

## **Understanding EMF**

Answers to the most commonly asked questions about electromagnetic fields (EMF).

### **What are electric and magnetic fields?**

Electric and magnetic fields, or EMF, are created by both natural and manmade sources, and occur all around us in our everyday lives. Electric fields are associated with the voltage or strength of an electrical source. Magnetic fields are present when current flows through various appliances, motors and conductors such as wiring and pipes. Together, these two fields are commonly referred to as EMF.

### **Where do they come from?**

There are many sources of electric and magnetic fields, including many common household appliances. Examples include electric blankets, televisions, refrigerators, kitchen appliances, hair dryers, computers, home wiring and electric power lines. EMF levels decrease in strength quickly as you move away from the source.

### **Is exposure to EMF harmful?**

Extensive studies have been conducted over the last 35 years to broaden scientific knowledge of EMF. After examining all of the scientific evidence, scientists have not been able to link biological responses on cells found in some laboratory experiments to adverse effects on the human body.

Also, after reviewing 500 studies spanning nearly two decades the National Academy of Sciences concluded that “no clear, convincing evidence exists to show that residential exposures to EMFs are a threat to human health.”

In 2007, the World Health Organization – in a presentation at an EMF conference in Washington, D.C. -- stated that current research does not show enough evidence to alter the way in which utilities provide electricity to their customers.

### **What is being done?**

America’s electric industry, including SCE&G, has devoted and continues to devote a substantial amount of time and money supporting research conducted by independent firms and universities. The funds are administered by the Electric Power Research Institute (EPRI). EPRI is a non-profit research organization supported by utilities that has invested approximately \$150 million in EMF research since 1973.

**Typical magnetic field measurements:**

Magnetic fields are present everywhere and can be measured in units called milligauss. Here are some typical magnetic field readings in milligauss:\*

| Typical 60 hertz magnetic fields measured at various distances.<br>Magnetic fields are measured in milligauss. |  |                             |                         |
|--|--|-----------------------------|-------------------------|
| <b>Typical items in the home</b>   | <b>1 inch</b>  | <b>1 foot</b>               | <b>3 feet</b>           |
| Microwave oven   | 14.0   | 65.0                        | 10.0                    |
| Refrigerator   | 6.0  | 4.0                         | 1.2                     |
| Electric stove   | 250.0  | 25.0                        | 2.0                     |
| Electric razor   | 500.0  | -                           | -                       |
| Hair dryer   | 100.0  | 30.0                        | -                       |
| Electric can opener  | 5000.0   | 470.0                       | 24.0                    |
| Computer terminal/TV   | 26.0   | 3.4                         | 1.2                     |
| Electric clock   | 130.0  | 15.5                        | 2.5                     |
| <b>Transmission lines*</b>   |  |                             |                         |
|  | <b>Under line</b>  | <b>Edge of right of way</b> | <b>50 ft. from edge</b> |
| 100kV  | 2.1-19.3   | 0.6-3.4                     | 0.3-1.9                 |
| <b>Distribution lines*</b>   |  |                             |                         |
|  | 0.1-35   |                             |                         |
| <b>Substation</b>  | Measured at the fence, readings typically do not exceed those of distribution lines: 0.1-35. |                             |                         |
| * These are typical readings under normal operating conditions at moderate load.                               |  |                             |                         |