September 29, 2015

Mr. Robert Stein
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Docket No. 461 - CSC 461 Greenwich Substation and Line Project

Dear Mr. Stein:

This letter provides the response to requests for the information listed below.

Response to BELLA-01 Interrogatories dated 09/08/2015
BELLA-001, 002, 003, 004, 005

Response to CHIRO-01 Interrogatories dated 09/01/2015
CHIRO-001, 002, 003, 004, 005, 006

Response to FPET-02 Interrogatories dated 09/22/2015
FPET-001, 002, 003, 004, 005, 006, 007, 008

Very truly yours,

John Morissette
Project Manager
Siting
As Agent for CL&P
dba EversourceEnergy

cc: Service List

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
What are the projected EMF readings at various distances from the proposed substation on 290 Railroad Ave?

Response:
The transmission line and underground feeders will not be sources of electric field. The electric field from the buswork within the substation will attenuate to approximately 0.1 kilovolt per meter ("kV/m") or less at the edges of the property. Additional shielding of the electric field will be provided by the substation fence.

The magnetic fields in the vicinity of the substation will be greatest where the transmission and distribution lines cross the station. The route of the distribution feeders is yet to be determined. The fields from the substation based equipment (bus work, transformers and switchgear) and the transmission lines will produce magnetic fields of the following levels:

- At the North and South property boundaries, the magnetic fields will be at or below 1 milliguass ("mG").
- At the East and West edges of the property, the magnetic field will be at or below 2 mG and will drop to below 1 mG within 30 feet of the property line.
- The contribution of the substation equipment and the transmission line at the nearby buildings would be less than 1 mG.

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
Please explain why the Siting Council and Greenwich residents should treat the testimony of Dr. Gabor Mezei as unbiased and independent when his employment history and research funding has many connections to the energy industry, e.g., EPRI and Exponent? (See Exhibits 1 & 2 (the latter is provided to show how experts with conflicts of interest can corrupt the outcomes of careful deliberation)

Response:
Dr. Gabor Mezei's resume (See Exhibit 10i) speaks for itself. Exponent is an established international mulitdiciplinary organization of scientists and engineers with approximately 20 offices in the United States serving a wide range of clients. EPRI has long been widely recognized internationally as facilitating independent, unbiased scientific study, regardless of the funding source.

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
Please explain why the Siting Council and Greenwich residents should treat the testimony of Exponent as unbiased and independent when serious concerns of its neutrality exist? This is the same company whose experts stated that dioxin is not carcinogenic! (See Exhibits 3 & 4)

Response:
See Eversource's response to Q-FPET-002.

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
Please explain why the Siting Council and Greenwich residents should accept that EMF is safe for the community given the following summary findings which say otherwise: 1. the table showing that the NIEHS Working Group, the IARC (WHO committee), the National Radiological Protection Board (UK), and two-thirds of the California DHS committee conclude that the research data shows the existence of a "possible link between EMF and childhood leukemia" (See Exhibit 5) and 2. California DHS's risk assessment of various health effects as summarized by Professor Denis Henshaw at University of Bristol (See Exhibit 6)

Response:
1. As summarized in the Exponent report (Appendix G-3 to the Application) and the pre-filed testimony of Dr. Gabor Mezei, the relevant scientific evidence on potential EMF effects have been thoroughly reviewed and evaluated by a number of multidisciplinary expert panels assembled on behalf of authoritative national and international health and scientific agencies, including the National Institute of Environmental Health Sciences (NIEHS) in 1998, the National Radiological Protection Board (NRPB) in the United Kingdom in 2001, the International Agency for Research on Cancer (IARC) in 2002, the World Health Organization (WHO) in 2007, and the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) of the European Union in 2015. None of these agencies concluded that the evidence confirms the existence of any adverse health effects. This lack of any confirmed adverse health effects was also acknowledged by the Connecticut Siting Council's "Electric and Magnetic Fields [EMF] Best Management Practices [BMP] For the Construction of Electric Transmission Lines in Connecticut," dated February 20, 2014 (Appendix G-1 to the Application), which states:

> "The Council recognizes that a causal link between power-line MF exposure and demonstrated health effects has not been established, even after much scientific investigation in the U.S. and abroad."

A statistical association with magnetic fields, reported by some of the childhood leukemia epidemiologic studies, was recognized by these agencies, and it was considered as "limited evidence." "Limited evidence," as defined by the IARC risk assessment process, implies that the observation is considered credible; but chance, bias and confounding could not be excluded as an explanation for the observed association. The combined assessment of this "limited evidence" from epidemiologic studies, and the "inadequate evidence" largely negative and unsupportive laboratory animal studies resulted in the classification of EMF as "possibly carcinogenic to humans." As discussed

in the Exponent report, this classification implies that the evidence was insufficient to classify EMF either as carcinogenic or even as probably carcinogenic. With respect to childhood leukemia, the most recent comprehensive assessment conducted by SCENIHR states that:

> "As stated in the previous Opinions, no mechanisms have been identified and no support is existing from experimental studies that could explain these findings, which, together with shortcomings of the epidemiological studies prevent a causal interpretation."

This is consistent with the conclusion of the WHO:

> "Given the weakness of the evidence for a link between exposure to ELF magnetic fields and childhood leukaemia and the limited potential impact on public health, the benefits of exposure reduction on health are unclear and thus the cost of reducing exposure should be very low."

The policies expressed in the EMF BMP of the Connecticut Siting Council are consistent with WHO recommendations.

2. The evaluation carried out by the California Department of Health Services (CDHS) in 2002 substantially differed from evaluations conducted on behalf of national and international health and scientific agencies at that time. The CDHS review was limited in that it was conducted by three CDHS staff scientists (two of which were overseen by the third scientist) and it was not conducted by a multidisciplinary expert panel, as was the case for other reviews (e.g. the NIEHS, IARC and WHO reviews). The conclusions in the CDHS report were not consensus opinions, as in other risk evaluations, but were reached independently and individually by the three scientists. Importantly, the three scientists in the CDHS review did not employ the generally accepted scientific weight-of-evidence methods to consider all the evidence, but they expressed a "degree of certainty" as to their beliefs of whether the increased risk of certain diseases in relation to ELF EMF exposure was indeed due to EMF exposure. At least two of the three scientists relied more heavily on the individual epidemiologic studies showing some effects and were less influenced by the largely negative results in laboratory animal bioassays and by the lack of established biophysical mechanisms that could feasibly explain potential effects. The unconventional methods used by the CDHS scientists represent major departures from the standard risk assessment process, as discussed above, and these departures likely explain the discrepancies between the conclusions reached by the CDHS scientists and the conclusions reached by multidisciplinary expert panels on behalf of health and scientific agencies. As a result of the unorthodox methods used in the CDHS risk evaluation, its conclusions were not relied upon by decision making authorities. For example, in its decision issued in January 2006, the California Public Utilities Commission concluded that "a direct link between exposure to EMF and human health effects has yet to be proven despite numerous studies, including a study ordered by the CPUC and conducted by DHS [Department of Health Services]" (CPUC, 2006, p. 19).

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
How should we regard the work of Drs. Henry Lai, Narendra Singh, and Martin Blank showing the link between ELF and DNA damage? (See Exhibits 7 & 8)

Response:
In 2007, a multidisciplinary expert panel on behalf of the WHO conducted a comprehensive review of the scientific literature relevant to EMF exposure. The 2004 study by Lai and Singh was considered in this evaluation. The expert panel reached the following conclusion based on their analysis of the available data: "Overall there is no evidence that ELF exposure alone causes tumours." In reaching this conclusion, they observed that the findings of Lai and Singh (2004) were not independently and consistently replicated by other scientists. The review of the scientific evidence conducted by the European Union's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) in 2015 reached the following conclusions regarding in vivo animal studies:

> Previously, SCENIHR (2009) concluded that animal studies did not provide evidence that exposure to magnetic fields alone caused tumours or enhanced the growth of implanted tumours. The inclusion of more recent studies does not alter that assessment. In addition, these studies do not provide further insight into how magnetic fields could contribute to an increased risk of childhood leukaemia.

The review by Blank (2012), prepared by a single scientist, is a section of the BioInitiative report (BIR), which was originally published on the internet in 2007 and then updated, also on the internet, in 2012. The Blank paper provides a cursory review of potential mechanisms that, according to the author, may be responsible for "interaction of EMF with DNA." However, this review confuses the issue by discussing research related to ELF EMF exposures at which no thermal effects have been shown to occur in combination with research related to higher frequencies (for example, radiofrequencies) that can induce thermal effects. Many of the in vitro studies related to EMF exposure that are discussed in the review by Blank (2012) were also considered in reviews conducted by national and international health and scientific agencies, such as the World Health Organization. The conclusions of the Blank review and BIR are not consistent with the conclusions of the World Health Organization or other health agencies. The BIR was prepared by a self-selected group of scientists and lay EMF activists, and was not prepared under the auspices of any authoritative national or international health or scientific agency. The methods used by BIR were heavily criticized by scientific agencies, including the Health Council of the Netherlands, the Australian Centre for Radiofrequency Bioeffects Research, and the EMF-NET Steering Committee of the European Commission, and the Committee on Man and Radiation of the Institute of Electrical and Electronics Engineers. These agencies noted

that the BIR did not follow the generally accepted weight-of-evidence scientific methods for risk assessment, therefore, its conclusions were not valid or compelling.

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
How should we regard Dr. Henry Lai's literature review of research conducted between 2007-2014 which shows a preponderance of studies showing genetic effects from EMF? (See Exhibit 9)

Response:
The review of Lai (2014), prepared by a single scientist, is a section of the BioInitiative report (BIR), which was originally published on the internet in 2007 and then updated, also on the internet, in 2012. The section by Lai also includes a supplement added in 2014. The paper by Lai is not a critical evaluation of the literature, but a compilation of abstracts and short summaries of scientific papers that may be relevant to genotoxicity. The author simply counted studies that, according to him, showed or did not show an effect. This method does not account for differences in study quality and did not give any consideration to whether the study represents original research or an independent replication attempt by a different scientist. The paper also discusses research on ELF and RF exposures together. This is not justified, because ELF and RF exposures have vastly different physical characteristics. I note that in spite of the initial statement that "there are more papers reporting effects than no effect," (p.2) Lai concludes that "not very much of the cellular and animal genetic research data directly indicate that EMF (both RF and ELF EMF) is a carcinogen" (p.6). As discussed above, the BIR was prepared by a self-selected group of scientists and lay EMF activists, and was not prepared under the auspices of any authoritative national or international health or scientific agency. Most of the BIR conclusions are not consistent with conclusions reached by multidisciplinary expert panels on behalf of national and international health agencies. The methods used by the BIR were heavily criticized by scientific agencies, including the Health Council of the Netherlands, the Australian Centre for Radiofrequency Bioeffects Research, and the EMF-NET Steering Committee of the European Commission, and the Committee on Man and Radiation of the Institute of Electrical and Electronics Engineers. These agencies noted that the BIR did not follow the generally accepted weight-of-evidence scientific methods for risk assessment, therefore, its conclusions were not valid or compelling.

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
Why is the project in-service date so important to adhere to when the town's population growth rate and energy growth rate is so low and when the date causes more acceptable (from the town's perspective) siting options (like 330 Railroad Ave) to be dismissed?

Response:
There are several capacity and reliability related needs for the Town of Greenwich including:

- The need for capacity at the Cos Cob Substation forecasted for 2017,
- The immediate need for 27.6-KV distribution line capacity for the feeders from Cos Cob to Prospect Street Substations (Eversource experienced 27.6-kV overloads on three separate occasions during July 2015), and
- The need for a second bulk distribution source in the Town for operational flexibility to provide alternate transmission level power source.

The overall usage of the Town of Greenwich is the third highest town in the Eversource Connecticut system and new load growth is being driven by the residential service upgrades and not by population growth. The substation site selection is based upon several criteria as detailed in the Application pages H-1 to H-12.

Witness: **Witness Panel**
Request from: **Field Point Estate Townhouses, Inc.**

Question:
Did ISO-New England consider the summers of 2012 and 2013 to be unusually warm? What quantitative haircut factors did ISO-NE apply to peak energy usage in MW to create a usage history normalized for weather for Greenwich (or comparable region)?

Response:

On an overall basis ISO-NE considered 2012 to be slightly warmer than normal because there were only two isolated hot days and peaks. ISO-NE considered 2013 warmer than normal based on a weeklong major heat wave in mid-July.

Because ISO-NE weather normal summer peaks are calculated with forecasting models and actual daily peak and weather data, there are no "haircuts" in the process. All adjustments are on a New England wide basis, weather normalized seasonal peaks are only done for the ISO-NE control area.