STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

CONNECTICUT SITING COUNCIL INVESTIGATION INTO THE ELECTRIC TRANSMISSION LINE LIFE-CYCLE COSTS	:	LIFE CYCLE 2011
	:	OCTOBER 1, 2012

COMMENTS OF THE CONNECTICUT LIGHT AND POWER COMPANY ON REVISED DRAFT REPORT

The Connecticut Light and Power Company (CL&P) respectfully submits the following comments on the revised Draft Report (Revised Draft) issued by the Connecticut Siting Council (Council) on September 20, 2012. CL&P appreciates the opportunity to review and provide comments on the Revised Draft. CL&P has carefully reviewed the Revised Draft and offers the following additional comments in an effort to address specific items that may benefit from additional clarification, explanation or revision.

Also, the majority of CL&P's April 19, 2012 Comments regarding the March 20, 2012 initial Draft Report (Initial Draft) also pertain to the Revised Draft. To assist the Council, CL&P is providing, in Section II. below, the individual comments that apply to the Revised Draft with references to the applicable sections in the Revised Draft.

I. New Comments on the Revised Draft

Section/Page/Para./ Figure/Table	Specific Comments
Section ES, P. ES-1 to ES-3, Tables ES-1 & ES-2, Section 9.2, P.A-3, Table 9-1	In its prior comments, CL&P had explained that its preference is to use natural wood for new 115-kV H-Frame structures and direct buried tubular steel poles for new 345-kV H-Frame structures. In CL&P's recent siting application to the Council relating to the Interstate Reliability Project, CL&P explained that the new 345-kV H-Frame structures would be constructed using steel poles or laminated wood poles. See, for instance, Docket 424, Application, Vol. 1, p. ES-12. Moreover, CL&P submits that the cost difference

	between direct buried tubular steel and wood laminate 345-kV H-Frame structures of the same height would be relatively small. Therefore, CL&P recommends that in Tables ES-1 and ES-2 (and in other sections in the 2012 Life-Cycle Costs Final Report) the references to 345-kV H-Frame structures not include a specification of wood or steel and simply refer to a "345-kV H-Frame Structure" instead.
Section ES, P. ES-2, third paragraph, second and third sentences	The title for the Council's EMF Best Management Practices document is not correctly stated and should be corrected to match the actual title. Also, because the Council approved the referenced document in 2007, it would be appropriate to delete the words "the most recent" in the following sentence so it reads: "This document presents information available on acceptable transmission line EMF mitigation practices for the State of Connecticut."
Section ES, P. ES-3 & ES-4, Figures ES-1 and ES -2 , and P. A-4 and A-5, Figures 9-1 and 9-2	In the headers just above each of the graphs shown in Figures ES-1, ES-2, 9-1 and 9-2, the word "Cumulative" is misspelled; the extra "m" should be deleted.
Section ES, P. ES-5, items 1-5 in first paragraph & Section 9.3, P. A-6, Table 9.3 and items 1-5 under this table	Items 1-5 on page ES-5 are taken from Section 9.3 of Appendix A. The Report should specifically acknowledge, when making "general observations" about 345-kV underground cable systems, two important matters that affect cost: • The substantial costs of additional substation equipment required for underground cable systems, but not required for overhead lines -- specifically pumping plants for HPFF cable systems and shunt reactors for longer underground 345-kV lines (HPFF more so than XLPE). • The Revised Draft deleted double-circuit underground lines from the report scope with its deletion of double-circuit overhead lines. However, especially for 345-kV lines and considering the references to line types currently in use in Connecticut and "most likely to be used in the near future", the Final Report should include two cables per phase designs (which can be operated either as two parallel circuits or as a single circuit) for the 345-kV underground design types. The reason for this is in order to achieve capacity comparable to that of a bundled conductor overhead 345-kV line, an underground 345-kV line needs at least two cables per phase. Comparing a single-cable-per-phase 345-kV underground line to a bundled conductor overhead 345-kV line is a comparison of two designs with very different capacities and is not reflective of line types currently in use in Connecticut, or most

	likely to be used or compared in the future. For example, the Bethel to Norwalk project's underground 345-kV sections have two cables per phase, Middletown to Norwalk project's underground 345-kV line segments were built with two circuits, whereas its overhead line segments were built as single circuits, and the 345-kV underground alternatives presented to the Council in the subsequent Dockets 370 and 424 each involved three cables per phase.
Section 1, P. 1-3 to 1-5, Figures 1-1 to 1-4.	Figures 1-1 to 1-4 have each been revised (from Figures 2-1 to 2-4 in the Initial Draft) and reflect a significant loss-cost correction, consistent with CL&P's April 19, 2012 comment. Each of the Figures 1-1 to 1-4 in the Revised Draft state that it shows Life-Cycle Costs for a type of "typical" line. CL&P notes that the NPV Costs shown in each of these four figures do not equate to the NPV costs for any of the eight designs summarized in Tables ES-2 and ES-3. Thus, it is not clear what design was used as "typical" in the Figures 1-1 to 1-4. The NPV Cost amounts in these figures may reflect an average or some composite of the two designs in Table ES-2 and ES-3 for each line type; however, the Final Report should explain how these amounts were developed.
Section 1, P. 1-5, Figure 1-4,	Consistent with CL&P's third comment on Section ES above regarding additional important factors affecting the cost of underground 345-kV cable systems, Figure 1-4 does not account for these factors.
Section 2, P. 2-2, Paragraph above Table 2-1, second and third sentences	The second and third sentences of this paragraph each state that the report addresses first costs of "five" overhead transmission line designs. The word "five" should be deleted and replaced with "four" because the first costs of only four overhead line designs are evaluated in the report. See, e.g., Tables 2-1, 2-2 and 2-3.
Section 2, P. 2-7, Table 2-6	Consistent with CL&P's third comment on Section ES above, Table 2-6 does not accurately depict the first cost of typical 345-kV underground cable systems because it reflects cost data for designs with only one cable per phase. That design is not typical for 345-kV cable systems in Connecticut.
Section 3.2, P. 3-2, second paragraph after bullets, second sentence	CL&P notes that its new overhead lines frequently can be constructed across wetlands without the need to incorporate longer than normal spans between structures, which would require taller structures and special foundations. Consequently, the second sentence of this paragraph should be revised to state: If the transmission line needs to span over longer than normal distances due to wetlands, larger foundations and taller structures are typically required, resulting in higher costs.
Section 3.2.1, P. 3-3, first paragraph	This paragraph refers to increased cost "estimates" for the Middletown-Norwalk project (M-N) due to disposal of excavated rock and soil. MN was completed several years ago and no longer has cost estimates. CL&P's response to Q-OCC-010 explained the

	following regarding CL&P's portion of MN underground: "Total cost for soil sampling, testing, and disposal: $2.9 million."
Section 3.2.1, P. 3-4, last bullet	The word "larger" should be inserted before the words "concrete foundations" in this bullet.
Section 3.4, P. 3-9, paragraph that starts with the words "The impact of ..."	The last sentence of this paragraph states that Project cost estimates (including ROW costs) for the Milford-Norwalk section of the Middletown-Norwalk 345 kV transmission project were higher for the underground option due to higher land costs, even though the distance was shorter. This is incorrect – the land costs of an overhead option were much higher than for the underground option. Consequently, CL&P submits that this sentence should be revised to state as follows: Project cost estimates (including ROW costs), for the Milford-Norwalk section of the Middletown-Norwalk section of the Middletown-Norwalk 345-kV transmission project were only a little higher for the underground line option because the land costs associated with an overhead line option were much higher than the land costs for the underground option.
Section 4-2, P. 4-2, third paragraph, third sentence	This sentence states that a hybrid line "may require terminal facilities at each point where the line changes from overhead to underground and again to overhead." CL&P submits that terminal facilities at each point where a transmission line changes from overhead to underground are needed only for a typical multi-conductor per phase 345-kV line, but not a typical 115-kV line.
Section 4-2, P. 4-2, fifth paragraph, first sentence	In 2003, the Bethel-Norwalk project (BN) application did not include any costs estimates for hybrid lines. CL&P presented cost estimates for hybrid line variations only during the course of the evidentiary hearings over the next couple of years, in response to the so-called mix-and-match questioning by Council members. Those estimates for hybrid lines were clearly higher than the original cost estimate for an all-overhead line in the BN application. The cost estimates for the Council-approved hybrid lines later proved to be low in comparison to bids that CL&P received.
Section 4-3-3, P. 4-6, first two sentence under the bullets	Together, these sentences may suggest that Aluminum Conductor, Steel-Reinforced (ACSR) conductor is a type of HTLS conductor. ACSR conductor is not HTLS – it is the most common conductor in use today, to which newer Aluminum Conductor, Steel-Supported (ACSS) conductor is compared in the third sentence of the paragraph. This point should be clarified. One option would be to insert the following parenthetical clarification after the words "standard conductor" in the second sentence of this paragraph "(not HTLS conductor)".
Section 7, P. 7-1, third paragraph under bullets	The second sentence of the paragraph indicates that the International Committee on Electromagnetic Safety is "part of IARC" -- that is not correct; the International Committee on Electromagnetic Safety is part of the Institute of Electrical and

	Electronic Engineers (IEEE). Also, this paragraph should note that the maximum exposure guidelines referenced are for the "general public". "C95.6-2002, IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 – 3 kHz." Finally, ICNIRP revised its number in 2010, from 833 mG to 2,000 mG. "Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1Hz to 100kHz)", ICNIRP 2010.
Section 7, P. 7-2, first sentence on page	The phrase "EMF intensity" should be revised to "EMF levels". Also, CL&P does not understand why EMF mitigation would be required "in environmentally sensitive areas" and suggests that this phrase be deleted. In the following sentence, the phrase "a new 345-kV line" should be replaced with "new 345-kV lines" because the MN project included construction of several such lines.
Sections 7.1.1 and 7.1.3, P. 7-2 to 7-3, Appendix F, P. F-2 Tables E-1 to E-3 (text refers to Tables F-1to F-3)	Sections 7.1.1, 7.1.3, and 7.2.2 explain that the Tables E-1 to E-3 (referred to as Tables F-1 to F-3 in the text) used a presumed current flow of 502 amperes per phase for the EMF calculations shown in those three tables. That presumed current flow (502 amperes) should be stated on each of those Tables to clarify this peresumption.
Section 7.1.2, P. 7-2 to 7-3	The explanation of a typical "arrangement" of split phasing is accurate for 115-kV lines, which typically have one conductor per phase, but not 345-kV lines, which typically have bundled conductors in each phase. Consequently, a split-phase 345-kV line typically has six phases and 12 conductors. This section should clarify that the explanation is referring to a typical 115-kV split phasing.
Section 7.2.2, Pages 7-4 to 7-5	The text in this Section refers to a Figure in Appendix F (labeled as Figure E-3) and to Figure 7-1, which show magnetic field profiles. Figure E-3 and Figure 7-1 are the same figures. In addition, Figure E-4 is the same as Figure 7-2. CL&P suggests that the two Figures should be included in the Appendix only.
Section 8.2.4, P. 8-6,	The text in this section refers to the cost of handling contaminated substances as a "major cost concern". Considering the level of costs incurred on prior projects, CL&P suggests that these costs would be better described as creating a "significant cost concern". Also, several revisions should be made to the first two paragraphs of text of this Section to reflect the fact that the M-N project is no longer "proposed"; it was completed several years ago.
Section 9.1, P. labeled as A-2 (should be 9-2), Energy Cost escalation paragraph	CL&P questions the basis for using a 5 percent per year escalation factor for energy costs. Recently, energy (i.e., electric energy) costs have remained flat or even dropped in the northeast U.S. The increased availability of natural gas supplies can be reasonably expected to keep upward movement in energy costs at levels substantially below an average of 5% increase per year.
Section 9.3, P. A-6 to A-7, Table 9-3	Table 9-3 and the items numbered 1 – 5 below the table on Page A-6 are repeated on page on Page A-7. The repetition should be

and items 1-5 below table	deleted.
Appendix B	This Appendix includes Line configuration drawings for typical 115-kV overhead and underground lines and for typical 345-kV overhead lines, but does not include a typical 345-kV underground configuration. As explained above in CL&P's third comment regarding the Executive Summary section, the most typical 345-kV underground cable system would use at least two cables per phase. By deleting the double-circuit (or two-cable) 345-kV underground cable figure, the Report does not contain a depiction of the most common 345-kV underground cable system now in use in Connecticut.
Appendix E, P. E-2, last paragraph	This paragraph should be deleted from Appendix E because it does not concern LiDAR and it is incorrect as noted in CL&P's April 19, 2012 Comments (CL&P uses herbicides as part of its vegetation management programs, but it does not use growth retardants).
Appendix G, P.G-1, "NOTES"	The average incremental energy cost (AIC) is parenthetically noted to be "$10/kWh in this report". That figure is incorrect and should be corrected to $0.10/kWh.

II. CL&P's April 19, 2012 Comments That Pertain to the Revised Draft

The table below provides the individual comment items included in CL&P's April 19, 2012 Comments that pertain to the Revised Draft. Comments that are not included below have been addressed or do not apply to the Revised Draft or are addressed in specific comments explained above regarding the Revised Draft.

September 14, 2012 Section/Page/Para./Figure/Table	**Specific Comments**
Section 2, P. 2-3 to 2-6, Figures 2-1 to 2-4 Section 1, P. 1-3 to 2-5, Figures 1-1 to 1-4	Each of the referenced Figures is a pie chart that provides percentage breakdowns for different cost elements of the life-cycle costs. Each figure uses an energy cost of 10 cents/kWh, which is the same energy cost that was used in the 2007 Life Cycle Report. However, CL&P notes, as Mr. Carberry explained during the January 17, 2012 hearing (Transcript at 11-13), that actual 2011 hourly energy cost data is available on the ISO-New England's website at: http://www.iso-

	ne.com/markets/hstdata/znl_info/hourly/index.html Using the data on this website, the real time locational marginal price of energy in Connecticut, averaged across all hours in 2006, was approximately 6.45 cents/kWh. In comparison, the real time locational marginal price of energy in Connecticut, averaged for all hours in 2011, was approximately 4.79 cents/kWh. Thus, the ISO-New England's actual hourly data show a decrease in the average energy price in Connecticut between 2006 and 2011 of approximately 1.66 cents per kWh. CL&P recommends that the 2012 Transmission Line Life-Cycle Cost Report provide a data source for the presumed energy costs that are used in calculating the Life-Cycle costs shown in the Report. CL&P also suggests that a downward adjustment to the cost of energy to be used in 2012 Report (from the energy cost used in the 2007 Report) seems warranted to reflect the general decrease in the actual cost of electricity over this five-year period.
Section 2.2, P.2-2, first full paragraph, third sentence (see also Table 4-2 on P. 4-8)	This sentence states: "These differ significantly from the 2007 report, however, because the designs investigated in the [2007] report were based on the use of ACSR conductors, whereas these five designs all employ ACSS conductors." If the word "these" in this sentence refers to the "first costs" of overhead lines, CL&P notes that there are several factors (other than the change in conductors) that contributed to the change in first costs between 2006/2007 compared to 2011/2012. Such other factors would include changes in the costs of materials, fuel, and labor, to name just a few.
Section 2.2, P. 2-3, Sixth Bullet & Tables 2-2, 2-3, 2-5 and 2-6	In the sixth bullet on page 2-3, the actual tax rate that is reflected in the Sales Tax dollar amounts shown in Tables 2-2 to 2-3, 2-5 and 2-6 is the current "blended" rate of 4.13%, rather than 4.6%; therefore, "4.6%" should be deleted and replaced with "4.13%" in this bullet and each of these tables. In addition, the text of this bullet should explain that 4.13% is the current "blended" sales tax rate, which is applied to the aggregate cost of taxable and tax-exempt purchases of services, equipment and materials from suppliers and contractors.
Section 2.2, P, 2-4, paragraph above Table 2-3, last sentence	This sentence states: "A wood H-Frame structure with horizontal conductor spacing results in a 42% lower cost per mile when compared with using single steel

	poles." To clarify, CL&P recommends that this sentence be revised to state: "A 345-kV H-Frame structure with horizontal conductor spacing results in a 42% lower cost per mile when compared to using a single steel pole structure with a Delta configuration."
Section 2.3, P.2-6, Table 2-5 and text below Table 2-5 (the previously noted typo has been corrected)	Further, Table 2-5 compares the total cost per mile of 3000 kcmil 115-kV HPFF cable (Delta – One cable per phase) to the cost per mile of 3000 kcmil 115-kV XLPE cable (Horizontal – One cable per phase). The sentence immediately below the table states that total XLPE cable system cost is 46% per mile higher than HPFF cable system cost. This cost comparison is somewhat distorted because the cost per mile of HPFF cable does not account for the additional cost that would be required for pressurization plants to support an HPFF cable and potential of additional costs for increased shunt compensation needed for HPFF cable. In addition, the HPFF cable may either have reduced capacity as compared to XLPE cable (of the same size) or require additional costs for equipment to circulate the fluid used in the HPFF cable in order to achieve equivalent capacity. Text further below in this Section 2.3 notes that Section 3 discusses other factors including pressurization plants and shunt reactors and their associated costs.
Section 2.3, P.2-7, Table 2-6 and text below Table 2-6	Table 2-6 compares the total cost per mile of 3000 kcmil 345-kV HPFF cable (Delta – One cable per phase) to the cost per mile of 3000 kcmil 115-kV XLPE cable (Delta/Horizontal – One cable per phase). The sentence immediately below the table states that the total XLPE cable cost is 32% per mile higher than HPFF cable. Again, this cost comparison is somewhat distorted because the cost per mile of HPFF cable does not include the additional cost that would be required for pressurization plants for HPFF cable and the potential for additional shunt compensation costs. And, the HPFF cable may have reduced capacity as compared to the XLPE cable or additional costs for circulating equipment to increase the HPFF cable capacity.
Section 3.2.2, P. 3-3, paragraph immediately below bullet points.	Last sentence of this paragraph states that if the transmission line needs to cross rivers or streams "a number of special foundations are typically required." CL&P is not sure what type of "special foundations" are contemplated and suggests that this sentence be revised to explain the likely effects resulting from such

	river or stream crossings -- longer spans between transmission line structures, which would require taller and stronger structures and associated larger foundations, both of which would lead to increased costs.
Section 3.3.2, P. 3-8, carryover paragraph at top of the page, last sentence	The word "design" in this sentence should be deleted so that the sentence reads: "This is another limiting consideration for underground cable systems."
Section 3.3.4, P. 3-8, second to last sentence of section	This sentence indicates that the USACE permits "may take up to a year" to obtain. However, CL&P notes that the USACE permit for its Greater Springfield Reliability Project and Manchester to Meekville Project actually took 27 months to obtain. Accordingly, the sentence could be revised to state as follows: "These permits, which may take a year or even significantly longer to obtain, are typically done in connection with other permits granted by the Council and/or DEEP."
Section 4-2, P. 4-2	To make the point that hybrid line alternatives are more expensive, the Council and KEMA could refer to the ISO-NE's Transmission Cost Allocation (TCA) Decision on the Bethel-Norwalk project dated September 22, 2006. This decision can be found at the following link: http://www.iso-ne.com/trans/pp_tca/isone_app_approvals/tca/2006/sep/nu_phase1_tca_letter.pdf In this TCA decision (see Table 1 of the decision), ISO-NE determined that, excluding ancillary facility costs, the Bethel-Norwalk project could have practically and feasibly been built using all-overhead lines (ISO-NE's alternative 5a) for a cost of $258 million, including $81.3 million in substation costs and $44 million in ROW costs. These cost estimates also included an allowance for costs associated with project delays relative to the as-built project. In its decision, ISO-NE also determined that the estimated cost for the as-built project, excluding ancillary facility costs, would be $350 million, including $81.6 million in substation costs and $9.8 million in ROW costs. The as-built project included two double-cable underground sections (one HPFF and one XLPE) and two overhead sections in the new 345-kV line, and it included three overhead and two underground sections (XLPE) in the Plumtree to Peaceable 115-kV line and one overhead

	and one underground section (XLPE) in the Peaceable to Norwalk 115-kV line.
Section 6.2, P. 6-1, second paragraph, fifth sentence.	This sentence states that the electric system is "continuously exposed" to disturbances of varying severity. Because this type of disturbance is not continuously present, the word "continuously" should be deleted and replaced with either "frequently" or "routinely".
Section 6.2, P. 6-2, paragraph immediately above Section 6.3, third sentence	The third sentence refers to "large overruns of budgeted expenditures" that were caused by "unplanned" and "non-routine activities" such as line overloads, generating unit or major transmission forced outages, or storm conditions. CL&P does not understand how there would be "large overruns of budgeted" operating expenditures caused by these types of events. CL&P notes that costs associated with major storms would normally be charged to separate storm accounts, rather than transmission operating costs. CL&P would not expect that line overloads, generating unit or major transmission forced outages would cause "large overruns" of the operating cost budgets.
Section 6.3.1, P. 6-4, sentence above Figure 6.1 and Figure 6.1 (Amounts shown in revised Figure 6-1 are still inconsistent with and much higher than the amounts provided in interrogatory responses in this proceeding)	The sentence above Figure 6-1 refers to increases in Overhead Transmission Line Maintenance Costs shown in Figure 6-1, while the labels underneath and within Figure 6-1 indicate that this Figure is showing Total Overhead Transmission Line O&M Costs ($/ckt-mi) (O&M Costs indicates both Operating and Maintenance Costs). In addition, the amounts shown in this Figure appear to be inconsistent with, and higher than, the amounts provided in responses to interrogatories filed in this proceeding. See, e.g., CL&P Response to CSC-01, Q-CSC-001 and UI Response to CSC-01, Q-CSC-005. CL&P suggests that the data shown in this Figure should be carefully reviewed.
Section 6.3.1, P. 6-5, bullets at top of the page	A bullet for herbicide applications should be added here.
Section 6.3.1, P. 6-5, Figure 6.2	It appears that the CL&P and UI labels on the chart have been reversed. The labels should be switched.
Section 6.3.1, P. 6-5, paragraph below Figure 6.2, second sentence	This sentence states that the patrol frequency for 345-kV has increased from once per year to three patrols per year. These patrols actually were increased to two patrols per year. Consequently, the word "three" in this sentence should be deleted and replaced with the number "two".

P. E-1, first paragraph, first bullet	This bullet concerning LiDAR should be deleted because LiDAR does not provide or estimate temperature or loading of a transmission line. LiDar models the transmission line to show its relative locations under all possible operating conditions (maximum sag and sway conditions).
P. E-1, Figure D-1 (the figure should be relabeled as Figure E-1)	Figure D-1 should be titled "Hazard Tree in transmission ROW" because the picture shows a "hazard tree" rather than a "danger tree" based on CL&P's definitions: A "danger tree" is any tree that could contact a transmission line when it falls. A "hazard tree" is any danger tree that possesses certain characteristics that would result in the tree being classified as a higher risk of failing. Structurally weak species, growth patterns, decay or damage or poor rooting would be characteristics considered when determining if a danger tree is a hazard tree. A hazard tree would also be any tree within the right-of-way that has grown tall enough to encroach within minimum clearance distances to the energized conductors.
P. E-2, last sentence on page and P. 6-5, last sentence above Section 6.3.2	These sentences should be corrected to explain that "the utilities in the state of Connecticut use herbicides for transmission right-of-way vegetation control, but they do not use growth retardants."
Section 6.3.2, P. 6-6, first two paragraphs	These paragraphs list a number of maintenance work activities associated with different components of underground transmission cable systems. Two other examples of underground transmission system equipment components that need to be maintained are sheath bonding equipment in XLPE splice vaults and cable-temperature monitoring systems.
Sections 5.4, P. 5-2, Appendix G	This bullet list in Section 5.4 provides and explains the factors that influence the magnitude of the cost of losses and Appendix G provides the formulas that were used by KEMA to approximate the cost of transmission losses. CL&P suggests that Appendix G also include an explanation that the assumed values for some of the factors are provided at the top of the tables included in Appendix C.
Appendix F, the Tables labeled as E-1 to E-3	CL&P presumes that a 5% over-nominal voltage may have been used, but that is not stated in the tables. It would be useful to note what the assumed voltage was used under each of these tables, in addition to indicating that a presumed current flow of 502 amperes

	was used in the tables, as suggested above.
Section 7.1.3, P. 7-3, first paragraph, third sentence (text refers to Table F-3, which is labeled as Table E-3 on Page F-3)	This sentence explains as shown in Table E-3 (text refers to Table F-3, which is labeled as Table E-3 on P. F-2) that even though the power flow is assumed to be twice as high for the double circuit line compared to the single circuit line, "EMF levels for the double circuit line increase by less than a factor of two." The following sentence explains that this result "is due to some cancellation in the fields from the two circuits." CL&P recommends that the reference to "EMF" (which stands for electric and magnetic fields) be changed to "Magnetic Field" or "MF" because the described cancellation effect applies to magnetic fields, but the effect on electric fields is somewhat different. The reduction in magnetic fields will be more consistent across the ROW, whereas the reduction in electric fields due to reverse phasing will change the shape of the electric field profile and in some locations the electric field may be slightly higher with reverse phasing than without reverse phasing.
Section 7.2.2, P. 7-4, first paragraph, second sentence	This sentence states that a "steel pipe provides the maximum shielding effect on magnetic fields, compared to a flat steel plate." CL&P submits that the reference to a flat steel plate is inappropriate with respect to HPFF cables; while a flat steel plate might be considered for use over XLPE cables it would not be considered for HPFF cables. Also, magnetic shielding has not yet been discussed in the Report. CL&P suggests that this sentence be revised to state simply that the pipe provides a shielding effect on the magnetic fields.
Section 7.2.2, P. 7-4, first paragraph, fifth sentence and associated footnote 2	This sentence refers to magnetic field measurements taken on the 345 kV HPFF section of the Greater Springfield Reliability Project (GSRP). This reference is incorrect because GSRP does not have any HPFF section and this project is not yet in service. This reference should be revised to refer to the Bethel-Norwalk project, which includes CL&P's only 345-kV HPFF underground cable. In addition, the text included in footnote 2 on P. 7-6 is incorrect. This footnote should be revised to reference CL&P Response to Connecticut Siting Council Request for Information for Docket No. LIFE-CYCLE 20111, Connecticut Siting Council Investigation into the Life-cycle Costs of Electric Transmission Lines,

	Interrogatory Set 2, Q-CSC-019, October 21, 2011. Attachment 1 – "Post Construction Magnetic Field Measurements" and Attachment 2 – "Pipe-Type Cable Magnetic Fields".
Section 8-1, P 8.2, third paragraph, last sentence and Table 8-2 on P. 8-3.	The reference to the "Public Utilities Regulating Authority" is incorrect. This reference should be corrected to the "Public Utilities Regulatory Authority." This same correction should be made on P. 8-3 in Table 8-2.
Section 8.1, P. 8-3, first paragraph, second sentence	This sentence refers to the agencies that provide input into the U.S. Army Corps of Engineers (Corps) permitting process. Native American Tribes should be included as another group providing input to the Corps because they provide key input to the Corps' permitting process.

Respectfully submitted,
THE CONNECTICUT LIGHT AND POWER COMPANY

By: Jeffery D Cochran

Jeffery D. Cochran
Senior Counsel
Northeast Utilities Service Company
As Agent for CL&P

CERTIFICATE OF SERVICE

I hereby certify that, on this 1st day of October 2012, a copy of the foregoing has been mailed or electronically sent to the persons on the Service List for this proceeding.

Jeffery D. Cochran
Commissioner of the Superior Court