

# Underground transmission lines

**A**t first glance, it may seem that burying high voltage transmission lines underground is an easy solution, particularly in cases where landowners are concerned about overhead lines disrupting the landscape. However, there actually are many drawbacks to burying transmission lines underground, for both property owners and utilities.

Electric utilities build high voltage power lines underground only in very rare circumstances, where there is no viable overhead corridor, such as near airports or downtown urban areas.

Great River Energy does not build transmission lines underground.

## Cost is significantly higher

Due to differences in equipment, materials and construction costs, building transmission lines underground is much more costly than building overhead. Underground lines must be routed to avoid other underground installations such as water, gas and sewer lines. Unstable slopes, hazardous material sites and bedrock must be avoided. Going under a road, highway or river requires expensive construction techniques such as directional boring. High cost is only one drawback to burying lines underground, but it is a significant one.

## Outages can last much longer

While outages may be less frequent, underground transmission lines can take much longer to repair than



*Burying high voltage transmission lines is extremely disruptive to property. An open trench is required throughout the construction process.*

overhead lines. Overhead lines can generally be repaired in a matter of hours or days after a fault occurs. In addition, when repairs need to be made to an underground transmission line, the utility may need to dig and disrupt the land to access the problem area.

## Construction is extremely disruptive to property

When building underground, utilities must dig an open trench through the entire right of way so concrete duct banks can be installed. The trench needs to remain open throughout construction. To allow for regular inspection and maintenance, splice boxes and manholes also must be installed along the line. When building overhead lines, only the areas where poles will be set into the ground (approximately 25 sq ft) are disrupted.



*A solid dielectric underground cable is significantly larger than a standard conductor that hangs from an overhead structure.*

*Splice boxes and manholes must be installed every 1,500 to 2,000 feet to allow for regular inspection and maintenance.*

### **Land use is more restricted**

Due to the need to ensure safety and maintain the integrity of the transmission system, use of the land within the right of way area can be significantly more restricted with underground transmission lines than with overhead transmission lines.

### **Large structures are needed**

Underground transmission lines do not completely eliminate the need for overhead structures. “Riser structures”, which are large structures with large attachments, are needed at the locations where the line transitions from underground to overhead.



*Riser structures are required in some areas when burying transmission lines underground.*

