Gopher to Badger Link

DAIRYLAND POWER COOPERATIVE

Xcel Energy®

The Basics: Electromagnetic Fields

Electromagnetic fields, or EMF, are a normal part of everyday life. They're created whenever electricity is present and come from both natural sources, like the earth's magnetic field, and everyday things we all use, such as household appliances, wireless devices, and power lines. This handout explains what EMF is, where you might encounter it, and what decades of research tell us about EMF levels near transmission lines.

What is EMF?

Electromagnetic fields (EMF) are a form of energy created by a combination of electricity and magnetism. Some EMF is natural, such as sunlight, lightning or the earth's magnetic field. Other sources are human made, such as power lines or any devices that run on power or send a wireless signal.

You encounter EMF daily

EMF are created whenever electricity flows or an electrical force is present. These fields can occur naturally, such as in a person's brain, heart and muscle. The level of magnetic fields at 60 Hertz are also produced by everyday household items like space heaters, vacuums, kitchen appliances and electric blankets. The widespread use of electricity means we are exposed to EMF in our everyday environment at work, school and home.

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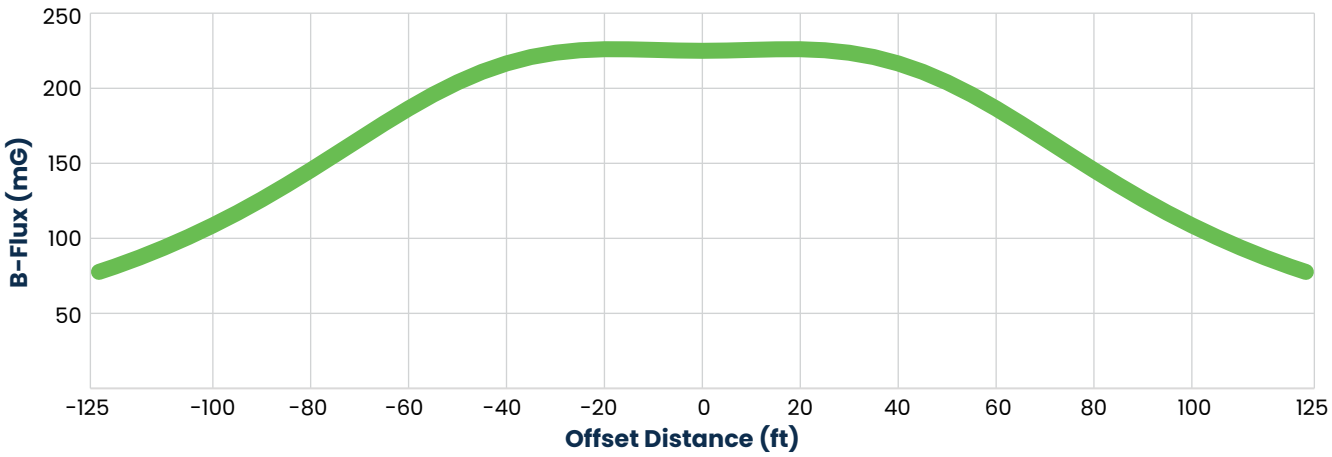
The following graphics provide magnetic field levels of common household appliances as well as anticipated magnetic fields under the proposed 765 kV line.

MAGNETIC-FIELD LEVELS (IN MILLIGAUSS) MEASURED NEAR HOUSEHOLD APPLIANCES

Hair dryer		Electric shaver		Blender		Vacuum cleaner		Coffee makers	
6 in. away	12 in. away	6 in. away	12 in. away	6 in. away	12 in. away	6 in. away	12 in. away	6 in. away	12 in. away
300 mG	1 mG	100 mG	20 mG	70 mG	10 mG	300 mG	60 mG	200 mG	40 mG

ANTICIPATED MAGNETIC FIELD LEVELS FOR GOPHER TO BADGER LINK 765 KV TRANSMISSION LINE



EMF and Health

EMF from power lines, and their effects on health, have been studied for more than 40 years by governmental bodies, public health organizations, and government appointed scientific panels all over the world. Initially, there were concerns of a possible association between childhood leukemia and magnetic fields of transmission lines. Subsequent research failed to demonstrate a causal relationship between transmission lines and any health risk. The World Health Organization (WHO) and other health agencies have concluded that scientific evidence does not support a link between health effects and exposure to electromagnetic fields.

EXPERT SOURCES FOR ADDITIONAL INFORMATION

- International Commission on Non-Ionizing Radiation Protection (ICNIRP). Power Lines – Low Frequency. *Available at: https:// www.icnirp.org/en/applications/power-lines/index.html. Accessed October 30, 2025.*
- National Institute of Environmental Health Sciences; National Institutes of Health. Electric and Magnetic Fields Associated With the Use of Electric Power. 2002. *Available at: https://www.niehs.nih.gov/sites/default/files/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf. Accessed October 30, 2025.*
- National Cancer Institute. Electromagnetic Fields and Cancer. *Available at: https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet. Accessed October 30, 2025.*
- World Health Organization. Electromagnetic Fields. *Available at: https://www.who.int/health-topics/electromagnetic-fields#tab=tab_1. Accessed October 30, 2025.*