



**DRAFT**

*Stephen G. Whitley*  
Senior Vice President and Chief Operating Officer

[DATE X], 2006

Mr. Allen Scarfone, P.E.  
Transmission Planning  
Northeast Utilities Service Company  
107 Selden Street  
Berlin, CT 06037

**Re: TCA Application #NU-04-TCA-04, Dated: January 12, 2005**

Dear Mr. Scarfone:

This letter provides the determination of ISO New England Inc. (the “ISO”) in connection with the revised transmission cost allocation (“TCA”) application dated January 12, 2005 and revised February 3, 2006 (the “Application”) submitted by the Connecticut Light & Power Company (“CL&P”) pursuant to Schedule 12C of the ISO New England Open Access Transmission Tariff and ISO New England Planning Procedure No. 4 (“PP-4”).<sup>1</sup>

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<sup>1</sup> Effective with the start of ISO operations as a regional transmission organization on February 1, 2005 (the “RTO Operations Date”), Schedules 12 and 12C are contained in Section II of the ISO New England Inc. Transmission, Markets and Services Tariff (the “Tariff”). CL&P submitted the original application on January 12, 2005 pursuant to Schedule 12C of the NEPOOL Open Access Transmission Tariff (“NEPOOL OATT”). Because there are no substantive differences between the versions of Schedules 12 and 12C contained in the NEPOOL OATT and in Section II of the ISO New England Tariff, the schedules will be referred to throughout this letter simply as “Schedule 12” and  
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At the outset, I would like to commend CL&P for the comprehensive nature of the materials it provided to support its Application, the clarity with which it presented its Application, including providing the ISO, the NEPOOL Reliability Committee (the “Reliability Committee”) and interested stakeholders with a video “fly-over” of the site, and its diligence in responding to inquiries from NEPOOL Participants, New England stakeholders and ISO staff. This Application involves a complex and novel transmission design, and CL&P has done an excellent job in presenting the matters arising out of this Project.

This Application involves the costs associated with Phase I of a two-part transmission upgrade in southwestern Connecticut. Phase I consists of the construction of a new 20.4-mile, 345-kV transmission line between Plumtree Substation in Bethel, Connecticut and Norwalk Substation in Norwalk, Connecticut, along with the reconfiguration of certain sections of the existing 115-kV transmission lines between the Plumtree, Peacable, and Norwalk Substations and two other 115-kV lines in the vicinity of Norwalk Substation, plus certain related ancillary work (the “Project”). The revised Application seeks a determination that \$354.8 million of the Project’s estimated costs constitute Pool-Supported PTF costs and \$2.4 million of the Project’s estimated cost constitutes Non-PTF costs (*i.e.*, Localized Costs).

Phase II consists of a new 345-kV transmission line between Norwalk and Middletown, CT, and associated facilities, which will be the subject of a separate, yet-to-be filed TCA application.

## **I. SUMMARY OF ISO DETERMINATION**

As shown in Table 1 below, the ISO finds that \$237.3 million, the majority of the total estimated cost of \$357.2 million for the Project, qualifies as Pool-Supported PTF costs. The ISO finds that \$119.9 million of the total estimated cost for the Project constitutes Localized Costs, as defined in Schedule 12C.

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“Schedule 12C,” respectively. Capitalized terms not defined herein have the meanings ascribed thereto in the Tariff.

**TABLE 1**

	NU Requested PTF Amount (\$\$ in Millions)						ISO-NE Supported (\$\$ in Millions)		
	Alternative #1 (Proposed Project)			Alternative #5a			ISO Final Determination (Cost Comparison to Feasible and Practical Alternative)		
	Total (A)	Regional (B)	Local (C)	Total (D)	Regional (E)	Local (F)	Local Costs in Alternative 5a (Column F Plus ISO Adjustments) (G)	Regional (D Minus G) (H)	Local (A Minus H) (I)
<b>Transmission Lines</b>	268.4	268.4	0.0	176.8	176.8	0.0	20.3	156.5	111.9
<i>Construction</i>		215.9			81.9				
<i>ROW</i>		9.8			44.1				
<i>Additional Engineering</i>		42.7			29.0				
<i>Delay Costs</i>					10.0		10.0		
<i>Planning &amp; AFUDC</i>					10.3		10.3		
<i>Additional Legal</i>					1.5				
<b>Norwalk and Plumtree Substations</b>	81.6	79.2	2.4	81.3	78.9	2.4	7.7	73.6	8.0
<i>Plumtree Sub-Total</i>	20.6	20.6		17.6	17.6				
<i>Shunt reactor &amp; assoc. equipment</i>							4.0		
<i>Norwalk Sub-Total</i>	45.7	43.3	2.4	45.7	43.3	2.4	5		
<i>GIS Enclosure &amp; Regulatory Fees</i>								2.6	
<i>Spare Transformer</i>			1.2			1.2		1.2	
<i>Distribution Related Costs</i>			1.2			1.2		1.2	
<i>Delay Costs</i>				2.7	2.7		2.7		
<i>Additional Legal/Engineering Costs</i>	15.3	15.3		15.3	15.3				
<b>Total Ancillary Facilities</b>	7.2	7.2	0.0	7.2	7.2	0.0	0.0	7.2	0.0
<b>Total</b>	357.2	354.8	2.4	265.3	262.9	2.4	28.0	237.3	119.9

## II. OVERVIEW OF SCHEDULE 12C

Given the large dollar amounts at issue with this Project and the multiple questions raised by Market Participants and other stakeholders regarding other potential transmission designs and routes, the ISO provides an overview of the contents and purpose of Schedule 12C to facilitate an understanding of the ISO's Schedule 12C determination for the Project.

The ISO's role in determining Localized Costs is defined by Schedule 12C and PP-4.<sup>2</sup> Schedule 12C provides that “[t]he ISO shall determine what those reasonable requirements are that are consistent with Good Utility Practice and the current engineering design and construction practices in the area in which the Transmission Upgrade is built [and that] [t]he costs of Transmission Upgrades that exceed those reasonable requirements . . . shall be deemed Localized Costs.” Schedule 12 of the Tariff provides that Localized Costs “shall not be included in the Pool-Supported PTF costs recoverable under this OATT . . . .”

In discussing the factors the ISO must consider when making its determination of whether Localized Costs exist, Schedule 12C provides that, with advisory input from the Reliability Committee, the ISO will consider the reasonableness of the proposed design and construction method with respect to:

- a) Good Utility Practice;
- b) current engineering design and construction practices in the area in which the Project is proposed to be built/is being built;
- c) allowing for appropriate expansion and load growth;
- d) alternate feasible and practical transmission alternatives; and
- e) the relative costs, operation, efficiency, reliability and timing of implementation of the proposed Project.

PP-4 also clarifies that a “feasible and practical transmission alternative means a transmission alternative that is feasible and practical from an *engineering design and construction perspective*.”<sup>3</sup> Also, “[a]n alternative that is not or may not be approved by

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<sup>2</sup> PP-4 was originally entitled NEPOOL “Planning Procedure No. 4,” but beginning on the RTO Operations Date, has been re-designated as “ISO New England Planning Procedure No. 4.” Because no substantive change was made in this transition, the document will be referred to herein simply as PP-4.

<sup>3</sup> PP-4 § 1.6.1(d)(i) (emphasis added).

a siting or local review board may still be considered a feasible and practical transmission alternative[.]”<sup>4</sup> The ISO will consider an “[a]ssessment of the schedule or in-service date of the Project *from an engineering and construction* standpoint rather than from the standpoint of potential delays in local or state siting.”<sup>5</sup>

Attachment A to PP-4 also provides guidance regarding underground transmission lines. Included in its non-exclusive list of examples illustrating the types of Projects containing Localized Costs is an example where “[t]he Project includes underground transmission cable, which is selected (a) at the direction of a local or state siting board, or (b) to address other local concerns, and the cost of overhead transmission lines is less expensive, taking into account all relevant costs.”<sup>6</sup>

In other words, Schedule 12C directs the ISO to determine whether the estimated costs of a proposed project exceed the estimated costs of an alternative project that provides equivalent performance and that is consistent with Good Utility Practice and feasible and practical to be designed and constructed from an engineering standpoint. The fact that it may be difficult or impossible from a state or local statutory, regulatory, or political perspective to convince a relevant governmental body to allow the applicant to build such an alternative is irrelevant, because this outcome would be unrelated to engineering design and construction or Good Utility Practice issues.

The ISO’s determination of Localized Costs is based primarily on the types of expenditures proposed. Such cost estimates are relevant to the ISO, not for ratemaking purposes, but rather for determining the presence of Localized Costs by analyzing, for example, whether a Project will cost more than a transmission alternative with equally robust power system performance. However, an ISO finding that certain proposed expenses do not constitute Localized Costs should in no way be interpreted as a determination by the ISO that such estimates are accurate and should automatically be included in the regional transmission revenue requirement collected by Participating Transmission Owners (“PTOs”) through Attachment F of the OATT, since that revenue requirement is based on actual costs (either already incurred or forecasted but trued-up, with interest).<sup>7</sup> The PTOs are responsible for including the proper supporting

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<sup>4</sup> *Id.* (emphasis added).

<sup>5</sup> PP-4, Attachment A (emphasis added).

<sup>6</sup> As previously noted, Attachment A to PP-4 makes clear that “all relevant costs” would not include “potential delays in local or state siting.”

<sup>7</sup> The Schedule 12C process does not constitute, for example, an ISO audit of such costs. Should a PTO include imprudent expenditures or make an error in its Transmission Revenue Requirement, a Customer may challenge such expenditures at FERC through filing a complaint pursuant to Section 206 of the Federal Power Act (“FPA”), 16 U.S.C. § 824e (2000), in response to the PTOs’ informational filing. Similarly, if a Customer

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information and detail in their annual informational filing as required by Attachment F and its Implementation Rule. An ISO finding of Localized Costs does not prohibit a PTO from seeking to include such expenditures in its rates for Local Service under Schedule 21 of the Tariff.

### **III. SUMMARY OF PROJECT, ITS GENESIS AND RELATED RELIABILITY AND SITING REVIEW**

In this section, the ISO describes the core elements of the Project, explains its genesis in Regional Transmission Expansion Plans<sup>8</sup> and summarizes the reliability and siting review undertaken for the Project.

#### **A. Core Elements of the Project**

As described more fully in the Application, the Project, initially estimated by CL&P to cost \$357.2 million to construct, consists primarily of a new 20.4-mile 345-kV transmission line connecting Plumtree Substation in Bethel to Norwalk Substation in Norwalk. Specifically, the Project includes the following elements:

- installing a combination of 8.6 miles of new 345-kV overhead construction and 11.8 miles of 345-kV underground cables;<sup>9</sup>
- reconstructing 1.8 miles of existing overhead 115-kV lines (on an expanded right-of-way to accommodate the new overhead 345-kV facilities);<sup>10</sup>
- relocating approximately 7.8 miles of existing 115-kV line segments from overhead to underground, primarily under public roads;<sup>11</sup>

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believes the formula rates currently in effect have become unjust and unreasonable, that Customer may file a Section 206 complaint with FERC. Such issues, however, are unrelated to the TCA application process and the ISO's determination on Localized Costs.

<sup>8</sup> Following the RTO Operations Date, Regional Transmission Expansion Plans are denominated as "Regional System Plans." *See* OATT § II.48.

<sup>9</sup> Application, at 6.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

- expanding the Plumtree Substation by installing a 345-kV gas-insulated substation (“GIS”), including switchgear and equipment that allows for the transition from the SF<sub>6</sub> bus to open-air 345-kV lines and bus;<sup>12</sup>
- expanding and reconfiguring the Norwalk Substation by installing an indoor 345-kV GIS system, autotransformers, a relay/control enclosure, battery enclosures, three underground 115-kV line sections, a fourth 115-kV switchyard bay, and a 345-kV line terminal structure, along with replacing a 115-kV line series reactor and 115-kV capacitors;<sup>13</sup> and
- adding ancillary facilities at five locations to mitigate project impacts on the existing grid<sup>14</sup> (*i.e.*, installing 115-kV series reactors at the Southington substation in the 1910 and 1950 lines; installing a 345-kV circuit breaker at the Long Mountain switching station; a Special Protection System at the Glenbrook substation; replacing 115-kV circuit breakers at the Norwalk Harbor substation; and replacing terminal equipment at the Southington and Millstone 345-kV substations).<sup>15</sup>

For ease of discussion, CL&P divides the Project into seven segments:

- **Segment 1:** Located in Bethel, this segment is approximately 2.1 miles long and connects Plumtree Substation to Hoyts Hill Road at CT Route 58. The new 345-kV line is placed underground in this segment. The 0.5 mile portion of the existing overhead 115-kV line in the David Deakins Education Park in Bethel (“Bethel Educational Park”) is relocated underground. The Project’s route will vary somewhat from the existing right of way (“ROW”).<sup>16</sup>

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<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

<sup>15</sup> *Id.* at 52-53.

<sup>16</sup> Exhibit No. [x] (CL&P PowerPoint Presentation to Reliability Committee on May 26, 2005 regarding the Bethel-Norwalk Project 12C TCA Application, Slide 6). The ISO’s data requests and CL&P’s responses are currently available at [http://www.iso-ne.com/trans/pp\\_tca/req/p1\\_swct/index.html](http://www.iso-ne.com/trans/pp_tca/req/p1_swct/index.html). [Note to the Reader: The ISO intends to assign (in the final version of this letter) each CL&P data response, along with additional relevant material provided by CL&P, a specific exhibit number. These data response exhibits will become an annex to the TCA letter.]

- **Segment 2:** Located in Bethel and Redding, this segment is approximately 3.6 miles long and connects Hoyts Hill Road at CT Route 58 to Gallows Hill Road. In this segment, the 345-KV line is located overhead along the existing ROW. The current overhead 115-kV line is relocated underground along public streets.<sup>17</sup>
- **Segment 3:** Located in Redding, this segment is approximately 1.3 miles long and connects Gallows Hill Road to the Archers Lane vicinity. In this segment, 345-kV and 115-kV lines are located overhead, supported by steel monopoles along an expanded version of the existing ROW.<sup>18</sup>
- **Segment 4:** Located in Redding, this segment is approximately 2.4 miles long and connects Archers Lane vicinity to the Peaceable Street Substation. The 345-kV line is underground in this segment. The existing 115-kV line (with H-frame supports) is unmodified. This segment does not require an ROW expansion.<sup>19</sup>
- **Segment 5:** Located in Redding and Wilton (and avoiding Weston completely), this segment is approximately 2.7 miles long and connects the Peaceable Street Substation to Mather Street and Honey Hill Road. The 345-kV line is located underground in this segment. The existing 115-kV line with H-frame supports is unmodified. This segment does not require an ROW expansion.<sup>20</sup>
- **Segment 6:** Located in Wilton, this segment is approximately 4.2 miles long and connects Mather Street and Honey Hill Road to the Norwalk Junction. In this segment, the 345-kV line is located underground along streets. The existing 115-kV overhead line, located on lattice towers, is unmodified. Except for a short portion of 345-kV line, this segment does not require a new or expanded ROW.<sup>21</sup>
- **Segment 7:** Located in Wilton and Norwalk, this segment is approximately 3.7 miles long and connects the Norwalk Junction to the Norwalk Substation. In this segment, the 345-kV line is placed on

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<sup>17</sup> *Id.* (Slide 7).

<sup>18</sup> *Id.* (Slide 8).

<sup>19</sup> *Id.* (Slide 9).

<sup>20</sup> *Id.*

<sup>21</sup> *Id.* (Slide 10).

monopoles along a new ROW in part, and in an expanded version of the existing ROW elsewhere. One of the three existing 115-kV lines would be relocated underground.<sup>22</sup>

The January 12, 2005 Application reflects consideration of the following alternatives: no build (*i.e.*, the status quo),<sup>23</sup> adding generation,<sup>24</sup> adding distributed generation,<sup>25</sup> developing new demand-side management programs, constructing two new underground 115-kV lines between Plumtree and Norwalk Substation,<sup>26</sup> and constructing an “Overhead Alternative.”<sup>27</sup> Two portions of the Overhead Alternative would, in fact, include underground construction for portions of the 345-kV line:

- a 2.1-mile portion in Segment 1 to avoid overhead construction in the Bethel Educational Park;<sup>28</sup> and
- a 4.3 mile portion in Segment 6 to avoid constructing it above the Cannondale National Historic District (“NHD”) and directly above existing buildings, to avoid takings of homes in the Pimpewaug Road area, and to bypass a segment of the ROW constrained by Route 7, the Norwalk River, and a railroad corridor.<sup>29</sup>

The Application estimates this Overhead Alternative would cost approximately \$279.2 million to construct.<sup>30</sup> The Application does not consider a fully-overhead alternative, rejecting such a concept as “neither feasible nor practical.”<sup>31</sup>

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<sup>22</sup> *Id.* (Slide 12). This segment currently includes three parallel 115-kV lines on two rows of lattice towers.

<sup>23</sup> Application, at 33.

<sup>24</sup> *Id.* at 33-34.

<sup>25</sup> *Id.* at 34-35.

<sup>26</sup> *Id.* at 36-37.

<sup>27</sup> *Id.* at 61-71.

<sup>28</sup> *Id.* at 64.

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at 69; Exhibit [x] (CL&P PowerPoint Presentation to Reliability Committee on May 26, 2005 regarding the Bethel-Norwalk Project 12C TCA Application, Slide 13).

<sup>31</sup> Application, at 38.

The Application also discusses proposals CL&P had included in its application to the Connecticut Siting Council (the “CSC Application”).<sup>32</sup> CL&P, however, did not formally include these other possibilities as “alternatives” to be considered as part of the Schedule 12C application process.

## **B. Genesis of the Project in Regional Plans**

CL&P designed the Project to address the acute need for additional power transmission transfer capacity in Southwestern Connecticut (“SWCT”), where “the existing electric power system ... does not meet national and regional reliability performance standards.”<sup>33</sup> CL&P currently serves SWCT with a 115-kV transmission system, making it the only major load pocket in New England not connected to the 345-kV transmission system.<sup>34</sup> Many of the lines in the region were installed more than forty years ago and were never intended to support the present level of electric demand, which the Application states as having increased by approximately 27 percent during the five-year period preceding CL&P’s application for siting approval of the Project.<sup>35</sup>

SWCT “is presently exposed to line overloads, voltage degradations and high short-circuit currents under various operating conditions,” resulting in “an increasing risk of customer outages in the SWCT region, particularly in the Norwalk-Stamford Sub-area.”<sup>36</sup> As the Application explains, “[t]he 54-town SWCT area continues to experience peak customer demands for electricity that exceed existing transmission service capabilities and peak demands are forecasted to grow.”<sup>37</sup> In fact, the SWCT transmission constraints “restrict the full dispatch of generation resources,” warranting “a significant number of reliability must-run contract (RMR) proposals ... .”<sup>38</sup> Also, because of New England’s integrated transmission system, SWCT reliability issues “pose the risk of cascading outages that could impact the entire grid.”<sup>39</sup>

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<sup>32</sup> *Id.* at 42-45. The three options CL&P suggested in its CSC Application are discussed below in Section III.C.1.

<sup>33</sup> Application, at 10.

<sup>34</sup> *Id.* at 2.

<sup>35</sup> *Id.*

<sup>36</sup> *Id.* at 3.

<sup>37</sup> *Id.* at 10.

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*

The ISO repeatedly has identified SWCT as the most severe reliability problem in the New England Control Area. The ISO's Regional Transmission Expansion Plan issued September 28, 2001 ("RTEP01"), for example, identified the SWCT Import Interface as the most heavily constrained in New England.<sup>40</sup> The ISO's Regional Transmission Expansion Plan issued November 13, 2003 ("RTEP03") highlighted the severely inadequate status of SWCT's transmission system, warning of the dire consequences that could occur in the absence of badly-needed transmission upgrades:

Despite recently completed local area improvements, the most urgent system reliability need in New England continues to be in the Southwest Connecticut and Norwalk Sub-areas. The combined area lacks the required transmission infrastructure to provide adequate reliability to its electric customers. Studies demonstrate that, without transmission infrastructure upgrades, widespread violations of transmission planning criteria will exist. Without such upgrades, it is doubtful that the existing system could reliably support projected loads in the long term. Even in the short term, without significantly increased implementation of demand response programs, it is doubtful that the existing system could reliably support projected loads.<sup>41</sup>

RTEP03 recommended completion of the SWCT 345-kV Phase I and II projects "as soon as practicable."<sup>42</sup>

### **C. The CSC Application and Approval of the Project**

#### **1. Proposals Presented for Consideration in the CSC Application**

On October 15, 2001, CL&P submitted its original application to the Connecticut Siting Council ("CSC") for a Certificate of Environmental Compatibility and Public Need for an Electric Transmission Line Facility between Plumtree Substation in Bethel and Norwalk Substation in Norwalk (the "CSC Application"). The CSC Application began with the premise that a logical routing for the proposed 345-kV line would be the

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<sup>40</sup> RTEP01, at 29. RTEP01 and associated materials are posted on the ISO's website at <http://www.iso-ne.com/trans/rsp/2001/index.html>.

<sup>41</sup> RTEP03, at 32. RTEP03 and associated materials are posted on the ISO's website at <http://www.iso-ne.com/trans/rsp/2003/index.html>.

<sup>42</sup> *Id.*

existing CL&P transmission corridor between the Plumtree and Norwalk Substations.<sup>43</sup> Based on that premise, CL&P submitted a core design and two alternative designs.

a. 345-kV/115-kV Overhead Proposal (CL&P Original Preference)

CL&P's preferred proposal ("CL&P Original Preference") consisted primarily of steel monopoles to support both the existing 115-KV line and the proposed 345-kV line. CL&P stated:

After careful consideration, CL&P submits that its 345-kV/115-kV Overhead Proposal strikes the best balance between assuring system reliability, minimizing environmental effects, and doing both at the lowest reasonable cost to consumers.<sup>44</sup>

The routing followed the existing 115-kV transmission line corridor, primarily along the existing ROW (including through the Cannondale NHD), except at Bethel Educational Park, where the line would be routed generally along its easterly perimeter, increasing the route length in Bethel by about 0.15 mile.<sup>45</sup> The steel monopoles would have averaged 130 feet in height. Although monopoles are taller than other support structures, their vertical configuration would have minimized the need to acquire additional ROW, because taller structures generally require narrower ROWs (compared with, for example, shorter H-frame structures).<sup>46</sup> These tall structures, however, would have been more visible than the shorter, existing wood H-frame structures.<sup>47</sup> Nonetheless, as CL&P pointed out, the use of the monopoles would be consistent with general practice within the state, and with the support structures used in the immediate vicinity of the Project:

The use of vertically configured conductors on high towers is consistent with the Council's EMF Best Management

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<sup>43</sup> CSC Application, at 2.

<sup>44</sup> *See, e.g., id.* at 5; *see also* CSC Revised Opinion, at 5, Docket No. 217 (Sept. 9, 2003) ("CSC Order") ("The applicant's first preference is building extra high voltage electric transmission lines in an overhead configuration.").

<sup>45</sup> CSC Application, at 11. Bypassing around the school grounds by routing along the easterly perimeter of Bethel Educational Park is referred to herein as "Bethel Bypass #2."

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

Practices...[and the monopoles] would be *very similar to the steel monopole structures on the right-of-way from Long Mountain Substation, in New Milford, to Plumtree Substation, which carry two 345-kV lines.*<sup>48</sup>

CL&P presented itemized estimated costs of \$127.4 million (in 2002 dollars) to construct the CL&P Original Preference.<sup>49</sup>

b. Original 345-kV Overhead Alternative

This alternative (the “Original 345-kV Overhead Alternative”)<sup>50</sup> involved construction of a new overhead 345-kV transmission line along the same route as that of the CL&P Original Preference, but with a relocation of the existing 115-kV line underground along public streets. CL&P developed this alternative in response to concerns raised by affected municipalities in the pre-filing consultation process regarding the “height and visibility” of the steel monopoles in the CL&P Original Preference.<sup>51</sup> CL&P stated:

The [Original] 345-kV Overhead Alternative responds to the concerns raised by the public during the municipal consultation hearing, *but raises other problems of its own.*<sup>52</sup>

Under the Original 345-kV Overhead Alternative, the 345-kV line would have been supported on wood pole H-frame structures (averaging 90 feet high) and steel monopoles (averaging 108 feet high) elsewhere.<sup>53</sup> The lower support structures would have required a 150-foot ROW, wider than that required for the taller steel monopoles. The CSC included “CL&P’s recommendations for discussion purposes as to where the wood pole H-frame and monopole structures might be used to their best advantage.”<sup>54</sup>

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<sup>48</sup> CSC Application, at 2.

<sup>49</sup> *Id.* at 11. This estimate consisted of \$53.1 million for building the 345/115-kV overhead transmission line, \$32.3 million for ROW acquisitions, and \$42.0 million for modifications at the Plumtree and Norwalk Substations.

<sup>50</sup> The CSC Application called this proposal the “345-kV Overhead Alternative.” This letter refers to this proposal as the “Original 345-kV Overhead Alternative” to reduce any confusion with the “Overhead Alternative” discussed in the TCA Application.

<sup>51</sup> CSC Application, at 4.

<sup>52</sup> CSC Application, at 5 (emphasis added).

<sup>53</sup> *Id.* at 19.

<sup>54</sup> *Id.*

Relocating the existing 115-kV line underground would have avoided widening the existing ROW in response to height and visibility concerns, and was described as potentially providing a reliability advantage, because separating the two lines would make them less vulnerable to a simultaneous outage. CL&P also stated that constructing a 115-kV line underground would not present the same reliability concerns as those presented by a 345-kV underground line, because the reliability of solid dielectric cable technology at the 115-kV level is well established.<sup>55</sup>

CL&P presented itemized estimated costs of \$185.4 million (in 2002 dollars) to construct the Original 345-kV Overhead Alternative.<sup>56</sup>

c. 345-kV Underground Alternative

CL&P's third alternative (the "345-kV Underground Alternative") involved constructing the entire 345-kV line underground.<sup>57</sup> CL&P did not, however, consider it as a technically acceptable alternative due to operational concerns with long 345-kV underground lines.<sup>58</sup> Moreover, CL&P stated that the existing ROW used by the 115-kV line was not well-suited for underground construction, because it traverses rough terrain with many areas of very steep and long slopes, and it contains a high percentage of rock at or near the surface along much of the ROW. Therefore, CL&P identified a 21.6 mile alternative route that would generally follow public streets, departing at the Bethel Educational Park and near Norwalk Substation.<sup>59</sup> Under the 345-kV Underground Alternative, CL&P would not have needed to purchase any ROWs to install transmission cables underground within public street areas.<sup>60</sup> The diversions from public street ROWs would have required the acquisition of easement rights from affected property owners.<sup>61</sup> As CL&P explained, "[w]ith the entire 345-kV facility constructed underground, the

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<sup>55</sup> *Id.* at 4.

<sup>56</sup> *Id.* at 19-20. This estimate consisted of \$41.4 million for constructing the 345-kV overhead transmission line, \$38.2 million for ROW acquisitions, \$63.0 million to construct the 115-kV underground transmission line, and \$42.8 million for modifications at the Plumtree, Peaceable, and Norwalk Substations.

<sup>57</sup> *Id.* at 25-30.

<sup>58</sup> *Id.* at 26.

<sup>59</sup> *Id.* CL&P stated that it is typically easier to build an underground transmission line along existing ROW access roads because they typically follow the topographical contours, and road gaps avoid wetlands, waterways, severe slopes and other sensitive areas. *Id.* at 48.

<sup>60</sup> *Id.* at 28.

<sup>61</sup> *Id.* at 28.

existing overhead 115-kV facilities would not require reconstruction and would remain unchanged on the existing ROW.”<sup>62</sup> CL&P estimated the cost of this alternative at \$182.1 million (in 2002 dollars).<sup>63</sup>

## **2. CL&P Rejection of “Super 7” Highway Route**

In its CSC Application, CL&P also discussed additional potential alternative routes it had investigated but declined to pursue. One option CL&P rejected involved constructing a new 345-kV line along the route proposed for the “Super 7” highway. CL&P explained:

CL&P considered a line route along the corridor proposed years ago by the State Department of Transportation for a new Route 7 limited access highway. Since this is not an established corridor, nor are there active plans that CL&P is aware of to make it an established corridor in the near term, CL&P discarded this route as having any practical feasibility.<sup>64</sup>

## **3. Settlement Creating “Configuration X”**

The CSC Application observes that “[i]t appeared to [CL&P] that the [CSC] would conclude that the optimum configuration that would best balance cost, reliability, and environmental considerations could well be one that included diverse elements of all of the three basic configurations identified in the application [to the CSC], as opposed to an all overhead configuration.”<sup>65</sup>

After receiving input from the affected towns regarding the proposed line, CL&P and the Towns of Bethel, Redding, Weston, and Wilton (“Four Towns”) negotiated a hybrid design (called “Configuration X”) that incorporated overhead and underground elements.<sup>66</sup> The CSC provided the following description of Configuration X:

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<sup>62</sup> *Id.* at 26.

<sup>63</sup> *Id.* at 26. This estimate consisted of \$132.1 million for building the 345-kV underground transmission line and \$50.0 million for modifications at the Plumtree and Norwalk Substations. *Id.*

<sup>64</sup> *Id.* at 46.

<sup>65</sup> Application at p. 63.

<sup>66</sup> *Id.*; CSC Order at 5.

The applicant and the Four Towns proposed a configuration X using XLPE cable, overhead line, and HPFF cable technologies. The 345/115-kV lines would exit Plumtree Substation overhead on the same structure for 0.6 miles to Whittlesey Road. The 345/115-kV lines using XLPE cables would transition underground. A transition station would be needed for 345- kV and a transition pole for 115 kV. The 115-kV underground cables would extend from Whittlesey Road to a point north of Route 302 where it will transition at a pole to existing overhead for 0.8 miles to the Route 58/Hoyts Hill Road intersection, and then transition again to underground and follow Route 58, Route 107, and Gallows Hill Road. The first part of this undergrounding would remove much of the existing 115-kV line that traverses the Bethel Educational Park. The 345-kV cables would be underground from Whittlesey Road to Route 58/Hoyts Hill Road where they would transition to overhead and replace the existing 115-kV line on the right-of-way from Route 58/Hoyts Hill Road to Gallows Hill Road, using H-frame structures. At Gallows Hill Road the underground 115-kV line transitions at a pole to overhead and combines with the overhead 345-kV line on the same structures to cross the Saugatuck River and Saugatuck Falls Natural Area to Archers Lane, Redding. The 115-kV line then continues overhead on existing H-frame structures, and the 345-kV line would transition underground using HPFF for 9.7 miles to Norwalk Junction. The underground 345-kV line would transition back to overhead and join the 115-kV overhead line on new common steel-pole structures to Norwalk Substation. Within Norwalk Substation, the 345- and 115-kV lines would transition again to underground XLPE cables before terminating.<sup>67</sup>

CL&P and the Four Towns submitted Configuration X to the CSC late in the proceeding.<sup>68</sup>

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<sup>67</sup> *Id.* at 6.

<sup>68</sup> *Id.*

#### **4. The CSC Findings of Fact**

On July 14, 2003, the CSC issued its Findings of Fact (the “Findings of Fact”). Included among these findings are several relating to the impact of choosing underground cabling (rather than overhead lines) for the Project, and therefore particularly pertinent to the TCA Application:

52. There is a risk that the proposed line's entire cost will not be socialized over all New England customers *if the line is not built overhead*, as described in RTEP02. NEPOOL has approved socialized treatment for the costs of putting transmission facilities underground *in urban areas where overhead facilities are not feasible*. (Tr. 1/15/03, p. 239-241; Tr. 1/16/03, p. 50, 175-176; Tr. 1/22/03, p. 155-157; Tr. 12/3/02 p. 104-105; Tr. 1/29/03, p. 187)

53. Accordingly, if the proposed line is built promptly *and is as described in RTEP02 (an overhead line)*, its costs will probably be recovered on a New England-wide basis, and Connecticut consumers will bear approximately 25% of those costs, or approximately \$4.6 million annually. (Council Administrative Notice No. 20, 12/20/02 FERC Order on Rehearing, pp. 14-15, footnote 15; CL&P 18, pp. 44-45; Tr. 1/15/03, p. 206)

54. There are 2,000 miles of overhead 345-kV transmission lines in New England, including about 400 miles in Connecticut. *The only underground 345-kV transmission line in New England is located in Boston*. Transmission lines are usually built underground *in urban areas where the lines are short; where right-of-way acquisition for an overhead line would require considerable disruption to existing residential and/or commercial uses, and where the costs of undergrounding are thus not excessive in relation to the costs of an overhead line. Less than 1% of all “extra high voltage” (EHV) transmission lines in the world are underground facilities*. (CL&P 1, Vol. I, p. 25, Tr. 12/4/03, p. 46; Tr. 1/16/03, p. 175-177)

(emphasis added).

With respect to use of the existing 115-kV routing for installation of 345-kV overhead lines, the Findings of Fact included:

97. The alignment of the new 345-kV line along the existing right-of-way will minimize impacts and costs, and *will be consistent with a basic facility planning principle, which calls for the siting of linear facilities (such as transmission lines) within or along existing utility corridors.* (CL&P 1, Vol. I, p. 2; CL&P 18, pp. 3, 6)

(emphasis added).

In addition, one of the Findings of Fact indicated that the routing of the overhead project through the Bethel Educational Park could be varied to increase the line's distance from existing school buildings:

98. *CL&P could move the new 345-kV/reconstructed 115-kV line further to the east approximately 0.5 mile along the eastern perimeter of the Bethel Education Park thereby moving farther away from existing school buildings.* CL&P could also shift the right-of-way, or locate a special design structure, or ask for voluntary sale of property to avoid three homes in the Pimpewaug Road area of Wilton. Another option is to re-align the existing 115-kV line from the east side of the Danbury Branch Railroad corridor to the west side of the railroad and inside the "Super 7" right-of-way to avoid two homes in the Arrowhead Road area of Wilton.

(emphasis added).

With respect to the addition of overhead 345-kV lines through the Cannondale NHD, the Findings of Fact stated:

216. The [Connecticut Historical Commission] believes that modifications of the existing 115-kV line structures to 345-kV line structures in the Cannondale National Register Historic District would significantly alter the historic viewshed, *but with design flexibility regarding maximum structure height, tower design, and distance between towers could potentially minimize visual impacts to the Cannondale National Register Historic District.* (CL&P31)

(emphasis added).

## 5. The CSC Order

In the CSC Order, the CSC observed that “Configuration X represents a consensus on the Four Towns’ part, recognizing a need for an extra high voltage transmission line.”<sup>69</sup> The CSC also observed “Configuration X marries both overhead and underground technology in an unorthodox manner”<sup>70</sup> for high-voltage transmission, with successive underground and overhead segments creating a “porpoising” configuration.<sup>71</sup> The CSC approved Configuration X, but also directed CL&P to place underground another portion of 345-kV line from Whittlesey Road to the Plumtree Substation (in Segment 1), and install additional underground facilities from Norwalk Junction in Wilton to Norwalk Substation (in Segment 7).<sup>72</sup> The latter directive required CL&P to move one of the existing 115-kV lines off the ROW and install it underground, thus allowing the 345-kV overhead line to be installed on shorter towers.<sup>73</sup>

The CSC Order prompted a concurring, and two dissenting, opinions expressing, *inter alia*, reservations about the expense of placing underground significant portions of the 345-kV lines.<sup>74</sup>

### D. Reliability and Siting Review of the Project

Pursuant to Section 18.4 of the Restated NEPOOL Agreement,<sup>75</sup> CL&P submitted to the ISO multiple applications to build all of the elements of the Project. Consistent with the Reliability Committee’s unanimous recommendation, the ISO conditionally approved CL&P’s Section 18.4 applications by letter dated February 11, 2004, finding that the Project “will not have a significant adverse effect on the reliability or operating characteristics of the Participant that submitted the applications or upon the system of another Participant,” subject to several conditions. The Application includes the costs for complying with these conditions.

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<sup>69</sup> *Id.*

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

<sup>72</sup> *Id.* at 7.

<sup>73</sup> *Id.*

<sup>74</sup> See Concurring Opinion of Colin C. Tait, and Dissenting Opinions of Brian J. Emerick and Philip T. Ashton, posted on the CSC website in connection with Docket No. 217 (<http://www.ct.gov/csc/cwp/view.asp?a=962&Q=248152>).

<sup>75</sup> As of the RTO Operations Date, the substance of Section 18.4 of the Restated NEPOOL Agreement is contained in Section I.3.9 of the Tariff.

#### **IV. SCHEDULE 12C EVALUATION PROCESS APPLIED TO THE PROJECT**

To evaluate the Application for purposes of Schedule 12C, the ISO carefully considered the advisory deliberations regarding Localized Costs undertaken by the Reliability Committee. This section describes the evaluation process the ISO has applied to the Project.

##### **A. Consideration by the Reliability Committee**

The Reliability Committee and the broader ISO stakeholder process have provided CL&P an extensive opportunity to explain and support its Application. For example, the ISO held Transmission Cost Allocation Public Stakeholder Meetings on February 7 and April 27, 2005, both solely to discuss this Project. Both meetings provided CL&P the opportunity to describe the Project and stakeholders the opportunity to ask questions.

The ISO also solicited and received additional information from CL&P. For example, in a letter dated February 16, 2005, the ISO submitted to CL&P 35 questions (excluding subparts) reflecting input provided by stakeholders attending the February 7, 2005 meeting.<sup>76</sup> Further, in a letter dated April 11, 2005, the ISO forwarded to CL&P additional questions received from (i) Richard Blumenthal, Attorney General of the State of Connecticut (six questions); (ii) the Maine Public Utilities Commission (nine questions); and (iii) National Grid (one question).<sup>77</sup> CL&P provided responses on February 28,<sup>78</sup> March 16,<sup>79</sup> and April 29.<sup>80</sup> On May 16, 2005, CL&P provided a spreadsheet comparing the costs of several alternatives as a supplemental answer to data request ISONE-03, question number 5.<sup>81</sup> The ISO received another CL&P response on April 29, 2005, which included a comparison of the Project's estimated costs with five alternatives.

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<sup>76</sup> Exhibit No. [x] (referred to by CL&P in its responses as Data Request ISONE-01).

<sup>77</sup> Exhibit No. [x] (referred to by CL&P in its responses as Data Requests ISONE-02 and ISONE-03, respectively).

<sup>78</sup> Exhibit No. [x] (answers to Data Request ISONE-01, questions 1-26 and 28-35).

<sup>79</sup> Exhibit No. [x] (undated first supplemental answer to Data Request ISONE-03, question number 5).

<sup>80</sup> Exhibit No. [x] (answers to Data Request ISONE-01, question 27; Data Request ISONE-02; Data Request ISONE-03).

<sup>81</sup> Exhibit No. [x] (supplemental answer to Data Request ISONE-03, question 5).

At the May 26, 2005 Reliability Committee meeting, CL&P made a formal presentation in support of the Application, explaining the Project's configuration and routing in each of the Project's seven segments. CL&P also compared the Project (Alternative 1) with the following estimated costs for the five alternatives (Alternatives 2 through 6) as CL&P provided in its May 16, 2005 data response to ISONE-03, question number 5:

- **Alternative 1 (*i.e.*, the Project as expressed in Configuration X, as modified in the CSC Order):** estimated costs of \$357.2 million for the Project as proposed. The Project includes a total of 11.8 miles of 345-kV underground cables, located in Segment 1, a portion of Segment 2, and Segments 4-6. The Project also relocates approximately 7.8 miles of existing 115-kV line segments from overhead to underground, in a portion of Segment 1 and all of Segments 2 and 7.
- **Alternative 2:** estimated costs of \$302.9 million for constructing the 345-kV elements of the Project as proposed (*i.e.*, underground), but keeping the existing 115-kV facilities overhead.
- **Alternative 3 (*i.e.*, the Application's "Overhead Alternative"):** estimated costs of \$279.2 million for a modification of Alternative 2 that kept the entire 115-kV line overhead and placed underground only the portions of the 345-kV line in Segment 1 in Bethel (to avoid overhead construction through the Bethel Educational Park) and in Segment 6 in Wilton (to avoid overhead construction through Cannondale NHD).
- **Alternative 4:** estimated costs of \$263 million for constructing a variant of the Overhead Alternative that would retain the underground 345-kV line for Segment 6 (to avoid overhead construction through the Cannondale Historic District), but utilize overhead construction in Segment 1 along a new ROW through largely residential neighborhoods that would entirely bypass the Bethel Educational Park ("Bethel Bypass #1").
- **Alternative 5:** estimated costs of \$235.7 million for an all-overhead alternative that would include Bethel Bypass #1 in Segment 1 and a bypass primarily using state-owned land held for future construction of the Super 7 limited-access highway ("Cannondale Bypass #1") in Segment 6.
- **Alternative 6:** estimated costs of \$229.4 million for constructing an all-overhead alternative following the current ROW for the existing 115-kV facilities. *Of the six alternatives, Alternative 6 most closely follows the*

*routing of the CL&P Original Preference as proposed in its original CSC Application.*<sup>82</sup>

At its June 14, 2005 meeting, the Reliability Committee considered the Application *but failed to reach a majority vote in order to make a recommendation to the ISO*. Initially, a motion was submitted to recommend ISO approval as Pool-Supported PTF costs the Project's entire estimated cost of \$357.2 million.<sup>83</sup> By a show of hands, however, the Reliability Committee approved a motion to amend the motion to find that the "estimated Pool-Supported PTF costs of this \$357M project is \$279.2M" as described in Alternative 3 (*i.e.*, the Overhead Alternative, including undergrounding in Bethel and Wilton).<sup>84</sup>

*Significantly, CL&P voted for this amendment.*<sup>85</sup> Indeed, in a May 23, 2005 memorandum from NU to the Reliability Committee, NU had stated that:

CL&P also provided information on the costs associated with an "Overhead Alternative" [*i.e.*, Alternative 3] that CL&P considered to be an alternative to the Approved "Proposed Project" (\$357M as approved by the Connecticut Siting Council). While CL&P believes this Overhead Alternative would have taken longer to build and may, in fact, have delayed the construction of the Project for years, the Overhead Alternative utilizes a minimal amount of underground construction in order to

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<sup>82</sup> It is important to note that Alternative 6 differs from the CL&P Original Preference in one important aspect. Specifically, whereas Alternative 6 would use the existing ROW through the Bethel Educational Park, the CL&P Original Preference would route generally along the easterly perimeter of the school property, increasing the route length in Bethel by about 0.15 mile. This bypass is referred to herein as "Bethel Bypass #2."

<sup>83</sup> Memo from Richard Burke, Secretary, Reliability Committee, to NEPOOL Participants Committee, Actions of the June 14, 2005 Reliability Committee Meeting at p. 1 (June 20, 2005), available at [http://www.iso-ne.com/committees/comm\\_wkgrps/relbly\\_comm/relbly/actions/2005/RC\\_ACTIONS\\_050614.doc](http://www.iso-ne.com/committees/comm_wkgrps/relbly_comm/relbly/actions/2005/RC_ACTIONS_050614.doc) ("Actions of the June 14, 2005 Reliability Committee Meeting").

<sup>84</sup> *Id.*

<sup>85</sup> Exhibit No. [x] (Reliability Committee June 14, 2005 Vote Tabulations).

accommodate engineering and right of way issues in two areas.<sup>86</sup>

Thus, CL&P did *not* take the position that Alternative 3 was impractical or infeasible, or inconsistent with Good Utility Practice, but instead asserted that it would have taken longer to build, essentially from a siting perspective.

With a vote of 61.14% in support, the amended motion failed to receive the support of two-thirds of the aggregate Sector Voting Shares,<sup>87</sup> as is necessary for the Reliability Committee to provide advisory input to the ISO.<sup>88</sup>

Before conducting that final vote, the Reliability Committee considered the following additional motions to amend the amount to recommend as Pool-Supported PTF costs:

- With a vote of 46.1% in support, the Reliability Committee failed to adopt a motion “to modify the amended motion to reflect a Pool-Supported PTF costs of \$250.8 million,” which is the estimated cost of Alternative 5, plus \$15.1 million reflecting additional ROW costs listed on the spreadsheet comparing the costs of several alternatives provided by CL&P as a supplemental answer to data request ISONE-03, question number 5.<sup>89</sup>
- Next, with a vote of 38.01% in support, the Reliability Committee failed to adopt a motion “to modify the amended motion to reflect a Pool-Supported PTF cost of \$273,074,719,” which is the estimated cost of Alternative 5, “plus all the additional costs associated with construction of Alternative 5 shown” on the spreadsheet referenced above.<sup>90</sup>
- Next, by a show of hands, the Reliability Committee rejected a motion “to modify the amended motion to reflect a Pool-Supported PTF cost of

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<sup>86</sup> Memo from Lisa M. Barton, Manager, Transmission Relations and Compliance, Northeast Utilities Service Co., to Reliability Committee (May 23, 2005), available at [http://www.iso-ne.com/committees/comm\\_wkgrps/reblty\\_comm/reblty/mtrls/2005/may262005/a2\\_1\\_memo\\_bethel\\_norwalk\\_resolutionrev1.doc](http://www.iso-ne.com/committees/comm_wkgrps/reblty_comm/reblty/mtrls/2005/may262005/a2_1_memo_bethel_norwalk_resolutionrev1.doc).

<sup>87</sup> Actions of the June 14, 2005 Reliability Committee Meeting at p. 2.

<sup>88</sup> See Section 8.3.7 of the Participants Agreement.

<sup>89</sup> Actions of the June 14, 2005 Reliability Committee Meeting at p. 2.

<sup>90</sup> *Id.*

\$230.9M,” which is the estimated cost of Alternative 5, except it would incorporate Alternative 6 for Segment 1 (*i.e.*, an all-overhead line along the existing ROW through the Bethel Educational Park).<sup>91</sup>

## **B. Evaluation Process Undertaken by the ISO**

During the period following the Reliability Committee’s advisory deliberations, the ISO undertook the following actions to obtain additional information to assist its determination under Schedule 12C:

- The ISO requested additional maps showing routing for Alternatives 4 and 5, which CL&P provided.
- In response to an ISO request, CL&P provided an updated version of the spreadsheet distributed for the June 14, 2005 Reliability Committee meeting, showing a further breakdown of Alternative 5 costs, and expanding the spreadsheet to provide further details for Alternative 4 costs.
- In a letter dated September 13, 2005, the ISO submitted to CL&P a list of seven additional questions (excluding subparts).<sup>92</sup> CL&P provided responses in letters dated October 27,<sup>93</sup> December 14,<sup>94</sup> and December 28, 2005.<sup>95</sup>
- In a letter dated January 11, 2006, the ISO submitted to CL&P three additional questions and asked CL&P to revise its Application to reflect the revised pricing and Non-PTF costs identified in its response to

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<sup>91</sup> *Id.*

<sup>92</sup> Exhibit No. [x] (referred to by CL&P in its responses as Data Request ISONE-04).

<sup>93</sup> Exhibit No. [x].

<sup>94</sup> Exhibit No. [x], which includes CL&P’s original, uncorrected response to question 2 from the ISO’s questions dated September 13, 2005.

<sup>95</sup> Exhibit No. [x], which includes a corrected version of the response to the ISO’s question 2 from its September 13, 2005 questions.

question 4 of Data Request ISONE-04 provided December 28, 2005.<sup>96</sup>  
CL&P provided its response in a letter dated February 3, 2006.<sup>97</sup>

**C. CL&P’s Revised Cost Estimates for Alternative Projects**

During this process, CL&P revised its cost estimates for the different alternatives identified above. CL&P provided cost estimates for its six alternatives in its supplemental response to Data Request ISONE-03, question 5, which the ISO received May 16, 2005<sup>98</sup> and at the May 26, 2005 Reliability Committee meeting. Following that meeting, CL&P provided the ISO and the Reliability Committee a spreadsheet dated June 13, 2005<sup>99</sup> that increased the estimated costs for constructing Alternative 5 from \$235.7 million to \$273.1 million. CL&P increased its prior estimate for Alternative 5 by approximately \$37.4 million primarily to account for the additional two-year delay CL&P estimated it would take to obtain the necessary approvals to site and build Alternative 5. CL&P also indicated to the ISO verbally that Alternative 4 would require similar cost estimate increases.

On August 8, 2005, the ISO received from CL&P the following revised breakdown of estimated costs for Alternatives 1-5, in which both Alternatives 4 and 5 included estimated increases due to an assumed two-year implementation delay versus the time taken to implement the Project:

**Alternative 1:** \$355.9 million estimated cost for the Project as proposed.

**Alternative 2:** \$301.6 million estimated cost.

**Alternative 3:** \$277.9 million estimated cost.

**Alternative 4:** \$287.1 million estimated cost.

**Alternative 5:** \$274.0 million estimated cost.

On September 13, 2005, the ISO issued a data request asking CL&P to explain in more detail why it was necessary to increase the costs of Alternatives 4 and 5 and to

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<sup>96</sup> Exhibit No. [x] (referred to by CL&P in its responses as Data Request ISONE-05).

<sup>97</sup> Exhibit No. [x] (answers to ISONE-05, question numbers 1-3, plus the revised Application).

<sup>98</sup> Exhibit No. [x].

<sup>99</sup> Exhibit No. [x]. Specifically, this spreadsheet provides estimated delay costs for Alternatives 4 and 5.

identify what these escalated costs included.<sup>100</sup> In that same set of questions, the ISO also asked CL&P to provide a similar update for each alternative previously identified.<sup>101</sup>

In response, CL&P further updated its cost estimates with the following figures:

**Alternative 1:** \$354.8 million estimated cost for the Project as proposed.

**Alternative 2:** \$300.6 million estimated cost.

**Alternative 3:** \$280.6 million estimated cost.

**Alternative 4:** \$289.7 million estimated cost.

**Alternative 5:** \$277.3 million estimated cost.

**Alternative 6:** \$267.7 million estimated cost.<sup>102</sup>

CL&P also identified the two factors causing the estimated cost increases for Alternatives 4, 5, and 6.<sup>103</sup> First, CL&P increased the estimated costs to account for a two-year expected delay in the construction of Alternatives 4 and 5 relative to the Project. CL&P stated that the delay “would be caused by the legal process that would take place for the required takings of a substantial number of residences, and [was] not a siting process delay.”<sup>104</sup> Second, CL&P increased the cost for an overhead Cannondale NHD bypass, which is part of Alternative 5, because CL&P had based its initial estimates on the Cannondale Bypass #1 routing, from which it was now backing away. The Cannondale Bypass #1 routing involved obtaining new ROWs relying primarily on land owned and held by the State of Connecticut for a future extension of the Super 7 Highway. CL&P explained:

A CT law passed in 1993 bars the sale of this land or land rights. It was very unlikely that CL&P could ever obtain a

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<sup>100</sup> Exhibit No. [x] (ISONE-04, question number 3).

<sup>101</sup> *Id.* (ISONE-04, question number 4).

<sup>102</sup> Exhibit No. [x] (answer to ISONE-04, question number 3).

<sup>103</sup> *Id.* CL&P also decreased the estimated cost for Alternative 1 (i.e., the Project in the form of Configuration X as modified by the CSC) and for Alternative 2 by replacing its original estimated costs with some actual contract amounts that had since been negotiated.

<sup>104</sup> *Id.*

legislative approval to build an overhead transmission line on this state property (see the response to Data Request ISONE-04, Q-ISO-006). We therefore determined that the May 26, 2005 estimate for Segment 6 of Alternative 5 should be revised, and we submitted a revision to ISO-NE on August 8, 2005.

Our estimate revision on August 8, 2005 for Segment 6 of Alternative 5 was based on a more viable route for an overhead line bypass that would be alongside the state-owned property for most of the route. The first ROW route that we mapped along one side of the state-owned land would require takings of about 16 residences, so we modified this route to crisscross from one side of the state-owned land to the other side in a couple of locations. Although adding to the number of line angles, this route reduced the number of residences required to be taken from 16 to 10. For the revised cost estimate we did not change the construction cost or the base ROW cost, but we added costs associated with taking 10 residence properties. We used an average Wilton residence property value of \$1.36 M for the 10 residences to be taken and included this cost in a new column labeled “Land Purchase”. We also increased the cost estimate for Legal, Real Estate and other administrative costs by \$1.5 million for Alternative 5, recognizing the need to take 10 homes and additional ROW from multiple landowners. On the August 8, 2005 spreadsheet, this cost increase appears on the line item on the spreadsheet labeled “Additional Delay and ROW costs”. It should also be noted that while CL&P estimates a need to take 10 residences, there are at least 10 to 20 other residential properties over which required easements would encumber almost half of the property. During ROW acquisition efforts, some of these ROW acquisitions could also become complete property takings.<sup>105</sup>

The revised Cannondale NHD bypass proposed by CL&P for Alternative 5 is referred to herein as Cannondale Bypass #2.

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<sup>105</sup> Exhibit No. [x] (answer to ISONE-04, Q-ISO-003).

#### **D. Development of Alternative 5a**

Through its January 11, 2006 data requests, the ISO asked CL&P to provide a revised cost estimate for a slight variation of Alternative 5, denominated by the ISO as “Alternative 5a.” Like Alternative 5, Alternative 5a would constitute an all-overhead project. Unlike Alternative 5, Alternative 5a would utilize different routes for the bypasses around Bethel and Cannondale. Specifically, Alternative 5a would include:

- Segment 1 would utilize the existing ROW to combine the new 345-kV transmission line with the existing 115-kV line on steel monopoles, except at the Bethel Educational Park, where the new 345-kV line would bypass around the school grounds by cutting through the “use restricted land” near the stream to the east of the Bethel Educational Park (referred to above as Bethel Bypass #2). Alternative 5a would not relocate the existing 115-kV facilities cutting through Bethel Educational Park
- For Segment 6, the appropriate 345-kV pole construction along the edge of the land reserved by the Connecticut Department of Transportation (“CDOT”) for the Super 7 highway (with acquisition of an adjoining strip of private lands for ROW) for 2.1 miles, and on ROW to be acquired through privately owned lands for 2.4 miles (referred to above as Cannondale Bypass #1).<sup>106</sup>

CL&P estimated the cost of Alternative 5a to be \$263.0 million.

#### **E. Amendment to TCA Application**

As a result of the revised pricing estimates CL&P provided in response to question number 4 of the ISO’s September 13, 2005 data requests, the ISO asked CL&P to revise its Application. Included in its February 3, 2006 response to data requests, CL&P provided a revised Application reflecting total proposed Pool-Supported PTF costs of \$354.8 million and total Non-PTF costs (i.e., Localized Costs) of \$2.4 million.<sup>107</sup> As requested by the ISO, the revised Application utilizes 2004 real estate costs, and up-to-date construction, siting and legal costs.

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<sup>106</sup> Cannondale Bypass #1 is substantially the same routing as that included in original “Alternative 5” in CL&P’s May 26 and June 11, 2005 presentations to the Reliability Committee.

<sup>107</sup> Exhibit No. [x] (revised Application by cover letter dated Feb. 3, 2006).

## **V. DETERMINATION AND ANALYSIS BY THE ISO**

The following discussion begins with determinations that do not relate to particular segments, and proceeds to an analysis of potential Localized Costs in each individual segment and for the substations. Except where identified in this Section V and in the summary chart in Section I, above, the ISO finds that the estimated costs in the revised Application are not Localized Costs.

Fundamentally, the ISO believes that the appropriate baseline from which to identify Localized Costs is Alternative 5a, because Alternative 5a represents a practical and feasible configuration, consistent with Good Utility Practice, that is less expensive to construct but that would provide the same benefits to the bulk power system as the Project. Stated another way, the estimated costs of the Project that exceed the estimated costs of Alternative 5a are Localized Costs. *Significantly, Alternative 5a reflects only a few particularized changes from Alternative 3, which NU supported in the Reliability Committee’s advisory deliberative process.*

### **A. Non-Segment-Specific Determinations**

#### **1. Ability to Site and Build on an Overhead Routing; Delay Costs**

Despite the fact that CL&P estimates that the Project as proposed will cost significantly more than other alternatives, the Application requests Pool-Supported PTF treatment for virtually the entire cost of the Project because it “was the only reliable configuration that could be sited, permitted and constructed in a timely manner.”<sup>108</sup> The Application calls the additional expenditures “an investment in the certainty of getting this line built without undue delay.”<sup>109</sup>

##### **a. Schedule 12C Analysis of State Regulatory Barriers**

State regulatory barriers, however, play no determinative role under Schedule 12C. Interpreting Schedule 12C, PP-4 further explains that “[a]n alternative that is not or may not be approved by a siting or local review board may still be considered a feasible and practical transmission alternative,”<sup>110</sup> and that the ISO must assess “the schedule or in-service date of the Project from an engineering and construction standpoint rather than from the standpoint of potential delays in local or state siting.”<sup>111</sup> It is clear from the

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<sup>108</sup> *Id.* at p. 61.

<sup>109</sup> *Id.*

<sup>110</sup> PP-4 § 1.6.1(d)(i) (emphasis added).

<sup>111</sup> PP-4, Attachment A.

CSC Application, as noted above, that any CL&P deviations from the purely overhead, steel monopole alternative (the Original CL&P Preference in the CSC context, and Alternative 6 in the TCA context) were driven in this case by local, aesthetic concerns: namely, concerns over “height and visibility,”<sup>112</sup> as acknowledged by some CSC members.<sup>113</sup>

Moreover, as CL&P highlighted in the CSC Application, tall steel monopoles are used in the immediate vicinity of the Project (in lines connecting into the Plumtree Substation)<sup>114</sup> and thus conform with “current engineering design and construction practices in the area in which the Transmission Upgrade is built,” one of the core criteria of Schedule 12C. In addition, an all-overhead routing along existing ROW similarly meets this core criterion, as noted by the CSC in its Finding of Fact No. 97:

The alignment of the new 345-kV line along the existing right-of-way will minimize impacts and costs, and will be *consistent with a basic facility planning principle, which calls for the siting of linear facilities (such as transmission lines) within or along existing utility corridors.*<sup>115</sup>

Thus, the Project’s use of more expensive underground cables was premised on the view that including these facilities would placate parties’ desire to further delay the siting process. As such, the equipment, design, and construction associated with these measures are a source of Localized Costs.

b. Schedule 12C Analysis of Delay Costs

CL&P also contends that, if the ISO finds Alternative 5a to constitute a feasible and practical alternative, the ISO should allow the estimated Pool-Supported PTF costs for this alternative to include additional expenses that CL&P would incur due to a two-

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<sup>112</sup> CSC Application, at 4.

<sup>113</sup> Concurring Opinion of Colin C. Tait (framing the question posed by the Configuration X settlement as whether “the use of substantial undergrounding to avoid visual impacts in exchange for less reliability and greater costs a reasonable trade-off under the circumstances”); Dissenting Opinion of Philip T. Ashton (noting that the 345/115-kV monopole supports included in the CL&P Original Preference “created a storm of opposition because of their visibility above the tree line,” which led to the development of the Configuration X settlement).

<sup>114</sup> CSC Application, at 2.

<sup>115</sup> CSC Findings of Fact, at 19.

year delay.<sup>116</sup> CL&P estimates these two-year delay costs for Alternative 5a consist of the following: (i) line delay cost of \$10 million; (ii) increased planning and Allowance For Funds Used During Construction (“AFUDC”) costs of \$10.3 million (in addition to any AFUDC costs incurred for the Project); and (iii) substation delay cost of \$2.7 million due to escalation for materials, labor, and equipment.<sup>117</sup>

CL&P initially explained that Alternatives 4 and 5 would require a two-year delay in the start of construction “caused by the legal process that would take place for the required takings of a substantial number of residences, and not a siting process delay.”<sup>118</sup> Specifically, Alternative 4 would require CL&P to take by eminent domain nine homes in Segment 1 to construct Bethel Bypass #1. Alternative 5, as revised by CL&P, would require CL&P to take at least 19 homes – the nine houses to construct Bethel Bypass #1, plus ten houses to construct Cannondale Bypass #2 (plus ten to twenty additional residential properties “over which required easements would encumber almost half the property,” which could lead to additional “complete property takings.”)<sup>119</sup> Although Alternative 5a would require only two such takings, CL&P factors into its estimated cost the same two-year delay.

CL&P, however, has not demonstrated that it would likely have experienced this two-year delay if it had adopted and retained Alternative 5a as the preferred alternative from the onset. First, Alternative 5a requires significantly fewer residential takings than Alternative 5 (*i.e.*, two homes versus nineteen or more). Second, CL&P’s delay cost estimates rely on unsupported speculation about the eminent domain, legislative and litigation burdens Alternative 5a might entail. CL&P itself acknowledges that related litigation could very well be resolved in less than two years. For example, a landowner might preserve his or her right to contest the property valuation without delaying the process by stipulating to immediate entry.<sup>120</sup> Even absent such a stipulation, once an immediate entry order is granted, CL&P believes it is “unlikely” that a landowner would

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<sup>116</sup> See, *e.g.*, Exhibit No. [x] (answer to ISONE-5, question number 1) (explaining that, because Alternative 5a would result in the takings of two homes, the same delay implications to the entire project that were reflected in the Alternative 5 cost estimate would also apply to Alternative 5a).

<sup>117</sup> Exhibit No. [x] (answer to ISONE-5, question number 1 (attached spreadsheet)).

<sup>118</sup> Exhibit No. [x] (answer to ISONE-4, question number 3).

<sup>119</sup> Exhibit No. [x] (answer to ISONE-04, question number 3).

<sup>120</sup> Exhibit No. [x] (answer to ISONE-2, question number 4) (“It is also possible that the landowner will stipulate to immediate entry, while preserving his or her right to contest the valuation in a condemnation hearing at a later date.”).

cause further delays by appealing.<sup>121</sup> Moreover, development of the Project already included time taken to obtain legislative enactments deemed helpful by CL&P.

In determining the estimated costs for a feasible and practical alternative, therefore, the ISO excludes these additional delay costs.

## **2. Relocating Portions of Current 115-kV Line**

The Project includes not only significant costs to construct a badly-needed 345-kV line, but also significant costs to underground approximately ten miles of the existing 115-kV line.<sup>122</sup> These ten miles include portions in Segment 1 (traversing the Bethel Educational Park), Segment 2, and Segment 6 (traversing the Cannondale NHD), as well as to underground one of the three 115-kV lines in Segment 7. The ISO finds that the expenses CL&P incurs for these changes to the 115-kV line constitute Localized Costs. From an engineering perspective, there currently is no need to make such changes to the 115-kV line. Furthermore, such changes will not enhance bulk power system performance.

## **3. Outage Issues**

CL&P argues that the Project's configuration to underground approximately ten miles of the 115-kV line will have fewer outage problems during construction.<sup>123</sup> A PP-4 factor includes "[a] comparison of the potential operational impacts on the bulk power system during construction of the Project with any feasible and practical transmission alternatives that were considered." Nevertheless, under the given circumstances, the ISO finds that this factor does not obviate Localized Costs.

CL&P itself has conceded (as included in CSC Finding of Fact 152) with respect to the all-overhead route in the CL&P Original Preference that "CL&P has flexibility in construction sequencing, and can schedule work to maximize the amount of time that the existing 115-kV lines remain in service." This same flexibility would apply equally to the similar overhead construction contemplated in Alternative 5a. CL&P could accomplish this flexibility by scheduling 115-kV line outages during low load periods.

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<sup>121</sup> *Id.*

<sup>122</sup> Exhibit No. [x] (answer to ISONE-03, question number 4). CL&P estimates that it will cost approximately \$75.5 million to underground these ten miles of the existing 115-kV line. *Id.*

<sup>123</sup> *See generally* Exhibit No. [x] (CL&P PowerPoint Presentation to Reliability Committee on May 26, 2005 regarding the Bethel-Norwalk Project 12C TCA Application) (explaining throughout the presentation how CL&P's decision to underground portions of the 115-kV line will significantly reduce line outages during construction).

CL&P also could install a temporary bypass circuit to provide a backup power supply to Peaceable Substation during construction. Such temporary construction of 115-kV bypasses is commonly used for transmission line re-work.

With appropriate planning, line outages would not present a significant issue. Therefore, any reduction in outage problems by constructing significant portions of the Project underground does not justify the substantial increase in estimated costs of over \$100 million, when CL&P itself conceded that it could “maximize” the in-service time for the existing 115-KV facilities when constructing an overhead 345-kV line.

## **B. Analysis By Segment**

The following discussion analyzes sources of potential Localized Costs by segment.

### **1. Segment 1**

#### **a. CL&P’s Decision to Avoid Constructing New Overhead 345-kV Line Along Existing ROW Through Bethel Educational Park**

CL&P provides several reasons why it decided to avoid constructing a new overhead 345-kV line along the existing overhead 115-kV routing through the Bethel Educational Park in Segment 1. One key argument CL&P asserts is that an expansion of the existing 80-foot wide ROW to 125 feet would be needed to accommodate steel monopole structures that would support both a new 345-kV line and replacement 115-kV line, and a corner of the Bethel Middle School would protrude into that expanded ROW.<sup>124</sup>

While the 115-kV line and ROW already traverse the Bethel Educational Park and adjacent play areas, the ISO finds that building a new, combined 345-kV and 115-kV transmission structure on the existing ROW would not be consistent with Good Utility Practice because an existing school building would be within a portion of the expanded ROW. Even if the school building did not protrude within a portion of the ROW, it still would not exceed those reasonable requirements consistent with Good Utility Practice to avoid constructing a new 345-kV line through school grounds and so close to existing school buildings.

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<sup>124</sup> Exhibit No. [x] (answer to ISONE-04, question number 1, page 1).

b. Underground and Bypass Issues

Segment 1 presents Localized Cost issues relating to the undergrounding of the 345-kV line, in particular through the Bethel Educational Park.<sup>125</sup> Even though a new combined 345-kV and 115-kV overhead line directly through the school property along the existing 115-kV routing would not be consistent with Good Utility Practice, two less expensive alternatives to undergrounding exist: Bethel Bypass #1 in Alternatives 4 and 5 (longer bypass) and Bethel Bypass #2 (shorter bypass) in Alternative 5a. As noted above, Alternative 5a uses overhead lines throughout all of Segment 1.

Pertinent to this analysis are the following factors:

- CL&P estimates that Segment 1 in the Project as planned will cost about \$27.1 million to construct (\$23.9 million for the underground 345-kV line and \$3.2 million to place underground the portion of the 115-kV line in Bethel Educational Park).
- Bethel Bypass #1, utilized in Alternatives 4 and 5, would avoid ROW acquisition over use-restricted land, but would entail “numerous new easements and the taking of at least 9 homes.”<sup>126</sup> CL&P estimates that Bethel Bypass #1 would cost about \$13 million (\$5 million in construction costs and \$8 million in costs to obtain the ROW, excluding asserted delay costs).
- Bethel Bypass #2, utilized in Alternative 5a, would cost about \$12 million (\$8.8 million in construction costs and \$3.2 million in ROW (*i.e.*, wetland replication) costs and excluding asserted delay costs). Identical to the bypass included in CL&P’s Original Preference in the CSC Application, this routing generally would follow the easterly perimeter of Bethel Educational Park property. As such, it provides a more direct route than Bethel Bypass #1. Although using Bethel Educational Park land, it would do so only at the outer edges, away from the schools.

CL&P raises several arguments against the appropriateness of Bethel Bypass #2 as a portion of the baseline Alternative 5a:

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<sup>125</sup> As discussed in Section V.A.2 above, the estimated costs of undergrounding the 115-kV line through the Bethel Educational Park constitute Localized Costs as well.

<sup>126</sup> Exhibit No. [x] (answer to data request ISONE-04, question number 1, attached “Segment 1 – Bethel Educational Park Fact Sheet).

- The Town of Bethel “was ... opposed to an alternative routing of the same line design along the border of the school complex property at East Swamp Brook.”
- Bethel Bypass #2 would cause wetland disturbances, where large areas of high quality wetlands surround East Swamp Brook.
- The ability of CL&P to obtain the requisite ROW for Bethel Bypass #2 would be constrained by a pre-existing September 8, 1969 “Dedication Agreement” between the Town of Bethel and the State of Connecticut providing that the park property should not be “conveyed or converted to any use other than recreation or conservation purposes ... except with the approval of the State Council on Agriculture and Natural Resources [now the Department of Environmental Protection]....” “[A]lthough CL&P believes it may have ultimately prevailed in [litigation to obtain this ROW], if CL&P lost the case, CL&P would have no overhead route option over” Bethel Educational Park.

The ISO finds that the increased costs CL&P will incur to construct Segment 1 of the Project, instead of utilizing Bethel Bypass #2 as incorporated in Alternative 5a, constitute Localized Costs. Bethel Bypass #2 provides a significantly less expensive feasible and practical alternative from an engineering design and construction perspective. Significantly, CL&P’s claim of the infeasibility of Bethel Bypass #2 is belied, fundamentally, by the inclusion of this routing in CL&P’s Original Preference, as filed with its CSC Application.

More specifically, none of CL&P’s arguments support regional treatment for extra costs of Segment 1 compared with Bethel Bypass #2.

First, local opposition – such as was experienced with the Town of Bethel – does not constitute a sufficient basis under Schedule 12C to incur increased project costs. As discussed above, the costs of underground routing to overcome state or local opposition are specifically identified as examples of Localized Costs in PP-4.

Second, issues of erosion wetland disturbance can be addressed with special design and construction methods and use of best management practices, and are therefore not a basis for rejecting Bethel Bypass #2 as a practical and feasible alternative routing. Such measures could include using low ground pressure construction vehicles.

In support of its conclusion, CL&P also points to the March 8, 2002 comments made by the Commissioner of the Connecticut Department of Environmental Protection:

The deviation from the existing alignment to bypass behind Johnson School will place two structures ... on the upper portion of a steep slope descending from the school

property to East Swamp Brook. These structures ... should be pulled up as close to the school property as possible to locate them off the steep slope and reduce the threat of both short-term and long-term disturbance and erosion.

Significantly, however, the Commissioner's comments do not support CL&P's implication that construction on Bethel Bypass #2 is *precluded* for environmental reasons. Instead, the Commissioner is providing *mitigation* measures to reduce erosion and wetlands disturbance. From a Good Utility Practice and engineering feasibility perspective, proper engineering and construction techniques can avoid erosion and wetlands disturbance.<sup>127</sup>

Third, the Dedication Agreement constitutes a local determination on how to use certain land and, for that and other reasons, does not make Bethel Bypass #2 infeasible for purposes of Schedule 12C. As noted above, Attachment A to PP-4 addresses this very issue, because it provides as an example of Localized Costs as when "[t]he Project includes underground transmission cable, which is selected ... to address other local concerns, and the cost of overhead transmission lines is less expensive, taking into account all relevant costs." Section 1.6.3 of PP-4 also directs the Applicant to identify additional significant costs "introduced as the result of local or state regulatory and/or legislative requirements," and that the "ISO will then determine ... whether these incremental costs resulting from the requirements of any local or state regulatory and/or legislative requirements will be identified as Localized Costs." The Dedication Agreement is substantively indistinguishable from such regulatory or legislative requirements involving a local decision on how to use specific land.

Moreover, it cannot be said that achieving approval by the State Council on Agriculture and Natural Resources in connection with a transmission line ROW is infeasible. As CL&P admits,<sup>128</sup> a change to the existing ROW was made in 1983 and a new transmission line was built. Because CL&P does not state to the contrary, this change had to be, and was, approved by the Council. Although the Town of Bethel and the State of Connecticut might have reservations about the use of open space along the outer edge of the Bethel Educational Complex in Bethel Bypass #2, those same entities would also be likely to oppose the taking of at least nine houses under Bethel Bypass #1.

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<sup>127</sup> In fact, one CSC Member dissented from the order accepting the Configuration X settlement because CL&P could avoid constructing an underground line, particularly in Bethel Educational Park, "where options for overhead exist without significant adverse environmental effect." Dissenting Opinion of Philip T. Ashton in Connection with Docket No. 217.

<sup>128</sup> See "Segment 1-Bethel Education Park Fact Sheet," attached to CL&P's response to ISONE-04, Q-ISO-001.

Having to choose between the two, the Town and State might well choose the less-expensive, shorter route in Bethel Bypass #2 that would avoid taking any houses over the more expensive Bethel Bypass #1 that would require the taking of at least nine houses.

## **2. Segment 2**

Segment 2 presents Localized Cost issues relating to the use of H-frame supports for the 345-kV line, and undergrounding of the existing 115-kV line.

Specifically, the Project's routing for Segment 2 retains the existing ROW, and uses wooden H-frame supports (with average height of 90 feet) for the new 345-kV line, and relocates the current overhead 115-kV line underground using a different route along public streets. In contrast, Alternative 5a would have CL&P use steel monopoles along the existing ROW to support both the new 345-kV and the current 115-kV line.

For Segment 2, Alternative 5a clearly provides a feasible and practical alternative from an engineering design and construction perspective. In fact, it follows the CL&P Original Preference routing that CL&P submitted in its CSC Application. As explained in Section V.A. above and discussed below, the estimated cost to underground the 115-kV line are Localized Costs. Moreover, using the shorter, wider H-frame supports will require CL&P to obtain a larger ROW expansion than the steel monopoles would require, saving ROW expansion expenses.

CL&P concedes that the Project, as developed in the Configuration X settlement, relocates the 115-kV underground "to reduce the height and visibility of the new 345-kV line over an area of hilly terrain," which would have been "conspicuously visible."<sup>129</sup> Thus, the decision to bury the 115-kV line to allow the use of the shorter H-frame supports for the 345-kV line is clearly based on aesthetics. The towns involved in the settlement strongly opposed CL&P's proposal to use the taller steel monopoles. CL&P argues that this agreement reduces the risk of delay due to appeals. Increased costs incurred to reduce local aesthetic concerns, however, constitute Localized Costs. The steel monopole construction utilized in Alternative 5a (and the CL&P preference from its CSC Application) provides a feasible and practical alternative from an engineering design and construction perspective. Therefore, Localized Costs are present in Segment 2.

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<sup>129</sup> Exhibit No. [x] (answer to data request ISONE-01, question number 18); *see also* Exhibit [x] (CL&P PowerPoint Presentation to Reliability Committee on May 26, 2005 regarding the Bethel-Norwalk Project 12C TCA Application, Slide 7) (demonstrating how placing the existing 115-kV line underground would allow CL&P to use the shorter H-frame supports).

### **3. Segment 3**

Segment 3 is identical in both the Project and Alternative 5a. In both cases, this segment consists of using steel monopoles to support the new 345-kV line and the existing 115-kV line along an expanded version of the existing ROW. Therefore, Localized Costs are not present in Segment 3.

### **4. Segments 4 and 5**

For Segments 4 and 5, CL&P is constructing an underground 345-kV line using a new route along public streets and leaving the existing 115-kV line unchanged. In contrast, Alternative 5a incorporates use of steel monopoles along the existing ROW to support both the new 345-kV and the current 115-kV line.

For Segments 4 and 5, Alternative 5a clearly provides a feasible and practical alternative from an engineering design and construction perspective. In fact, this configuration and routing is reflected in the CL&P Original Preference submitted in its CSC Application.

CL&P argues that undergrounding the 115-kV line allows it to use the shorter H-frame supports for the 345-kV line agreed to in the Configuration X settlement.<sup>130</sup> It is clear that the use of these supports is based on aesthetics. The towns involved in the settlement strongly opposed CL&P's proposal to use the taller steel monopoles. CL&P argues that this agreement reduces the risk of delay due to appeals. Increased costs incurred to reduce local aesthetic concerns, however, constitute Localized Costs. The steel monopole construction utilized in Alternative 5a (and the CL&P preference from its CSC Application) provides a feasible and practical alternative from an engineering design and construction perspective. Therefore, Localized Costs are present in Segments 4 and 5.

### **5. Segment 6, Including Cannondale NHD**

#### **a. Decision to Avoid Constructing New Overhead 345-kV Lines Above Buildings**

The ISO finds that CL&P's decision (as reflected in the Application) to avoid building a new overhead 345-kV line along the existing 115-kV ROW in the Cannondale NHD is justified by Good Utility Practice and the current engineering design and construction practices in the area.

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<sup>130</sup> Exhibit No. [x] (CL&P PowerPoint Presentation to Reliability Committee on May 26, 2005 regarding the Bethel-Norwalk Project 12C TCA Application, Slide 7).

The existing 115-kV transmission line spans several historic structures in the NHD. While Rule 234 from the National Electric Safety Code Handbook permits transmission lines to be run over buildings, the ISO does not believe that construction of a new high-voltage overhead line over buildings is Good Utility Practice. Constructing a new 345-kV line over existing buildings might create the need to remove these buildings. Avoiding such a routing over existing buildings makes the line safer, easier to repair quickly, and less costly to repair. It also reduces the likelihood of property damage.

Despite this finding, the ISO notes the state and federal guidelines for historic districts identified by CL&P are not controlling. As CL&P acknowledges, “there are no federal guidelines that would ‘prohibit’ the siting of a transmission line through a historic district . . . .”<sup>131</sup> FERC utilizes the Federal Power Commission’s “Guidelines for the Protection of Natural, Historic, Scenic and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities”<sup>132</sup> only for transmission facilities serving jurisdictional hydroelectric projects.<sup>133</sup>

State and local siting requirements also are not controlling. For example, Connecticut’s Public Utility Environmental Standards Act, which rely on the Federal Power Commission guidelines,<sup>134</sup> specifies local requirements that are not controlling for

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<sup>131</sup> Exhibit No. [x] (answer to ISONE-3, Q-ISO-006).

<sup>132</sup> Guidelines for the Protection of Natural, Historic, Scenic and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities, Order No. 414, 44 FPC 1491 (1970).

<sup>133</sup> 18 C.F.R. § 2.13(b) (2005) (“The Commission will consider these guidelines inter alia, in the determination of whether applications for any licenses under the Federal Power Act are best adapted to a comprehensive plan for developing a waterway.”). Furthermore, the Federal Power Commission guidelines *allow* the use of ROWs through places listed in the National Register of Historic Places. Exhibit No. [x] (answer to ISONE-3, question number 6) (explaining how the Federal Power Commission guidelines provide that ROWs should merely avoid historic districts where “practical”; otherwise, such ROWs should be “least visible from areas of public view and so far as possible in a manner to preserve the character of the area”). The U.S. Department of the Interior’s “Environmental Criteria for Electric Transmission Systems” provides similar guidance. *Id.* (quoting U.S. Department of the Interior, Environmental Criteria for Electric Transmission Systems (“Rights-of-way should avoid . . . historic areas. If the line must be located in or near these areas, the feasibility of placing the line underground should be clearly determined. If the line must be located overhead, it should be located in a corridor least visible to public view.”)).

<sup>134</sup> Exhibit No. [x] (answer to ISONE-3, question number 6).

TCA purposes. The opinion of the State Historic Preservation Officer<sup>135</sup> similarly does not present a federal requirement.

b. Decision to Not Use Super 7 Highway ROW

i. CL&P Arguments

CL&P argues that an overhead by-pass around the Cannondale NHD using ROW along the undeveloped Super 7 highway, as presented in Alternative 5a, “is not practically feasible”<sup>136</sup> for a number of reasons. In responses to the ISO’s data requests, CL&P articulates five main barriers to constructing an overhead transmission line within the undeveloped Super 7 highway corridor between Norwalk Junction and Kent Road in Wilton (Segment 6).

First, CL&P states that it would be “difficult to satisfy” the conditions required by the Connecticut Department of Transportation (“CDOT”), Bureau of Highways policy on the accommodation of utilities on limited-access highway ROWs.<sup>137</sup> (In response to a later data request, CL&P further discounts the ability to obtain such a ROW by stating that “Alternative 5a is based on the flawed assumption that it was possible to route a new 345-kV transmission line within [this] undeveloped Super 7 limited access highway corridor ....”)<sup>138</sup>

Second, “CL&P learned in early discussions with CDOT representatives that the CDOT would be prohibited from conveying easement rights over this land by Section 13a-85b of the Connecticut General Statutes,” which provides that CDOT “shall not sell, or use in any manner that is incompatible with transportation purposes, the existing right-of-way acquired for potential use as the Route 7 limited access highway from Danbury to Norwalk.”<sup>139</sup>

Third, CL&P argues that, as a matter of public policy, “[i]t should not be a requirement for regional transmission cost allocation decisions that utilities be expected to have a state law passed to make a design and routing alternative for a transmission line ‘feasible.’”<sup>140</sup> CL&P adds that “there is an inherent value with reserving right-of-ways

<sup>135</sup> Exhibit No. [x] (answer to ISONE-1, question number 29).

<sup>136</sup> Exhibit No. [x] (answer to ISONE-05, question number 1 at p. 1).

<sup>137</sup> Exhibit No. [x] (answer to ISONE-04, question number 6).

<sup>138</sup> Exhibit No. [x] (answer to ISONE-05, question number 1).

<sup>139</sup> Exhibit No. [x] (answer to ISONE-04, question number 6).

<sup>140</sup> Exhibit No. [x] (answer to ISONE-05, question number 1).

for future development, as the Connecticut General Assembly recognized in enacting Conn. Gen. Stat. § 13a-85b.”<sup>141</sup>

Fourth, CL&P notes that it would have to take two houses to route a 345-kV line along the east edge of this 2.1 mile section of the undeveloped Super 7 corridor.<sup>142</sup> This would conflict with “the general policy of attempting to avoid forced relocations of homeowners whenever possible” and would result in condemnation-related delays to the Project.<sup>143</sup>

Fifth, CL&P notes that the Super 7 corridor provides only 2.1 miles of the entire 4.5 mile bypass proposed in Alternative 5a.<sup>144</sup> The remaining 2.4 miles present significant routing issues, according to CL&P, because the necessary ROW would cross property within the Cannondale NHD.<sup>145</sup> It also would cross the Gregg Preserve and the Wilton Land Conservation Trust, both of which are encumbered by conservation easements.<sup>146</sup> CL&P explains that “[t]he routing of Alternative 5a over these properties therefore presents significant view shed and environmental issues whenever transmission lines are proposed in historic districts or on land trust properties, particularly when an entirely new ROW is being proposed.”<sup>147</sup> CL&P also assumes it would need to use the shorter H-frame line design over these 2.4 miles, which would require a wider 150-foot ROW than for the taller steel monopoles.<sup>148</sup> CL&P sites FERC’s “Guidelines for the Protection of Natural, Historic, Scenic and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities” as providing guidance that a ROW should avoid nationally-registered historic places, parks, scenic, wildlife and recreational lands officials designated by duly constituted public authorities,” as well as

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<sup>141</sup> *Id.*

<sup>142</sup> *Id.* at p. 3.

<sup>143</sup> *Id.*

<sup>144</sup> *Id.* at p. 3.

<sup>145</sup> *Id.*

<sup>146</sup> *Id.*

<sup>147</sup> *Id.*

<sup>148</sup> *Id.*

“prime or scenic timbered areas, steep slopes and proximity to main highways where practical.”<sup>149</sup>

ii. ISO Determination

The Cannondale NHD bypass utilized in Alternative 5a provides a feasible and practical transmission alternative. The decision to underground the 345-kV line in Segment 6 of the Project exceeds those reasonable requirements consistent with Good Utility Practice and the current engineering design and construction practices in the area.

None of CL&P’s five arguments effectively counter this conclusion.

First, the fact that it might be difficult to get permission from CDOT, or that it would require an act of the Connecticut General Assembly to create a specific ROW, does not make the alternative infeasible or impractical from an engineering design and construction perspective. In fact, neither provides a *per se* bar on utilizing the Super 7 corridor, because the CDOT guidelines provide that “a utility may be permitted along a freeway on new location under certain stated conditions,”<sup>150</sup> and the General Assembly allowed construction along the Super 7 corridor elsewhere. The fact that the conditions might be difficult to satisfy, or that a utility’s franchise right to use the highway ROW is not “inviolable,” does not change this conclusion.<sup>151</sup>

It certainly does not violate Good Utility Practice to build an overhead transmission line along a limited access highway ROW. In fact, where practical, it is Good Utility Practice to situate power lines in road ROWs to share a public use corridor. The line design and layout simply must comply with the CDOT roadside safety policy regarding clear zones. Overhead power lines typically are directed to be situated at the edge of the ROW.

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<sup>149</sup> *Id.* at pp. 3-4 (citing Guidelines for the Protection of Natural, Historic, Scenic and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities, Order No. 414, 44 FPC 1491, 1496-97 (1970)).

<sup>150</sup> Exhibit No. [x] (answer to ISONE-04, question number 6 at p. 1 and attachment (Connecticut Department of Transportation, Bureau of Highways, A Policy on the Accommodation of Utilities on Highway Rights-of-Way)).

<sup>151</sup> In fact, the CDOT guidelines could easily allow the creation of the Alternative 5a ROW if shown as the “most feasible and prudent location available from the standpoint of the highway users and utility customers.” Such concerns of the utility customers should include considering how much less expensive building an overhead line along the Super 7 ROW would be instead of the underground routing of the Project or along the Alternative 5 routing, which includes takings of at least ten houses in Segment 6.

Furthermore, it appears only theoretical that a limited-access highway might ever be built through this Super 7 ROW. CL&P explained in its CSC Application, for example, that “this is not an established corridor” and that CL&P was unaware of any “active plans” to make it an established corridor.<sup>152</sup> The provision in the Connecticut General Statutes regarding this property, in fact, refers only to its “*potential* use as the Route 7 limited access highway from Danbury to Norwalk.” Despite the enactment of this provision in 1993, and despite the pendency for five decades of a possible limited-access highway to replace existing Route 7 between Danbury and Norwalk,<sup>153</sup> the CDOT no longer includes such a project in its long-range infrastructure program covering the period through 2030.<sup>154</sup> The absence of active plans to construct a limited-access highway on this ROW removes any argument that Project routing using this ROW presents a conflict between transportation and utility purposes.

Second, the ISO disagrees with CL&P’s conclusion that Section 13a-85b of the Connecticut General Statutes prohibits CDOT from granting such a ROW, because that law would allow CL&P to obtain such a ROW so long as it was not “incompatible with transportation purposes.” Furthermore, the fact that the Connecticut General Assembly could pass a special act to allow CL&P to use the Route 7 ROW means that the General Assembly – to the extent a statutory change is in fact necessary – could do so again with respect to this Cannondale area as well, demonstrating that the Super 7 highway ROW limitations are not related to Good Utility Practice or engineering practices in the area.

Third, CL&P’s public policy argument that regional cost allocation decisions should not require a change in state law misses the point. Of course, the State of Connecticut has the authority to approve whatever siting application it wishes. The ISO will not deny the proposal, so long as it does not pose a reliability problem for New England’s bulk-power system. To determine whether the region should support all such resulting costs, however, the ISO must follow Schedule 12C and PP-4. These rules focus only on concerns of Good Utility Practice and practical and feasible alternatives from an engineering and construction perspective—not whether a feasible and practical alternative would require a change in state law. In fact, PP-4 makes clear that “[a]n alternative that is not or may not be approved by a siting or local review board may still be considered a feasible and practical transmission alternative[.]”<sup>155</sup> This rationale applies equally to decisions by the state legislature.

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<sup>152</sup> CSC Application, at 46.

<sup>153</sup> See [http://www.nycroads.com/roads/US-7\\_CT/](http://www.nycroads.com/roads/US-7_CT/).

<sup>154</sup> Connecticut Department of Transportation, Long-Range Transportation Plan for the State of Connecticut 2004-2030 (May 2004).

<sup>155</sup> PP-4 § 1.6.1(d)(i).

Assuming for the sake of argument that a change in the law is needed, the Connecticut General Assembly has the power to make such changes to allow CL&P to build a less-expensive feasible and practical alternative.

Fourth, the alternatives present at least three distinct approaches for Segment 6: (i) an expensive and unusual approach utilized in the Project to underground a new 345-kV line (and existing 115-kV line); (ii) an even more expensive approach in Alternative 5<sup>156</sup> (*i.e.*, Cannondale Bypass #2) to construct an overhead line that would avoid using the land reserved for the Super 7 highway but would require the taking of at least ten homes;<sup>157</sup> and (iii) a less-expensive alternative in Alternative 5a<sup>158</sup> (*i.e.*, Cannondale Bypass #1) that utilizes land reserved for the Super 7 highway and requires the taking of two houses. All three alternatives discussed here appropriately avoid building a new overhead line directly above buildings in the Cannondale NHD. Of the three, Alternative 5a provides a significantly less-expensive feasible and practical alternative that avoids the high expense of undergrounding the transmission lines and significantly reduces the number of takings from ten houses to only two.<sup>159</sup> Among these three alternatives, Alternative 5a provides a balanced approach that is consistent with the requirements of Schedule 12C.

Fifth, none of CL&P's arguments regarding the 2.4 miles of the Cannondale Bypass that would not use a Super 7 ROW demonstrate that Alternative 5a does not present a feasible and practical alternative from an engineering design and construction perspective. The view-related and environmental issues identified by CL&P are simply aesthetic; they do not pose engineering or construction problems, or otherwise demonstrate a failure to comply with Good Utility Practice. Indeed, in its CSC Application, CL&P pointed to the lack of adverse effects of ROW through open lands and land trust areas:

As described in Section K.3, however, 11 miles of the right-of-way is in protected open space owned by land trusts or municipalities, and most of that length is in areas where development is either prohibited, unlikely, or strictly regulated because of designated open space, wetlands,

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<sup>156</sup> Exhibit No. [x] (answer to ISONE-05, question number 1, page 5 spreadsheet) (comparing cost estimates among alternatives).

<sup>157</sup> Exhibit No. [x] (answer to ISONE-04, Q-ISO-003).

<sup>158</sup> Exhibit No. [x] (answer to ISONE-05, question number 1, page 5 spreadsheet) (comparing cost estimates among alternatives).

<sup>159</sup> Indeed, it is not clear that anything more than an easement would be required with respect to the two homes.

floodplains, and lack of sufficient space. In addition, there are more than 3 miles of nearly contiguous forestland in Bethel and Redding in private ownership, suggesting that acquisition of additional right-of way width throughout the entire route would affect little land that is in active use or planned for development (see Volume 2, Segments 3, 4, 5, 6, 7, 9, 11).<sup>160</sup>

Furthermore, the cited FERC guidelines are not germane to the Project. FERC uses these guidelines solely with respect to transmission lines built in connection with hydroelectric projects licensed by FERC under Part I of the FPA; they do not apply to other transmission facilities.<sup>161</sup>

In summary, for the foregoing reasons, Segment 6 contains Localized Costs.

## **6. Segment 7**

Segment 7 in both the Project and in Alternative 5a involve constructing the 345-kV line overhead. The Project, however, relocates one of the three existing 115-kV lines underground for what appears to be purely aesthetic reasons: burying one of the 115-kV lines allowed CL&P to utilize shorter support structures. Specifically, with the 115-kV line buried, CL&P could use a monopole 345-kV delta structures to reduce the average pole height by 22 feet in comparison to the 345/115-kV monopole structure design.<sup>162</sup> CL&P estimates that it will cost approximately \$25.5 million just to underground this portion of 115-kV line.<sup>163</sup> The Project's total estimated cost for Segment 7 is \$36 million.<sup>164</sup> For Alternative 5a, CL&P estimates the total cost would be \$22.5 million.<sup>165</sup>

Accordingly, the ISO finds that Segment 7 contains Localized Costs. The steel monopole construction utilized in Alternative 5a (and the CL&P Original Preference

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<sup>160</sup> CSC Application, at 58.

<sup>161</sup> Specifically, FERC's regulations provide: "The Commission will consider these guidelines inter alia, in the determination of whether applications for any licenses [i.e., hydroelectric project licenses] under the Federal Power Act are best adapted to a comprehensive plan for developing a waterway." 18 C.F.R. § 2.13(b) (2005).

<sup>162</sup> Exhibit No. [x] (answer to ISONE-1, question number 19).

<sup>163</sup> Exhibit No. [x] (answer to ISONE-05, question number 1 (attached "B-N Breakdown of Costs" spreadsheet dated January 23, 2006)).

<sup>164</sup> *Id.*

<sup>165</sup> *Id.*

from its CSC Application) provides a feasible and practical alternative from an engineering design and construction perspective. CL&P, in fact, proposed this same configuration – and therefore endorsed its feasible and practical nature from an engineering design and construction perspective – in the CL&P Original Preference submitted in its CSC Application.

### **C. Analysis of Substation Costs**

In addition to the \$2.7 million in delay costs discussed above in Section V.A.1 that CL&P identifies for constructing the substations as part of Alternative 5a, the ISO identifies below additional Localized Costs included in CL&P's cost estimates for the Plumtree and Norwalk Substations constructed as part of Alternative 5a.

#### **1. Plumtree Substation**

The Project calls for expanding the Plumtree Substation by installing a 345-kV GIS, including switchgear and equipment that allows for the transition from the SF<sub>6</sub> bus to open-air 345-kV lines and bus. Generally speaking, CL&P's proposed improvements to the Plumtree Substation do not exceed those reasonable requirements that are consistent with Good Utility Practice and the current engineering design and construction practices in the area.

The Project's use of underground lines, however, requires additional equipment that would otherwise be unnecessary for an all-overhead project, such as Alternative 5a. Specifically, an all-overhead alternative would eliminate the need for a shunt reactor, associated switching equipment, and the GIS terminal for the reactor connection. All costs incurred for these additional improvements exceed those reasonable requirements that are consistent with Good Utility Practice and therefore constitute Localized Costs. CL&P estimates these costs to be about \$3 million. Because CL&P excluded these costs from its Alternative 5a cost estimate for the Plumtree Station, it is unnecessary to further reduce that cost estimate in order to reflect Localized Costs.

#### **2. Norwalk Substation**

At Norwalk Substation, the Project involves installing an indoor 345-kV GIS system, autotransformers, a relay/control enclosure, battery enclosures, three underground 115-kV line sections, a fourth 115-kV switchyard bay, and a 345-kV line terminal structure.<sup>166</sup> CL&P also is replacing a 115-kV line series reactor and 115-kV capacitors.<sup>167</sup> CL&P explains that a GIS design was necessary, because “an air-insulated

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<sup>166</sup> Application, at 6.

<sup>167</sup> *Id.*

345-kV station design could not fit on the available land.”<sup>168</sup> CL&P estimates \$45.7 million in total costs to make these Norwalk Substation upgrades.<sup>169</sup>

The ISO finds that portions of these improvements constitute Localized Costs for exceeding those reasonable requirements that are consistent with Good Utility Practice and the current engineering design and construction practices in the area in which the Transmission Upgrade is being built. Specifically, this \$45.7 million figure includes the \$2.4 million for which the revised Application does not request Pool-Supported PTF rate treatment, as well as approximately \$2.6 million to construct a GIS enclosure building for the Norwalk Substation.<sup>170</sup>

CL&P has not provided a description of a technical need to construct this GIS enclosure building. Indeed, CL&P will be installing GIS equipment outdoors at Plumtree Substation.<sup>171</sup> Moreover, CL&P proposed enclosing the GIS equipment in a long building (in consultation with the Norwalk Conservation Commission and the Norwalk Zoning Commission) only after the Norwalk Conservation Commission denied CL&P’s request to expand the Norwalk Substation.<sup>172</sup> It appears that CL&P agreed to construct the Norwalk Substation GIS enclosure for aesthetic reasons. Specifically, CL&P indicates in the Application that it is constructing this long building because “[t]he elevated area which is made available for substation equipment by this site preparation work at the Norwalk Substation is ... visible to the public.”<sup>173</sup>

Interpreting Schedule 12C, PP-4 explains that “[a]n alternative that is not or may not be approved by a siting or local review board may still be considered a feasible and

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<sup>168</sup> *Id.* at 50; *see also id.* at 6 (“The limited property available to support new facilities at Norwalk Substation, which is bounded by the Norwalk River and Route 7, dictated the selection of the GIS design.”).

<sup>169</sup> Exhibit No. [x] (answer to ISONE-04, question number 4, attached “B-N Breakdown of Costs” spreadsheet).

<sup>170</sup> This \$2.6 million figure represents the difference between CL&P’s cost estimate for the building (including foundations) of \$3.3 million, and the cost estimate for the comparably sized GIS foundation at Plumtree Substation of \$1 million, plus \$300,000 for related engineering, administrative, construction management, taxes, and regulatory costs.

<sup>171</sup> *See, e.g.*, Application, at 6 (discussing the outdoor GIS at Plumtree Substation and an indoor GIS at Norwalk Substation).

<sup>172</sup> CSC Revised Opinion at 9; CSC Finding of Fact 247.

<sup>173</sup> Application, at 50.

practical transmission alternative[.]”<sup>174</sup> Under Schedule 12C and PP-4, therefore, such increased costs must be localized.

## **VI. PROCESS TO DISPUTE THE ISO’S DETERMINATION**

Pursuant to Schedule 12C, CL&P may dispute this determination of Localized Costs “by submitting within 60 days of such decision formal written notice of the dispute to the ISO . . . .” If CL&P chooses to dispute the determination, the ISO will then enter into good faith negotiations with CL&P not to exceed 60 days, as specified in Schedule 12C.

## **VII. CONCLUSION**

The ISO believes, except with respect to elements constituting Localized Costs, the Project’s estimated costs are consistent with the criteria in Schedule 12 of the ISO-NE Open Access Transmission Tariff for receiving regional support. As discussed above, the ISO therefore determines that \$119.9 million of the proposed Project costs constitute Localized Costs under Schedule 12C, and \$237.3 million qualify as Pool-Supported PTF costs.

The ISO commends CL&P for developing and implementing a transmission project to address SWCT’s pressing reliability needs.

Sincerely,

Stephen G. Whitley  
Senior Vice President and Chief  
Operating Officer

cc: Eric K. Runge, NEPOOL Counsel  
TCA apps

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<sup>174</sup> PP-4 § 1.6.1(d)(i).