

# Cedar Pole NEWS

## Western Red Cedar Poles Used By Three South Dakota Utilities

**K**nown for its rural landscape, many South Dakota electric cooperatives have chosen to use Western Red Cedar Poles. Cedar Pole News interviewed three coops in central South Dakota that are typical of the utilities supplying power to local residents, ranchers, farmers and towns in their areas.

**Rosebud Electric Cooperative**, located in Gregory, SD, is the 10th largest rural electric coop in the state, and covers approximately 3200 square miles.

They maintain 2,500 miles of line, and serve 5,300 metered accounts in three counties. Like most rural electric coops, Rosebud Electric has a low density service area. They serve two accounts per mile of electric line, compared to large power companies that serve about 40 accounts per mile of line. Despite the low density, Rosebud Electric has one of the lowest rates in the nation.

Rosebud Electric has used only cedar poles since 1965, and have 45,000 poles

in sizes from 40 ft. to 80 ft. Their oldest cedar pole, installed in 1938, is in Dallas, SD.



*Rosebud Electric Coop uses Western Red Cedar like this 70 ft. transmission pole because of its durability, climbability and ease of handling.*

Transmission line voltages are 114kV and distribution line voltages are 7.2kV. Through their maintenance program they inspect the system every 15 years.

**West Central Electric Cooperative**, located in Murdo, SD, has some 3,500 cedar transmission poles ranging from 30 ft. to 80 ft in height. Of the 62,000 distribution poles, 30% are cedar. For 25 years the utility has used Western Red Cedar poles throughout their system due to their durability and climbability.

The coop serves 3,660 members with 6,770 meters located in 12 towns in five counties. Incorporated in 1949, West Central owns and maintains 3,770 miles of line in more than 7,000 square miles. Much of their system serves areas outside city limits, that include farms, ranches, and accompanying barns, equipment storage buildings and wells.

Transmission voltages are 115kV and 69kV, with distribution voltages 25kV and

# South Dakota Electric Coops Use Cedar Poles for Durability



*This 45 ft. pole is typical of West Central Electric Coop's service to rural users in the Murdo, SD, area.*

2.4kV. About 55% of West Central's power consumption is residential use with the remainder commercial use.

West Central maintains a 10-year cycle of inspection and maintenance for its system.

Along with other cooperatives, West Central Electric is a member of Basin Electric Power Cooperative in Bismarck, ND. Basin Electric is the nation's largest generation and transmission cooperative, serving an eight-state area in the Midwest. West Central receives about 70% of their power requirements from Basin, with the remainder being obtained

from the Western Area Power Administration.

**Moreau-Grand Electric Cooperative** is as unique as its service area. Twenty-five employees maintain a system that has one of the fewest meters (1.63) per mile of line in the nation.

The utility services 6,950 sq. miles of rolling plains encompassing Corson, Dewey and Ziebach counties in north central South Dakota. Moreau-Grand Electric lies entirely within two adjacent Indian Reservations. These are the Cheyenne River Sioux Indian Reservation in the south, and the Standing Rock Sioux Indian Reservation to the north.

Part of the cooperatives' uniqueness is that it also serves the 26 communities

located within its boundaries. In addition to the main office located in Timber Lake, the cooperative also has outposts and offices in the neighboring communities of Eagle Butte and McLaughlin.

The utility has approximately 70,000 cedar poles in their system, of which 4,000 are transmission poles. Moreau-Grand Electric has used cedar poles since 1952, and has used them exclusively since 2001. All poles are full-length treated. System voltages are 69kV for transmission lines and 7.2kV for distribution.

Two major winter storms followed by spring flooding has handed the cooperative its share of line damage. With all of this, Moreau-Grand Electric is firmly committed to Western Red Cedar and its advantages.



*Twelve miles of new 70 ft, Class 1 cedar transmission line was constructed in 2007 by Moreau-Grand Electric. This along with a new substation and 15.2 miles of new cedar three-phase, supply power to a new water intake for the Mni Waste water project that brings safe drinking water to Dewey and Ziebach Counties.*

# Estimated Service Life of Wood Poles

*A reprint of the first half of the North American Wood Pole Council Technical Bulletin, prepared by Jeffrey J. Morrell, Dept. of Wood Science & Engineering, Oregon State University. For the entire technical bulletin, and more information about wood poles the reader can access [www.woodpoles.org](http://www.woodpoles.org).*

## Introduction

Utilities are often faced with questions about how long a pole lasts once it is placed in the ground. Why does it matter? There are a number of important reasons for paying attention to service life. First, utilities want to maximize their capital dollars and longer service life reduces the need for pole replacements. More recently, utilities have begun to examine their carbon footprint. While thousands of tons of carbon are stored in the utility wood pole plant, a relatively small portion of a utility's total carbon footprint is represented by the electric transmission and distribution system. Efforts to reduce this foot print can have important public relations value. Wood poles offer an opportunity for atmospheric carbon sequestration not provided by other materials.

A recent Electric Power Research Institute study suggested that wood poles lasted 50 years. Most utilities assume that their poles provide 30 to 40 years of service life. Which is really true or are they both wrong? How would you find out? How do you compare these numbers with claims by producers of competing materials that their poles will last 80 or more years? There are a variety of competing claims about how long poles last. In some cases, such as for wood, lattice steel and pedestal-mounted thick-walled steel poles, the claims are based upon

actual performance data. However, there is little or no long term data for many more recently developed materials, or new use patterns such as direct-burial of steel poles. Instead, the producers of these products depend upon accelerated testing or extrapolations from the performance of similar materials to support claims.

## Discussion

A 1999 Oregon State University survey of utilities across the U.S. revealed that a majority of respondents believe that their poles last between 20 and 40 years. There is compelling evidence indicating that the estimated 30-year pole service life originated from curves developed to estimate economic service rather than actual service life. The goal was to determine when the investment had been returned, rather than when the pole had actually failed.

Actual pole service life is a function of many factors including the specification, the quality of treatment, the conditions to which the pole is exposed, and how well the pole is maintained during use. In a single utility, one can look at pole records to estimate service life. Many utilities record the date of pole installation along with supplier, wood species and treatment details. They may also record inspection dates along with any supplemental treatments applied and, finally, they record when the pole is changed out. The final information may not be directly tracked because the new pole information automatically populates the data base replacing the original data but if it is, the utility can directly calculate service life. Utilities can also examine pole purchasing records to infer replacement

rates, but this also depends on how much new line construction is occurring within the system. This data must be viewed carefully because it includes poles removed for all causes not just those no longer capable of supporting their original design load. Poles may be removed for upgrades, road widening, car/pole interactions, storm damage, or a number of other reasons.

As you might expect, pole quality can have a major effect on service life. All poles should be specified to the Standards of the American Wood Protection Association (AWPA). These consensus standards provide minimum levels of treatment for all native pole species currently listed within the American National Standards Institute Standard O5.1. Although there will be differences in characteristics of poles treated with various chemicals, new chemicals are assessed by the technical committees that set AWPA Standards with the assumption that they should all provide similar resistance to deterioration. This leaves the user with a suite of chemicals that may produce poles that are different colors, vary in fire resistance, or differ in climbing characteristics, but they should provide similar service with regard to resistance to fungal or insect attack. Utility enhancements to specifications can also enhance performance. For example, most users of Douglas-fir utility poles through-bore, radial drill, deep-incise or kerf to improve treatment at the ground-line and these practices markedly reduce internal decay and extend pole service life.

***This bulletin will be continued in the next issue of Cedar Pole News.***



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2405-61st Ave. S.E., Mercer Island, WA 98040  
800-410-1917, 206-275-4753, Fax: 206-275-4755  
email: [info@wrcpa.org](mailto:info@wrcpa.org)

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## Wood Pole Structure Design Seminars

Three Wood Poles Structure Design Seminars are still available this year, and are sponsored by the North American Wood Pole Council.

Attendees learn to design wood electrical distribution structures, including calculating strength and maximum allowable spans for wind and ice loading, guy loading due to tension and wind, and non-design aspects of wood structures. The course includes an extensive design and reference guide.

The course is especially useful for engineers, managers, purchasers, construction personnel, experienced personnel and novices.

Attendees completing a seminar earn 18 Professional Development Hours.

Topics include:

- Conductors
- Poles
- Pole-top Assemblies
- Guying and Anchoring
- Beyond Design

2009 seminars are being held:

- June 16-18, in Birmingham, AL
- June 23-25 in Charlotte, NC
- Oct. 13-15 in Minneapolis-St. Paul, MN


**For more information on  
these seminars to to  
[www.woodpoles.org](http://www.woodpoles.org)**

### *Did You Know?*

*One of the world's most environmentally friendly materials, wood is renewable, recyclable, and continues to store carbon dioxide even as a finished product. And managed forests in the U.S. offset more than 20% of the countries greenhouse gas emissions.*

**Cedar Pole News is a publication of the Western Red Cedar Pole Association, which is solely responsible for its content.**

**The Western Red Cedar Pole Association can be reached at 800-410-1917, and at [www.wrcpa.org](http://www.wrcpa.org).**

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