

In addition to relying on NIEHS and the Department of Energy, BPA also follows the latest EMF-related efforts of other groups such as the World Health Organization, the International Commission on Non-Ionizing Radiation Protection, the Institute of Electrical and Electronic Engineers and the Electric Power Research Institute. BPA will continue to monitor the latest scientific EMF research and will communicate new information to interested parties, particularly as part of the public information on its transmission construction projects.

### Where can I get more information about EMF?

Health issues are important to everyone. Electricity is an essential part of our lives, and it's important to get the facts on EMF to make informed decisions.

You can find more information about EMF at the National Institute of Environmental Health Sciences Web site at [www.niehs.nih.gov/health/topics/agents/emf/](http://www.niehs.nih.gov/health/topics/agents/emf/), which includes the 1999 report to Congress and a comprehensive informational brochure by the Department of Energy called "Question and Answers About EMF – Electric and Magnetic Fields Associated with the Use of Electric Power."

Another excellent source for EMF information is the World Health Organization at [www.who.int/peh-emf/publications/en/](http://www.who.int/peh-emf/publications/en/).

[www.bpa.gov](http://www.bpa.gov)

# Electric and magnetic fields & transmission lines



Electricity is an essential part of our lives. It powers our appliances, office equipment and countless other devices that we use to make life safer, easier and more interesting. Use of electric power is something many of us take for granted. Some have wondered whether long-term public exposure to electric and magnetic fields produced through the generation, transmission and use of electric power might adversely affect our health. Over the last 25 years, numerous research studies and scientific reviews have been conducted to address this question.



## What is EMF?

Electric fields are produced by voltage in a wire. For example, an electric field is present when an appliance is plugged into an outlet, even if it is not turned on. Electric fields can be blocked or shielded by objects such as buildings or trees. They are typically measured in volts per meter.

Magnetic fields are produced when electric current is flowing, so they are only present when an appliance is turned on. As the flow of electricity – the current – increases, the magnetic field increases. Magnetic fields pass through most objects and cannot be blocked as easily as electric fields. They are typically measured in milligauss.

Together, electro-magnetic fields are known as EMF.

EMF is found everywhere there is electricity, including household wiring, electric appliances and power lines. Both electric and magnetic fields are strongest at the electrical source and diminish quickly with distance. A large majority of the scientific studies and reviews performed over the last 25 years have focused primarily on magnetic field exposure, so the term “EMF” usually refers to magnetic fields.

## What do scientific studies say about EMF?

One of the largest evaluations of EMF to date was led by two U.S. government institutions, the National Institute of Environmental Health Sciences of the National Institutes of Health and the U.S. Department of Energy. The agencies received input from a wide range of public and private agencies. This six-year project was designed to provide scientific evidence

to determine whether exposure to power-frequency EMF involves a potential risk to human health. The agencies also developed materials to inform the public about EMF.

In 1999, the National Institute of Environmental Health Sciences (NIEHS) reported to the U.S. Congress that the overall scientific evidence for human health risk from EMF exposure was determined to be weak and that aggressive regulatory action was not warranted. However, the agency also concluded that EMF exposure could not yet be recognized as entirely safe because of weak scientific evidence that exposure may pose a small risk related to childhood leukemia. As such, NIEHS recommended a more passive approach with emphasis on additional scientific research and continued public/regulatory education. The last 10 years of additional EMF research and investigations have not yet prompted any significant change to this position.

## How does EMF affect the siting of transmission lines?

As a federal agency, the Bonneville Power Administration relies on NIEHS and the U.S. Department of Energy findings and conclusions for guidance and direction when addressing EMF exposure for new transmission facilities. BPA often performs EMF assessments as part of the environmental process when designing and siting new transmission lines. EMF assessment is one of many important factors that BPA considers when determining and selecting preferred project alternatives.