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Subject: Letter of Comment on Smart Meter Report

This letter addresses the CCST Smart Meter Report issued on January 11, 2011. Overall, the report does begin to highlight international scientific concerns about chronic, low-intensity radiofrequency radiation exposures. Radiofrequency radiation health risks have been and continue to be addressed by scientific bodies around the world as a credible threat to health.¹⁻⁴

The Report text provides an introduction to the science and public health questions on health impacts that can reasonably be expected from chronic exposure to low levels of RF in close proximity to occupied space in homes, schools and other daily living environments.

Conclusions Are Not Supported by Evidence of Compliance with FCC Safety Limits

There is no solid basis in the CCST report to conclude (or to support the contention) that FCC public safety limits are met for smart meters, in the manner installed and operated.

Conclusions Disregard Evidence in the Report for Possible Health Risk

The text of the report only partially documents potential health risks from low-level, chronic exposure to radiofrequency radiation. The conclusions ignore this discussion.

Conclusions Do Not Follow from Report

Conclusions of the report are inconsistent with the report's more balanced warnings about possible risks to health. The overall legitimacy of the report is cast into doubt as a result.

CCST's report could equally well have concluded '*there is ample evidence to advise the California Legislature that, based on multiple studies of radiofrequency radiation below current FCC safety limits, it is advisable to issue a cautionary warning on the wireless component of smart meters until a full assessment of their effects is completed by*

independent experts. Further, it can be concluded that the continued rollout of wireless smart meters may increase public health risks on a widespread basis and should be reconsidered in light of the existing scientific evidence and public health warnings for such chronic exposures to pulsed RF.'

I was one of the expert reviewers invited by CCST to submit comments for the Committee. CCST asked several experts to answer two questions (see below). Since the Report conclusions apparently ignored much of the expert and committee input – only intervention by the final editor(s) to disregard key evidence explains how CCST's final conclusions could give rise to the “all clear” message.

Questions asked of Invited Expert Reviewers

1) Are the current FCC standards for smart meters sufficiently protective of public health, taking into account current exposure levels to radiofrequency (RF) and electromagnetic fields?

2) Are additional technology-specific standards needed for smart meters and other devices that are commonly found in and around homes, to ensure adequate protection from adverse health effects?

CCST Report Conclusions

1) *“The FCC standard provides a currently accepted factor of safety against known thermally induced health impacts of smart meters and other electronic devices in the same range as RF emissions. Exposure levels from smart meters are well below the thresholds for such effects.”*

This conclusion presents a partial response to Question 1 – only that the FCC's thermal standards are adequate (these standards prevent only heating and burning of tissues, and shock hazard, however). The conclusion does not address non-thermal (or low-intensity) RF exposures, which is really the point. It also is silent on FCC violations of public safety limits, which have been calculated to occur.¹³

2) *“There is no evidence that additional standards are needed to protect the public from smart meters.”*

By ignoring evidence for low-intensity RF adverse health effects, the Report essentially then dismissed the need for changes in public safety standards for pulsed RF. This conclusion simply cannot be reconciled with the evidence presented in the report (thin as it is), nor with the larger body of evidence known to experts in this field. That evidence is now widely discussed by international health and safety experts who find the existing thermal standards inadequate to protect public health.^{1,2}

FCC Violations and Excessively High RF Exposures are Ignored

Another report issued on January 1, 2011 is titled *Assessment of Radiofrequency Microwave Radiation Emissions from Smart Meters* by Sage Associates.¹³ It documents what RF levels may be expected. The Assessment seems not to have been considered either by the CCST experts nor the Committee.

The Assessment identified where and under what conditions smart meters can cause FCC violations of public safety limits as the meters are typically installed and operated. The CCST report concludes that all smart meter RF exposures will be well below the FCC safety limits, and this is erroneous.

To date, there have been no other studies that provide sufficient information to support the claim that smart meters comply with FCC regulations. In fact, there is solid evidence from a review of the FCC Grants of Authorization and attached FCC RF exposure studies that many thousands (perhaps millions) of meters are in clear violation of one or more of the explicit limitations noted on each FCC Grant of Authorization. The FCC Grants of Authorization are void unless meters are installed in compliance with every one of those limitations.

The Assessment also shows many cases where, although the FCC safety limits may not be violated, excessively high RF levels from smart meters would be predicted to occur within the home or in other occupied space. In many instances, predicted RF levels are many times higher than those reported to cause adverse health effects.⁵⁻¹²

Such exposures, if chronic, would reasonably be expected to result in increased disease and disability.

Misleading Comparisons Are Made to Cell Phones

CCST's report makes misleading comparisons of RF exposures from cell phone use and from smart meters, an apparent effort to minimize public health concern. If the FCC had thought smart meters would be held to the head in normal operation, they would have required smart meters to be tested for SAR compliance, not power density. These are not the same, and to compare them is wrong.

Cell phones produce a high, localized RF exposure at the head. They are presumed to be used within 20 centimeters (8") of the body. Smart meters, like cell towers, create whole-body exposure rather than localized exposure in most circumstances, and specific FCC compliance depends on keeping a 20 cm or greater distance from the meter. Cell phone use is voluntary; smart meter exposure is involuntary. Cell phone use is sporadic or intermittent, but smart meter exposure estimates are 'all over the map'. There is great uncertainty on this point, and as such, the outcome cannot be known; therefore, no assertion of safety or compliance can be given.

RF Levels from Smart Meters are Unreconciled and Need Assessment

PG&E's sole figure for RF exposure was given during CPUC proceedings as 1/6000th of the federal health (sic) limit. Nothing is given about the specific conditions under which this estimate might be true (antenna make and model, duty cycle, which FCC formula, what reflection factor, one meter or multiples, etc). However, from that single data point, we calculate that RF exposure to be 0.11 uW/cm² at 10 feet (where the FCC safety limit is known to be 655 uW/cm² at the frequencies 915 MHz and 2405 MHz). This means that at 10 feet from the meter, PG&E says the RF level will be 0.11 uW/cm².

Kundi and Hutter (Pathophysiology, 2009)² say they *don't yet find RF health impacts at levels below 0.05 to 0.1 uW/cm²* but do find consistent evidence of adverse health impacts at levels generally above that (based on at least eight cell tower studies conducted internationally). These figures were for healthy adult populations.

From the CCST Report, figures 1 and 7 (identical) give a comparison of RF levels from various sources, including two estimates for smart meters. They are 4 uW/cm² at 10 feet, and 40 uW/cm² at 3 feet away (no source is identified for these estimates, and again, the operational conditions are unspecified). Another estimate from CCST's report (pages 17 and 22) says that a 'worst case' RF estimate – a meter that transmits continuously – would produce 60% of the FCC limit (which is 655 uW/cm² for the combined antenna frequencies), or 393 uW/cm². However, the location at which this RF exposure level is calculated to occur is not given. The information is not useful. But, given the peer-reviewed scientific literature, any of these estimates is too high for chronic exposure to pulsed RF.^{1,2}

No one can reconcile or separate reasonable from unreasonable RF predictions without some better, more systematic computer modeling of RF exposures.

Cumulative RF is Not Assessed Prior to Meter Installation

None of the PG&E or the EPRI estimates includes any provision for 'what amount of RF exists already' and does the smart meter's additional RF burden push that location over the FCC limit. The CCST report does not consider cumulative sources of RF (WI-FI, nearby cell tower(s), AM, FM, TV, HAM transmitters, etc). The cumulative RF burden must be considered, including ongoing RF exposures from existing sources.

Further, since these meters are part of a radiofrequency surveillance and communications system that includes cell antennas (to relay RF signals to the utility) and eventually, power transmitters on/within appliances (to relay RF signals within the home to the smart meter), these critical omissions in the overall RF burden placed on people from the 'smart meter program' should be assessed. No one can install a smart meter and make a blanket assertion the environment still complies with public safety standards in the after condition, if the before condition is not known. RF exposures from multiple sources are additive.

Recommendations to CCST

- 1) Advise the California Legislature that further assessment of smart meter impacts to public health and safety are necessary before further deployment.
- 2) Recommend de-activation of wireless transmitters in meters already installed pending further review.
- 3) Recommend that California Legislative hearings be scheduled on smart meters.
- 4) Post in their entirety each of the written expert review letters to CCST.
- 5) Recommend that the California Department Public Health receive and log smart meter health complaints.

Thank you for the opportunity to comment on the CCST draft report on smart meters.

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