KEMA

KEMA, INC.

February 16, 2005

VIA HAND DELIVERY

Mr. S. Derek Phelps
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06501

RE: Docket No. 272

Dear Mr. Phelps:

As requested by the Connecticut Siting Council, KEMA Inc. has prepared the attached Engineering Summary, entitled "KEMA's Findings Based on Results Presented at the Connecticut Siting Council's Technical Meeting on February 14, 2005," for use by the Council in its deliberations on this docket. Please contact me if you have any questions regarding our findings.

Sincerely,

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KEMA's Findings Based on Results Presented at the Connecticut Siting Council's Technical Meeting on February 14, 2005

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On February 14, 2005, a Technical Meeting was convened by the Connecticut Siting Council (Council) to discuss:

- The ROC Final Report's contention that additional undergrounding (beyond 24 miles) is not technologically feasible.
- Use of C-Type filters and other types of mitigation.
- Feasibility of alternative underground transmission technologies.

At this meeting, the results of additional investigations by the Applicant and its consultants were summarized. After reviewing these results, KEMA has revised the conclusions stated in its report of January 18, 2005, entitled "Observations on the Reliability and Operability Committee's Final Report," referred to as the KEMA White Paper. Specifically, these revisions relate to KEMA's conclusions regarding 1) the feasibility of additional undergrounding beyond 24 miles, and 2) the possibility of mitigating temporary overvoltages (TOVs) using passive filtering.

- **Feasibility of additional undergrounding beyond 24 miles**

KEMA's White Paper states that the "supporting data and analyses" presented and discussed in the ROC Final Report do not confirm that additional amounts of transmission undergrounding necessarily lead to unacceptable overvoltages. At the Council's Technical Meeting, additional results were provided by the Applicant's consultant, EnerNex, and these results do support the conclusion that 10 to 20 miles of additional undergrounding would not be technologically feasible. These results were

subsequently filed as Exhibit ___. After reviewing these new results, KEMA agrees that an additional 10 to 20 miles of undergrounding would not be technologically feasible.

- **Mitigation of TOVs using passive filtering**

In discussing the possibility of mitigating future TOVs that could occur on the Southwest Connecticut electric power system as a result of undergrounding the proposed 345 kV transmission line, KEMA's White Paper states that:

1) No further optimization was done for the C-Type filter alternative in the ROC Group's performance evaluation, and

2) No mitigation options using other types of passive filters were investigated by the ROC Group in order to extend feasible undergrounding beyond 24 miles.

At the Council's Technical Meeting on February 14, 2005, the Applicant's consultant, GE Energy, presented the results of further studies that do investigate mitigation using passive filtering, including C-Type filters. These results were subsequently filed as Exhibit ___. In performing these studies, GE Energy did attempt to optimize the location and design of the C-Type filters. The results of these C-Type filter studies were described as "promising" by the GE investigator, Ms. Elizabeth Pratico, and the potential for significant reductions in TOVs was confirmed.

While KEMA continues to believe that additional undergrounding may be technically feasible if such mitigation is employed, the Applicants have expressed concern that there is little (if any) past industry experience in using C-Type filters to mitigate TOVs. Because of this, there is uncertainty regarding their physical size, power rating, and TOV mitigating performance. KEMA agrees with the Applicant that the introduction of these filters should be done in a conservative, step-wise process. As more experience is gained with the design and use of C-Type filters they may prove to be an effective mitigating device that will permit additional underground cable to be installed.

In conclusion, while additional undergrounding beyond 24 miles may be feasible with appropriate mitigation, the feasibility of mitigating TOVs with passive filtering has not been established in actual industry practice. Based on the results of transient network analyses conducted by the Applicant and its consultants, KEMA agrees that the technical and operational feasibility of additional undergrounding cannot be confirmed at this time.

- **Feasibility of Alternative Underground Transmission Technologies**

The Council's Technical Meeting also included a discussion of Gas Insulated (Transmission) Line (GIL) technology as an alternative for undergrounding short distances (1 to 2 miles) of the proposed transmission line without adding significant capacitance to the system. Although GIL technology has existed for 30 years or more, utilities have not adopted this technology for common use in long distance transmission lines. As a consequence, we are not aware of any established industry data base on its use in such systems.