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May 17, 2022

Melanie A. Bachman, Esq. Executive Director Connecticut Siting Council 10 Franklin Square New Britain, CT 06051

Re: Docket No. 508 - The United Illuminating Company Application for a Certificate of Environmental Compatibility and Public Need for the Milvon to West River Railroad Transmission Line 115-kV Rebuild Project

Dear Ms. Bachman:

Enclosed for filing with the Connecticut Siting Council ("Council") are The United Illuminating Company's responses to the City of Milford's April 26, 2022 interrogatories ("Set 1").

An original and fifteen (15) copies of this filing will be hand delivered to the Council.

Should you have any questions regarding this letter, please do not hesitate to contact me.

Very truly yours,

Bruce L. McDermott

Enclosures

cc: Service List

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Witness: MeeNa Sazanowicz Page 1 of 8

Q-MIL 1-1: Referencing United Illuminating ("UI") Response to Milford Recommendation 1, which requested supplemental data regarding the economic and environmental viability of rebuilding *any* portion of the transmission line between Beardsley Avenue and River Street in an underground configuration (emphasis added), please respond to the following:

- (a) Please provide the requested data with regard to alternative configurations for the referenced area, including entirely underground or entirely on rebuilt catenary structures or a combination of both, that minimize impacts to the five properties listed on the National Register of Historic Places in the City of Milford and Milford City Hall located at 70 West River Street, including P914N. In providing a comparison in any cost increases, use consistent general assumptions.
- (b) With respect to the information requested in (a) above, quantify with specificity potential impacts as to the increase in the size of work platforms and construction access areas.
- (c) With respect to the information requested in (a) above, quantify the number and duration of the "closing of parking spots within the train station" and whether there is any known shortage of commuter parking at the Milford train station.
- (d) With respect to the information requested in (a) above, quantify the number and type of additional permanent and temporary easements required.
- (e) With respect to the information requested in (a) above, identify the duration of work that would impact traffic within downtown Milford as compared to the lifespan of the proposed monopoles.
- (f) With respect to the information requested in (a) above, identify and quantify the environmental impacts arising from the management of the additional volume of soil and groundwater that could not be mitigated through best management practices.
- (g) With respect to the information requested in (a) above, identify existing underground utilities located in that area and the environmental impacts arising from their relocation that could not be mitigated through best management practices.

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Page 2 of 8

Witness: MeeNa Sazanowicz

- (h) Provide details of the visual impact of "transition stations" including their size and height as compared to the proposed monopoles.
- (i) With respect to the information requested in (a) above, identify the number of required transition stations.
- (j) With respect to the information requested in (a) above, provide the projected EMF levels and whether such levels are consistent with Connecticut Siting Council ("CSC") Best Management Practices (see page 7-5 of Volume 1 of Application).

A-MIL 1-1: (a) The following options were investigated:

- 1. Completely underground between P905N and P914N within the CT DOT corridor.
- 2. Portion of the line between P911N and P914N completely underground. This was determined to be not constructible due to size of transition station and riser poles and the requirement for an unencumbered installation area.
- 3. Rebuilt, in portion or totality, on the catenary system. This conceptual alternative (to rebuild on existing catenary structures) has multiple considerations and limitations that make it difficult to project the resulting detailed design. These considerations include, among other things, the fact that UI does not own the catenary structures – they are owned by CT DOT. It is potentially prohibitive to rebuild infrastructure that UI does not own. The structural standards (including storm hardening) required for electrical infrastructure are significantly different than standards for other types of structural infrastructure. Keeping UI's electrical equipment located on structures owned by another entity and in very close proximity to railroad tracks does not meet the core project objectives of enhancing the reliability and resiliency of UI's electrical system. Rebuilding on the catenary structures would require each catenary structure to be analyzed and designed individually. This would significantly increase the timeframe to complete the engineering design. As stated in the project solution study, rebuilding each catenary structure between Milvon and West River Substations would require extensive railroad outages and four-track crossings at each location (four-track crossings have work hours limited to Friday and Saturday nights).

Witness: MeeNa Sazanowicz

Page 3 of 8

4. Underground between P905 and P914 within public roads

Option 1 (RR Corridor)– Conceptual Cost Estimate			
Engineering	\$2,238,000		
Materials/Procurement	\$7,828,000		
n Land Rights	\$998,000		
d Construction	\$25,689,000		
Overheads/Escalation	\$6,511,000		
g AFUDC	\$10,661,000		
Centingency (30%)	\$12,736,000		
u Total	\$66,661,000		

Option 3 (Catenary) Conceptual Cost Estimate ¹		
Total \$39,290,000		

Option 4 (Public Roads) – Conceptual Cost Estimate			
Engineering	\$2,238,000		
Materials/Procurement	\$8,826,000		
Land Rights	\$371,000		
Construction	\$29,221,000		
Overheads/Escalation	\$7,201,000		
AFUDC	\$12,095,000		
Contingency	\$14,082,000		
Total	Total \$74,034,000		

b)

Option	Increase in Work Area Compared to	
	Proposed Solution	
1 (RR Corridor)	~60,000 sq. ft	
3 (Catenary)	Unknown ²	
4 (Public Roads)	Unknown ²	

¹ Conceptual grade estimate.

² Final underground transmission line route will need to be determined to calculate this. See response to City of Milford Interrogatories 1C for typical work zone area sizes.

The United Illuminating Company Witness: MeeNa Sazanowicz

Docket No. 508 Page 4 of 8

(c)

It is anticipated that for Options 1 and 3 all parking on the north side of the tracks for Milford Train Station will be impacted throughout the construction sequence, potentially in totality both east and west of High Street. It is anticipated that duct bank installation work zones will be about 30 feet wide by 400 feet long; cable pulling 30 feet wide by 200 feet long; cable splicing 30 feet wide by 100 feet long.

(d)

Option	Estimated Easements	
	Permanent/Temporary	
1 (RR Corridor)	~1.3 acres	
3 (Catenary)	Unknown ³	
4 (Public Roads)	~0.5 acres*	

^{*}Measurement is inclusive of the riser pole locations and other land rights maybe required based on formalized underground design.

- (e) Current evaluation of these options are only being conceptualized, the exact duration of impact relative to each of three options will be able to be more defined if and when a means and methods is defined through the procurement of a construction contractor. However, Option 4 is expected to have the highest impact to traffic in Downtown Milford area.
- (f) Between Beardsley Avenue and River Street, UI currently has soil characterization at five locations. These locations are characterized as follows from west to east; contaminated, polluted, clean, polluted, and polluted. Groundwater was also characterized at these same five locations. In four of the five locations treatment/disposal would be required. One of the five sampling locations, the eastern most location, treatment would not be required and best management practices would be followed. Assuming all soil and groundwater management along the stretch from Beardsley Avenue to River Street will follow the results of the existing five characterization locations completed by UI, the majority of soil and groundwater that will require specialized management processes outside of best management practices, specifically disposal/treatment will increase by approximately 25 to 35 times the originally estimated volume for the proposed alignment (i.e., double-circuit monopole configuration).

² Final underground transmission line route will need to be determined to calculate this.

The United Illuminating Company

Docket No. 508 Page 5 of 8

(g) UI has not performed surveys of utilities related to an underground configuration, either between Beardsley Avenue and River Street, or along the entire route of any potential underground configuration within public roadways.

Witness: MeeNa Sazanowicz

(h) An overhead-to-underground-to-overhead configuration will require the installation of four riser structures, one structure per circuit, located at each end of the underground cable section. These are where the overhead wires will connect to the underground cables. To accommodate the overhead wire clearances, the heights of the poles that are currently proposed at the riser pole locations (P905: 115' and P914: 135') would not change, and two underground cables per phase, for a total of 12 cables, would need to be installed to match power flow of the overhead wires. Underground cables would be connected to other electrical equipment (i.e. substation bus, overhead wire) through cable terminations. To accommodate the connection of the overhead wires to the underground cables, these terminations would need to be installed on the riser structure arms (see Figure 1 below for a representative illustration of a riser structure).

In addition, the underground configuration would also require one transition station, which would be located at one end of the underground transmission cable segment. This transition station would include two of the four riser structures as well as one control enclosure (approximately 30 feet long, 14 feet wide and 12 feet tall) for protection and control equipment for safe and reliable operation of the underground cables. The estimated size of the transition station would be $\sim \frac{1}{4}$ acre.

Witness: MeeNa Sazanowicz

Page 6 of 8

Figure 1: Representative Riser Structure



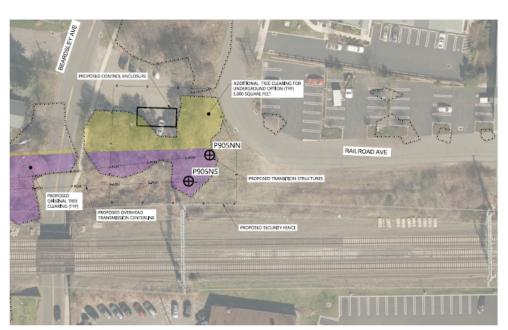
(i) One transition station would be needed.

The United Illuminating Company Docket No. 508

Witness: MeeNa Sazanowicz Page 7 of 8

Figure 2







The United Illuminating Company Witness: MeeNa Sazanowicz

Docket No. 508 Page 8 of 8

(i) Each of these historic properties are approximately 175 feet (or more) from the centerline of the proposed new overhead structure/rebuilt 115-kV transmission facilities. At this distance, the calculated magnetic-field level at average loading is approximately 1 milli-gauss (mG) or less and electric-field levels are negligible. Pre-construction magnetic-field measurements also were performed in these areas as summarized in Appendix E of the Application. Measurement "Areas" are shown graphically in Figure D-7 and are identified as Areas 8 and 9 (north of the corridor) and Area 13 (south of the corridor). Measured field levels in these Areas are summarized in Table D-2 and show that the average existing magnetic-field levels were between approximately 2.0 mG and 5.3 mG, values which are greater than the contribution of approximately 1 mG of the proposed overhead transmission line in these Areas. The construction of the line underground (if aligned within the CT DOT corridor) therefore would have a minimal effect on EMF levels in the five historic properties referenced. underground line were to be constructed further from the existing CT DOT corridor (e.g., beneath a local street), magnetic-field levels would increase in the immediate vicinity of that underground installation.

The United Illuminating Company Docket No. 508

Witness: Shawn Crosbie

Page 1 of 1

Q-MIL 1-2: Referencing UI Response to CSC Interrogatory 21, provide the required height of each rebuilt catenary structure in the area identified in Interrogatory 1 (a) above.

A-MIL 1-2:

The required height of each rebuilt catenary structure in the area referenced in Interrogatory 1(a) is unknown at this time. As stated in response to Interrogatory CSC-21, if the catenary structures were rebuilt, and the MNR signal and feeder wires stayed at their existing elevations. UI estimates that the UI bonnet structures (and associated rebuilt 115-kV conductors and OPGW) would increase in height by a minimum of 20'- 25' from the existing catenary support column/bonnet configuration (to a total estimated catenary plus bonnet height = 80' -85'). This conceptual alternative (to rebuild the 115-kV transmission lines on existing catenary structures) has multiple considerations and limitations that make it difficult to project the resulting detailed design. These considerations include the fact that UI does not own the catenary structures – they are owned by CT DOT. It is potentially prohibitive to rebuild infrastructure that UI does not own. The structural standards (including storm hardening) required for electrical infrastructure are significantly different than standards for other types of structural infrastructure. Keeping UI's electrical equipment located on structures owned by another entity and in very close proximity to the railroad tracks (which are a critical part of the Northeast U.S. railroad system) does not meet the core project objectives of enhancing the reliability and resiliency of Ul's electrical system. Rebuilding on the catenary structures would require each catenary structure to be analyzed and designed individually, with extensive coordination/concurrence with CT DOT. This would significantly increase the timeframe to complete the engineering design. As stated in the Project solution study, rebuilding each catenary structure between Milvon and West River Substations would require extensive railroad outages and four-track crossings at each location (four-track crossings have work hours limited to Friday and Saturday nights). The construction schedule would be extended by years and the associated costs would increase accordingly.

The United Illuminating Company Docket No. 508

Witness: Correne Auer

Page 1 of 2

Q-MIL 1-3: Referencing UI Response to CSC Interrogatory 43(d), please respond to the following:

- (a) Identify with specificity the referenced "local preservation partners."
- (b) Identify any known gaps in historical research of Charles Island.
- (c) Identify all other "mitigation options" that were considered, including mitigation options that directly involved the "adversely impacted" locations in the City of Milford listed on the National Register of Historic Places.
- (d) Identify the likely location and content of the proposed interpretive signage.
- (e) Provide an estimate of the likely number of people who will encounter the proposed interpretive signage in a given year as compared to the number of people whose views will be impacted by the proposed monopoles from the "adversely impacted" locations in the City of Milford listed on the National Register of Historic Places.

A-MIL 1-3:

- (a) The referenced "local preservation partners" includes the City of Milford and the Connecticut Department of Energy and Environmental Protection.
- (b) Ul's scope relative to its interaction with SHPO was not to research data gaps relative to the history of Charles Island, rather Ul's scope was to work with SHPO to identify a valid location based on the visual impacts from its Project. Some of the history which Ul will document on Charles Island is as follows: Native American occupation/use of the island, nature of the early historical use of the island settlers and who they were, use of the island as a summer resort in the middle of the nineteenth century, use of the island by the Dominican Order in the early twentieth century, and the historical development of Silver Sands Park in the modern era.

The United Illuminating Company Docket No. 508

Witness: Correne Auer

Page 2 of 2

(c) Other mitigation options considered were the following; Ward-Heitman House (preservation-related tasks), CT Audubon Society (repairs/upgrades to the Milford Point Hotel), Fort Nathan Hale (preservation related efforts), and Congregational United Church of Christ, New Haven (preservation related efforts such as roof replacement).

- (d) The location of the signage will be determined in consultation with the Connecticut Department of Energy and Environmental Protection, as the island is maintained by that agency. The proposed sign will contain text, maps, and photos relating to the history of the island in consultation with SHPO. The proposed sign may very well not be on Charles Island itself, but rather at Silver Sands State Park; UI anticipates that the agencies will prefer that the sign be visible to a maximum number of visitors.
- (e) Since there is no official record of the number of annual visitors to Silver Sands State Park in general or Charles Island in particular, it is difficult to determine how many people may view the sign when visiting the island in comparison to the number of people whose views could be potentially affected from the proposed monopoles in the City of Milford.

The United Illuminating Company Docket No. 508

Witness: Michael Libertine

Page 1 of 1

Q-MIL 1-4:

With reference to Page 14 and Figure 13 of Appendix D of the Application, provide viewshed analysis of year-round and seasonal visibility for existing, proposed, option 4 (catenary) and underground for P912N - P914N.

A-MIL 1-4:

See Attachment MIL 1-4-1 which is a viewshed analysis of year-round and seasonal visibility for Option 4 (catenary rebuild) and underground for P912N – P914N.

Please refer to the Company's response to MIL 1-2 regarding obligations and ownership surrounding Option 4.

The attached maps provide visibility analyses for the following scenarios within a one-mile radius ("Study Area") of the applicable area between Beardsley Avenue and River Street: (i) existing conditions; (ii) future conditions under the proposed project (monopoles 905N through 914N); (iii) Option 4 (conceptual catenary rebuild) between existing structures 905N/S and 914N/S; (iv) comparative analysis of the proposed project monopoles and Option4; (v) conceptual underground option; and (vi) a comparative analysis of the proposed project monopoles and conceptual underground option.

As depicted on the maps, direct views of the project corridor's infrastructure from primary visual receptors (e.g., adjacent and nearby developed areas) would not be substantially reduced under either of the scenarios, including the proposed project.

The United Illuminating Company Docket No. 508

Witness: Michael Libertine

Page 1 of 1

Q-MIL 1-5: Provide photo simulations of proposed option 4, and underground from

the five locations listed on the National Register of History places in the

City of Milford.

A-MIL 1-5: See Attachment MIL 1-4-1.

Witness: Aziz Chouhdery

Page 1 of 2

Q-MIL 1-6:

With reference to Pages 9-6 through 9-9 of the Application, provide a similarly detailed description for an underground configuration between and including P911N - P914N inclusive.

A-MIL 1-6:

Using an underground configuration between and including P911N through P914N, the overhead portion of the lines east and west of this area would need to connect to the underground cable system through riser structures at each end of the underground cables, and a transition station located at one end of the cable system to provide system protection. Due to the size of the required riser structures and transition station, the overhead to underground transition would need to take place in an open and unencumbered location. UI estimates that the conceptual locations for such transitions due to the current built environment would be best suited at pole locations:

P905N and P914N. The underground cable system for either option would consist of two XLPE (crossed-linked polyethylene) cable circuits containing three phases per circuit, with two cables per phase, contained within several polyvinyl chloride (PVC) conduits placed in a concrete-encased duct bank. For each circuit, the system would require buried concrete splice chambers, where the underground cable sections would be spliced together. The splice chambers would be spaced at intervals of approximately 1,800' to 2,500' along the underground alignment. Thus Options 1 and 4 would require four splice chambers.

Underground cable installation requires the excavation of a continuous trench, typically approximately 8-10 feet deep and 7.5 feet wide. This generally requires a minimum 30-foot-wide work area for the cable duct construction. In addition, excavations of approximately 12 feet wide by 12 feet deep and 32 feet long are typically required for each splice chamber. The cable conduits must be encased in high-strength concrete for mechanical support and the trench backfilled with flowable thermal backfill that serves to disperse the heat generated by the cables

The United Illuminating Company Docket No. 508

Witness: Aziz Chouhdery

Page 2 of 2

Due to the built environment, Option 1 (railroad corridor) will require approximately two- 400-foot long horizontal directional drill (HDD) installations beginning just before River Street on Railroad Avenue and ending at riser pole P914. Specialized and restricted work areas for HDD operations would be approximately 200 feet wide by 200 feet long with an open slurry area of approximately 25 feet wide by 50 feet long by 8 feet deep.

The United Illuminating Company Docket No. 508

Witness: Shawn Crosbie

Page 1 of 1

Q-MIL 1-7: With reference to Page 9-5 of the Application, provide a description of the type of "social impacts" that would warrant an underground

configuration.

A-MIL 1-7: The reference to "social impacts" on Page 9-5 of the Application is

included in UI's discussion of 115-kV underground alternatives and is part of the paragraph that reads, in full, "The vast majority of transmission lines in Connecticut (as well as in the United States overall) are overhead. However, underground transmission systems may warrant consideration when overhead lines are not practical or cost-effective due to environmental or social impacts. constructability

issues, and regulatory requirements."

In this context, the term "social impacts" refers to the effects that would occur to a community and/or private property owners from the installation of an overhead transmission line, particularly the need to acquire new permanent easements (including potentially "taking" homes and businesses) to establish a sufficiently wide transmission corridor and to install, operate, and maintain the overhead line. Such social impacts would occur in densely developed urban/suburban areas where no existing linear corridors exist within which an overhead transmission line could be aligned. This is not the case for the proposed Project, as UI's existing overhead electric transmission lines have been co-located within the CT DOT railroad corridor since the 1940s and the linear railroad corridor has been in existence since the 1840s.

The United Illuminating Company Docket No. 508

Witness: Shawn C. Crosbie

Page 1 of 1

Q-MIL 1-8: With reference to Page 9-14 of the Application and Ul's outreach with

"representatives of the involved municipalities," identify the Milford

representatives.

A-MIL 1-8: During the course of the Project, UI held multiple meetings with

representatives of the City of Milford to discuss design and current proposed configuration. Feedback from these stakeholders was taken into account when designing the Project within Milford. City of Milford municipal employees present at these meetings were as follows: Mary Rose Palumbo - Wetlands; David Sulkis - City Planning; Chris Saley -

Public Works.

The United Illuminating Company Docket No. 508

Witness: Correne Auer/David George Page 1 of 1

Q-MIL 1-9: With reference to Page 9-17 and Table 9-2, identify which of the three options for the Milford train station would best minimize adverse impacts on historic resources.

A-MIL 1-9: In reference to Page 9-17 Table 9-2, a summary of estimated impacts for each option is included in the following table:

Option	No. of Poles	*Pole Heights (ft)	Tree Clearing (sf)
1	4	~115' – 130'	7,750
2	3	~130'	4,780
3	3	130' – 140'	600

^{*}Pole heights for Option 1 and 2 are approximate, since UI did not complete detailed engineering design for these options.

Compared to the other two options, Option 3, which was selected to best minimize adverse impacts to the surrounding built environment, keeps the rebuilt transmission line alignment closest to the railroad tracks and catenaries while minimizing the number of poles and tree clearing required, with a minor increase of pole height (Δ = 15 feet). These three options were vetted during the design process. Option 3 was also agreed upon by UI's cultural resource expert. Option 3 was chosen as the preferred design for the rebuilt transmission lines in the vicinity of the Milford Train Station.

Witness: Aziz Choudhery

Page 1 of 2

Q-MIL 1-10:

With reference to Pages 9-9 and 9-10 of the Application, provide a description of an alternative for configuration in Downtown Milford in the area between P911N and P914N.

A-MIL 1-10:

With reference to the four alternatives on Pages 9-9 and 9-10 of the Application, below is a description of the alternatives strictly within Downtown Milford in the area between Catenary Structures 911 and 914.

Alternative 1: This is the proposed project. The 115-kV lines that are presently located on both the north and south catenary structure bonnets will be relocated to be supported by new double circuit monopoles installed north of the railroad tracks predominantly within the CTDOT corridor.

Alternative 2: If the proposed double circuit lines diverged into two single circuit lines only in the area of Downtown Milford, the southern 115-kV circuit would have to cross the tracks twice. One crossing would be either near catenary structure 906 or 907 (west of Milford Train Station) and the second crossing would be either near catenary structure 914 or 915 (east of Milford Train Station). The height of the monopoles supporting conductors crossing the tracks would be no less than 100' near catenary structure 906 or 907 and no less than 120' near catenary structure 914 or 915 due to existing site topography.

In this alternative, the proposed pole locations on the north side of the railroad tracks would remain as they are in the proposed project, but their heights could decrease by 10' to 15' as single circuit structures can be framed with a delta configuration (two phases on one side, one phase on the other). The poles on the south side of the railroad tracks would be placed adjacent to each existing catenary structure with heights ranging from 90' to 120', depending on site topography. Existing poles P911S and P912S, adjacent to the Milford Arts Council, would remain. The billboard on the south side of existing catenary structure 913 may have to be removed.

Alternatives 3 and 4: Per UI's response to MIL 1-2, there are multiple limitations that make these two alternatives potentially prohibitive to design and build. However, if it were deemed possible for this small section within Downtown Milford, the conductors would cross the tracks at the same locations as described in Alternative 2.

The United Illuminating Company Docket No. 508

Witness: Aziz Choudhery

Page 2 of 2

All wires crossing the tracks would have to be supported by steel poles as the bonnets and catenary structures would not be able to support the terminal dead-end load cases that they would be required to meet. These poles would be at the same heights as described in Alternative 2.

As stated in the response to MIL 1-2, assuming the MNR signal and feeder wires stayed at their existing elevations, UI estimates that the rebuilt bonnet structures would increase at a minimum height by 20' – 25' (total estimated catenary plus bonnet height = 80' – 85').

The United Illuminating Company

Docket No. 508 Page 1 of 2

Q-MIL 1-11:

Utilizing the various resources available to UI, provide a good faith analysis of an alternative to the proposed option that balances costs with the City's preference to minimize adverse impacts to both historic resources and the heart of downtown Milford.

Witness: Shawn Crosbie

A-MIL 1-11:

Beginning in 2020, UI has worked with the City of Milford municipal staff along with representatives of other governmental agencies to discuss the Project design along with opportunities for avoiding, minimizing, and/or mitigating impacts to cultural resources (historic and archaeological), environmental resources, land uses, and the community while also considering costs. During the evolution of UI's design for the Project, these factors were taken into account and balanced. The proposed Project, as presented in the Application to the CSC, reflects this iterative design process and represents UI's efforts to balance costs while minimizing environmental/cultural resource and social impacts and achieving the Project objective of maintaining the reliability of the regional transmission system.

With respect to the NRHP resources in Milford, UI retained Heritage Consultants LLC early in the Project design process to evaluate historic and archaeological resources in the Project area. Heritage worked with UI to coordinate with the State Historic Preservation Office (SHPO) during the Project design process.

Accordingly, based on input from the SHPO, the proposed Project design reduces the total number of new monopoles near the NRHP structures in Milford to avoid/minimize indirect (visual) effects to those historic resources to the extent practical. Ul's visual assessment (refer to Ul's Application - Appendix C) provides representative views of these areas in Milford. The excerpts from that report, below, show existing views of the railroad corridor/bonnets and photo-simulations of views of the proposed monopoles from Milford Green.

The United Illuminating Company Docket No. 508

Witness: Shawn Crosbie

Page 2 of 2

