DOCKET 370 – Consolidated proceeding pursuant to the Connecticut Energy Advisory Board (CEAB) Request for Proposal (RFP) process under C.G.S. §16a-7c. **Original application:** The Connecticut Light & Power Company application for Certificates of Environmental Compatibility and Public Need for the Connecticut Valley Electric Transmission Reliability Projects which consist of (1) The Connecticut portion of the Greater Springfield Reliability Project that traverses the municipalities of Bloomfield, East Granby, and Suffield, or potentially including an alternate portion that traverses the municipalities of Suffield and Enfield, terminating at the North Bloomfield Substation; and (2) the Manchester Substation to Meekville Junction Circuit Separation Project in Manchester, Connecticut. **Competing application**: NRG Energy, Inc. application pursuant to C.G.S. §16-50*l*(a)(3) for consideration of a 530 MW combined cycle generating plant in Meriden, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	March 9, 2010

Opinion Docket 370 - Manchester to Meekville Circuit Separation Project

I. Introduction

On October 20, 2008, The Connecticut Light and Power Company (CL&P) applied to the Connecticut Siting Council for Certificates of Environmental Compatibility and Public Need for the Connecticut Valley Electric Transmission Reliability Projects which consist of (1) The Connecticut portion of the Greater Springfield Reliability Project (GSRP) that traverses the municipalities of Bloomfield, East Granby, and Suffield, or potentially including an alternate portion that traverses the municipalities of Suffield and Enfield, terminating at the North Bloomfield Substation; and (2) the Manchester Substation to Meekville Junction Circuit Separation Project (MMP) in Manchester, Connecticut.

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, both in Manchester, Connecticut.

II. Need

In 2004, ISO-New England Inc. (ISO-NE) began a study on deficiencies and interrelated needs throughout the southern New England electric supply system and in 2006 released a draft report later referred to as the "Southern New England Transmission Reliability Report (SNETR) – Needs Analysis, January 2008." Developed by the planning staffs of NUSCO and National Grid USA (National Grid), SNETR was the genesis of the New England East-West Solution (NEEWS).

NEEWS consists of four separate projects that would alleviate reliability deficiencies in the southern New England transmission system. These projects are:

a. The GSRP and MMP – the subject of Docket No. 370A
b. The Interstate Reliability project – a new 345-kV line from Millbury Switching Station in Massachusetts owned by National Grid to its West Farnum Substation in North Smithfield, Rhode Island, to CL&P's Lake Road Substation in Killingly, Connecticut and Card Street Substation in Lebanon, Connecticut.
c. The Central Connecticut Reliability Project – a new 345-kV line from CL&P's North Bloomfield Substation to its Frost Bridge Substation in Watertown, Connecticut.
d. The Rhode Island Reliability Project – A National Grid project entirely within the State of Rhode Island. This project would not come before the Council.

Following its "Needs Analysis," the SNETR working group analyzed transmission solutions to satisfy the identified needs for every concentrated load area of southern New England. Their draft report, which discussed detailed solution options for each area, was published by ISO-NE on its website in April 2008 with the title "New England East-West Solutions (Formerly SNETR) Report 2, Options Analysis."

The specific need for the MMP is a consequence of reliability improvements from the proposed GSRP itself. GSRP would improve the reliability of Massachusetts-Connecticut power transfers, allowing greater flows of electricity in the general Greater Springfield/north-central Connecticut load area. The MMP would make certain adjustments to help the system accommodate these higher power flows more reliably. For instance, it would eliminate the possibility of a critical double-circuit contingency in the north-central Connecticut area. A double-circuit contingency is the loss of a line where two circuits are carried by the same set of structures: in this case the contingency is deemed critical because one of the circuits is high-voltage (345-kV). Also, the MMP would address overloads modeled to occur on 115-kV underground cables in the Hartford area due to the proposed disconnection of one 115-kV circuit at the North Bloomfield Substation.

The Council has determined that there is a need for the reliability enhancements associated with the GSRP. (See the Opinion and Decision and Order for the GSRP portion of Docket 370.) The GSRP and MMP are necessary to provide safe, reliable, and economic transmission service throughout the Greater Springfield and north-central Connecticut geographical areas. The proposed projects would bring these portions of the transmission grid into compliance with federal and regional reliability standards.

The GSRP and MMP would advance NEEWS, which is a comprehensive long range regional plan for expansion that addresses electric transmission concerns in New England. Consistent with the state's energy policy under Connecticut General Statute §16a-35k, the proposed GSRP will: provide an interconnected utility system serving interests of electric system economy and reliability; replace energy resources vulnerable to interruption; and help develop and utilize renewable energy resources. The MMP will allow the GSRP to work efficiently, without causing disruptions on the existing 115-kV transmission lines in the Hartford area.

The proposed MMP would separate two existing circuits that occupy one line of structures along a 2.2-mile section of CL&P's existing ROW between Manchester Substation and Meekville, Junction, both in Manchester, Connecticut. The two circuits to be separated are a 115-kV circuit (#1448) and a 345-kV circuit (#395). To accomplish the separation, a new line of approximately 155-foot steel monopoles with a vertical configuration of conductors would be constructed in the center of the ROW. The 115-kV circuit that is currently on the shared structures would be relocated to the new monopoles. The 345-kV circuit would remain in place.

III. MMP Variation

The MMP Variation (MMP-V) was developed to address potential reliability issues with the existing #395 circuit, which is a three-terminal 345-kV circuit connecting the North Bloomfield Substation in Bloomfield, Manchester Substation in Manchester, and Barbour Hill Substation in South Windsor. The MMP-V would require the same new set of steel monopoles and conductors in the Manchester-Meekville ROW as proposed for MMP, but would extend the area involved in construction so as to create more reliable 345-kV transmission resources in this area overall.

Specifically, the MMP-V would increase the length of the MMP by 0.4 miles, and install a new 345-kV circuit on the new structures configured as a 2-terminal line, a design that is more reliable than a 3-terminal line. This would allow the existing 345-kV circuit (#395) also to be configured as a more reliable 2-terminal line, while remaining in place. The existing 115-kV circuit (#1448) would remain in place as well.

The MMP-V appears to meet a higher level of reliability beyond that met by MMP. Power-flow studies conducted by CL&P showed that the circuits were less heavily loaded under contingencies with the MMP-V than with the MMP, which indicates that the MMP-V is a more robust and longer-lasting solution. Plans for two of the other NEEWS projects (Central Connecticut Reliability Project and Interstate Reliability Project) apparently already incorporate a reliability improvement similar to the MMP-V, albeit in wider system contexts. Indeed, the Central Connecticut Reliability Project directly addresses a particular reliability problem on the #395 circuit that has been identified under planning criteria, and if this project were not to go forward the alternative plan CL&P would be required to formulate would probably be the same as the MMP-V.

While the MMP separates two circuits on one structure, eliminating a double-circuit contingency, the MMP-V: creates an additional 345-kV circuit in an important load area; improves the 345-kV system in north-central Connecticut by turning a single 3-terminal 345-kV circuit into two 2-terminal 345-kV circuits; could increase the transfer capacity between Connecticut and Massachusetts; and provides a more flexible electric system overall to operate and build on for the future.

The proposed baseline design of the MMP would cost approximately $14 million. The MMP-V would cost approximately $10 million more, bringing the total project cost to approximately $24 million. However, the cost of the MMP-V is unclear, because many details have not been worked out. Further questions about regionalization/localization also complicate cost estimates for the MMP-V.

IV. Environment

MMP

Wetlands and Watercourses

There are numerous wetlands and watercourses along the MMP route, including 13 wetland systems. Two of the wetlands are vernal pools that support amphibian breeding habitat. Nine existing structures are currently located in wetlands and new structures would be located in wetland areas, requiring permanent fill.

Wildlife

No designated wildlife management areas are found in the vicinity of the proposed MMP route; however, the Hockanum River corridor is a state-designated trout management area that is overseen by the DEP.

One state-listed endangered species - the barn owl (*Tyto alba*) - has been documented in the vicinity of the MMP route. In the spring of 2008, during an inspection of the MMP route for potential barn owl nesting habitat, no active barn owl nest sites were found; however, two areas along the MMP route were identified as potential foraging habitat for barn owls, one of which was located within the CL&P transmission line ROW. The proposed construction activities along the MMP corridor may temporarily disturb potential foraging habitat of the barn owl; however, CL&P expects that re-establishment of vegetation on the ROW following the completion of construction would provide restore such habitat.

CL&P would conduct a nesting tree cavity survey prior to the removal of any trees along the ROW.

Habitat and Vegetation

Approximately 3.7 acres of forested upland vegetation would be cleared and maintained in shrub or grass cover types along the existing ROW.

Visual resources

The Council recognizes that views of the additional transmission line structures from the surrounding area will be apparent; however, the new structures would be installed in the center of the right-of-way with existing transmission structures on either side.

Historic and Cultural Resources

Eight Native American sites have been reported within approximately one mile of the proposed MMP route. None of the sites would be eligible to be listed on the National Register of Historic Places. Although none of the sites are within the ROW, there are sites within 500 feet of the MMP. The c. 1835 Charles Bunce House, which is eligible for the National Register of Historic Places, is located approximately 0.25 miles from the MMP route.

MMP-V

The Council recognizes that the MMP-V covers a somewhat longer distance than the MMP: on that basis, the MMP-V could have some added impacts to wetlands and watercourses, wildlife, visual resources, and historic and cultural resources. Since no specific information has been provided on such impacts, however, the Council cannot make a comparison between the MMP and the MMP-V in terms of the environment.

V. EMFs

The Council's *"Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut"* (EMF BMPs) were issued in December 2007 to address concerns regarding potential health risks from exposure to EMF from transmission lines. The Council's EMF BMPs support the use of effective no-cost and low-cost technologies and management techniques to reduce magnetic fields (MF) exposure to the public while allowing for the development of electric transmission line projects.

International health and safety agencies, including the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), and the International Commission on Non-Ionizing Radiation Protection (ICNIRP), have studied the scientific evidence regarding possible health effects from MF produced by non-ionizing, low-frequency (60-Hz) alternating currents in transmission lines. Two of these agencies attempted to advise on quantitative guidelines for mG limits protective of health, but were able to do so only by extrapolation from research not directly related to health: by this method, the maximum exposure advised by the International Committee on Electromagnetic Safety (part of IARC) was 9,040 mG, and the maximum exposure advised by the ICNIRP was 833 mG. Otherwise, no quantitative exposure standards based on demonstrated health effects have been set world-wide for 60-Hz MF, nor are there any such state or federal standards in the U.S. The maximum magnetic fields for the GSRP are significantly lower than IARC and ICNIRP exposure standards.

There is no new evidence that might alter the scientific consensus articulated in the Council's 2007 EMF BMP document.

The baseline configuration of the MMP would reduce MFs at the east edge of the ROW by approximately 55 percent due to relocating one line farther from the edge of the ROW. Since there are three "statutory facilities" located east of the existing MMP ROW, including Howell Cheney Vocational Training School, Leber Field/Playground and East Catholic High School, the #395 circuit could be reconfigured as a split-phase line to reduce the level of MFs at the east edge of the ROW by an additional 27 percent, for a total 82 percent reduction. However, the split-phase configuration would use both sides of the existing monopole that the #395 circuit is located on, which would limit any future additions to the ROW. In other words, if the MMP is installed and the #395 circuit is reconfigured in a split-phase configuration, the MMP-V (or any similar project) could be more difficult and more expensive to construct in the future.

Because it adds a 345-kV circuit to the ROW and leaves the double-circuit lines in place, the MMP-V could potentially increase MF; on the other hand, the second path for current to flow along could decrease the current in the existing circuit, potentially reducing MF. Lacking any specific information on this question, the Council cannot make a comparison between the MMP and the MMP-V in terms of EMF.

VI. Conclusion

Although the MMP would cost less than the MMP-V, the Council finds that the MMP-V may be make more efficient use of the existing ROW by significantly improving reliability at a relatively small additional cost. However, the Council does not have enough information regarding the MMP-V to make a decision on the project at this time. Information still lacking includes: a confirmation of reliability improvements; potential additional environmental impact; 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. Therefore, the Council denies the MMP without prejudice.