

**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

Application 11-03-014  
(Filed March 24, 2011)

**ECOLOGICAL OPTIONS NETWORK  
PROTEST**

April 25, 2011

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## **ECOLOGICAL OPTIONS NETWORK PROTEST**

Ecological Options Network (EON) appreciates this opportunity to file a protest to the March 24, 2011 APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY FOR APPROVAL OF MODIFICATIONS TO ITS SMARTMETER™ PROGRAM, pursuant to Rule 2.6 of the Commission's Rules of Practice and Procedure. EON objects to granting the approval sought in the application for the reasons described below. We ask the Commission to consider alternate solutions.

### **Introduction**

Mary Beth Brangan and James Heddle are Co-Directors of EON, the Ecological Options Network, a non-profit organization devoted to public education and consulting on energy and radiofrequency radiation ("RF") safety issues. EON works with consultants who are top technical and scientific experts in these fields.

EON is calling for a statewide moratorium on deployment of smart meters and retention of analog meters. We call for the respecting of the moratoriums enacted in the 39 cities and counties who have indicated their opposition to the continuing deployment of smart meters until the concerns have been fully addressed. EON asks for the opportunity to address these concerns in an evidentiary hearing on this issue. EON will focus primarily on the adverse effects from the RF and EMI including health and disruption of electronic equipment and appliances; we will offer solutions.

### **Topics Addressed**

EON is taking issue with the following sections of PG&E's filing:

- A.  
III. SMARTMETER™ TECHNOLOGY DESCRIPTION AND DEPLOYMENT STATUS

We will show that PG&E's modifications do not even refer to a major offending component of the meters - namely, the inadequately filtered Switching-Mode Power Supply (SMPS), which generates harmful electro-magnetic interference (EMI) or 'dirty electricity.' We describe this problem in detail below.

B.

IV. OVERVIEW OF THE PROPOSED MODIFICATIONS TO  
PG&E'S EXISTING SMARTMETER™ PROGRAM

1. SmartMeter™ “Radio Off” Option
2. Electric SmartMeter™ Relocation Option Per Existing Tariff

We will show that the proposed options don't alleviate the several actual causes of the adverse health effects and other problems. Therefore, PG&E's projections of tariffs and costs, “approximately \$2,500 to \$4,500 for overhead customers and \$6,000 to \$11,000 for underground customers,” are unwarranted and would cause an unfair burden to ratepayers.

**Ratepayers should not be financially responsible for utility mistakes.**

In the haste to implement the smart meter plan, many billions of ratepayer dollars have been spent. EON believes that ratepayers should not be held responsible for the costs of either implementing or mitigating this poorly thought out plan which the CPUC and PG&E are responsible for. EON was informed by a PG&E employee who wishes to remain anonymous, that the cost of the smart meter program already approaches \$10 Billion.

**Procedural History**

PG&E became the first California utility to respond to CPUC's rulemaking that directed IOUs to consider program options to reduce their electric use during high-demand periods, and to use Advanced Metering Infrastructure (AMI). PG&E then received Commission approval to upgrade its Smart Meter program to wireless radio frequency (RF) AMI.

A PUC decision on January 27, 2006, affirmed the Commission's November 1993 decision on low-cost/no-cost, policy to mitigate EMF exposure for new utility transmission and substation projects. However, no attention has been given to EMF exposures or EMI from smart meters.<sup>1</sup>

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<sup>1</sup> Key documents in prior proceedings including: Application of EMF Safety Network for Modification of D.06 07-027 and D.09-03-026. Application 10-04-018  
<http://emfsafetynetwork.org/wp-content/uploads/2011/01/PGE-Smart-Meters-ARH-5-Jan-11.pdf>

## Characterization of the Issues

### 1 – Extent of Deployment

As of March 1, 2011, PG&E claims to have installed a total of approximately 7.7 million gas and electric SmartMeters™.

### 2 – No Mandate for Deployment

PG&E implies that its deployment of untested wireless 'SmartMeters™' is in accordance with a federal mandate despite the fact that no federal mandate exists either for 'SmartMeters™,' or for wireless meters. As reported by [Burbank Action](#):

The federal government has set goals for states and utilities to upgrade their electrical grids, and has awarded \$4.5 billion in grants to encourage this. However, the federal government does not specifically call for the installation of smart meters, or even wireless smart meters, and had not made them mandatory.

On February 1, 2011, press officer Thomas Welch of the U.S. Department of Energy press officer responded to questions about whether the federal government has made the installation of wireless smart meters mandatory. He wrote:

No. The Federal government, including DOE, does not have any role in regulating the installation of smart meters, nor does it have a policy about the mandatory adoption of smart meters.

The source of DOE's response can be found in federal documents and legislation relating to the promotion of the smart grid and smart grid technologies, which

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Application of EMF Safety Network for Modification of D.06-07-027 and D.09-03-026.  
Application 10-04-018 <http://docs.cpuc.ca.gov/efile/PD/125548.pdf> more...

PACIFIC GAS AND ELECTRIC COMPANY  
2011 GENERAL RATE CASE  
REBUTTAL TESTIMONY  
VOLUME 3B  
DISTRIBUTION  
[https://www.pge.com/regulation/GRC2011-Ph-I/Testimony/PGE/2010/GRC2011-Ph-I\\_Test\\_PGE\\_20100604-07.pdf](https://www.pge.com/regulation/GRC2011-Ph-I/Testimony/PGE/2010/GRC2011-Ph-I_Test_PGE_20100604-07.pdf)

DRA Issues Comments on Report on Smart Meter Health Impacts  
[http://www.dra.ca.gov/DRA/hot/110203\\_smartmeters.htm](http://www.dra.ca.gov/DRA/hot/110203_smartmeters.htm)

<http://www.dra.ca.gov/NR/rdonlyres/C5CBD825-1698-45DA-BFF8-7EF4E0251EDE/0/DRACommentsonCCSTReportJan302011.pdf>

Application of Wilner & Associates for |  
Modification of D.06-07-027 and D.09-03-026  
<http://www.ccst.us/projects/smart/documents/WilnerApplicationforModification.pdf>

does not include any federal mandate for wireless smart meter adoption, and does not include any requirement that smart meters (wireless or wired) should be forced upon all consumers.<sup>2</sup> According to the Federal Energy Regulatory Commission:

EISA...does not make any standards mandatory and does not give the Commission authority to make or enforce any such standards. [EISA = Energy Independence and Security Act of 2007, adopted by Congress.]

Source: For FERC Smart Grid Policy Statement, read "128 FERC ¶ 61,060, UNITED STATES OF AMERICA, FEDERAL ENERGY REGULATORY COMMISSION, 18 CFR Chapter I, [Docket No. PL09-4-000], Smart Grid Policy (Issued July 16, 2009)," see page 15, Item 23, found on-line at: <http://www.ferc.gov/whats-new/comm-meet/2009/071609/E-3.pdf>

### **3 – Technical Data Withheld**

PG&E has published none of the functional specifications of the meters now being installed, including their block diagrams, schematics, or bill of materials. The scientific community has been prevented from identifying any of the design problems prior to their installations.

### **4 – Adverse Health Impacts and Damaged Electronic Equipment Reported**

CPUC has received at least 2000 complaints filed by people reporting serious ill health effects, disruption of electrical systems and damage to appliances from the "SmartMeters™" already installed.

The CPUC told KCRA 3 TV that it has received more than 2,000 health-related complaints but said the health issues are not its jurisdiction and referred customers to the Federal Communications Commission and state health officials.

<http://www.kcra.com/station/25639450/detail.html>

The FCC in turn, has referred a complaint from EMF Safety Network back to PG&E's website and states "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 of RF emissions. Exposure levels from smart meters are well below the thresholds for such effects. There is no evidence that additional standards are needed to protect the public from smart meters." FCC then directed inquiries to the CCST report that says the FCC standard is adequate to protect against thermal effects.

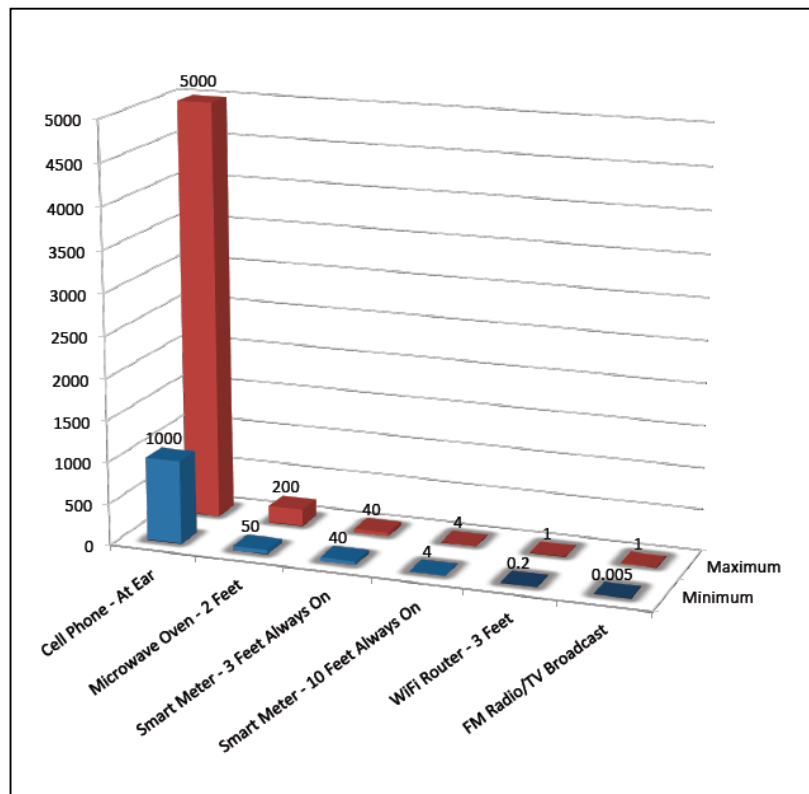
## 5 - CCST Study Shown to be Biased, Seriously Flawed

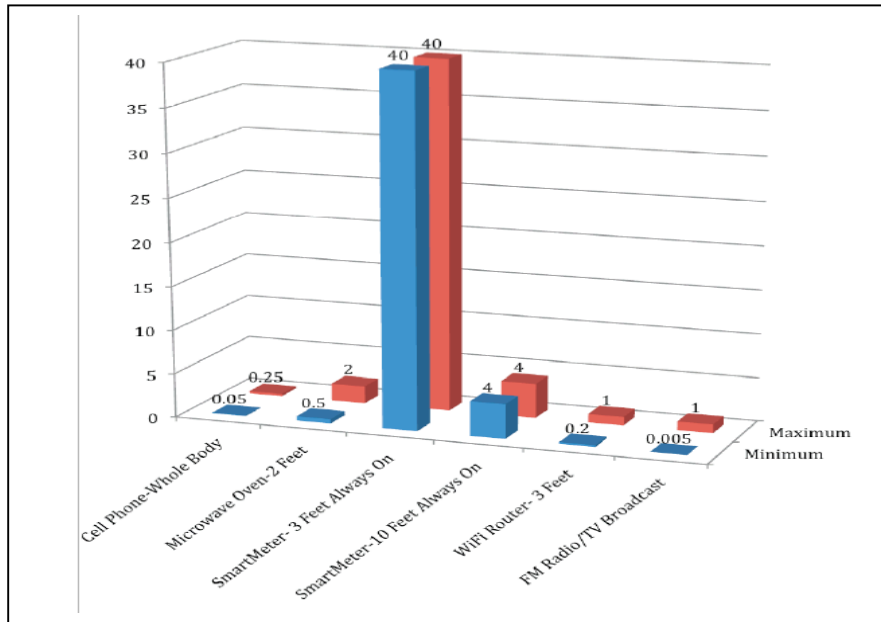
On March 31, 2011, the California Council on Science and Technology (CCST) released a report entitled "Health Impacts of Radio Frequency from Smart Meters" undertaken at the request of Assembly Member Jared Huffman (Marin) and Assembly Member Bill Monning (Santa Cruz). According to many subsequent critiques, CCST ignored evidence of non-thermal human EMF exposure dangers and violations of FCC 'guidelines.' [see: Expert Letters to CCST [http://sagereports.com/smart-meter-rf/?page\\_id=282](http://sagereports.com/smart-meter-rf/?page_id=282)

For example: Below are the two charts that seek to compare microwave radiation from smart meters to cell phones, microwaves and other devices. The first is from the [CCST report](http://www.ccst.us/news/2011/20110111smart.php)- <http://www.ccst.us/news/2011/20110111smart.php>

The second is from Mr. Dan Hirsch's study, corrected for whole body, cumulative exposure. [http://www.committeetobridgethegap.org/pdf/110212\\_RFrad\\_comments.pdf](http://www.committeetobridgethegap.org/pdf/110212_RFrad_comments.pdf)

The CCST report mixed units and published this *highly misleading chart* below, which was presented as fact by many media outlets.





The chart above was produced by Daniel Hirsch, corrected to represent cumulative, whole body exposure. When the chart is corrected to reflect the same units of measurement, it appears that smart meters are at least 100x more powerful than cell phones, which are increasingly being linked with brain tumors.

For a statement on RF radiation risks from leading international scientists, please see:

Scientific Panel on Electromagnetic Field Health Risks:  
Consensus Points, Recommendations, and Rationales

[http://www.sagereports.com/smart-meter-rf/docs/Fragopoulou\\_et\\_al\\_2010b.pdf](http://www.sagereports.com/smart-meter-rf/docs/Fragopoulou_et_al_2010b.pdf)

**Adverse health effects caused by RF and EMI are non-thermal.**

The DRA filed comments Nov. 10, 2010, on the California Council on Science and Technology (CCST) report on "Health Impacts of Radio Frequencies for Smart Meters." DRA believes that the Report does not fully explore issues related to additional factors that can impact RF exposure from Smart Meters; exposure from multiple co-located meters; or the basis for the Report's conclusion that "there is no clear evidence that additional standards are needed to protect the public from smart meters or other common household electronic devices."



### **Even the thermal effects-based FCC standards may be exceeded by Smart Meters**

Moreover, particularly with the model of smart meter that PG&E has mainly deployed, OWS- NIC 514, computer modeling has shown that even the thermal effects-based FCC standards may be exceeded. See “487% Higher Radiation from Silver Springs/PG&E Smart Meter:” <http://eon3emfblog.net/?p=1758>

The CCST report has been soundly criticized for not even addressing the mandate it was commissioned to undertake: <http://eon3emfblog.net/?p=1724> See expert critiques to CCST [http://sagereports.com/smart-meter-rf/?page\\_id=282](http://sagereports.com/smart-meter-rf/?page_id=282)

The public is not fooled by false assurances of safety and compliance with irrelevant standards.

### **Health Effects from RF and EMI Must Be Fully Addressed**

RF and EMI induced health problems are very disruptive to people’s lives. The economics of the utility will be affected if CPUC allows the health problems to continue to fester without addressing them. Smart Meter opposition is growing and will not be dismissed – sooner or later CPUC and PG&E will have to address it directly. The cost gets bigger the longer these problems are ignored. *Public perception of utility and CPUC credibility is plummeting as injuries are repeatedly occurring.*

In spite of massive increases in EMFs and RFs from both electrical utility and telecommunication providers, the Commission has only addressed this problem twice since 1993, at a one day workshop in 1993 and in a PUC decision in 2006:

<http://www.cpuc.ca.gov/PUC/energy/Environment/ElectroMagnetic+Fields/action.htm>

Though these proceedings acknowledged “public perception of risk” the science establishing harm was deemed inconclusive.

The huge monied interests of utilities and telecomm industries have blocked funding for research while calling for more studies because they insist on 100% proof and mechanisms of action before taking prudent public health policy actions.

Yet the Commission is tasked with “ensuring the provision of *safe*, reliable utility service...” as well as just and reasonable rates. Therefore, in the interest of sound public safety policy, evidentiary hearings on this issue are vital.

New science is available that deepens the understanding of this serious threat to the population and ultimately to our species survival. There is compelling scientific evidence that shows chronic long term exposure to low levels of RF and EMF radiation can cause double strand DNA breaks. (<http://www.verum-foundation.de/eu-projekte.html>), as well as weakening of the blood brain barrier which then allows toxins to penetrate into the brain tissue. (Salford et al., 1944] Chang, B.K.; Huang, A.T.; Joines, W.T.; Kramer, R.S. The effect of microwave radiation (1.0 GHz) on the blood-brain-barrier. Radio Sci. 17:165-168; 1982.)

DRA Issues Comments on Report on Smart Meter Health Impacts  
[http://www.dra.ca.gov/DRA/hot/110203\\_smartmeters.htm](http://www.dra.ca.gov/DRA/hot/110203_smartmeters.htm)

<http://www.dra.ca.gov/NR/rdonlyres/C5CBD825-1698-45DA-BFF8-7EF4E0251EDE/0/DRACommentsonCCSTReportJan302011.pdf>

“The Division of Ratepayer Advocates of the California Public Utilities Commission issued a report last month calling on the CPUC to investigate the health impacts of Smart Meters, citing “clearly a high level of public concern” over health problems.

“The commission would be remiss in its duty to ensure ‘safe and reliable’ service if it did not solicit further evidence and perform an analysis” on health problems of radio-frequency emissions, the ignition potential of Smart Meters close to gas lines, and electronic interference with other wireless devices, the ratepayer advocates’ report stated.”

## **6 – Local Jurisdictions Have Declared Moratoria on Installation**

As of April 25, 2011, 39 California cities and counties have placed moratoriums on Pacific Gas and Electric's SmartMeters after customers raised concerns about potentially harmful health effects, as well as privacy, security, safety, accuracy and impact on property values. <http://stopsmartmeters.org/how-you-can-stop-smart-meters/ca-local-governments-on-board/>

## **7– More Injuries Likely when RF Mesh-Network is Fully Activated**

Though there has been public outcry from the adverse effects from the smart meters already installed, the RF function of the meters has not yet been fully activated in all local mesh networked configurations. At such time as the entire proposed mesh-network is activated, there will be even more extreme adverse health effects.

## **8 - 'SmartMeters™' Contain Harmful Switched-Mode Power Supply (SMPS)**

Examination of the "SmartMeters™" by qualified engineering professionals (engineering degrees from MIT and Stanford) shows that they each contain a switching-mode power supply (SMPS) which are widely known to induce electro-magnetic interference (EMI), high frequency transients, in the electrical wiring systems to which they are attached.

The SMPS function transforms the 240v AC from the utility pole power line to the 5v DC to run the meter's electronics. The SMPS functions 24/7, constantly emitting sharp spikes of high frequency transients in its efforts to transform and convert the voltage and current characteristics. These spikes, or high frequency transients, are created on the power lines when the current is repeatedly interrupted. See [Switched-mode power supply'](#):

“Higher switch frequency allows component sizes to be shrunk, but can produce more radio frequency (RF) interference.”

The harmful effects from exposure to EMI, electromagnetic interference, from the pulsed high frequency transients, are similar to those of exposure to pulsed RF. According to studies, pulsed electromagnetic radiation is more disruptive to cell activity.

See for example:

BioInitiative Working Group, Cindy Sage and David O. Carpenter, Editors.  
BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF) at [www.bioinitiative.org](http://www.bioinitiative.org), August 31, 2007.

Pathophysiology Journal, Special Issue 16: Volumes 1 and 2, 2009. Elsevier Press. (There are chapters on low- intensity radiofrequency and wireless radiation health effects based on scientific literature from the realms of genotoxicity, genomics and proteomics, neurology, blood-brain barrier effects, stress (heat shock) proteins, immunology and inflammatory diseases, cancer and public health consequences of ignoring warnings given global proliferation of wireless exposures at billions of times greater levels than earth and humans evolved with.)

## **9 – 'SmartMeters™' Electro-Magnetic Interference (EMI) — High Measurements**

Such electro-magnetic spikes, harmonics or 'transients' have been measured by our consulting engineers at levels as high as 60,000 Hz. Their extensive measurements have demonstrated that all of the meters measured so far, including ABB, GE, and Landis Gyr, emit noise on the customer's electric wiring in the form of high frequency voltage spikes,

typically with an amplitude of 2 volts, but a frequency anywhere from 4,000 Hertz, up to 60,000 Hz. The actual frequency of the phenomena is influenced by the devices that are plugged into the customer's power. Some houses are much worse than others, and this observation has been confirmed by PG&E repairmen who have changed the meters due to this problem. (as reported to the engineers as well as to others.)

<http://seekingalpha.com/news-article/390076-pg-e-replaces-corte-madera-resident-s-smartmeter-after-complaints>

From the above article: "We've been getting a lot of calls about this, most of them are coming from California." [snip] Ott said the problem occurred with one of the meters supplied by Switzerland-based Landis+Gyr and disappeared when a meter made by General Electric Co. (GE) was substituted. Ott said the Landis+Gyr meter may use microwaves instead of radio waves to transmit its information. "Microwaves are much higher frequency, shorter wavelengths, and could be a higher energy level," Ott said. "

## **10 – Human Health Effects Established**

Electro-Hyper Sensitivity, or EHS, is a recognized medical condition to which an estimated 3 - 15% of the population is subject. The scientific data tells us that 3% of the population will get sick immediately from overexposure to RF, and another 10% will develop the disability over time. This means about 4.5 million people in California are potential victims to life altering adverse health effects. But no one is immune. Sweden officially recognizes EHS as a functional disability and provides government assistance to enable EHS sufferers to live as normal a life as possible.

## **11– EHS Functional Impairment Caused by Exposure to Both RF and EMI**

EHS has also been shown to be caused by exposure to EMI, or so-called 'dirty electricity.' (<http://www.sammilham.com/> Physician-epidemiologist and expert witness Dr. Sam Milham carried out a study based on U.S. Census Bureau data covering the period from 1920 to 1960. The data showed death rates, cancer, cardiovascular diseases were much higher in electrified areas than in non-electrified areas. Dr. Milham warns that because of the recent proliferation of radio frequency radiation from cell phones and towers, terrestrial antennas, Wi-Fi and Wi-max systems, broadband internet over power lines, and personal electronic equipment, we may be facing a looming epidemic of morbidity and mortality.

## **12 – Health Effects Related to Switched-Mode Power Supply**

Based on the evidence above and the fact that some injuries from smart meters occurred immediately after installation, EON believes it is the switched-mode power supply as well as the RF component that has so far damaged peoples' health and disrupted the functioning of electrical appliances by generating electro-magnetic interference in both the target building and the local power supply network.

## **13 – PG&E's 'Modifications' Do Not Address the Problem**

In view of this, neither of PG&E's 'modifications' - i.e. 'relocation' or 'RF-off' - will adequately address the root cause of the problem, and are therefore irrelevant.

## **14 – Proposed 'Modifications' Will Not Fix Problem & Full RF Activation Will Also Worsen Problems**

Since SMPSs in the meters induce EMI or dirty electricity in the power supply lines as well as in the specific buildings to which the meters are connected, neither the 'relocation' or 'RF-off' options proposed by PG&E would remove the risk of EMI exposure either in the target household or the neighboring buildings attached to the same power lines. High frequency transients will continue.

The same is true for the RF in a mesh-network of RF signals. To eliminate one RF source while further strengthening neighboring RF signals to make up for the one removal is completely counter-productive and will add RF exposure.

Furthermore, once the RF mesh-network functions of the "SmartMeters™" are fully activated the body burden of electromagnetic exposure for residents will be increased even more. Individual opt-outs are inadequate for all the above reasons, as well as when there are banks of multiple meters in one location.

## **15 – SMPS Problem Known**

According to newspaper reports, PG&E has been aware of the SMPS problem causing electronic interference with other home and business electrical and electronic equipment.

<http://seekingalpha.com/news-article/390076-pg-e-replaces-corte-madera-resident-s->

[smartmeter-after-complaints](#) and [http://www.mercurynews.com/top-stories/ci\\_16007725?nclick\\_check=1](http://www.mercurynews.com/top-stories/ci_16007725?nclick_check=1)

### **16 – No Safety Studies Conducted**

Though the smart meter deployment has been touted as one of the largest rollouts of new technology ever undertaken, a CEQA review was waived. The decisions by PG&E and the CPUC *to conduct no safety and environmental studies* has forced customers to discover the current problems themselves — after the meters have been installed and after significant capital has been invested in this project.

### **17 – Post-Installation Fixes Expensive**

The customer's cost for eliminating and preventing dirty power disease is expensive. Because the dirty power must be stopped in the customer's house wiring, all of the filter components must handle high power, and therefore are expensive. Including an adequate filter for the SMPS in the original design and manufacture of the smart meter would have been much more economical.

### **18 – The Company Must Be Held Accountable**

Though this whole issue is partly a result of negligent regulation on the part of CPUC, it is PG&E's responsibility to manage risks. PG&E can't escape responsibility by blaming CPUC. There has been managerial and technological incompetence and a culture of irresponsibility on the part of PG&E. Ratepayers should not be charged what amounts to 'protection racket' costs for non-solutions to the problems.

### **19 – PG&E Must Bear Costs, Not Ratepayers**

The costs of the real solutions to these problems - namely, to continue with analog meters; conduct an evidentiary hearing to fully address all the issues; honoring the moratoriums of all 39 cities and counties who voted in opposition to smart meters; and implementing a fiber-optic network regulated by strictly enforced privacy protection provisions - must be born by PG&E shareholders.

**Conclusion**

CPUC should immediately order PG&E to retain analog meters so they can be re-installed.

A moratorium must be placed on any more smart meter installations.

All 39 cities and counties' moratoriums must be honored.

An evidentiary hearing must be scheduled to fully address and resolve these issues.

Regional opt-outs must be allowed.

Dated: April 25, 2011

Respectfully Submitted,

/s/ Mary Beth Brangan

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Mary Beth Brangan, Co-Director

/s/ James Heddle

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**CERTIFICATION OF SERVICE**

A. 11-03-014

I, Mary Beth Brangan, certify that on this day April 25, 2011 I caused copies of the attached

**ECOLOGICAL OPTIONS NETWORK PROTEST** to be served on all parties by emailing a copy to all parties identified on the electronic service list provided by the California Public Utilities Commission for this proceeding, and also by efilng at the CPUC Docket office, and mailing a copy to ALJ Timothy J. Sullivan and Assigned Commissioner Michael Peevey.

Dated: April 25, 2011 at Bolinas, California.

/s/ Mary Beth Brangan

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DECLARANT

(Electronic service List attached to original only)



## Service List A1103014

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[kpp@cpuc.ca.gov](mailto:kpp@cpuc.ca.gov)  
[tjs@cpuc.ca.gov](mailto:tjs@cpuc.ca.gov)