

STATE OF CONNECTICUT

SITING COUNCIL

Docket 370A: The Connecticut Light and Power Company application for a Certificate of Environmental Compatibility and Public Need for (1) The Greater Springfield Reliability Project consisting of a new 345-kV electric transmission line and associated facilities from the North Bloomfield Substation in Bloomfield to the Connecticut/Massachusetts border, together with associated improvements to the North Bloomfield Substation, and potentially including portions of a new 345-kV electric transmission line between Ludlow and Agawam, Massachusetts that would be located in the Towns of Suffield and Enfield, Connecticut; and (2) the Manchester Substation to Meekville Junction Circuit Separation Project in Manchester, Connecticut

Docket 370B: NRG Energy, Inc. application pursuant to C.G.S. § 16-50l(a)(3) for consideration of a 530 MW combined cycle generating plant in Meriden, Connecticut

DOCKET 370

February 17, 2010

**COMMENTS OF THE CONNECTICUT LIGHT AND POWER COMPANY
REGARDING THE DRAFT FINDINGS OF FACT DATED FEBRUARY 4, 2010
OF THE CONNECTICUT SITING COUNCIL**

The Connecticut Light and Power Company ("CL&P") files these comments regarding the draft findings of fact issued by the Connecticut Siting Council dated February 4, 2010.

FOF #2:

Draft Finding: Pursuant to CGS §16-50l(a)(3), on March 19, 2009, NRG Energy, Inc. (NRG) submitted an application to the Council for consideration of a 540 megawatt (MW) (nominal) combined cycle generating plant located off South Mountain Road in Meriden, Connecticut (the Meriden power facility) as a competing project to the GSRP/MMP proposed by CL&P in Docket No. 370A. The NRG proposal was assigned as Docket No. 370B. NRG proposed the Meriden power facility following review of the project by the Connecticut Energy Advisory Board (CEAB) pursuant to CGS § 16a-7c. (NRG 1, pp. 1, 12)

Comment: NRG 1 indicates that its application is for a 530 MW plant.

Recommended Change: Revise draft finding by changing “540” to “530”.

FOF #8:

Draft Finding: Pursuant to CGS §16-50l(e), on June 16, 2008, CL&P provided draft application documents to the Chief Elected Official of the four towns that may potentially be affected by the proposed project, as well as the four towns located within 2,500 feet of the proposed project. The GSRP may traverse Bloomfield, East Granby, Suffield and Enfield. Granby, Simsbury, Somers and South Windsor are within 2,500 feet of the proposed route. The proposed MMP would be located entirely within Manchester. (CL&P 1, Vol. 1, Section II, p. 3; CL&P 2, CL&P Affidavits, October 28, 2008)

Comment: CL&P provided municipal consultation documents. In addition, note that South Windsor is within 2,500 feet of the MMP route.

Recommended Change: Switch order of last two sentences and revise draft finding as follows (see italics):

Pursuant to CGS §16-50l(e), on June 16, 2008, CL&P provided *municipal consultation* documents to the Chief Elected Official of the four towns that may potentially be affected by the proposed project, as well as the four towns located within 2,500 feet of the proposed project. The GSRP may traverse Bloomfield, East Granby, Suffield and Enfield. The proposed MMP would be located entirely within Manchester. Granby, Simsbury, Somers and South Windsor are within 2,500 feet of the proposed *project* routes. (CL&P 1, Vol. 1, Section II, p. 3; CL&P 2, CL&P Affidavits, October 28, 2008)

FOF #20:

Draft Finding: In addition to the Northern Route, CL&P also proposed the Connecticut portion of the Southern Route Alternative, which connects with the WMECO proposed Massachusetts portion. The Southern Route Alternative of the proposed GSRP would begin at Ludlow Substation and extend south to Hampden Junction in Hampden, Massachusetts. From Hampden Junction the route would travel west through Enfield and Suffield before heading north into Massachusetts to the South Agawam Switching Station. The line would

then extend north to Agawam Substation before traveling south along the Northern Route to the North Bloomfield Substation. Refer to Figure 1. (CL&P 1, Vol. 1, pp. ES-3, ES-7, ES-18)

Comment: The Agawam to Ludlow line is a second GSRP 345-kV line and is the line with a Southern Route Alternative. The Ludlow to Agawam circuit and the Agawam to North Bloomfield circuit are separate "lines."

Recommended Change: Revise draft finding as follows (see italics):

In addition to the Northern Route, CL&P also proposed the Connecticut portion of the Southern Route Alternative *for a Ludlow to Agawam 345-kV line*, which connects with the WMECO-proposed Massachusetts portion *of this line*. The Southern Route Alternative of the proposed *Ludlow to Agawam line* would begin at Ludlow Substation and extend south to Hampden Junction in Hampden, Massachusetts. From Hampden Junction the route would travel west through Enfield and Suffield before heading north into Massachusetts to the South Agawam Switching Station. The line would then extend north to Agawam Substation. *The Agawam to North Bloomfield 345-kV line would then* travel south along the Northern Route to the North Bloomfield Substation. Refer to Figure 1. (CL&P 1, Vol. 1, pp. ES-3, ES-7, ES-18)

FOF #26:

Draft Finding: Transmission planning and reliability standards have become more closely integrated on a regional basis since the 1960s. Driven by such events as the Northeast blackout of 1965, as well as nationwide electric industry restructuring during the 1990s, regulators and legislators gradually, over four decades, created and strengthened a clear chain of authority for both planning and reliability from the federal down to the regional level. The most recent significant development for New England came on February 1, 2005, when the Federal Energy Regulatory Commission (FERC) designated ISO-NE as a Regional Transmission Organization, with consolidated authority both to plan transmission systems and to maintain system reliability. (CL&P 1, Vol. 1, pp. F-1 to F-3)

Comment: Restructuring has not been "nationwide" in the sense that it has taken place in all 50 states. For instance, in the referenced text, CL&P noted that restructuring has occurred in "every New England state except Vermont."

Recommended Change: Revise second sentence in draft finding to replace "nationwide" with "extensive".

FOF #27 and FOF #28:

Draft Finding: Long-term system planning for New England is conducted by ISO-NE through a regional transmission planning process (RTEP). This process is continuous, resulting each year in a report developed by RTEP participants and reviewed by state regulators, New England Power Pool (NEPOOL). (Council Admin. Notice No. 45, FOF #20)

Draft Finding: Consistent with RTEP findings, ISO-NE can require a transmission owner to build transmission infrastructure. Conversely, if a transmission owner were to make a transmission improvement without approval by ISO-NE, such an action may not meet regional cost allocation requirements: therefore, the cost would not be regionalized (distributed among New England ratepayers). Also, if ISO-NE were to find the improvement would not work with the system, it could order the transmission owner not to energize the equipment. (CL&P 1, Vol. 1 p. F-3; ISO-NE 1, p. 7; Tr. 14, pp. 151, 152)

Comment: The RTEP has been replaced by the Regional System Plan.

Recommended Change: Revise draft findings as follows:

27. Long-term system planning for New England is conducted by ISO-NE through an annual, comprehensive Regional System Plan ("RSP"). A regional transmission plan is developed and reviewed by interested parties, including state regulators and New England Power Pool (NEPOOL) market participants. (ISO-NE 1, p. 8)

28. Change "Consistent with RTEP findings" to "Consistent with the RSP".

FOF #29:

Draft Finding: In 2006, ISO-NE began a study on deficiencies and interrelated needs throughout the SNE electric supply system, and 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). (CL&P 1, Vol. 1, pp. F-8, F-13, F-14)

Comment: The reference to "2006" is misplaced and a reference to "2004" was omitted. These references are important to demonstrate the length of the planning process.

Recommended Change: Revise draft finding as follows (see italics):

In 2004, ISO-NE began a study on deficiencies and interrelated needs throughout the SNE 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). (CL&P 1, Vol. 1, pp. F-8, F-13, F-14)

FOF # 36:

Draft Finding: In accordance with ISO-NE Planning Procedure 3 (PP3), planners use the terms "N- 1" and "N-1-1" to designate the contingency conditions in which the system must be capable of reliable operation. N-1 designates the state of the transmission system following the occurrence of a single contingency. N-1-1 designates the condition of the

system following the occurrence of a second contingency, assuming that one element is already out of service. (CL&P 1, Vol. 1, p. F-6)

Comment: The "system" referred to in the first and third sentences is the "transmission" system as stated in the second sentence.

Recommended Change: For clarity, add "transmission" before "system" in the first and third sentences.

FOF #38:

Draft Finding: The particular contingencies simulated during the computer modeling are overlaid on normal loads forecast for the future, peak loads that would occur in extreme weather, inter-regional power transfers, and "reasonably stressed" conditions, which are generally considered to be the unavailability of generation proximate to load—often with multiple units being unavailable. Regarding such extreme conditions as "reasonably stressed," acknowledges that generation units may be unavailable for many reasons, such as economics, equipment failure, lack of fuel, maintenance requirements, and environmental restrictions. (CL&P 1, Vol. 1, p. F-5)

Comment: The grammar of the last sentence of this Finding is confusing, as is the use of the word "extreme" to characterize "reasonably stressed" conditions. An "extreme" contingency is a term of art that describes conditions different than those referenced here. A closer paraphrase of the referenced statement in the Application would improve this Finding.

Recommended Change: Revise second sentence of draft finding as follows (see italics):

Requiring the transmission system to operate effectively under such "reasonable stress" recognizes that generation units may be unavailable for many reasons, such as economics, equipment failure, lack of fuel, maintenance requirements, and environmental restrictions. (CL&P 1, Vol. 1, p. F-5)

FOF #41:

Draft Finding: Contingency modeling under "reasonably stressed" conditions is meant to test the strength of the system in general. Planners do not try to design the system to meet particular contingencies. Rather, the conditions and contingencies represented in the simulations serve as proxies for multiple other potential future events that cannot be defined or predicted, but that the system should be able to survive. (Tr. 5, p. 67; Tr. 12, pp. 60, 61; Tr. 14, pp. 210, 211; Tr. 15, pp. 211, 212)

Comment: To fully capture the sense of the referenced testimony, the statement should say that planners do not try to design the system **only** to meet the contingencies for which it is tested in the power-flow studies. While the design objective is broader than just surviving the particular contingencies tested, it does include surviving those contingencies.

Recommended Change: Revise the second sentence of draft finding as follows (see italics):

Planners do not try to design *improvements to the system to meet only the particular contingencies for which it is tested in power-flow simulations.*

FOF #46:

Draft Finding: The proposed GSRP/MMP takes priority because improvements to Connecticut-Massachusetts transfers have been in the queue for a long time. As early as 1977, Council Docket No. 11 discussed long range plans for the bi-state transmission system and specifically stated that “a new 345-kV circuit between North Bloomfield, Connecticut and Agawam, Massachusetts” is needed. (Council Admin. Notice 61, FOF #45)

Comment: The first sentence is confusing because it uses the term “queue,” which is a term of art for the “queue” of generation projects awaiting ISO-NE I.3.9 analysis. In addition, this sentence does not indicate what the GSRP is taking “priority” over.

Recommended Change: Replace the first sentence of the draft finding as follows:

The need for improvements to the transmission system such as will be provided by the GSRP/MMP has been recognized for a long time.

FOF #52:

Draft Finding: Contingency modeling predicts that, even under normal conditions, the 115-kV line from North Bloomfield Substation to Agawam Substation frequently must carry loads approximately 17 percent above its long-time emergency (LTE) rating. The LTE rating is the load that a line can carry for 12 hours before overheating and insulation failure. Overheating could cause sagging to the point that the line would arc and short out (Tr. 12, pp. 105, 106; Tr. 15, p. 92)

Comment: The “line out of North Bloomfield” to which Mr. Mezzanotte refers at Tr. 15, p. 92 is a reference to the double-circuit 115-kV line from North Bloomfield Substation to the South Agawam Switching Station (not the “Agawam Substation”), and conductor overheating does not cause insulation failure on overhead lines.

Recommended Change: Revise draft finding as follows:

Contingency modeling predicts that, even under normal conditions, the two circuits of a 115-kV line from North Bloomfield Substation to South Agawam Switching Station frequently must carry loads approximately 17 percent above their long-time emergency (LTE) rating. The LTE rating is the load that a line can carry for 12 hours before overheating. Overheating could cause sagging to the point that the line would arc and short out (Tr. 12, pp. 105, 106; Tr. 15, p. 92)

FOF #59:

Draft Finding: The new 345-kV loop would greatly enhance reliability by lessening the loads to the 115-kV lines in the Greater Springfield bi-state load area and addressing the security insufficiencies in both Connecticut and Massachusetts. It would also establish a new 345/115-kV hub west of the Connecticut River and north of the North Bloomfield Substation at the Agawam Substation, which would improve the ability of both substations to handle contingencies and, in the process, make the established transfer capacity between Connecticut and Massachusetts more reliable. (Tr. 15, pp. 9-12)

Comment: Substitution of the phrase “reducing power flow on” for “lessening the loads to” in the first sentence would be technically and grammatically correct, and still consistent with the cited references.

Recommended Change: Replace "lessening the loads to" in the first sentence with "reducing power flow on".

FOF #63:

Draft Finding: The conductors for the new 345-kV overhead line would consist of three bundles of two 1,590-kcmil aluminum conductors with steel reinforcement (ACSR). An overhead lightning shield wire would be installed above the line for protection; it also would contain optical glass fibers for communication. (CL&P 1, Vol. 1, p. I-2)

Comment: As stated in the cited section of the Application, the line in CT will have two overhead lightning shield wires.

Recommended Change: Revise second sentence in draft finding as follows (see italics):

Two overhead lightning shield wires would be installed above the line for protection, *and one of these wires* would contain optical glass fibers for communication. (CL&P 1, Vol. 1, p. I-2)

FOF #84:

Draft Finding: The Connecticut portion of the Southern Route Alternative would be approximately 5.4 miles long. This route would cross the Massachusetts border into Connecticut in Suffield, traverse Suffield for approximately 1.1 miles, cross the Connecticut River back into Massachusetts for approximately 0.5 miles, and then cross back into Connecticut again in Enfield, going east for approximately 4.3 miles before crossing back into Massachusetts to continue on to the Ludlow Substation. (CL&P 1, Vol. 1, p. E-5, Fig. E-3, p. E-8); CL&P Ex. 15, Carberry/Newland, p. 18)

Comment: The term “Southern Route Alternative” is sometimes used to refer to the combination of the proposed North Bloomfield to Agawam 345-kV line-route and the Agawam to Ludlow 345-kV line route along the “southern” ROW. *See, e.g.,* Draft FOF 21.

For clarity, this Finding should indicate that it refers to Southern Route for the Agawam to Ludlow 345-kV line.

Recommended Change: Revise the first sentence of the draft finding as follows (see italics):

The Connecticut portion of the Southern Route Alternative *for the Agawam to Ludlow 345-kV line* would be approximately 5.4 miles long.

FOF #85:

Draft Finding: The Connecticut portion for the Southern Route Alternative would lie entirely within an existing CL&P ROW that varies between 280 and 300 feet in width. It is occupied by a 115-kV line supported on wood-pole H-frame structures, 60 feet in height. The Connecticut River crossing structure in Suffield is much taller, approximately 215 feet in height. (CL&P 1, Vol. 1, p. O-38, Fig. O-12, p. O-39 and Fig. O-13, p. O-41; p. I-7)

Comment: The term “Southern Route Alternative” is sometimes used to refer to the combination of the proposed North Bloomfield to Agawam 345-kV line-route and the Agawam to Ludlow 345-kV line route along the “southern” ROW. *See, e.g.,* Draft FOF 21. For clarity, this Finding should indicate that it refers to Southern Route for the Agawam to Ludlow 345-kV line.

Recommended Change: Revise the first sentence of the draft finding as follows (see italics):

The Connecticut portion of the Southern Route Alternative *for the Agawam to Ludlow 345-kV line* would be approximately 5.4 miles long.

FOF #92

Draft Finding: The purpose of the MMP is to address some overloads that would occur in the Hartford area as a result of the proposal, in GSRP, to terminate the associated 115-kV circuits at the North Bloomfield Substation as proposed in the GSRP. (Tr. 6, p. 43)

Comment: This paraphrase of Mr. Scarfone’s testimony suggests that the 115-kV circuits will be connected to (“terminated” at) the North Bloomfield Substation, whereas in fact they are currently connected there, and will be disconnected; and it is the cutting of these ties that requires the MMP. This explanation is given more clearly at pages 30 and 31 of Transcript 6.

Recommended Change: Revise draft finding as follows (see italics):

The purpose of the MMP is to reliably accommodate the higher power flows to CL&P's north-central Connecticut substations (Barbour Hill, North Bloomfield, and Manchester) that the GSRP will enable. The MMP will also address overloads that would occur in the Hartford area as a result of the proposal, in GSRP, to disconnect the associated 115-kV

circuits at the North Bloomfield Substation as proposed in the GSRP. (CL&P 1, Vol. 1, p. A-2; Tr. 6, pp. 30, 31, 43;)

FOF # 93:

Draft Finding: The proposed MMP consists of separating two existing circuits that are currently on a shared transmission structure: a 115-kV line and a 345-kV line. 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)

Comment: The two existing circuits are currently on shared structures.

Recommended Change: Revise draft finding as follows (see italics):

The proposed MMP consists of separating two existing circuits that are currently on shared transmission *structures*: a 115-kV line and a 345-kV line.

FOF #103:

Draft Finding: There are several differences between the technologies of overhead lines and underground cables for electric transmission:

- a. Underground cables are typically installed over short distances in urban environments with strong electrical sources. Cables installed over long distances or in suburban and rural settings require consideration to prevent damage and disruptions to the transmission system and potential damage to customer equipment.
- b. Underground cables have a much lower current-carrying capacity compared with overhead lines. Therefore, multiple underground cables are required to achieve the same power-transfer capacity as an overhead line.

Comment: The information in subsection b relates specifically to the 345kV lines under discussion. It may or may not apply for 115-kV circuits, but is always true for 345-kV circuits. For clarity, the Finding should refer to 345-kV cables.

Recommended Change: Revise draft finding as follows (see italics):

- b. Underground *345-kV* cables have a much lower current-carrying capacity compared with *345-kV* overhead lines. Therefore, multiple underground cables are required to achieve the same power-transfer capacity as *a 345-kV* overhead line.

FOF #122:

Draft Finding: Due to CDOT regulations, splice-vaults cannot be constructed in-street, meaning that any underground installation involving state highways would require substantial construction of such vaults on adjacent private property. (Tr. 16, pp. 80-82; CL&P 1, Vol. 1, pp. H-37, H-38)

Comment: This FOF is not supported in the Record.

Recommended Change: Revise draft finding as follows (see italics):

Due to CDOT *requirements that splice vaults be built outside of the travel ROW wherever possible*, any underground installation involving state highways would require substantial construction of such vaults on adjacent private property. (Tr. 16, pp. 80-82; CL&P 1, Vol. 1, pp. H-37, H-38)

FOF #132:

Draft Finding: The 4.6-Mile In-ROW Underground Line Route Variation would minimize long-term visual effects associated with an overhead 345-kV transmission line but would result in direct and significant impacts to environmental resources. Environmental impacts occur throughout the life of the project since a permanent access road would be required along the ROW to provide access to the entire cable system. The variation would cross a wetland that is approximately 1,500 feet long, located north of Turkey Hills Road. Crossing this wetland using HDD may be possible but would depend on subsurface conditions in the area. Also, HDDs are costly and there is a risk of the drilling fluid returning to the surface and affecting the wetland. (CL&P 1, Vol. 1, pp. H-43, H-44)

Comment: The underground variation would not reduce the visual impacts of “an overhead 345-kV transmission line” but rather those of an equivalent overhead line segment. In addition, it is not strictly accurate to say that the underground cables will “minimize” the visual impacts of the overhead line segment. Since there will be no overhead line segment, there will be no visual effects associated with it. On the other hand, the underground segment, due to the required transition stations, will have some visual impacts - which will be different than those of an overhead segment.

Recommended Change: Revise the first sentence of the draft finding as follows (see italics):

The long-term visual effects associated with the 4.6-Mile In-ROW Underground Line Route Variation would be limited to the transition station locations and would be significantly less than those associated with the overhead 345-kV transmission line segment the variation would replace. However, the variation would result in direct and significant impacts to environmental resources.

FOF #143:

Draft Finding: The cost of construction of an underground transmission cable route along or adjacent to public roads is approximately \$479 million. The estimated maintenance costs over the life of the facility would be approximately \$682 million. (CL&P 1, Vol. 1, p. H-26)

Comment: The reference to “maintenance” costs is not entirely correct; those costs are “life-cycle” costs which are broader.

Recommended Change: Revise draft finding by changing “maintenance” to “life-cycle”.

FOF #149:

Draft Finding: An all overhead GSRP transmission line would increase a typical residential customer’s monthly bill (700 kWh) by about \$0.91 per month. An all underground variation would increase a typical residential customer’s monthly bill by \$3.43. (CL&P 18, R. Suffield-013; Tr. 8, p. 277)

Comment: The increases listed are not consistent with the information in the Record.

Recommended Change: Revise draft finding as follows (see italics):

An all overhead GSRP transmission line would increase a typical residential customer’s monthly bill (700 kWh) by about *\$0.88* per month. An all underground variation would increase a typical residential customer’s monthly bill by *\$3.37*. (CL&P 18, R. Suffield-013; Tr. 8, p. 277)

FOF #186:

Draft Finding: CL&P could temporarily take the existing 115-kV line out of service for short periods to allow for construction of the proposed 345-kV line. An outage of the 115-kV line would allow the proposed 345-kV line may be moved up to 25 feet closer to the existing 115-kV line. This would reduce clearing requirements by up to 25 feet by 4.7 miles along the ROW, which equates to 14 acres. (Tr. 8, p. 202)

Comment: More than one outage will be necessary for this purpose.

Recommended Change: Revise second sentence of draft finding as follows (see italics):

Temporary outages of the 115-kV line would allow the proposed 345-kV line *to* be moved up to 25 feet closer to the existing 115-kV line. This would reduce clearing requirements by up to 25 feet by 4.7 miles along the ROW, which equates to 14 acres. (Tr. 8, p. 202)

FOF #229:

Draft Finding: The proposed 345-kV structures would be slightly more visible than the existing 115-kV structures from the Metacomet Trail. (Tr. 10, pp. 83, 84, 86)

Comment: Strictly speaking, structures do not have voltages; lines have voltages.

Recommended Change: Revise draft finding as follows (see italics):

The *structures for the proposed 345-kV line* would be slightly more visible from the Metacomet Trail than *the existing 115-kV line structures*. (Tr. 10, pp. 83, 84, 86)

FOF #247

Draft Finding: The State of Connecticut noise control regulations for residential areas are 55 dBA during the day and 45 dBA at night. (CL&P 1, Vol. 1, p. L-52, L-55)

Comment: The values stated in the Finding are inconsistent with those in the cited source and incorrect.

Recommended Change: Revise draft finding as follows (see italics):

The State of Connecticut noise control regulations for residential areas are *61* dBA during the day and *51* dBA at night. (CL&P 1, Vol. 1, p. L-52, L-55)

FOF #248:

Draft Finding: The proposed transformer is the only equipment at the North Bloomfield Substation that would result in a new noise source. The estimated noise level following the addition of the proposed equipment at the substation would be not higher than 50 dBA during the day and 43 dBA at night. (CL&P 1, Vol. 1, p. L-58)

Comment: As the cited source makes clear, the estimated noise levels in this Finding are not those produced by the transformer (which will not vary between day and night) but the overall projected noise levels, including the existing ambient noise levels, with the addition of the project. Since the ambient levels change from day to night, the overall levels change as well.

Recommended Change: Revise draft finding as follows (see italics):

The proposed transformer is the only equipment at the North Bloomfield Substation that would result in a new noise source. The estimated noise level following the addition of the proposed equipment at the substation (*including ambient noise from existing sources*) would be not higher than 50 dBA during the day and 43 dBA at night. (CL&P 1, Vol. 1, p. L-58)

Header Preceding Draft Findings 249 - 253 and Header Preceding Findings 305 - 398

As previously explained, we recommend a change to: *Connecticut Portion of the Southern Route Alternative for the Ludlow to Agawam Line*

FOF #282:

Draft Finding: CL&P calculated MF using three loading conditions; Annual Peak Load (APL), which is ISO-NE's projected 90/10 system peak loads; peak daily average loads (PDAL), which uses the estimated average load over a 24-hour period on the 90/10 peak load days; and annual average loads (AAL), which are based on a 61% annual load factor of the New England transmission system. (CL&P 1, Vol. 1, p. O-12)

Comment: As the cited reference notes, each modeled load case included a 2017 projected customer load; an associated generation dispatch assumption; and an associated import assumption. Each of these factors affects current flow on the lines in question and therefore magnetic field projections. FOF 282 should be expanded to make these points.

Recommended Change: Revise draft finding as follows (see italics):

CL&P calculated MF *for post construction (2017) conditions using three load "Cases."* Each Case assumed a projected customer load, with an associated generation dispatch assumption and power import assumption. The three Cases were: Annual Peak Load (APL), which uses ISO-NE's projected 90/10 system peak loads; peak daily average loads (PDAL), which uses the estimated average load over a 24-hour period on the 90/10 peak load days; and annual average loads (AAL), which are based on a 61% annual load factor of the New England transmission system. (CL&P 1, Vol. 1, p. O-12)

FOF #284:

Draft Finding: EMF levels at annual average loading for the proposed H-frame configuration at ROW edges for the section of ROW between North Bloomfield and Granby Junction were calculated to be:

	Magnetic Fields (mG) Fields (kV/m)		Electric	
	west/north ROW	east/south ROW	west/north ROW	east/south ROW
Pre- construction	16.0	0.5	0.46	0.00
Post- construction	10.2	13.4	0.01	0.18

(CL&P 1, Vol. 1, p. O-20)

Comment: See Comment to FOF #282.

Recommended Change: Revise draft finding as follows (see italics):

EMF levels *with the 2017 annual average load case* for the proposed H-frame configuration at ROW edges for the section of ROW between North Bloomfield and Granby Junction were calculated to be: [insert table]

FOF #291:

Draft Finding: The delta configuration would not require the widening of the existing ROW for the construction of the new 345-kV structures, while the proposed design in this portion of Segment 2 would require an expansion of the existing ROW. The delta configuration would include 110-foot monopoles centered 75 feet east of the centerline of the ROW. (CL&P 1, Vol. 1, pp. O-62, O-63)

Comment: The first sentence contains an inaccurate comparison in that the statement regarding the delta configuration only applies to a specific 3.2-mile section of Segment 2.

Recommended Change: Revise draft finding as follows:

Neither the delta or H-frame line configurations would require a widening of the existing ROW in the 3.2-mile section of the Segment 2 ROW between the ROW crossings of Phelps Road in Suffield and the location where Country Club Lane in East Granby comes closest to the ROW. However, the proposed design in two other short sections of the Segment 2 ROW in Suffield would require an expansion of the existing ROW. The delta configuration would include 110-foot monopoles centered 75 feet east of the centerline of the ROW. (CL&P 1, Vol. 1, pp. O-62, O-63)

FOF #295:

Draft Finding: Options to reduce magnetic fields along the 3.2-mile “focus area” of the GSRP Northern Route include: [table in original]

Comment: The information in the table is based on the Average Annual Load Case.

Recommended Change: Revise draft finding by adding heading to table: “Average Annual Load Case”. Also, change "conductor" to conductors" in the note beneath the table marked with an *.

FOF #306:

Draft Finding: There are three statutory “residential areas” adjacent to the Southern Route Alternative transmission ROW in Enfield. CL&P did not develop an overhead BMP line-design alternative for these areas but has evaluated an underground variation (the Route 220/Enfield Variation). (CL&P 1, Vol. 1, p. O-43)

Comment: Over a 3.7-mile distance in Enfield, both sides of the ROW are bordered by dense residential development that CL&P acknowledged may qualify as “residential areas”. For this section of ROW, CL&P developed overhead BMP line-design alternatives. Unlike the BMP alternatives for the Connecticut segment of the North Bloomfield to Agawam line, the BMP alternatives for the Connecticut portions of the Southern Route Alternative were not included in Section O of the Application. However, they were provided in a Supplemental Field Management Design Plan filed as CL&P 5, Response CSC-049-BULK.

Recommended Change: Revise draft finding as follows (see italics):

Over a 3.7-mile *length* of the Southern Route Alternative transmission ROW in Enfield, both sides of the ROW are bordered by dense residential development that may qualify as “residential areas”. CL&P developed overhead BMP line-design alternatives for these areas

and evaluated an underground variation (the Route 220/Enfield Variation). (CL&P 1, Vol. 1, p. O-43; CL&P 5, Response CSC-049-BULK)

FOF #308:

Draft Finding: EMF levels at annual average loading at ROW edges for the section of the Southern Route Alternative ROW and Variations (with underground cable calculations at 25 feet from the centerline) were calculated to be: [table in original]

Comment: See Comment to FOF #282.

Recommended Change: Revise draft finding as follows (see italics):

EMF levels *with the 2017* annual average load *case* at ROW edges for the section of the Southern Route Alternative ROW and Variations (with underground cable calculations at 25 feet from the centerline) were calculated to be: [insert table]

FOF #312:

Draft Finding: The BMP configuration for the MMP would reduce the magnetic field levels at the west edge of the ROW by 25% and on the east edge by 61% at average system loading. This design would increase the cost of the project by approximately \$520,000. (CL&P 1, Vol. 1, p. O-67)

Comment: See Comment to FOF #282.

Recommended Change: Revise draft finding as follows (see italics):

The BMP configuration for the MMP would reduce the magnetic field levels at the west edge of the ROW by 25% and on the east edge by 61% *with the 2017 average annual load case*. This design would increase the cost of the project by approximately \$520,000. (CL&P 1, Vol. 1, p. O-67)

FOF #321:

Draft Finding: Certain specific resource alternatives modeled by ICF were:

- a. Reduce Connecticut zonal demand by 1,000 MWs
- b. Reduce Western Massachusetts zonal demand by 1,000 MWs
- c. West Springfield and Berkshire power plants operational and a new 400-MW facility located at Berkshire Power for a total of 854 MW in Greater Springfield
- d. West Springfield and Berkshire power plants operational, a new 200-MW facility located at Berkshire Power, and a new 200-MW facility at Mount Tom for a total of 1,054 MW in Greater Springfield
- e. West Springfield and Berkshire power plants operational, Connecticut zonal demand reduced by 500 MWs, and limit load at Chicopee, Clinton, East Springfield, Agawam and Breckwood Substations

- f. Reduce Connecticut zonal demand by 500 MWs, and limit load at Chicopee, Clinton, East Springfield, Agawam and Breckwood Substations (CL&P 1, Vol. 1, p. G-9)

Comment: Subsection d incorrectly combines 2 different simulations.

Recommended Change: Correct draft finding subsection d (see italics) and add a new subsection e as follows:

- d. West Springfield and Berkshire power plants operational, a new 200-MW facility located at Berkshire Power, and a new 200-MW facility at Mount Tom for a total of 854 MW in Greater Springfield
- e. West Springfield and Berkshire power plants operational, a new 400-MW facility located at Berkshire Power, and a new 200-MW facility at Mount Tom for a total of 1,054 MW in Greater Springfield

and change the former subsection e to f and the former subsection f to subsection g.

FOF #332:

Draft Finding: HVDC transmission lines typically are not introduced into the middle of an existing grid because they have different electrical characteristics from normal transmission lines that carry Alternating Current (AC). Every connection point between HVDC and AC lines requires a converter station, and these are expensive, both because of the technical equipment and the extra space involved. Also, if a line is out of service in an AC system, the electricity immediately and automatically flows on the remaining AC lines to get to the customer, whereas an HVDC line has to be manually operated. For these reasons, HVDC systems limit flexibility, and tend to be used only in special cases, such as the connection of power systems that differ operationally, asynchronous systems, and underwater cables. (Tr. 7, p. 84; Tr. 10, p. 118)

Comment: The transcript reflects testimony that an HVDC line does not automatically pick up load if it was dropped from somewhere else.

Recommended Change: Revise the third sentence of draft finding as follows (see italics):

Also, if a line is out of service in an AC system, the electricity immediately and automatically flows on the remaining AC lines to get to the customer, whereas an HVDC line has to be manually operated, *to change its loading.*

FOF #335:

Draft Finding: Estimated costs for HVDC systems include the installation of an HVDC system include 35 miles of HVDC underground, the 115-kV overhead work that would still be required in Greater Springfield and three converter stations. The estimate also includes spare HVDC transformers because lag time in acquiring these transformers is more than a year. The spare transformers would cost approximately \$62 million. (Tr. 10, p. 103)

Comment: The language is confusing.

Recommended Change: Revise draft finding as follows (see italics):

Estimated costs of an HVDC system include *installation of 35 miles of HVDC underground cables*, the 115-kV overhead work that would still be required in Greater Springfield and three converter stations. The estimate also includes spare HVDC transformers because lag time in acquiring these transformers is more than a year. The spare transformers would cost approximately \$62 million. (Tr. 10, p. 103)

FOF #337:

Draft Finding: The MMP Variation (MMP-V) consists of the reconfiguration an existing 2.6 mile section of 115-kV transmission lines between Manchester Substation and Meekville Junction. The MMP-V includes upgrading the existing 115-kV line to 345-kV. (CL&P 26, pp. 2, 3)

Comment: The draft finding condenses the information in the Record and implies an upgraded existing 115-kV line would immediately operate as a 345-kV line; however, the Record reflects that after the MMP-V work, the existing 115-kV circuit segment would be unchanged and would continue to operate at 115 kV.

Recommended Change: Replace draft finding with Applicant's Proposed Finding of Fact #238:

The MMP-V would entail separation of the existing 3-terminal 395 circuit into 2 separate 2-terminal circuits, and foregoing the separation of the 115-kV circuit as contemplated by MMP. This would be accomplished by means of the following construction in addition to that proposed by the MMP: (i) installing new steel monopoles and new conductors along the 0.4 miles of the ROW where CL&P proposes to leave the existing 115-kV line segment unchanged; and (ii) completion of a 345-kV line position at the Manchester Substation 345-kV switchyard. Proposed modifications at the Manchester Substation to accommodate the new 345-kV circuit position would require completion of a new dedicated 345-kV line terminal position including the installation of a line termination structure and associated substation equipment (line disconnect switch, circuit breaker, CCVTs , wave trap and associated wiring and control equipment), and the relocation of the existing 395 line terminal position to the newly completed line position. The new 345-kV circuit would be connected to the existing 395 circuit position in the 345-kV yard. By constructing the MMP-V directly, there would be no need to relocate the 115-kV circuit segment off the existing double-circuit lattice-steel towers, and it would remain in its current location. This would not allow for the proposed split-phase bundling of the conductors on the lattice-steel towers. (CL&P 26, p. 3)

FOF #342:

Draft Finding: The MMP-V, with the GSRP, would eliminate violations on the transmission system. In power flow studies the MMP-V were less heavily loaded under contingencies than the MMP, which indicates that the MMP-V is a more robust and longer lasting solution. (CL&P 26, p. 6)

Comment: The language is confusing.

Recommended Change: Revise draft finding as follows (see italics):

The MMP-V, with the GSRP, would eliminate violations on the transmission system. In *power-flow* studies, *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. (CL&P 26, p. 6)

FOF #356:

Draft Finding: CEAB did not analyze the proposed GSRP as a whole and did not do an independent load flow analysis or stability studies to determine if any non-transmission alternatives in Connecticut could replace some portions of the GSRP. (Tr. 16, p. 169)

Comment: The citation refers to testimony by Mr. Peaco regarding the original ICF study wherein Mr. Peaco indicates that such study examined the GSRP as a whole. The substance of the Draft Finding is supported by the Record, but by different citations. These citations also support a somewhat expanded finding.

Recommended Change: Revise draft finding as follows:

CEAB did not analyze the proposed GSRP as a whole and did not do an independent load-flow analysis or stability studies to determine if any non-transmission alternatives could replace some portions of the GSRP. (Tr. 16, pp. 22-24, 96, 101, 102, 107, 108)

And add draft findings from Applicant's Proposed Findings of Fact dated January 4, 2010 ("PFOF"):

PFOF #196: Based upon its review of the need analyses conducted by ISO-NE and CL&P, the CEAB concluded that the reliability concerns identified by CL&P and ISO-NE demonstrate the need for mitigation measures. (CEAB 1, p. 24; Tr. 16, p. 23)

PFOF #202: The CEAB did not conduct an independent comparative reliability analysis comparing the GSRP and the Meriden plant. (CEAB 4, Response to CL&P-01-032)

PFOF #203: Since CEAB did not perform or contract for the reliability studies that would have been required to determine if the Meriden Plant would solve the overall problem addressed by GSRP and MMP, it made no such determination. (CEAB 1, Appendix E, p. 1; Tr. 16, p. 26)

Recommended Additional FOF Consistent with the Record

Comment: In order to create a more complete record of the information in this docket and to fully support the Council's decision, CL&P asks that the Council consider the following additional findings:

PFOF #18: These Projects are needed to provide safe, reliable, and economic transmission service throughout the Greater Springfield, Massachusetts geographic area and in north-central Connecticut, and to assure that these portions of the transmission grid will comply with mandatory federal and regional reliability standards. (CL&P 1, Vol. 1, p. ES-1)

PFOF #24: Finally, the GSRP and MMP improvements will also advance a comprehensive regional plan, known as the New England East – West Solution (NEEWS), for improving electric transmission in New England, through extensive coordinated improvements in Connecticut, Massachusetts, and Rhode Island. (CL&P 1, Vol. 1, p. ES-1)

PFOF #80: The Northeast Blackout of 1965 highlighted the need for such operational coordination between the region's utility companies, and also prompted creation of the Northeast Power Coordinating Council (NPCC) in January, 1966. NPCC was a voluntary international electric Regional Reliability Council formed by the utilities in the six New England States, Ontario, Quebec, and the Maritime Provinces of Canada. NPCC established a number of fundamental criteria documents that define the planning, design and operating principles that each participant electric utility company must follow to assure a reliable interconnected power system. (CL&P 1, Vol. 1, pp. F-1, F-2)

PFOF #108: The new high-capacity 345-kV loop through western Massachusetts and north-central Connecticut will relieve congestion on the 115-kV system that serves the Springfield area and will enable increased power transfers across the Connecticut Import interface. Completion of the loop will have an effect analogous to completing a multi-lane circumferential highway that was previously constructed only part of the way around an urban area, leaving a large gap in the circumferential highway system that forced traffic to traverse congested city streets to gain access to the next section of highway. The upgrading of Massachusetts 115-kV transmission circuits will provide a parallel path to the proposed 345-kV transmission circuit from the Ludlow

Substation to the Agawam Substation, and will solve the numerous problems on the underlying 115-kV loops in Springfield that arise when power flows must be redistributed in response to an interruption on a section of one of the loops. (CL&P 15, Scarfone, p. 37)

PFOF #111: The Projects are needed to eliminate conditions that impair the ability of the transmission system to consistently maintain its established existing import capability of 2500 MW. Today, the Connecticut system is capable of importing 2500 MW except under problematic conditions in the Springfield area. Connecticut is dependent on specific generation west of Springfield in order to maintain that 2500 MW capability. When that generation is on and available, then Connecticut can import 2500 megawatts reliably. However, if the generation becomes unavailable, then the 115-kV lines in Springfield get very heavily loaded, such that the only option is to cut back severely on Connecticut's ability to import power. The unavailability of this generation cuts back Connecticut's import capability from about 2500 MW to as little as 300 MW and even less under some conditions. Indeed, in some conditions, Connecticut would actually have to export power to relieve the loading in the Springfield area when that generation is unavailable. (Tr. 14, p. 124-130, Tr. 15, pp. 185, 186)

PFOF #122: ISO-NE concluded that the Projects will address the existing reliability issues by eliminating the thermal and voltage criteria violations and improving transfer capabilities and that the transmission upgrades will serve to ensure that the transmission system remains in compliance with NERC, the NPCC, and the ISO-NE reliability standards. (ISO-NE 1, p. 14)

Note: The Council may consider the following PFOF #411 and #412 more appropriate for its Opinion than for its Findings of Fact. However, they should be in one place or the other.

PFOF #411: The proposed new 345-kV line would therefore not be "adjacent to" the homes on the more densely settled side of the ROW. (CL&P 1, Vol. 1, p. H-28)

PFOF #412: If the proposed new 345-kV line is determined to be "adjacent to" a "residential area," the presumption of CGS § 16-50p(i) that constructing the new line overhead on that section of the ROW would be inconsistent with the purposes of PUESA, CGS Ch. 277a, has been overcome, because:

- There is no practical overhead line routing alternative to the use of the existing ROW. *See*, PFOF Section K.5
- The use of BMP designs offers a more practical, cost effective, and reliable means of lowering MF levels along the ROW than underground line construction.

- Construction of any of the underground variations to avoid building the line overhead on the existing ROW would impose an unreasonable burden on ratepayers. See, PFOF Sections K.3 and K.5
- The environmental impacts of constructing the new 345-kV line underground within the existing ROW render the permitting and construction of such a configuration environmentally impractical. See, PFOF Section M.6
- The construction of the new 345-kV line as an underground line in streets would create a new source of EMF exposure off the ROW.

(CL&P 15, Carberry/Newland, pp. 49-53)

PFOF #445: To assist the Council in this review, CL&P commissioned William H. Bailey, Ph.D. and colleagues at Exponent, Inc. to provide a report that systematically evaluates peer-reviewed research and reviews by scientific panels published from December 14, 2007 through June 16, 2008 to determine if there are new developments that might alter the current scientific consensus as articulated in the Council's 2007 BMP. (CL&P 1, Vol. 1, pp. O-57 to O-58, Appendix O-2)

PFOF #447: The Connecticut DEP, Radiation Division, concurred with the conclusions of the Exponent Update Review. (DEP comments dated July 15, 2009)

PFOF #548: Consultations with the USFWS revealed that there are no federally-listed, proposed threatened or endangered species, or critical habitats in the Project area. (CL&P 1, Vol. 1, p. L-28; Vol. 4, Ex. 4, *Federal, State and Municipal Agencies Correspondence*, USFWS letter dated November 8, 2007)

Comment: The FOF omit any references to the information presented on behalf of CL&P by London Economics International, LLC ("LEI") and the testimony by LEI's economist, Julia Frayer. Ms. Frayer is a highly qualified expert with extensive experience in economic analysis and simulation modeling of power markets, particularly including the New England power markets. See CL&P 15, Frayer, pp. 7, 8; CL&P 16g, Resume of Frayer. This information and testimony is relevant because it provides a solid foundation for the economic benefits that will arise from the increase in transfer capability from GSRP, that are in addition to its reliability benefits. Moreover, this information and testimony was unchallenged by any expert with similar qualifications. The Council accordingly may consider adding the following:

FOF #154: The LEI analysis establishes that New England ratepayers can expect energy market benefits attributable to GSRP over ten years to average \$35 million per year under the conservative "normal" operating conditions modeled in the Base Case. At the upper bound of the 95% confidence level, the cumulative, ten-year benefit stream may be as high as \$404 million in nominal terms. (CL&P 15, Frayer, p. 10)

FOF #156: In addition to these energy market benefits, GSRP is likely to create economic benefits of \$5.5 million per annum on average in the LFRM that will be shared by all New England ratepayers. (CL&P 15, Frayer, p. 12)

FOF #158: The LEI Base Case demonstrates probable combined benefits from the energy market and LFRM equal to \$351 million to \$459 million in nominal terms; this range represents the total benefits projected for all ISO-NE ratepayers. (CL&P 15, Frayer, p. 15)

FOF #163: The economic benefits to Connecticut ratepayers from the market impact of GSRP over the first ten years of its life, modeled in the LEI Base Case, can be expressed as an approximate saving on market prices of 40 cents per megawatt hour, at a cost per megawatt hour of \$1.26. (Tr. 10, pp. 51-54, Frayer; CL&P 34, Annual Demand Weighted Price Reduction)

Corrections to Text and/or Citations (see italics)

FOF #9: The East Granby open house was held on Wednesday, June 25.

FOF #19: The citation should include references to Figures 1 and 2 and to CL&P 1, Vol. 1, pp. ES-3, ES-5, *ES-12, ES-13, ES-19*.

FOF #21: The citation for the GSRP study area figure should be CL&P 15, Exhibit *AWS-1*.

FOF #32: The term "proposed" in the phrase "to design and proposed transmission improvements" should be "*propose*".

FOF #34: The correct citation is Tr. 15, *pp. 37-40*.

FOF #38: The citation should also include references to CL&P 1, Vol. 1, pp. F-5, *F-7, F-8*.

FOF #43: The correct citation is *Tr. 14, pp. 160, 161*.

FOF #49: The citation should include references to Tr. 15, *pp. 75-78*.

FOF #59 and FOF #61: The correct citation is *ISO-NE 1, p.16*.

FOF #64: The maximum span length proposed is *1,166 feet*.

FOF #67: The citation should include *p. O-19*.

FOF #71: The citation should include *p. O-24*.

FOF #72: The citation should include *CL&P 1, Vol. 1, p. H-28; DPH comments dated October 8, 2009, p. 1*.

- FOF #83:** The word "*and*" should be inserted between "impacts costs" in the first sentence.
- FOF #95:** The word "*segment*" should be inserted after "circuit" in two places in the third sentence.
- FOF #98:** The page reference should be *I-10*.
- FOF #104:** The word "*of*" should be inserted before "transformers".
- FOF #106:** The words "*per phase*" should be inserted after "plus a spare cable".
- FOF #107:** The word "*system*" should be inserted after "cable".
- FOF #109:** The word "*Cross-linked*" should replace "Crossed-link".
- FOF #110:** The word "*system*" should be inserted after "cable" and then the next "cable" changed to "*cables*".
- FOF #120:** An all-underground In-Street transmission facility typically consists of three splice-vaults (*one* per each set of three XLPE cables)...
- FOF #127:** The correct citation for CL&P 15, Carberry/Newland is *pp. 46-47*.
- FOF #138:** The words "*in Connecticut*" should be inserted after the words "Southern Route Alternative".
- FOF #140:** The correct citation is *CL&P 1, Vol. 1, pp. H-57, H-58*.
- FOF #144:** The citation should include "*Carberry/Newland*" after CL&P 15.
- FOF #180:** The complete quotation should be included: The National Park Service has expressed concern about the "potential environmental and scenic/recreational impact to the recently designated New England National Scenic Trail and *congressionally authorized* Wild and Scenic River Study of the Lower Farmington River and Salmon Brook" due to the proposed GSRP. (NPS comments dated July 28, 2009)
- FOF #192:** *Marbled salamanders* should be added to the list of amphibian species.
- FOF #210:** No in-water work is proposed within the major *watercourses* where the three species of mussels may occur.
- FOF #219:** The citation should include *CL&P 4, R. 10*.
- FOF #231:** The citation should include CL&P 1, Vol. 1, *pp. L-45, N-45*.

- FOF #246:** The low night decibel level should be 36.4 decibels.
- FOF #284:** The table should include an indication that pre- means 2012 and post-means 2017.
- FOF #293:** The table should include an indication that pre- means 2012 and post-means 2017.
- FOF #295:** The table should include an indication that these are *2017 results*.
- FOF #299:** The word "conductors" should be replaced with "*poles*".
- FOF #300:** The first sentence should be deleted since it does not accurately reflect the DEP's comments.
- FOF #302:** The table should include an indication that pre- means 2012 and post-means 2017.
- FOF #308:** The table should include an indication that these are *2017 results*.
- FOF #310:** The table should include an indication that pre- means 2012 and post-means 2017.
- FOF #313:** The percentage reduction – west edge for the 115-kV design is *13%*.
- FOF #320:** The citation should be *CL&P 1, Vol. 1, pp. G-3, G-4, G-5*.
- FOF #322:** The citation should also include a reference to *Admin. Notice Item 45, FOF #113, FOF #121*.
- FOF #336:** The page reference should be *117*.
- FOF #338:** The word "*over*" should be inserted after "conductors".
- FOF #351:** The MW for NRG should be *530*.
- Appendix A:** Figures 6 and 7 are located on p. ES-16 and p. ES-17 respectively, of CL&P 1. These citations should be revised to add "*ES-*"