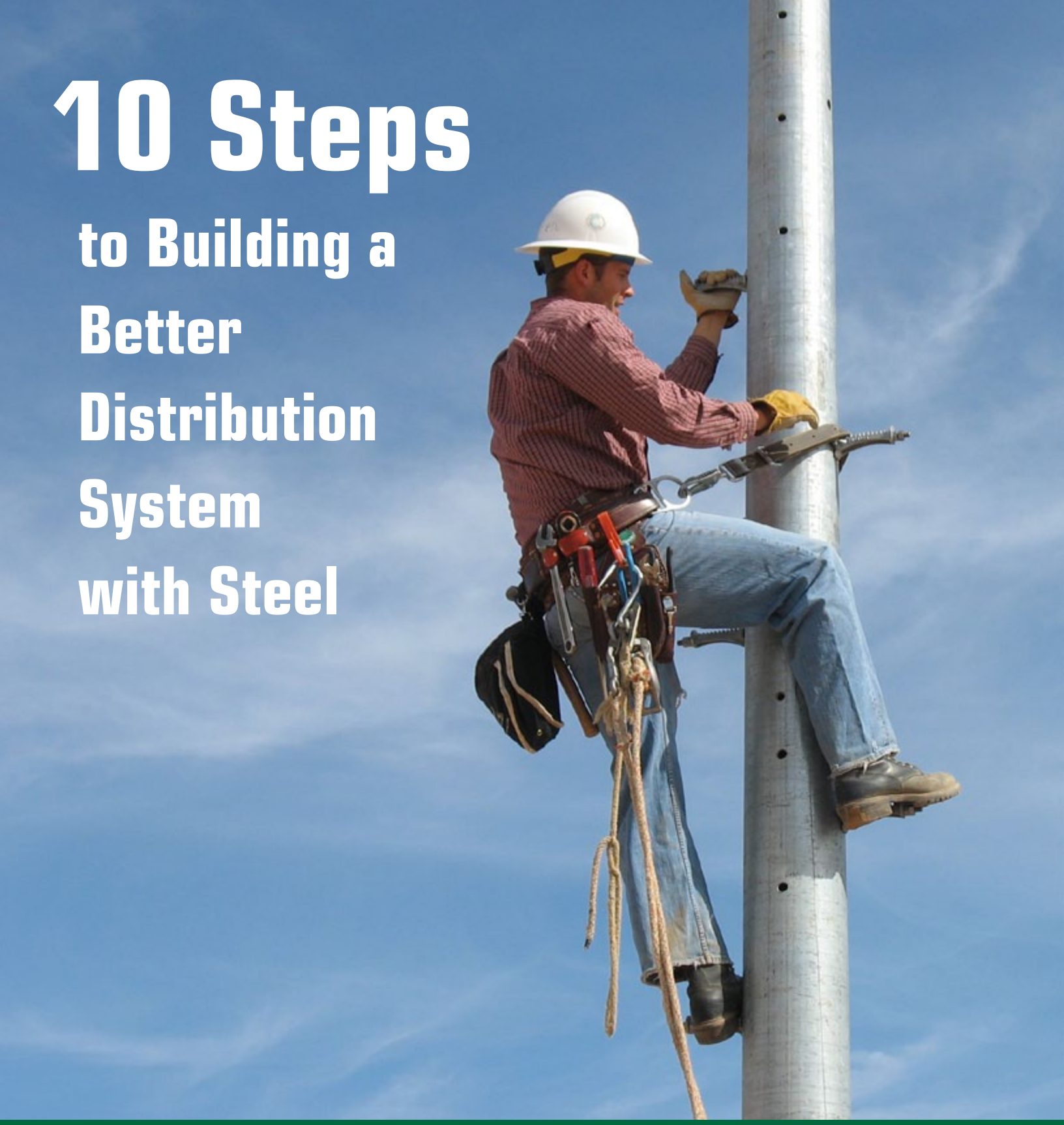
10 Steps

to Building a Better Distribution System with Steel



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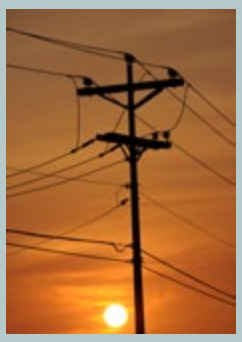
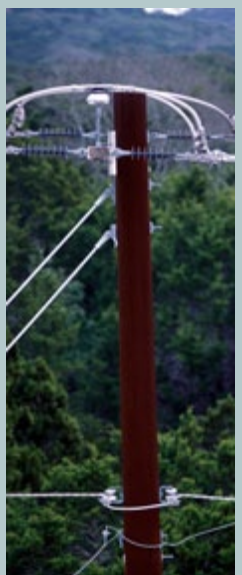




Steel poles help harden a distribution line, providing increased reliability at a lower installed cost.

Industry research and user experience show that steel poles require less maintenance and offer more protection against extreme weather, pests and rot.

This guide is a resource to help utility companies and their linemen implement a steel distribution pole program.

STEP 1: Evaluate Your Existing Distribution System.

All distribution systems are not created equal. Before deciding on what type of utility pole to purchase, evaluate your system's unique requirements. Consider the longer spans needed for highway crossings, the installation and maintenance required for remote installations, right-of-way issues, developer or city-mandated aesthetic considerations, special technical situations and budgetary restraints. It is likely that steel poles can provide an economical solution to your distribution needs.

Online Resource:

- Steel Utility Pole Manufacturers and Related Companies Listing

STEP 2: Compare the Alternatives.

Today, utility companies have several options to consider when constructing a new distribution line, or upgrading or replacing an existing system. These include steel, wood, fiberglass and concrete. With the myriad of benefits steel can introduce into a distribution system, it is not surprising that an estimated one million steel poles have been installed in the last 10 years. There are an estimated 185 million electric distribution poles that crisscross North America, and more than 600 utility companies now use steel distribution poles.

Online Resources:

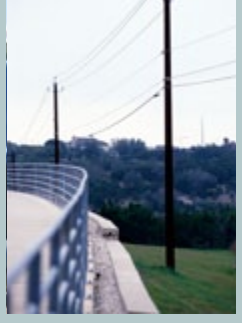
- "The Science of Pole Selection"
  Transmission and Distribution World - August 2003

STEP 3: Get the Facts on Steel Straight.

A steel distribution pole is a value-added product. It is reliable, cost-competitive, engineered for strength, and sustainable. A steel pole is made of 100 percent recycled content and contains no toxic chemicals. The steel will be used time and again.

Online Resources:

- Get Current
- What Every Lineman Should Know (**VIDEO**)
- Steel Utility Poles - Frequently Asked Questions
- Steel Utilities - Top Reasons to Use Them



STEP 4: Calculate the Savings.

Steel poles can reduce costs, especially labor costs associated with installation, handling and maintenance. The longer life span, strength and flexibility of steel poles can also trim workforce and equipment outlays.

Online Resources:

- Steel Utility Pole Pro Forma (**on request**)
- "Utilities Make Tradeoffs When Selecting Pole Types"
  Transmission and Distribution World - June 2003
- Predicting Hot-Dip Galvanized Steel's Service Life

STEP 5: Review the Research.

Steel poles offer solid performance and present significant advantages.

Online Resources:

- "Raptors: Test to Protect"
  Transmission and Distribution World - March 2002
- BIL Testing on Steel Poles
- Grounding Equivalency of Steel Poles
- Conductivity Research

STEP 6: Evaluate Various Coatings.

Steel poles resist corrosion through the use of hot-dip galvanizing, or an uncoated weathering grade steel. In the hot-dip galvanizing process, steel poles are dipped into a bath of molten zinc, forming a permanent metallurgical bond between the zinc and the steel substrate. In the case of uncoated weathering steel, a dense and tightly adherent oxide barrier forms when the material is exposed to the environment, sealing out the atmosphere and retarding further corrosion. Advanced coatings, including polyurethane for below-ground protection of direct-embedded poles, further extend the life of steel poles.

Online Resources:

- RUS Guidelines for Approval for Use of Steel Distribution Poles
- Zinc Coating Life Predictor
- FHWA Technical Advisory on the Use of Weathering Steel in Structures
- Life Cycle Analysis Study

STEP 7: See What Works for Other Users.

Tucson Electric Power, Tucson, Arizona
TEP started using steel poles as stopper poles but soon realized that steel poles minimize the potential cascading effects of sudden failure during a storm or a microburst. In addition, a TEP life cycle analysis of steel versus wood pegged the life expectancy of a steel pole at 60 years - twice that of a wood pole, which is typically 30 years.

Bluebonnet Electric Cooperative, Bastrop, Texas
Bluebonnet performed an extensive steel-versus-wood trade study to evaluate overall life cycle costs from longevity to installation costs to resistance to damage. They found that the benefits of a steel pole are longevity, maneuverability, low maintenance and durability, particularly in difficult-to-access areas. The economic study found that the steel poles save the utility 10-20% in life cycle costs when compared with wood poles.

Carbon Power and Light, Saratoga, Wyoming
Steel poles have helped crews at Carbon Power and Light harden the utility's distribution line against storm and woodpecker damage, increased line reliability, provided a uniform pole that is light and easy to handle, and given the community a more environmentally responsible and aesthetic alternative to wood.

STEP 8: Get Your Linemen Involved.

Your linemen are the strongest link in your distribution system. These training tools can help them master the art of steel pole installation.

Online Resources:

- Lineman Training Overview (**VIDEO**)
- Hotline Training with the Nebraska Rural Electric Association (**VIDEO**)
- Storm Restoration (**VIDEO**)
- Setting a Steel Pole in a Live Circuit
- Climbing a Steel Utility Pole (**VIDEO**)

STEP 9: Ask for a Demonstration.

Looking for more interactive information? Request a steel pole installation or training DVD, attend a steel pole workshop, or talk to a steel pole manufacturer's representative to learn more about how steel can fit into your distribution system.

Online Resources:

- Steel Pole Lineman Training Manual and DVD
- Lineman Training Workshop Information
- List of Manufacturing Representatives
- Lineman Training Workshop (Schedule one today. Email dsnyder@steel.org.)

STEP 10: Start Using Steel Distribution Poles.

Working with Steel Distribution Poles: Essential Lineman Training

Steel is becoming a preferred material for distribution poles as management and linemen at utilities realize its important cost, installation and maintenance benefits. The Steel Distribution Pole Lineman Training Workshop educates utility linemen, students and instructors on the use of steel distribution poles and reinforces safety requirements for working with steel. The workshops include a classroom session and hands-on demonstrations, teaching linemen how to climb, drill, install and maintain steel distribution poles. The program has reached thousands of linemen across the nation since it was started.

The SMDI Lineman Training Kit was developed specifically for use by utilities and lineman program instructors as a supplement to the workshops. The kit contains a student/teacher manual, instructional DVD, case studies, and other information essential for lineman training. It is available to download on the Web site or can be ordered. Interested in scheduling a training workshop at your school or utility, or ordering a kit? Email dsnyder@steel.org or call 202.452.7100. To learn more go to lineman.steel.org.

This brochure is produced by the Steel Market Development Institute, a business unit of AISI.

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