



# GET CURRENT

## Steel Distribution Poles



Steel  
Market Development  
Institute

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## HARDENING The Line With Steel

A utility company relies on a strong and resilient overhead distribution system to deliver electricity to its customers through wind, snow, sleet, fire and rain. Today, over 185 million electric distribution poles line the streets and open terrain of North America.

Steel distribution poles carry electric, telephone and cable TV services to keep customers safe, productive and in touch. Keeping these services on line is essential to daily living. Steel distribution poles help build a reliable and cost-effective distribution system – a system that will deliver electric power and access to communication when and where they are needed.

*“Steel poles require much less maintenance and are much more reliable than other materials.”*

*Duane Oliver, Former Construction Supervisor,  
Arizona Public Service*



## RELIABILITY and Savings

Steel poles offer reduced risk of catastrophic system failure, or the ‘cascading effect’ from a single downed pole. Steel poles can be ordered to specific height requirements, with the potential to carry heavier loads and increase span lengths. The costs of framing, insulators, line hardware and stringing are reduced, and steel poles require less labor for installation and maintenance.

Steel distribution poles increase distribution system reliability and are now widely considered a viable alternative to wood and other materials. This is especially true in remote locations where access is difficult and in areas prone to extreme weather or pests such as high winds, ice storms or fire, or excessive woodpecker populations.

*“We looked at steel poles for several reasons but primarily because they are expected to last up to 80 years.”*

*David Cutbirth, Director of Operations,  
Carbon Power and Light*



## LESS MAINTENANCE Lower Installation Costs

The competitive utility marketplace demands exceptional customer service while containing costs. Industry research and user experience show that steel distribution poles cost less – and deliver more – over the long haul. For example, Jeff Hohn, manager of engineering for Farmers Electric Cooperative in Clovis, New Mexico, found that using steel for a 225-pole installation saved his company \$50,062. How? The poles took less time to install, reducing the total cost of the project.

*“If the labor cost to replace a pole in our network is more than the difference between the material cost of steel versus wood, then we generally go with steel. We also use steel for most new labor-intensive installations.”*

*Clive Buttrey, Middle Tennessee Electric Membership Corporation*



## STEEL IS AN Environmental Winner

Non-toxic and 100 percent recyclable, steel poles offer a long-term solution for regulatory pressures to buy recycled and recyclable materials. Today’s spiraling costs for disposal of chemically treated wood poles is another selling point for steel. Even untreated wood pole disposal is now a serious issue, as landfills are no longer an option in many areas.

While it takes an entire tree to produce a wood pole, one scrapped automobile may produce more than four steel distribution poles.

*“Steel poles are entirely recyclable. Wood poles, on the other hand, have been treated with preservatives. Even though they’re a natural material, there are certain restrictions and costs associated with disposal.”*

*Ken Wright, Lead Superintendent of Transmission Maintenance, Tucson Electric Power*



## LINEMAN TRAINING

Steel is becoming a standard material for distribution poles, as management and linemen at utility companies realize its important life cycle costs, installation and maintenance benefits. Lineman training with steel is essential to helping new and veteran linemen gain valuable skills they will use right away on the job.

In conjunction with colleges, vocational schools and utilities, the Steel Market Development Institute, a business unit of the American Iron and Steel Institute, provides steel pole training at locations throughout North America, including lineman schools, community colleges and utilities. This training addresses steel pole design, installation and safety in classroom and field training sessions.



The program offers important information and hands-on training to utility operations and purchasing managers, journeymen linemen and linemen-in-training.

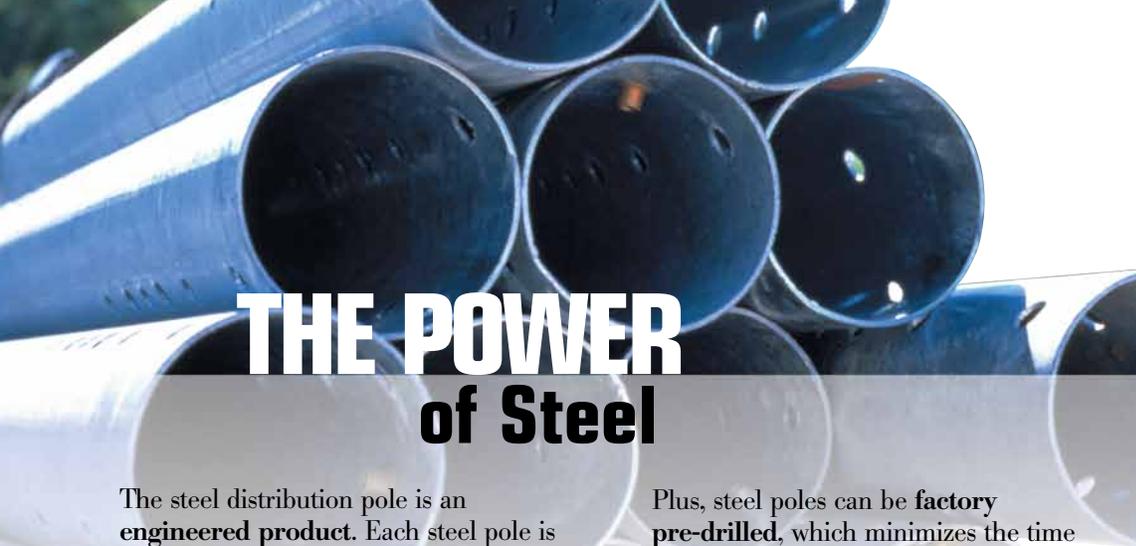
For information on SMDI's lineman training, visit [lineman.steel.org](http://lineman.steel.org), call 202.452.7100, or email [dsnyder@steel.org](mailto:dsnyder@steel.org).

## STEEL IS THE Choice for Today

**A steel distribution pole is a value-added product. Here's why:**

- Increased reliability and lower installed costs.
- Less maintenance, reduced labor costs.
- Customizable for specific applications.
- Resistant to fires, pest and rot.
- Variety of finishes available: galvanized, paint over galvanized, weathering steel.
- Environmentally sound: 100% recyclable, with no toxic chemicals.





# THE POWER of Steel

The steel distribution pole is an **engineered product**. Each steel pole is designed to meet specific strength and load requirements. They are tested to American Society of Civil Engineers (ASCE) tolerances and National Electric Safety Code (NESC) load requirements, and fabricated to American Society for Testing and Materials (ASTM) tolerances. The result is an extremely strong and reliable product with uniform dimensions and strength, but without twists, knots, splits or bows.

Through design, a steel pole is a **lighter product** – at least 30 percent lighter than wood. Lighter weight can **reduce the cost** of transportation, handling and construction. It also simplifies remote location installations.

A steel pole distribution system requires **little maintenance**. There's minimal need for tightening hardware to compensate for pole shrinkage. Steel has proven to retain its strength and shape over many years.

Inspections for damage caused by rot, insects or woodpeckers are eliminated with steel poles. They are impermeable to these forces of nature.

Plus, steel poles can be **factory pre-drilled**, which minimizes the time spent by construction crews preparing poles for installation.

Steel poles **offer flexibility**. Steel installations offer an economical alternative for guying and strength problems at angles and deadends.

There's **safety in steel**. With minimal maintenance and inspection, steel poles can reduce workers' risk of accidents. Also, steel poles are conductive so there is no need to install the full-length copper ground wire typically required for wood. Steel distribution poles are safe to install or maintain under hot line or energized working conditions. No matter if the pole is wood or steel, proper procedure is essential when working with live lines.

Also, steel poles provide **safety when impacted by a vehicle**. While wood poles tend to shear, steel poles will typically bend when impacted, keeping the energized lines upright and away from the vehicle.

And because steel will not burn, ground and pole-top fires are not an issue.

## STEEL WORKS FOR Tennessee's Largest Cooperative

Special situations call for the right solution. About 15 years ago, Middle Tennessee Electric Membership Corporation (MTEMC) began transitioning parts of its predominantly wood pole-based distribution line to steel poles to meet specific needs.

Clive Buttrey, an electrical engineer with MTEMC, explains, "We use steel distribution poles when we need long-term reliability. Typically, this is in remote or ordinarily inaccessible areas. Any pole in these locations has excessive costs associated with installation, repair or replacement since crews may require a bulldozer or crawler truck for access. Other installations have time constraints on replacement due to limited outage windows, or other external constraints such as rail and highway shutdowns, that mandate overtime work. All these factors increase labor costs. We use steel poles in these locations because they are low maintenance, lighter weight and have longer life spans."

When deciding whether to replace aging wood poles with steel, MTEMC performs a cost comparison study that evaluates labor and material costs with the assumption that the life span of a wood pole is 30 years and a steel pole is 80 - 100 years. Buttrey explains, "If the labor cost to replace a pole in our network is more than the difference between the material cost of a steel pole versus a wood pole, then we generally go with steel."

MTEMC also uses steel poles for the bulk of its new labor-intensive installations. According to Buttrey, the lifetime ownership costs of steel poles can be proven comparable to or less than wood poles in certain situations.



## FINISHES AND Ground Protection



On the aesthetic side, a variety of finishes are available with steel. These include galvanized, paint over galvanized (powder coat over liquid), dulled and darkened galvanizing and weathering steel.

Advanced coatings, including polyurethanes for below-ground protection for direct-embedded poles, further extend the life of steel poles. These coatings can be applied over the top of galvanized and weathering steel for a non-leaching, environmentally friendly corrosion barrier.



Scan this QR code with your smart phone or visit [lineman.steel.org](http://lineman.steel.org) for more information on steel distribution poles, or contact the Steel Market Development Institute.



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## CARBON POWER AND LIGHT SARATOGA, WYOMING

### For Wyoming Utility, Steel Distribution Poles Stand Up

#### Making the Right Move to Steel

Carbon Power and Light's veteran lineman and Director of Operations David Cutbirth says that steel poles have been the right choice for the utility for both operational and life cycle reasons. "The use of steel has helped our crew harden Carbon Power and Light's line against storm damage, increased line reliability, and given the community a more environmentally responsible alternative to wood."

According to Cutbirth, the overwhelming majority of new and replacement distribution poles set – from small routine pole changes to larger multi-pole line work – are steel. The utility, which installs an average of 300 to 400 steel poles annually, typically uses Class 3 or Class 4 poles ranging in height from 30 to 70 feet in height. Carbon Power and Light installs less than 10 wood poles annually.

"Steel helps us create a more reliable system with less maintenance. So overall, the life cycle cost for our utility is better with steel." - David Cutbirth, Carbon Power and Light

#### Why did the company switch to steel poles?

Cutbirth explains, "In the early 1990s, the price of wood poles started to skyrocket. At that time, my predecessor decided to look at steel for several reasons—primarily, because steel poles are expected to last up to 80 years. Additionally, the poles require minimal maintenance. And finally, the cost of wood to steel was comparable at that time. The economics are different now and steel poles may cost more, but the benefits outweigh the initial cost difference."

Cutbirth continues, "Steel helps us create a more reliable system. So overall, the life cycle cost is better with steel." He adds that Carbon Power and Light also began using fiberglass crossarms around the same time.

Cutbirth says the use of steel has resulted in important benefits to the community and the utility's bottom line, including:

**Resistance to Nature's Wrath:** "Standing tall during ice storms was one of the first benefits we realized with the steel pole installations. Other pluses: no pole-top fires, and an answer to woodpecker damage."

**Less Maintenance Required:** "A steel pole's resistance to shrinkage is a major benefit in the field."

**Aesthetics:** "Steel poles are uniform in size, and straight with no splinters."

**Versatility:** "Steel poles go everywhere, from prairie to mountains, sand to rock."



CPL Director of Operations David Cutbirth and crew with Mike Rowe, host of the "Dirty Jobs" program. Cutbirth's confidence in the utility's move to steel for its distribution system was showcased on the TV show. When Cutbirth got the call from the show's producers, he suggested changing out a wood distribution pole with a steel one, a task that was on his crew's to-do list.



# STEEL DISTRIBUTION POLES