

Installing a mile of

BY LE SPEARMAN

"Member service is our highest priority," says Jim Lauzon, chief executive officer of Maquoketa Valley Electric Cooperative (MVEC) in Anamosa. MVEC serves 14,000 members in seven designated service areas within its territory.

"We do a ten-year plan for the existing system to forecast what our load growth is going to be. Then we design the system to meet that need," says Lauzon. This plan is updated each year to adjust for population increases, as well as commercial and industrial growth.

MVEC requires that all line personnel receive formal training at an approved college. Once hired, they enter a four-year training program that includes further study and on-the-job work experience. "After four years, we feel that our line personnel have been well-trained and obviously meet our needs quite well," says Lauzon.

This in-depth skill and safety training gives MVEC flexibility when sending crews to install or service lines. According to Ken Smith, director of operations at MVEC, "The type of line will dictate the number of linemen and amount of equipment that is needed for each mile of line installation."

Thanks to the folks at MVEC for their help in producing this story!



Photos by Le Spearman

1

Following staked locations already cleared of trees, vegetation and debris, Bill Dietiker, Jim Waterman and Dan Petersen dug the holes for the new poles.



2

After digging, the linemen removed the auger shaft to install the anchor for the pole. The anchor connects to the guy wire supporting the pole.



3

The linemen *canted* the pole—rotating it so the insulators and other hardware would face the right direction when the pole was lifted into the hole.



4

Using the digger derrick truck to lift the pole, the crew guided the pole into place. Then they made minor adjustments to its placement.

new line



5 After all the poles were set, the crew ran both the phase and the neutral conductors. The conductors—aluminum-stranded wires with a steel core—are about the diameter of a nickel.

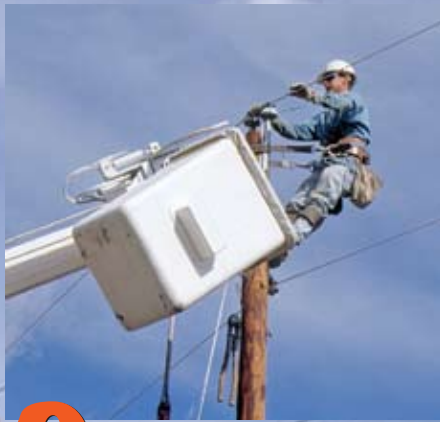


6 As the stringing trailer moved down the road, a lineman handed the wires to a lineman in the basket on the truck. Another worker on the ground made sure the line didn't get hung up on road signs.



7 The lineman in the basket guided the conductor over the insulator at the top of each pole; he also located the neutral wire on its insulator below. The next job was *sagging*—tightening—the lines.

8 MVEC's director of operations Ken Smith tied the neutral conductor in place, using preformed ties.



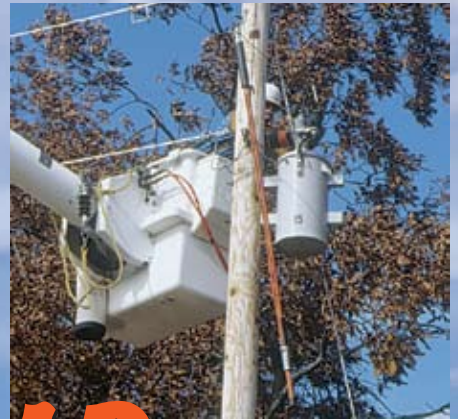
9 Jim Waterman tied phase wire. The mechanical press hanging down was used to bond the neutral conductor to the pole's ground wire.



10 From the bucket, Mike Kupka tied the phase wire to one of the poles that was positioned to follow the curve of the road.



11 Steve Ludwig prepared to pull both wires across the road for attachment to another line that was already in place.



12 Tom Weaklen connected the new line to the transformer to convert the line's 7,200 volts to a consumer-usable 120 volts.

What does it cost to install a mile of line?

"On average, we build 15 miles of new line each year," explains Lauzon. It costs MVEC \$15,400 to build one mile of single-phase line and \$27,400 for one mile of three-phase line. MVEC builds new lines to update load (electrical usage) and to serve new members. This includes rapidly growing housing developments in rural areas near Dubuque and between Cedar Rapids and Anamosa.

The costs detailed below are estimates. The amount for installing a mile of line varies on each job, depending on factors such as terrain, distance to the job and whether the installation is on a private right-of-way or along a public road.

Single-phase line

A single-phase electrical line carries 7,200 volts of electricity through one wire. The current passes through a transformer, reducing voltage from 7,200 volts down to 220 or 120 volts.

Estimated Cost: \$15,400

Poles	\$2,700
Conductor	\$1,700
Hardware	\$2,500
Labor	\$5,000
Truck expense	\$1,500
Overhead	\$2,000

Three-phase line

A three-phase electrical line carries 7,200 volts of electricity through each of three electrical wires. The current passes through a transformer, reducing voltage from 7,200 volts down to 480, 220 or 120 volts.

Estimated Cost: \$27,400

Poles	\$4,000
Conductor	\$3,400
Hardware	\$6,000
Labor	\$7,000
Truck expense	\$3,000
Overhead	\$4,000