

Understanding transmission lines

Distribution lines, the power lines that connect directly to homes and businesses, are often placed underground. So why not bury transmission lines too? The answer is complicated:

Duke Energy carefully evaluates each transmission project to determine whether an overhead or underground installation is more suitable. Burying transmission lines presents significantly different challenges than overhead construction.

- The construction of underground transmission lines demands the use of more expensive materials and requires precise installation and testing. This, along with other additional costs such as real estate acquisition and relocation of underground utilities, results in costs that are generally 10 to 15 times more than the cost of overhead transmission lines, depending on the specific project.
- Installation requires extensive digging that can have a significant impact on natural resources such as wetlands and wildlife habitats. Typically, that means a 16-foot-wide trench that's 6 to 9 feet deep. Also, burying lines does not preclude the need to remove trees, and construction impacts would be considerable – with heavy construction equipment, blasting and the need to build access roads and other facilities.
- Mountainous terrain poses additional installation and environmental challenges for underground lines, likely requiring shorter distances between manholes, cable reinforcement and special construction processes, adding to the costs of the line.
- The size of the duct bank in which the transmission cables are placed can vary depending on the voltage, power requirements and number of transmission circuits.
- Manholes for cable pulling and splicing are buried 10 feet deep and are 8 feet wide and 24 feet long. Manhole spacing is normally 1,500 to 2,000 feet but can vary significantly depending on the features and obstructions of the underground route.
- Though underground transmission lines are protected from trees, they are still subject to damage. When a fault does occur, it takes much longer to repair, resulting in longer restoration times.

While the installation of transmission lines underground presents a number of challenges, we will continue to evaluate each transmission project to determine the safest, most effective installation for our customers and our communities.

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