

STATE OF CONNECTICUT  
OFFICE OF CONSUMER COUNSEL  
TEN FRANKLIN SQUARE, NEW BRITAIN, CT 06051-2644  
PHONE: (860) 827-2900 --- FAX: (860) 827-2929

STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

RE: JOINT APPLICATION OF THE : DOCKET NO. 272  
CONNECTICUT LIGHT AND POWER :  
COMPANY AND THE UNITED :  
ILLUMINATING COMPANY FOR A :  
CERTIFICATE OF ENVIRONMENTAL :  
COMPATIBILITY AND PUBLIC NEED FOR :  
A 345-KV ELECTRIC TRANSMISSION LINE :  
FACILITY AND ASSOCIATED FACILITIES :  
BETWEEN SCOVILL ROCK SWITCHING :  
STATION IN MIDDLETOWN AND :  
NORWALK SUBSTATION IN NORWALK : MARCH 16, 2005

BRIEF  
OF THE  
OFFICE OF CONSUMER COUNSEL

RECEIVED  
MAR 16 2005  
CONNECTICUT  
SITING COUNCIL

OFFICE OF CONSUMER COUNSEL'S

KEY OBSERVATIONS AND RECOMMENDATIONS

1. **The Siting Council should certificate the Applicants' 13-Mile Case (Alternative A). Their 24-Mile Case would be less reliable than the 13-Mile Case, and more expensive.**
2. Public Act 04-246 does not require the Council to place the maximum amount of this transmission project underground. This law's presumption for undergrounding is limited, and can be rebutted by Council determinations that reliability or cost limits (or both) have been reached.
3. The costs of this transmission project will be enormous, more than \$800 Million for its initial construction and between \$4 Billion and \$5 Billion over its life as a project.
4. The Council must address cost and cost containment in every major determination it makes in this docket, including how much underground cable to approve.
5. The EMFs produced by power lines represent a health risk that is unknown, but probably small. The Vermont PSB's recent decision in the VELCO case is instructive on this complex issue.
6. EMF mitigation can be satisfactorily addressed by prudent avoidance, a cost-centered policy appropriate for unknown risks. The docket evidence justifies no EMF mitigation more extensive than the highly selective use of optimally phased overhead poles.
7. **The Council failed to establish that the Applicants' transmission project was the best way to resolve electric reliability issues in SW CT, and thereby missed a significant opportunity in this proceeding. Viable alternatives to Big Transmission may exist in Connecticut, and the Council should have investigated them.**

STATE OF CONNECTICUT  
OFFICE OF CONSUMER COUNSEL  
TEN FRANKLIN SQUARE, NEW BRITAIN, CT 06051-2644  
PHONE: (860) 827-2900 --- FAX: (860) 827-2929

**TABLE OF CONTENTS**

<b><u>CONTENTS</u></b>	<b><u>PAGE</u></b>
I. INTRODUCTION .....	4
II. ARGUMENT .....	6
A. The Council Missed an Important Opportunity in this Proceeding .....	6
B. Cost Considerations Are Inescapable in this Proceeding.....	18
C. EMF Issues Are Readily Resolvable in this Proceeding.....	29
D. The Council Should Certificate the Applicants' 13-Mile Case .....	41
III. CONCLUSION.....	51

## I. INTRODUCTION

The Office of Consumer Counsel ("OCC") is a party to the above-captioned Connecticut Siting Council ("Siting Council" or "Council") proceeding. OCC is the statutory advocate for consumer interests in all matters that may affect Connecticut utility ratepayers with respect to public service companies, per §16-2a of the Connecticut General Statutes ("CGS").

In this proceeding, the Siting Council is reviewing the various facilities for which The Connecticut Light and Power Company ("CL&P") and The United Illuminating Company ("UI") [CL&P and UI together, the "Applicants"] seek a certificate of environmental compatibility and public need. In their Application of October 9, 2003, the Applicants presented the Siting Council with the following primary options:

- (a) the Proposed Route (with supported changes), containing approximately 45 miles of overhead construction and 24 miles of underground construction;
- (b) Alternative A, containing approximately 60 miles of overhead construction and 13 miles of underground construction; and
- (c) Alternative B, containing approximately 72 miles of overhead construction and 2 miles of underground construction.

The CL&P/UI application for the indicated Certificate is sometimes referred to below as the "Joint Application" or the "Application".

The particulars of the Proposed Route, and of Alternative A and Alternative B, considered as Applicant proposals, each have been somewhat changed over the course of

this proceeding, principally on account of the Applicants' response to the Final Report of the Reliability and Operability Committee, December 20, 2004 ("Final ROC Report").

For convenience and clarity, these three alternative proposals, as currently recommended by the Applicants, are referred to below, not as the Proposed Route, or as Alternative A and Alternative B, but rather as (respectively) the 24-Mile Case, the 13-Mile Case and the 4-Mile Case.<sup>1</sup>

Public Act 04-246, An Act Concerning Electric Transmission Siting Criteria ("PA 04-246" or the "Special Transmission Statute"), took effect on June 3, 2004, and applies to this proceeding. OCC addresses the implications for this proceeding of the Special Transmission Statute in specific detail below.

OCC has participated actively in the present Siting Council proceeding, including through the filing of the following testimony:

- (a) Testimony of Marc D. Montalvo, March 9, 2004 ("Montalvo Testimony");
- (b) Supplemental Testimony of Marc D. Montalvo, May 25, 2004 ("Supplemental Montalvo Testimony"); and
- (c) Testimony of Torben Aabo, May 25, 2004 ("Aabo Testimony").

Based on that testimony, and on its evaluation of other evidence presented in this proceeding, OCC herewith presents its Brief and statement of position respecting the

---

<sup>1</sup> In a Power Point presentation to the FERC Technical Session held in Hartford on January 6, 2005, John J. Prete (an Applicant representative) referred to these three currently recommended alternatives as the 4 Mile Case, the 13 Mile Case and the Maximum Underground Case. The latter phrase refers to a line configuration featuring 24 miles of underground cable.

Joint Application. OCC's key observations and recommendations, explained in detail below, are summarized on a single page above, just following the title page of this Brief.

## II. ARGUMENT

### A) The Council Missed an Important Opportunity in this Proceeding.

The Siting Council cannot approve the best solution for the critical electrical reliability problems in Southwest Connecticut ("SW CT"), whatever the outcome of the present administrative proceeding. This is because the Council declined to investigate whether there exist any resource-neutral, least-cost set of alternatives that might be better than the three main transmission-centered alternatives offered by the Applicants. Given the enormous cost of expanding transmission capacity in SW CT (to say nothing of the complexity and controversy of such a project), OCC urged the Council to insure that all reasonable alternatives were explored before approving the Application. The Council missed its opportunity to do so.

The testimony of Marc D. Montalvo, one of OCC's expert witnesses in this proceeding, began by recognizing that the Applicants had established that there is a critical electric reliability problem in SW CT.<sup>2</sup> In fact, Mr. Montalvo credited the Applicant's claims of thermal, voltage, short circuit and similar problems in SW CT long

---

<sup>2</sup> Montalvo Testimony, p. 3.

before the ROC study group (which analyzed these problems in great detail) had even been formed.<sup>3</sup>

**From his recognition of SW CT's serious reliability issues, Mr. Montalvo went on to argue that the Applicants had not established that their proposed transmission project is the best solution within the universe of possible solutions to the identified need.**<sup>4</sup> The "universe" here includes not only transmission but also generation and demand-side resources. And "best" in this context refers to the most robust (e.g., significantly delaying the year-of-need for the next big project) and the most cost-effective.

Mr. Montalvo established that the Application treats non-transmission resource options in a cursory manner.<sup>5</sup> The Application does not consider (as it should have done) alternatives that coordinate/integrate transmission & non-transmission resources. For instance, the Application states<sup>6</sup> that distributed generation cannot "by itself" solve SW CT's reliability problems, that new generation is "not an acceptable alternative", that new technologies "by themselves" would not solve the energy problems, and that demand-side management "alone" is not a feasible alternative. Even though some or all of these separate contentions may well be true, they do not add up to the broader conclusion which they most likely are meant to suggest --- namely, that some combination of all of

---

<sup>3</sup> Montalvo Testimony, pp. 7-8.

<sup>4</sup> Montalvo Testimony, pp. 3-8.

<sup>5</sup> Montalvo Testimony, pp. 11-12.

<sup>6</sup> Application, Volume 1, pp. G-3, G-5, G-7, G-8.

them (along with some transmission upgrades) could not serve as a feasible alternative to the transmission project proposed. It is this latter possibility that the Siting Council could have, and should have, examined in this proceeding.

Electric restructuring means that some resources come into play through regulated authorization and some through the operation of market forces.<sup>7</sup> To date in Connecticut (since restructuring began), market forces have not responded as expected/hoped. However, the Siting Council now has available, in Public Act 03-140 (“PA 03-140”) and the reconstituted Connecticut Energy Advisory Board (“CEAB”), a mechanism through which appropriate alternatives can be identified and analyzed.

Mr. Montalvo’s expert testimony summarized the principles and methodologies for carrying out an appropriate multi-resource review, partly based on his own experience as an expert witness in the recent VELCO case in Vermont.<sup>8</sup> The data that the Siting Council should require of the Applicants was specified, and also the appropriate analytical methods for analyzing different options. As Mr. Montalvo pointed out<sup>9</sup>, the studies he recommended possibly could validate the Applicants’ initial proposal (as ended up occurring in the Vermont case). Or, those studies could identify as optimal an alternative incorporating some other combination of resources. In other words, the outcome of these studies is not known in advance. What is clear is the imperative to actually carry out such studies.

---

<sup>7</sup> Montalvo Testimony, pp. 13-16.

<sup>8</sup> Montalvo Testimony, pp. 16-24.



Given the interest which Mr. Montalvo's initial written testimony aroused among Council members, OCC arranged for him to prepare supplemental testimony on point.<sup>10</sup> This further testimony began by highlighting an important NECPUC document.<sup>11</sup> NECPUC, in a letter submitted to ISO New England on 2/4/03, succinctly states the rationale underlying the planning process OCC here advocates to address the SW CT reliability issues. Such planning should be resource-neutral, meaning (in the present context) that it does not elevate transmission above other resources (including demand response, distributed generation and generation) as a means of meeting reliability needs and improving market efficiency. Such planning also should be designed to identify the least-cost approach to problems facing the system. This means that costs (immediate and long-term, direct and indirect) are analyzed to dynamically assess a variety of alternatives.<sup>12</sup> Pursuit of this "least-cost" concept does not mean that minimizing capital costs is the only consideration. Energy costs and rate impacts also must be assessed, as must environmental impacts, planning flexibility, operational impacts, and other factors.

Both the capital costs and the life-cycle costs for any particular configuration of the Applicants' transmission project proposal that the Council certificates are going to be enormous. (Current estimates for such costs are summarized at the outset of Section II-B of this Brief, below.)

---

<sup>9</sup> Montalvo Testimony, p. 23.

<sup>10</sup> Supplemental Montalvo Testimony, pp. 4-18.

<sup>11</sup> Supplemental Montalvo Testimony, pp. 4-5.

Given the enormity of the cost of expanding transmission capacity in SW CT, and the potential for cost escalations due to additional undergrounding, OCC (through Mr. Montalvo) urged the Siting Council to act to insure that all reasonable alternatives, and all reasonable combinations of resources, were explored before approving the Application.<sup>13</sup> **The unanswered question is to what degree SW CT's demonstrated reliability need can be met more cost-effectively by including non-transmission resources in the overall resource plan.**

PA 03-140 created a new statutory context in Connecticut, restructuring the CEAB to better enable it to facilitate implementation of a coordinated set of energy policy strategies.<sup>14</sup> Specifically, in the Siting Council context, the new CEAB is authorized to issue a request for proposals (RFP) in response to needs identified in regional energy system planning processes. Electric system reliability in SW CT is just such an identified need. Where a market failure has occurred, it would not be contrary to the workings of a competitive power market for the Siting Council to work with CEAB in this context.

The scenario sketched by OCC witness Montalvo, a scenario that recognizes the urgency of SW CT's need, includes the following steps.<sup>15</sup> First, the Siting Council would require the Applicants to carry out the additional analysis sketched above (i.e., resource-

---

<sup>12</sup> Planners in this field understand very well how to go about such analyses. For a summary, see Montalvo Testimony, pp. 16-24.

<sup>13</sup> Supplemental Montalvo Testimony, pp. 6-7.

<sup>14</sup> Supplemental Montalvo Testimony, pp. 8-10.

neutral, least-cost). Conceivably, this analysis would validate the approach already favored by the Applicants (i.e., 69 miles of 345kV transmission), as occurred in VELCO/Vermont. Mr. Montalvo's own summary of his work in the VELCO case is instructive here:

In the early stages of our analysis, a number of technologies were "screened out," i.e., eliminated from the analysis, using a set of criteria established to eliminate technologies that were not technically or commercially feasible. We eventually constructed sets of alternative resource configurations representing different combinations of resources in sufficient quantity to meet the identified need. Among the alternatives that we studied were combinations of (1) utility-scale generation, (2) distributed generation, (3) DSM, and (4) transmission. These alternatives were compared to the proposed transmission project in terms of their impacts on net incremental power supply costs in the region.

Some of the alternative resource configurations that we evaluated compared very closely (i.e., within several percent) to the proposed transmission option on a cost basis. We concluded that the proposed transmission project was the best alternative for Vermont only after a subsequent, careful evaluation of risks and implementation uncertainties.<sup>16</sup>

Returning to the Connecticut context, the Supplemental Montalvo Testimony continues as follows.<sup>17</sup> If (and only if) this additional analysis identifies an alternative that has superior performance or lower overall cost, the Siting Council and the CEAB would take the following next steps. The Council would issue a decision in this case, referencing the superior alternative and conditionally certificating the transmission

---

<sup>15</sup> Supplemental Montalvo Testimony, pp. 10-12, 14.

<sup>16</sup> Montalvo Testimony, pp. 17-18.

<sup>17</sup> Supplemental Montalvo Testimony, pp. 12-15.

portion of that alternative. That certification would be subject to the condition that the Siting Council approves generation facilities integral to the superior alternative in a specified time frame. This Council decision would describe the indicated generation facilities (e.g., by generating capacity, location and technology type), and would anticipate a separate proceeding in which the Council could act expeditiously to grant appropriate siting approval (because the generation in question already would have been determined to be part of a least-cost resource plan). The CEAB, using its RFP powers, necessarily would be proactively involved in the attempt to obtain appropriate generation applications here.

The major unknown in this proposed process is whether the developers of appropriate generation would seek assurance of access to revenue streams other than the competitive wholesale market that ISO New England administers.<sup>18</sup> This section of Mr. Montalvo's Supplemental Testimony closes by discussing three options for the creation of such revenue streams. However, it also emphasizes the significance of the Siting Council's own findings as to the desirability of specified generation resources. In other words, to the extent that the Council could pledge to facilitate the process of siting approval for the generation facilities in question, the process sketched by Mr. Montalvo is more likely to reach a successful outcome.

---

<sup>18</sup> Supplemental Montalvo Testimony, pp. 15-18.

To illustrate his recommended approach with a quite specific example, Mr. Montalvo used the so-called East Shore Alternative (“ESA”) as a test case.<sup>19</sup>

The ESA had been proposed as a major alternative to what the Application labels as “Segment 2” of the proposed project (i.e., the construction proposed between Beseck and East Devon substations). Beginning in December 2003, the Applicants and ISO New England carried out reliability studies for the ESA, eventually concluding that the proposed line did not meet appropriate standards (e.g., for thermal loading and voltage performance). These studies treated the New Haven Harbor generating station as a critical contingency. However, Mr. Montalvo observed that the Applicants’ own data strongly suggests that their eventual conclusion (i.e., that the ESA does not pass reliability muster) was dependent on confining their attention to alternative transmission configurations, and failing to consider the possibility of installing additional generation capacity, whether at East Haven or elsewhere in SW CT. The technical point is that new generation elsewhere could offset the New Haven Harbor contingency. The policy point is that studies taking such a broader range of resource options into account could identify a better alternative that meets the least-cost standard.

Later developments in this docket raised questions about whether the Council had the legal power to certificate an “East Shore” transmission alternative, the concern being that the (required) municipal consultation process had not yet occurred with respect to some of the towns through which the ESA would pass. This concern, even if valid, does

---

<sup>19</sup> Montalvo Testimony, pp. 26-28; Supplemental Montalvo Testimony, pp. 18-24.

not undercut the importance of these Montalvo/OCC recommendations. This is because the Council clearly has the power to examine all alternatives to any proposed project, and the power to reject that project if the other alternatives appear to be clearly superior. These OCC recommendations, presented through its witness Mr. Montalvo, do not depend on the ESA as such for their cogency. Rather, the ESA has provided a concrete example that embodies the process OCC is here advocating.

OCC, to further its advocacy of the comprehensive approach to evaluation of the Application articulated by its expert witness, Mr. Montalvo, filed a Motion for Technical Studies in this docket on June 22, 2004. That Motion was crafted with full recognition of the issue of possible docket schedule delays. For instance, in the Technical Memorandum appended to this Motion, OCC recounted that its experts had advised that only Segment 2 (out of the 4 segments designed by the Applicants as sub-parts of the proposed project) necessarily would be affected by the technical studies in question. In other words, it appeared to OCC that the Council could (consistent with the grant of our Motion for Technical Studies) proceed expeditiously to approve Segments 1, 3 and 4 of the proposed project. Had the Council accepted this approach, only minimal schedule adjustments would have been needed in consequence of the technical studies OCC had asked the Council to require of the Applicants. Further, carving out Segment 2 in this manner could have allowed the ESA municipal consultation process to proceed as well.

Obviously, the ROC group's study and analysis efforts, set in motion by ISO New England's June 7, 2004 written testimony in this docket, became the major dynamic

focus of this docket until very recently. OCC believes that the studies our agency recommended (through Mr. Montalvo) could and should have been pursued in the ROC context. For instance, since our expert estimated that these OCC-recommended studies could be completed in some two-to-three months of diligent effort<sup>20</sup>, such work most likely could have been incorporated within the ROC project without significantly adding to docket delays.

On July 13, 2004, the Siting Council acted on OCC's Motion for Technical Studies. In a July 29, 2004 letter, the Council advised OCC as follows: "Please be advised that the Council acted to deny this motion on the basis that the Council concluded that there are more appropriate forums available for the resolution of these matters outside of this proceeding."

By denying OCC's Motion for Technical Studies, the Siting Council missed an important opportunity. OCC continues to believe that the Council should have granted our 6/22/04 Motion. We close this section of this Brief by pointing to two quite recent developments that highlight the good sense of carrying out technical studies of the type that OCC recommended in this docket.

First, the pursuit of these OCC-recommended studies is fully supported by the Council's own most recent statement of its broadest concerns and priorities as an

---

<sup>20</sup> Montalvo Testimony, p. 5.

administrative agency.<sup>21</sup> OCC here refers to the Council's 2004 Review of Connecticut Electric Utilities' Ten-Year Forecasts of Loads and Resources, issued October 29, 2004.

This 2004 Review contains the following statements:

- (a) SW CT has "insufficient transmission and inadequate resources within the region." (pp. 1, 5).
- (b) It is "increasingly important for resources to be strategically located on the grid to ensure supply can technically and economically serve pockets of high demand." (p. 5).
- (c) "The Council fully endorses and participates in the assessment of resources, modeling, and planning initiatives to maintain electric reliability. These processes include programs for conservation and load management, resource supply, and transmission planning. The complexity and necessary integration of these programs has substantially increased as growing demand has stressed existing resources." (p. 18).

These Council statements, which OCC fully endorses, become somewhat baffling when considered in the context of the present administrative proceeding. This is because their immediate, logical corollary is that the Council would welcome OCC's 6/22/04 Motion for Technical Studies. As already stated, the Council missed a major opportunity in this context.

Second, the pursuit of these OCC-recommended studies is fully supported by the current cost picture for the transmission resources under consideration in this proceeding.

---

<sup>21</sup> The pursuit of these OCC studies also is supported by the earlier Review(s) of Connecticut Electric Utilities' Ten-Year Forecasts, as issued by the Council for 2002 and 2003, and by pertinent current guidance from the DPUC, from ISO New England, and from FERC. For further specifics on this point, see the OCC Motion for Technical Studies, 6/22/04, pp. 5-9.



In their Application of October 9, 2003, the Applicants offered the following cost estimates for the alternatives they were proposing:<sup>22</sup>

	<u>Initial Capital Cost</u>	<u>Life Cycle Cost</u>
<b>Proposed Route</b> (similar to 24-Mile Case)	\$ 603.6 Million	\$ 824.1 Million
<b>Alternative A</b> (similar to 13-Mile Case)	\$ 620.0 Million	\$ 840.6 Million
<b>Alternative B</b> (similar to 4-Mile Case)	\$ 601.8 Million	\$ 804.3 Million

According to recent evidence on file in this docket, all of these various cost estimates have risen by at least one-third in the last 15 months, and these cost estimates perhaps have risen by two-thirds over that brief period.<sup>23</sup> The Applicants' most recent cost estimates are stated in ranges. If the lower cost estimate is realized, then "only" one-third will have been added to the initial estimate. If the higher cost estimate is realized, then costs will have risen by two-thirds over the 15-month period in question.

These new cost estimates of course are based in fair measure on facility design changes suggested by the ROC studies. Nonetheless, they do represent the Applicants' best current effort to quantify the expected costs of their three main proposals. OCC believes that these current cost estimates are credible.

In the present context, the point is that the case for following OCC's recommended path is even stronger now than it had been. **Since the projected costs for the Applicants' transmission-centered solution have risen substantially, and risen**

<sup>22</sup> Application, Volume 1, pp. I-4 through I-6, I-29 through I-31, I-42 through I-44.

**very quickly, it should be self-evident that the search for overall least-cost alternatives has become even more urgent.**

Connecticut’s regulatory process for siting the necessary components of our state’s electrical system may be at a crossroads. Both the Phase One and the Phase Two transmission projects (Council Docket No. 217, and the current Council docket) have been subject to special legislation that adjusted some docket rules and delayed docket completion. In this light (and particularly considering state energy policies promoting conservation, efficiency and fuel diversity), the case for explicit, specific and detailed consideration of alternatives to “Big Transmission” is now more compelling than ever.

**B) Cost Considerations Are Inescapable in this Proceeding.**

Considerations of cost and cost containment are inescapable in this proceeding. This conclusion should be obvious based simply on a look at the current estimated dollar costs for the three major alternatives the Applicants have proposed:

	<b><u>Initial Capital Cost</u></b> <sup>24</sup>	<b><u>Life Cycle Cost</u></b> <sup>25</sup>
<b><u>24-Mile Case</u></b> (similar to Proposed Route)	\$ 837 Million to \$ 993 Million	\$ 1,180.4 Million to \$ 1,405.9 Million
<b><u>13-Mile Case</u></b> (similar to Alternative A)	\$811 Million to \$ 947 Million	\$ 1,146.9 Million to \$ 1,346.6 Million
<b><u>4-Mile Case</u></b> (similar to Alternative B)	\$ 754 Million to \$ 864 Million	\$ 1,036.6 Million to \$ 1,185.6 Million

<sup>23</sup> The current cost estimates are given below, at the outset of Section II-B of this Brief.

<sup>24</sup> Testimony of Anne Bartosewicz and John J. Prete, 12/28/04, p. 2.

<sup>25</sup> Applicant Response to the question OCC numbered as OCC-74 (which the Applicants numbered as OCC-15), 1/19/05.

Two points about the life cycle costs given on the right side of the chart above should be noted. First, a “thousand million” is (yes indeed) a billion dollars.<sup>26</sup> Second, these life cycle cost estimates all have been present-valued according to the Council’s approved methodology (assuming a 35-year recovery period, etc.).

The nominal life cycle costs, that is the estimated amounts that actually will be collected from CL&P and UI ratepayers over time on account of the construction and operation of this transmission project, are as follows<sup>27</sup>:

	<u>Nominal Life Cycle Costs</u>
<b><u>24-Mile Case</u></b> (similar to Proposed Route)	\$ 4,318.1 Million to \$ 5,139.9 Million
<b><u>13-Mile Case</u></b> (similar to Alternative A)	\$ 4,206.3 Million to \$ 4,933.9 Million
<b><u>4-Mile Case</u></b> (similar to Alternative B)	\$ 3,923.9 Million to \$ 4,448.7 Million

**In other words, in round figures, the Applicants believe their ratepayers will be charged some Four to Five Billion Dollars in total costs over time for this transmission project.**

The cost estimates given above take account only of transmission project configurations that the Applicants have supported and proposed. Many of the variant

<sup>26</sup> In the United States, that is. In the United Kingdom, it takes a “million million” to reach a billion.

<sup>27</sup> Applicant Response to the question OCC numbered as OCC-74 (which the Applicants numbered as OCC-15), SP-01, 2/3/05.

configurations proposed by other participants in this docket clearly would add to these estimated costs.

For instance, the undergrounding proposal made for the Cedar Road area of the Town of Woodbridge would add another \$132.2 Million to the initial construction costs (and \$189 Million to the life cycle costs) for the Applicants' proposed line.<sup>28</sup> Also, the undergrounding proposal made for the area east of the East Devon substation in the City of Milford would add another \$67.3 Million to the initial construction costs (and \$96.1 Million to the life cycle costs) for the Applicants' proposed line.<sup>29</sup> (These Woodbridge and Milford cost numbers are uncontroverted in this docket, partly because the Council allowed the Towns to decline to answer OCC's Third Set of Interrogatories, propounded 7/29/04).

The discussion above offers the most direct support for OCC's contention that costs and cost containment considerations are inescapable in this proceeding --- namely, that the expected costs for this transmission project are going to be mammoth. Clearly, costs are the elephant in the living room of this docket.

However, there also is more to be said on this subject, given a briefing question that the Council asked docket participants to address in an invitation issued February 17, 2005. In its Briefing Request No. 1(a), the Council asks whether the fact that the

---

<sup>28</sup> Applicant Response to OCC-14, 7/28/04.

<sup>29</sup> Applicant Response to OCC-14, 7/28/04.

provision of PA 04-246 stating the presumption for undergrounding<sup>30</sup> is a separate statutory subsection from CGS § 16-50p(a)(3)(D) prohibits the Council from considering costs in determining whether to order portions of the proposed line adjacent to listed facilities to be placed underground. This Council question apparently hinges on the fact that CGS § 16-50p(a)(3)(D) specifically mentions costs while § 7 of PA 04-246 does not do so.

The Siting Council is required to consider costs in determining whether to order portions of the proposed transmission line adjacent to listed facilities to be placed underground. OCC so states for several reasons.

First, concerning the two specific statutory provisions referenced in Briefing Request No. 1(a), it is well understood under Connecticut law that any two statutes in apparent conflict must be read and applied so that they are mutually consistent, if this is at all possible.<sup>31</sup> The only way to reach such a consistent reading in the case of these two particular statutory provisions is to conclude that the Council must take costs into account when evaluating undergrounding options presented to it.

Second, other provisions of the Public Utility Environmental Standards Act, CGS § 16-50g et seq. (“PUESA”), require the Siting Council to take costs into account in its regulatory determinations. One such provision is the first PUESA purpose listed in CGS § 16-50g, specifically:

---

<sup>30</sup> That is, § 7 of PA 04-246, now codified as CGS § 16-50p(i).

“To provide for the balancing of the need for adequate and reliable public utility services at the lowest reasonable cost to consumers with the need to protect the environment and ecology of the state and to minimize damage to scenic, historic, and recreational values”.  
(Emphasis added.)

Another such provision is CGS § 16-50t(a)(3), which requires the Council to proceed with the elimination of overhead transmission and distribution lines over appropriate periods of time in accordance with “the need to provide electric service at the lowest reasonable cost to consumers.” (Emphasis added.)

Third, PA 04-246, the Special Transmission Statute, cannot reasonably be read to banish cost considerations from the factual and regulatory determinations it calls on the Siting Council to make in this docket.

The presumption for underground construction of high voltage transmission lines found in § 7 of PA 04-246 ultimately tells the Council very little. Because § 7 states merely that (certain) aerial transmission is “inconsistent with” the PUESA purposes, this pro-undergrounding presumption amounts in the end to no more than the following general proposition: aerial transmission may tend to be unbalanced toward meeting the state’s need for reliable utility service at a reasonable cost and against the need to protect the state’s environmental and ecological values.<sup>31</sup> In other words, standing alone, the pro-undergrounding presumption would not necessarily re-direct the Council’s conduct of

---

<sup>31</sup> See, e.g., Bahre v. Hogbloom, 162 Conn 549 (1972), 554-555; Rich v. Dixon, 153 Conn 52 (1965), 57-58.

<sup>32</sup> The case for this conclusion is presented in specific detail in OCC’s Comments on Public Act 04-246, filed 7/19/04 in this docket, at pp. 4-13.

this administrative docket very significantly (compared to the docket parameters created by prior law).<sup>33</sup>

The Special Transmission Statute's presumption is a weak one. It merely states that [aerial line adjacent to certain sensitive uses] is "inconsistent with" the PUESA purposes.<sup>34</sup> In this context, inconsistency means only that such aerial line is not compatible with, or not uniformly related to, the purposes in question. However, such mere inconsistency does not go so far as to tell the Siting Council that such aerial line conflicts with, is in opposition to, or fails to meet, those PUESA purposes.

Further, the pro-undergrounding presumption found in § 7 of PA 04-246 is rebuttable, disputable. This means that the presumption holds good only until contrary evidence is introduced before the Siting Council, after which the presumption loses its determining force.<sup>35</sup> In this context, the evidence in question does not need to be proof beyond reasonable doubt, or even proof by a preponderance of the evidence. It merely needs to be evidence that the Siting Council finds credible (even if other docket evidence suggests contrary conclusions).

Rebuttable presumptions (such as the one found in the Special Transmission Statute) mainly serve to place the burden of going forward on a particular party. In the

---

<sup>33</sup> **Special Note.** The Council's Briefing Request No. 1(b) makes a small but important mistake when referring to PA 04-246. It mentions an "underground requirement." Actually, PA 04-246 contains no such requirement, but merely states a preference for undergrounding.

<sup>34</sup> Or rather, as it turns out, with some of those purposes.

present case, if no docket participants said anything at all about any issues related to this special presumption<sup>36</sup>, then the presumption would prevail (and the Siting Council probably could not certificate any aerial line it determined would be “adjacent to” the sensitive uses listed in Special Transmission Statute). However, once any evidence properly placed before the Siting Council challenges this presumption, the Council as a decision-maker thereupon proceeds basically as the regulatory fact finder it always has been. It assesses the extent to which the particulars of the proposal before it meet the various PUESA purposes, as those purposes were set out before enactment of the Special Transmission Statute.

Further still, the pro-undergrounding presumption found in § 7 of PA 04-246 can be rebutted by docket evidence relating to subjects other than the technological infeasibility of placing portions of the transmission line underground, or the effects of undergrounding on the reliability of the bulk power system. Specifically, PA 04-246 does not bar the use of evidence relating to the costs of underground installation (either construction costs or life cycle costs) to rebut or dispute the pro-undergrounding presumption.

Compare, for instance, CGS § 46b-215b(a), which concerns child support guidelines. This statute states a rebuttable presumption regarding child support amounts,

---

<sup>35</sup> See Black’s Law Dictionary, Fifth Edition, St. Paul, Minn: West (1979), pp. 1067-1068, 1094 (Definition of, and discussion of, rebuttable presumptions).

<sup>36</sup> Which of course has not turned out to be the case. See, among a great deal of other docket evidence, the Final ROC Report, 12/20/04.



and then goes on to provide that this presumption may be rebutted only by a specific finding on the record, there described. PA 04-246, at § 7, does not so circumscribe the means by which its pro-undergrounding presumption may be rebutted. The General Assembly, having enacted CGS § 46b-215b(a), obviously is aware that it can provide an exclusive means by which presumptions in its laws may be rebutted. Since § 7 of PA 04-246 is not worded to confine the means by which its pro-undergrounding presumption may be rebutted, it is clear that multiple means for that rebuttal are available to the participants in this docket, and to the Siting Council.

Fourth, and further to all of the above, costs and cost containment are inescapable considerations in this docket for reasons that are fundamental to utility regulation. CL&P and UI (the Applicants) both are regulated utilities subject to CGS Title 16.<sup>37</sup> The Applicants have franchise territories granted under special state statutes, and an obligation to serve the customers in those territories (including through provision of adequate transmission facilities). In return, the Applicants are allowed a reasonable opportunity to recover the operating and capital costs of providing such service (including an appropriate profit level). The intent of Title 16 is that this reasonable opportunity will be provided to the Applicants by allowing them to collect such costs in rates charged to customers.

---

<sup>37</sup> The Applicants also are subject to a variety of federal statutes, including the Federal Power Act. The fundamental principles stated here (about costs, rate recovery and cost containment) do not differ between state and federal law.

Given that the Applicants recover their costs through regulated rates (and not merely in the competitive market, where cost recovery for a business enterprise of course is not assured), cost containment also is fundamental to utility regulation. This is why the Title 16 regulatory standards, which the Applicants always must meet, include efficiency, economy and prudence. This fundamental structure of regulation (in which rate recovery and cost containment go hand in hand) applies equally to the Siting Council and the Department of Public Utility Control ("DPUC"), even though the Council and the DPUC have different specific responsibilities under Title 16.

OCC recognizes that the Siting Council itself will not directly make any cost determinations in this docket. Rather, ISO New England ("ISO-NE")<sup>38</sup> and the Connecticut Department of Public Utility Control ("DPUC") ultimately will make those determinations. Nonetheless, the Council can and should contribute indirectly to those later cost determinations. This is because the Council's factual determinations in this docket (e.g., concerning who would benefit from particular configurations for the project that it approves) will vitally inform and assist ISO-NE and the DPUC in the cost decisions they must make or may make.

Under ISO-NE's current cost allocation procedures, the transmission project that is the subject of this Application is eligible for regional cost sharing (under which the other five New England states would assume proportionate shares of this Connecticut

---

<sup>38</sup> These ISO-NE cost determinations are subject to review by the Federal Energy Regulatory Commission.

project).<sup>39</sup> However, these same ISO-NE procedures exclude from regional cost sharing all project costs that deviate substantially from what is necessary from a technical design standpoint. Further, the relevant ISO guidelines identify the costs of constructing underground transmission that is not technically justified as costs that are to be localized (i.e., borne by Connecticut alone). The ISO cost allocation process asks, essentially: “Is there anything in this project that is not necessary to make it work?” This inquiry is centered on engineering considerations, on normal design practices for such projects. The ISO-NE guidelines specifically do not take into account local preferences, even local preferences embodied in law (such as PA 04-246).

The DPUC could become involved in cost recovery determinations related to this project for two reasons. First, it has overall retail rate review authority over CL&P and UI. Second, § 11 of PA 04-246 (now codified as CGS § 16-50cc) provides for possible rate recovery for costs specifically associated with this project. The “Section 11” costs are project cost changes “resulting from” or “associated with” changes to the Applicants’ proposed transmission facility through implementation of PA 04-246 as such.

The Council, in determining this Application, should assist ISO-NE and DPUC by making pertinent factual determinations in at least the following areas. Its eventual decision should specify the extent to which any undergrounding it orders is based on traditional considerations for installation of underground cable<sup>40</sup> versus considerations

---

<sup>39</sup> Montalvo Testimony, pp. 25-28.

<sup>40</sup> These are discussed further in Section II-D of this Brief, below.

related to PA 04-246 as such. The Council's eventual decision also should specify the reasons for any route/design variations it approves, and should identify the parties it views as benefiting from such changes.

Speaking most broadly, the Council's goal in this docket respecting costs should be two-fold. First, it should strive to minimize the overall cost of the project. Second, it should strive to maximize the proportion of overall project costs that are likely to be eligible for New England-wide socialization.

As an example relating to the second point just mentioned, one of the cost allocation criteria found in ISO-NE's Planning Procedure No. 4 and pointing to localized costs is the following: the existence of a feasible or practical transmission alternative which costs less than the approved project and whose bulk power system performance is at least as good as that of the project.<sup>41</sup> The evidence in this docket shows that the Applicants' 13-Mile Case both less expensive and more reliable than is their 24-Mile Case. This means that, if the Council certifies the 24-Mile Case, then ISO-NE is quite likely to deem all incremental costs of the 24-Mile Case (above those of the 13-Mile Case) to be localized --- that is, to be borne by Connecticut ratepayers alone.

Finally here, cost issues are sufficiently important in this docket that OCC asks the Council to engage in periodic cost monitoring as this project goes forward. Such monitoring should continue through the D&M phase of this project, through the ISO-NE

---

<sup>41</sup> See Applicants' Memorandum Concerning NEPOOL/ISO-NE Planning Procedure No. 4, October 12, 2004, p. 3.

cost allocation process, through the construction process, and all the way until the line is actually put into service.

**C) EMF Issues Are Readily Resolvable in this Proceeding.**

In this docket, the Council has taken administrative notice of an important regulatory decision recently reached in Vermont. OCC begins this portion of our Brief by highlighting certain aspects of that Vermont case.

On January 28, 2005, the State of Vermont Public Service Board (“Vermont PSB”), in a decision taken in its Docket No. 6860, authorized the Vermont Electric Power Company, Inc. (“VELCO”) to construct what is known as the Northwest Vermont Reliability Project (the “Vermont Project”). This Vermont PSB decision (the “Vermont Project Approval”) authorizes, in a sister New England state, a transmission project quite comparable to the transmission project placed before the Council in this proceeding. The Vermont Project includes the construction of some 35.5 miles of new 345-kV transmission line.<sup>42</sup> While the 345-kV line before the Siting Council in this proceeding is around twice as long as that in the Vermont Project, Connecticut’s electrical load is more than six times greater than Vermont’s.<sup>43</sup>

The Vermont Project Approval offers important lessons for Connecticut, and for this Siting Council docket, in two areas. The first concerns the imperative for least-cost

---

<sup>42</sup> Vermont Project Approval, p. 4.

planning, and the second concerns the “prudent avoidance” resolution for electromagnetic fields (“EMF”) issues.

**Least-Cost Planning.**

The Vermont Project Approval states that the Vermont PSB considered the potential to avoid or defer construction of the Vermont Project, through alternative transmission investments and/or non-transmission investments, to be a “key issue” in that docket.<sup>44</sup> Diverse testimony on point was presented to the Vermont PSB, including from VELCO (the applicant utility in that proceeding).<sup>45</sup> VELCO’s expert witness for that purpose was Marc D. Montalvo, of La Capra Associates.<sup>46</sup> That is, VELCO used the very same expert witness on least-cost planning that OCC offered in the present Connecticut proceeding.

The Vermont PSB considered that the most attractive alternative to the Vermont Project, as VELCO envisioned it (35.5 miles of 345-kV line, etc.) was a major reduction in expected demand, achieved through increased spending for energy efficiency, coupled with the installation of several new midsize generation plants.<sup>47</sup> Upon consideration, the Vermont PSB decided that the efficiency part of this alternative appeared achievable, but

---

<sup>43</sup> Around 27% of the regional electrical consumption across New England occurs in Connecticut, while around 4% of that consumption occurs in Vermont.

<sup>44</sup> Vermont Project Approval, p. 5.

<sup>45</sup> See, generally, Vermont Project Approval, pp. 7-62.

<sup>46</sup> Vermont Project Approval, p. 23 (Finding No. 43).

<sup>47</sup> Vermont Project Approval, pp. 5-6.

the generation part did not. Therefore, that regulator decided to certificate VELCO's transmission project as proposed.<sup>48</sup>

This "least-cost planning" aspect of the Vermont PSB's evaluation of the Vermont Project relates directly to OCC's major advocacy in this docket. As explained in detail in Section II-A of this Brief, above, the Siting Council missed an important opportunity in this docket --- specifically, the opportunity to verify whether the Applicants' transmission-centered proposal actually is the best overall plan for restoring electrical reliability in SW CT.

**EMFs.**

The Vermont Project Approval analyzes EMF issues in great detail. The Vermont PSB concludes<sup>49</sup> that the scientific evidence suggesting that EMFs pose any health risk is weak. Thus, it continues Vermont's policy of "prudent avoidance", meaning policies that limit EMF exposure whenever this can be done for a small investment of money and effort. The Vermont PSB specifically states that it is not persuaded that prudent avoidance requires a general policy of placing all transmission lines underground, regardless of cost.

---

<sup>48</sup> Evidently, the Vermont PSB gave substantial credence to Mr. Montalvo's testimony on point for VELCO. For more detail on what was done in Vermont, see the discussion in Section II-A of this Brief, above, and specifically Mr. Montalvo's description of his Vermont work in the passage of his testimony flagged at footnote 16.

<sup>49</sup> Vermont Project Approval, pp. 6-7.

The EMF analysis presented in the Vermont Project Approval is careful and balanced, thorough and reasonable.<sup>50</sup> OCC commends it to the Siting Council's attention as a model of how EMF issues could and should be addressed in the present docket. In light of this commendation, OCC here summarizes certain key observations/findings presented by the Vermont PSB in the Vermont Project Approval:

- (a) For any given size of wire (e.g., 115kV, 345kV), line current (and thus EMFs) will increase with greater electrical demand. Thus, end user efficiency, by reducing load on the transmission line, will reduce EMFs.<sup>51</sup>
- (b) Most laboratory evidence (in animals and humans and mechanistic studies on cells) fails to demonstrate a link between EMF and adverse health effects.<sup>52</sup>
- (c) At most, EMFs are a potential, but uncertain, health risk. Relevant health authorities<sup>53</sup> classify EMFs as "possibly carcinogenic", a category that includes coffee and pickled vegetables as well. This category is the third part of a ranked list, wherein the first two categories are (1) carcinogenic (e.g., tobacco, asbestos), and (2) probably carcinogenic (e.g. UV radiation, sun lamps).<sup>54</sup>
- (d) The failure to implement this [Vermont] transmission project has potential health risks that are far more serious than those associated with EMFs --- for instance, because a reliable electric system is

---

<sup>50</sup> For a summary, see Vermont Project Approval, pp. 221-222.

<sup>51</sup> Vermont Project Approval, p. 67.

<sup>52</sup> Vermont Project Approval, p. 69.

<sup>53</sup> Specifically, the International Agency for Research on Cancer, the National Institute of Environmental Health Sciences, and the World Health Organization.

<sup>54</sup> Vermont Project Approval, pp. 70-72, 222.



essential for public health and safety in many specific ways, from ensuring adequate health care at hospitals to functioning traffic lights to prevent traffic accidents.<sup>55</sup>

- (e) Transmission lines are not the only, or even the primary, source of EMF exposure for most people.<sup>56</sup>
- (f) The standards for transmission line EMFs that some states have adopted (i.e., designating specific miligauss levels expected) are not health-based, and we do not adopt such standards. Nonetheless, we are requiring VELCO to identify areas of relatively high EMF levels at nearby residences and propose mitigation measures for such areas.<sup>57</sup>
- (g) Prudent avoidance has been the Vermont policy regarding EMFs, which means adopting policies that limit EMF exposure whenever this can be done for a small investment of money and effort. This is consistent with the scientific evidence, which shows that while some basis for concern (about the health effects of EMFs) exists, the evidence does not justify large investments to avoid EMF exposure.<sup>58</sup>
- (h) “Low cost” anti-EMF efforts include such mitigation as increasing line clearance and careful line configuration. Placing the line underground clearly does not constitute prudent avoidance.<sup>59</sup>
- (i) We will not require VELCO to place underground any portion of the project based on the health effects of EMF.<sup>60</sup>

---

<sup>55</sup> Vermont Project Approval, pp. 72-73.

<sup>56</sup> Vermont Project Approval, p. 73.

<sup>57</sup> Vermont Project Approval, pp. 68, 73-74.

<sup>58</sup> Vermont Project Approval, p. 74.

<sup>59</sup> Vermont Project Approval, p. 74.

<sup>60</sup> Vermont Project Approval, p. 76.

- (j) We reject a proposal to establish 3 mG as a chronic exposure standard for EMFs, since none of the numerous health agencies that have reviewed the state of knowledge concerning EMFs have yet done so.<sup>61</sup>
- (k) Utility purchase of any lands or structures frequently used by children, where they are exposed to EMFs resulting from the project, would not be consistent with the policy of prudent avoidance. Under no credible reading can prudent avoidance be read as equivalent to a standard of zero additional exposure to EMFs for any population group. Recommendations of this type appear to be based on fear and uncertainty, rather than on the findings and recommendations of leading health agencies that have extensively studied the EMF issue.<sup>62</sup>

OCC concurs with each of the Vermont PSB's observations, summarized above, relating to EMFs and to the appropriate regulatory response to them by state-level siting agencies. These Vermont PSB observations and conclusions offer the Siting Council a good model for evaluation of EMF issues in the present docket. We now turn to a specific consideration of the present docket's evidence on point.

The expert evidence on the record in this docket does not justify Siting Council implementation of any EMF mitigation policy that goes beyond prudent avoidance.

OCC finds it noteworthy that EMF issues played a distinctly secondary role in the Council's recent consideration of the Phase One transmission project (Council Docket No. 217). The Findings of Fact comprising a large part of the Council's final decision in the Phase One docket directly address EMFs in only 2 of the 260 numbered items found

---

<sup>61</sup> Vermont Project Approval, pp. 76-77.

in that document (i.e., #255, 256). Even though the extent of possible/desirable undergrounding of the transmission line was vigorously contested in the Phase One docket, those disputes did not center on EMF-related issues.

The record of the present Council proceeding contains no scientific evidence tending to show that newly discovered EMF dangers have arisen since October 2001 (when the Council's Docket No. 217 began). In this context, it is worth noting that the Council's most recent review of the utilities' ten-year load forecasts, issued in October 2004, took note of a major scientific report on EMFs concluding that evidence does not support the contention that the use of electricity poses a major unrecognized public-health danger.<sup>63</sup>

Drs. William Bailey and Philip Cole, the Applicants' lead EMF expert witnesses in this docket, state emphatically that, after decades of research, no causal relationship has been established between EMFs and any health outcomes.<sup>64</sup> They insist that there is an overwhelming consensus in the scientific community that the evidence is insufficient to demonstrate a causal link between EMF exposure and childhood leukemia. Drs. Bailey and Cole also state that scientific research has not deemed an EMF/leukemia link to be totally impossible.

---

<sup>62</sup> Vermont Project Approval, p. 77.

<sup>63</sup> 2004 Review of Connecticut Electric Utilities' Ten-Year Forecasts, October 29, 2004, p. 18.

<sup>64</sup> Supplemental Testimony V, 1/24/05, pp. 11-12.

The testimony of Drs. Leonard Bell, Peter Rabinowitz, et. al., the expert witnesses presented by several Woodbridge groups in this proceeding, is not to the contrary of the points just summarized from Drs. Bailey and Cole. In their written testimony in this docket, Drs. Bell, Rabinowitz et al., allude to the fact that EMFs have not been proven to cause cancer.<sup>65</sup> Thereafter, upon cross-examination, both Drs. Bell and Rabinowitz conceded that no one claims that EMFs have been established as a cause of childhood cancer.<sup>66</sup> Rather, their concern is that epidemiological/statistical studies show that such a causal link might be a possibility.

Thus, on the evidence before the Council in this docket, the question of health hazards possibly associated with EMFs reduces itself to the extent to which statistical associations suggest or tend to show a such a causal link. All experts agree that EMFs, produced at the levels typical for high voltage transmission lines sited in right-of-ways of proper width, have not been shown to be harmful. The disagreement rather is over whether a showing of any such harm may be made in the future.

On the EMF/health issue, thus narrowed, OCC finds the testimony of Drs. Bailey and Cole credible and balanced. We have specific reference to their most recent comments in this docket.<sup>67</sup> There, Drs. Bailey and Cole state that the most recently filed testimony of Drs. Bell and Rabinowitz exemplifies an invalid statistical procedure known as “data dredging”. Bailey and Cole also note Bell and Rabinowitz’ failure to address

---

<sup>65</sup> Testimony, 3/16/04, p. 9.

<sup>66</sup> Tr., 5/13/04, pp. 244-245.

plausible alternative explanations for the statistical associations they have re-analyzed, and their misleading characterization of certain recent laboratory research.

Over time, the Council has dealt with EMF issues by endorsing a “prudent avoidance” approach. The Council’s updated Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut, December 21, 2004 (at pp. 2, 3) explicitly recommends a prudent avoidance approach. OCC now turns to the specific implications of this approach for the present docket.

The World Health Organization (“WHO”) has succinctly summarized the concept of prudent avoidance as it relates to EMFs.<sup>67</sup> Prudent avoidance means taking simple, easily achievable, low cost measures to reduce EMF exposure, even in the absence of a demonstrable risk. WHO contrasts prudent avoidance with ALARA (“as low as reasonably achievable”), which it notes is a policy used to minimize known risks, such as ionizing radiation. WHO states that ALARA is not an appropriate policy for mitigating EMFs.

WHO notes that Dr. Granger Morgan of Carnegie Mellon University initially developed prudent avoidance as a risk management strategy for power frequency EMF in

---

<sup>67</sup> Supplemental Testimony V, 1/24/05, pp. 1-7.

<sup>68</sup> World Health Organization Background, “Electromagnetic Fields and Public Health Cautionary Policies”, March 2000, Testimony of Dr. Leonard Bell, Dr. Peter Rabinowitz, Dr. Carl Baum, Dr. Alan Gerber, Dr. David Carpenter, March 16, 2004, Appendix No. 2, Attachment 32.

1989.<sup>69</sup> Dr. Morgan's rationale for this approach is that it makes no sense for society to spend more to reduce exposure to an unknown risk (such as EMFs) than it spends to avoid various known risks.<sup>70</sup>

In this docket, the Council should continue to apply the concept of prudent avoidance to EMF mitigation. It should not endorse or order specific EMF mitigation techniques that go beyond prudent avoidance.

Specifically, the Council should decline to require extensive use of underground cable as an EMF mitigation technique. As noted above, the Vermont PSB rejected this approach for the Vermont Project. In the case of this particular SW CT project, the docket evidence shows that reliability considerations in any case forbid the extensive use of underground cable for the project.<sup>71</sup>

Further, the Council should not require the transmission line configuration it approves to meet any particular quantitative standard for EMF exposure at the edge of the ROW or in any buffer zone [e.g., two, three or six miligauss ("mG")]. There are several reasons why it would be inadvisable to impose a rigid requirement of this type, as contrasted with non-binding goals for EMF levels.

Any such minimum exposure rule would be inconsistent with prudent avoidance. To impose an "objective" requirement of this type would treat EMFs as a known health risk (through ALARA or otherwise), which they are not. Also, any such minimum

---

<sup>69</sup> WHO Backgrounder, third page.

<sup>70</sup> Supplemental Testimony of Dr. William Bailey, 5/3/04, pp. 3-6.

exposure rule would be costly. It presumably would require ongoing monitoring, and possibly would require the creation of buffer zones wider than normal ROWs. Finally, any such minimum exposure rule would be difficult to implement, since mG readings for EMF exposure inherently are subject to considerable variation.

For appropriate EMF mitigation, the Council may wish to consider the optimal phasing of overhead poles in selected sensitive locations. Drs. Bailey and Cole cautiously endorse this possibility.<sup>72</sup> However, they emphasize that this approach should be considered only at locations where large numbers of children might spend significant amounts of time. Such highly selective use of low magnetic field line designs would contrast with the extensive use thereof throughout Segments 1 and 2, about which the Council has inquired. The Applicants estimate that such more extensive use of low magnetic field designs would cost an estimated \$68 Million to \$80 Million.<sup>73</sup>

Spending \$68 Million to \$80 Million on such a project modification would be inconsistent with the concept of prudent avoidance. The California Public Utilities Commission, ordering utilities to undertake low-cost EMF mitigation measures, defined low-cost for this purpose as in the range of 4% of total project cost.<sup>74</sup> The lowest current initial cost for the Applicants' 13-Mile Case is \$ 811 Million.<sup>75</sup> Four per cent of this figure is around \$32 Million. Thus, based on this reasonable quantification of the prudent

---

<sup>71</sup> See Section II-D of this Brief, below, and OCC's Proposed Findings of Fact, 3/11/05.

<sup>72</sup> Supplemental Testimony V, January 24, 2005, pp. 9-10.

<sup>73</sup> Testimony of Anne Bartosewicz and John J. Prete, 12/28/04, p. 5 and Appendix B.

<sup>74</sup> Vermont Project Approval, p. 75.

avoidance standard, highly selective use of low magnetic field designs possibly could be consistent with prudent avoidance, but the extensive deployment of such designs would not meet the concept of prudent avoidance.<sup>76</sup>

OCC proposes that the Council could view the dollar figure just mentioned (i.e., \$32 Million) as a cost ceiling for overall EMF mitigation measures ordered in this docket. However, even the investments under such a cap should be allowed only where meaningful improvements in EMF levels in specific problem locations can be demonstrated.

This section of the Brief also briefly discusses several CSC Briefing Points, as follows.

- (a) The Council's Briefing Request No. 1(b) asks several questions relating to the interpretation of "adjacent" for purposes of § 7 of PA 04-246 (which lists sensitive areas "adjacent to" which the pro-undergrounding presumption applies).
- (b) The Council's Briefing Request No. 4 asks several questions relating to the effect of "buffer zones" under PA 04-246. For instance, the Council asks whether it can determine that there should be no buffer zones, or no consequences to such a zone, or what those consequences might or should be.
- (c) The Council's Briefing Request No. 5 asks what the definition of a "residential area" is, for purposes of the pro-undergrounding presumption and the buffer zone requirement.

OCC has two comments on this trio of Briefing Requests. First, OCC has not prepared detailed answers to these Council questions. This is because, based on the EMF/prudent

---

<sup>75</sup> See Section II-B of this Brief, above.

<sup>76</sup> For more details on this point, see Letter of Roger C. Zaklukiewicz, February 3, 2005.



avoidance discussion above, the Council should find that protecting public health does not require establishing buffer zones beyond the existing ROWs. Second, answers to each of these three Briefing Questions are within the Council's discretion to determine. Each of the ambiguities mentioned in these Briefing Requests requires the Council to bring to bear its fact-finding responsibilities and policy-implementation abilities as a regulatory agency.

**D) The Council Should Certify the Applicants' 13-Mile Case.**

The "bottom line" question of this docket is which transmission configuration the Siting Council should certify.

As an initial point, OCC believes that the Council cannot reach the best answer to this question based on the record of this proceeding as it now stands. This is because the Council failed to take up the opportunity that OCC offered to the Council, in our Motion for Technical Studies (6/22/04) and otherwise. The Council declined to investigate whether there exist any resource-neutral, least-cost set of alternatives that might be better than the three main transmission-centered alternatives offered by the Applicants.

That said, OCC believes, for reasons explained specifically below, that the Council should certify the Applicants' 13-Mile Case --- that is, Alternative A from the initial Application, as modified since then by the Applicants, principally through their response to the Final ROC Report.

Irrespective of PA 04-246 and the presumption favoring undergrounding of transmission that this law creates, several considerations have long supported decisions to install high voltage transmission lines underground rather than overhead in given areas. The testimony of Torben Aabo, one of OCC's expert witnesses in this proceeding, explained these well-understood and long-accepted guidelines for undergrounding, and their application to the present proposed project.

General engineering practice supplies criteria for deciding whether underground transmission construction is appropriate in a given area.<sup>77</sup> These criteria (e.g., rural character of area; future land use plans that do not contemplate more intensive development) tend to support aerial construction for components located in Segments 1 & 2 of the Applicants' proposed Project. If aesthetic considerations are the basis for an underground preference, this benefit must be carefully evaluated against considerations of additional cost for such undergrounding. Further, technical issues associated with adding additional cable to the circuit must be carefully studied.

According to OCC's witness, Mr. Aabo, the original Proposed Route (24 miles of undergrounding, out of 69 miles total length) appears to feature an amount of undergrounding that is appropriate under normal considerations for transmission line design.<sup>78</sup> For instance, Segments 1 & 2 of this route (which would be substantially aerial) appear in the Application photographs to be substantially rural, and no information

---

<sup>77</sup> Aabo Testimony, pp. 16-17.

<sup>78</sup> Aabo Testimony, pp. 10-11.

on future land use plans for these areas that could be jeopardized by aerial transmission has been submitted in this proceeding. The Applicants gave less detailed consideration to Alternatives A and B.

In OCC's view, the particular choices for amounts (lengths) of underground cable found in the initial Application were made appropriately with respect to all three of the original proposals --- that is, the Proposed Route, and Alternatives A and B. Some differences among these three proposals of course were noted. Alternative B presented difficulties to the extent that an expanded right of way would be needed and some 29 homes would have to be acquired. The portions of Alternative A chosen for underground cable appeared to follow normal siting criteria (i.e., cable use in highly populated areas). Further, the portions of the Proposed Route where underground cable was chosen also appeared to be based on normal considerations (e.g., congested areas, route following roads and highways).

However, as is well known, the question of which particular facility the Council would or could actually certificate took several unexpected turns during the course of this docket. These surprises included the enactment of PA 04-246 and ISO-NE's initial refusal, in its 6/7/04 written testimony, to allow construction of the (original) Proposed Route. The eventual result of these developments has been the Final ROC Report, now fully endorsed by the Council's independent expert, KEMA.

Given these unexpected (but very important) developments, the question of how much underground cable was advisable or possible as a part of this proposed transmission

facility came to be posed in an entirely new light, one quite different from the situation as initially analyzed by OCC's expert witness, Mr. Aabo. When the Final ROC Report was issued, the Applicants had settled on substantial design changes for the facility.

OCC endorses one specific aspect of the altered facility designs that the Final ROC Report now has placed before the Council. This is the extensive use of XLPE cable rather than HPFF cable wherever underground installation is otherwise indicated. OCC's expert witness, Mr. Aabo, specifically addressed this subject well before the dramatic docket direction changes just mentioned took place.

The initial Application proposed to use HPFF cable for the underground sections of the project, in Segments 3 & 4.<sup>79</sup> However, Mr. Aabo recommended XLPE cable as superior for this application. One reason for this is that the proposed cable route crosses more than a dozen rivers, creeks and brooks, and the use of XLPE cable would eliminate the potential for water contamination through leakage of the dielectric fluids found in HPFF cable. Also, the use of pressurized fluids means that HPFF cable presents more serious maintenance issues than does XLPE cable.

Further, the amount of undergrounding proposed for this Project is comparable to that already found in other locations, including New York City, California, Denmark and Japan, including for XLPE installations.<sup>80</sup> HPFF and XLPE appear to present comparable

---

<sup>79</sup> Aabo Testimony, pp. 4-6.

<sup>80</sup> Aabo Testimony, pp. 6-9.

operating problems. The apparent Applicant perception that XLPE cable is particularly prone to failure is incorrect.

When cross-examined in this proceeding by Applicant representatives, Mr. Aabo denied that reliability problems are more severe for XLPE cable than for HPFF cable, or that XLPE cable is so new as to be considered unproven. Tr., 6/2/04, pp. 64-88. OCC finds it gratifying that, in the months since that hearing room encounter took place, the Applicants have changed their assessment of XLPE cable. See Applicant Exhibit 179 (XLPE fault rate calculations, filed 1/14/05); Tr., 1/13/05, pp. 53-56, 238; Tr., 1/19/05, pp. 120-144. It now appears that the Applicants share the basic confidence in XLPE cable that OCC's expert witness, Mr. Aabo, had earlier insisted was warranted in light of current industry experience.

The Council's Briefing Request No. 1(c) is relevant in this context. This request asks whether, in interpreting "technologically infeasible" (a phrase found in PA 04-246, § 7), the Council can or must consider technologies that are theoretically possible but unproven.

**The answer to this question is that both Connecticut law and good engineering practice require the Siting Council to take a conservative approach to these technological issues.**

See CGS § 16-50t(a)(3) (Elimination of overhead transmission lines is to proceed "over appropriate periods of time in accordance with existing applicable technology.").

And see Tr., 2/17/05, pp. 16-18 (Technological feasibility, for this docket, should include actual industry experience. If mitigation measures not based on established industry practice are contemplated, that adds significant risk. The initial testing for new technologies, or new uses for existing technologies, should be on a small scale, so that the system impacts of possible failures would be minimal.) (Statement by KEMA).

Stating this point in its simplest form, the Council must decline to certificate any transmission configuration that would place Connecticut in the position of being a testing ground for unproven technologies, a costly large-scale experiment in the unknown. The fundamental goal of this docket must be to resolve SW CT's electrical reliability problems, not to continue those problems in a new and different guise.

In other words, the Council has no discretion to certificate a transmission facility that would rely crucially on a technology that the Council views as unproven. At the same time, with respect to particular technologies, the Council does have discretion to determine whether or not they are unproven.

In the present context, OCC suggests (based on Mr. Aabo's testimony) that XLPE cable should be regarded as a proven technology for these purposes.

As a contrasting example in this area, OCC also suggests that the use of C-Type filters as a generic mitigation option for the reliability problems (e.g., temporary overvoltages) the ROC group found in its modeling work (when more than 24 miles of undergrounding was contemplated) is not a proven technology. If so, then the Council

has no discretion, under the guidance cited above, to certificate a transmission facility that would rely on C-type filters in this manner.

However, PA 04-246 and the ROC analyses have presented other questions in this docket as well, questions that reach well beyond whether XLPE cable is an acceptable technology for underground cable. **The ultimate question that has been asked over and over in this docket is how much underground cable can be installed as a part of this transmission project, while still enabling the project to meet regional and national reliability standards.**

**OCC believes that the answer to this question is thirteen miles --- specifically, Council certification of the 13-Mile Case.** In support of this conclusion, OCC refers the Council to our Proposed Findings of Fact, filed in this docket on March 11, 2005.

Those Proposed Findings of Fact, which are not repeated in detail here, review the docket evidence in light of the multiple criteria for electrical reliability in use in this docket, criteria accepted both by the ROC study group and by KEMA. That docket evidence shows that the 24-Mile Case is unacceptable, based solely on electrical system reliability considerations. Thus, even though the Applicants continue to advocate the 24-Mile Case as their main proposal, OCC urges the Council to certificate the 13-Mile Case instead.

In this docket, ISO-NE has stated repeatedly<sup>81</sup> that, based on the Final ROC Report, it will refuse in its so-called “18.4” review process to approve any “Phase Two” transmission line configuration containing more than 24 miles of underground cable.

This ISO-NE position, evident to all, perhaps is the source of the Council’s Briefing Request No. 3. Here, the Council asks whether it may or must consider the likelihood that ISO-NE will approve the configuration the Council approves, in deciding what to approve in this docket. The following is OCC’s answer to this inquiry.

ISO-NE is federally regulated, while the Siting Council of course is a state agency. Thus, since no questions of federal pre-emption are presented here, the Council is not literally required to consider ISO-NE’s position on most issues of this proceeding. However, there is one small (but possibly vital) exception to this conclusion.

The legislative history of PA 04-246 indicates that the General Assembly intended that the electrical reliability standard that applies for purposes of this law is to be the one that ISO-NE itself uses.<sup>82</sup> To the extent that this is so, the Council is required to give deference to ISO-NE’s views on reliability issues (e.g., whether construction of more than 24 miles of underground cable in this project would cause unacceptable reliability risks) in its own deliberations.

---

<sup>81</sup> See, for instance, Tr., 1/11/05, pp. 42-44.

<sup>82</sup> Pertinent excerpts from the legislative floor debate on what became PA 04-246 are presented in an earlier ISO-NE filing in this docket. See Comments of ISO New England, Inc. Regarding Public Act 04-246, 7/19/04, pp. 4-5, esp. note 9.



ISO-NE has independent (federally-based) authority and responsibility to accept or reject whatever project configuration the Council certifies in this proceeding. As all participants in this docket are aware, the work of the ROC group was set into motion last June by ISO-NE's reminder to the Council that its independent authority/responsibility over this transmission project exists and would be exercised. At that time, the Council specifically asked ROC to evaluate and to document which line configuration (focusing on "how much undergrounding") ISO-NE could stand behind. In doing so, the Council manifestly looked forward to ISO-NE's future 18.4 process. In effect, the ROC work in this docket amounted to a dress rehearsal of that (future) 18.4 process.

ISO-NE has been a crucial participant in the work of the ROC group. In this docket, the Council has chosen to make evaluation of the work of the ROC group a central component of its own fact-finding mission, including through the use the Council has made of its independent consultant, KEMA. Thus, it would be highly inadvisable for the Council to ignore the ROC work at this stage of this proceeding.

Specifically, if the Council believes that the need to resolve electrical reliability issues in SW CT is not only real but also urgent, then the Council clearly should not certificate a project that it believes ISO-NE will reject during the 18.4 process. Taking such a step would only cause delay. This is because any such ISO-NE rejection would require the Applicants to make whatever changes to the line were required by that rejection, and thereafter to re-apply to the Council for state certification of the thus-reconfigured project.

### Summary

In this Brief, OCC has emphasized the signal importance of reliability considerations and cost considerations in this docket. Both are vital. Both should form the core of Council deliberations in this docket. Clearly, the Council's goal in this docket should be to certificate a facility that offers Connecticut the best reliability solution for SW CT that is available at a reasonable cost.

The Council's interpretation and application of the pro-undergrounding legal presumption that obviously has shaped the course of this docket could be the linchpin of its eventual decision. Some docket participants may take the position that the presumption for undergrounding is something the Council should apply irrespective of cost considerations. Some docket observers, if not docket participants, appear to believe that more than 24 miles of undergrounding is possible for this project, even though ROC and KEMA have now agreed that this could not be done reliably.

The Council must strike the proper balance among cost and reliability considerations, in light of PA 04-246's presumption for undergrounding. **As the Council proceeds to completion of this docket, it must stay completely clear of any prospect of certifying a project that is both expensive and unreliable.**

The record in this docket unequivocally establishes that the 24-Mile Case (still advocated by the Applicants) would be more expensive than the 13-Mile Case. That record also establishes that the 24-Mile case would be less reliable than the 13-Mile Case.

OCC has supported this comparative characterization of these two cases in detail, both in this Brief and in OCC's Proposed Findings of Fact, filed on March 11, 2005.

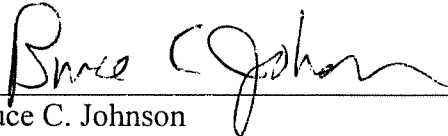
OCC believes that the 24-Mile case would cost more than an appropriate transmission project for SW CT needs to cost, and that it would do less to resolve SW CT's reliability issues than any such project should do. It is on this basis that OCC finds the 24-Mile case unacceptable. We ask the Council to certificate the 13-Mile Case.

**III. CONCLUSION**

For all of the above-stated reasons, OCC urges the Siting Council to make its determinations in this proceeding in accordance with OCC's several recommendations, as presented in specific detail above.

Respectfully submitted,

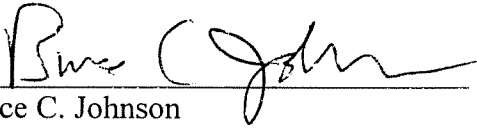
MARY J. HEALEY  
CONSUMER COUNSEL

By   
Bruce C. Johnson  
Litigation Attorney

STATE OF CONNECTICUT  
OFFICE OF CONSUMER COUNSEL  
TEN FRANKLIN SQUARE, NEW BRITAIN, CT 06051-2644  
PHONE: (860) 827-2900 --- FAX: (860) 827-2929

**CERTIFICATION**

I hereby certify that a copy of the foregoing has been mailed and/or hand-delivered to all known parties and intervenors of record this 16<sup>th</sup> day of March 2005.

  
\_\_\_\_\_  
Bruce C. Johnson  
Commissioner of the Superior Court