Almost 1,600 Pacific Gas and Electric Co. SmartMeters harbor a defect that can overcharge customers when the devices get too hot, the utility reported Monday.

The flawed meters sometimes misread electricity usage when their internal temperature tops 100 degrees. All of the faulty meters have been or will be replaced, and affected customers will receive refunds averaging $40, PG&E representatives said.

Those customers, scattered across Northern and Central California, also will receive a free home energy audit as well as a $25 credit for the inconvenience.

"It's a proactive response. We want to do right by our customers," said Greg Kiraly, PG&E's vice president of SmartMeter operations.

The defective meters were made by Landis+Gyr, which has supplied roughly 2 million meters to PG&E so far. PG&E, the state's largest utility, has installed nearly 8 million wireless SmartMeters and plans to add 2 million more.

"It's a very small number - less than 1,600," said Jerry Figurilli, Landis+Gyr's chief operating officer in North America. "Nonetheless, it is a number greater than zero, so we're not happy about that."

For more than a year, PG&E's $2.2 billion SmartMeter installation program has been dogged by questions of accuracy, privacy and safety. Critics of the meters have repeatedly called for a moratorium on their installation, but the California Public Utilities Commission has rejected those requests.

Lately, most of the public debate about the wireless devices has focused on whether their radio-frequency transmissions can trigger illnesses, an idea in deep dispute. Monday's revelation, however, could reignite concerns about whether the devices accurately measure electricity and natural gas use.

In 2009, PG&E faced widespread complaints of overcharging in Bakersfield after the meters were installed there. PG&E blamed the higher bills on unusually hot weather and a series of electricity
rate increases. Last year, a state-commissioned report gave the SmartMeters high marks, saying they typically performed better than the old analog meters they replaced. That report quieted the debate about accuracy but didn't end it.

"Customer complaints about smart meter accuracy continue to pour into TURN," said Mark Toney, executive director of The Utility Reform Network watchdog group, in a prepared statement. "Today’s admission that hot weather causes some smart meters to run fast may mean the (utilities) Commission needs to take another look at thousands of complaints, particularly those that came from Bakersfield in the summer of 2009."

A PG&E spokesman said that the defect reported by the company on Monday was not responsible for the problems in Bakersfield.

PG&E first suspected something could be wrong with the faulty meters last year, when the devices started sending diagnostic signals that indicated possible problems.

"It would be like your check-engine light coming on, on your dashboard," Figurilli said.

The company discovered misreadings on some of the affected meters in December, and Landis+Gyr identified the source of the problem in February. Since then, the companies have been working to find all the flawed meters and ensure that future meters won't have the same defect.

The faulty meters remain under warranty from Landis+Gyr, so replacing them won't cost PG&E customers, said utility spokesman Blair Jones.

While PG&E has defended the overall accuracy of the meters, the company has previously reported other problems with the devices. Some meters, for example, suffered a software glitch that caused the component that stores energy-use data to reboot itself, occasionally losing some of the data. And an installation problem with some of the company's natural gas SmartMeters caused the devices to either double each customer's apparent usage or cut it in half.

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