

People, Property and Power Lines

Frequently asked questions
about power lines
on or near your property



**GREAT
RIVER
ENERGY™**

Great River Energy is a not-for-profit wholesale electric power cooperative which provides electricity to the 28 distribution cooperatives shown below.



Our system provides power to approximately two-thirds of Minnesota geographically and parts of Wisconsin, serving about 1.7 million people.



Great River Energy is committed to providing safe, reliable electricity to our member cooperatives and the member-consumers they serve. Keeping electricity flowing to you and to other customers sometimes requires us to build new power lines or upgrade existing lines. That means working with landowners and local, state and federal government units to meet the region's needs.

Inside you will find answers to frequently asked questions about:

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Power line basics

Electric power lines have been part of the landscape for more than a century, delivering the power we need to use our favorite electronics and appliances and operate our businesses. There are transmission lines, such as those Great River Energy builds, and distribution lines from your local electric utility to your home or business.

Q. What are transmission and distribution power lines?

A. Transmission lines deliver large or bulk amounts of electricity from power plants to substations. Think of transmission lines as the interstate freeways of the electrical system. Distribution lines deliver smaller amounts of electricity directly to homes, farms and businesses. Think of them as the smaller state or county highways of the electrical system. The electricity provider who you pay each month is a distribution cooperative or company.



Transmission lines and structures are usually smaller than landowners expect at first. The large lattice towers that come to mind are rarely used any longer. Pictured above is a common structure for 69-kV and 115-kV transmission lines.

Q. What are volts?

A. The force or electrical pressure of an electrical current is measured in volts. The voltage at which a transmission line operates is expressed in kilovolts (kV). One kV equals 1,000 volts. Any line that operates at over 100 kV is considered a high-voltage transmission line. Lines operating below 100 kV are either considered sub-transmission lines or distribution lines.

How transmission lines are planned

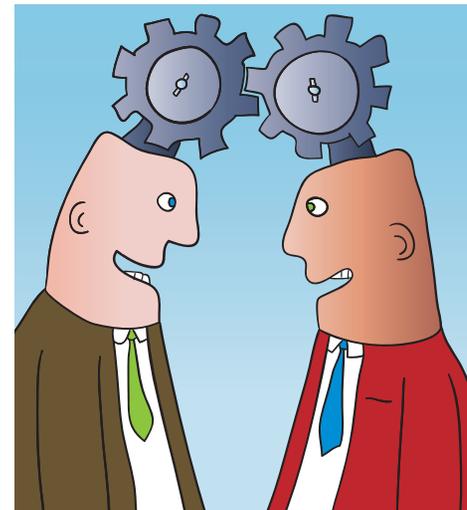
A new transmission line can be needed to improve or preserve reliability for many reasons, such as people in an area using more electricity than they had in the past or more people or businesses moving into an area.

In addition, transmission lines may be built when a source of backup power is needed, such as to add an alternate source of power to an existing facility or provide a link between utilities so backup power is available during emergencies. Think of it as serving the same purpose as a road construction detour. When one path is unavailable, it is important to have an alternate path.

Transmission lines are also needed when a new power plant is built, to deliver the electricity from the plant to the electric system.

Q. Who decides a new line is needed?

A. Planning engineers at Great River Energy, our member cooperatives and other utilities continuously monitor the system. Most of our projects are requested by our members (such as your electric cooperative) based on estimates of their member-consumers' existing and forecasted future needs. Other times new transmission lines are needed to address regulatory requirements, such as renewable energy standards.



Who thinks of this stuff? Most of our projects have been requested by our members. Engineers from your electric cooperative, Great River Energy and other area utilities work together continuously to maintain a reliable electric system. Sometimes that requires building new power lines.

Determining where the line will be built

Great River Energy uses a thorough process for routing transmission lines whether we are following a local or state permitting process.



As much as possible, we follow existing corridors, such as along roadways, railroads, pipelines or existing power lines. Sometimes the Minnesota Public Utilities Commission makes the final decision on where the line will be constructed.

Q. How do you decide the specific route a new line will follow?

A. Many social, environmental and engineering factors are considered by a team that includes representatives from land rights, environmental resources, construction, engineering and local electric cooperatives. The team examines the area and identifies possible routes for the line. Our goals include:

- Using existing corridors (such as along roadways, railroads, pipelines or other power lines) as much as possible
- Minimizing, as much as possible, effects on human settlement, agriculture, forestry, mining, natural systems, wildlife and recreation, public or culturally significant lands and water
- Providing a safe, reliable transmission line at a reasonable cost
- Maintaining compatibility with future plans

Q. How can I get involved in the process?

A. You may be contacted for input, or public meetings may be held to answer landowner questions, encourage public discussion and get input

on proposed routes. If you are invited to a public meeting in your area, it is important that you attend. On projects following the state of Minnesota's permitting process, the Minnesota Public Utilities Commission makes the final decision on where the line will be built, after receiving extensive public input.

Q. Why not bury the lines underground?

A. At first glance, it might seem that burying transmission lines is a good solution, but it actually has significant drawbacks for both utilities and landowners. Burying long-distance transmission lines underground is generally not practical because:

- 1) They cost several times more than overhead lines due to the differences in equipment, materials and construction costs.
- 2) Repairs are much more difficult and expensive. Outages can last days rather than hours.
- 3) The construction process is much more disruptive for landowners.

Even though special circumstances (such as areas near airports or downtown areas) may require underground lines for short distances, transmission lines will continue to be built above ground until a more reliable and economical method of underground construction and maintenance is developed.



Keeping the power flowing to you

The electricity you use every day travels through miles of power lines before it reaches you. Making it possible for you and other customers to reliably operate your favorite electronics and appliances sometimes requires us to build or upgrade transmission lines.

Purchasing easements

If Great River Energy needs to build a transmission line on your property, a right-of-way professional will work with you to obtain an “easement.”

Q. What is an easement?

A. An easement is a right and interest in real property for a specific use, such as a transmission line. With an easement, you grant permission to Great River Energy to build a transmission line on your land for an agreed-upon payment. You still own and can use the property on which the line is located, but the easement grants us the right to build, operate and maintain the line (including removing vegetation) within the defined area. Easements generally last for the life of the transmission line.

Q. What is the process for acquiring easements?

A. Once a final route is determined and we have the necessary permits, we identify which landowners will be affected by the line. We then study current market property values and the type of land the line will cross. Next, we develop an easement payment schedule that becomes the basis for



Designing the best route is often very challenging. We appreciate your cooperation and input as we do our best to balance many different factors to determine the best route and find solutions that work for both landowners and the line design.

negotiations with landowners for each parcel of land. If an easement is needed across your property, a Great River Energy representative will personally meet with you to discuss:

- The type of power line that will be built and the proposed location of the easement and power line across your property
- Terms and conditions of the easement document
- The payment schedule and amount of your payment

In addition, we will answer your questions, provide you with a copy of the easement and give you information that describes various aspects of the power line.

Q. When does the landowner receive the easement payment?

A. If you have signed an easement, you will receive your payment prior to construction.

Q. What is a right of way? What rights does Great River Energy have?

A. The right of way is the actual strip of land defined in the easement. Our easement rights allow for the right to enter the easement area to remove trees and vegetation, and the right to remove or trim trees adjacent to the right of way.

Q. How wide is the right of way?

A. Widths depend primarily on the size of the power line. Ours typically range from 70 feet to 180 feet.

Q. What if we can't reach an agreement?

A. *Great River Energy always prefers to negotiate directly with landowners and come to an agreement.* However, in the event an agreement cannot be reached between you and Great River Energy, Minnesota law authorizes a court proceeding called eminent domain. Eminent domain is a right granted by the state that allows for the condemnation of land for facilities that benefit the general public, such as transmission lines. To exercise the right to an eminent domain proceeding, Great River Energy must prove the proposed facility is needed.

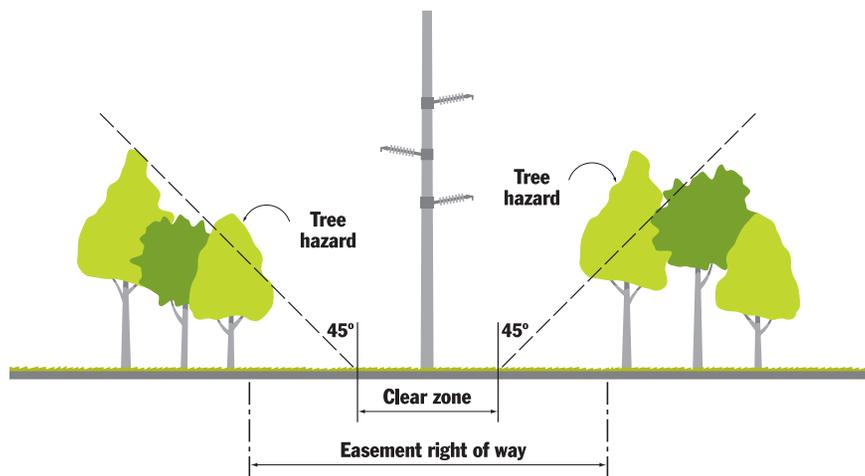
In such proceedings, the court appoints three commissioners who are knowledgeable in real estate matters to determine the amount to be paid for the easement. If you or Great River Energy are dissatisfied with the amount of the commissioner's award, either party may request an additional proceeding to determine compensation.

Tree removal, construction and property restoration

After the easements and necessary approvals have been secured, the line can be built. Landowners will receive information about the construction process, which involves surveying, tree removal, construction and restoration of property.

Q. Why do you have to remove trees?

A. For safety and reliability, a clear area around power lines, called the clear zone, must remain clear. Transmission line wires are not insulated and produce heat as the electric current moves through the line. Trees that come in contact with the power line can start on fire and/or cause a short circuit and outages. Additionally, line contact with trees or other objects that touch the ground can be dangerous for people nearby.



The North American Electric Reliability Corporation (NERC) requires utilities to maintain proper clearances along transmission rights of way.

Q. Do you have to remove even small trees?

A. Yes. Crews will remove any trees or vegetation that would hinder the construction, operation or maintenance of the line. For safety, reliability and cost savings, we remove tall-growing trees and saplings before they become a problem. Whenever possible, we leave shrubs and other low-growing vegetation in the edges of the right of way; however, an open area is needed on both sides of the transmission line's center for accessibility.

Q. Can I keep the wood?

A. As part of the easement, Great River Energy acquires the trees on the right of way; however, you can request the wood if the removal method allows the wood to be saved.

Q. What is involved in constructing the line?

A. You will be contacted about construction procedures and access to locations where poles will be placed. If necessary, gates or openings at points of access will be installed. Concrete foundations for poles will be installed if necessary. Then the poles will be set and the wires installed.

Q. Will you restore my property when you are done?

A. We always try to minimize the impact our projects have. During construction, we clean up along the route as best we can. Following construction, we restore the land as closely as possible to its original condition. Then a final cleanup and inspection are made. Restoration is part of our right-of-way management program, which is designed to minimize the impact of transmission lines and ensure continuous operation.

Q. What if you damage my fencing or other property during construction?

A. When the line is complete, we will contact you to ensure the conditions of the easement are met to your satisfaction. Sometimes, however, minor damage is unavoidable. Damage to fences, roads, fields or other property will either be repaired to your satisfaction or you will be paid for doing your own restoration and repair.

Q. How are crop losses determined?

A. Crop losses are determined by measuring the area damaged and then multiplying it by the current market price per bushel using an average yield per acre for the type of crop. This calculation will be discussed with you at the time of settlement.

Meeting industry guidelines for transmission line design and maintenance



In order to maintain a safe, reliable system, Great River Energy closely follows industry standards, such as those outlined in the National Electrical Safety Code and requirements of the North American Electric Reliability Corporation.

Ongoing maintenance and tree management

To ensure safe, reliable operation of our transmission lines, we inspect our transmission lines each year by air or by ground for:

- Trees that are growing too close or could grow too close to a power line
- Equipment needing repair or replacement
- Easement encroachments
- Anything that might jeopardize safe, reliable operation of the line

Q. Will you enter my property to remove or prune trees?

A. Sometimes, yes. Occasionally crews might have to enter your property to remove or prune trees or to perform other maintenance work. In the event of an emergency, quick and direct access may be necessary for major repair. Great River Energy typically uses existing field or access roads with your permission and makes every effort to avoid damaging your property. We (or one of our contractors) will make a reasonable effort to contact you first. However, in emergencies, it may not be possible to contact you beforehand.

Q. Do you use herbicides?

A. Where conditions permit and with the property owner’s permission, Great River Energy also uses herbicides as an effective and economical method of controlling tree and brush growth. Great River Energy’s herbicide application methods follow U.S. Environmental Protection Agency and state agency regulations. Herbicides are applied by licensed applicators.

Q. How do you handle Dutch elm disease and oak wilt?

A. We handle elm and oak wood cut from rights of way according to local and state regulations.

Q. How much of a clearance do you need for safe operation?

A. For safety and reliability, Great River Energy requires a minimum 15-foot clear zone (sometimes more) on both sides of any transmission line, measured from the base of the structure. (See diagram on page 8.) Transmission lines operate at high enough voltages that actual contact with an object may not be necessary to cause an outage or dangerous situation. Also, summer temperatures and higher electricity use can cause lines to sag, sometimes as much as five to 10 feet.

Q. Can I plant anything in the right-of-way area?

A. For your benefit, **DO NOT** plant any trees in the right-of-way area before talking to Great River Energy. As a landowner, even with an easement granted to Great River Energy, you retain most property rights, but we do not want to have to remove your new tree. Activities in the easement area that do not interfere with the safe construction, operation and maintenance of the line, such as using the land for pastureland, farming or gardening, are permitted.

Q. Can I build a building or other structure in the easement area?

A. Not without prior written approval from Great River Energy. Buildings and other structures are generally not permitted on rights of way. Crops, driveways, fences, parking lots and other such activities are permitted but must be reviewed by Great River Energy prior to construction. Again, we need to discuss projects with you so we can avoid problems in the future.



**YOU MUST
CALL US FIRST!**

For everyone's benefit, you must call before planting any trees or building in the right-of-way area. We do not want to have to remove your new addition.

Other questions

Q. What is stray voltage? What causes it?

A. The term stray voltage is used to describe a special case of voltage developed on the grounded neutral system of a farm. If this voltage reaches sufficient levels, animals coming into contact with grounded devices may experience a small shock or tingle. When this occurs on a dairy farm, the dairy cow may become stressed, which can result in behavior changes. These changes in behavior can affect the cow's health and the cow may begin to produce less milk.

Stray voltage is associated with on-farm wiring and electrical connections to the local electric distribution system. Questions and concerns about stray voltage are best addressed by the electric distribution utility that serves the farm directly (the utility the farm receives a bill from each month).

Q. Will a power line interfere with my television, radio, Internet, cell phone and GPS signals?

A. Power lines seldom interfere with radio or television reception or with Internet service, cell phones or Global Positioning Systems (GPS). Most interference is caused by appliances and equipment within the home and/or faulty receivers. Attempting to tune in a weak, distant station makes any interference more noticeable. Sometimes an improper connection on the power line can cause interference. If power line interference does occur, qualified personnel will investigate and solve the problem at Great River Energy's expense. Because the conversion to digital television is very recent, no data is available at this time to assess the effects of transmission lines on digital service.

Safety around power lines

If you see a broken or damaged piece of transmission equipment or line, or any other unusual condition, please report it at once to us at 1-800-442-3013.

Important safety information is available in our “Safety Around Power Lines” brochure and under Delivering Electricity at greatriverenergy.com.

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