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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for Approval of Modifications to its SmartMeter™ Program and Increased Revenue Requirements to Recover the Costs of the Modifications (U39M).	Application 11-03-014 (Filed March 24, 2011)
Application of Utility Consumers' Action Network for Modification of Decision 07-04-043 so as to Not Force residential Customers to Use Smart Meters.	Application 11-03-015 (Filed March 24, 2011)
Application of Consumers Power Alliance, Public Citizen, coalition of Energy Users, Eagle Forum of California, Neighborhood Defense League of California, Santa Barbara Tea Party, Concerned Citizens of La Quinta, Citizens Review Association, Palm Springs Patriots Coalition Desert Valley Tea Party, Menifee Tea Party-Hemet Tea Party-Temecula Tea Party, Rove Enterprises, Inc., Schooner Enterprises, Inc., Eagle Forum of San Diego, Southern Californians For Wired Solutions to Smart Meters, and Burbank Action For Modification of D.08-09-039 And A Commission Order Requiring Southern California Edison Company (U338E) To File An Application For Approval Of a Smart Meter Opt-Out Plan.	Application 11-07-020 (Filed July 26, 2011)

PACIFIC GAS AND ELECTRIC COMPANY'S (U39M) REPLY BRIEF ON QUESTIONS PRESENTED BY ASSIGNED COMMISSIONER'S RULING

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PACIFIC GAS AND ELECTRIC COMPANY'S (U39M) REPLY BRIEF ON QUESTIONS PRESENTED BY ASSIGNED COMMISSIONER'S RULING

I. INTRODUCTION AND EXECUTIVE SUMMARY

Pacific Gas and Electric Company (PG&E) hereby provides its reply brief on the questions presented in the Ruling Amending Scope of Proceeding to Add a Second Phase ("Assigned Commissioner's Ruling"). PG&E specifically responds to statements in the opening briefs concerning Questions 1, 2 and 3. PG&E's opening brief already addresses the arguments in the opening briefs on Questions 4 and 5, and therefore PG&E does not repeat its arguments on those questions here.[1/]

1/ PG&E Opening Brief, July 16, pp. 12- 15.

1. Does an opt-out fee, which is assessed on every residential customer who elects to not have a wireless smart meter installed in his/her location, violate the Americans with Disabilities Act or Pub. Util. Code § 453(b)?

2. Do the Americans with Disabilities Act or Pub. Util. Code Section 453(b) limit the Commission's ability to adopt opt-out fees for those residential customers who elect to have an analog meter for medical reasons?

Several parties have challenged the opt-out fees that the Commission set in Phase 1 of this proceeding (D.12-02-014).[2/] Their position that the fees violate the Americans with Disabilities Act ("ADA") rests on two mistaken assumptions.

First, they incorrectly posit that stated sensitivity to Radio Frequency ("RF"), also referred to as electromagnetic sensitivity ("EMS"), is a legally-recognized medical "disability" or "physiological disorder or condition."[3/] It is not. No court or agency has found that RF or electromagnetic emissions are a "disability" or "physiological disorder" subject to the ADA, and the "evidence" to which they cite does not represent any medical consensus.[4/]

Second, they assume that the installation and maintenance of SmartMeters™ and charging of related fees constitute public services by a private entity covered by the "public accommodations" requirements of Title III of the ADA.[5/] This also is not so. As the U.S. Department of Justice has stated, a public utility is not an entity covered by Title III of the ADA, because it is not engaged in the type of "public service" in a place of "public accommodation"

2/ See, *e.g.*, Southern Californians for Wired Solutions to Smart Meters, Opening Brief, pp. 16- 21; Stop Smart Meters Irvine, Opening Brief, pp. 5-6; Center for Electrosmog Prevention, Opening Brief, pp. 1- 14; County of Marin, *et al.*, Opening Brief, pp. 5- 17; Center for Accessible Technology, Opening Brief, pp. 2- 18; Peoples Initiative Foundation, Opening Brief, pp. 8- 12; Wilner & Associates, Opening Brief, *passim*; EMF Safety Network, Opening Brief, *passim*.

3/ 42 U.S.C., Sections 12102(1), 12131; 29 C.F.R. § 1630.2(h) & Pt. 1630, App. § 1630.2(h); Southern Californians for Wired Solutions to Smart Meters, Opening Brief, *passim*; Stop Smart Meters Irvine, Opening Brief, pp. 5-6; Center for Electrosmog Prevention, Opening Brief, pp. 1- 14; County of Marin, *et al.*, Opening Brief, pp. 5- 17; Center for Accessible Technology, Opening Brief, pp. 2- 18; Peoples Initiative Foundation, Opening Brief, pp. 8- 12; Wilner & Associates, Opening Brief, *passim*; EMF Safety Network, Opening Brief, *passim.*

4/ PG&E Opening Brief, p. 5, fn. 1.

5/ 42 U.S.C. Section 12182(a).

that the ADA covers (such as a retail storefront or public office building).[6/] The Commission similarly should reject these parties' arguments that Public Utilities Code Section 453(b) prohibits the Commission-approved opt-out fees. Stated RF sensitivity is not defined as a "disability" under Section 11135 of the Government Code, as incorporated into Public Utilities Code Section 453(b), and the opt-out fees apply to all customers who choose an analog meter, irrespective of their medical condition. Customers may opt-out for any reason, or for no reason at all.

3. Can the Commission delegate its authority to allow local governments or communities to determine what type of electric or gas meter can be installed within the government or community's defined boundaries? If so, are there any limitations?

Several parties, including the County of Marin ("Marin"), *et al.*,[7/] attempt to argue that a "community opt-out" does not violate the prohibition on the Commission's delegation of its authority to local governments and third parties. For example, Marin argues that a "community opt-out" is no different than the "cooperation and coordination" on cell tower siting issues authorized by the Commission under General Order 159-A.[8/] Likewise, Marin argues that a "community opt-out" is the same as a Community Choice Aggregation (CCA) program in which customers are defaulted to electric service by a local government, but may opt back in to service by their utility.[9/]

Neither analogy works. Unlike the "community opt-out" proposed by Marin, *et al.*, General Order 159-A does not permit a local government to veto a utility's siting decision. Rather, General Order 159-A preserves for the Commission its full authority to preempt the local government if the local government's acts conflict with the Commission's goals and/or statewide interests. Thus, General Order 159-A is fundamentally different from what Marin, *et al.*, seek by way of "community opt-out," as they would not leave the Commission with any authority to

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6/ SDG&E and SoCal Gas, Opening Brief, Attachments A and B.
7/ County of Marin, *et al*., Opening Brief, pp. 18- 23.
8/ *Id.*, pp. 19- 20.
9/ *Id.*, pp. 20- 23.

preempt their opt-out decisions, undermining the State's interest and investment in SmartMeter™ deployment and benefits.[10/]

Nor is CCA an apt analogy. Unlike the "community opt-out" proposed here, the Legislature expressly enacted a law that delegated CCA-authority to local governments to establish CCAs. It is an express exception to the exclusive authority of the Commission over utility matters and services.[11/]

II. ARGUMENT

A. Residences or Buildings Containing Public Utility Equipment Are Not Locations of "Public Accommodations" Subject to the ADA.

Several of the opening briefs argue that Title III of the ADA applies to installation and maintenance of utility meters by a public utility at the private residences or buildings of its customers.[12/] That is not the case; rather, Title III ensures access to places of public accommodation, such as stores, restaurants, theaters, and other facilities open to the public, as well as commercial facilities. For example, although admitting that a private residence or building is not a place of "public accommodation" and that the issue is "unclear," the Center for Accessible Technology ("Center") nonetheless argues that there is a sufficient "nexus" between a public utility's publicly-accessible facilities and the meter installation services it provides at private residences or buildings to support a finding that the metering services at private residences and buildings are "public accommodations" covered by Title III of the ADA.[13/]

Center's argument is directly contradicted by the ADA itself and the U.S. Department of Justice's opinion letters cited in SDG&E's opening brief. Title III does not apply to private residences or public utilities, because Congress did not identify these as among the 12 categories

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10/ *Id.*, pp. 19- 20, fn. 47; p. 21, fn. 50 (Under Marin's form of "cooperation," it asserts that "an individual could not be served by a wireless mesh-based meter…;" see also p. 26, describing Marin's recommendation that the Commission be precluded from resolving any disputes regarding "community opt-out' determination; instead, such disputes would be required to be resolved in an "appropriate judicial forum.")

11/ Public Utilities Code Section 366.2.

12/ See. *e.g.*, EMF Safety Network, Opening Brief, p. 8; County of Marin, *et al.*, Opening Brief, pp. 12- 13; Center for Accessible Technology, Opening Brief, pp. 7- 9.

13/ Center for Accessible Technology, Opening Brief, pp. 6- 8.

of "public accommodations" in the ADA (42 U.S.C.§ 12181(7)). Further, the DOJ opinions cited by SDG&E persuasively find that "[p]ublic utility companies, including telephone companies, are not generally considered to be places of public accommodations within the meaning of Title III" of the ADA.[14/] No cases have applied Title III to private residences or utility easements; Center's citation to a recent federal court case in Massachusetts is inapposite because that decision applied to a retailer whose "storefront" is an internet service provided directly in the home, not a public utility whose metering equipment is pursuant to a private easement on private property with no connection to the public utility's publicly-accessible buildings or facilities.[15/]

Thus, even before considering whether stated sensitivity to wireless meters constitutes a "disability" under the ADA, and whether opt-out fees discriminate against persons with disabilities, the ADA plainly does not apply to metering by public utilities, because Title III of the ADA does not recognize such metering services as "public accommodations."

B. The ADA Does Not Recognize Stated RF-Sensitivity as a "Disability" or "Physiological Disorder."

The parties that oppose the Commission-approved opt-out fees have expended many pages of their briefs *assuming* that wireless meters *cause* physiological disorders, and then build on those assumptions to argue that, *therefore*, the opt-out fees charged to avoid such wireless meters are subject to the ADA and discriminatory under Public Utilities Code Section 453(b), Government Code Section 11135, and Civil Code Section 51 (Unruh Act).[16/] But that assumption is manifestly incorrect. As PG&E stated in its opening brief, ***no court has ever found reported RF-sensitivity to be a disability under the ADA, nor are there any cases finding***

14/ SDG&E and SoCal Gas, Opening Brief, Attachments A and B.

15/ *Nat'l Assoc. of the Deaf v. Netflix, Inc.*, ___F.Supp.2d __, 2012 WL 2343666, *4 (D.Mass)(June 19, 2012). In any event, *Netflix* does not apply or overrule the decisions in the Ninth Circuit, which Center concedes applies a more restrictive definition of "public accommodations." (Center opening brief, p. 7, fn. 29.)

16/ See, *e.g.*, EMF Safety Network, Opening Brief, pp. 1, 4- 14, and Attachment A; Wilner & Associates, Opening Brief, pp. 1- 8; Southern Californians for Wired Solutions to Smart Meters, Opening Brief, pp. 8, 13- 20; Center for Electrosmog Prevention, Opening Brief, pp. 2- 14; County of Marin, *et al.*, Opening Brief, pp. 5- 14. PG&E has received no federal funding for its SmartMeter deployment and therefore Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. Section 794, does not apply.

that reported RF-sensitivity exacerbated an existing ADA-recognized disability.[17/]

There is no persuasive or admissible evidence to the contrary. For example, some parties cite to a 2004 statement by the U.S. Access Board, a non-scientific federal agency that addresses accessibility issues for people with disabilities. Although a preamble to the Board's 2004 ADA Accessibility Guidelines states in passing that stated multiple chemical sensitivities (MCS) and electromagnetic sensitivities (EMS) "may" be considered disabilities under the ADA,[18/] the Board did not reach any conclusion. It found that neither its proposed rule nor its final rule should include provisions addressing stated MCS or EMS because "these issues require a thorough examination and public review before they are addressed."[19/] The Board's final rules contained no requirements nor recommendations regarding stated MCS and/or EMS, and the current 2010 ADA Standard for Accessible Design contains no building or design requirements aimed at accommodating stated MCS and/or EMS, and/or reduction of electromagnetic fields.[20/]

Similar citations to a 2005 study by the National Institute of Building Sciences (which is not a medical body) regarding access barriers for individuals with MCS and EMS are similarly lacking.[21/] The study included some design suggestions for accommodating individuals with EMS, but did not address whether stated MCS or EMS are diagnosed, medically-accepted conditions.[22/]

Assertions that RF emissions have been classified as a "2b carcinogen" by the International Association for Research on Cancer ("IARC"), an advisory panel to the World Health Organization, also fail.[23/] First, the IARC nowhere mentions SmartMeters™, which rely on orders of magnitude less RF than cellphones. Even if they did, the World Health Association

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17/ See, e.g., *Mary D. Owen v. Computer Sciences Corp* (1999) 1999 U.S. Dist. LEXIS 12635; *Jesus Mendoza v. David Moron et al*. (2006) 2006 U.S. Dist. LEXIS 11185. Although the courts disposed of these cases on summary judgment and they are not precedential appellate decisions, they underscore the lack of any legal precedent for establishing RF sensitivity as a disability under the ADA.

18/ EMF Safety Network, Opening Brief, p. 8; County of Marin, *et al.*, Opening Brief, p. 13.

19/ A complete copy of the report can be found at http://www.access-board.gov/research/ieq/.

20/ See http://www.ada.gov/2010ADAstandards_index.htm.

21/ EMF Safety Network, Opening Brief, p. 8, fn. 22; County of Marin, *et al.*, Opening Brief, p. 13, fn. 43.

22/ *Id.*

23/ See, e.g., County of Marin, *et al*, Opening Brief, p. 8; EMF Safety Network, Opening Brief, p. 9.

expressly found that:

> "A large number of studies have been performed over the last two decades to assess whether [RF from] mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use."[24/]

Nor did IARC's classification constitute a finding that RF causes cancer; rather, it put cellphones on a "watch list" with some 240 other items, including such familiar items as pickled vegetables and coffee.[25/]

Other purported evidence to which these parties cite is equally lacking. For example, the Santa Cruz County report to which some parties cite is not a peer-reviewed epidemiological study or medical diagnosis,[26/] and the press release and letter from the "American Academy of Environmental Medicine" cite no medically-accepted epidemiological studies in support of stated RF sensitivity.[27/]

In sum, those parties who oppose the opt-out charges have not cited a single finding by any court, agency, or peer-reviewed epidemiological or medical study or diagnosis that RF from wireless meters causes physiological disorders that would constitute a "disability" under the ADA. It thus follows that the opt-out fees do not violate the ADA, the Public Utilities Code, or the Unruh Act.

Importantly, and as explained in PG&E's Opening Brief, even assuming *arguendo* that there existed an ADA-recognized causal connection between wireless smart meters and RF sensitivity, the Commission's approval of an opt-out charge does not violate any ADA or Public

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24/ http://www.who.int/mediacentre/factsheets/fs193/en/.

25/ http://well.blogs.nytimes.com/2011/05/31/cellphone-radiation-may-cause-cancer-advisory-panel-says/.

26/ See Appendix A, "EPRI Comments: A Perspective on Two Smart Meter Memoranda," http://www.socalgas.com/documents/ami/EPRI_comments.pdf.

27/ See Appendix A, "EPRI Comments: A Perspective on Two Smart Meter Memoranda," http://www.socalgas.com/documents/ami/EPRI_comments.pdf ; County of Marin, *et al*., also allege that a "Department of Health Services epidemiological study" has found that "approximately 3% of Californians report that they are EMF sensitive." (County of Marin, Opening Brief, p. 8, fn. 24.) The document to which Marin referred, however, is *not* an "epidemiological study," and is *not* a "California Department of Health Services" endorsed report. Rather, it reflects a1998 telephone survey of 2,072 California residents. The telephone survey only contained "self-reports" of EMF-sensitivity (not RF-sensitivity), and did not contain any medical diagnoses. See http://www.ehib.org/emf/about.html.

Utilities Code provision. The opt-out charges in this proceeding do not in any way restrict the ability of a customer, whether he or she considers himself or herself to be RF-sensitive or not, to choose an analog electromechanical meter instead of a wireless SmartMeter™. Nor do the fees discriminate in any way against customers based on their medical or any other status; all Opt-Out Program customers pay these charges to cover Opt-Out Program costs, and do so irrespective of any other factor. Customers with SmartMeters™ pay rates based on the lower costs to serve them due to remote rather than manual meter reading; customers with analog meters pay rates and fees that are based on the incremental costs to serve them, including somewhat higher costs for the manual reading of their meters. In both cases, the rates and fees are non-discriminatory and do not in any way affect the right of customers to choose to be served by an analog meter instead of a SmartMeter™. (PG&E Opening Brief, p.6.)

C. Neither California Government Code Section 11135 Nor Public Utilities Code Section 453(b) Recognizes Stated RF-Sensitivity as a "Disability" or "Physiological Disorder."

For the same reasons discussed in Section B, above, the Commission should reject the arguments that opt-out charges violate Section 453(b)'s prohibition on different rates based on "medical condition" or any "characteristic" listed in Government Code Section 11135 as referenced by Section 453(b). As discussed above, there is no scientific or medical evidence that concludes that wireless SmartMeters™ cause any medical condition or disability. Even if there were, the opt-out fees are not based on any customer's medical condition; they are based solely on whether a customer chooses an analog meter or a wireless meter, without regard to the reason for doing so.

D. The County of Marin, *et al*'s Proposed Form of "Community Opt Out" Would Violate the Prohibition on Delegation of CPUC Authority to Local Governments or Communities, Despite Marin's Attempt to Distinguish It from Other Unlawful Delegations.

PG&E's argument that the Commission lacks authority to give local governments and other third parties a "community opt-out" is supported by the only customer group filing a brief in the proceeding, the Utility Consumers' Action Network, as well as the other utilities.[28/]

County of Marin, *et al.* ("Marin"), the main proponent of "community opt-out," also appears to concede the Commission's inability to delegate its authority, and instead attempts to argue that no delegation at all is required, only some sort of "cooperation" between the Commission and local governments in implementing a "community opt-out" program.[29/]

That is not the case at all. In fact, what Marin promotes is a wholesale cession of Commission authority and jurisdiction over utility metering and ratemaking to local governments and other quasi-communities, including homeowners associations, condominium boards of directors, and retirement community associations – all at the expense of the actual customer whose utility service is affected.[30//]

Marin claims that its form of "community opt-out" is analogous to the "cooperation" that utilities provide to local governments on siting issues under General Order 159-A. But General Order 159-A retains the Commission's full authority to preempt and veto a local government's siting decision where it conflicts with the Commission's goals and/or statewide interests.[31/] Contrary to GO 159-A, Marin's "community opt-out" would not be subject to Commission veto, and leaves any disputes to be resolved in civil court, not at the Commission.[32/]

Marin also claims that its "community opt-out" would give customers the same "opt-out" rights that they have under Community Choice Aggregation (CCA) – a program specifically

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28/ UCAN Opening Brief, pp. 3- 5; Southern California Edison, Opening Brief, pp. 6- 9; SDG&E and SoCal Gas, Opening Brief, pp. 9- 13.
29/ County of Marin, *et al.*, Opening Brief, p. 18.
30/ *Id.*, p. 21, fn. 50 ("For example, an individual could not be served by a wireless mesh-based meter").
31/ GO 159-A.
32/ County of Marin, Opening Brief, *Id.*, p. 26 (disputes regarding whether a local government, homeowners association, residents association or other entity can exercise a "community opt-out" would be decided by "an appropriate judicial forum," not the Commission.)

authorized by the Legislature under a separate statute delegating specific authority to local governments that choose to aggregate the electrical loads of residents within their jurisdiction. In contrast, the Legislature has not specifically authorized "community opt-out," and Marin's "community opt-out" would *not* give utility customers the same "opt-out" rights they have under CCA. In fact, under Marin's proposal, customers would have *no* right to choose a wireless meter at all, but instead could only choose a meter approved by the local government.[33/]

Marin, *et al*, the primary supporters of "community opt-out," have conceded in their opening briefs that the Commission is legally unable to delegate its authority over the facilities, equipment, and terms and conditions of utility service to local governments. Marin's proposal for "cooperation" rather than "delegation," for example, attempts to dress up what is otherwise a wholesale delegation of the Commission's jurisdiction, and do so at the expense of customer choice. Marin and other parties in their opening briefs raise no legal arguments that can support a "community opt-out." The Commission should reject the "community opt-out" proposal as beyond the Commission's authority, and wholly unfair to utility customers who are choosing by overwhelming numbers to retain their SmartMeters.[34/]

III. CONCLUSION

As discussed above, no party has offered admissible evidence nor legal precedent to support a finding that the opt-out fees violate the Americans with Disabilities Act, the Public Utilities Code, or any other law, order or regulation. Moreover, none of the arguments in favor of a "community opt-out" support any finding that the Commission may delegate its authority to local governments or other third parties to implement a "community opt-out."

33/ *Id.*

34/ As of July 20, 2012, PG&E has installed 167,665 wireless meters in Marin County, and only 2,823 Marin County customers have chosen to "opt out" under PG&E's Opt-out Program.

Accordingly, PG&E requests that the Commission issue a decision in this proceeding finding that (a) the opt-out fees do not violate the ADA, Public Utilities Code or any other law, order or regulation; and (b) the Commission lacks authority to grant to local governments or other third parties a right to a "community opt-out" as proposed in this proceeding.

Respectfully Submitted,

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APPENDIX A

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

EPRI Comments: A Perspective on Two Smart Meter Memoranda

EMF and RF Health Assessment and Safety

Introduction

In January 2012, two separate memoranda – one from the Santa Cruz (CA) County Health Officer[1] and another from the American Academy of Environmental Medicine (AAEM)[2] – were issued indicating views that the radio-frequency (RF) electromagnetic fields emitted from smart meters pose a health risk. The purpose of these EPRI Comments is to offer additional perspectives on the issues raised in these two memoranda.

The two memoranda assert that the Federal Communications Commission (FCC) rule issued in 1997 (see FCC OET Bulletin 65[3] and Code of Federal Regulations 47 CFR § 1.1310) that sets enforceable limits on human RF exposure is protective of only adverse thermal effects, and does not address non-thermal effects. Neither the Santa Cruz nor the AAEM documents took into account the vast wealth of research on RF conducted over nearly half a century, as well as the "weight-of-evidence" approach taken by any number of expert groups and panels convened over the years to evaluate the RF health science literature.

Background

By way of historical perspective, the 1997 FCC rule was adopted from two previous guidelines, one published by the National Council on Radiation Protection and Measurements (NCRP Report No. 86) in 1986, and the other by the Institute for Electrical and Electronic Engineers (IEEE C95.1) in 1991. Both had extensively reviewed the biological and health literature, regardless of whether or not the research had been conducted at non-thermal levels of exposure. NCRP and IEEE both concluded that the only established effects were associated with tissue heating, and that there were no confirmed adverse effects from RF exposure levels below an exposure threshold associated with an elevation in body temperature of about 1 degree centigrade (1.8 degrees Fahrenheit).

Prior to its publication, the FCC rule received endorsements from the U.S. Environmental Protection Agency (EPA), the U.S. Food and Drug Administration (FDA), and the U.S. Occupational Safety and Health Administration (OSHA). The EPA reaffirmed its opinion in letters written in 1999 and 2002. The expanding body of scientific evidence concerning potential health effects from RF exposure has been re-visited since the FCC rulemaking, but the basic conclusions have remained consistent with the position taken by the FCC in 1997. The International Commission on Non-Ionizing Radiation Protection (ICNIRP, 1998 reaffirmed in 2009) and the IEEE (2005) published exposure limits very similar to the FCC's following a comprehensive review of the scientific literature.

References to reviews and comments about RF health by a variety of scientific and governmental institutions are included at the end of this commentary. They reflect a consensus that adverse effects from RF exposure have not been established below the thresholds that serve as the basis for published exposure limits.

Concerns about RF exposures received significant visibility in Spring 2011 when the International Agency for Research on Cancer (IARC) released the results of its expert panel's evaluation of potential cancer risks from radiofrequency exposures.[4] Based on "limited"[5] epidemiologic evidence in studies of cell phones and "limited"[6] evidence from a small

[1] http://sccounty01.co.santa-cruz.ca.us/bds/Govstream/BDSvData/non_legacy/agendas/2012/20120124/PDF/041.pdf

[2] http://aaemonline.org/images/CaliforniaPublicUtilitiesCommission.pdf

[3] http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf

[4] http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf

[5] "A positive association has been observed between exposure to the agent and cancer for which a causal interpretation is considered by the Working Group to be credible, but chance, bias or confounding could not be ruled out with reasonable confidence." (from: IARC)

[6] "The data suggest a carcinogenic effect but are limited for making a definitive evaluation because, e.g. (a) the evidence of carcinogenicity is restricted to a single experiment; (b) there are unresolved questions regarding the adequacy of the design, conduct or interpretation of the studies; (c) the agent increases the incidence only of benign neoplasms or lesions of uncertain neoplastic potential; or (d) the evidence of carcinogenicity is

fraction of all reported animal experiments, IARC classified radiofrequency electromagnetic fields as a "possible" or a Group 2B carcinogen. The hierarchy of IARC categories consists of: Group 1, Carcinogenic to humans (i.e., sufficient evidence); Group 2A, Probably carcinogenic (less than sufficient evidence); Group 2B, Possibly carcinogenic (limited evidence, less supportive evidence than 2A); and Group 3, Not classifiable (inadequate and/or insufficient evidence for classification).[7] With reference to Group 2, IARC states,

> The terms probably carcinogenic and possibly carcinogenic have no quantitative significance and are used simply as descriptors of different levels of evidence of human carcinogenicity, with probably carcinogenic signifying a higher level of evidence than possibly carcinogenic.

Thus, the IARC 2B classification provides for a range of qualitative interpretations concerning potential carcinogenicity of radiofrequency electromagnetic fields. This classification carries an indication that more research information would be required for a more definitive statement in either direction, but as of the present the weight of evidence does not provide a basis for concluding that RF can be considered even "probably" carcinogenic. IARC is a part of the World Health Organization (WHO), which is planning in the near term to evaluate the potential effects of RF on all health endpoints, including cancer.

In light of the scientific uncertainties with respect to cancer and all other potential health effects from RF fields, similar to those emitted by smart meters and other technologies, the Electric Power Research Institute (EPRI) held two workshops in 2011. The first of these was designed to more specifically identify emerging technologies within the electric utility industry whose operation would result in electromagnetic field emissions. Such emissions may occur by design for communication purposes or may be a by-product of a technology, such as emissions from appliances powered with variable speed drives. The second workshop was a meeting of internationally-convened health scientists to review the state of knowledge with respect to potential health effects of RF. The workshop covered all aspects of RF science including epidemiology, exposure assessment, laboratory studies (humans and animals), and biophysical mechanisms. A report describing both workshops is available to the public.[8]

Specific Comments

The AAEM includes the statement that "the US NIEHS National Toxicology Program in 1999 cited radiofrequency radiation as a potential carcinogen." In 1999, RF was nominated to the National Toxicology Program (NTP) by the FDA's Center for Devices and Radiological Health (CDRH) as an exposure to be tested in a long-term cancer study in animals, an experiment that's termed a bioassay. The CDRH did not offer a conclusion regarding RF carcinogenicity, and a nomination is based on many factors that include scientific uncertainty among other considerations. The nomination's executive summary concluded, "[t]here is currently insufficient scientific basis for concluding either that wireless communication technologies are safe or that they pose a risk to millions of users. A significant research effort, involving large well-planned animal experiments is needed to provide the basis to assess the risk to human health of wireless communications devices." After a delay of several years, the experiment is presently in progress with results expected in the 2014 time frame.

The AAEM also stated that "[e]xisting safety limits for pulsed RF were termed 'not protective of public health' by the Radiofrequency Interagency Working Group [RFIAWG] (a federal interagency working group including the FDA, FCC, OSHA, the EPA and others)". On a formal basis the agencies named had endorsed the FCC rule (see above). However, the RFIAWG's purpose was to raise critical issues with respect to RF exposure limits. The group transmitted a list of 14 questions to the chair of the IEEE Risk Assessment Work Group in June 1999, with the qualification that, "[t]he views expressed in this correspondence are those of the members of the Radiofrequency Interagency Work Group and do not represent the official policy or position of the respective agencies." The exact quote from the AAEM memorandum could not be found or verified, but one of the group's questions concerned pulsed fields (and may have formed the basis for the AAEM statement), as follows:

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restricted to studies that demonstrate only promoting activity in a narrow range of tissues or organs." (from: IARC)

[7] The parenthetical descriptions are encapsulated thumbnails for quick reference only. The full IARC methodology is at http://monographs.iarc.fr/ENG/Preamble/CurrentPreamble.pdf

[8] Visit http://www.epri.com and type "1024737" in the search box to retrieve the workshop summary.

> These studies have resulted in concern that exposure guidelines based on thermal effects, and using information and concepts (time-averaged dosimetry, uncertainty factors) that mask any differences between intensity-modulated RF radiation exposure and CW [continuous wave] exposure, do not directly address public exposures, and therefore *may not adequately protect the public*." (emphasis added)

The IEEE Work Group transmitted a response to all of the RFIAWG's questions and with reference to pulsed fields stated,

> There are no reliable studies that provide convincing evidence of adverse, nonthermal effects, occurring at exposure levels below the current guidelines. To be convincing and reliable, claims of adverse, non-thermal effects must be repeatable by other capable and interested laboratories. Potentially significant in vitro studies demonstrating low level RF induced effects have not been substantiated, and either found upon review after publication to have technical problems, and/or are overwhelmed by a body of evidence which demonstrates a consistent absence of the initial reported effect.

Thus, the RFIAWG was not asserting that the FCC's limits were not protective, but was asking the IEEE Work Group to give its questions serious consideration (which it did).

The transmittal from the Santa Cruz County health officer reflected a misunderstanding of several terms and concepts, including some of the basic principles of how smart meters work. For example, the piece identified sunlight as a source of extremely-low-frequency (ELF) electromagnetic fields. In fact, sun's emissions span the spectrum from ultra-violet to infrared. The frequencies of the sun's emissions are at least 12 orders of magnitude (a thousand billion) times greater than the power frequency, which is 60 Hz and located within the ELF range. As another example, the author identifies x- and gamma-rays as "extremely high frequency," or EHF, which is a label reserved for the frequency band from 30 gigahertz (GHz) to 300 GHz. A GHz is a thousand million Hz and the EHF band is a part of the spectrum that is "non-ionizing," in other words, EHF exposure (unlike x- and gamma-rays) does not directly damage genes. Emissions from smart meters are at frequencies ten or more times lower than EHF, and therefore, also do not directly break molecules (such as DNA) or damage genes.

With respect to smart meter operation, the Santa Cruz memorandum stated,

> It has been aptly demonstrated by computer modeling and real measurement of existing meters that SmartMeters emit frequencies almost continuously, day and night, seven days a week. Furthermore, it is not possible to program them to not operate at 100% of a duty cycle (continuously) and therefore it should not be possible to state that SmartMeters do not exceed the time-averaged exposure limit.

In fact, smart meters transmit for a very small fraction of the time (the fraction of time transmitting is called the duty cycle), usually 1% or much less, with a handful of exceptions that are higher. For example, a recent analysis of data from 88,296 meters in the Pacific Gas and Electric service territory reported that 0.2% of the meters transmitted for 1% or more of the time (EPRI Technical Report 1021829). The results were similar in a study of the Southern California Edison and San Diego Gas and Electric service territories in which, respectively, 0.1% and 0.0% of meters sampled had duty cycles greater than 1% (EPRI Technical Report 1021126).

Though we live in a digital age with a proliferation of wireless technologies, exposure to RF has been ever present indoors and outdoors since the 1920s with the advent of the AM radio broadcast industry (~1 MHz), the 1930s with the introduction of FM radio (~100 MHz), and the 1940s and 1950s with, respectively, the great expansion of VHF TV (~50 to 200 MHz) and UHF TV (~400 to 900 MHz). The range of exposure levels from these broadcast technologies is not much different from those in the near vicinity (~10 feet) of smart meters (see EPRI White Paper, 1022270). The exposure levels from smart meters are very small because they transmit at power levels no greater than about 1 watt, about the same power used by a small flashlight bulb. Although they transmit in all directions, the research to date indicates that the exposure levels are relatively lower behind the meter than in front (EPRI Technical Reports 1021829 and 1021126), a factor that becomes relevant to concerns about exposure in a room directly behind the meter.

Finally, the Santa Cruz memo refers to the following point apparently sourced from another article,

> …most research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures [, and] research funded by industry and some governments seems to cast doubt on the potential for harm.

With regard to this statement two points are appropriate to mention. First, the gold standard for including a piece of research in a formal risk evaluation is whether it has been published in the peer-reviewed literature, not who the source of funding happened to be. Second, government institutions and industry have a responsibility to address environmental health issues that may touch either or both the general public or occupational groups. One could justifiably point to a lack of support from public institutions or industry as an abrogation of their responsibility to the common good. The Santa Cruz memo refers to a very limited segment of published research instead of citing the full record of published science that forms the basis for formal risk assessments.

Conclusion

In conclusion, smart meters offer consumers the means with which to economically optimize and plan their use of electricity, while providing the electric utility the information to more efficiently operate the system, pinpointing issues with local service in real time. Smart meters deployed in California and many other states across the U.S. communicate wirelessly, meaning that they both receive and emit RF electromagnetic fields. The smart meters studied in California operate at a power of 1 watt or less, producing fields that are very small compared to the exposure limits published by the FCC, ICNIRP and IEEE, even at very close distances to the meter face. The data collected to date indicate that, with very few exceptions, the meters transmit with a duty cycle of one percent or less (about 14 minutes or less per day). For purposes of assessing compliance, the measured field is multiplied by the duty cycle to derive an average exposure level, which would usually lower the total exposure value by a hundred-fold or more. The exposure limits published by the FCC, ICNIRP and IEEE were the product of careful and thorough evaluations of the scientific literature at all levels of exposure (above and below thermal thresholds). All of these limits are based on a consensus that there is no evidence for adverse effects of RF exposure below the level documented in laboratory experiments that caused tissue heating accompanied by behavioral disruption. To remain conservative, the three organizations added safety factors of 10 to the behavioral threshold for occupational groups (i.e., trained personnel), and 50 for the general public. On the basis largely of studies addressing RF exposures from cellular telephones, IARC classified RF electromagnetic fields a “possible” (Group 2B) carcinogen, meaning the existing research information is “limited” leaving uncertainties that further study could lessen. However, the designation fell below the threshold for IARC to conclude that RF is “probably” carcinogenic (Group 2A). For 30-plus years, the Electric Power Research Institute has taken an active role in characterizing electromagnetic environments associated with power frequency transmission and distribution systems, and more recently with RF from smart meters. The results of these recent RF investigations have been shared with the regulatory/policy and industry communities as well as with the general public in the interest of fostering a common understanding of these environments.

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