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July 6, 2010

TO: Parties and Intervenors

FROM: S. Derek Phelps, Executive Director

RE: **DOCKET 370A-MR** - The Connecticut Light & Power Company application for a Certificate of Environmental Compatibility and Public Need for the Manchester Substation to Meekville Junction Circuit Separation Project in Manchester, Connecticut.

As stated at the hearing in New Britain on June 2, 2010, after the Council issues its draft findings of fact, parties and intervenors may identify errors or inconsistencies between the Council's draft findings of fact and the record; however, no new information, evidence, argument, or reply briefs will be considered by the Council.

Parties and Intervenors may file written comments with the Connecticut Siting Council on the Draft Findings of Fact issued on this docket by July 9, 2010.

SDP/laf

Enclosure

DOCKET 370A-MR –The Connecticut Light & Power } Company application for a Certificate of Environmental } Compatibility and Public Need for the Manchester Substation to } Meekville Junction Circuit Separation Project in Manchester, } Connecticut. Petition for Reconsideration under C.G.S. §4- } 181a(a).	Connecticut Siting Council June 25, 2010
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Draft Findings of Fact (Reconsideration)
Introduction

1. Pursuant to Connecticut General Statutes (CGS) §16-50g et seq., on October 20, 2008, The Connecticut Light and Power Company (CL&P) applied to the Connecticut Siting Council (Council) for Certificates of Environmental Compatibility and Public Need (Certificate) for the construction, operation and maintenance of the Connecticut portion of “The Connecticut Valley Electric Transmission Reliability Projects.” These projects include the Greater Springfield Reliability Project (GSRP) and the Manchester to Meekville Junction Circuit Separation Project (MMP). The MMP portion of the application was denied without prejudice on March 9, 2010. The decision was mailed to the applicant and parties and intervenors on March 24, 2010. (CL&P 1, Vol. 1, p. ES-1; CL&P 44, pp. 1,2; record)
2. During the course of the Docket 370 proceedings, a variation of the MMP was introduced. The variation is referred to as the MMP variation, or MMP-V. (CL&P 44, p. 2)
3. In the MMP Opinion of March 9, 2010 the Council found that although the MMP would cost less than the MMP-V, the MMP-V may make more efficient use of the existing right-of-way (ROW) by significantly improving reliability at a relatively small additional cost. However, at the time of the decision, the Council did not have enough information regarding the MMP-V to make a decision on the project. Information requested by the Council includes: a confirmation of reliability improvements; potential additional environmental impact; electric and magnetic field (EMF) levels; clarification and details of the additional cost associated with the MMP-V; and further discussion of ISO-NE’s approach to MMP-V in terms of cost allocation. (Opinion 3/09/10)
4. On March 16, 2010, the Council voted to approve the Greater Springfield Reliability Project (GSRP) portion of Docket 370. In the Findings of Fact, and Opinion documents associated with the GSRP, the Council identified that the MMP is needed to prevent overloads on Connecticut electric transmission facilities that could otherwise occur as a result of power flows enabled by the GSRP. (CL&P 44, p. 2)
5. On April 7, 2010, CL&P submitted a “Petition for Reconsideration of the Denial of a Certificate of Environmental Compatibility and Public Need for the Manchester to Meekville Junction Circuit Separation Project” (Petition) to the Council. The Petition requested the Council to reconsider the denial without prejudice and provided direct testimony on the MMP and MMP-V. (CL&P 44; record)

6. On April 7, 2010, CL&P provided two copies of the Petition to the Town of Manchester. On May 3, 2010, CL&P met with Town of Manchester representatives Mr. Scott Shanley, Manchester's General Manager; Mr. Mark Carlino, Manchester's Director of Public Works and Engineering; and Mr. Mark Pelligrini, Manchester's Director of Neighborhood Services and Economic Development, to discuss the project and CL&P's outreach to abutters of the MMP-V that did not abut the MMP. (CL&P 46, pp. 3, 4)
7. On May 6, 2010, the Council voted to reopen the MMP portion of the Docket 370 application for the limited purpose of considering additional information on the MMP and the MMP-V. CL&P requested that the Council issue a Certificate for either the MMP or the MMP-V. The reopened docket was designated Docket No. 370A-MR. (CL&P 44, p. 5)
8. Pursuant to CGS §16-50j (h), on May 7, 2010, the following state agencies were requested to submit written comments regarding the proposed MMP and MMP-V: Department of Environmental Protection (DEP); Department of Agriculture (DOAg); Department of Public Health (DPH); Council on Environmental Quality (CEQ); Department of Public Utility Control (DPUC); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); and Connecticut Department of Transportation (CDOT). (Record)
9. The Drinking Water Section of DPH responded on May 20, 2010 with a "no comment" letter. (DPH comments dated)
10. DEP provided comments on the proposed project on June 2, 2010 finding that environmental impact of the MMP-V is substantially similar to the MMP. (DEP comments dated June 2, 2010)
11. CL&P provided copies of the Petition to the Town of South Windsor on May 17, 2010, which is within 2,500 feet of the MMP and MMP-V. (CL&P 46, pp. 4, 5)
12. Parties and Intervenors to these proceedings include CL&P (the Applicant), NRG, Connecticut Attorney General Richard Blumenthal, Town of East Granby, Town of Suffield, ISO New England Inc. (ISO-NE), Connecticut Office of Consumer Counsel (OCC), ICE Energy, Inc., Town of Enfield, City of Meriden, The United Illuminating Company (UI), the Connecticut Energy Advisory Board (CEAB), CDOT, Farmington River Watershed Association, Citizens Against Overhead Power Line Construction (CAOPLC) and the Massachusetts Municipal Wholesale Electric Company (MMWEC). (Record)
13. CL&P sent a cover letter and the Council's hearing notice to the majority of the property owners with land abutting the Manchester Substation to Meekville Junction ROW on May 11, 2010. The same notice was sent to the remainder of the list on May 20, 2010. There was a total of 47 notice letters sent to Manchester residents, 10 of which were returned as undeliverable because they were unoccupied properties, including two CL&P-owned properties. For seven non-CL&P properties, CL&P obtained mailing addresses for the property owners and a second letter was sent on May 19, 2010. On May 24, 2010, CL&P sent notice to the one remaining property owner's fiduciary for the deceased property owner's ancillary estate in Manchester and to the estate's attorney. (CL&P 46, pp. 5, 6)

14. Four homes abut MMP-V that would not abut MMP: two on Mary Drive and two on Botticello Drive in Manchester. On May 11, 2010, CL&P mailed notice of the project and the Council's hearing to each of these residents. On May 20, 2010, a project representative went to each house and reminded the resident of the letter of May 11 and informed of the Council's scheduled hearing. On May 21, 2010, CL&P hand-delivered a copy of the same letter that was mailed on May 11 to each of the four residences. (CL&P 46, p. 6)
15. On May 21, 2010, CL&P put up three signs providing notice of the Council's scheduled hearing. The signs were placed: at the entrance to the ROW access road on Burnham Street Extension, just north of Meekville Junction; on CL&P property at the substation entrance on Olcott Street; and on private property at the corner of Mary Drive and Botticello Drive. (CL&P 46, p. 6)
16. Pursuant to CGS § 16-50m, the Council, after giving due notice thereof, held a public hearing for the reopened proceeding on June 2, 2010, beginning at 11:00 a.m. at Central Connecticut State University, Institute of Technology and Business Development, 185 Main Street, New Britain, Connecticut. A public comment session was held at 1:00 p.m., at which no members of the public spoke. (Transcript 18, June 2, 2010 [Tr. 18], pp. 6, 41)

Proposed Route

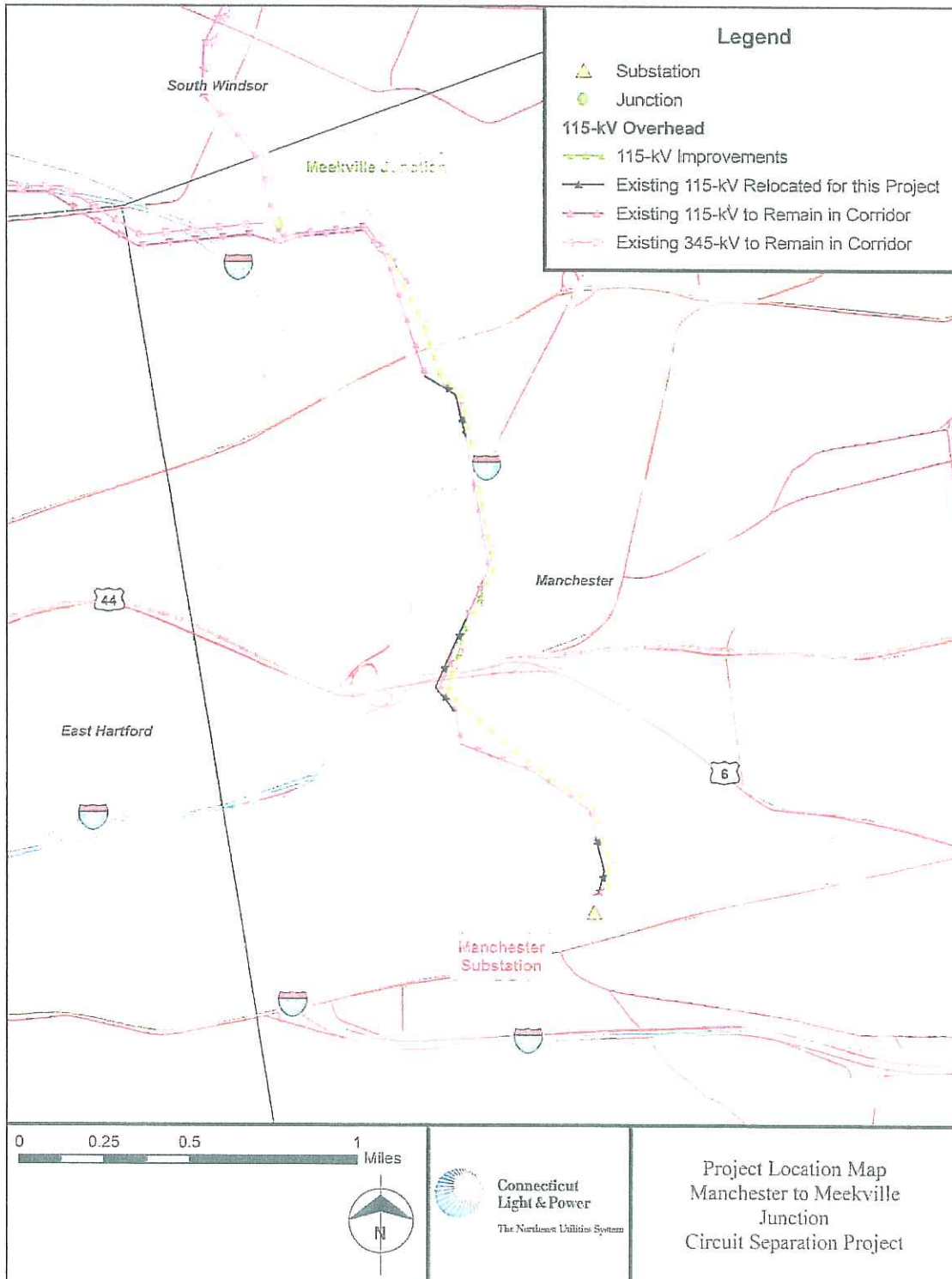
MMP

17. The MMP would consist of the separation of a 345-kV and a 115-kV circuit for 2.2 miles between Manchester Substation and Meekville Junction, Manchester, Connecticut. Refer to Figure 1. (CL&P 1, Vol. 1, p.ES-5)

MMP-V

18. The MMP-V route would consist of the addition of a new 345-kV circuit for 2.7 miles from within Manchester Substation to approximately 400 feet west of Meekville Junction. Refer to Figure 1. (CL&P 44, Facilities/Cost, pp. 2, 3)

Figure 1. Meekville Junction to Manchester Substation Project.



(CL&P 1, p. ES-10)

Need

19. The MMP is needed because the GSRP will create greater power flows throughout north-central Connecticut resulting in the need for the MMP. (CL&P 1, Vol. 1, pp. F-28, F-29)
20. The 345-kV transmission line associated with the GSRP could not be energized until the MMP or MMP-V is also ready to be energized. The GSRP transmission line will result in higher power flows on the system that have to be redistributed by the MMP/MMP-V so 115-kV cable circuits in Hartford do not overload under contingency conditions. (ISO-NE 1, p. 16; CL&P 44, Process, p. 5; CL&P 45, R. 15)

System Benefits

21. The MMP-V would result in the elimination of a 3-terminal 345-kV line and the creation of two independent 345-kV circuits on mostly separate ROWs. This creation of two 2-terminal lines would provide robust support to both the Ludlow Substation and Manchester Substation, which would not be provided by the proposed MMP. (CL&P 44, System Benefits, p. 2)
22. Generally, system planners prefer 2-terminal lines to 3-terminal lines because it is more difficult to design system protection that is reliable under fault conditions for 3-terminal lines, and because a fault on a 3-terminal line would result in the loss of a circuit connection at three terminals, rather than two. (CL&P 44, System Benefits, p. 2)
23. A new 345-kV connection between North Bloomfield Substation and Manchester Substation would reduce power flow on the existing 115-kV network between the two substations during N-1 and N-1-1 contingency events. (CL&P 44, System Benefits, p. 2)
24. The MMP-V may slightly increase the Connecticut import capability by between 20 and 120 MW. (CL&P 44, System Benefits, p. 2)
25. The GSRP will provide a 345-kV connection between Connecticut and western Massachusetts, which will create a loop. If the Manchester-North Bloomfield-Barbour Hill 395 circuit were to trip, the connection to Manchester from Barbour Hill and North Bloomfield would be interrupted, thus eliminating one of the benefits of a looped system. This problem would be solved through the construction and operation of the Central Connecticut Reliability Project (CCRP), a future component of NEEWS. If the CCRP is not constructed, CL&P would look for another solution, which may be similar to the MMP-V. (CL&P 44, System Benefits, pp. 2, 3)
26. If a contingency were to occur on the Manchester-North Bloomfield-Barbour Hill 345-kV circuit, Connecticut would still have a 345-kV connection to Rhode Island via the Killingly-Sherman Road 347 circuit and a 345-kV connection to New York at the Long Mountain Switching Station. There would also still be a 345-kV connection to Barbour Hill Substation through Ludlow Substation and to North Bloomfield Substation through Agawam Substation. (CL&P 44, System Benefits, p. 5)
27. A second contingency on a Connecticut-New England tie would trigger operator action to enable the system to remain intact. (CL&P 44, System Benefits, p. 5)

28. CL&P performed additional power flow analyses for the MMP-V with additional cases. The results of these analyses confirmed that MMP-V did not solve any criteria violations that are not also solved by MMP. However, the new 345-kV line associated with MMP-V would reduce power flow on the existing 115-kV network between North Bloomfield Substation and Manchester Substation following N-1 and N-1-1 contingency events. (CL&P 44, System Benefits, p. 6; CL&P 45, R. 2)
29. CL&P repeated testing for voltage criteria violations previously performed, and additional analysis of voltage levels under N-1-1 contingency events. In a study including MMP but not the two capacitor banks proposed for Ludlow Substation in Ludlow, Massachusetts, system voltages on the bulk power 345-kv system fall below acceptable levels for N-1-1 contingency events. However, with the MMP-V in place, system voltages do not violate the 345-kV low level limit. This means constructing the MMP-V would eliminate the need for constructing the Ludlow capacitor banks at this time. The cost of the MMP-V could be offset by elimination of the Ludlow capacitor banks. (CL&P 44, p. 6)
30. If MMP is approved, the Ludlow capacitor banks would be needed to maintain voltage levels at North Bloomfield Substation and Barbour Hill Substation to within acceptable limits. (Tr. 18, p. 67)
31. A transfer analysis with the MMP-V in operation showed an approximately 25 MW increase in the N-1 Connecticut import transfer limit capability. Under N-1-1 conditions, almost all line out simulations showed a negligible improvement in the Connecticut import interface transfer limit capability. The one exception was with any portion of the 345-kV Manchester-North Bloomfield-Barbour Hill 395 circuit out initially, there is an increase of more than 150 MW in the transfer limit. (CL&P 44, System Benefits, p. 7)
32. Stability studies were performed using: three-phase normally cleared faults (normal contingencies); single-line-to-ground faults with delayed clearing due to a stuck circuit-breaker (normal contingencies); and three-phase faults with delayed clearing (extreme contingencies). The stability studies determined that there is no appreciable difference in system dynamic performance between MMP and MMP-V. (CL&P 44, System Benefits, pp. 8, 9)
33. Short-circuit analyses performed showed no criteria violations for either the MMP or the MMP-V. (CL&P 44, System Benefits, p. 9)
34. The MMP-V would allow transmission lines to be taken out of service for maintenance and maintain system operation. During maintenance without MMP-V, generation would have to be dispatched within Connecticut that is more expensive than would be dispatched under normal conditions. The cost of running generation out of merit escalates quickly. (Tr. 18, pp. 22-24)

Project Description

MMP

35. Under the MMP the 115-kV line segment would be constructed with conductors, spacing, and insulation suitable for use with a 345-kV line in the future. (CL&P 44, Facilities/Cost, p. 1)
36. Construction of the MMP would begin immediately north of the Manchester Substation fence on the substation property. The MMP would extend to a point just before the existing ROW makes a sharp westerly turn and splits into two ROWs. (CL&P 44, Facilities/Cost, pp. 1, 2)

Route & Design

37. The two existing circuits to be separated by the proposed MMP are a 115-kV circuit (#1448) and a 345-kV circuit (#395). The separation would take place over a 2.2-mile-long section of CL&P's existing ROW between Manchester Substation and Meekville Junction. (CL&P 1, Vol. 1, pp. E-8, E-9, I-5)
38. Currently, there are two double-circuit lines on the ROW. Along the western portion of the ROW is one line of lattice-steel towers, typically 105 feet tall, supporting two 115-kV circuits. Toward the eastern side of the ROW is another line of similar towers supporting the 115-kV and 345-kV circuits. These towers range between 120 and 195 feet in height, averaging 155 feet. Over some of this distance, in between the two rows of towers on the east and west, lies a row of 40-foot wood poles supporting a distribution circuit. (CL&P 1, Vol. 1, p. I-5; CL&P 15, Carberry/Newland, p. 56)
39. The proposed circuit separation would include constructing a new line of steel monopoles down the middle of the ROW. These structures would be approximately 155 feet tall, with a vertical configuration of the conductors. The 115-kV circuit segment on the easterly set of towers would be inactivated, and a circuit segment replacing it, using bundled 1,590-kcmil aluminum conductors with steel reinforcement, would be put onto the new monopoles. The 345-kV circuit that is also currently on the eastern towers would be left where it is. (CL&P 1, Vol. 1, pp. O-49, O-55, Fig. O-18, O-51; CL&P 15, Carberry/Newland, pp. 56, 57)
40. The MMP would require the installation of a total of 25 new monopole structures at 23 locations. At two locations, a lattice tower supporting a double circuit 115-kV line would be replaced by two monopoles. (CL&P 45, R. 10)
41. The total distance along the ROW between Manchester Substation and Meekville Junction is 2.6 miles. The proposed MMP circuit separation is 0.4 miles shorter than the total distance because the #1448 circuit is already on separate structures along that section. (CL&P 26, p. 2)
42. The distribution line that currently occupies some of the middle area would be shifted within the ROW toward the existing row of towers on the west. To accommodate this shift, three to four of the western towers would have to be moved. (CL&P, Vol. 1, pp. I-6, O-64)
43. Most of the existing ROW is sufficiently wide to accommodate the relocated 115-kV line between the existing double-circuit transmission lines. However, CL&P proposes an expansion area of the existing ROW consisting of an approximately 2,400 square-foot area located within a commercial development north of Tolland Turnpike. The expansion area consists of a paved parking lot. (CL&P 1, Vol. 1, p. I-6; CL&P 17, R. OCC-001-SP01)
44. Although the new replacement line would be operated initially at 115-kV, it would be built with the capability to operate at 345-kV, thus facilitating system upgrades in the future. (CL&P 1, Vol. 1, p. I-10)
45. If the MMP were approved, conversion of the 115-kV circuit to a 345-kV circuit in the future would be relatively insignificant. The only work that would need to be done would be removal of cross connections so that one set of conductors on the structures could be operated at 115-kV. (CL&P 44, EMF, p. 12)

46. Both the MMP and MMP-V would include a new line of structures in the center of the ROW. The difference between the MMP and MMP-V would be that: the MMP-V would require more structures because it is a longer segment; and the circuit on the new structures would be operated at 345-kV under the MMP-V rather than at 115-kV under the MMP. (CL&P 44, EMF, p. 11)

Cost

47. The proposed baseline design of the MMP would cost approximately \$14 million. The split-phase option of the 345-kV line would cost an additional \$520,000. (CL&P 1, Vol. 1, p. O-67; Carberry/Newland, p. 55)

MMP-V

Route & Design

48. The MMP-V would construct the same new set of steel monopoles and conductors in the middle of the Manchester-Meekville ROW as proposed in the MMP, but would extend the area involved in construction include a different configuration. Specifically, the proposed MMP-V would:
- Extend the new structures and conductors the entire distance from Manchester Substation to Meekville Junction;
 - Place a new 345-kV circuit on the new structures, configured as a 2-terminal line;
 - Reconfigure the 345-kV line currently existing on the double-circuit lattice towers (#395) to a 2-terminal line instead of a 3-terminal line;
 - Make improvements at the Manchester Substation to establish the reconfiguration; and
 - Leave the 115-kV circuit currently existing on the double-circuit lattice towers (#1448) as is. (CL&P 26, pp. 2, 3)
49. The existing 345-kV circuit established in the Manchester-Meekville ROW (#395), branches in three different directions, like a Y: it runs from Meekville Junction to Barbour Hill Substation in South Windsor, from Meekville Junction to North Bloomfield Substation in Bloomfield, and from Meekville Junction to Manchester Substation (the branch involved in the proposed MMP). These three 345-kV branches comprise a 3-terminal circuit. The MMP-V would, in effect, split the existing 3-terminal circuit into two 2-terminal circuits, one extending between North Bloomfield Substation and Manchester Substation, and the other extending between Barbour Hill Substation and Manchester Substation. (CL&P 26, p. 3)
50. Construction of the MMP-V would require the same work as the MMP and additional construction at each end of the MMP route. The MMP-V would extend from Manchester Substation to the western end of Meekville Junction. (CL&P 44, Facilities/Cost, p. 2)
51. New equipment within the existing Manchester Substation fenceline under the MMP-V includes: a new 345-kV line terminal structure and associated equipment (consisting of line and breaker disconnect switches, 345-kV circuit breaker, coupling capacitor voltage transformers, wave trap and associated wiring and control equipment); and the relocation of the existing 395 line to the new terminal structure position. Additional line structures would also be needed outside of the substation fence for approximately 0.1 miles from the terminal structure to structure 20001 to accommodate the 345-kV connections. (CL&P 44, Facilities/Cost, pp. 2, 3)

52. At the north end of the proposed MMP, the MMP-V would require an additional 0.4 miles of 345-kV line segment. The 345-kV line would end at structure number 20027, approximately 400 feet past Meekville Junction, and require the removal of some existing 115-kV line structures. The MMP-V would involve the relocation of two spans of existing double circuit 115-kV line (structures 6278 to 6275) to the west within the existing ROW. (CL&P 44, Facilities/Cost, p. 3)
53. The MMP-V would require the installation of a total of 34 new monopole structures at 31 locations. At three locations, a lattice tower supporting a double-circuit 115-kV line would be replaced by two monopoles. (CL&P 45, R. 10)
54. At the southern end, the MMP-V would include four new 345-kV line spans to Manchester Substation, the removal of two existing structures, and construction work within the substation to accommodate a new 345-kV circuit position. (CL&P 44, Facilities/Cost, p. 2)
55. At the northern end, between existing Structure # 10088 and Meekville Junction, four new 345-kV transmission line structures and two new double circuit 115-kV line structures would be installed for the MMP-V. (CL&P 44, Environment, p. 5)
56. CL&P prefers the MMP-V to the MMP, assuming delays in permitting could be avoided. (CL&P 45, R. 11)

Cost

57. The incremental capital cost of MMP-V would be approximately \$9,250,000 more than MMP. (CL&P 44, Facilities/Cost, p. 5)
58. If the MMP-V were built rather than the MMP, 345-kV capacitor banks that are proposed at Ludlow Substation as part of the GSRP would not be needed. The MMP-V would provide additional voltage support that would have been provided by the capacitors. The cost of the capacitor banks is approximately \$10,000,000. (CL&P 44, Facilities/Cost, p. 5)
59. Since the MMP-V may eliminate voltage violations that would otherwise require the installation of the Ludlow capacitor banks, the MMP-V may be eligible for regionalization to be determined by ISO-NE. (CL&P 44, System Benefits, p. 9)
60. If there is adequate evidence that the difference between the MMP and MMP-V are cost justified, then that would be a basis for regionalization of the incremental cost. (Tr. 18, pp. 20, 21)

Route Alternatives

61. An in-ROW underground alternative to the MMP-V could not be constructed due to wetland impacts that would result. (CL&P 46, pp. 7, 8)
62. CL&P investigated an in-road underground alternative to the MMP-V. This alternative would be constructed along a road between Manchester Substation and a new transition station north of Meekville Junction in South Windsor. The route would extend 4.15 miles from Manchester Substation northeast on Olcott Street, turning north onto Adams Street, continuing north on Buckland Street, turning west onto Pleasant Valley Road into South Windsor, then turning south on Clark Street to a potential transition station. (CL&P 46, p. 8)

63. The in-road underground alternative would require upgrades to the Manchester Substation including equipment additions to create bus-connection positions for each of two sets of 345-kV cables and a 345-kV transition station to connect the cables to an overhead line. (CL&P 46, p. 8)
64. The in-road underground alternative would cost \$124 million. If the overhead MMP-V were approved and regionalized, Connecticut ratepayers would pay \$107.2 million (27 percent of \$23 million, which is approximately \$6.2 million plus 100 percent of the difference in cost of \$101 million for a total of \$107.2 million.) (CL&P 46, p. 8)
65. The MMP-V would be operational by mid-2013, if all permitting is completed as expected. Delays in obtaining permits have the potential to cause delays in the schedule. (Tr. 18, p. 45)

Environment

Wetlands and Watercourses

66. The portion of MMP-V closest to the Manchester Substation would require the installation of portions of the 345-kV line structures within the Federal Emergency Management Agency (FEMA) designated floodway of Hop Brook. The installation of the transmission line structures would impact the flood storage capacity of the Hop Brook Floodway. (CL&P 44, Environment, p. 3)
67. The reduction in flood-storage capacity within the Hop Brook floodplain associated with the MMP-V is equal to the volume of two additional monopoles minus the volume of the removed lattice tower. The change would result in an increase of water surface elevation ranging from approximately 0.01 to 0.03 feet. This may require compensatory flood storage mitigation, which would include excavation downstream of the areas of increased water elevation. (CL&P 44, Environment, p. 9; CL&P 45, R. 3, R. 4)
68. The MMP-V would use the same alignment as the MMP for the Hockanum River Stream Channel Encroachment Line (SCEL) crossing but would use different structure locations within the Hop Brook floodplain, which may impact the hydrology of the floodway and the flood-storage capacity within the floodplain. (CL&P 44, Environment, p. 9)
69. The additional 0.4 mile segment of the MMP-V would include the crossing of an intermittent stream and associated wetland as well as two other wetlands. The three wetland areas consist primarily of scrub-shrub vegetation, however, small portions of one wetland consists of open water and palustrine vegetation. None of these three wetlands are classified as vernal pools. (CL&P 44, Environment, pp. 5, 6)
70. Vegetation near the northern 0.4 mile MMP-V segment consists of upland shrub and forested areas, palustrine forested and palustrine scrub-shrub wetlands. (CL&P 44, Environment, p. 5)
71. There is one structure associated with MMP-V that would not be needed for MMP, near Meekville Junction, that is proposed to be installed within a wetland area. (DEP Comments dated June 2, 2010)
72. Within the 0.1 mile segment of the ROW immediately northeast of the substation, the MMP-V would require three different structure locations, including two 345-kV line structures and one 115-kV line structures, within a wetland area. The wetland is associated with Hop Brook, which is the south fork of the Hockanum River. (CL&P 44, Environment, pp. 7, 8)

Wildlife

73. There are no threatened or endangered species habitat or amphibian breeding habitat within the 0.4 mile MMP-V segment. Also, there are no federal, state, or locally designated recreational areas or state wildlife management areas within the 0.4 mile section. (CL&P 44, Environment, p. 7)
74. No threatened or endangered species or cultural resources would be affected by the 0.1 mile segment of MMP-V. One structure that is eligible for the National Register of Historic Places, the Charles Bunce House, is located approximately 0.25 miles south of the substation. However, the MMP and MMP-V would have no adverse affect on that property. (CL&P 44, Environment, p. 8)

Vegetation Removal

75. Approximately 1.4 acres of vegetation removal is required near Meekville Junction where the center of the 350-foot wide ROW is forested. An additional ten feet of vegetation would have to be removed along both sides of the ROW along the entire 2.7 mile length of MMP-V. The additional clearing is necessary because the 345-kV lines require greater clearances between the conductors and vegetation. (CL&P 44, Environment, p. 9; Tr. 18, pp. 74, 75)
76. Approximately 2.4 acres of the 3.1 acres of additional upland clearing required for the MMP-V would occur along the 0.4 mile segment near Meekville Junction because of the installation of a new 345-kV line and shifts of the existing 115-kV double circuit line. (CL&P 44, Environment, p. 9)

Land Use

77. The MMP-V is bordered by commercial and industrial land uses, near existing structure numbers 10088 to 10090, and single-family residences on Burnham Street, Botticello Drive, and Mary Drive. NU owns in fee portions of the ROW immediately southeast of Meekville Junction. Along the NU-owned area, four residences are within 300 feet of the MMP-V. The existing 345-kV line is located closer to these residences than the MMP-V. (CL&P 44, Environment, p. 6)

Cultural Resources

78. There are no known structures listed on or eligible for the National or State Registers of Historic Places within 0.25 miles of the 0.4 mile segment of ROW associated with the MMP-V. (CL&P 44, Environment, p. 7)

Comparison of MMP and MMP-V

79. A comparison of environmental impact of the entire MMP and the MMP-V routes is as follows.

Resources	MMP	MMP-V
Number of Stream Crossings	6 (5 perennial, 1 intermittent)	7 (5 perennial, 2 intermittent)
Number of wetlands within ROW	10	13
Number of vernal pools within ROW	3	3
Temporary impacts on wetlands (from construction)	168,793 sq. ft. (3.9 acres)	210,470 sq. ft. (4.8 acres)
Permanent impacts on wetlands (Fill)	2,221 sq. ft. (0.05 acres)	2,786 sq. ft. (0.06 acres)
Forested wetland clearing	43,569 sq. ft. (1 acre)	65,273 sq. ft. (1.5 acres)
Forested upland clearing	74,502 sq. ft. (1.7 acres)	207,889 sq. ft. (4.8 acres)
Potential threatened and endangered species near ROW	1	1

(CL&P 44, Environment, p. 11)

Permits

80. If the MMP-V were approved, CL&P would have to file amendments to the DEP 401 Water Quality Certificate Application and the SCEL Application, as well as the United States Army Corps of Engineers (USACE) application. The amendments would include the additional structures and removal activities that are part of MMP-V and revise the Floodway analysis and hazards report. The amendments would be filed in July 2010. (CL&P 45, R. 1)

81. DEP permits may be issued in October 2010. The USACE permit, typically issued within one month of DEP's permits, may be issued in November 2010. Following this permit schedule, CL&P would commence construction activities in December 2010. (CL&P 45, R. 1)

EMF

82. Using Average Annual Load (AAL), both the MMP and the MMP-V would produce magnetic fields generally lower than pre construction magnetic field (MF) levels. (CL&P 44, EMF, p. 3)

83. The proposed MMP involves changes to the ROW along Cross Section 21. The MMP-V involves changes to the ROW along Cross Section 21 and Cross Section 22. Cross Section 21 extends from the Manchester Substation (proposed structure # 20003) to the point where the 115-kV circuit separates from the structures shared with the 395 circuit (proposed structure # 20018). Cross Section 22 extends from where the ROW turns west (proposed structure # 20020) to the point where the Barbour Hill and North Bloomfield legs of the 395 circuit split apart (proposed structure # 20022). (CL&P 44, EMF, p. 4)

84. Cross Section 22 is typically wider than Cross Section 21 and does not have a distribution line on it. (CL&P 44, Facilities/Cost, p. 5)

85. The Cross Sections do not cover the entire length of the MMP-V because no EMF modeling is done where line conductors transition from a substation to line structures or from one configuration to another on a ROW. (CL&P 44, EMF, p. 4)
86. Along Cross Section 21, the MMP would lower MF at the ROW edges because the new 345-kV circuit between North Bloomfield Substation and Agawam Substation would supply southwest Connecticut load via a future NEEWS project extending from North Bloomfield Substation to Frost Bridge Substation. The future project would draw electricity over that transmission line rather than the lines to Manchester Substation, thereby reducing the loading of the existing 395 line segment from Meekville Junction to Manchester. Also, re-using one set of conductors on the former double-circuit line on the east side of the ROW would result in a split-phase configuration of the 345-kV line, which would further reduce MF along the ROW. (CL&P 44, EMF, p. 5)
87. Along Cross-Section 21, the MMP-V would reduce MF at ROW edges by less than the MMP. The loading on the existing #395 line would be reduced, however, the reduction would not be as large as with the MMP. The power flow on the #395 line from the north that turns west at Meekville Junction to North Bloomfield Substation as part of the MMP would change direction with the MMP-V. The MMP-V would require power to first flow south to Manchester Substation, then back north to Meekville Junction on the new 345-kV line to get to North Bloomfield Substation. Also, no split-phasing opportunity is available because the 345-kV (#395 circuit) and the 115-kV (#1448 circuit) would remain in place. (CL&P 44, EMF, p. 5)
88. Since the power flow would double back to Meekville Junction and then to North Bloomfield Substation, some of that power would shift to the Agawam to North Bloomfield line. This change would increase current on the GSRP line, which would increase MF levels along that line by approximately 2.3 % from the modeling provided under the GSRP. (CL&P 44, EMF, pp. 12, 13)
89. Under the MMP-V alternative, no Council Best Management Practices (BMP) configuration is available for Cross Section 21. Calculated MF for the MMP baseline design, MMP split-phase configuration and MMP-V baseline design are shown in the table below.

	Magnetic Fields (mG)		Electric Fields (kV/m)	
	west/south ROW	east/north ROW	west/south ROW	east/north ROW
Pre-const. (2012)	4.8	27.4	0.06	0.15
Post-const. MMP (2017)	3.0	12.2	0.07	0.15
Post-const. MMP split-phase (2017)	2.3	4.8	0.05	0.14
Post-const. MMP-V	3.0	24.5	0.08	0.16

(CL&P 44, EMF, p. 6)

90. A BMP design could be constructed for Cross Section 22 of the MMP-V. A split-phase configuration of the #395 line could be constructed in this segment of the MMP-V because the existing conductors on the south side of the ROW would not be needed. (CL&P 44, EMF, p. 8)

91. The predicted MF levels for Cross Section 22 with the baseline design and the split-phase configuration are shown in the table below.

	Magnetic Fields (mG)		Electric Fields (kV/m)	
	west/south ROW	east/north ROW	west/south ROW	east/north ROW
Pre-const. (2012)	16.2	47.4	0.63	0.15
Post-const. MMP (2017)	18.1	27.1	0.63	0.20
Post-const. MMP-V (2017)	18.2	29.7	0.61	0.27
Post-const. MMP-V split-phase (2017)	17.0	9.5	0.63	0.20

(CL&P 44, EMF, p. 8)

92. There are three “statutory facilities” immediately east of Cross Section 21 of the MMP and MMP-V. The statutory facilities consist of Howell Cheney Vocational Training School; Leber Field/Playground; and East Catholic High School. The Howell Cheney Vocational Training School is 547 feet from the proposed transmission line and East Catholic High School is 900 feet from the proposed MMP and MMP-V and would, therefore, not experience increased MF levels at AAL following the installation of the project. MF levels at Leber Field, which is 203 feet from the proposed transmission line, would not increase from pre-construction levels. (CL&P 44, EMF, pp. 10, 11)
93. Along Cross Section 22, there are four homes north of the ROW. The homes are adjacent to the existing 345-kV line but not to the proposed 345-kV line, which would be constructed within the interior of the ROW. The homes range from 250 feet to 298 feet from the proposed new MMP-V transmission line. The MF levels at these homes are not expected to increase above pre-construction conditions. (CL&P 44, EMF, p. 11)
94. The construction of the split-phase configuration for Cross Section 22 involves changing or making connections between phase conductors at two existing lattice structures. No modifications to existing towers are required. The cost of the split-phase configuration is \$20,000 above the cost of the baseline configuration. (CL&P 45, R. 6)



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NOTICE OF SERVICE

I hereby affirm that a photocopy of this document was sent to each Party and Intervenor on the service list dated November 13, 2009 with method of service to each party and intervenor listed via either e-mail or hard-copy on July 6, 2010.

Dated: July 6, 2010

Lisa Fontaine
Custodian of Docket No. 370