

Rhineland Loop Electric Reliability Projects

UPDATE

ATC projects improve area energy delivery and reliability

The electric transmission infrastructure serving the communities of Antigo, Merrill, Tomahawk, Eagle River, Three Lakes, Minocqua and Rhineland is in need of reinforcement. The area is served by a series of 115-kilovolt electric lines that take the form of a figure-eight. This system is referred to as the Rhineland Loop.

Significant growth has occurred in the Rhineland area, resulting in conditions that could lead to a loss of transmission service, which would result in power outages. The Rhineland Loop is susceptible to overloads, low voltage and voltage collapse conditions during times of heavy demand. Several such events occurred in 2001.

American Transmission Company has worked with Wisconsin Public Service, the local electric distribution company, to address these issues by installing equipment and diesel generators at several WPS substations. In addition, the existing 46 kV transmission line between the Pine Substation near Merrill and the Eastom Substation near Tomahawk is being upgraded to 115-kV operation. This portion of the project is being rebuilt on existing right-of-way and should be completed in May 2004.

In November 2003, the Public Service Commission of Wisconsin authorized construction of a transmission line from

Rhineland to Tomahawk that will further strengthen the electric system in Lincoln, Oneida and Vilas counties. *(See related story.)* The existing single-circuit 16.3-mile 115 kV line between Skanawan Switching

Significant growth has occurred in the Rhineland area, resulting in conditions that could lead to a loss of transmission service, which would result in power outages.

Station five miles southeast of Tomahawk and the Highway 8 Substation in Rhineland will be replaced with a double-circuit 115 kV line. This will require reconfiguring the right-of-way and negotiating new easements. The existing line is on wood poles in a 100-foot wide easement corridor. The double-circuit line will be strung on single steel poles and will require an 80-foot corridor.

Future plans include construction of an interconnection between the Rhineland Loop and the transmission facilities in the western portion of Upper Michigan. This interconnection will not only strengthen reliability of the Rhineland Loop, it also will improve transfer capability to and from the Upper Peninsula.

ATC attorney Dan Sanford outlines route alternatives to the crowd at the Public Service Commission of Wisconsin's October 2003 hearing on the Skanawan-Rhineland transmission line.

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Agency approves Skanawan-Rhineland transmission line

Real estate acquisition, environmental permits needed prior to construction

The Public Service Commission of Wisconsin approved construction of a 16.3-mile transmission line between Skanawan Switching Station five miles southeast of Tomahawk and the Highway 8 Substation in Rhineland. The line is needed because the existing 115-kilovolt transmission system, known as the Rhineland Loop, is inadequate to reliably serve customers in parts of Lincoln, Oneida and Vilas counties.

The approval comes after a detailed review of environmental impacts and various route alternatives. The route selected by the PSC follows an existing single-circuit overhead transmission line that runs through the towns of Skanawan, King and Harrison in Lincoln County, and the town of Crescent and city of Rhineland in Oneida County. The existing wooden H-frame structures will be replaced with single pole steel structures. About 80 percent of the route is within public and private forested lands and the remainder is agricultural and wetlands.

The existing right-of-way will need to be

reconfigured for the new line. Currently, the right-of-way corridor is 100 feet wide; the new, single-pole design requires only 80 feet. For most of the length of the line, 40 feet of the existing easement will overlap with the new right-of-way, and an additional 40 feet of new right-of-way will be needed either to the east or west of the existing easement. After construction, 60 feet of the existing right-of-way will be released to the property owners and the easement terminated. In an area south of Rhineland, however, development along State Highway 17 will require ATC to construct the transmission line within the existing easement.

In issuing its order authorizing the project, the PSC directs American Transmission Company to use proper erosion control methods, avoid or minimize impacts to wetlands and assure that no invasive species are introduced during construction. Construction will generally occur in winter months when the ground is frozen so as to minimize soil impacts.



The existing wood H-frame transmission line (right) will be replaced with a double-circuit line on single poles made of Core 10 steel (superimposed on left). The right-of-way will be reconfigured and reduced from 100 feet to 80 feet with the new design.

ATC will need to obtain various permits from the Army Corps of Engineers and the Wisconsin Department of Natural Resources before construction can begin. ATC anticipates beginning construction in October 2004 and placing the line in service in June 2005.

Survey work, easement acquisition begin along route

ATC's real estate contractor, Steigerwaldt Land Services, Inc., of Tomahawk, is contacting landowners to describe the easement acquisition process. Steigerwaldt representatives also will be asking landowners for permission to conduct survey work and soil boring tests. Land surveys will assist ATC engineers in designing the line so as to create the fewest impacts to the environment and property. Archaeological surveys also will be conducted.

Easements allow ATC to locate facilities on the right-of-way and provide access

to the line corridor for maintenance or tree-trimming operations. Certain conditions and limitations apply, including:

- Landowners will be informed of the length and width of the right-of-way; the number, type and maximum height of all structures to be erected; the minimum height of the transmission lines above the landscape; and the number and maximum voltage of the lines to be constructed and operated.
- Landowners will be compensated for the use of their property. Rights-

of-way are acquired through negotiations with property owners based on the appraised value of the area needed for the transmission line.





- In addition to compensation for the easement, ATC will pay for any crop damages and/or physical damages to property resulting from the construction and maintenance of the transmission line. Payment for crop damages is based upon current market prices and expected yields in the area.

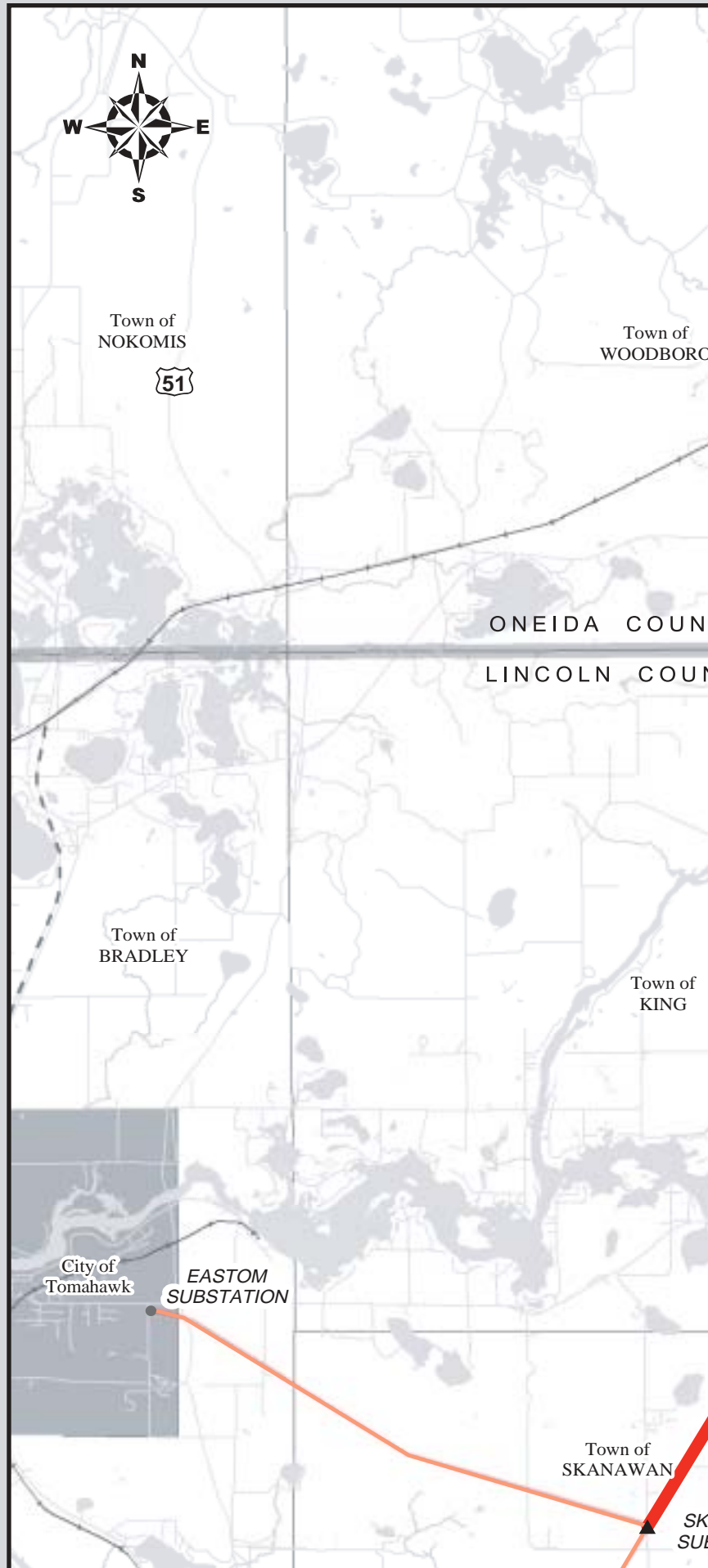
Route description

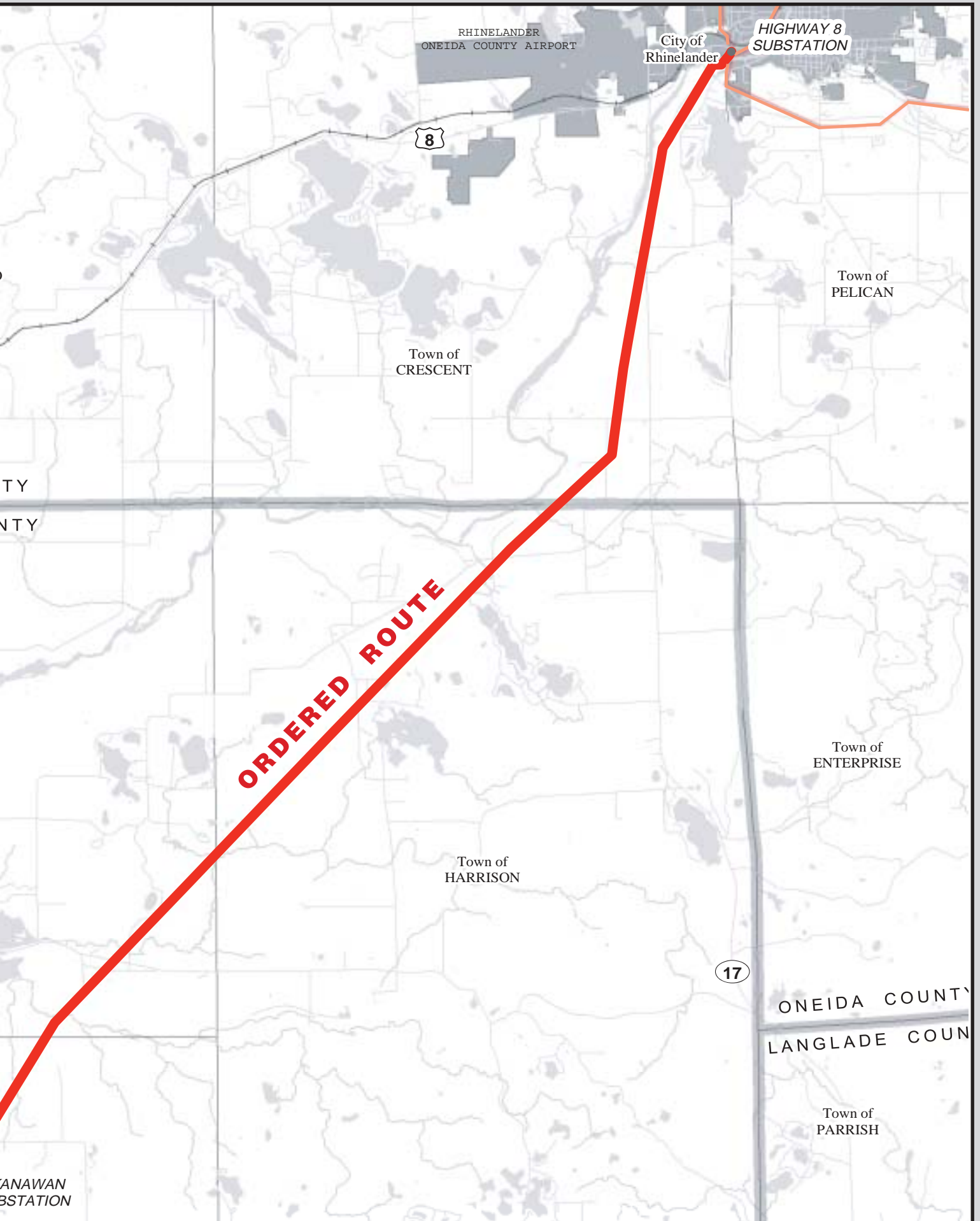
In approving the new transmission line, the Public Service Commission of Wisconsin ordered ATC to replace the existing single-circuit 115-kilovolt transmission line with a double-circuit overhead line. The 16.3-mile line runs from Skanawan Switching Station southeast of Tomahawk to the Highway 8 Substation in Rhinelander. Existing wooden H-frame structures will be replaced with single pole steel structures.



Proposed Routes

-  Existing 115 kV transmission line
-  Approved route
-  ATC owned substation
-  Jointly owned substation





Understanding electric transmission

Ensuring that you have electricity to power the essentials in your home and business involves more than just your local electric company these days. Today, companies specialize in various aspects of energy production, transmission and delivery, and they work cooperatively to bring energy to homes and businesses.

Wisconsin Public Service generates electricity and delivers it to consumers. In between generating and delivering the electricity, there is electric transmission. ATC's role is exclusively **electric transmission**. That is, ATC owns, operates, plans, monitors and maintains the wires that carry electricity at high voltages from power plants to substations. ATC has more than 8,900 miles of transmission lines and approximately 450 substations throughout portions of Wisconsin, Upper Michigan and Illinois. This transmission equipment provides the pathway for power from where electricity is generated to where it is used.

To help put that in perspective, this illustration shows how electricity gets from energy producers to energy users.



ELECTRIC GENERATION

Electricity is generated by utilities and other energy producers at many kinds of power plants.

ELECTRIC TRANSMISSION

Substations step up the electricity generated at power plants, and the electricity travels at very high voltages over transmission lines.

ELECTRIC DISTRIBUTION

Electricity from transmission lines is reduced to lower voltages at substations, and distribution companies route the power to homes and businesses.

PROJECT TIMELINE

Rhineland Loop Electric Reliability Projects

- Spring 2004** Complete Pine-Eastom line upgrade to 115 kV
- Spring through fall 2004** Survey work, easement acquisition Skanawan – Highway 8 line
- Fall 2004** Begin line construction Skanawan – Highway 8 line
- Late spring 2005** Energize Skanawan – Highway 8
- Late 2007 into 2008** Connect Rhineland Loop with Upper Peninsula transmission system



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Late last year, the Public Service Commission of Wisconsin approved a 16-mile transmission line between Skanawan Switching Station near Tomahawk and the Highway 8 Substation in Rhineland.

Read about the project inside.

Questions about the Rhineland Loop Reliability projects? Call Joanne Leonard in ATC's Wausau office at 715-848-4246.

www.atcllc.com



Mike Hueppchen, ATC design engineer, explains the Rhineland Loop reliability projects to a local girl scout troop and their leader at an open house preceding the PSCW's public hearing.