STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

November 30, 2015

TO: Parties and Intervenors

FROM: Melanie A. Bachman MAB
Acting Executive Director

RE: **DOCKET NO. 461** - Eversource Energy application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a 115-kilovolt (kV) bulk substation located at 290 Railroad Avenue, Greenwich, Connecticut, and two 115-kV underground transmission circuits extending approximately 2.3 miles between the proposed substation and the existing Cos Cob Substation, Greenwich, Connecticut, and related substation improvements.

The Connecticut Siting Council (Council) is in receipt of correspondence from First Selectman Peter J. Tesei and correspondence from the Town of Greenwich Planner, Katie DeLuca, dated November 23, 2015 concerning the above-referenced application.

Pursuant to Connecticut General Statutes §16-50*l*(b), a copy of the application is to be submitted to the chief elected official of the municipality for review. In the event that the Town of Greenwich does not avail itself of the opportunity to attain party status under Connecticut General Statutes §16-50n, this correspondence shall become part of the record in this proceeding in the form of a limited appearance.

Therefore, a copy of First Selectman Tesei and Town Planner DeLuca's correspondence is being distributed to all participants in this proceeding and will also be administratively noticed in the record.

MAB/RDM/cm

c: Council Members

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November 30, 2015

The Honorable Peter J. Tesei, First Selectman
Katie DeLuca, Town Planner
Town of Greenwich
101 Field Point Road
Greenwich, CT 06830

RE: **DOCKET NO. 461** - Eversource Energy application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a 115-kilovolt (kV) bulk substation located at 290 Railroad Avenue, Greenwich, Connecticut, and two 115-kV underground transmission circuits extending approximately 2.3 miles between the proposed substation and the existing Cos Cob Substation, Greenwich, Connecticut, and related substation improvements.

Dear First Selectman Tesei and Ms. Deluca:

The Connecticut Siting Council (Council) is in receipt of your correspondence dated November 23, 2015 concerning the above-referenced application. Thank you for taking the time to provide the Council with your comments.

Pursuant to Connecticut General Statutes §16-50*l*(b), a copy of the application is required to be submitted to the Town of Greenwich, including the Planning and Zoning-Land Use Department, for review. Before reaching a final decision on an application, the Council carefully considers all of the facts contained in the evidentiary record that is developed by the Council, the applicant, parties and intervenors in the proceeding, and members of the public who speak at the public hearing or submit written statements to the Council.

In the event that the Town of Greenwich and the Greenwich Planning and Zoning-Land Use Department do not seek formal party or intervenor status under Connecticut General Statutes §16-50n, which provides full participation at the public hearing, including, but not limited to, cross examination of witnesses, parties and intervenors, your comments shall nevertheless become part of the official record in this proceeding in the form of a limited appearance defined under subsection (f) of Connecticut General Statutes §16-50n.

Therefore, copies of your correspondence will be distributed to all participants in the proceeding and will be administratively noticed in the record. Please note you can view all of the documents related to this proceeding on our website at www.ct.gov/csc under the "Pending Proceedings" link. You may also keep apprised of Council events on the website calendar and agenda.

Thank you for your interest and concern in this very important matter.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/RDM/cm

c: Parties and Intervenors
Council members

TOWN OF
GREENWICH

Office of First Selectman (203) 622-7710 Fax (203) 622-3793
Town Hall • 101 Field Point Road • Greenwich, CT 06830
E-Mail: ptesei@greenwichct.org

Peter J. Tesei
First Selectman

November 23, 2015

Connecticut Siting Council
c/o Ms. Melanie A. Bachman
Staff Attorney/Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

CC: Ms. Jacqueline Gardell
Project Manager
Eversource Energy
56 Prospect Street
Hartford, CT 06103

CC: Mr. John R. Marissette
Project Manager Transmission Siting-CT
Eversource Energy
56 Prospect Street
Hartford, CT 06103

Dear Members of the Connecticut Siting Council, Ms. Bachman:

I have read the attached letter as prepared by the Town of Greenwich Planner, Katie Deluca and concur that detailed further review, in which the Town of Greenwich is an active participant, is mandated to ascertain if there indeed exists the need for "The Greenwich Substation and Line Project".

At present, nothing offered by the Connecticut Light and Power Company doing business as Eversource Energy, confirms the necessity of such a project, which as proposed, is expected to cost $140M and would dramatically affect electric rates in the State of Connecticut (already the highest in the contiguous 48 states). I respectfully urge you to withhold any support of such an undertaking until a careful, thorough review of the project, based on the most current and accurate data is completed.

Sincerely,

Peter J. Tesei
First Selectman

KATIE DELUCA, AICP
DIRECTOR PLANNING AND ZONING/ZONING ENFORCEMENT COORDINATOR/TOWN PLANNER

ROBERT SEALE
Deputy Director Planning and Zoning/Assistant Town Planner

PATRICK LAROW, AICP, Senior Planner
CINDY TYMINSKI, AICP, Planner II
MAREK KOZIKOWSKI, AICP, Planner II
MARISA ANASTASIO, Applications Coordinator

PLANNING AND ZONING - LAND USE DEPARTMENT

November 23, 2015

Connecticut Siting Council
c/o Ms. Melanie A. Bachman
Staff Attorney/Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

CC: Ms. Jacqueline Gardell
Project Manager
Eversource Energy
56 Prospect Street
Hartford, CT 06103

CC: Mr. John R. Marissette
Project Manager Transmission Siting-CT
Eversource Energy
56 Prospect Street
Hartford, CT 06103

RE: Docket #461: Proposed siting of a new substation and associated underground transmission lines intended to increase electric capacity and strengthen the reliability of the electric power distribution system for the Town on a .94 acre property located at 290 Railroad Avenue in the General Business (GB) Zone.

Dear Members of the Connecticut Siting Council, Ms. Bachman:

The Town of Greenwich is continuing to pursue our interests in Siting Council Docket #461, which is the proposal to the Connecticut Siting Council by Eversource Energy. We have prepared the attached report to provide local insight on the issues that the Council addresses pursuant to Section 16-50g of the Connecticut General Statutes, which reads in part "... *To provide for the balancing of the need for adequate and reliable public utility services at the lowest reasonable cost to consumers with the need to*

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protect the environment and ecology of the state and to minimize damage to scenic, historic, and recreational values; to provide environmental quality standards and criteria for the location, design, construction and operation of facilities for the furnishing of public utility services at least as stringent as the federal environmental quality standards and criteria, and technically sufficient to assure the welfare and protection of the people of the state..."

The report covers our stated intent, our understanding as to what Eversource is trying to accomplish, our reaction to their explanation of the problem, major objections to the proposal for the new 115 kv feeders, suggested alternatives, and conclusions. In short, the Town feels very strongly that the need for the overhead lines has not been demonstrated, the load projections used to support their project appear to demonstrate the need is in fact, not there, and EVEN IF there was a need, the more sightly, vastly less expensive, and certainly more environmentally sensitive alternatives have not been adequately explored.

The Town has consistently asked for evidence to support their claims that alternatives "won't work" and to date, adequate and in depth information has not been provided. We were told it would be provided later to the Council and STILL nothing has been provided. We're referring specifically to why the transformers at Cos Cob can't be upgraded, whether they are OA or FA, and why overhead lines can't continue down the metro north right-of-way, which is the logical location. **The Town's communication with Eversource never reached conclusion and to suggest that we are in favor of lines through our Park, or that the Town has agreed to such a route, is simply incorrect!** Eversource relayed in conversation and on the record during the Municipal Consultation Filing period that they intend to go through our Municipal Improvement process to ask permission to go through Bruce Park. It is clear in the response by Attorney Dubuqne to the astute line of questioning by Dr. Klemens at the October 6, 2015 Evidentiary Hearing, that Eversource intends to use a potential approval as their right to go through Bruce Park. This contradiction regarding process and procedure has tested our trust and left us, even more so, wanting to ensure our interests are protected.

Our goal is not to act as an impediment to progress, or to myopically suggest that utility transmission/distribution/substation facilities do not need upgrading after reaching their expected service duration. To the contrary, we wish to work in concert with Eversource and the Siting Council to develop an economical, responsible solution, one that in no way jeopardizes the public's physical or environmental safety, during construction of any improvements or during their eventual operation. With that in mind, our four primary points are as follows:

POINT ONE

It appears that there are very viable options to meet the utility's claimed needs, **none of which involve Bruce Park**. All of these options could be accomplished at a significant savings over the utility's projected cost of $140 million for their scheme. We sincerely thank Mr. Ashton for requiring Eversource to provide information on the following "...there may be options such as putting poles on both sides of the railroad right-of-way with the arms hanging into the right-of-way that allow you to go overhead there. And I'd like a careful look at that option. So that please don't put a hundred foot right-of-way in there. I'm not going to swallow that." (page 148 of the transcript from the 10/6/15 evidentiary hearing). Based on a submission presented to the Town on November 18, 2015 (attached), Eversource has opted to only present the overhead transmission lines going through Bruce Park, which in fairness was a suggestion made by Dr. Klemens. It seems Eversource is still unwilling to examine alternate designs, at least with the Town, one of which would run the new feeders along the existing metro north railroad tracks. It is

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unfathomable to the Town that State controlled property, that support this technology throughout the State, is being dismissed out of hand without proper consideration of such options.

If the utility's application currently before the Connecticut Siting Council is approved, the final cost of the project likely to exceed the $140 million budget figure, would be passed along in the form of a permanent rate increase to Eversource customers. The utility's projected $140+ million expenditure includes no improvements to the overhead 13.2kv distribution system throughout Greenwich. The construction of a new substation on Railroad Avenue would in no way improve the restoration of electricity owing to a storm event that might bring down the hundreds of miles of overhead lines and thousands of wood poles that service the bulk of Greenwich's homes along with numerous schools, nursing homes, fire houses, and other vital services. These are the reliability issues that plague our community.

POINT TWO

Eversource has represented to the State of Connecticut that as early as 2017, Greenwich may use more electricity than the utility's present system was designed to accommodate. This is based on actual consumption data no more recent than 2013. It also presumes a growth pattern in Greenwich equal to that of Stamford. According to their projections, by 2024, the system will exceed its capacity by 6.8%.

Based on the actual consumption data for 2014 and 2015 compiled by Eversource, it will not be until 2031 that the system will exceed its designed capacity. That is based on an annual growth of 1% each year. During 2015, the warmest summer ever recorded, the electrical system serving Greenwich still had a reserve capacity of 15%. The utility has not recalculated their projections since 2013, to reflect actual conditions.

POINT THREE

In an effort to remedy what Eversource in 2013 identified as a 6.8% potential overload of capacity in 2024, they are proposing building a new substation on Railroad Avenue. The capacity of this substation would be equal to the entire available capacity at present. Whereas in electrical terms, in 2024 there may be a shortage of 9.2 MVA, the utility is proposing adding 134 MVA in a new substation at the Railroad Avenue site. To overcome a 6.8% deficiency, the utility is proposing a 100% increase in their available capacity.

To power this new substation, the utility has stated it would need to run, two 115kv lines through Bruce Park and directly in front of the playground on Museum Drive. The Town has serious reservations about the effects to public safety and convenience during a lengthy construction process and even more so, once these feeders were operational.

POINT FOUR

Eversource has proposed using a cable technology that employs a petroleum based fluid to act as the insulating means for the 115kv cables. Installing these feeders would necessitate digging up Bruce Park, most likely blasting rock, and permanently removing trees. The proposed cable system can leak (google "Long Island Sound clean-up of failed power cables"), as evidenced by multiple examples of fluid spills of many thousands of gallons of this product, the vapors of which the manufacturer states one should not

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even inhale. Per Eversource's plan, 2.3 miles of these cables running between Cos Cob and Railroad Avenue would contain in excess of 100,000 gallons of this fluid. As an alternative to the "pipe type cable" through Bruce Park and Museum Drive, Eversource has now proposed installing overhead wires on 100+ foot high steel poles. Although Bill 5418 prohibits the Connecticut Siting Council from siting certain overhead lines carrying between 345 and 495 kilovolts within 250 feet from any school, day care facility, camp or playground, which is 1/3 of the voltage being discussed in this instance, it would make most sense to site overhead lines away from the well-used Bruce Park if there is a viable alternative.

Sincerely,

Katie DeLuca, AICP
Director of Planning and Zoning
Town of Greenwich

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REPORT PREPARED BY THE TOWN OF GREENWICH, CT FOR THE CONNECTICUT SITING COUNCIL REGARDING DOCKET #461

November 23, 2015

STATED INTENT

In June, 2015, the Connecticut Siting Council received an Application, from the Connecticut Light and Power Company, doing business as Eversource Energy, entitled Greenwich Substation and Line Project. As the Town of Greenwich, we have a strong interest in this application and would be clearly impacted by the construction of the facilities being proposed. To that end, we have attended the Council's meetings on this application and other public hearings.

Our sole interest in voicing our concerns at these forums is to ensure that the 61,428 residents of Greenwich and the 10,862 people who commute to work in Greenwich are protected, in addition to ensuring that the natural resources of the town not be compromised in any way. Having said that, we are fully cognizant of the critical, and most vital necessity that there be ample, reliable, and dependable sources of electricity at all times.

Our goal is not to act as an impediment to progress, or to myopically suggest that utility transmission/distribution/substation facilities do not need upgrading after reaching their expected service duration. To the contrary, we wish to work in concert with the utility and the Siting Council to develop an economical, responsible solution, one that in no way jeopardizes the public's physical or environmental safety, during construction of any improvements or during their eventual operation. This is directly in keeping Section 16-50g of the Connecticut General Statutes that reads:

> *The legislature finds that power generating plants and transmission lines for electricity and fuels, ... have had a significant impact on the environment and ecology of the state of Connecticut; and that continued operation and development of such power plants, lines and towers, if not properly planned and controlled, could adversely affect the quality of the environment and the ecological, scenic, historic and recreational values of the state.* ***The purposes of this chapter are: To provide for the balancing of the need for adequate and reliable public utility services at the lowest reasonable cost to consumers with the need to protect the environment and ecology of the state and to minimize damage to scenic, historic, and recreational values; to provide environmental quality standards and criteria for the location, design, construction and operation of facilities for the furnishing of public utility services at least as stringent as the federal environmental quality standards and criteria, and technically sufficient to assure the welfare and protection of the people of the state;*** *to encourage research to develop new and improved methods of generating, storing and transmitting electricity and fuel and of transmitting and receiving television and telecommunications with minimal damage to the environment and other values described above; to promote energy security; to promote the sharing of towers for fair consideration wherever*

technically, legally, environmentally and economically feasible to avoid the unnecessary proliferation of towers in the state particularly where installation of such towers would adversely impact class I and II watershed lands, and aquifers; to require annual forecasts of the demand for electric power, together with identification and advance planning of the facilities needed to supply that demand and to facilitate local, regional, state-wide and interstate planning to implement the foregoing purposes.(emphasis added)

If the Council ultimately finds that there is a genuine need for a massive reconfiguration of how the majority of the Greenwich geographic area receives it electric power, we will of course impart our unique knowledge of the area's geological strata, traffic patterns, and most importantly the threshold of the Town's residents property as to what type, and how much inconvenience they are likely to be willing to endure in order to achieve the utility's goal.

THE UTILITY'S NEED AS WE UNDERSTAND THEIR EXPLANATION

At present there is a major substation, known as "Cos Cob", described by the utility as a "bulk substation". At this location, a pair of 115kv overhead circuits that extend from the west (Stamford) feed three step down transformers. These transformers reduce the incoming power delivered at 115kv, to 27.6kv. It is via eight, 27.6kv circuits, that four smaller substations located throughout Greenwich are fed in addition to the "Greenwich Network", which is discernible from Figure E-1 contained in the application (Note: All references to figures and pages are from the June 2015 Application prepared by Eversource to the Connecticut Siting Council, unless otherwise noted). From these stations, the various 13.2kv and 4kv distribution feeders running through the town, mostly on wood poles adjacent to roadways, become energized.

On Page E-5 of the application it states, "the Company examined actual load levels for 2013 and projected load levels for 2017 for loads served by Cos Cob Substation. Based on this analysis, the Company concluded that Cos Cob substation's 115 to 27.6-kV transformers could be overloaded starting in 2017 under certain contingency events." The utility also maintains on the same page, "In addition, 27.6-kv load relief is needed at two distribution substations (Prospect and Byram Substations) that are supplied from Cos Cob Substation." To substantiate this assertion, the application offers Table E-1, which offers the total load on the three, 115kv step down transformers in the Cos Cob Station during the maximum "summer peak". Of the eleven years, spanning from 2013 until 2023, only those values listed for 2013 are actual. The actual consumption figures for 2014 and 2015 have not been included in that matrix.

According to the application on page E-5, the "permissible loading" of the Cos Cob transformers is "135 MVA". For 2013, the actual encountered maximum summer load this transformer experienced was 130.5 MVA. Whereas, this same table listed the projected load on these units for Summer, 2014, to be 131.8 MVA, a foot note to the table states, "the actual 2014 load peaked at 107.6 MVA due to an unusually mild summer." 2014's equivalent of 2103's 130.5 MVA, was 107.6 MVA, a substantial reduction over what the utility anticipated. The actual 2014 maximum output of these units was 17.5% below the utility's expectations. Those expectations form the rationale behind the need for this entire project.

Table E-2 performs the same tabulation for the 27.6 kv to 13.2 kv transformers at just the Prospect Substation. Within the text of the report, a potentially grave, Town wide situation is elaborated, "the Company examined actual load levels for 2013 and projected load levels for 2017 for loads served by Cos Cob Substation. Based on this analysis, the Company concluded that Cos Cob Substation's 115 to 27.6 kv transformers could be overloaded starting in 2017" (Page E-5). A more localized condition at the Prospect Substation is also described, "Based on current projections, four 27.6 to 13.2 kv transformers at Prospect Substation would be overloaded beginning in 2021." (Page E-8). This potential condition is referenced earlier in the application, "In addition, 27.6 kv load relief is needed at two distribution substations (Prospect and Byram Substations) that are supplied from Cos Cob Substation." (Page E-5).

Table E-1 is designed to elucidate the 115-27.6 kv transformer problem at Cos Cob, Table E-2 has been offered to present the impending difficulties at the Prospect Substation involving the 27.6-13.2 kv transformers there, but no data is offered to illustrate the difficulties at Byram, though the utility clearly refers to a potential problem at that facility.

As in the case of Table E-1, which depicts the situation at Cos Cob, only the values for 2013 for the Prospect Substation in Table E-2 are what was actually recorded. The 2014 value, shown for Prospect as 51.7 MVA, is only a projection. The actual value for that year, 2014, as listed in a footnote contained at the bottom of Table E-2. It proved to be well below the dire projection. The actual recorded value for 2014 at Prospect was 42.8 MVA, which was greatly reduced from the projection of 51.7%. The utility ascribed this to 2014 being, "an unusually mild summer."

The actual electricity delivered from Cos Cob in 2014, proved to be 17.5% below the utility's prediction. The amount of electricity delivered by just the Prospect Substation (a "subset" of the total delivered by Cos Cob) was 17.2% below the utility's prediction.

The reduction of the actual electricity output by the Prospect Substation in 2014, when compared to what was delivered in 2013, is to be expected. In 2014, electricity distributed from Cos Cob, the sole source of electric for almost the entire municipality was down dramatically (17.5%) from the prior year, so it therefore follows the same should be true at Prospect (17.2%) which is "downstream" from Cos Cob. It is also logical to presume the same would be true at the Byram Substation though no data has been included in the application.

THE TOWN'S REACTION TO THE UTILITY'S EXPLANATION OF THE PROBLEM

While we have no reason to question the validity of the "actual" data being put forth by the utility, we are quite surprised by their forecasts of such vigorous load growth: 1% per year, for every year extending until 2023. It is in the Town's best interest to carefully monitor population and land use in Greenwich, both presently and for many years into the future. It has dramatic implications on the services we are obliged to provide, whether it be the capacity of our sewage treatment facility, the number of teachers we need to maintain, the size of our police force, and our tax revenue stream. We have substantial documentation to prove the residential population has stayed steady for the last decade.

The Town's 2009 Plan of Conservation and Development (http://www.greenwichct.org/public_documents/greenwichct_landuse/pocd/index/) states on page ii, that "Specifically, this Plan of Conservation and Development is first about conservation. Second, it is about development." The overriding goals of the Plan are detailed on page iii and are attached. Please note specifically Goals 6 and 7 respectively, "*Continue, initiate and encourage renewed commitment for land-use regulation to underscore the importance of conservation and encourage development that preserves a sense of community around historic centers, schools and other institutions.*" "*Development should be discouraged or prohibited when it is not compatible with and does not preserve existing land-use patterns. We need to provide alternate zoning opportunities to ensure that such development meets residents' needs.*" And lastly, Goal #10, "*Continue to investigate and adopt energy conservation measures and initiatives for private and public properties and continue our healthy and safe environment. Promote incentives to encourage this.*"

Clearly, our land use policies and accompanying zoning regulations are geared to maintain the current profile of Greenwich, with any future development being limited to the replacement of existing stock.

We have no reason to dispute the application's claim that, "The Southwest Connecticut area is the largest load within Connecticut." However, the changes to the Greenwich "landscape" over the last three decades, does not mirror that of Stamford. This would be borne out by comparing the actual increase of electrical consumption, on a percentage growth basis. We believe much of the forecasting for potential electric consumption in Greenwich has been influenced by what has taken place in Stamford and other areas, rather than a careful analysis of what has taken place in Greenwich.

From a purely technical aspect, we have questions relative to the data and contentions presented by the utility in their application.

1. Has the "135 MVA" offered by the utility as being the maximum output of the Cos Cob units been derived using the OA, or FA value, or is it the FA2 value? If it should be the OA value, and there exists the capable of forced air cooling, "FA", on these transformers, there exists capacity in these units that presently is not being accounted for.
    a. The statement by the utility that the "permissible loading" of the Cos Cob 115-27.6kv transformers is 135 MVA needs to be elaborated. Most step down transformers of higher voltages, of which these are, have several MVA ratings including, "OA", "FA", and "FA2". "OA" represents "oil air" and these units are filled with oil, which absorbs the heat produced by the operation that reduces the 115 kv to 27.6 kv. The normal operating mode of these units is OA, and the warmed oil is circulated through "cooling fins" and the air surrounding these fins absorbs the heat from the oil. Even during the summer when the transformer may be under considerable load, the outside air temperature is cooler than the oil, allowing heat to dissipate from the fluid. "FA" refers to "forced air". These transformers are fitted with fans. Via automatic sensors, when the air temperature around the oil cooling fins rises, usually in the summer, when not coincidentally the transformer output is high, and normal convection circulation of the air around the fins is not sufficient, the fans are turned on, which increase the air circulation around the fins. This cools the fluid faster, and to a lower temperature than the simple convection employed during OA. Most transformers have a second set of fans, or employ two speed fans. "FA2" is a more vigorous version of "FA". The difference in

capacity between OA and FA can be an increase of over 30% more available MVA. The difference between OA and FA2 can be over 60% more available MVA.

b. It is our understanding that ANSI Standard 57.12.00-2010 sets the requirements for transformers such as those in the Cos Cob Substation. The actual construction of these transformers has to be such that they can handle 133% of the load indicated on the nameplate for each value, whether it be OA, FA, or FA2. Therefore, should a transformer whose nameplate indicates a FA2 rating to be 100 MVA be subjected to a load of 120 MVA, it does not suddenly become at risk for a failure. The sole ramification of consistently operating this hypothetical transformer at 133 MVA, (133% of it nameplate rating), is that its designed life expectancy is reduced from 30 years to 25 years.

2. Although the utility has described in Table E-1 the highest load output of the 115-27.6 kv transformers at Cos Cob in a given year, there is no mention of the duration of this loading. It would be revealing to learn the total number of hours these units were subjected to these maximum loads and for how long a sustained continuous period that took place. If, by example, these transformers saw 130 MVA for a two hour period, on three different days, spread out during the Summer of 2013, the concerns are much less than if they delivered the same 130 MVA for twenty four hours, every day, continuously from June 21st all the way through September 21st in 2013.
   a. This very issue was raised by Mr. Ashton at the October hearing of the Siting Council and is chronicled beginning on Page 25 of the hearing transcript. This discussion should be continued and definitively resolved.
3. During 2015, the warmest summer ever recorded, the electrical system serving Greenwich still had a reserve capacity of 15%. The utility has not recalculated their projections since 2013, to reflect actual conditions. How will this be reconciled?
   a. It is fully acknowledged that higher air temperatures give rise to higher electrical consumption, owing to the increased use of air conditioning, swimming pools, fans, and an increased demand on refrigeration units, etc. Per Table E-1, there was a precipitous drop off between the actual output of the 115-27.6kv step down transformers in Cos Cob, which appears to be the sole source of electrical power distributed through the Town of Greenwich, between 2013 and 2014. It should be noted again, that the value listed in the Table for 2013 reflects actual usage, while the same value listed under 2014 is a projection. The actual usage for 2014 is described in a footnote beneath the Table. 2013 saw a total output of 131.8 MVA, while the same measurement for 2014 was 107.6 MVA. The actual recorded total output of the Cos Cob transformers in 2014 dropped from the prior year. To explain this reduction the utility offers that 2014 was, "an usually mild summer".

      It is difficult to discern the quantitative meaning of "an usually mild summer", however we attempted to recreate the temperatures from June 1, through September 30, inclusive for 2013, 2014, and 2015 (a summer universally recognized as not being, "unusually mild"). We employed data compiled by the National Weather Service in Bridgeport, which is their recording station in closest proximity to Greenwich. Without question, 2015 was dramatically warmer than the other years, but we did not see the major difference in temperature between 2013 and 2014 to which the application refers.

      The enclosed tabular presentations show: The average daily high temperature for the four month duration, June through September, in 2013 was 79.52 degrees; in 2014 it was 79.075

degrees; less than half a degree milder. Considering 2014 was described as "an usually mild summer" in several instances in the application, one would have expected a far lower average daily temperature for 2014. Note that for 2015, this value was 80.875 degrees, over a full degree warmer than 2013.

In the four summer months of 2013, there were 24 days where the average daily maximum temperature exceeded 85 degrees. For 2014, in what Eversoure referenced as being, "an unusually mild summer", that number was 22, only two fewer days. In 2015, the number of days where the average daily high temperature was 85 degrees or more, there were 36 days where the average daily temperature surpassed 85 degrees, or one and half times that of 2013.

MAXIMUM RECORDED TEMPERATURE

MONTH/YEAR	TEMPERATURE	DATE	
JUNE 2013	90	25	
JULY 2013	95	16	
AUGUST 2013	88	21	
SEPTEMBER 2013	90	11	
AVERAGE MAXIMUM TEMPERATURE SUMMER 2013	90.75		
JUNE 2014	89	18	
JULY 2014	90	8	
AUGUST 2014	87	27	
SEPTEMBER 2014	91	2	
AVERAGE MAXIMUM TEMPERATURE SUMMER 2014	89.25		
JUNE 2015	89	21	
JULY 2015	93	20	

MONTH/YEAR	TEMPERATURE	DATE	
AUGUST 2015	91	15	
SEPTEMBER 2015	94	8	
AVERAGE MAXIMUM TEMPERATURE SUMMER 2015	91.75		

	AVERAGE DAILY HIGH	DAYS 85-90	DAYS 90-95	DAYS OVER 95
JUNE 2013	77.8	4	1	-
JUNE 2014	77.3	-	1	-
JUNE 2015	75.9	7	-	-
JULY 2013	85.5	5	10	-
JULY 2014	82.6	10	1	-
JULY 2015	83.6	7	4	-
AUG 2013	80.4	4	-	-
AUG 2014	80.4	6	-	-
AUG 2015	84.2	12	1	-
SEPT 2013	74.4	-	-	-
SEPT 2014	76.0	4	-	1

	AVERAGE DAILY HIGH	DAYS 85-90	DAYS 90-95	DAYS OVER 95
SEPT 2015	79.8	5	-	-
TOTALS				
2013	79.52	13	11	
2014	79.075	20	2	
2015	80.875	31	5	

If the summer of 2013 severely challenged the limits of the Cos Cob transformers, it is logical to presume the much hotter Summer of 2015 would have done so as well, and to a vastly greater extent. It may well be that the load projections offered in the application by the utility are not entirely accurate, and that the precipitous drop in usage in 2014 was not solely the result of "an usually mild summer", as the utility has purported in footnotes to Table E-1 and Table E-2.

In reviewing the Summer temperatures for 2013, 2014, and 2015 derived from the enclosed tabular compilations, based on the average daily high temperature, 2014, ("an usually mild summer"), was only half of one percent cooler than 2013, whereas, 2015 (the hottest summer ever) was 1.7% hotter than 2013. The Summer of 2015 was more than three times hotter than the Summer of 2014, which was cooler than the Summer of 2013.

4. At the time of the preparation of this application to the Siting Council, prior to June, 2015, the actual consumption figures for the Summer of 2015 were not available. These were presented at the hearing held on October 6, 2015. Beginning on Page 153 of the transcript of that hearing, testimony from the utility reveals the peak load during the Summer of 2015, experienced at the Cos Cob Substation's 115-27.6kv step down transformers was 114.8 MVA. Now that the data is available, when and how will this be reconciled?
    a. The actual recorded number of 114.8 MVA is 86.25% of the 133.1 MVA the utility had projected the usage would be for Summer 2015. At the time that projection was made, it would not have been possible to predict the Summer of 2015 would have been as hot as it proved to be. Had the utility's projection for 2015 of 133.1 MVA indeed come to pass, the transformers would have been loaded to within 2.6% of their stated capacity of 135 MVA. There would have been little reserve capacity. However, in that the electricity actually consumed during the exceptionally hot summer of 2015, fell dramatically below the utility's projections, there remained 15% unused capacity in those transformers.

The utility states, "A new Greenwich bulk substation is a long-term solution. The numerous upgrades and other short-term distribution measures that the Company has applied to keep the system operational to date have allowed the electric power system in Greenwich to function until a long-term solution could be implemented. That time is now." (Page E-7) Except for, "That time is now", that may indeed be an accurate assessment. If during the very hot Summer of 2015, the system was able to operate and STILL retain almost 12.5% more unused capacity, when compared to a cooler Summer of 2013, whatever measures were previously taken by the utility along with the conservation efforts of the consumers were quite obviously, highly successful. What once was a concern that there may not be ample power available to handle the electrical consumption of the Town of Greenwich, may no longer exist.

By its own admission (Page E-5), the utility's load projections for 2017, upon which the application is based, ("Cos Cob Substation is projected to be overloaded in 2017" (Page E-5)), did not take into account the actual loadings of 2014 and 2015. Once the 2014 information became available, the utility discredited the values for 2014, as being an anomaly, due to "an usually mild summer". This may not be prudent, particularly since the consumption during the very hot summer of 2015, also fell well below the application's projections. Based on the values recorded in 2015, 2013 may in fact be the anomaly.

The truest indication of whether there may be a bona fide problem that some time in the future Greenwich's electricity consumption may exceed the system's capacity can only be accurately ascertained by employing the actual 2015 consumption figures. Any proposed remedy of this condition needs to be based on this most recent data. The application and its proposal of creating a new "bulk" substation does not reflect the actual trending data from the last two summers.

5. It is plausible that power ending up in Stamford could originate within the Cos Cob Substation. Were there any extraordinary 13.2 kv switching configurations in place in 2013, that are not "normal"? If there was power going from Greenwich to Stamford in 2013, that could explain the "spike" to over 130 MVA at Cos Cob that year. There should be a more detailed analysis performed to reveal the status of various distribution circuits (13.2 kv) in 2013. It is our understanding from the transcript of the October Council hearing that circuits feeding loads within the confines of Greenwich could emanate from the Waterside Substation in Stamford. That means the reverse is true as well.

6. The application goes into significant detail to describe what is likely to occur at the Cos Cob Substation as projected over the next number of years. The situation at the Prospect Substation is analyzed in a bit less detail. Even less is offered by way of what the utility is expecting to occur at the Byram Substation, though it textually states it is plagued by the same problem as the Prospect Substation (a demand for electricity it cannot meet). What strikes us as glaringly absent is data for the various 27.6 feeder circuits that leave the Cos Cob 115-27.6 kv step down transformers and feed the four Greenwich substations along with the "Greenwich Network". Figure E-1 shows the routing of these eight feeders, but the capacity of these individual circuits, and what loads they individually have carried in the past, is not made available.

There is the distinct possibility that the only potential problem may simply one of transformer sizing. There is no mention as to the need to alter the 115 kv overhead transmission feeder coming into Cos Cob from Stamford anytime in the future. That indicates there is enough 115 kv power available at the Cos Cob location, regardless of any potential load growth in Greenwich. The problem as the utility perceives it is highlighted in Table E-1 and Table E-3. What is portrayed is that the capacity of the three, 115-27.6 kv transformers in Cos Cob, are potentially undersized per their load profiling for coming summers. The most apparent solution that could meet these future electrical needs would be to upsize those three transformer units or add a fourth unit. That could provide the required additional output that the utility's application is stating will be needed in 2017, which is when it has been projected (again, using data no more current than 2013) that for the first time, the Greenwich total consumption will exceed the stated 135 MVA capacity at the Cos Cob Substation. Should the actual 2015 consumption values, be applied going forward, (rather than the 2013 recorded value), at an annual load growth rate of 1% every year, it would be in 2031, that Greenwich's electric consumption would exceed the 135 MVA capacity at the Cos Cob Substation.)

The utility's rejection of the solution involving increasing the 115-27.6kv transformer capacity at Cos Cob is based on their assertion that there are severe spatial restrictions at the Cos Cob Substation (Page E-15). However, in order to facilitate the scheme proposed in the application, which mandates installing, two, new 115kv, underground transmission circuits that would originate inside the Cos Cob facility, there would need to exist ample space to construct two sets of 115kv cable risers, (Figure K-5) and circuit breakers, disconnects, arrestors, required for these to operate. It appears the spatial requirements for both solutions are very similar.

Just using the information provided in the application, it is not possible to analyze if the output from any increase of capacity of the 115-27.6kv transformers could reach the likes of Prospect and Byram where the application contends it will be needed, using the existing 27.6 kv circuits. If the eight, 27.6kv circuits now originating at Cos Cob are of sufficient capacity and routed advantageously, the entire overloading concern at Cos Cob could quite possibly be remedied simply by only focusing on upsizing the 115-27.6kv transformers there. Should the eight existing 27.6 kv feeders not prove to be adequate, then, as part of a simpler solution than what the application is proposing, it may be necessary to run a ninth 27.6 kv feeder out of Cos Cob, possibly to Prospect, in conjunction with increasing 115-27.6 kv transformer sizing at Cos Cob.

Table E-3 provides insight as to how the output of the Cos Cob Substation is distributed throughout Greenwich. The table quantifies the loads of the North Greenwich Substation, Byram Substation, Prospect Substation, and the Greenwich Network. Most telling in Table E-3 is the rightmost column, which describes the available output from the 27.6 to 13.2 kv transformers at the referenced substations that feed the distribution circuits throughout the Town.

Based on the projected loads in 2017, the year the application claims Cos Cob's 115-27.6 kv transformers will become overloaded, North Greenwich Substation's 27.6 to 13.2 kv transformers will have 132% extra capacity, Byram's will have over 50% extra capacity, while only the Prospect Substation will be somewhat challenged with only 3% of additional capacity. Again, these projections DO NOT take into account the actual consumption values for both 2014 and 2015, which

proved far below what the utility anticipated to be consumed when they developed Table E-3 after the Summer of 2013. The line of questioning by Mr. Ashton, regarding the transformer ratings at Cos Cob (OA/FA/FA2) is also pertinent to the capacity being offered for the 27.6-13.2 kv transformers at these other stations.

7. The sole problem appears to originate at the source, Cos Cob. It may be confined to only that location and not by the substations downstream. What is being portrayed in the application along with the capacity issue at Cos Cob is a second problem, which is the "27.6 kv load relief needed at two distribution substations (Prospect and Byram Substation) that are supplied from Cos Cob Substation." (Page E-5). When will support documentation to support that assertion be provided?

   It seems from the information presented in the application regarding upsizing the 115-27.6 kv step down transformers at Cos Cob and also the 27.6-13.2 kv transformers at Prospect, together would effectively mitigate both of the utility's concerns, (if indeed the problem at Prospect is real), with possibly a bit more additional alteration to the present electrical system. Sound engineering principles, generally install incoming feeders to transformers designed at not less than the transformer's name plate capacity. It is quite possible that the incoming circuits to the Prospect Substation may be sized only to feed the 55 MVA transformer on site. Therefore, if the Prospect transformers were upsized, it might also be desirable to add one more incoming 27.6kv feeder from Cos Cob into Prospect, once the Prospect units were upsized.

   On a cost basis, all those modifications: upsizing the 115-27.6 kv transformers at Cos Cob, adding a 27.6 kv feeder from Cos Cob Substation to Prospect Substation, and upsizing the 27.6-13.2 kv transformers at Prospect; in total would appear to be dramatically less than what is being proposed in the application and effective in obviating the stated impending capacity shortage as perceived in 2013. It appears as if a very telling analytic is absent from the application.

8. The overall analysis of the potential under capacity problem, as being offered, could be better evaluated if for each of the substations and loads downstream from Cos Cob, (Byram, Prospect, Mianus, North Greenwich, and the Greenwich Network) there was a listing of the capacity of all the incoming 27.6kv feeders and a list of the output capacity of all the 27.6-13.2kv transformers at these substations and in the case of the Network, the loads fed. Coupled with this design data should be the actual usage values for 2013, 2014, and 2015, differentiated by these stations and loads.

   The perceived problems at Prospect may well be one of balancing loads. North Greenwich has dramatic excess transformer capacity, (132%), while Prospect is being projected by 2017 to have very little (3%). If circuits now being fed from Prospect can be refed from North Greenwich (this is accomplished through the 13.2 kv conductors running through the streets), the reserve capacity at Prospect would be increased without any need to upsize the transformers there. This analysis for all the substations, only doable with the now absent information in hand, should be performed. This study could reveal that by adding a bit more capacity (an amount as low as 10 MVA at two transformers) the need for the new, "bulk", "Greenwich Substation" could be obviated. This relatively minor expenditure, along with a similarly inexpensive reconfiguration of what 13.2 kv circuits are fed from what 27.6-13.2 kv substation, may suffice to meet the utility's aggressive and unrealistic load growth projections through 2024, precluding the need for a $140 M undertaking.

ADDRESSING THE UTILITY'S PERCEIVED NEED FOR A NEW BULK SUBSTATION IN GREENWICH

NEED

At several points within the application the utility offers dates by which the current facilities will no longer handle what they believe will be the power consumption throughout Greenwich. On Page ES-1, in Section ES.2, it is stated, "Without the needed upgrades, certain contingency events could result in the overload of Cos Cob Substation transformers by as early as 2017." This proclamation is derived from Table E-1, "Summer Peak Load Levels Cos Cob Substation 27.6 kv – Load in MVA"

Using actual load readings depicted in 2013, as 130.5 MVA (as compared to what has been offered (though not established) as a maximum capacity at Cos Cob of 135 MVA), Table E-1 lays out the projected load at Cos Cob through 2023. The expectation is that each and every year, the total load on the Cos Cob transformers, will increase approximately 1%. We, as the Town of Greenwich, do not envision ample new residential or commercial real estate development to support that projection. We also believe there should be some noticeable effect brought about by passive conservation measures, such as energy efficient appliances, compact fluorescent and LED lighting; and the active conservation measures taken by users motivated by the excessively high rate structure already in place. Stated quite simply, "Our electric bills are so high, we need to not leave lights on, when we are out of the room." We believe the actual load figures for the Summer of 2015, indicate that these consumer generated conservation efforts have begun to take effect.

It should be noted that in 2008, the Town of Greenwich started its participation Connecticut's Clean Energy (CEC) Program. Initial work on this program included a town-wide energy fair with other Town departments to establish baseline energy consumption for Town buildings with the goal of reducing energy consumption through efficiencies. The Town Conservation Commission has coordinated the CEC program in Greenwich and in January 2010 Greenwich had earned sufficient points and received a free 7.7 kilowatt (kW) photo voltaic solar system which was installed on the science building of Greenwich High School. Conservation coordinated with other Town departments to establish baseline energy consumption for Town buildings with the goal of reducing energy consumption through efficiencies and the Greenwich Public Schools implemented an energy conservation program for all school buildings with much success.

In addition to the solar system installed at Greenwich High School as part of the Clean Energy Community program, the Town of Greenwich has completed a number of other clean energy projects at municipal buildings. As part of an ongoing commitment to clean energy the Town of Greenwich installed a large 95kW solar photovoltaic system on the roof of Glenville middle school as well as part of a Clean Energy Block Grant. Additionally, a geothermal heating and cooling system was installed at Hamilton middle school which will reduce the cost and energy consumption of heating and cooling the school. The Town Department of Public Works has been upgrading all lighting and has installed small solar panel systems where appropriate around town and the Parking division is exploring a pilot installation of a charging station for electric vehicles. Energy conservation and alternative energy

solutions are becoming standard operating procedures for most departments and in the future will result in significant savings.
The Conservation Commission has helped to lead the Town's energy education and outreach effort with a subcommittee. The Town participated in the Solarize CT program, which doubled the residential installation of solar in 6 months over the previous ten years and also promoted the C-PACE program aimed at commercial.

On October 14, 2015 the Energize CT program recognized towns that are involved in the Clean Energy Communities Program. The Clean Energy Community program promotes clean energy technologies and energy conservation for town facilities and also for town residents and businesses. Greenwich was recognized Bronze level and is near to becoming a Silver level community.

In addition to this recognition, the Town has also been awarded 2 - $4,500 rewards for participation in the Solarize and C-PACE programs. The rewards much be used for energy conservation or green energy projects in Town. The Town is currently working on how to use these fund.

In 2013, 130.5 MVA was the recorded peak summer load on the Cos Cob transformers. We would presume this would have occurred on July 15, when the temperature reached 95 degrees, (a reading not reached in either 2014 or 2015). The actual load on these transformers had been projected to be 131.8 MVA during 2014, (but only materialized at 107.6 MVA). Nevertheless, Table E-1 lists a projected load of 144.2 MVA for year 2023. From 2013, for the next eleven summers, the overall load in Cos Cob has been slated to grow almost 1% each summer; meaning come 2024, if no changes were made to the Cos Cob transformers, there would be an overload of 9.2 MVA, equaling an increase of 6.8% beyond the total capacity presently said to be available.

With several questions regarding the design of the Cos Cob transformers' ratings (the OA/FA/FA2) unanswered, such a minimal overload may well be in the capacity of the existing units. Should that not be the case; upsizing by only an additional 10 MVA, at two of the three existing 115-27.6kv step down units in Cos Cob, would eliminate the projected overload challenge well through 2024. (With the 2024 overload projected to be 9.2 MVA, adding only 10 MVA to one transformer would alleviate the condition, however contingency requirements demand that all calculations treat any one transformer, as if it was unavailable; creating the need to add 10 MVA to different two units.)

There are numerous known instances where utilities working in concert with transformer manufacturers have increased the MVA capacity of large transmission transformers, by designing new radiators (cooling fins) and adding more fans. Historically it has proven cheaper to simply replace the entire transformer, particularly in cases of older transformers. Newer transformers are also generally smaller in size than older units of the same capacity, allowing new transformers to be placed on foundations and within oil containment reservoirs that previously were designed for transformers of lesser MVA capacity.

With a recorded load of 130.5 MVA in 2013, and embracing the utility's contention that each summer, thereafter, load would grow by 1% (a presumption that has yet to be substantiated with factual data); one could assert that by 2017, the stated 135 MVA maximum output, of the three, 115-27.6kv transformers now in operation at Cos Cob would be exceeded. To countermand that possibility, (to the extent it may

or may not be realistic), the utility in its application, has offered as its solution, building an entirely new substation facility, at a second location, "Greenwich Substation", that would almost exactly replicate the present Cos Cob substation.

To overcome a 6.8% overload, a 9.2 MVA deficit in capacity, at the 115-27.6 kv transformers at the Cos Cob Substation; one that is not projected to be realized until 2024, (if, at all, based on the actual consumption during the extremely warm Summer of 2015), the utility is petitioning to add 134 MVA of additional capacity. This would be in addition to Cos Cob's, capabilities described as 135 MVA. To address a projected 6.8% potential overload, (again, based on the actual readings taken in 2013, while not taking into account those same readings for 2014 and 2015), that is thought by the utility to maybe, occur ten year's hence, Eversource's plan is to double its existing capacity and do so, in the immediate future.

In order to resolve what the most current information reveals to be a dubious 6.8% shortage of capacity, not projected to happen until 2024, the utility is proposing to spend $140 Million. The Town of Greenwich firmly believes that to implement this massive undertaking would create major upheavals to daily life in Greenwich and permanently damage pristine natural resources. We have simply not been convinced by what was presented in the June, 2015 Siting Council Application and the subsequent October, 2015 hearing, that either the potential problem, as elaborated or its proposed solution have been fully evaluated to the extent there can be no doubt that such an expenditure is warranted and such a sacrifice by the residents of the Town of Greenwich is mandated.

The application describes, at length, the utility's mindset that the only plausible solution to handling load growth in Greenwich is a "bulk substation" simply, "Because none of these alternatives could be developed to an extent sufficient to eliminate the pressing need for additional capacity at a cost that is comparable to the Project's cost or less." At the same time, little to no discussion is devoted to the multiple other options presented on Page F-2, that do not require a new "bulk substation."

Figure E-4 parallels the proposed new, added "bulk" substation arrangement for Greenwich and the present arrangement for Stamford; offering the Stamford model as the reason for the construction of a second "bulk" substation in Greenwich. "For example, Stamford has four bulk substations that serve the load in that area" (Page E-6). It should not be ignored that, at present, the electrical consumption of Stamford is more than three times that of Greenwich. On the whole, Greenwich is far more rural in nature than Stamford. Greenwich is 50.6 square miles, while Stamford is 40 square miles. The population of Greenwich is about half that of Stamford.

As the body that governs Greenwich's growth and development, we can offer the assurance that under our existing regulatory schema, no portion of Greenwich could ever replicate the present density of Downtown Stamford, irrespective of the statement that "The Southwest Connecticut region and Greenwich in particular, continues to experience economic growth and, as a result, load has increased at a faster pace than in other parts of Connecticut." (Page E-6) While, it may be the utility's plan to enhance the electrical system servicing Greenwich, the Town has no immediate plans to upgrade and enlarge the other vital infrastructure such as roads, sewers, schools and other services at a similarscale necessary to support any major growth, in either the residential or commercial sector.

RELIABILITY:

Without question the "bulk substation" solution of adding 134 MVA of new transformer capacity, would indeed remediate the utility's projected (derived without the benefit of the actual electric consumption since 2013) load deficit of 2.2 MVA (a 1.6% overload) in 2018; as well as the largest overload they have projected, which is 9.2 MVA (a 6.8% overload) which they claim will occur in 2024. However, we cannot concur with the statement that construction of a new "bulk substation" on Railroad Avenue, "would provide a more reliable power supply than the existing multiple lengthy distribution feeders originating from Cos Cob Substation" (Page ES-2).

At present, the Cos Cob Substation is located at the end of the overhead 115kv transmission feeders that come from Stamford. This is clearly visible in Figure E-4. If the two 115kv overhead lines from Stamford that feed Cos Cob become inoperable; not a commonplace occurrence, but certainly a realistic possibility made more plausible since both circuits are supported on common structures; the entire set of three Cos Cob Substation 115-27.6 kv transformers lose power. Without question, the majority of Greenwich would be "blacked out".

The new proposed "bulk" substation would be equally as reliant on these two overhead 115kv transmission lines coming from Stamford, as is the current Cos Cob Substation. Should those two 115 kv lines from Stamford become deenergized, both the Cos Cob Substation AND the new "bulk" substation would be without a feed. Again, virtually the entire Town of Greenwich would be without power. Although 135 MVA capacity would be available at Cos Cob, along with an additional 134 MVA at the new "bulk" substation, does not change the predicament should the two 115kv feeds from Stamford be unavailable.

In utility parlance, since both the Cos Cob Substation and the new "bulk" substation would both be fed by only 115 kv feeders, common to both facilities, the construction of the "new" bulk substation would not constitute a "second contingency". What is clear from Figure E-4 is that the multiple "bulk" substations in Stamford are fed by different and independent 115kv sources. A loss of all the incoming 115 kv feeders to one of the Stamford "bulk" substations does not leave Stamford blacked out. That is not the case with Greenwich at this time with the existence as Cos Cob as the only "bulk" substation, OR in the future, with both there being Cos Cob Substation along with the new "bulk" substation. To this end, building a new "bulk" does not ensure continuous, reliable, virtually uninterruptible power, to the Town of Greenwich any more so than at present.

Figure E-4, the depiction of the "Greenwich and Stamford Substations and Transmission Lines with Addition of the Project", shows that there would be no change to how the North Greenwich and Mianus Substations, along with the Greenwich Network would be fed once the new "bulk" substation was built. Per Table E-6, only the loads of the Byram and Prospect substations would be fed by the new bulk substation. Once built, only 52% of all the energy projected to be delivered to the Town of Greenwich in 2018 would come from the new "bulk substation". The remaining 48% would remain, having their electricity delivered by "lengthy distribution feeders originating from Cos Cob Substation." The load connected to the North Greenwich Substation, which is equally remote from either the Cos Cob Substation or new "bulk substation" site, represents almost 25% of all the energy used by Greenwich. With no change to how the North Greenwich would be fed once the new, "bulk" substation was

operable; the major portion of all the residential customers in Greenwich would receive no benefit from a new "bulk" substation.

The application states, this new substation would, "Greatly improve the reliability of the entire electric distribution system in Greenwich." (Page E-3). Without the benefit of a "one line schematic" of the 27.6 kv circuit configuration at present, and one for the anticipated future arrangement, it is impossible to ascertain exactly what flexibility will be available to transfer loads between the existing Cos Cob substation and the new "bulk" substation as asserted on Page E-9.

As best we can derive, the only "tie" being contemplated between the existing the Cos Cob Substation and the new "bulk" substation would be at 115kv. Although it is an unlikely event, if there was a failure of several of the 115-27.6kv transformers at Cos Cob, the construction of a new "bulk" substation as presently elaborated, could not compensate for the loss of those units. The potential for numerous customers to be without power in such a scenario, would remain unchanged from what it is today, despite an expenditure of $140M.

The utility offers, "With the installation of the new distribution equipment, loads could also be transferred between the two bulk substations under contingency conditions, thus improving reliability." (Page E-2). If we properly understand that statement, should there be a total malfunction of the new "bulk substation"; transferring all that load to Cos Cob, (or the reverse, should the Cos Cob Station be fully disabled), would be possible. Cos Cob Substation is going to retain its capacity of 135 MVA, while the new bulk substation will have a capacity of 134 MVA. Table E-1 shows that per the utility's anticipations, for every year past 2016, the total load of Greenwich will exceed 135 MVA. Whatever solution the utility is proposing (short of power outages) to deal with such a total failure of the new "bulk" substation and then by transferring its entire load back to Cos Cob, should be considered as a permanent solution to the "overloading" at Cos Cob that is mandating the addition of 134 MVA at Railroad Avenue.

It is being portrayed in the application that at any one time, should the need arise, all of Greenwich could be fed from either the 135 MVA Cos Cob Substation or from the new, 134 MVA, station on Railroad Avenue. As we comprehend the need being put forth in the application, by 2017 Greenwich's power consumption is being projected to exceed 135 MVA; therefore the additional "bulk" substation is critical. How then would it be possible when per the application, the total load is slated to exceed 135 MVA, (the highest MVA capacity of the two stations), to have either Cos Cob or the new "Railroad Avenue", solely on its own keep Greenwich energized?

By way of example, per Table E-1, in 2021, the total summer peak load of Greenwich is projected to be 141.3 MVA. This exceeds the present capacity at Cos Cob Substation which has been identified as 135 MVA. For whatever hypothetical reason, presume the new "bulk" substation is entirely disabled, (from a massive fire, or failure of the two, 115 kv circuits feeding the new "bulk" station faulted, (think back to the problems that plagued Metro North Railroad in the winter of 2014, owing to the interruption of feeders belonging to Con Edison)), the only source of electricity for all of Greenwich would be Cos Cob Substation. Cos Cob Substation, unless it would be reinforced can only deliver 135 MVA, which is less than the demand of 141.3 MVA that is being projected to be encountered in 2021. What specifically would the utility do in that very situation? The same is true in reverse, with the new station being rated

at 134 MVA.
Whatever the utility's course of action would be to deal with only having 135 MVA available, could be implemented immediately in 2015. The hypothetical scenario described of not having a second "bulk" substation and not having enough capacity at Cos Cob, is precisely the problem the utility presents in its application --- offering the construction of a new facility at Railroad Avenue at a cost of $140M as being the sole viable solution.

In two locations in the application, (Page E-10) and (Page E-6) there is mention of the consequences associated with the failure of the 27.6 kv feeders that move the energy from the Cos Cob Substation to the other substations: Prospect, Mianus, North Greenwich, et al. A new "bulk" substation would obviate the need for those feeders from Cos Cob that are now feeding Mianus and Prospect, (which would then be fed from the new station), but as best we can tell from the application, there are no planned replacements for any of the remaining 27.6 kv circuits. Page E-10 details the impact of, "the loss of three circuits at Cos Cob Substation due to lightning strikes occurring over two consecutive days during a heat wave. The building of a new "bulk" substation does not in the future, appear to protect the feeders at Cos Cob from a recurrence of lightning strikes, anymore than at present.

The North Greenwich Substation, from which almost a quarter of all energy consumed in Greenwich is dispatched, is fed by two, 27.6 kv feeders that originate in Cos Cob substation and go directly to the North Greenwich Substation. It has another link, a 27.6 kv feeder that originates in the Cos Cob Substation, that first runs to the Prospect Substation and then finally terminates at North Greenwich. Under the proposed "bulk" substation configuration, only one of the three feeders to the North Greenwich Substation, would be fed from the new substation, the one that is presently routed through Prospect. Therefore, if the two remaining feeders to the North Greenwich Substation, those coming from the Cos Cob Substation, were inactive for any reason, the one remaining cable circuit would have to carry the entire load of the North Greenwich Substation, (31.0 MVA in 2103 per the actual readings.) (Presently, eight feeders deliver the nominal 135 MVA available, or an average of a bit less than 17 MVA per circuit.) This particular condition also exists at present with all of Greenwich being fed from only the Cos Cob Substation, and yet, it clearly remains unchanged with the addition of a new "bulk" substation. For all those customers fed from the North Greenwich Substation there is no improvement in reliability by the building of a new $140M new "bulk" substation.

We would encourage major modifications to all the existing circuitry throughout Greenwich at all voltages, in an effort to, "greatly improve the reliability of the entire electric distribution system in Greenwich." However, we believe there is a difference in understanding of the word "distribution" between the Town of Greenwich and the utility. To our way of thinking, the eight, 27.6 kv circuits originating at Cos Cob Substation that feed the various loads and substations throughout Greenwich, should be labeled, "sub-transmission", not "distribution". Doing so would eliminate any confusion with the 13.2 kv and 4 kv circuits that run along almost every street throughout Greenwich and feed the secondary transformers that power almost every residential and a substantial number of commercial customers.

A look at the power interruptions throughout Greenwich over the last decade should reveal that by far, most were the result of damage to the overhead 13.2 and 4 kv overhead lines, not the 27.6 kv feeders from the Cos Cob Substation. For a resident of one of the Greenwich areas that have constantly been

plagued by storm related power interruptions (Stanwich Road, Belle Haven, Upper North Street, Lake Avenue at Upper Cross Road) hearing that the utility is proposing an expenditure of $140 M to improve "reliability" and avoid potential outages, would be welcomed news. However, from what we can ascertain, that $140 M will contain no portion devoted to "storm hardening", additional reclosers, more effective circuit sectionalizing and the under-grounding of any existing overhead 13.2 and 4 kv conductors. Those are the types of "reliability" improvements are in great demand and would be welcomed.

THE TOWN's OBJECTIONS TO THE PROPOSAL FOR THE NEW 115 KV FEEDERS (Particularly High Pressure Fluid Filled Pipes)

We have strong objections to the use of High Pressure Fluid Filled circuits that are being proposed in the application, regardless of along whatever route is eventually chosen. A proposal of an oil conveyance system, operating at 200 psi, (the technical name of the cable system contains the words "High Pressure") containing 6.352 gallons of fluid per linear foot, installed immediately adjacent to wetlands, and through an estuary (Figure G-8B), would not garner approval from any municipality, anywhere. Yet simply because the nomenclature in the application refers to what is essentially a "pipeline" as being a "transmission supply line", we are being required to ignore all the obvious hazards and accept two, 115kv, fluid filled feeders and a fluid return line run through some of the most environmentally sensitive areas in Greenwich.

It would be hard to envision the residents of the Town of Greenwich, or any other municipality, readily embracing a request from say the likes of an Exxon Mobil, to build a conveyance system for upwards of 100,000 gallons of a liquid petroleum product through their streets. In this particular case, the proposed route of the fluid filled feeders would take it directly past one of the most populated children's playground in the entire Town of Greenwich, located on Museum Drive (P-8 on Page G-21).

Should one examine the MSDS (Material Safety Data Sheet) for the dielectric fluid customarily used in conjunction with High Pressure Fluid Filled Feeders, which has been provided for the record in a previous submission from the Town, one would find under the heading, *Fire Fighting Measures*: "Wear full protective clothing and positive pressure breathing apparatus". For the section describing, *Accidental Release Measures. Procedures in case of accidental release*:, "Avoid breathing vapor". "Prevent entry into sewers and waterways". "Avoid contact with skin, eyes, clothing". Under the heading *Hazards Identification:* "May be fatal if swallowed and enters airway."

To the Town of Greenwich, Bruce Park is the equivalent of what Central Park and Prospect Park are to New York City. The property comprising Bruce Park was deeded over to the Town of Greenwich in 1908. The deed states that "the land shall be forever used for the purposes of a public park, to be known as the "Bruce Memorial Park", and shall be devoted to no other use or purpose, except that the building on the second tract may be leased for proper purposes, and the rentals therefrom applied in the care, preservation and maintenance of said park." (see attached).

Bruce Park contains a public croquet pitch, trees that are over 100 years old, significant specimen plantings, a tidal pond and estuary that is a habitat for many types of marine fowl, tennis courts, athletic

fields, walking trails, and meditation areas. Just as neither Central Park, nor Prospect Park, both of which are located in the midst of the very densely populated areas of Manhattan and Brooklyn respectively, have "transmission supply lines", nor overhead distribution circuits transversing them; we feel strongly neither should Bruce Park.

The upheaval associated with the construction of any form of "transmission supply line" or distribution circuitry through this particular area would be monumental. This would also hold true if pipe type cable was employed. The difficulties are not lessened by the use of "trenchless technologies", in either form: horizontal directional drilling or pipe jacking.

The vehicular road system through the park is very windy and narrow. Altering these paths is impossible without removing trees, many of which exceed 36 inch caliper. There is no alternate route through the park. Moving large excavating equipment, sheeting boxes, roadway plates, all of which are required to dig the pits at each end of a drill or jack; and of course for an open trench, involves long tractor trailers. Any cable system demands the installation of massive splice vaults, and large cranes to set them in place. If horizontal directional drilling is employed, betonite "slurry" is required as part of the drilling operation. Massive quantities of water to form the slurry would need to be trucked through on these same winding narrow roads. Retention ponds to contain the slurry would have to be built. Regardless of the conduit chosen, for any directionally drilled crossing, the pipe would need to be staged.

If the drill were nominally 500 feet in length, a 500 foot section of the pipe would have to be fabricated and made ready to be pulled back through the hole bored by the drill (a task made more complicated if it were steel pipe that needed to be welded). Both horizontal directional drilling and pipe jacking are operations that must be ongoing 24 hours per day, continuously, every day until completed. Massive electrical generators would have to be set up in the park to support these operations. Fuel to operate all the equipment would need to trucked to and dispensed at the work locations.

Once the pipe was put in place regardless of excavating techniques, massive cable reels, some weighing over 25 Tons each, would need to be brought to the manhole locations. Cranes would needed to offload them. Any portion of the route that would be trenched conventionally concrete trucks supplying the special backfill material and dump trucks removing the excess spoils would be in motion almost continuously.

We cannot envision any way the vehicular and pedestrian thoroughfares through Bruce Park could be maintained as passable for other than construction equipment, once excavation began, until such time the cable installation was completed. It may not be clearly discernible on Figure G-8B, owing to the definition of the aerial photography, but there are numerous residences whose sole access are on the roads running through Bruce Park. Section K.2 beginning on Page K-10, outlines the construction activities and sequencing within Bruce Park, but nowhere is the relationship between those people living adjacent to the various routes and the construction activities associated with this work explored.

On Figure G-8B, there are three proposed routes for conduits installed by means of trenchless technology. Each drill, or jacking setup can only accommodate one pipe. In the case of the proposed pipe type cable arrangement, Figure G-10, a minimum of three drills or jacks would be required; one

each for the two cable pipes and a third for the return line. Unlike in the "open trench" arrangement where each pipe can be placed relatively close to the adjacent pipe, drills and jacks are generally spaced with a minimum of ten feet separating each pipe. This is necessary to ensure that the drilling equipment which is prone to drift laterally during drilling does not damage the newly installed adjacent conduit.

The staging areas depicted in Figures K-2 and K-3, both of which show the "drilling" end, (there needs to be a "receiving" end on the opposite side of the drill or bore) are for only a single pipe. The "sending area" described as "about 15,000 square feet" (Page K-2) for horizontal directional drilling; and as, "at a minimum, approximately 12,000 square feet" (Page K-4) for pipe jacking; is only for a single pipe, or only a third of what would actually be needed. For the number of pipes indicated in the current designs, these areas are likely to be expanded to the point where they would each exceed an acre.

Employing methods, other than the conventional excavation of an open trench from which the pipes are placed in the trench from above cannot guarantee that what is presently a pristine, natural resource will remain undisturbed as a result of either directional drilling (HDD) or pipe jacking. "Where a pipe jacking or HDD crossing method is needed (such as under the MNRR), some trees may have to be removed in order to provide the necessary work space for the jacking or drilling equipment." (Page J-9). To us, this is a major concern.

In several instances, production rates for the various excavating techniques, such as open trench, horizontal directional drilling, and pipe jacking, are offered in the application. There is a statement, "In the event that bedrock is encountered, excavation, drilling, or pneumatic hammer would be the preferred methods to remove rock. If extensive bedrock is encountered during construction, provisions for blasting would be considered" (Page J-3). We find it particularly alarming that the word "if" is employed, rather than "when" in reference to the existence of very hard rock. There are several sheer rock cliffs over twenty feet high and numerous rock outcroppings visible throughout Bruce Park. In all the discussions of the various available underground routes, there appears to be no attention given to soil strata and no reference made to any sub surface investigations.

The Town of Greenwich has vast experience in Bruce Park and can attest that the rock is both close to the surface and quite hard. The utility has similar knowledge, having just had to employ specialized rock drilling apparatus (a "down the hole hammer") to replace a wood distribution pole that had been struck by an automobile, on Bruce Park Drive, precisely along one of the proposed cable routes. We are quite concerned that large portions of the construction methodologies discussed in the application and factors leading to the choice of the preferred route are generic, rather than site specific; particularly relative to Bruce Park. Of all the criteria listed in H.3.1, "Transmission Line Routing Analysis", (Page H-13), there is no mention of the presence of rock, which, can result in stratospheric construction cost increases and lengthy project delays, if not properly identified.

RESERVATIONS ABOUT THE APPLICATION'S PROPOSED SOLUTION

Without additional information to support their claims, it appears that it is a gross exaggeration to state that without a new second "bulk" substation, reliable, consistent electric service to the Town of Greenwich would be severely jeopardized in the immediate future. However, at the same time, we

recognize that the existing equipment in both the Byram and Prospect Substations is indeed "aging", (Page E-20).

We applaud Eversource's sensitivity to the location of the new "Greenwich Substation", and their acknowledgement that installing anything other than Gas Insulated Switchgear (GIS) would not be acceptable to us. At present, as you know we are not in agreement with the aesthetics and quality of the proposed substation's enclosure, which is needed to hide it from public view and provide security. We are hopeful that an amiable solution as to the eventual appearance, could be devised that would be acceptable to both parties.

At the same time, we simply cannot go along with the utility's insistence to feed the new facility on Railroad Avenue via High Pressure Fluid Filled Feeders (HPFF) and their choice of a traverse through Bruce Park. If there does exist a major increase of the total load in Greenwich over the next decade, to the point that would exceed the capacity of the current equipment, there are solutions that do not demand a new "bulk" substation. These solutions all would mitigate the need to install 2.3 circuit miles of an oil filled feeder and not involve Bruce Park.

As proposed, the new Greenwich Substation is sized at 134 MVA, one MVA less than what has been described as the current capacity at the Cos Cob Substation. Whatever the load growth over the next decades may prove to be, it is a certainty that it will not increase by an additional 100%. Up until this point in time, the utility has been satisfied without a backup "bulk" substation in the event of a total failure of the Cos Cob facility. We do not see what conditions have changed at this time so as to demand a second substation equal in size to the present one. Furthermore, without major circuits in addition to the two, proposed, 115 kv links, between the Cos Cos Substation and the new Railroad Avenue facility, there are numerous potential situations that could arise where loads originating in Cos Cob could not be transferred to the new "bulk" substation and vice versa.

To many utilities, the new proposed station on Railroad Avenue would not qualify as a second contingency because both the new substation and existing Cos Cob Station would get their power from the same, two, overhead 115kv transmission feeders, which share the same structures. These feeders are designated as 1740 and 1750 on Figure E-3. Therefore, even with a new "bulk" substation in place, should one of the 1740/1750 structures collapse, there would be no service to either Cos Cob or the new "bulk" substation. Most, if not all of Greenwich, would be left without electricity.

If the second "bulk" substation to be added to the Greenwich System was totally independent of the 115kv circuits presently feeding the Cos Cob Substation, (for example, Feeders 1977 and 1151 that now terminate in Stamford); there might be a more valid reason for its construction.

Per Table E-3, the anticipated combined load for the existing Byram and Prospect Substations in 2017 is supposed to be 69.8 MVA. Growth for the years thereafter is projected to be at a bit less than 1% per year. It would seem that a new substation could be built at the Railroad Avenue site, and if it was rated at 80 MVA, (as opposed to the 134 MVA per the application), it would amply replace the existing, aging, Byram and Prospect facilities and not become overloaded for some time.

At 60% of the proposed capacity of the new "bulk" substation, a new 80 MVA facility at Railroad Avenue would be about the same size as the present North Greenwich Substation, which is according to

Table E-3 rated at 75 MVA. The feeders to the North Greenwich Substation are 27.6 kv, originating at Cos Cob and extend a greater length than the distance the new station proposed for Railroad Avenue is from Cos Cob. As was pointed out earlier, any new configuration involving a second bulk substation, would in no way change the feeder arrangement into the North Greenwich Substation. It will remain energized, "via long distribution feeders", (Page E-7), of the type the utility seems to eschew.

By reducing the capacity of the new facility proposed for Railroad Avenue from 134 MVA to a more suitable 80 MVA, if it were still to remain a "bulk" substation, one that is fed by 115kv circuits, it may no longer be economical for the utility to consider High Pressure Fluid Filled feeders.

In evaluating the pipe and cable sizes included in the application for the proposed 2.3 circuit mile route from the existing Cos Cob location to the new Railroad Avenue site, a High Pressure Fluid Filled circuit of two cable pipes and one return line would contain almost 80,000 gallons of dielectric fluid. The cable pipes would each contain 1.825 gallons per foot, and the return line 2.692 gallons per foot. The splice locations would have additional fluid, as would the terminations. Not included in the 80,000 gallons is the volume to be stored in the reservoir tanks at each end of the circuit. The actual final volume could approach 100,000 gallons. We do not concur with the statements offered in the application on Page G-12, that this fluid is not environmentally harmful simply because it is of, "low toxicity". The MSDS (Material Safety Data Sheet) for DF 100, the predominantly employed fluid for such cable systems, contains several very serious warnings. We, in fact, received a sample of this fluid from one of the leading manufacturers of the chemical and can attest it is anything but inert.

High Pressure Fluid Feeders are highly durable and extremely reliable, but by the utility's own admission, during the October hearings (Transcript Page 58) in describing a failure that took place in Stamford owing to an unauthorized excavation, these circuits are prone to mishap. In general, lower voltage underground transmission lines are very reliable. However, their repair times are much longer than those for overhead lines.

A failure in a High Pressure Fluid Feeder pipe, unlike a failure in any other cable system, results in a loss of fluid. There are mechanisms such as "stop joints" and "semi stop joints" that act as "check valves" in plumbing piping, to automatically seal the line at the point where they are located in order to stem the flow of escaping fluid. These are only suitable for the cable pipes. There does not exist any automatic valving system for the fluid return pipe (Figure G-4) to stop the loss of fluid from the pipe. The fluid return pipe alone contains 32,691.648 gallons of DF 100 dielectric fluid, which is circulated under pressure. An undetected leak in the return pipe could result in the loss of all that fluid, plus what may be in storage, in just a matter of hours. The risk of a leak in Bruce Park is unconscionable.

Precautions in the event of an electrical failure of the 115 kv link between Cos Cob and the new facility at Railroad Avenue are addressed in the application. "If one of the transmission supply lines experiences an insulation or conductor failure, then high speed protective relaying would remove the line from service, thereby protecting the public and the transmission line.", (Page L-1). The application is silent on detection, mitigation and response to a breech in either the piping housing the cables or the fluid return pipe. Very often, "insulation or conductor failure" involves the cable piping developing holes.

Among the major causes of pipe failures in fluid filled feeders are electrical incidents involving the

conductors inside the pipe; mechanical damage, usually arising from excavation equipment and the corrosion of the pipe. As pointed out on Page G-2, the pipe is coated to resist corrosion and, "to isolate the pipe from "ground"". Any route, whether it be the one proposed or any of the alternates, places these pipes in very close proximity to the Metro North Railroad. The Railroad uses its tracks as part of its DC Electric power system. Stray DC voltage and current enters the ground via the tracks. The failure rate of all metallic utility piping, be it water, gas, electric or other, is dramatically higher in areas near railroads and other electrically powered transportation means than in other areas, even with the inclusion of "a cathodic protection system" referenced on Page G-2. This needs to be very closely evaluated.

SOLUTIONS WE MIGHT BE WILLING TO ENDORSE

While the Town recognizes that a new substation on Greenwich Avenue is part of what the utility feels is the most advantageous way to alleviate what they perceive to be a dramatic increase in electrical consumption in the Town of Greenwich, it appears there is another very viable option: increase the 115-27.6kv transformer capacity at Cos Cob and possibly add a new, dedicated 27.6kv (or even a pair) from Cos Cob to the Prospect Substation and if necessary, upsize the 27.6-13.2kv transformers at Prospect. Logic holds that this would cost significantly less than the $140,000,000 offered as, "The estimated cost for the engineering, design, and construction of the Project." (Page ES-11). We also believe it could be implemented faster and certainly with significantly less disruption and inconvenience to the Town of Greenwich, its inhabitants, and the natural features of the area.

However, if a new substation located somewhere west of the Cos Cob Substation is still contemplated, we strongly feel the Town of Greenwich has to be afforded significant input into the architectural features of it. But, of greatest concern to us is the routing and type of cable employed to power this new load center. We cannot endorse any route that involves Bruce Park, nor can we support any installation, anywhere within the Greenwich boundaries involving a fluid filled feeder. A gas filled, pipe type feeder and solid dielectric conductors are viable options.

The Town would advocate strongly for an overhead 115kv feed, extending the 115kv lines that currently terminate at Cos Cob Substation. Running transmission lines in the Metro North Right of Way, has a long standing history. The 115kv feeders to Cos Cob run from Stamford adjacent to the train tracks. Transmission circuits exit Norwalk and run eastward on structures that extend atop the Metro North catenary system steel truss supports. We are aware of the limitations relative to "track fouling" and the railroad's mandate to work off hours. However, at a conservative length of 200 feet between structures, the entire overhead run from Cos Cob to Railroad Avenue would appear to require no more than 50 structures and could be accomplished in three conductor segments. In keeping with the utility's assertion, "the shorter and straighter a route, the lower the route installation cost", (Page H-15), there is no straighter and more direct route between the two locations than along the Metro North Right of Way and Figure H-3 confirms that!

The Town would not suggest using the area adjacent to the south of the tracks for an underground route given the location of our sewer main, nor do we believe it feasible to employ the area to the immediately north of the tracks for either an overhead or underground scheme. There is land between I-95 and the railroad, which presently is undeveloped. There are many trees and in many spots is mountainous rock.

The strata is ideal for foundations for steel "monopoles". If the current 115 kv circuits feeding Cos Cob share a common pole, we cannot see why their extension would need to be on separate structures. 150 foot tall, three piece, tubular poles would afford ample clearance for the bottommost conductor over the existing tree line. The pole locations could be accessed from the breakdown lane of I-95. Any excavation could be sufficiently removed from the tracks as not to be within, "the angle of incidence" of the tracks. There is sufficient clearance between any pole location and the breakdown lane of the highway. Such a proposal might encounter resistance from the Connecticut DOT, who may feel use of this strip of land would hamper an eventual widening of I-95. When one considers that every overpass along the route would have to have its support abutments demolished and reconstructed, as well as its bridge structure to allow for a wider roadway, it is hard to foresee such an occurrence in the next several decades. The Town believes this route has been labeled, "Variation 2-Middle Easement" (Page H-19) and was dismissed without a properly detailed study by stating, "ConnDOT policies limit the longitudinal occupation of interstate corridors unless no other practical option exist." (Page H-19). It does not seem as if such a route could be more costly than what we belie. The Town would also consider joining the utility in their petitioning of the State of Connecticut to allow this route.

Should the utility rethink the need for any new facility on Railroad Avenue to be fed at 115kv, we think there is another route to bring power to the site. The utility presently has a Right of Way that is north of the Metro North tracks, outside of the Railroad Right of Way. It currently is occupied by a wood pole line with preassembled aerial cables that are the 27.6kv feeds from Cos Cob to the North Greenwich Substation. If a similar approach was taken, feeding the new station at Railroad Avenue at 27.6kv, the feeders to a new Greenwich substation could be placed underground in that same Right of Way.

Since these 27.6kv cables would be smaller in diameter than 115kv solid dielectric feeders, significantly smaller sized ducts could be employed. A very common duct bank arrangement of three rows of 4" ducts, three high, could handle two 27.6kv feeders now and still have spare ducts available for a third future feeder. Four, 6" ducts in a "two over two arrangement" could handle, three, 27.6kv circuits immediately and still have a vacant duct for future use. These ducts could be installed using rubber tired backhoes, excavating a trench far narrower than what is being proposed in Figure G-4. The Town believes this route has been labeled, "Underground Central Route Using Existing Distribution ROW", (Page H-26). For reasons we do not comprehend the proposed construction methodology in the application for this route involves directional drilling in this Right of Way. Very recently as part of the installation of new 27.6kv feeders from the Cos Cob to North Greenwich Substations, overhead conductors were removed from the existing wood poles and new preassembled aerial cable was installed on them. Clearly the distribution right of way was sufficiently wide to accommodate the equipment associated with those tasks and therefore should be amply wide for a 27.6kv underground duct bank installation. (Care would have to be exercised when excavating near the existing wood poles, however, "pole holds" is a very common operation among utility line constructors.)

The objection, "Approximately 21 residential properties would be effected by the expansion of the ROW", (Page H-26), is not fully accurate. Whereas the people living adjacent to the distribution Right of Way may have to contend with construction behind their backyards, those almost equal number of residential properties along Kinsman Lane and Bruce Park Drive in the currently proposed scheme through Bruce Park will have noisier, dirtier, around the clock operations ongoing in front of their

homes. In addition, the analysis done by the utility for this route was based on a 115kv feeder, not a 27.6kv feeder.
The text continues, "which would also require the removal of existing trees that currently screen these backyards from the MNRR and I-95." (Page H-26). Within the application is the statement, "Upon completion of construction, Eversource would reestablish previously vegetated, disturbed areas with seed mixtures or plantings, where necessary." (Page J-9). We trust, "plantings" includes trees and the intent would be to restore this "screen".

For such a route, we would extend to the utility all of the Town's resources to assist in dealing with the property owners. To that end, we feel strongly that the use of the "distribution Right of Way" requires additional study by the utility.

With the Railroad Avenue site being North of I-95 and Cos Cob Substation being South of I-95, every route whether it is overhead or underground, needs to cross the highway. The issue really is where does this crossing take place; either at the Cos Cob end or the Railroad Avenue end. As one moves westward toward Railroad Avenue, the amount of vehicular traffic increases. The "Preferred Route" makes the transition to the North side of I-95 in heavily trafficked corridors. It would be in these paths where splice vaults would be located. Not only would traffic be encumbered during the duct installation but throughout the cable placement and splicing operations, and quite possibly in the future for maintenance tasks. We heartily suggest a more thorough investigation of possible routings that move to the North side of I-95 well to the east of Bruce Park.

CONCLUSION

The Town of Greenwich is willing to review and discuss at length, with the utility and the Siting Council, any proposed solution to any concern relative to the defensible need to increase electrical capacity within the Town of Greenwich. Our role as the government of Greenwich is to ensure that when any construction project is completed, the site is left equal to, (if not superior) in every way, to what it was prior to the commencement of any work. We hold residents, developers of commercial properties, and utilities to those obligations. We would expect the very same for whatever project is eventually agreed upon with this utility.

Town Staff in trying to understand this proposal and has obtained input from industry professionals who have considerable knowledge and experience in the design, construction, and maintenance of overhead and underground transmission facilities, throughout the Northeast, along with transmission voltage substations. They are equally familiar with pipe type cable feeders and solid dielectric circuits. They are thoroughly conversant in construction costs and methodologies, and industry practices relative to both design and implementation. They have done extensive work throughout the Northeast. Based on our continuing education on this subject, we feel very strongly indeed, that additional investigations must be undertaken by the utility before any approvals to proceed are contemplated. More specifically:

1. An overall examination based on the 2014 and 2015 actual loads should be provided. The projections included in the application are so dramatically overstated when compared to actual

consumption values, by 22.4% in 2014 and by 15.9% in 2015, we feel this is cause to question the need for this entire project.

2. There needs to be a detailed explanation of what is the true capacity of the existing 115-27.6kv transformers at the Cos Cob Substation. Once that has been confirmed, there has to be an analysis of the output of those units during the hottest points in recent summers, presumably the periods of maximum loads. For how many times and for how long a period, and to what extent, were these units pushed beyond their name plate capacities, if at all?
3. There should be a study performed as to whether at the 13.2kv distribution level, circuits from the Byram and Prospect Substations can be rerouted to originate in the North Greenwich Substation that features substantial reserve capacity.
4. Every option that would preclude the need for a new substation to be built at Railroad Avenue should be explored in depth. These include adding 115-27.6kv transformer capacity at Cos Cob, running new 27.6kv feeders out of Cos Cob, increasing 27.6-13.2kv transformer capacity at Prospect and/or Byram.

IF, after all these examinations, it is conclusively proven that the only possible remedy would be a new facility at Railroad Avenue, additional decisions would have to be evaluated.

5. Does the new Greenwich Substation have to be rated at 134 MVA?
6. Must it be a "bulk" substation with incoming 115kv transmission feeders rather than fed at 27.6 kv?
7. What is the optimal routing of the new feeders?

We are fully prepared to work harmoniously with the utility provided we find their presentations compelling. What is available to us at present seems superficial in its depth of investigation. Key assertions have been made without substantive supporting documentation (or none that we have been made privy to) and from those "givens" a single solution has arisen: a new "bulk" substation to be built at Railroad Avenue fed by a High Pressure Fluid Filled Feeder run through Bruce Park all at a cost of $140M. We have not seen the data that resulted in this figure, nor the cost comparisons with other alternatives.

We request that you, as the Connecticut Siting Council, urge Eversource to initiate a dialogue that will give us the "peace of mind" we need to be united behind their final proposal, rather than to be at odds, as we presently are with it. We trust that before any approvals are granted, you will be convinced that every facet of the utility's proposal has been subjected to the ultimate scrutiny and review, and indeed whatever the final submission is, it is without question the most cost effective, least disruptive, safest, most reliable, environmentally sensitive and mutually acceptable solution possible.

In its present form, the problem as outlined and the utility's proposed solution in the June, 2015 application to the Siting Council raises such significant doubts and questions that if it were allowed to go forward without significant modification, we would feel compelled to petition the appropriate State Agencies to conduct a "Prudence Audit" of this entire project. It is our sincerest hope that such drastic action will not become necessary.

Change seems to have occurred around us surprisingly and with rapidity. From its historic roots as a largely self-sustaining community, Greenwich has, in the past few decades, become more of a destination for many of our near and far-surrounding neighbors. Similarly Greenwich residents need to travel to other towns to fulfill many basic needs. Our streetscapes seem unprotected and unfamiliar as we witness severe site regrading, and clear-cutting of our trees, shrubs and vegetation. Age-old homes are razed in less than a day and replaced with looming houses and structures built to near maximum floor area ratios. Often, this crowding creates a sense of unease in neighbors in ways never anticipated by our existing Building Zone Regulations.

Indeed, as individuals and as a community, we are not immune to change or from its challenges that we face. We experience the results of these changes daily, some anticipated, others not, some welcomed, others not. Our general sense, without specifics, is that the economic value of Greenwich land and properties is guiding these changes and creating the challenges around us.

Traffic congestion in many areas of Town at certain times is becoming more and more evident. Safety of our bicyclists, drivers, pedestrians (especially our children) is a concern. Realizing the cumulative results that the potential build-out in all regulatory zones may bring, including in the commercial and residential zones, it is not difficult to understand our frustration and feeling that others are reshaping our world, and that the Town cannot control the changes of the overall character of Greenwich.

However, there is no need for this sense of loss of control. The purpose of this Plan of Conservation and Development is to organize and create a guideline for management of these changes in a way that is consistent with the needs and interests of the residents of this Town. It clearly is within the power of our community to control change.

We must continue to strive to maintain a quality of life that has made Greenwich such a fine place in which to live, work, worship, and raise a family. We can and should maintain our primarily residential community with housing for its entire diverse people. We can refocus our commercial property sector to complement personal, business, recreation and cultural needs of our residents.

Specifically, this Plan of Conservation and Development is first about conservation. Second, it is about development. While saving what is the essence of Greenwich we must improve and provide this road map as we and our families grow and change in a healthy, safe, environmentally-sensitive community with strong attention to our overall community welfare. Third, the POCD is about choice and change. We need not resign ourselves to a community designed by change. Changes in Greenwich must be motivated by, and addressed to, our quality of life choices and not motivated by chance or economic motivation. We must continue to renew our spirit and commitment to a community by design.

This entire document represents a compilation of all planning efforts and strategies developed as part of the planning process for implementation and direction of the future of Greenwich. Here is a synopsis of our goals:

Greenwich Plan of Conservation and Development

THE GOALS OF OUR 2009 PLAN OF CONSERVATION AND DEVELOPMENT AND FUTURE LAND USE REGULATION AND INTERPRETATION

1. *Be and remain primarily a well-maintained residential community for all of our current and future residents.*

2. *Protect and enhance well-defined neighborhoods and village centers.*

3. *Protect and enhance overall community character and quality of life, including the quality of our schools, cultural institutions, recreation, library system, and municipal and quasi-municipal services.*

4. *Encourage retail, residential, dining, cultural institutions, light business centers and other businesses that provide a variety and quality of goods and services for our residents.*

5. *Protect and enhance water and land natural resources, pervious surfaces, open space, parklands, recreational facilities and areas in an environmentally sensitive manner.*

6. *Continue, initiate and encourage renewed commitment for land-use regulation to underscore the importance of conservation and encourage development that preserves a sense of community around historic centers, schools and other institutions.*

7. *Development should be discouraged or prohibited when it is not compatible with and does not preserve existing land-use patterns. We need to provide alternate zoning opportunities to ensure that such development meets residents' needs.*

8. *Strive for consistency with business, retail, recreational, entertainment and commercial activities, and the needs and desires of our residents.*

9. *Develop and implement a Town-wide traffic plan that emphasizes transport and access, rather than parking, to achieve a living and working environment that is controlled and focused on sustainability in terms of system design, environmental impact and energy-efficiency with the least amount of congestion.*

10. *Continue to investigate and adopt energy conservation measures and initiatives for private and public properties and continue our healthy and safe environment. Promote incentives to encourage this.*

11. *While saving what is the essence of Greenwich, protect the Overall Environment, Preserve Energy, Build "Smart," Remain Sensitive to Historical and Cultural Preservation and Keep Greenwich Green.*

and authorized by the laws of said State, to take depositions and to administer oaths to be used in any Court of said State and for general purposes; and also to take acknowledgments and proofs of deeds or conveyances for lands, tenements or hereditaments in said State of New York. And further, that I am well acquainted with the handwriting of such Notary Public, and verily believe that the signature to said deposition or certificate of proof or acknowledgment is genuine.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of the said Court and County, at Lincoln, R. I., the 2 day of July, 1943.

(SEAL) Chas. E. Ransom, Clerk.

Received for Record July 9, 1943 at 3:21 P. M. and Recorded by:-

Town Clerk.

Title Abst.

STATE OF CONNECTICUT

TOWN COURT OF GREENWICH

TOWN OF GREENWICH

v.

No. 5542

1st Tuesday February 1943

FLORENCE R. BARLOW of the Town of Greenwich, individually and as executor of the will of Edward W. Barlow, late of the Town of Greenwich, deceased; PAUL L. MILLER and J. WILLIAM HOPE of the City of Bridgeport, County of Fairfield and State of Connecticut, and BRADFORD BOARDMAN of the Town and County of Fairfield and State of Connecticut, as successor-trustees under the will of Lucien B. Price, late of the Town of Greenwich, deceased

FORECLOSURE CERTIFICATE

This certifies that the following tax liens in favor of the Town of Greenwich against the estate of Edward W. Barlow, deceased were foreclosed upon the complaint of the Town of Greenwich against Florence R. Barlow of the Town of Greenwich, individually and as executor of the will of Edward W. Barlow, late of the Town of Greenwich, deceased, the owner of the equity of redemption in said premises, and Paul L. Miller and J. William Hope of the City of Bridgeport, County of Fairfield and State of Connecticut, and Bradford Boardman of the Town of Fairfield, County of Fairfield and State of Connecticut, as successor-trustees under the will of Lucien B. Price, late of the Town of Greenwich, deceased, having an interest therein, in the Town Court of Greenwich on the 3rd day of June 1943:

Tax lien continued by certificate dated December 30, 1933, recorded in the Greenwich Land Records in book 307 at page 15.

Tax lien continued by certificate dated December 31, 1934, recorded in the land records in book 313 at page 116.

Tax lien continued by certificate dated December 31, 1935, recorded in the land records in book 324 at page 49.

Tax lien continued by certificate dated December 31, 1936, recorded in the land records in book 333 at page 367.

Tax lien continued by certificate dated December 31, 1938, recorded in the land records in book 343 at page 120.

Tax lien continued by certificate dated December 30, 1939, recorded in the land records in

book 386 at page 418.
Tax lien continued by certificate dated December 31, 1940, recorded in the land records in book 386 at page 350.
Tax lien continued by certificate dated December 31, 1941, recorded in the land records in book 374 at page 349.
Tax lien continued by certificate dated December 31, 1942, recorded in the land records.
The property foreclosed is real estate in the Town of Greenwich, bounded northerly and easterly by Davis Avenue, southerly by tidal creek and other land formerly of the estate of Edward M. Barlow, deceased, and westerly by Davis Harbor.
The time limited for redemption in the judgment of foreclosure has passed and the title to the premises became absolute in the Town of Greenwich on the 6th day of July 1943.
July 9, 1943.

TOWN OF GREENWICH
By N. Allen Barton
Its Attorney

Received for Record July 9, 1943 at 4:15 P. M. and Recorded by:-
Town Clerk.

Cert. Distribution

State of Connecticut)
District of Stamford) ss. Court of Probate July 3, 1943.

THIS CERTIFIES that the estate of Mabel Smith Close, late of Stamford, in said District, deceased, has been duly settled in said Court, and that the legatees and devisees named in the will of said decedent, have made and filed in this Court a mutual distribution of said estate on hand for distribution, which has been recorded in the records of this Court, and that by said mutual distribution the following described real estate is set out and distributed to Ethelyn Louise Foss, of said Stamford, to wit: "All that certain piece, parcel or tract of land, with two house and other buildings thereon, situated at Banksville, in the Town of Greenwich, Fairfield County, Connecticut, bounded Northerly by land now or late of -- Osterbank, Easterly by land now or late of Panko Sunchuck in part and partly by land now or late of John Muskos, Southerly by land now or late of the Catholic Society and Westerly by highway; being the same premises conveyed to the decedent by Harriet Tanner by warranty deed dated April 2nd, 1928 and recorded in the Greenwich Land Records in Book 213 at Page 220"
IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of said Court to be hereunto affixed the day and year first above written.
(SEAL) J. Walter Madigan, Judge.
Received for Record July 10, 1943 at 9:01 A. M. and Recorded by:-
Town Clerk.

Rel Assign Rents

KNOW ALL MEN BY THESE PRESENTS:
THAT, FIRST NATIONAL BANK IN GREENWICH, a corporation organized and existing under and pursuant to the laws of the United States, and located and having its principal place of business in the Town of Greenwich, in the County of Fairfield and in the State of Connecticut, acting herein by Edwin C. Cluckey, its Assistant Cashier hereunto duly authorized, does hereby release and discharge a certain Assignment of Rents given as collateral security for the payment of a note for $600.00 dated August 15, 1942 from George Speer to FIRST NATIONAL BANK IN GREENWICH, which assignment is also dated August 15, 1942 and recorded in the Land Records of the Town of Greenwich in the County of Fairfield, and State of Connecticut, in Volume 303 on page 503; said note having been fully paid and satisfied.
IN WITNESS WHEREOF, FIRST NATIONAL BANK IN GREENWICH, by Edwin C. Cluckey, its Assistant Cashier, as aforesaid, has hereunto set its corporate name and affixed its corporate seal this 8th day of July, A. D. 1943.

which I as such Executrix have or ought to have in and to:

All that certain tract of land, situated at Riverside, in said Town of Greenwich. Beginning at the point formed by the intersection of the division line between land hereby conveyed and land of Lincoln Steffens, with the westerly line of Sound View Avenue, and running thence along the west line of Sound View Avenue, south 22° 19' West 254.5 feet, south 4° 32' West 104.8 feet, thence through land of said Estate, south 39° 33' West 170.7 feet to high water line of Cos Cob Harbor, thence along high water line of Cos Cob Harbor south 70° 32' West 48.9 feet, North 31° 30' West 17.3 feet, North 16° 55' East 418.8 feet to land of Lincoln Steffens, thence along land of said Steffens south 75° 51' East 220.7 feet to the place of beginning and containing 1.856 acres.

Bounded Northerly by land of Lincoln Steffens, Easterly by Sound View Avenue, Southerly by land of said estate and Cos Cob Harbor, and westerly by Cos Cob Harbor.

Together with all right title and interest in and to that portion of the highway, Sound View Avenue, in front of and adjoining the premises to the centre line thereof.

Together with all right, title and interest in and to the land between high and low water marks in front of said premises and all riparian rights therein.

This deed is given and accepted upon the express covenant and agreement, as part of the consideration thereof, that said premises shall be used by the grantee, his heirs and assigns, for private residence purposes only.

TO HAVE AND TO HOLD the above granted and bargained premises, with the appurtenances thereof, unto him, the said grantee, his heirs and assigns forever, to his and their proper use and behoof. And I, the said grantor, do for myself, my heirs, executors and administrators, covenant with the said grantee, his heirs and assigns that I have full power and authority, as such executrix, to bargain and sell the same in manner and form as above written.

AND FURTHERMORE, I, the said grantor, do by these presents bind myself and my heirs forever to warrant and defend the above granted and bargained premises to him, the said grantee, his heirs and assigns, against all claims and demands whatsoever.

IN WITNESS WHEREOF, I have hereunto set my hand and seal the 28th day of October A. D., 1909.

Signed, sealed and delivered in presence of,

Wilbur S. Wright — Fannie A. Hamilton (L.S.)
Executrix.

Fred A. HUbbard

STATE OF CONNECTICUT,)
SS.: Greenwich, October 28th, 1909.
COUNTY OF FAIRFIELD,)

Personally appeared FANNIE A. HAMILTON, signer and sealer of the foregoing instrument, and acknowledged the same to be her free act and deed as executrix as therein described, before me,

(Notary Seal) Wilbur S. Wright Notary Public.

Received for Record Oct. 28th, 1909, at 4:40 P. M., and recorded by,-

Robt. Mellhorn Town Clerk.

START

TO ALL PEOPLE TO WHOM THESE PRESENTS SHALL COME, GREETING:-

KNOW YE, THAT I, ROBERT M. BRUCE, of Greenwich, Fairfield County, Connecticut, for the

consideration of the sum of one dollar received to my full satisfaction of the TOWN OF GREENWICH, a public corporation in said Fairfield County, do give, grant, bargain, sell and confirm unto the said Town of Greenwich, all those four certain pieces, parcels or tracts of land, with the buildings thereon, situate and being in said town of Greenwich, and bounded and described as follows:

The first tract, on which is located my residence, is bounded northerly about thirteen hundred and seventy (1370) feet by land of the New York, New Haven and Hartford Railroad Company; easterly twenty and one-tenth (20 1/10) feet by Davis Avenue, and eleven hundred and thirty-eight and nine-tenths (1138 9/10) feet by Indian Harbor Drive; southerly eight hundred and ninety-one (891) feet by land of Elias C. Benedict and land of William J. Smith and westerly eight hundred and nine (809) feet by Greenwich Avenue, containing about twenty-one (21) acres.

The north line of the above described tract is parallel to and distant seventy-five (75) feet southerly, measured at right angles from the center between the four main tracks of the New York, New Haven and Hartford Railroad Company.

The second tract begins at the point formed by the intersection of the easterly line of Davis Avenue and land of the New York, New Haven and Hartford Railroad Company, and runs thence easterly along said division line for about nine hundred and forty (940) feet, thence on a continuation of said division line, but through my land for about eighteen hundred and twenty (1820) feet to land of Robert S. O'Laughlin (the above described line for its entire length of about twenty-seven hundred and sixty (2760) feet is parallel to and distant eighty five (85) feet, measured at right angles, from the center line between the four tracks of the New York, New Haven and Hartford Railroad Company) thence southerly and easterly about three hundred and seventy (370) feet along land of said Robert S. O'Laughlin to land of William H. Truesdale, and the easterly line of a private road; thence along the line of said private road, which is also the line of land of said William H. Truesdale, southerly, easterly, northerly and again easterly about twenty-one hundred and fifty-five (2155) feet to land of Harriet Louder Greenway, and the center line of the private road dividing the land hereby conveyed from land of said Harriet Louder Greenway; thence southerly along the center line of said Private road about thirteen hundred and eighty-five (1385) feet to the north line of the public road leading from the Borough of Greenwich to Charles Head's Point, so-called, and known as Davis Avenue- thence northwesterly along Davis Avenue about thirty-seven hundred and ninety (3790) feet to the place of beginning; containing about seventy-four and one-half (74 1/2) acres. Said tract is bounded northerly by land of the New York, New Haven and Hartford Railroad Company, land of the grantor, and land of William H. Truesdale; easterly by land of Robert S. O'Laughlin, land of William H. Truesdale and land of Harriet Louder Greenway, and southerly and westerly by Davis Avenue, and said tract is subject to right of way for pipe lines to The Greenwich Water Company, to right of way for electric poles to The Connecticut Company, and to right of way for sewer and roads as given in deeds to William H. Truesdale and Robert S. O'Laughlin, and also to a right of way to Harriet Louder Greenway over the westerly half of the private road bounding said tract on the easterly side thereof.

The third tract is bounded northerly thirty (30) feet by land of William J. Smith; easterly two hundred and forty (240) feet by Davis Avenue; southerly eighty (80) feet by land

formerly of the Estate of Charles Mead, and westerly by Davis Harbor; containing about one quarter of an acre.

The fourth tract is bounded North by land of Henry Webb; East by highway; south by land of William J. Smith, and west by the creek. Said tract lies directly in front of the tract first herein described and is coextensive therewith in length from north to south.

The grantor hereby reserves to himself the use of all of said premises for and during his natural life.

TO HAVE AND TO HOLD the above granted and bargained premises with the appurtenances thereof, to and for the uses and purposes and under the conditions hereinafter mentioned and specified, unto said Town of Greenwich and its successors forever, to it and their own proper use and behoof. And also I, the said grantor do for myself and my heirs, executors and administrators covenant with the said Town of Greenwich, and its successors, that at and until the ensealing of these presents I am well seized of the premises as a good indefeasible estate in fee simple, and have good right to bargain and sell the same in manner and form as is above written.

This deed is given by the grantor and accepted by the grantee upon the following conditions to wit:

First. That the land, except the fourth tract hereinbefore described, shall be forever used for the purposes of a public park, to be known as the "BRUCE MEMORIAL PARK", and shall be devoted to no other use or purpose, except that the building on the second tract may be leased for proper purposes, and the rentals therefrom applied in the care, preservation and maintenance of said park.

Second. That no building or other structure shall be erected on any part of the fourth tract hereinbefore described, but said tract shall be used for park purposes in connection with the first tract, for the purpose of a public highway.

Third. That the grantee, from its own funds and from the aforesaid rentals, so long as such rentals may exist, shall forever keep and maintain said park premises in a good state of preservation for the use of the public, and shall keep all of the buildings on said premises properly insured and in good repair.

Fourth. That my dwelling house, located on the first described tract, shall, so long as the same is proper and adequate for such purposes, be used as a Natural History, Historical, and Art Museum, for the use and benefit of the public, in such manner and under such rules as may be prescribed by the Selectmen of the town and the trustees (and their successors,) appointed by me in and by a certain trust agreement of even date herewith; and after the trust fund which I have created by said agreement shall have been expended, by said trustees, then said grantee shall, at its own expense, keep and maintain said Museum for the use of the public, either in said building or in another proper building on said park premises to be provided for that purpose.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 4th day of August A. D., 1908

Signed, sealed and delivered in presence of,

Geo. G. McNeil

Agnes O'Neill

Robert M. Bruce L.S.

STATE OF CONNECTICUT,)
SS.: Greenwich August 4, 1908.
COUNTY OF FAIRFIELD,)

Personally appeared ROBERT M. BRUCE, signer and sealer

of the foregoing instrument, and acknowledged the same to be his free act and deed before me.

Geo. G. McNall Notary Public.

Received for Record Oct. 30th," 1909, at 11:45 A. M., and recorded by,-

Robt. Millwood Town Clerk.

TO ALL PEOPLE TO WHOM THESE PRESENTS SHALL COME, GREETING:-

KNOW YE THAT I, SARAH E. BRUCE, of the City of New York, devisee under the last will and testament of ROBERT M. BRUCE, late of Greenwich, Fairfield County, Connecticut, for the consideration of the sum of one dollar received to my full satisfaction of the TOWN OF GREENWICH, a public corporation in said Fairfield County, do give, Grant, bargain, Sell and Confirm unto the said TOWN OF GREENWICH, all those four certain pieces, parcels or tracts of land, with the buildings thereon, situate and being in said town of Greenwich, and bounded and described as follows:

The first tract, on which is located the house lately occupied by said Robert M. Bruce, is bounded Northerly about thirteen hundred and seventy (1370) feet by land of the New York, New Haven and Hartford Railroad Company; Easterly twenty and one-tenth (20 1/10) feet by Davis Avenue, and eleven hundred and thirty-eight and nine-tenths (1138 9/10) feet by Indian Harbor Drive; Southerly eight hundred and ninety one (891) feet by land of Elias C. Benedict and land of William J. Smith, and westerly eight hundred and nine (809) feet by Greenwich Avenue, containing about twenty one acres. The North line of the above described tract is parallel to and distant seventy-five (75) feet southerly, measured at right angles from the center between the four main tracks of the New York, New Haven and Hartford Railroad Company.

The second tract begins at the point formed by the intersection of the easterly line of Davis Avenue and land of the New York, New Haven and Hartford Railroad Company, and runs thence easterly along said division line for about nine hundred and forty (940) feet, thence on a continuation of said division line, but through my land for about eighteen hundred and twenty (1820) feet to land of Robert S. O'Laughlin (the above described line for entire length of about twenty-seven hundred and sixty (2760) feet is parallel to and distant eighty-five (85) feet, measured at right angles, from the center line between the four tracks of the New York, New Haven and Hartford Railroad Company); thence southerly and easterly about three hundred and seventy (370) feet along land of said Robert S. O'Laughlin to land of William H. Truesdale, and the easterly line of a private road; thence along the line of said private road, which is also the line of land of said William H. Truesdale, southerly, easterly, northerly and again easterly about twenty one hundred and fifty-five (2155) feet to land of Harriet Louder Greenway, and the center line of the private road dividing the land hereby conveyed from land of said Harriet Louder Greenway; thence southerly along the center line of said private road about thirteen hundred and eighty-five (1385) feet to the north line of the public road leading from the Borough of Greenwich to Charles Mead's Point, so-called, and known as Davis Avenue; thence Northwesterly along Davis Avenue, about thirty-seven hundred and ninety (3790) feet to the place of beginning; containing about seventy-four and one-half (74 1/2) acres. Said tract is bounded Northerly by land

of the New York, New Haven and Hartford Railroad Company, land of the grantor, and land of William H. Truesdale; Easterly by land of Robert S. O'Laughlin, land of William H. Truesdale and land of Harriet Lowder Greenway, and southerly and westerly by Davis Avenue, and said tract is subject to right of way for pipe lines to The Greenwich Water Company, a right of way for electric poles to The Greenwich Company, and to right of way for sewer and roads as given in deeds to William H. Truesdale and Robert S. O'Laughlin and also to a right of way to Harriet Lowder Greenway over the westerly half of the private road bounding said tract on the easterly side thereof.

The Third tract is bounded northerly thirty (30) feet by land of William J. Smith; easterly two hundred and forty (240) feet by Davis Avenue; southerly eighty (80) feet by land formerly of the estate of Charles Mead, and westerly by Davis Harbor; containing about one quarter of an acre.

The Fourth tract is bounded north by land of Henry Webb; East by highway; South by land of William J. Smith and west by the creek. Said tract lies directly in front of the tract first herein described and is co-extensive therewith in length from north to south.

TO HAVE AND TO HOLD the above granted and bargained premises with the appurtenances thereof, to and for the uses and purposes and under the conditions hereinafter mentioned and specified, unto said Town of Greenwich and its successors forever, to it and their own proper use and behoof. This deed is given by the grantor and accepted by the grantee upon the following conditions, to wit:-

First. That the land, except the fourth tract hereinbefore described, shall be forever used for the purposes of a public park, to be known as the "BRUCE MEMORIAL PARK", and shall be devoted to no other use or purpose, except that the building on the second tract may be leased for proper purposes, and the rentals therefrom applied in the care, preservation and maintenance of said park.

Second. That no building or other structure shall be erected on any part of the fourth tract hereinbefore described, but said tract shall be used for park purposes in connection with the first tract or for the purpose of a public highway.

Third: That the grantee, from its own funds and from the aforesaid rentals, so long as such rentals may exist, shall forever keep and maintain said park premises in a good state of preservation for the use of the public, and shall keep all of the buildings on said premises properly insured and in good repair.

Fourth That the dwelling house, located on the first described tract, shall, so long as the same is proper and adequate for such purposes, be used as a Natural History, Historical, and Art Museum, for the use and benefit of the public, in such manner and under such rules as may be prescribed by the Selectmen of the town and the trustees (and their successors,) appointed by the said Robert M. Bruce in and by a certain trust agreement bearing date the eighth day of August, 1908, and after the trust fund created by said agreement shall have been expended, by said trustees, then said grantee shall, at its own expense, keep and maintain said Museum for the use of the public, either in said building or in another proper building on said park premises to be provided for that purpose. This deed is made to confirm the conveyance of said lands to said Grantee by said Robert M. Bruce by his deed bearing date the fourth day of August, 1909, and accepted by said Grantee on the sixteenth day of October, 1909.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this nineteenth day of October in the year one thousand nine hundred and nine.

IN PRESENCE OF

David M. Edsall

Laurence P. Reilly

Sarah E. Bruce (SEAL)

STATE OF NEW YORK,)
SS.: New York October 19, 1909.
COUNTY OF NEW YORK,)

Personally appeared, SARAH E. BRUCE, signer and sealer of the foregoing instrument, and acknowledged the same to be her free act and deed before me,

David M. Edsall Notary Public N. Y. Co.

STATE OF NEW YORK,)
SS.:
COUNTY OF NEW YORK,)

I, PETER J. DOOLING, Clerk of the County of New York, and also Clerk of the Supreme Court for the said County, the same being a Court of Record DO HEREBY CERTIFY, That David M. Edsall whose name is subscribed to the Certificate of the proof or the acknowledgment of the annexed instrument, and thereon written, was at the time of taking such proof or acknowledgment, a Notary Public in and for the County of New York, dwelling in the said County, commissioned and sworn, and duly authorized to take the same. And further that I am well acquainted with the handwriting of such Notary and verily believe that the signature to the said certificate of proof or acknowledgment is genuine.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of the said Court and County, the 19 day of Oct. 1909.

(SEAL) Peter J. Dooling, Clerk.

Received for Record Oct. 30th, 1909, at 11:50 A. M., and recorded by,-

Town Clerk.

TO ALL PEOPLE TO WHOM THESE PRESENTS SHALL COME, GREETING:-

KNOW YE THAT I, WILLIAM M. PITCH, of town of Greenwich in the County of Fairfield and State of Connecticut, as Executor of the Last Will and Testament of Milo Mead, late of said Town of Greenwich, deceased, by virtue of the power and authority given me by said Last Will and Testament as will more fully appear by reference to said Will, dated September 4, 1903 and on file and of record in the Probate Records of the District of Greenwich in said State of Connecticut, and for and in consideration of the sum of Two hundred and fifty ($250) dollars received to my full satisfaction as such Executor of SAMUEL D. MASLINE, of the Town of Greenwich, County of Fairfield and State of Connecticut, Do give, grant, bargain sell and confirm unto the said Samuel D. Masline all that right, title, interest, claim and demand whatsoever the said Milo Mead had at the time of his decease, or which I as such Executor have or ought to have in or to All that certain tract, piece or parcel of land located at New Lebanon (so-called) in the town of Greenwich, Fairfield County and State of Connecticut, and being all of lot No. 30 and the western portion of lot No. 29 on a map of "New Lebanon" on file in the office of the Town Clerk of said Greenwich, said lot No. 30 on said map is bounded as follows:

Town of Greenwich, Connecticut

REAL PROPERTY LEDGER

	2-4511	1		183
	2-4512	2		183
Title Bruce Park	Account # 2-4513	Lot # 15	Aerial Map # 171	Insurance Map # 16 & 29
	2-4517	16		182 & 183
	2-4519	1B		175

DESCRIPTION

Land				Buildings
2-4511	18.25 acres	Deed Ref.		
2-4512	0.8 "			
2-4513	7.78 " I	123 - 162	Schedule below	Restrictions Yes
2-4517	34.54 "	123 - 165		
2-4519	.206 acres II	388 - 371	Schedule below	No

I

1959: Account #2-4511 - 10.8 acres Lot #1 Br. Pk Dr. & Davis Ave.
Account #2-4513 - 3.28 " 15 Davis Avenue
Account #2-4517 - 34.54 " 16 Indian Field & Br. Pk.Dr.

#4512 absorbed by Thruway
#4519 became part of #4511

Res

That the land shall be forever used for the purposes of a public park, to be known as the "Bruce Memorial Park", and shall be devoted to no other use or purpose, except that the building on the second tract may be leased for proper purposes, and the rentals therefrom applied in the care, preservation and maintenance of said park.

That the grantee, from its own funds and from the aforesaid rentals, so long as such rentals may exist, shall forever keep and maintain said park premises in a good state of preservation for the use of the public, and shall keep all of the buildings on said premises properly insured and in good repair.

II

Account #2-4519 - .206 acre.

388 - 371: By foreclosure of several tax liens, including 307 - 15, against Florence R. Barlow, individually and as executor of will of Edward M. Barlow, et als, July 6, 1943.

307 - 15 refers to tract #2, bounded North coming to a point, East by Davis Avenue, South and West by Creek.

For acquisition of this tract by Edward M. Barlow, see 165 - 283 and 170 - 30 (tract said to contain about 1/50 of an acre).

2-1511 1 183
2-1512 2 183
2-1513 15 174
Account #2-1517 Lot # 16 Aerial Map # 182 & 183 Insurance Map # 16 & 29
2-1519 18 175

le Bruce Park

ASSESSOR'S RECORD

Date Acquired (several)

	Land	Building
Purchased from	(see reverse side)	
Constructed by		
Bequest of....		
Grant of.....		

Financed by:
(x) General Fund
(x) Bond Issue $5,996
(X) Gifts
(x) Federal Grant $15,545
( ) State Grant

Recorded:
Volume 123 388 182 & 165
Page 371

ORIGINAL COST PLUS IMPROVEMENTS OR ADDITIONS

	Date	Land	Buildings	Total	How Financed
Original Cost	As of 12/31/53	$ 217,455.08	$ 12,997.53	$ 230,452.61	
Sewage System	As of 12/31/55	-	1,100.00	231,552.61	
	Thru 6/30/69	-	6,700.00	238,252.61	
	June 30, 1972	1,971.00	-	240,223.61	
	June 30, 1973	12,963.20	11,160.92	264,355.73	
	June 30, 1974	21,012.66	2,047.64	287,416.03	
	June 30, 1975	22,702.99	-	310,119.02	
	June 30, 1976	-	11,250.00	321,369.02	
	June 30, 1977	-	1,773.80	323,142.82	

APPRAISAL

Date	Land	Buildings	Total	By Whom
	$	$	$	

ASSESSED VALUE
(Including Additions and Improvements)

Date		Land	Buildings	Total	Reason for Change
		Land	Buildings	Total	Revaluation
Account #2-4511	1959	108,000	-	108,000	
#2-4513	"	32,800	5,810 Pump Sta.	38,610	
#2-4517	"	345,400	15,600 House 3,830 Com'l Bldg.	364,830	$511,440

(a) Assessed value of Pump Station deducted from Assessed Value and it is shown separately.

INSURANCE COVERAGE

Date	Amount	Type of Coverage	Agent
2-4511 1954	$ 31,400	Fire and lightening	Insurance Board of Greenwich
2-4512 1954	700	" " "	" " " "
2-4513 1954	51,500	" " "	" " " "
2-4517 1954	14,500	" " "	" " " "
1963	18,600 (Barn)	" " "	" " " "
1963	21,850 (Cottage)	" " "	" " " "

DISPOSITION

Date	Amount	Portion	To Whom	Reason
	$			

PHOTO LOG

Legend

- ⊠ Existing Transmission Structure
- ↑ Photo Location

N W E S

500 250 0 500 Feet

1 inch = 500 feet

ALL-POINTS

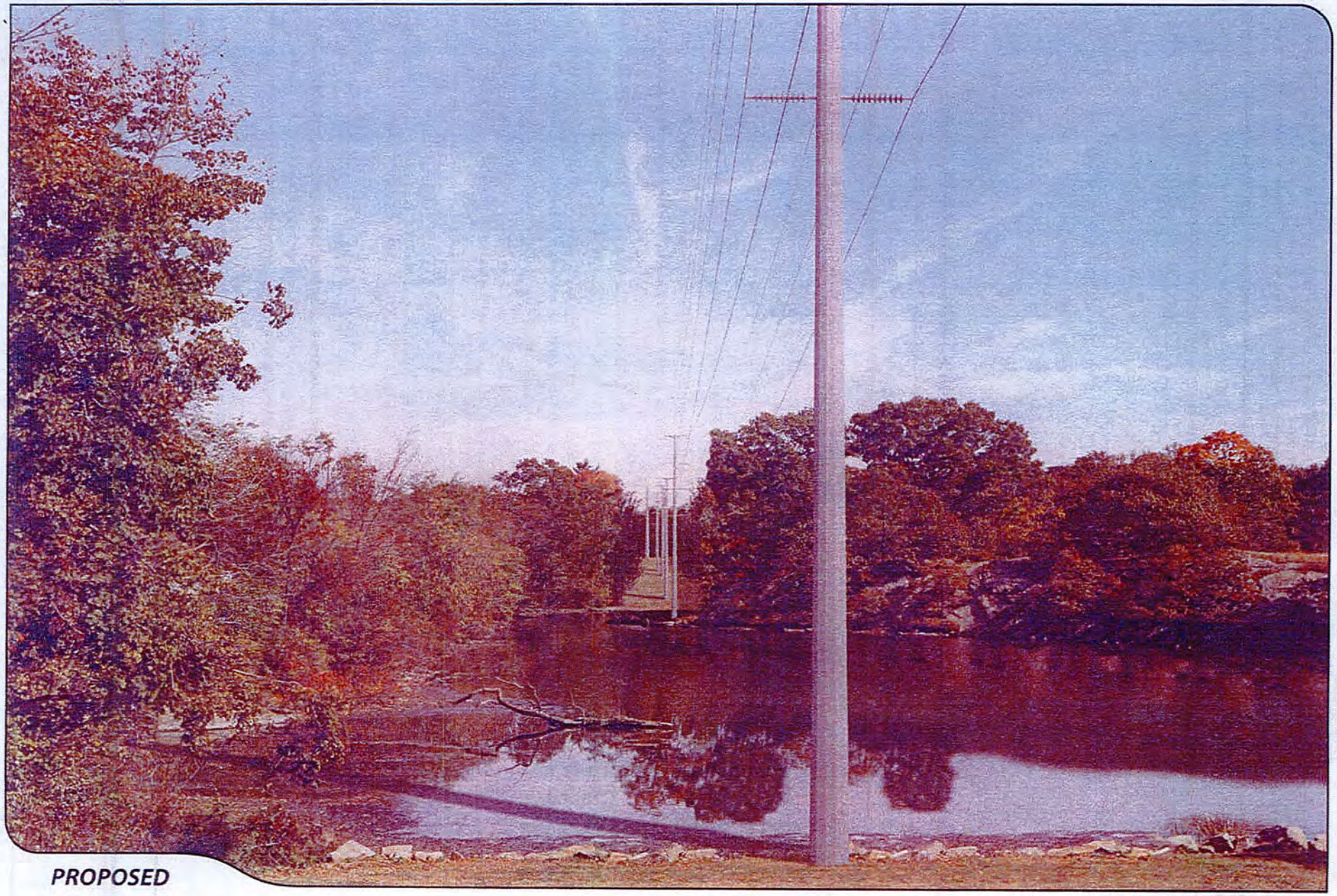
EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
1	**BRUCE PARK**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY



PROPOSED

PHOTO	LOCATION	ORIENTATION
1	**BRUCE PARK**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

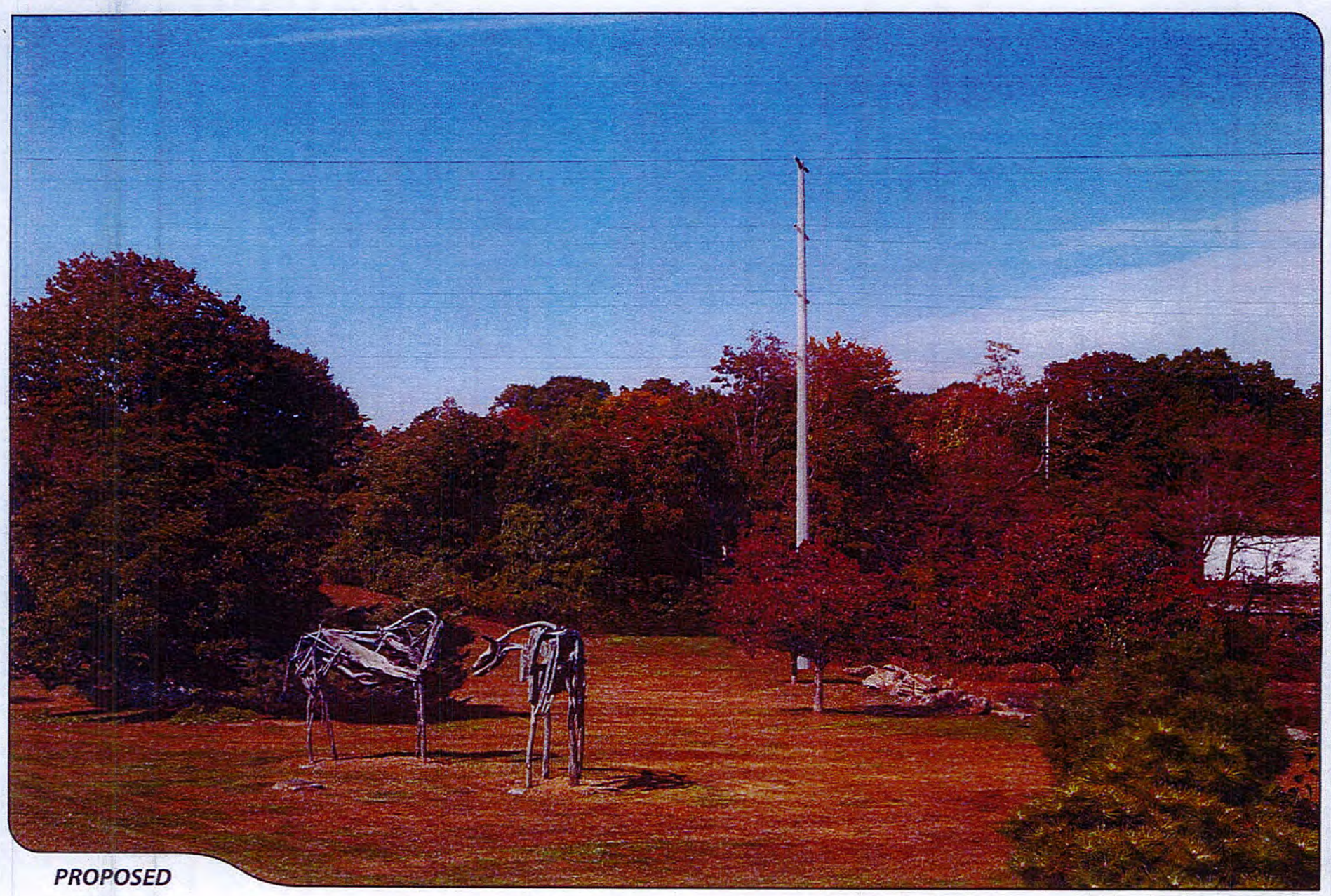
EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
2	**BRUCE PARK**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY



PROPOSED

PHOTO	LOCATION	ORIENTATION
2	**BRUCE PARK**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
3	**BRUCE PARK**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION
3	**BRUCE PARK**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
4	**DAVIS AVENUE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION
4	**DAVIS AVENUE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
5	**BRUCE PARK**	

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION
5	**BRUCE PARK**	

ALL-POINTS TECHNOLOGY CORPORATION

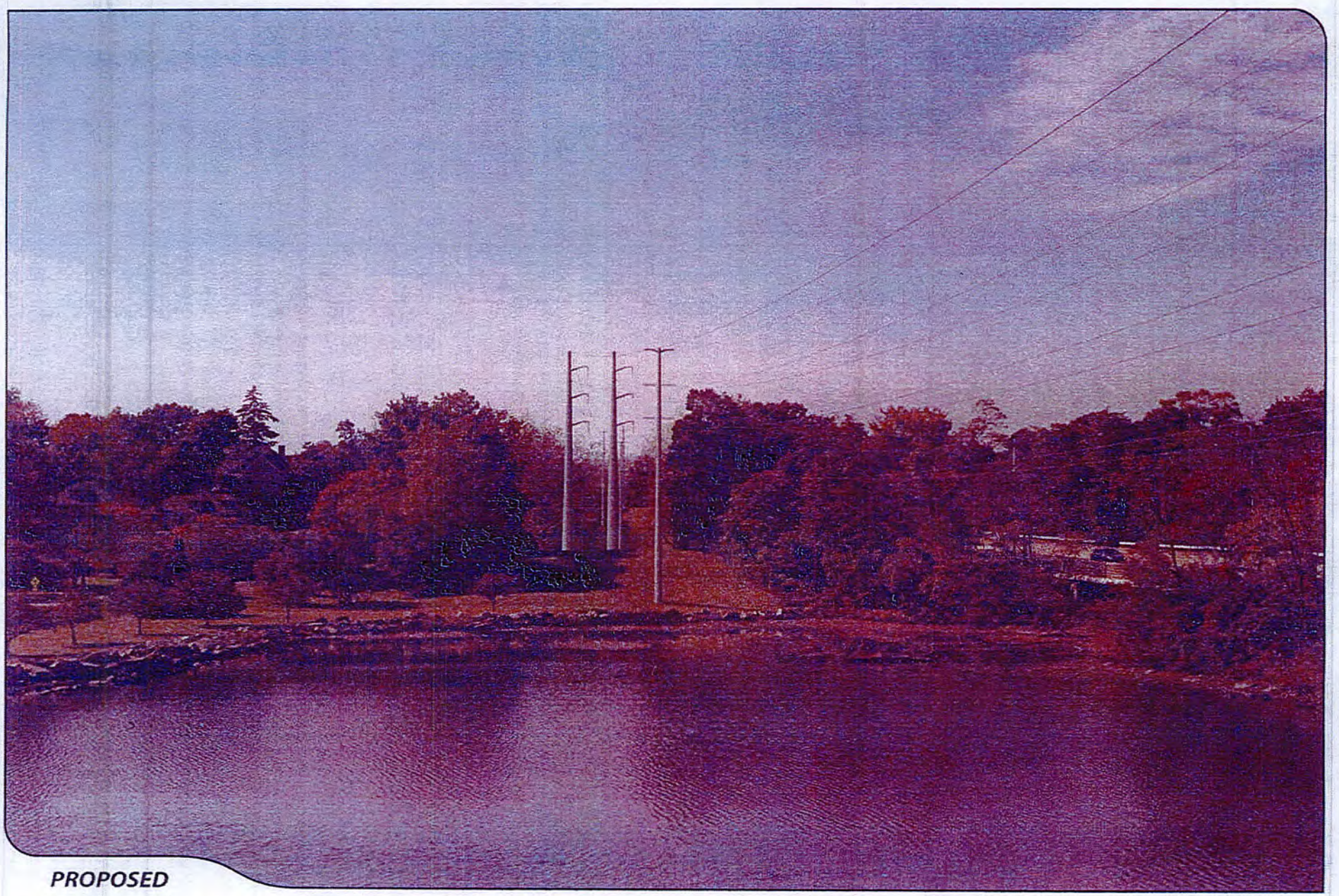
EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
6	**BRUCE PARK**	**SOUTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY



PROPOSED

PHOTO	LOCATION	ORIENTATION
6	**BRUCE PARK**	**SOUTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
7	**BRUCE PARK**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION
7	**BRUCE PARK**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

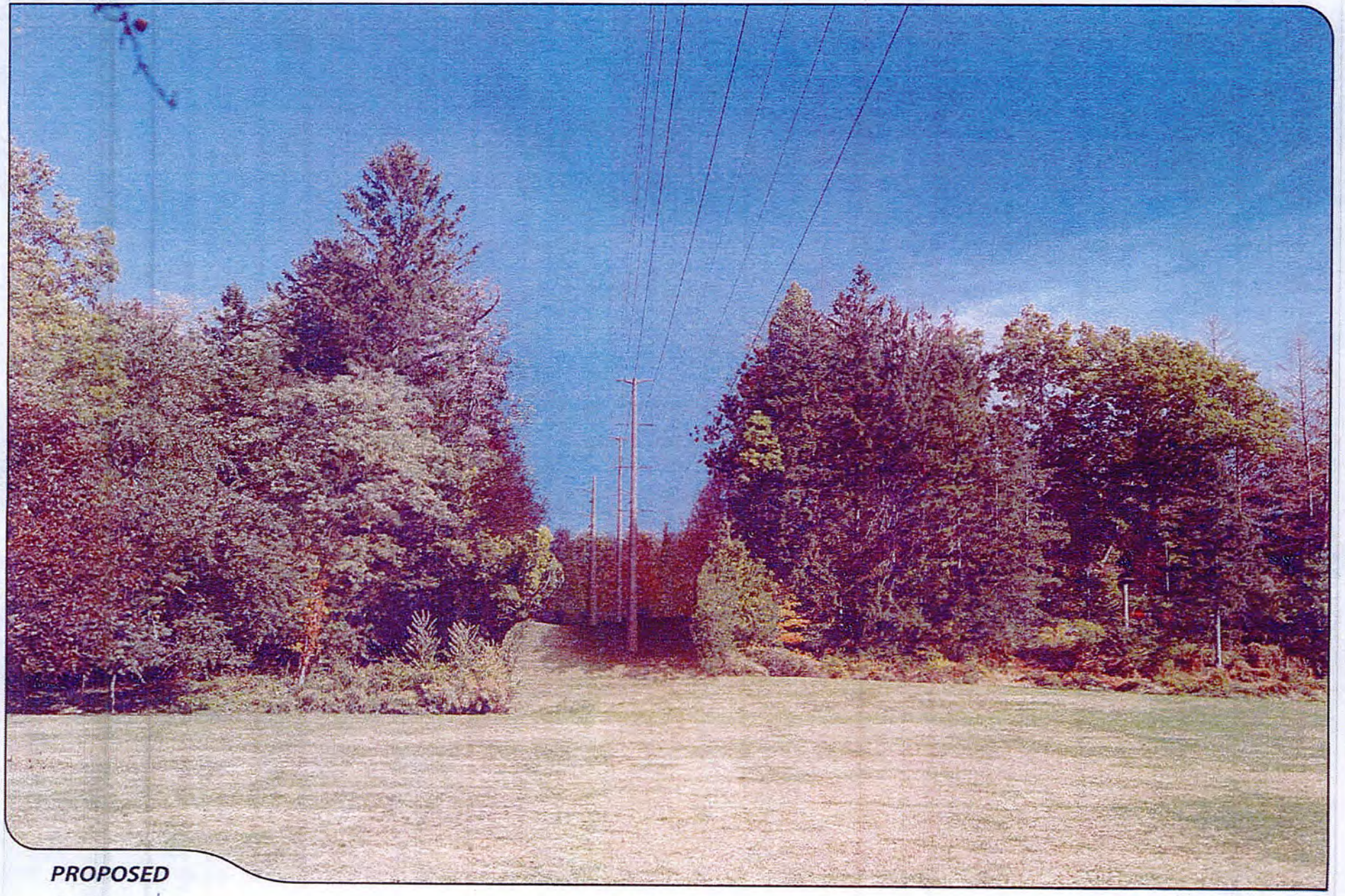
EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
8	**BRUCE PARK**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY



PROPOSED

PHOTO	LOCATION	ORIENTATION
8	**BRUCE PARK**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
9	**BRUCE PARK**	**SOUTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION
9	**BRUCE PARK**	**SOUTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
10	KINSMAN LANE	NORTHEAST

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION
10	**KINSMAN LANE**	**NORTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION
11	**HOME PLACE AT DAVIS AVENUE**	**NORTH**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION
11	HOME PLACE AT DAVIS AVENUE	NORTH

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY