

**EMF ASSESSMENT**  
**FOR THE**  
**PROPOSED TRUMBULL SUBSTATION**

Prepared for  
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**UI Exhibit 16**

**NOTE: The phase arrangement of the Connecticut Light & Power Company's 115 kV transmission lines located north of the proposed Trumbull substation were assumed to be reverse phased in this study. The actual arrangement of these lines as of December 2006 is like phasing. This study can be used to illustrate the impact of reverse phasing of the Connecticut Light & Power Company's 115 kV transmission lines located north of the proposed Trumbull substation. It incorrectly describes current conditions.**

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## TABLE OF CONTENTS

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	Page
List of Figures	iv
List of Tables	vi
Executive Summary	vii
1 Introduction	1
2 Project Effect on Electric and Magnetic Fields	2
2.1 Description of Electric and Magnetic Fields	2
2.1.1 Electric Fields	2
2.1.2 Magnetic Fields	2
2.1.3 Units of Measure	3
2.2 Description of Proposed Project	4
2.2.1 Existing Configuration	4
2.2.2 Proposed Configuration	9
2.3 Sources of Electric and Magnetic Fields in the Trumbull Substation Project	12
2.4 Methods for Measuring Electric and Magnetic Fields	13
2.4.1 Measurement Protocol	13
2.4.2 Instrumentation	13
2.4.3 Calibration	13
2.5 Electric and Magnetic Field Measurement Results	14
2.5.1 Electric Field	14
2.5.2 Magnetic Field	14
2.6 Methods for Calculating Electric and Magnetic Fields	16
2.6.1 Computer Modeling Software	16
2.6.2 Modeling Approach	16
2.6.3 UI Loading Information for the Computer Models	17
2.7 Electric and Magnetic Field Calculation Results	20
2.7.1 Existing Transmission Line Configuration	20
2.7.2 Proposed Trumbull Substation Configuration	27
2.7.3 Summary of Magnetic Field Calculation Results	32
3 EMF Research	34
4 Overall Project EMF Assessment	36
5 References	38

## TABLE OF CONTENTS

---

	Page
Appendices	
A Connecticut Siting Council Application Process	A-1
B Connecticut Siting Council EMF Management Practices	B-1
C Load Flow Patterns for Proposed Trumbull Substation Facility	C-1

## LIST OF FIGURES

---

	Page
Figure 1. Diagram of Transmission Lines at Proposed Substation Site	1
Figure 2. Diagram of the Existing Transmission Line Corridors at the Trumbull Junction with the Proposed Trumbull Substation Fence Line	4
Figure 3. 3-D Diagram of the Existing Transmission Lines at Trumbull Junction with the Proposed Trumbull Substation Fence Line	5
Figure 4. Photograph of Switch Tower NB 31 (located within the proposed substation boundary)	6
Figure 5. Photograph of Tower NB 30 (the structure south of Switch Tower NB 31)	6
Figure 6. Photograph of Tower 833A (the structure north of Switch Tower NB 31, and located at the intersection of the CL&P and UI easements outside of the proposed substation boundary)	7
Figure 7. Photograph of Tower 834 (the structure west of Tower 833A)	8
Figure 8. Photograph of Tower 833 (the structure east of Tower 833A)	8
Figure 9. Photograph of the Terrain West of Switch Tower NB31 (where the proposed Trumbull 115/13.8 kV Substation would be constructed)	9
Figure 10. Diagram of the Proposed Trumbull 115/13.8 kV Substation With 115 kV Transmission Line Feeds Into the Substation	10
Figure 11. 3-D Diagram of the Proposed Trumbull 115/13.8 kV Substation With 115 kV Transmission Line Feeds Into the Substation	11
Figure 12. Diagram of Proposed Trumbull Substation Boundary with Magnetic Field Measurement Path	15
Figure 13. Measured Magnetic Field Along Proposed Substation Boundary	15
Figure 14. Computer Model for the Existing 115 kV Transmission Lines at the Proposed Trumbull Substation	20
Figure 15. Phasing Diagram for the Existing 115 kV Transmission Lines at the Proposed Trumbull Substation	21

## LIST OF FIGURES

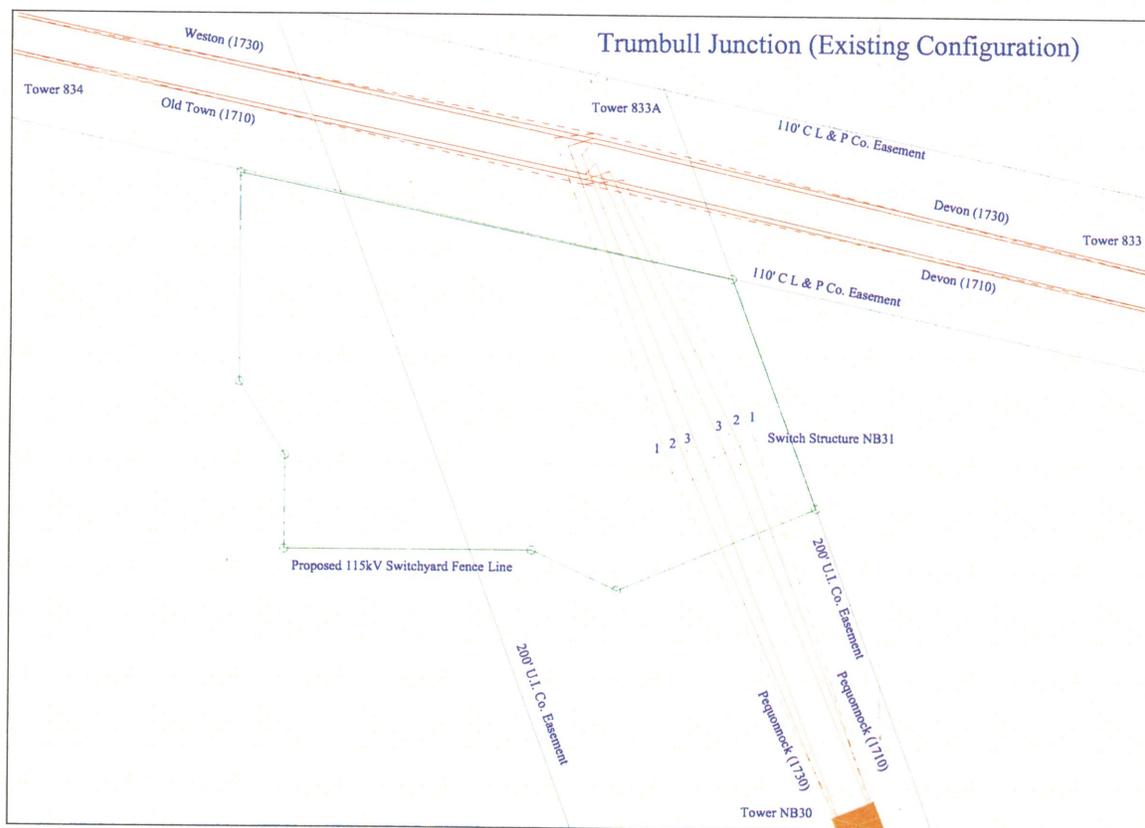
	Page
Figure 16. Comparison of Measured versus Calculated Electric Field Values Along the Proposed Trumbull Substation Fence Line For Measurements Conducted on May 7, 2003	23
Figure 17. Comparison of Measured versus Calculated Magnetic Field Values Along the Proposed Trumbull Substation Fence Line For Measurements Conducted on May 7, 2003	24
Figure 18. Computer Model for the Proposed Trumbull Substation	25
Figure 19. 3-D Diagram of the Proposed Trumbull Substation Computer Model	26
Figure 20. Calculated Electric Field Along the Proposed Trumbull Substation Fence Line (Proposed Configuration)	28
Figure 21. Comparison of the Existing Calculated versus “Pre-Bethel/Norwalk” Calculated Magnetic Field Along the Proposed Trumbull Substation Fence Line (Using May 07, 2003 Loading)	29
Figure 22. Calculated Magnetic Field Along the Proposed Trumbull Substation Fence Line (Proposed Substation Boundary – Normal Loading)	30
Figure 23. Calculated Magnetic Field Along the Proposed Trumbull Substation Fence Line (Proposed Substation Boundary – Peak Loading)	31
Figure C-1. Calculated Load Flow Patterns for the Proposed Trumbull Substation Normal 115 kV Loading for the “Post Bethel/Norwalk” Configuration	C-1
Figure C-2. Calculated Load Flow Patterns for the Proposed Trumbull Substation Peak 115 kV Loading for the “Post Bethel/Norwalk” Configuration	C-2
Figure C-3. Calculated Load Flow Patterns for the Proposed Trumbull Substation Normal 115 kV Loading for the “Post-Middletown/Norwalk” Configuration	C-2
Figure C-4. Calculated Load Flow Patterns for the Proposed Trumbull Substation Peak 115 kV Loading for the “Post-Middletown/Norwalk” Configuration	C-3

## DESCRIPTION OF PROPOSED PROJECT

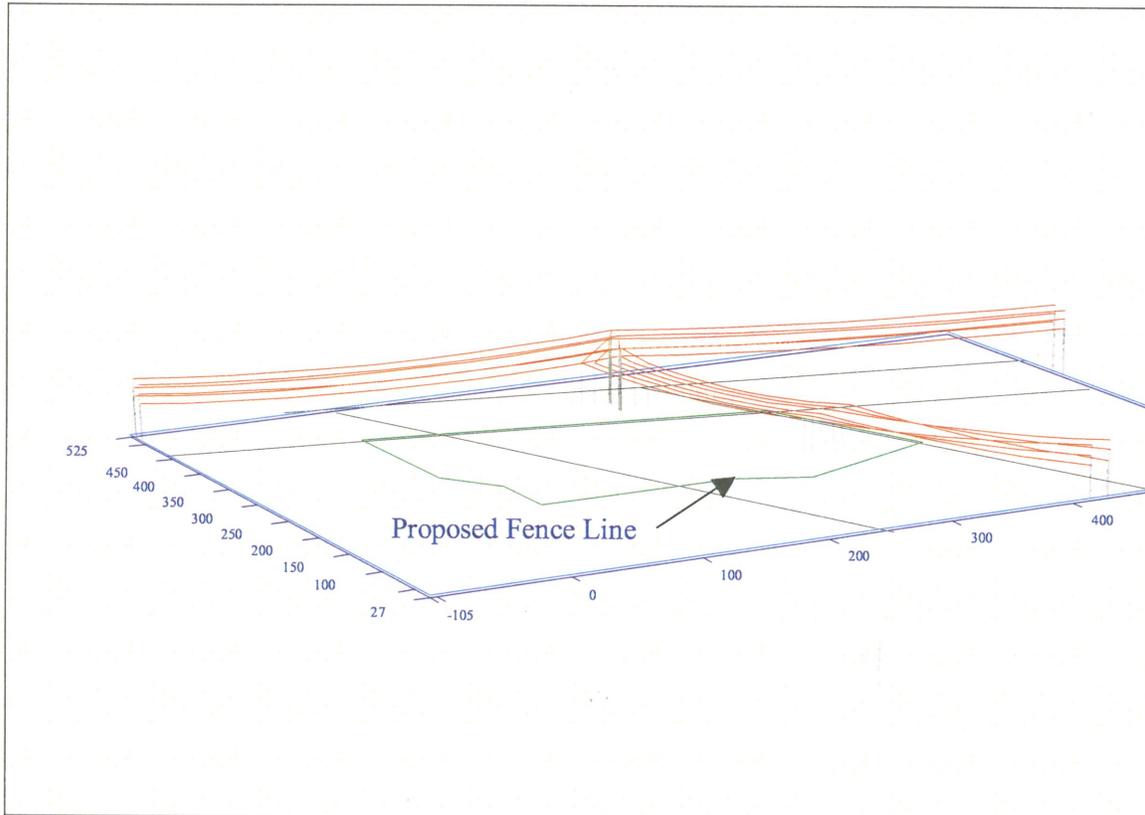
UI proposes to construct a new 115/13.8 kV electric power substation, named the Trumbull Substation. The substation will be located at the intersection of two existing 115 kV transmission line corridors.

### Existing Configuration

In Trumbull, an existing 200-foot wide UI easement intersects an existing 110-foot wide CL&P easement. The UI easement, which is oriented north to south, intersects the CL&P easement, which is oriented east to west. There are two 115 kV transmission line circuits within each of these corridors. The proposed substation would be built in the southwest corner of this intersection. The layout of the existing configuration, with the proposed substation boundary (fence line), is shown in Figures 2 and 3.



**Figure 2. Diagram of the Existing Transmission Line Corridors at the Trumbull Junction with the Proposed Trumbull Substation Fence Line**

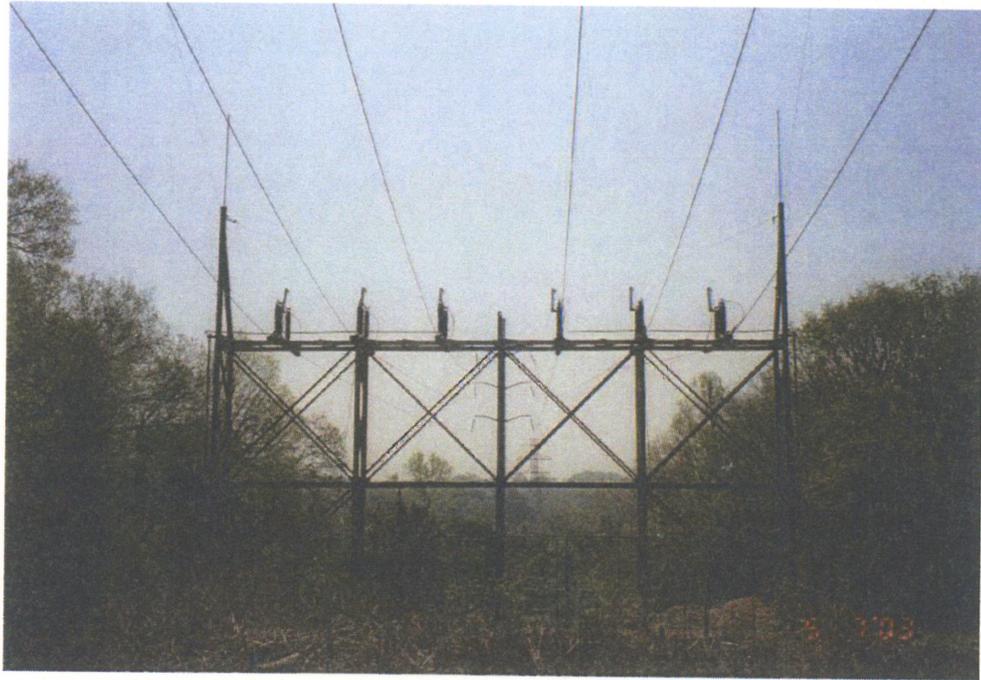


**Figure 3. 3-D Diagram of the Existing Transmission Lines at Trumbull Junction with the Proposed Trumbull Substation Fence Line**

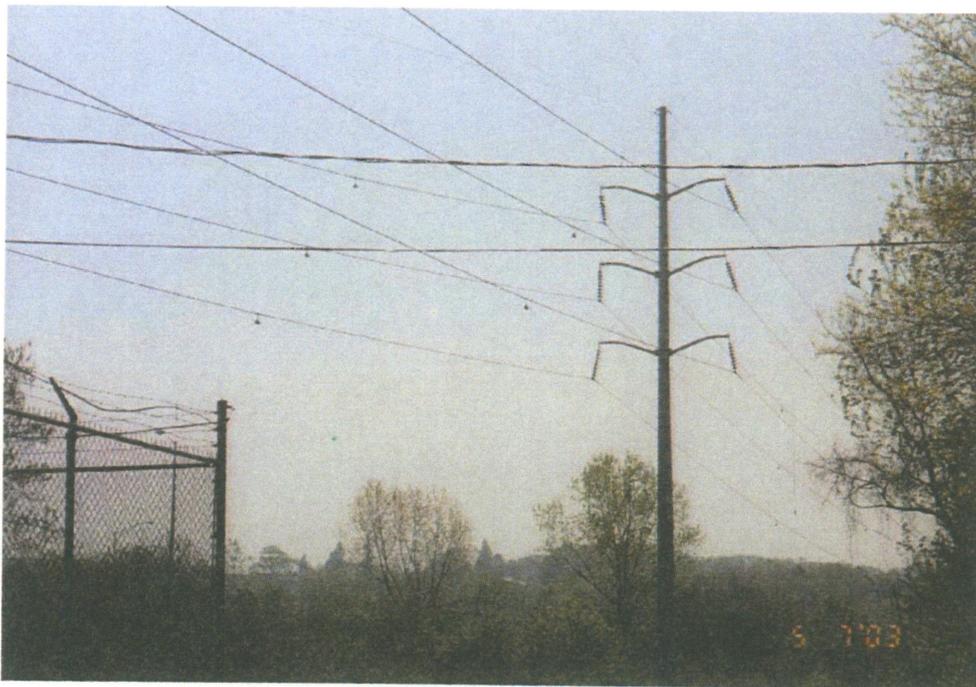
Photographs of the existing 115 kV transmission lines and the proposed substation location are presented in Figures 4 through 9.

Figure 4 presents the Switch Tower NB 31, which is located within the existing UI easement and also within the proposed substation boundary. As shown in this photograph, each of the 115 transmission circuits is arranged in a horizontal phase configuration at the switch.

To the south of Switch Tower NB 31 is Tower NB 30, a double circuit vertical structure, as shown in Figure 5. This structure is within the UI easement but south and outside of the proposed substation boundary.



**Figure 4. Photograph of Switch Tower NB 31 – View South  
(located within the proposed substation boundary)**



**Figure 5. Photograph of Tower NB 30  
(the structure south of Switch Tower NB 31)**

The structure north of Switch Tower NB 31 is Tower 833A. This structure is located within the intersection of the UI and CL&P easements, but outside of the proposed substation boundary. Figure 6 presents a photograph of Tower 833A.

To the west of Tower 833A is a double circuit vertical structure, Tower 834, shown in Figure 7. Tower 834 is located within the CL&P easement, but outside of the proposed substation boundary.

To the east of Tower 833A is another double circuit vertical structure, Tower 833, shown in Figure 8. Tower 833 is located within the CL&P easement, but outside of the proposed substation boundary.

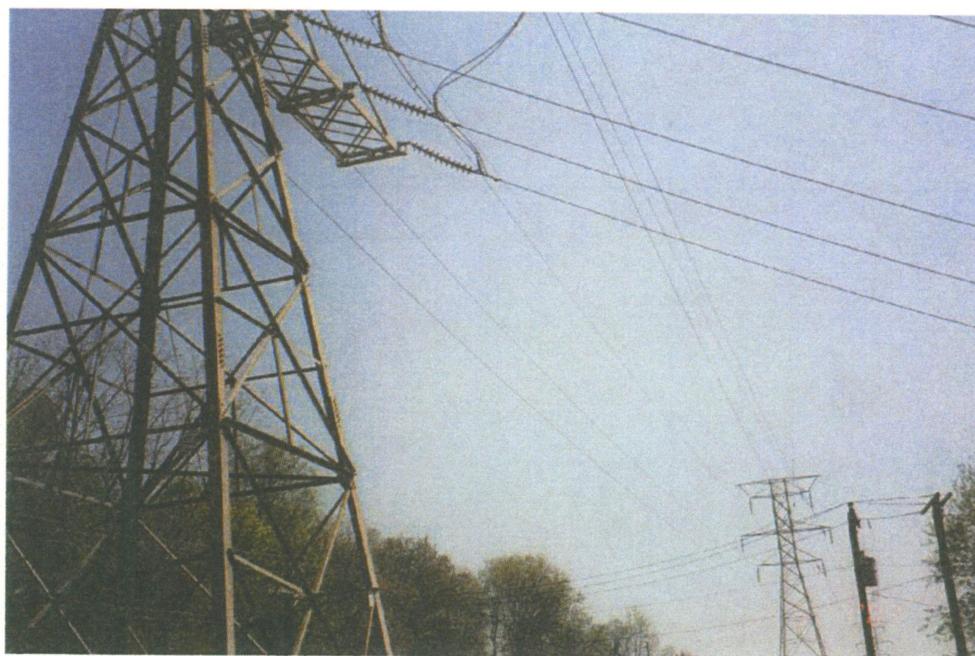
A photograph showing the general terrain where the proposed substation would be constructed is shown in Figure 9.



**Figure 6. Photograph of Tower 833A  
(the tap structure north of Switch Tower NB 31, and located at the intersection of  
the CL&P and UI easements outside of the proposed substation boundary)**



**Figure 7. Photograph of Tower 834  
(the structure west of Tower 833A)**



**Figure 8. Photograph of Tower 833  
(the structure east of Tower 833A)**



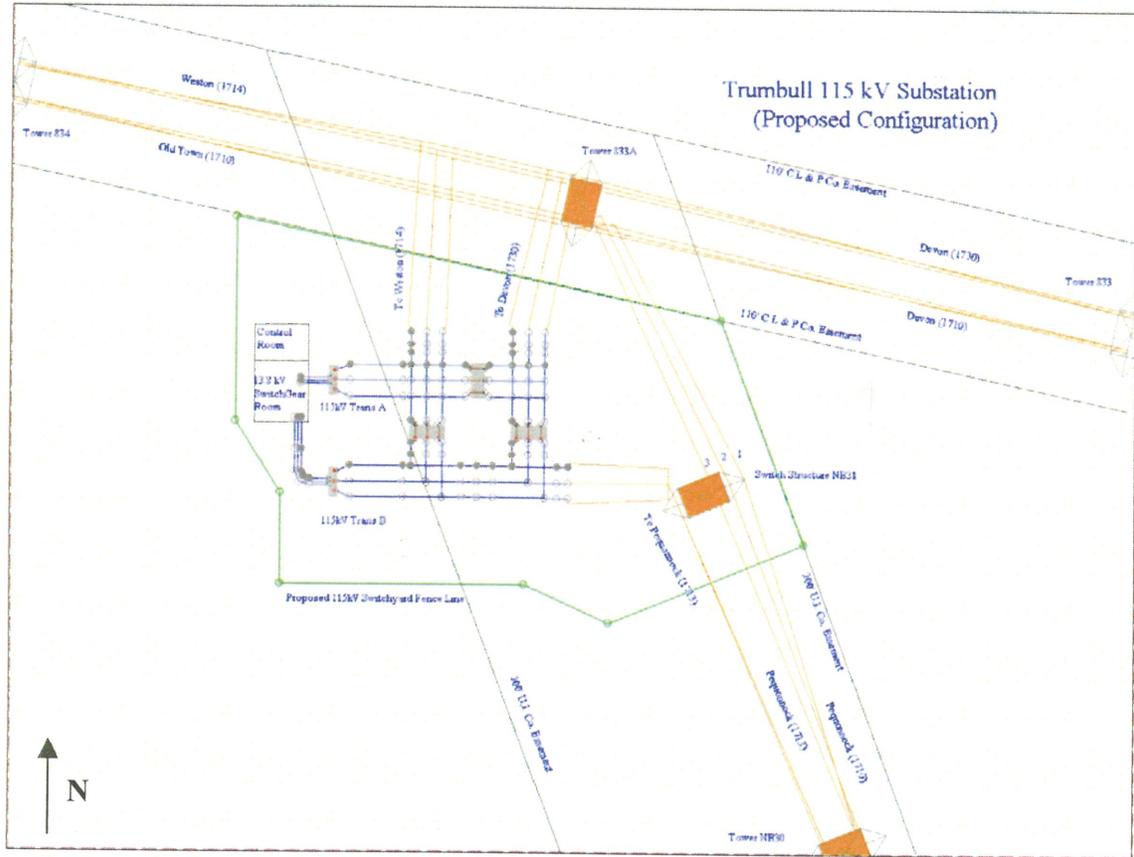
**Figure 9. Photograph of the Terrain West of Switch Tower NB31 (where the proposed Trumbull 115/13.8 kV Substation would be constructed)**

### **Proposed Configuration**

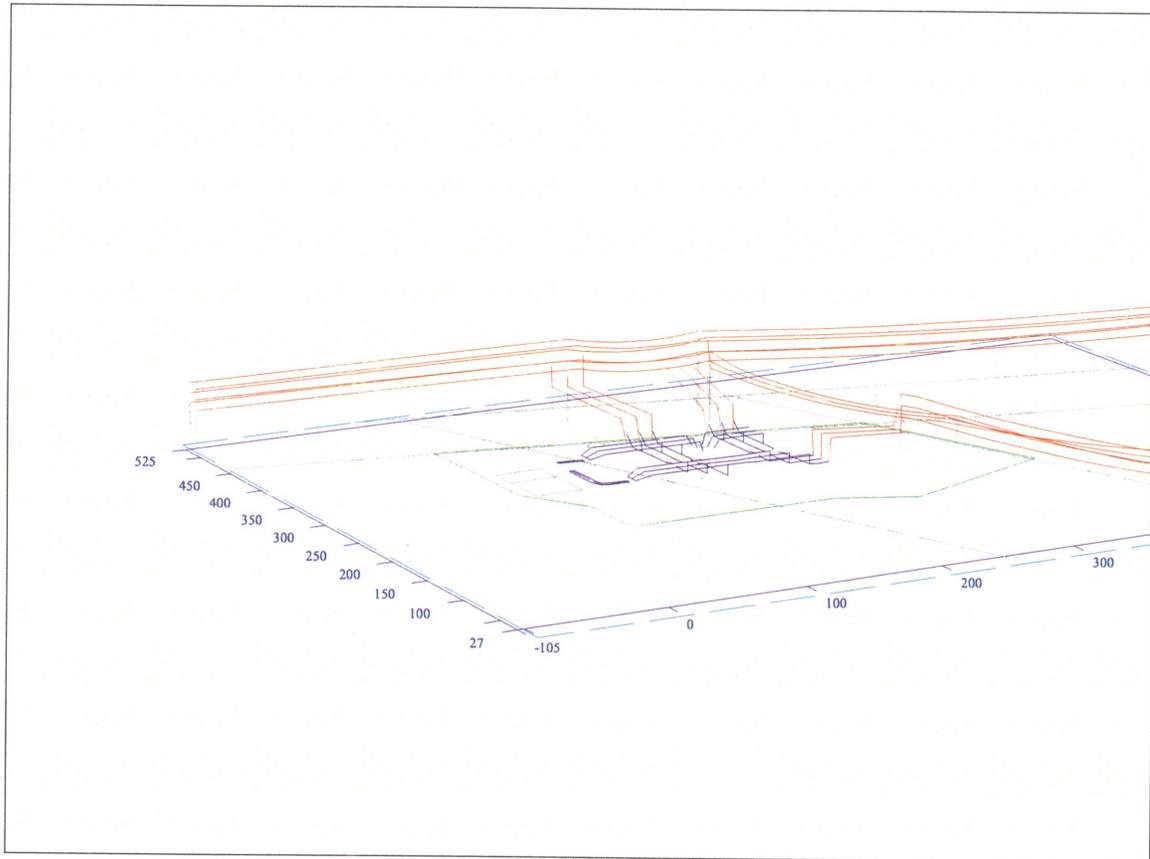
The proposed Trumbull Substation would be built in the southwest corner of the intersection of the two 115 kV transmission line corridors. The proposed substation would have a three-position ring bus, fed by three 115 kV transmission lines. Two 115 kV transmission lines would enter the substation from the northern boundary (Line 1714 to Weston & Line 1730 to Devon, shown in Figure 10), while the third 115 kV transmission line would enter the substation from the southern boundary (Line 1713 to Pequonnock, shown in Figure 10).

The proposed substation would convert 115 kV electrical power to 13.8 kV electrical power for distribution. The 115 kV portion of the substation would be an open-air configuration (i.e. not contained within a building). The 115 kV transmission lines would enter the substation at a height of approximately 40-feet above ground level. The two layers of the 115 kV buswork within the substation would be located at a height of approximately 16-feet and 26 feet above ground. There would be two transformers, Transformer "A" within the northern portion of the substation, and Transformer "B" within the southern portion. The 115 kV electrical power would be converted to 13.8 kV electrical power through these two transformers. The 13.8 kV power would then be routed through buswork into an indoor Switchgear Room. From the Switchgear Room, 13.8 kV electrical power would be routed underground to distribution feeders that exit the substation to the west.

Figures 10 and 11 present diagrams of the proposed Trumbull Substation configuration. Figure 10 presents an overall plan view of the proposed substation, while Figure 11 presents a three-dimensional view. The proposed routing of the 115 kV transmission lines into the substation is shown in Figures 10 and 11.



**Figure 10. Diagram of the Proposed Trumbull 115/13.8 kV Substation With 115 kV Transmission Line Feeds Into the Substation**



**Figure 11. 3-D Diagram of the Proposed Trumbull 115/13.8 kV Substation  
With 115 kV Transmission Line Feeds Into the Substation**