comment [CL&P52]:** Alternative 8 models both circuits in vertical configurations, and Alternative 9 models both circuits in delta configurations, in each case with the same centerline-to-centerline circuit separation. The MF profiles for these two alternatives on page 7B-23 are practically right on top of one another at all points east of the ROW. The small differences at the ROW edge and at the nearest homes, each rounded up to 0.1 mG, are attributable to changes in cancellation effectiveness with increasing distance.