

1. What is PGE doing to inform the public of the involuntary RF exposures Smart Meters emit?

PG&E is committed to our customers and to educating our customers about SmartMeter™ technology. The results of an independent study of RF is available on our website at <http://www.pge.com/myhome/edusafety/systemworks/rfsafety/>

2. What's PG&E position on the Bioinitiative Report?

.PG&E looks to the Governmental health and/or regulatory agencies to determine the safe limits of exposure from Radio Frequency fields, and we encourage our customers to do the same. If you would like to learn more about the Bioinitiative Report, please consider visiting the following websites for organizations that have reviewed the report:

- "Comments on the BioInitiative Working Group Report (BioInitiative Report)" (PDF). EMF-NET. 2007-10-30
<http://web.jrc.ec.europa.eu/emf-net/doc/efrtdocuments/EMF-NET%20Comments%20on%20the%20BioInitiative%20Report%2030OCT2007.pdf>.
- Committee on Man and Radiation (COMAR) (October 2009). "COMAR technical information statement: expert reviews on potential health effects of radiofrequency electromagnetic fields and comments on the bioinitiative report". *Health Physics* **97** (4): 348-356 <http://www.ncbi.nlm.nih.gov/pubmed/19741364>
- Rodney, Croft; Abramson, Michael; Cosic, Irena; Finnie, John; McKenzie, Ray; Wood, Andrew (2008-12-18). "ACRBR Position Statement on *BioInitiative Report*" (PDF). Australian Centre for Radiofrequency Bioeffects Research
<http://www.acrbr.org.au/FAQ/ACRBR%20Bioinitiative%20Report%2018%20Dec%202008.pdf>
- "BioInitiative report (publication no. 2008/17E)". Health Council of the Netherlands. 2008-09-01
<http://www.gezondheidsraad.nl/en/publications/bioinitiative-report-0>

3. What's PGE's position on Pathophysiology Journal Supplement 16 (November 2009) that peer-review publishes many of the Bioinitiative Report chapters in an updated form, including those on cancer and neurological disease?

Please see the answer to Question 2.

4. Have any empirical studies confirmed that this plan actually works – not in theory but in actual practice, can it be shown that the technology performs significantly better than other strategies such as consumer education?

It is the combination of new technology and customer education that maximize the benefits of a smart grid. Updating the current electrical transport and consumption system is a critical piece in encouraging growth in renewable energy sources, empowering customers to reduce their energy use, and laying the foundation for sustainable, long-term economic expansion. There are many European countries where smart grid development is further along than in the U.S. and these countries are realizing the demonstrated benefits to consumers and reductions in overall energy usage.

5. Who pays for the interior meter and appliance retrofitting?

PG&E pays for the meter installations. PG&E does not expect that existing appliances will need to be retrofitted after installation of SmartMeter™ devices, as this question suggests. Rather, to the extent that customers wish to take advantage of new functionality provided by the SmartMeter™ devices~such as the Home Area Network (HAN) gateway device which will be operational in the future, customers will generally be responsible for choosing what equipment the customers would like to deploy and for paying the costs associated with that equipment. In the future, however, there may be limited instances where PG&E proposes or sponsors a program to take advantage of the new functionality, in which case PG&E may provide or subsidize the necessary equipment to take part in the program.

6. How much additional energy will it take to power all these new RF transmissions?

SmartMeter™ devices use less power than cell phones or wireless routers, and transmit one watt of power in the 902-928 MHz frequency band. SmartMeter™ electric meters are designed to transmit radio signals to the SmartMeter™ network only once every four hours, with each transmission lasting approximately 50 milliseconds (0.05 seconds). A very conservative assumption is that any particular meter will transmit less than 4 percent of the time; most meters will transmit much less. Each SmartMeter™ electric meter acts as a repeater on average only two percent of the time. The pole-mounted SmartMeter™ network access point communicates with PG&E via the public wireless network less than a total of four minutes during each 4 hour period. The SmartMeter™ gas meters are designed to -transmit radio signals only once every six hour period, with each transmission only lasting a maximum of 0.18 seconds once every six hours, with a maximum output of 0.25 watts. DCU

transmissions are designed to occur no more than once every 15 minutes and lasts a maximum of between one and two-tenths of a second.

7. Isn't it smarter to leave appliances unplugged?

Unplugging appliances or turning off power strip switches is a more effective way to save energy, and is encouraged as a way to help customers save on energy use and costs.

8. Who pays for the new Smart Meter signal transmissions?

PG&E.

9. What if consumers reject this system?

The CPUC already has spent nearly a decade regulating next-generation, wireless meters, and only authorized PG&E to install its SmartMeter™ devices and offer its associated SmartRate rate-schedule after considerable scrutiny. As part of its decision to proceed with the SmartMeter™ program, the CPUC received input from consumer groups such as The Utility Reform Network (TURN) and the Division of Ratepayer Advocates (DRA), and took the input of these groups into consideration in deciding to deploy the SmartMeter™ devices. As part of this proceeding, the CPUC indicated that all electric customers should have advanced technology meters. While there currently is no opt-out provision, any consumer who does not participate in the system would be unable to realize the benefits offered by this technology, including the information available to reduce their total energy usage.

10. Is it then true that this Smart Grid system will fail in its purpose?

PG&E's program is one of many around the country and the globe. By the end of this year, over 76 million advanced metering systems will be installed worldwide, and that number will double by 2013.

There are many purposes for PG&E's SmartMeter program: (1) reducing the cost of reading meters, (2) reducing the cost of providing advanced metering service like time-of-use metering, (3) enabling the delivery of real-time pricing and critical-peak alerts for demand-response systems that help customers control their consumption and costs; relieve the need to construct new power plants; and reduce the carbon footprint of power consumption, (4) enable the delivery of electricity to charge large numbers of electric vehicles, (5) enable the grid to accept power from large numbers of solar-power installations and other alternative-power installations, (6) efficiently monitor, control, and restore power delivery to customers from the grid, just to name a few. PG&E customers are already benefiting from the cost savings realized from the reduced cost of reading

meters even before the full network has been installed. PG&E customers will continue to benefit from reduced costs and better service as more capabilities of the network are brought online, whether or not large numbers of customers subscribe to demand-response programs or not.

11. Why then would the federal government subsidize a 'failed program'?

The Smart Grid system is not a failed program. Both the state and federal governments are actively encouraging companies to accelerate the development of a smart grid, based upon recent state and federal government actions. Federal support will accelerate the deployment of an additional 18 million meters across the U.S., and California continues to lead the nation in fostering and deploying green technology and programs designed to fight climate change and support greater energy efficiency.

12. Was this study peer reviewed?

The peer-review process is utilized for journal publications. PG&E's independent expert consultant prepared the report and PG&E's internal experts have reviewed the report and agree with the findings. The findings are consistent with IEEE, ANSI, NIH, and FCC findings. Furthermore, we have published the study on our web site for everyone to review and welcome the review of any experts in the field.

13. Considering the weight of controversy over the health impacts of RF shouldn't PG&E have provided the public and with this study when they claimed it assured safety?

The results of this independent study of RF are available on our website at <http://www.pge.com/myhome/edusafety/systemworks/rfsafety/>

14. What is not an adverse health impact?

"Not an adverse health impact" means there are no negative impacts on health.

15. What is the frequency and signal strength utilized in both house meter and repeater system?

See the published report and analysis for more details on this point. In summary, two principal frequency bands are used. The 902-928 MHz band is used for the transmitter (operating at one watt of power) that communicates with the utility via either an access point (data collection point) somewhere in the neighborhood or via a repeater. Once operational, the 2400 MHz band will be used for the Home Area Network transmitter (operating at less than one watt of power) that communicates with any smart grid electrical equipment within the home.

16. What is the range and signal direction of both house meter and repeater?

Because of the extremely low power of the transmitter, the effective range of each meter is rather limited. This is why each meter may act as a repeater for adjacent meters that are having difficulty in communicating with an access point. Range is variable depending on the physical environment but is roughly one tenth of a mile for the electric network, and roughly one mile for the gas network. The signal emitted by the meter is primarily away from the meter (and the house) so that an outside mounted meter would transmit a signal more in the direction of the access point.

17. Are these one or two way signals?

The electric-meter network is a two-way network. The meter can transmit information about electric energy usage to an access point and it can receive information from the utility company or the customer, via the access point. This is not the case with the gas-meter network which is a one-way network.

18. Will house meters also be used as repeaters?

Yes. The electric-meter network is a mesh network. Any electric meter can relay data from any other electric meter. Dedicated pole-top repeaters are also used specifically for the purpose of more efficiently relaying data from meters within a neighborhood, and for extending the range of meters when terrain or other conditions dictate. Dedicated repeaters are used specifically for the purpose of extending the range of some meters within a neighborhood, when terrain or other conditions dictate.

19. Will the Smart Meters also use the existing cell antennas/ towers or will new ones be deployed?

In most cases, existing towers will be used. Access points (that communicate with the various meters in a neighborhood), are typically located well above ground, away from people, and to allow lower power transmissions to be effective. These access points are usually located, for example, on a light pole, utility pole, or other similar structure.

20. Can PG&E provide a detailed map of all new antennae repeater locations in Sonoma County?

This information is not publicly available...

21. How many power transmitters would be present in an average home under the plans that the Smart Grid assumes for normal operation?

There are no transmitters inside the home. There are two transmitters in the electric meter: one for communicating with the electric-meter network, and one for communicating with the Home Area Network, when it becomes operational and if the customer chooses. There is one transmitter in the gas meter for communicating with the gas-meter network.

22. How often will the meters, repeaters and smart appliances emit RF signals and for what duration?

Because of the nature of mesh networks where each meter can, if necessary, relay a signal from a nearby meter, it is not possible to specify a precise amount of time that the transmitter will actually emit an RF signal other than to say that the emissions are, typically, intermittent and, on average, exist for only a small amount of time during a day. In some configurations, the meters may communicate on a relatively fixed basis with signals only being emitted once every so often. In other cases, depending on the need for relaying data from adjacent meters, a meter may be found to emit signals at other random times. A distinguishing characteristic of SmartMeter™ devices, however, is that the emissions are typically very short in duration, sometimes lasting for only a few thousandths of a second. In some situations, the signals may exist for a few seconds before turning off. The repetition rate of the signals will be variable due to the characteristics of the mesh network and may not be exactly repeatable.

23. What is the signal strength at the device, at six inches, one foot, 3, 5, 10, 20, 50 feet?

Please see the published report and analysis for detailed answers.

24. If these are short bursts of RF, what is the peak power for each burst?

The peak power of each burst is limited by the power of the transmitter which is one watt for the main transmitter that communicates with an access point (data collection point). Normally, however, the transmitters operate for only a small fraction of time due to the intermittent nature of data transmission. The transmitter which will be used in the future for the Home Area Network (HAN) function will typically make use of only a fraction of a watt of peak power with similarly small percentages of time that the signal is actually emitted. The emissions of these transmitters are referred to as low duty cycle transmissions since they are present only very intermittently.

25. What levels of RF will these new signals add to the environment?

Because the transmitter output powers are so low to start with, and because the signal level decreases quickly with increasing distance from a meter, the overall aggregate RF field levels that would be expected to be found in a neighborhood with SmartMeter™ devices installed will remain very low in comparison with any of the health protection standards for RF fields (see for example, applicable FCC RF exposure rules), or as compared to any other pre-existing RF fields in any neighborhood. Using special equipment, we can easily detect the signals from the many meters but these will exist only within the applicable license free frequency bands. The meters will add signals that are similar to those produced by 900 MHz cordless phones and wireless routers commonly used within homes for distributing Internet to various computers.

26. Has special consideration been given to people who live in homes with multiple meters attached to their homes – next to where a child might sleep?

A group of meters, located at the same location, will produce a cumulative RF field that is greater than what would be produced by a single meter. But, because the meter transmitters operate at such low power levels, even the aggregate value of RF emissions that would be produced by a large number of multiple meters at a single location would be low in comparison to applicable FCC RF exposure rules, or the RF produced by other sources in the neighborhood.

27. Where will people with ES or medical implants live when the new Smart Grid creates an increase in ubiquitous RF signals right on our homes and neighborhoods?

We do not believe that the RF fields produced by a SmartMeter™ device would present an interference hazard since the ambient RF fields will be so low, especially when compared to likely RF sources from a neighbor's home. Generally speaking, there are a number of existing everyday environmental sources that produce much stronger RF fields, and if the already existing sources are not causing interference, then we do not believe that the relatively weak fields produced by a SmartMeter™ device would interfere with operation of a medical device.

28. What is PG&E doing to mitigate these effects?

A study of radio frequency fields produced by the transmitting components of a SmartMeter™ device shows the devices comply with applicable FCC regulations by a very wide margin.

29. What is tiered pricing and how is it different from the current pricing method?

California has created a tiered rate structure for energy use, a structure which has been in place for several decades and applies to the vast majority of PG&E residential customers. Currently, there is no change in how customers are charged for energy use between analog and SmartMeter™ device systems. SmartMeter™ devices will enable customers to monitor their energy use on a daily basis, allowing them to better manage their energy use so as to possibly avoid being charged for higher tiered energy use. A small percentage of PG&E residential customers are on a Time of Use (TOU) rate schedule. In the future, we expect dynamic pricing to be broadly available to customers.

30. Will it cost more to do laundry at 8 am, 2 pm, or 10 pm?

If the customer is on the normal 5-tiered residential rate schedule, there would not be a difference in rates charged for usage at 8 am, 2 pm or 10 pm, as long as the usage does not cause the customer to cross into a higher tier. If a residential customer is on a Time of Use ("TOU") rate schedule, they can usually save some money by doing their laundry during the off-peak TOU hours. The currently available TOU rate schedule for residential customers is called Schedule E-6.

Here are links to the standard residential tariff (Schedule E-1), and to the tariff for Schedule E-6:

Main page for all on-line tariffs: <http://www.pge.com/tariffs/>

Schedule E-1: http://www.pge.com/tariffs/tm2/pdf/ELEC_SCHEDS_E-1.pdf

Schedule E-6: http://www.pge.com/tariffs/tm2/pdf/ELEC_SCHEDS_E-6.pdf

Currently, approximately 98% of PG&E's residential customers are on an E-1 Schedule where rates vary by tier, not by TOU. In the future, we expect dynamic pricing to be broadly available to customers.

31. Will customers be advised of this new pricing method and if so when?

As referenced in response to question 29 above, there is no change in how customers are charged for energy use between analog and SmartMeter™ device systems. We are educating our customers about the tiered rate system as it applies to all energy users in our service area. And, we are educating our customers about the benefits of using their SmartMeter™ device to monitor and manage energy use and costs. And, if/when dynamic pricing for residential customers becomes the standard for electricity billing, both PG&E and the CPUC will undertake a robust public education program to inform people about the change, and how it can help to reduce monthly energy costs.

32. What is the current status of these complaints and what has PG&E done to resolve these problems?

We support the CPUC's decision to bring in an independent third party to review meter accuracy concerns raised in Bakersfield. The courts have issued a stay on the lawsuit that has been filed to allow the CPUC to conduct its investigation.

33. What personal information will be transmitted via the new meters?

The technology that communicates a customer's data back to PG&E is private and secure. It can be compared to a phone network that shares many calls but keeps them all separate. The only information transmitted is the amount of energy used, information which has always been clearly visible on the outside of the meter to anyone standing within several feet of the device.

34. Isn't the threat to privacy inherent to this wireless technology?

The information on energy usage has always been generally visible to anyone standing within several feet of a meter. The wireless technology now transmits this same data to PG&E for billing purposes. We have taken extensive measures to secure and protect customers and customer data. While we don't comment on specific security measures, we do have a continuous process in place to analyze and identify security threats in real time.

35. How many meter readers will be on State unemployment once these new meters are deployed?

We anticipate none. We have been successful in placing 80 percent of these PG&E employees in new positions and helping others to retire after decades of service. We value our employees and have been working closely with them to keep them with the company in other positions.

36. How many complaints has PG&E received about Smart Meters causing interference in their homes?

While there have been claims of interference and we have addressed these claims, we have not compiled statistics about these claims.

37. Isn't this also a threat to this wireless technology?

This wireless technology has been well-tested, and in use for over a decade.

38. Since alternative technologies exist for creation of the Smart Grid, why aren't consumers being offered those alternatives?

The CPUC already has spent nearly a decade regulating next-generation, wireless meters, and only authorized PG&E to install its SmartMeter™ devices and offer its associated SmartRate rate-schedule after considerable scrutiny. Without being familiar with the specific alternatives to which you are referring, PG&E can generally state that all of the options were evaluated, and multiple ones were tested, and the SmartMeter™ device system proved to be the most versatile, lowest cost, and most effective of the options available.