

1) Meter Security

- System and data security is a top priority. We have done extensive testing and preparation to ensure we protect the SmartMeter™ network.
- PG&E takes extensive measures to ensure the integrity of our control systems and to secure and protect customers and customer data.
- We work with industry and government partners to ensure best practices for IT security for our SmartMeter™ program.
 - Through PG&E's support of, and involvement in a number of industry security groups, we are leading efforts to improve threat and vulnerability management capabilities across the industry.
 - PG&E employs the industry best practice of continuous testing to ensure the integrity of all our networks, including the SmartMeter™ system.
- While PG&E does not comment on specific security concerns or specific measures, we do have a continuous process in place to analyze and identify IT security threats and vulnerabilities in real time.
- Our SmartMeter™ technology vendor contracts contain strict provisions to ensure that our vendors' systems and products meet our security requirements (including testing by PG&E) and that vendors work to quickly resolve any potential security issues.
- We regularly work with federal law enforcement and homeland security agencies to stay in front of potential issues.
 - PG&E, in conjunction with the U.S. Department of Energy and the industry, has been active in developing SmartMeter and Smart Grid security standards.
- Protecting our customers' information is a top priority.
 - We treat each customer's personal information and data as confidential consistent with all regulatory requirements, including those established by the Public Utilities Commission.
 - The Public Utilities Commission provides very strict prohibitions on specific customer information being provided to third parties without the customer's written consent, and we adhere to those restrictions.
 - 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.

2) Meter Accuracy

- The digital metering technology that calculates energy use has been around and in use since the 1980s. It's the deployment of this technology as part of a Smart Grid network, and how that information is communicated back to PG&E that is new.
 - The upgrade to the SmartMeter™ program provides state-of-the-art technology that empowers our customers to better manage their energy consumption and costs.
 - If any customer has questions about their meter or bill, we want to work directly with them to investigate the situation, test their meter, and provide all of the facts and information necessary to answer their questions.
- For PG&E and our customers, ensuring that our meters are measuring energy use properly is extremely important.
 - SmartMeter™ devices have been thoroughly and vigorously tested - and every meter is tested for accuracy before it is installed.
 - PG&E closely monitored a 50,000 meter pilot program in Ft. Lauderdale, conducted by Florida Power & Light, using these exact same devices.
 - PG&E conducted pilot programs of SmartMeter gas and electric devices in Vacaville and San Francisco.
 - Prior to the installation of the first advanced meters, our manufacturing partners, including General Electric and Landys+Gyr, spent - years rigorously testing this new technology.
- One hundred percent of SmartMeter™ devices are tested before leaving the factory. We then have three additional random testing processes to confirm the meters are accurate.
 - PG&E has hired an independent auditor to spot-test meters at the factory, following up on the factory's testing.
 - PG&E then tests an additional random sample of devices as part of its quality-management process when the meters arrive at PG&E.
 - PG&E conducts additional random meter testing after installation, to see how the meters are performing over time. We perform detailed data analysis on the information we gather from the meters to ensure the meters are reporting accurately.
 - Additionally, we test meters when we detect anything unusual in the data we receive from a meter or when we see any irregularities on a customer's bill. At the end of that process, if a customer calls us and reports irregularities on their bill, we will go out and test the meter, review that customer's usage and billing data, and offer the customer an energy audit.
- PG&E is performing side-by-side meter tests at homes in our service area.
 - We will be doing this at more than 300 locations so our customers can see for themselves the energy usage on their SmartMeter™ device compared to their legacy analog meter.
 - PG&E did side-by-side testing for a short time in Bakersfield last fall. We placed these for a few customers, and after the customers were satisfied, we removed the second meter.
- More than 99 percent of our SmartMeter™ devices are working properly and accurately. This compares to around 97 percent for traditional residential meters.
 - SmartMeter™ reliability and performance is superior to the performance of traditional meters: field tests have shown that 1 to 2 percent of analog meters don't meet accepted standards for accuracy (within +/- 2 percent of correct measure).
 - Traditional meters that do have issues tend to run slow [three-quarters].
- Out of almost 6 million SmartMeter™ devices installed through May, we have found only nine meters with accuracy issues within the meter itself. For perspective, that's equal to one meter in about 667,000 meters.
 - We are always monitoring the data from our SmartMeter™ devices.

- Of these nine, half of the meters reported usage information that seemed to be incorrect. Upon investigation, those meters were found to have issues.
- In the other half, we were contacted by the customer and asked to check their meter. Of those nine, we found three ran slow, and six ran fast. In the cases where the meter did run fast and a bill had been issued, we immediately issued a refund to the customer.
- We know the clear and overwhelming majority of our meters are working properly because they are communicating with us every hour, reporting in with data and other information.
- We replace or repair any inaccurate meters we find, and we make our customers whole when any of these issues impact a monthly bill.

3) Meter RF

- The World Health Organization (WHO) has conducted an investigation into RF that concluded that there are no adverse short- or long-term effects associated with low-level RF exposure such as that from PG&E's SmartMeter™ devices.
 - The radio signals generated by SmartMeter™ technology are far below the levels emitted by many common items included wireless Internet technology, cell phones and microwave ovens.
- A study of radio frequency fields produced by the transmitting components of SmartMeter™ devices shows the devices comply with applicable Federal Communications Commission (FCC) regulations by a very wide margin.
- The FCC monitors and regulates consumer products that utilize RF, including SmartMeter™ devices. They have established safe limits of exposure that all RF devices must adhere to. PG&E, like any other company, is regulated by that oversight and ensures that our products adhere to FCC safety regulations.
- PG&E has completed its own studies of -RF and published these results on its website.
- The results, completed by an independent and nationally-known expert in this field, show there are no issues related to the very low level signals transmitted by PG&E SmartMeter™ devices.
- For more information about RF safety, please visit the following page on our website, which provides links to third-party resources on the subject:
<http://www.pge.com/myhome/edusafety/systemworks/rfsafety/>.

4) Business case for the SmartMeter™ program

- The CPUC has determined that the program's benefits will exceed its costs over a 20-year program life. The benefits to customers are a combination of operational savings for the company - which are returned to customers - and energy savings for our customers.
- PG&E returns operational savings to customers through a reduction in rates for each meter installed and activated under the program. Currently, PG&E pays back to customers \$1.95 per month for each activated electric meter and \$1.04 per month for each activated gas meter. These amounts help to compensate customers for the technological investment, and reflect PG&E's operational savings (e.g. needing fewer meter readers and streamlining the process for detecting outages and restoring power). These are all tracked in what is called a 'balancing account' to make sure the savings, over the life of the program, are greater than the costs.
- In addition, with the information this technology can provide, customers are better able to understand how their use impacts their bills, allowing them to better manage and potentially reduce their energy use and costs.
- This technology also enables programs like SmartRate™, which helps customers moderate their

summer electricity bills. This past summer, nearly 70 percent of SmartRate™ customers saved on their energy bills by making small changes that reduced their energy usage between 2 p.m. and 7 p.m. during as many as 15 days during the whole summer.

- In the future, customers will have greater control over their energy costs as dynamic pricing is introduced in California. Under dynamic pricing, consumers will be charged in accordance with peak and non-peak energy use. Eventually, smart appliances will be able to find the best time of day to run your dishes or laundry for the lowest energy rates.

5) Greenhouse gas savings from SM reading compared to manual reading

- We believe SmartMeter™ devices are a sound and wise investment for our customers, our economy and our environment.
- By making customers more aware of how they use energy, SmartMeter™ devices will promote more efficient use of energy, resulting in lower greenhouse gas emissions.
- By supporting voluntary rate programs that encourage customers to conserve energy at critical times, PG&E will reduce the need to run less efficient “peaker” power plants. We will also avoid the emissions caused by sending crews to read millions of meters each month.
- A recent [study from the Department of Energy](#) found that a smart grid can reduce emissions by 12 percent. If used to its fullest potential, a smart grid would save 442 million metric tons of carbon emissions--equal to shutting down 66 average coal-fired plants.