

January 31, 2011

Rollin Richmond, Chair
Smart Meter Project Team
California Council on Science and Technology
1130 K Street, Suite 280
Sacramento, CA 95814-3965

Dear Chair Richmond,

Southern California Edison (SCE) is submitting comments on the California Council on Science and Technology (CCST) draft report, "Health Impacts of Radio Frequency from Smart Meters" (January 2011). SCE appreciates the CCST's efforts to provide science-based information on the potential for exposure to radio frequency (RF) fields from electric utility Smart Meters to affect public health. In general, we believe that the CCST report is consistent with SCE's approach to Smart Meter RF issues and our shared commitment to protect the public health. However, the draft report should be updated to correctly present the relevant scientific and engineering issues. This will allow the public, legislators, and regulators to have adequate information to inform the various policy debates.

With respect to RF exposures from electric utility Smart Meters, the report should clearly state the following key points:

1. There has been extensive and long-term scientific research on the potential for RF exposures to cause human health impacts. This research has been conducted by independent scientists at California, United States (U.S.), and international universities, research institutes, and government organizations. This research has been reviewed and assessed by independent panels convened by U.S. and international health authorities, such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP), National Council on Radiation Protection (NCRP), the Institute of Electrical and Electronics Engineers (IEEE), and the American National Standards Institute (ANSI). The consensus public health exposure standards protect against all known RF health effects.

The Federal Communications Commission (FCC), as part of its regulatory authority, relies on these agencies and the scientific standard-setting process to promulgate and inform their exposure standards;

2. SCE's Smart Meters have been engineered to operate well below existing RF health standards; and
3. Compliance of SCE's Smart Meters with applicable RF health standards has been confirmed in the laboratory, in field testing and by scientific calculations.

1. Established RF exposure standards protect against all known RF health effects.

With the increased use of RF-emitting devices such as cell phones, Wi-Fi networks, baby monitors, cordless phones and Smart Meters in recent years, it may be tempting to characterize potential health effects from RF exposures as an emerging issue that has been little studied. In fact, that characterization is incorrect, because there is a significant body of research on potential RF health effects that dates back several decades. Health and science organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP), National Council on Radiation Protection (NCRP), the Institute of Electrical and Electronics Engineers (IEEE), and the American National Standards Institute (ANSI) have assessed this research using established scientific methods and have developed exposure guidelines to protect against all known RF health effects. Although these standards are based on the heating of human tissues, the organizations mentioned above, and others, such as the World Health Organization (WHO), have considered all potential adverse health effects, based on both thermal and non-thermal biophysical mechanisms. The scientific consensus of these groups is that credible non-thermal biophysical exposure disease models have not been established, and therefore, limits based on thermal effects are the appropriate basis for health-based exposure standards.

In 1996, the FCC developed its current RF exposure limits based on the NCRP and the IEEE/ANSI guidelines. The FCC also considered a large number of comments submitted by government agencies, industry, and the public. In particular, the FCC considered comments submitted by health and safety agencies including the U.S. Environmental Protection Agency, the Food and Drug Administration, the National Institute for Occupational Safety and Health, and the U.S. Occupational Safety and Health Administration. These agencies have all endorsed the FCC guidelines as protective of public health.

While the CCST appropriately concludes that non-thermal effects have not been scientifically established, the report contains ambiguous language such as: "Exposures to RF emissions may lead to thermal and non-thermal effects." (See CCST Report at page 7.) Such comments may be misinterpreted as an indication that the CCST believes that both thermal and non-thermal biophysical

mechanisms exist, but that non-thermal effects have not yet been established scientifically. Such a statement runs counter to the conclusions of established health and scientific organizations and agencies such as WHO, ICNIRP, and IEEE. These groups have conducted scientific panel reviews far more extensive than the CCST's current review. The panels consisted of well-known scientific experts in the RF field. These experts methodically examined the body of RF health research on both thermal effects and potential non-thermal effects, and concluded that only thermal effects have been established. For example, in its 1992 report, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz" (which forms the basis of the FCC safety guidelines), the IEEE concluded, "the recommended exposure levels should be safe for all, and submit as support for this conclusion the observation that no reliable scientific data exist indicating that:

- (1) Certain subgroups of the population are more at risk than others
- (2) Exposure duration at ANSI C95.1-1982 levels is a significant risk,
- (3) Damage from exposure to electromagnetic fields is cumulative, or
- (4) Nonthermal (other than shock) or modulation-specific sequelae of exposure may be meaningfully related to human health." (See IEEE C95.1 at page 23.)

Additionally, in 2009, ICNIRP made the following statement:

"With regard to non-thermal interactions, it is in principle impossible to disprove their possible existence but the plausibility of the various non-thermal mechanisms that have been proposed is very low. In addition, the recent in vitro and animal genotoxicity and carcinogenicity studies are rather consistent overall and indicate that such effects are unlikely at low levels of exposure. Therefore, ICNIRP reconfirms the 1998 basic restrictions in the frequency range 100 kHz–300 GHz until further notice." (See "ICNIRP Statement on the 'Guidelines For Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)'" at page 257.)

Therefore, while the existence of non-thermal effects is possible, it is merely hypothetical at this point. Thus, SCE suggests the CCST's report should be consistent in discussing potential effects other than thermal effects as merely hypothetical.

2) SCE's Smart Meters have been engineered to operate well below existing RF health standards.

The CCST report appropriately concludes that Smart Meters have been engineered to meet the FCC standards and that these meters "will result in much smaller levels of radio frequency (RF) exposure than many common household electronic devices, particularly cell phones and microwave ovens." (See CCST Report, Key Findings, at page 4.) However, the report focuses most of its attention on PG&E's Smart Meters. Citizens who are served by the other

investor-owned utilities, SCE and San Diego Gas & Electric (SDG&E), would benefit from the inclusion of information on the Smart Meters in their areas. Both SCE and SDG&E utilize Itron OpenWay Smart Meters. While PG&E utilizes one-Watt RF local area network (LAN) transmitters, the RF LAN radios used by SCE and SDG&E's OpenWay meters operate at about one-quarter Watt. As a result, the OpenWay meters will emit lower levels of RF wireless signals than the PG&E meters cited in the CCST report.

3) The Compliance of SCE's Smart Meters with RF health standards has been confirmed in the laboratory, in field testing and by scientific calculations.

A December 2010 recent report by the Electric Power Research Institute (EPRI) confirms that SCE's Smart Meters complied with RF health standards, based on laboratory experiments, field testing, and scientific calculations. The report also contains detailed information about how building materials shield a large portion of the RF signals from SCE's meters, and about antenna patterns and duty cycle research. We suggest the CCST review this report and incorporate some of its information for citizens of Southern California.

SCE remains committed to addressing our customer concerns by providing accurate information on our smart meter RF emissions and RF health research.

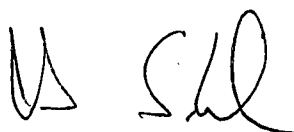
Regarding the other CCST considerations, such as providing customers with information, and regarding policy issues, SCE is committed to working with our customers to educate them on Smart Meters and RF issues. To this end, we have posted on our website EPRI's report detailing RF calculations and measurements of the wireless signals from our Smart Meters. We have also made knowledgeable staff available to answer customers' detailed questions on Smart Meter RF issues. Our experience has been that most of our customers' concerns can be addressed to their satisfaction by providing them with information, such as the details of Smart Meter RF emissions and the conclusions of RF health experts. Additionally, we remain committed to working with our regulatory agencies to develop appropriate policies for addressing customer concerns about Smart Meters.

Comments on future duty cycles need clarification.

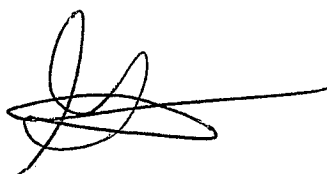
Duty cycle, or the percentage of the day that a meter transmits, is an important piece of information when evaluating RF exposures. The CCST discusses the low duty cycle of PG&E's smart meters (about 1%) but states that full deployment of the smart grid will result in much higher duty cycles. (See CCST Report at pages 10-11.) The CCST report uses duty cycles of 100% for its analysis. It is important that the CCST recognize that, while duty cycles may increase in the future, there are limits to how high the duty cycles will go. The manufacturer of SCE's Smart Meters, Itron, has stated that the maximum duty cycle for its OpenWay meter is 5%. Even if an individual meter duty cycle could exceed 5%, the mesh network has a design limit for duty cycle at approximately 30%. SCE

understands why the CCST used the 100% duty cycles to demonstrate the "worst case" scenario, but we urge the CCST to clarify in the report that such higher duty cycles will not exist in SCE's smart metering mesh network.

SCE believes the CCST report provides useful information that will reassure our customers that our Smart Meters operate safely. We hope that the CCST will give careful consideration to our comments and revise the report accordingly. If the CCST would like further information on our Smart Meters, we would be glad to open a dialogue with the Council.



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