



**Transmission Line Siting Final Report
- Lost City Solar
KY PSC**

Sept 12, 2025

Customer:
Kentucky Public Service Commission

Prepared for:
KY State Board on Electric Generation and Transmission



Revision 0
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Transmission Line Siting Final Report – Lost City Solar

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Synopsis

This document is the Final Report prepared by Elliot Engineering for the Lost City Solar Transmission Line in Muhlenberg and Logan Counties, to support the Lost City Solar Power Project, in Kentucky.

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REVISIONS

Revision	Date Issued	Issue Type	By	Description
0	9-12-25	Final Report	VC	Issue for Review & Record

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Since 2004, Elliot Engineering (formerly Wells Engineering) has served utility, industrial, and commercial facilities for all their power needs. Quality and innovation have established Elliot as the go-to engineering firm specializing in the planning, design, control, and analysis of electrical power systems. With a great reputation for working closely with our clients and listening to their requests, our team diligently provides solutions that fit every need.

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Elliot Engineering Inc. and its affiliates assumes no liability for any consequences, damages, or loss of production as a result of use or misuse of the information or calculations contained in this report. The calculation models that have been produced in this report are based on the industry consensus standard NFPA 70E Standard for Electrical Safety in the Workplace latest Edition which references the IEEE 1584 Guide for Performing Arc-Flash Hazard Calculations. The results published in this report are based on theoretical equations derived from measured test results. The test results are a function of specific humidity, barometric pressure, temperature, arc distance, and many other variables. These parameters will not be the same in your facility or application. All calculations are based on the assumption that existing installed equipment meet all applicable codes and standards. This report approximates the thermal effects of an arc-flash event and the potential of equipment failure but cannot predict an arc blast effect. Many variables contribute to the end result. In the event an Arc-Flash occurs, there is no guarantee a person will be completely protected with the PPE determined by the Arc Flash Hazard Analysis. The results of this report should be applied only by personnel qualified to work on the equipment and that have been trained in the application of electrical safety and arc-flash hazard PPE.

The Arc-Flash Hazard Assessment depends on the operation of the protective devices as shown on the manufacturer's TCC curves. It is essential that all protective devices and associated relays and sensors are tested and calibrated at regular intervals, as recommended by the manufacturer. Proper testing, inspection, and calibration at regular intervals will help ensure clearing times of protective devices as calculated in the studies, thereby protecting personnel. Changes in the electrical system configuration, including but not limited to, available short-circuit current, system impedance, or protective device clearing times, will invalidate the incident energy (cal/cm^2) values provided in this report. Recalculation of incident energy values are required to be performed upon changes to the electrical system in order to maintain a safe and compliant facility according to NFPA 70E Article 130.5.

1 General Statement

The present document is the Final report prepared for the Transmission Line Siting project of Lost City Solar who is applying for a certificate of construction for an approximately 10.5-mile-long 161,000 Volt Electric Power Transmission Line in Muhlenberg & Logan Counties in Kentucky.

1.1 Scope

As part of the personal service contract for the ‘Generation Siting Board 2025’, between The Commonwealth of Kentucky Energy Environment Cabinet/Public Service Commission and Elliot Engineering, in the matter of the order issued for case number 2025-00030, Elliot Engineering was appointed to review the Application documents and the Site assessment report submitted by the applicant as per the Kentucky Revised Statutes 278.714 and submit a Final report on the Transmission Line Siting for the application for a construction certificate by Lost City Solar.

1.2 Reference Document

The following documents are referenced for the creation of this document.

- i. KRS 278.714 Application for certificate to construct nonregulated electric transmission line or carbon dioxide transmission pipeline
- ii. Lost_City_Solar_Transmission_Line_Application_6102025
- iii. Lost_City_Response_to_KSB_RFI-1_(2025-00030)
 - a. VOL._1_-_Appendix_A_-_KSB_RF1_-_ROW_Agreements_REDACTED_Part_1_of_2
 - b. VOL._2_-_Appendix_A_-_KSB_RF1_-_ROW_Agreements_REDACTED_Part_2_of_2
 - c. VOL._3_-_Appendices_B_thru_E_-_KSB_RF1
- iv. Response_to_KSB_RFI-2_(2025-00030)

2 Transmission Line – ‘Know-how’

Electrical Energy is transported from one place to another by means of Electrical Power Transmission Lines, in short, Transmission Lines. Transmission Lines, although they can be underground, are typically overhead wires at voltages of 69 to 765 kilovolts supported by towers. A transmission line is built within an area known as a right-of-way (ROW).¹

A Transmission line is installed to

- i) form a connection between two substations to transmit electricity back and forth, or
- ii) to connect a generating station to a nearby utility substation to transmit the electricity produced to the grid for consumption.

Transmission Lines are typically ‘Regulated’, which means they generally are owned and operated by the electric utilities. However, ‘Non-regulated’ transmission lines are installed where the power is transmitted from an independent power producer to the Utility. The present scope is for a non-regulated transmission line which is installed from the ‘Collector substation’ of the Solar power plant to the nearby Utility substation.

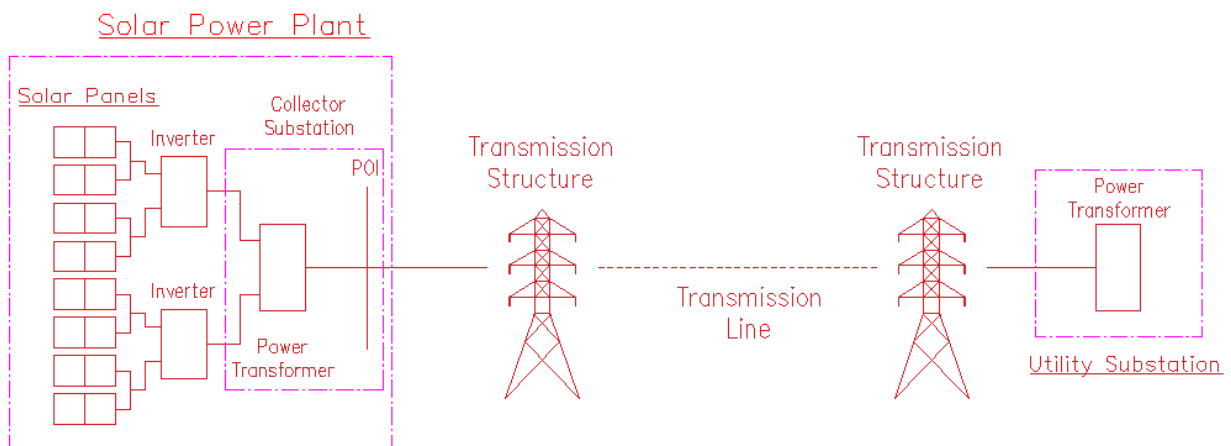


Figure (1) Transmission Line²

¹ <https://www.fws.gov/node/266176>

² Illustration from Elliot CAD Design

2.1 Construction of a Transmission Line and its Easement and Right Of Way (ROW)

A Transmission line is constructed using either wooden or steel structures. A wooden transmission line uses wooden poles to form Tangent, H-Frame, or Dead-end structures built by the appropriate placement of support insulators which carry the conductors. On the other hand, the steel structure transmission line utilizes solid steel poles or steel lattice structures, which are mounted with support insulators to carry the conductors. The Wooden and Steel Transmission line structures can be built to carry single or double circuits.

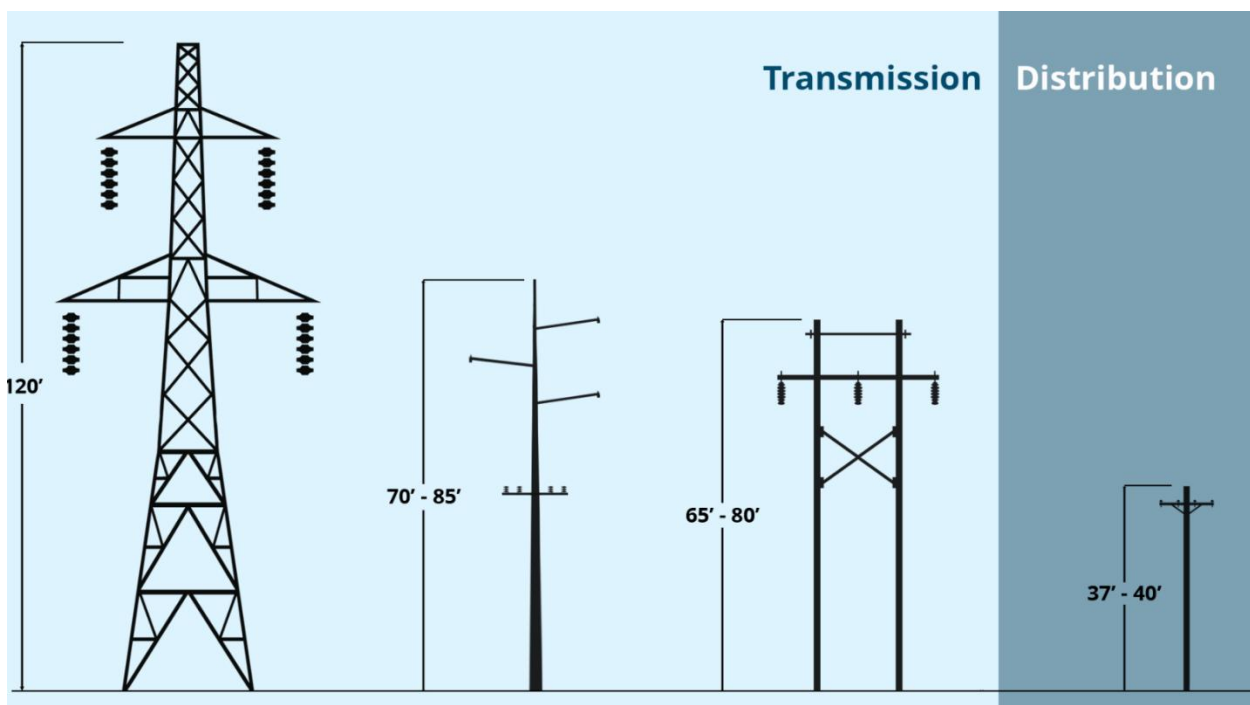


Figure (2) Transmission Line Structures³

An Easement is a defined strip of land where the transmission lines are safely constructed, maintained and operated. It is a permanent legal agreement between the Landowners and the company that owns the transmission line.

A Right of Way (ROW) is a safety zone around the transmission line which must be kept free of trees, buildings, fences, roads, utility infrastructure, and any other obstacles (referred to as encroachments) that interfere with the safe maintenance and operation of the transmission line. The ROW is regularly inspected for trimming and clearing the vegetation and to keep it free from

³ Image from LG&E KU website <https://lge-ku.com/transmission-vs-distribution>

encroachments.

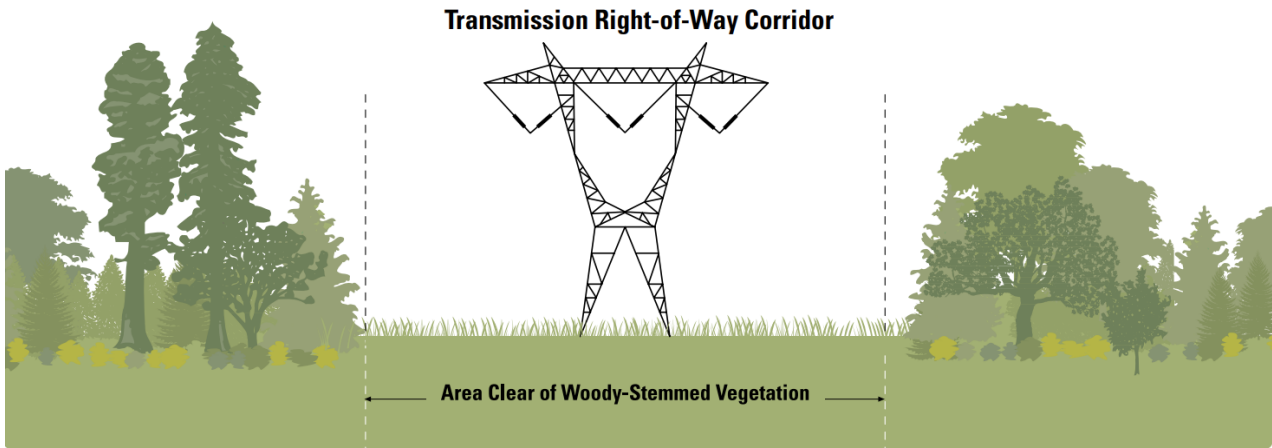
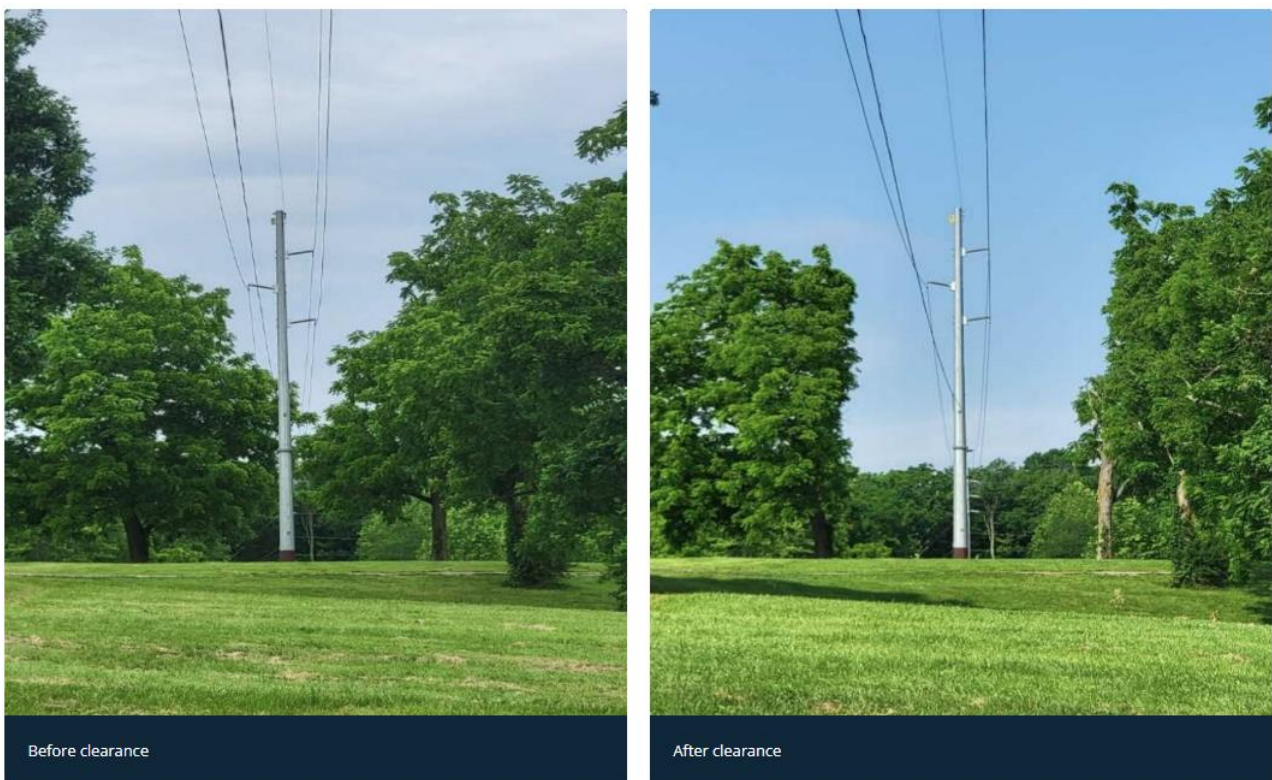


Figure (3) Transmission Line Right of Way⁴



Picture (4) Transmission Line Right of Way Before & After maintenance ⁵

⁴ Image found from [the document](#) "Transmission Right of Way Clearing and Maintenance" from Kentucky Power

⁵ Image from LG&E KU website <https://lge-ku.com/transmission-power-line-clearance>

2.2 Environmental Impact of Transmission Lines

The construction and maintenance of above-ground power lines require clearing land to prevent fires and short-circuits with native vegetation. This process can disrupt local ecosystems⁶. Construction of transmission lines should include environmental studies to ensure rare species are not impacted.

Operation and maintenance of transmission line ROWs may result in minor environmental impacts. ROW maintenance often involves chemical or mechanical control of vegetation. Cleared ROWs may be a continuous source of sedimentation into waterways. In addition to these potential impacts, transmission lines can pose **collision hazards to wildlife**⁷.

The above environmental risks can be minimized by routing the transmission line in a manner that avoids impact on wildlife. The risk of wildfire can be minimized by maintaining safe clearance from vegetation.

2.3 Importance of Transmission Lines

Transmission Lines improve the **security & reliability** of the electric grid, making the grid less vulnerable to power outages.

Transmission Lines help to **adopt cleaner and renewable energy** sources.

Constructing new Transmission Lines allows the **older, less reliable transmission lines and energy sources to be replaced**.

Construction of the new transmission lines **boosts the economy**.⁸

Based on the Article *“The Rising Importance of Transmission in the Clean Energy Era”*, from National Renewable Energy Laboratory,

“Over the past decade, the rate of adding new transmission lines to the U.S. grid has dramatically slowed. In contrast, electricity demand is steadily increasing as data-center energy demand rises and the nation ramps up efforts to decarbonize the energy sector by powering electric vehicles, heat pumps, and more with renewable resources.

⁶ Article “The Environmental Impact of Power Lines” Dt: 09-20-23 from Scenic America. www.scenic.org

⁷ Web page from US Fish & Wildlife Service www.fws.gov

⁸ Article “Why Transmission Matters” from Americans for a Clean Energy Grid. www.aleanenergygrid.org

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Unlike fossil power plants that are typically located near areas with a lot of electricity demand, the nation's most abundant, low-cost renewable energy resources are far from the highest energy demand—calling for more long-distance transmission lines⁹.”

⁹ Article from NREL, <https://www.nrel.gov/news/feature/2024/national-transmission-planning-study>

3 Lost City Solar Transmission Line – Application Review & Findings

The present document, as mentioned in the previous sections, is the final report created after reviewing the application documents submitted by the applicant, Lost City Solar Renewables LLC for a 161kV Transmission Line.

In this section, a detailed discussion is made on the Initial review, Site visit, and the Final review from Elliot Engineering.

3.1 Initial Review

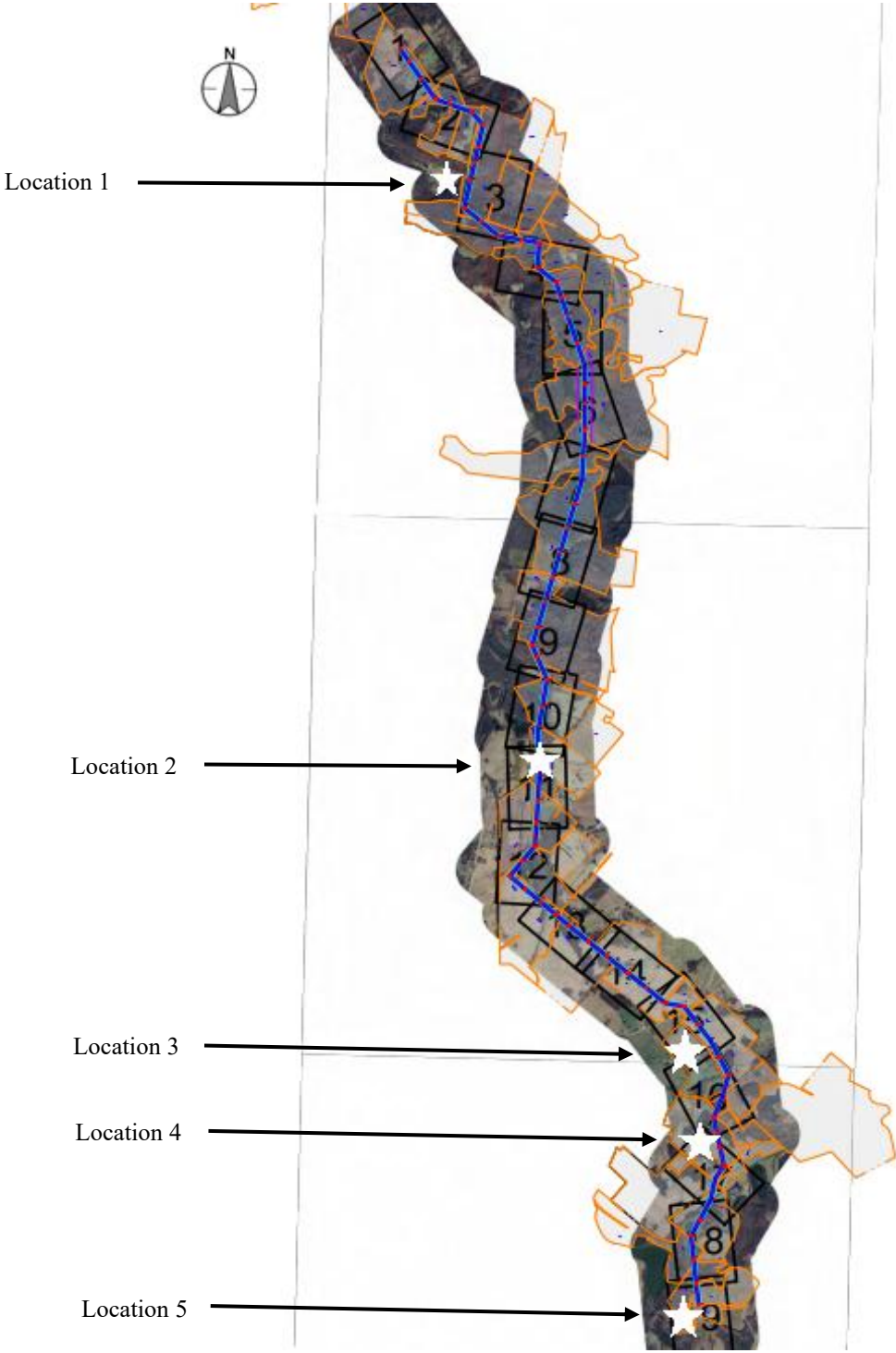
Elliot Engineering and its Consultants working on the Siting Project review the applicant document for their adequacy, as part of the requirements of the state order for the applicant's Case No. 2025-00030.

After the initial review of the application documents, a list of queries/questions was submitted as part of Data Requests 1 & 2.

3.2 Site Visit

As part of the requirements of the state order, for the applicant's Case No. 2025-00030, Elliot Engineering made a visit to the site as organized by the Siting board, on Aug 18th, 2025.

The locations visited are indicated in the picture below, Reference Picture (5).



Picture (5) Lost City Solar Transmission Site Visit Locations

Pictures from the site visit are shown in the following pages.



Picture (6) Location 1, 1696 Forgy Mill Road Dunmor KY



Picture (7) Iron Mountain Rd, Lewisburg KY



Picture (8) Location 2 (appx) Iron Mountain Rd, Lewisburg KY



Picture (9) Location 4 Mt Pleasant Rd / 1800 KY-106 Lewisburg KY



Picture (10) 181 Mt Pleasant Rd Lewisburg, KY



Picture (11) Location 5, 2295 Lost City Rd Russellville, KY

3.3 Final Review

In this section a detailed discussion is made on the major aspects of the application documents submitted for their compliance as per the statute KRS 278.714.

3.3.1 Review of Application Documents

The applicant, Lost City Solar Renewables, submitted the application documents and a Site Assessment Report addressing the compliances on the requirements of KRS 278.714.

The application documents are reviewed for,

- i) Contact details as per KRS 278.714 (2)(a)
- ii) Full description of the route as per KRS 278.714 (2)(b)
- iii) Initial design as per KRS 278.714 (2)(c)
- iv) Confirmation on NESC as per KRS 278.714 (2)(d) &
- v) Other information provided by the applicant as part of the other sections of KRS 278.714

After the review, additional information was requested as part of the data requests DR-1 &-2. The responses from the applicant are reviewed for adequacy.

As per the KRS 278.714, the following are the factors that influence the grant of a construction certificate,

- i) Significant adverse impact of the transmission line on scenic assets,
- ii) Construction and maintenance of the transmission line according to all applicable legal requirements

3.3.2 Factors affecting the grant of a construction certificate

With reference to the application document, Attachment D 'Lost City Solar Transmission Line Visibility Methodology and Analysis' Dt: 06-09-2025, reference to page no.1 (pdf pg 56/69), the following is not found in the area applicable to the transmission line project,

- Wild, scenic, or recreational rivers
- Scenic districts or roads, including areas that may be under a scenic easement or locally designated historic or scenic districts and scenic overlooks
- Parks (federal, state, or local), Recreation Areas, or Wildlife Management Areas

And with reference to the application document, Transmission Line Application submitted in June 2025, reference to page 5(pdf pg. 9/69), and the responses provided by the applicant on DR-1 & 2, the applicant has provided confirmation on all the legal requirements like Easements, Agreements, Right of Way, and compliance with NESC, IEEE, etc.

Hence, any discrepancy in identifying the scenic assets and the legal requirements at any stage

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of the project, shall be brought to the attention of the Public Service Commission and resolved for legal compliance.

4 Recommendations & Mitigations Measures

After reviewing the application documents and performing the site visit, Elliot Engineering provides the following Recommendations & Mitigation measures.

1. Create an overall plot plan indicating all water bodies, bridges, railroad crossings, culverts, access roads, power lines, residential and public structures, etc., to minimize interference or adverse impact.
2. The new transmission line shall maintain sufficient clearance from any existing power lines.
3. Coordinate with surrounding nonparticipating landowners to limit the impact of oversized loads delivered to the project (Ex, Power Poles).
4. The transmission line design systems that have a minimum impact on the environmental issues as discussed in the prior sections of this document.
5. Provide prior notices to neighbors regarding potential construction and operation noises, as well as limits on working hours during the construction period.

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practices.*

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