

# Customer Connection

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## UNDERSTANDING EMF ELECTRIC AND MAGNETIC FIELDS

Questions have been raised about the possible health effects of 60-hertz (power frequency) electric and magnetic fields (EMF\*), which are found wherever you have electric power. This brochure contains information that will help you understand the EMF issue, plus practical tips you can use if you want to reduce your exposure at home and at work.

### Can EMF Harm Your Health?

Electric and magnetic fields are present wherever electricity flows—around appliances and power lines, and in offices, schools and homes. Many researchers believe that if there is a risk of adverse health effects from usual residential exposures to EMF, it is probably just at the detection limit of human health studies; nonetheless, the possible risk warrants further investigation. The varying results from epidemiological studies, which looked at estimated EMF exposures and childhood leukemia, are consistent with a weak link. Laboratory studies, including studies investigating a possible mechanism for health effects (mechanistic studies), provide little or no evidence to support this weak link.

The results from many research studies have been evaluated by international, national and California EMF research programs to determine whether EMF poses any health risk. Given the uncertainty of the issue, the medical and scientific communities have been unable to conclude that usual residential exposures to EMF cause health effects, or to establish any standard or level of residential exposure that is known to be either safe or harmful. These conclusions remain unchanged by recent studies.

### World Health Organization Findings

The World Health Organization (WHO) completed a review of the potential health implications of extremely low frequency (ELF) EMF, which includes power-frequency fields. Their conclusions and recommendations were presented in June 2007 in a report known as the Extremely Low Frequency Fields, Environmental Health Criteria Monograph No. 238.

The WHO report concluded that evidence for a link between ELF magnetic fields and childhood leukemia "is not strong enough to be considered causal but sufficiently strong to remain a concern." "Virtually all of the laboratory evidence and the mechanistic evidence fail to support" this reported association. For all other diseases, there is inadequate or no evidence of health effects at low exposure levels.

The report emphasized that, given the weakness of the evidence for health effects, the health benefits of exposure reduction are unclear and adopting policies based on arbitrary low exposure limits is not warranted. In light of this situation, WHO made these and other recommendations:

National authorities should implement communication programs with all stakeholders to enable informed decision-making, including how individuals can reduce their own exposure.

- ◆ Policy makers and community planners should implement very low-cost measures to reduce exposures when constructing new facilities and designing new equipment, including appliances.
- ◆ Policy makers should establish guidelines for ELF field exposure for both the general public and workers. The best source of guidance for both exposure levels and the principles of scientific review are the international guidelines.
- ◆ Government and industry should promote research to reduce the uncertainty of the scientific evidence on the health effects of ELF field exposure. Several recommended research projects are already under way through the Electric Power Research Institute, of which SCE is a member.







To view the full report and a fact sheet summarizing it, visit [www.who.int/peh-emf/publications/elf\\_ehc/en/index.html](http://www.who.int/peh-emf/publications/elf_ehc/en/index.html)  
[www.who.int/mediacentre/factsheets/fs322/en/index.html](http://www.who.int/mediacentre/factsheets/fs322/en/index.html)

### What You Can Do



In a situation of scientific uncertainty and public concern, WHO recommended that utilities explore "very low-cost" ways to reduce EMF exposure from new or upgraded facilities. SCE and other California public utilities have been pursuing

no-cost and low-cost measures to reduce EMF levels from new utility transmission lines and substation projects. You, too, may want to take no-cost and low-cost measures to reduce your EMF exposure at home and at work.

Human studies have not produced a consensus about any health benefits from changing the way people use electric appliances. But, if you feel reducing your EMF exposure would be beneficial, you can increase your distance from electric appliances and/or limit the amount of time you use appliances at home or at work.

<b>Magnetic Fields at Home</b> (Measurements are in milligauss.)			
	1.2" away	12" away	36" away
 Microwave Oven	750 to 2,000	40 to 80	3 to 8
 Clothes Washer	8 to 400	2 to 30	0.1 to 2
 Electric Range	60 to 2,000	4 to 40	0.1 to 1
 Compact Fluorescent Bulb	0 to 32.8	0 to 0.1	0
 Hair Dryer	60 to 20,000	1 to 70	0.1 to 3
 LCD/Plasma TV	1.1 to 73.6	0 to 2.5	0 to 2.2

Source: Adapted from Gauger 1985 & EPRI Appliance Measurement Study 2010.

<b>Magnetic Fields Outside</b> (Maximum values may be lower for some California utilities.)	
 Distribution Lines	1 to 80 milligauss under the line
 Transmission Lines	1 to 300 milligauss edge of right-of-way

For instance, you can place phone answering machines and electric clocks away from the head of your bed. Increasing your distance from these and other appliances such as televisions, computer monitors and microwave ovens can reduce your EMF exposure.

You can also reduce your EMF exposure by limiting the time you spend using personal appliances such as hair dryers, electric razors, heating pads and electric blankets. You may also want to limit the time you spend using electric cooking appliances.

You can locate the sources of EMF in your work environment, and spend break time in lower-field areas.

It is not known whether such actions will have any impact on your health.

### Additional Information Is Available

SCE provides free EMF information packages and home/business measurements upon request. We also invite you to attend a workshop on EMF at our EMF Education Center located in Irwindale. For any of these services, please call us at 1-800-200-4SCE. Additional information is also available at these links:

EMF Basics:  
[www.who.int/peh-emf/about/WhatIsEMF/en/](http://www.who.int/peh-emf/about/WhatIsEMF/en/)  
[www.niehs.nih.gov/health/assets/docs\\_p\\_z/emf-02.pdf](http://www.niehs.nih.gov/health/assets/docs_p_z/emf-02.pdf)

World Health Organization International EMF Project:  
[www.who.int/peh-emf/en/](http://www.who.int/peh-emf/en/)

National Institute of Environmental Health Sciences:  
[www.niehs.nih.gov/health/topics/agents/emf/](http://www.niehs.nih.gov/health/topics/agents/emf/)

California Department of Health Services:  
[www.ehib.org/emf/](http://www.ehib.org/emf/)

California Public Utilities Commission:  
[www.cpuc.ca.gov/PUC/energy/Environment/ElectroMagnetic+Fields/action.htm](http://www.cpuc.ca.gov/PUC/energy/Environment/ElectroMagnetic+Fields/action.htm)

Campos Eléctricos y Magnéticos (EMF): Si desea recibir información en español, comuníquese con SCE al **1-800-441-2233**

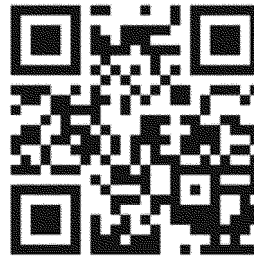
Reviewed by: California Public Utilities Commission (CPUC)  
 \*The term EMF in this publication refers to extremely low frequency (ELF) 60-hertz electric and magnetic fields associated with power delivered by electric utilities. It does not refer to radio frequency (RF) waves associated with wireless communications such as cell phones.

## SCE's New Mobile Website: Report Power Outages, View Outage Maps

For safety's sake, it's helpful to have an alternate communication option for urgent use. We have new options available for you to easily report and check on the status of power outages from your fully-charged, web-enabled mobile phone.

We have a new power outage app you can download and install for your Android phone or iPhone. If you experience a power outage or see a downed power line, use the app via your phone's web connection to contact SCE and report the issue. You can also use the app to view a map of outage locations, and find out when your service may be restored.

To get more information visit [www.sce.com/mobileapp](http://www.sce.com/mobileapp) or use a smartphone to scan this code:



The fastest and easiest way to let us know about a power outage is to report it online. If your power has been out for more than a few minutes, use your mobile phone and visit [www.sce.com/outage](http://www.sce.com/outage) or use our new power outage app.



## Put Your Old Refrigerator or Freezer in Its Place Help Save Money and the Environment

Recycling your old, working, inefficient refrigerator or freezer may enable you to save up to \$180 a year on your energy costs, but there's more: when you do your part to help the environment by letting SCE pick up and recycle your old appliance, we'll send you a \$35 incentive check – that could increase your total savings to up to \$215!

Don't go to the trouble of getting rid of an old model yourself. Let us pick it up for you instead. We'll haul it away for FREE and dismantle it at a recycling center in an environmentally-friendly way. You can rest assured it won't end up in a landfill, and reusable materials like metal and plastic will be recycled.

To qualify for your incentive and free pick up, your refrigerator or freezer must be in working condition, sized between 10 and 32 cubic feet, and located at a valid billing address within SCE's service area.

It's easy to schedule your free pickup. Visit at [www.sce.com/Pickup](http://www.sce.com/Pickup), or call **1-800-234-9722** today.

Pickup is limited to two refrigerators or freezers per location per year. Energy savings based on average usage and model. Actual savings may vary. SCE programs are available to SCE customers on a first-come, first-served basis until December 31, 2012, or until funding is exhausted or program is terminated, whichever occurs first. Programs are subject to change without notice. Programs are funded by California utility customers and administered by Southern California Edison under the auspices of the California Public Utilities Commission. ©2012 Southern California Edison. All rights reserved.

### POWER CONTENT LABEL

ENERGY RESOURCES	2011 SCE POWER MIX (Actual)	2011 CA POWER MIX**
<b>Eligible Renewable</b>	<b>19%</b>	<b>14%</b>
–Biomass & waste	1%	2%
–Geothermal	9%	5%
–Small hydroelectric	1%	2%
–Solar	1%	0%
–Wind	7%	5%
<b>Coal</b>	<b>8%</b>	<b>8%</b>
<b>Large Hydroelectric</b>	<b>7%</b>	<b>13%</b>
<b>Natural Gas</b>	<b>27%</b>	<b>37%</b>
<b>Nuclear</b>	<b>24%</b>	<b>16%</b>
<b>Other</b>	<b>0%</b>	<b>0%</b>
Unspecified sources of power*	<b>15%</b>	<b>12%</b>
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>

\* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

\*\* Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year.

For specific information about this electricity product, contact Southern California Edison. For general information about the Power Content Label, contact the California Energy Commission at 1-800-555-7794 or [www.energy.ca.gov/consumer](http://www.energy.ca.gov/consumer).