

ROCKDALE – WEST MIDDLETON PROJECT: EXPLORING THE UNDERGROUND OPTION

PROJECT BACKGROUND AND DESCRIPTION

In 2005, ATC proposed a new 345-kilovolt transmission line to connect the Rockdale Substation located in the town of Christiana with the West Middleton Substation in the town of Middleton. The involvement of the public, communities and regulators in the two-year routing and siting process has raised a number of questions. Among them is the possibility of constructing all or portions of the proposed line underground.

ATC'S RESPONSE AND POSITION

The issue of undergrounding a 345-kilovolt transmission line is complex. While there are aesthetic benefits of placing transmission lines underground, those benefits are offset by some drawbacks including operation, maintenance and cost. Although ATC will **not** be recommending underground facilities to the Public Service Commission of Wisconsin when we file our application next fall for this project, we have brought in experts to conduct a comprehensive study on the feasibility of undergrounding. The results will be included in the data we provide to the PSC so that the commission has a full and accurate characterization on which to base its decision.

AT A GLANCE: OVERHEAD TRANSMISSION LINES VS. UNDERGROUND LINES

Issues	Overhead	Underground
Construction	Poles are placed approximately 800' – 1,000' apart with little or no disturbance to the land between poles. Construction pace is approximately 10 miles per month.	Significant trenching at depths up to 12' deep and 4'-5' wide. Manholes, 16' deep. Boring under roadways and waterways as deep as 20'. Linear trench construction is labor and equipment intensive and may require larger crews to meet the same schedule as overhead construction.
Facilities	120' self-supporting steel structures carrying three conductors. End points at each substation.	Conduits encased in concrete duct package 4' x 4'. Manholes every 1,700-1,900 feet. Riser stations (transition from overhead to underground) require a fenced area up to 475' by 200' or more.
Environmental	Right-of-way clearing of trees; soil disturbance generally limited to pole sites. Post-construction, grass and low growing vegetation possible.	Facilities would be placed within existing roadways, minimizing environmental impacts. For non-road facilities, trenching and boring can affect the root structure of all vegetation. Right-of-way must remain clear of vegetation post-construction.
Reliability and Maintenance	Periodic tree trimming, inspections and repairs. Facilities are engineered to withstand extreme weather conditions. Repair time for outages generally limited to a few hours or days.	There are operational limitations and complexities that don't exist on overhead lines. Problems on underground facilities are difficult to locate when they occur. Because materials are not readily available in the U.S., a costly inventory of spare materials must be maintained and repair time can take weeks.
Routing and siting	Existing corridors such as utility lines, roadways and railroads considered first.	Use of multi-lane city streets standard practice and more favorable than state highways and interstate highways. Sharp bends and changes in topography are problematic.
Aesthetics	Visual impacts of structures and wires.	Visual impact (post-construction) limited to riser stations.
Cost	Total project cost: \$154 million to \$187 million	Additional \$50 million up to several hundred million dollars more. Absorbed by all ratepayers or funded locally.

(continued)

WHAT WAS STUDIED?

Because ATC's general practice is to place transmission lines on overhead structures, the company has limited expertise in fully analyzing an underground option for a 345-kV project the scale and magnitude of Rockdale-West Middleton. (There are no 345-kV underground facilities in Wis.) To fully evaluate this option, the company enlisted the expertise of a Chicago-based engineering company with significant experience in the design and construction of underground utilities to look at a number of issues including:

- A route that is suitable for underground construction
- The impacts on the cost and schedule

A second engineering company analyzed the operational performance of an underground line within the overall ATC network.

WHY WAS UNDERGROUNDING BEING STUDIED IF ATC DOESN'T INTEND TO PROPOSE IT?

At ATC, it is our obligation to explore any and all viable options and alternatives to the project we are proposing to ensure that the project proposal is the right system solution to the electrical problem we're trying to solve. The PSC and a number of local municipalities requested that ATC explore the feasibility of constructing the proposed line underground, particularly along areas of Madison's Beltline highway and portions of Fitchburg. This study is a responsible and responsive approach to this request. The study provides valuable information to both supporters and opponents of undergrounding because it offers a comprehensive analysis of the challenges associated with this option, and allows the PSC to make a decision based on a full and complete evaluation of undergrounding. ATC does not believe the findings support a change in our position that overhead lines are the best option for this project. The PSC ultimately makes the decision; if a requirement is made to place portions of the line underground, ATC will comply.

THE BELTLINE VERSUS FRONTAGE AND ARTERIAL ROADS

Among the routes being considered for an overhead transmission line is a route along the Beltline highway. Although the Beltline is a reasonable route option for an overhead line, it is not a viable route for an underground route primarily because of the construction methods used for underground facilities. The volume and speed of traffic, space requirements, truck and crew access, drainage and over/underpasses make major highways and interstate highways poor candidates for underground construction. Underground construction is generally limited to city streets, frontage roads and arterial streets, where adequate space is available to put traffic restrictions in place and meet the design and engineering requirements for an underground line.

For these reasons, separate and distinct underground route options were identified for the Rockdale-West Middleton Project. The route is characterized by four segments to allow the PSC to review the challenges and issues associated with different areas of the route. ATC will not be recommending to the PSC the underground route or any underground facilities in its project application.

MORE INFORMATION

Request a copy of "Underground Transmission Lines: Answering your questions," or download it from ATC's web site at www.atcllc.com. Direct your questions to either of the following individuals:

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