



Putting Big Data to Work: Opportunities for Enterprises

By Brett Sheppard

Report extract: PG&E smart utility infrastructure

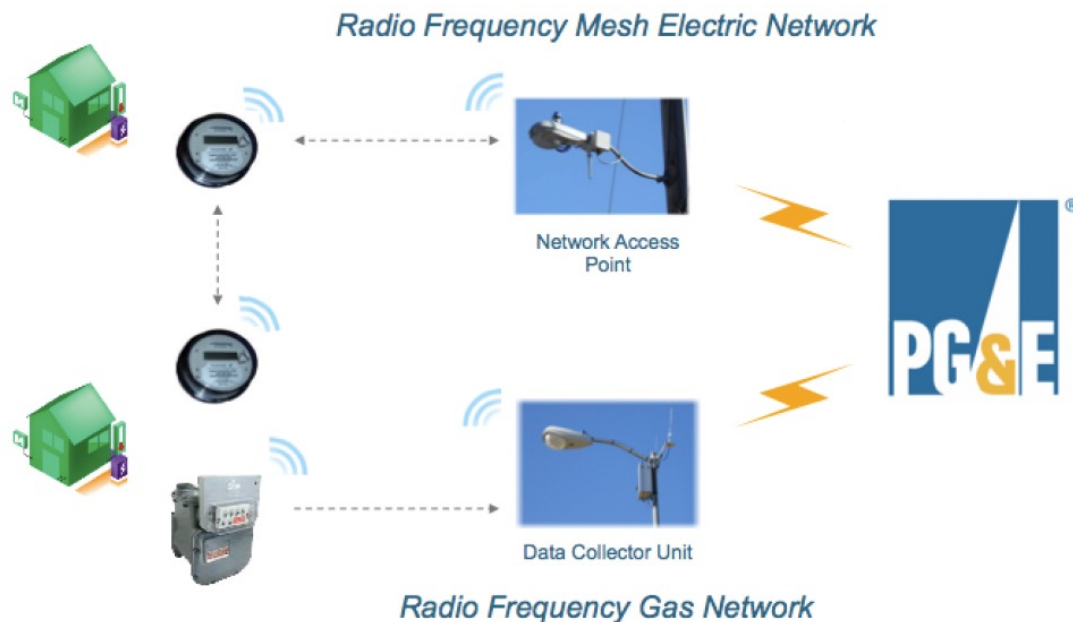


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As discussed by Professor of Computer Science Joseph M. Hellerstein at the University of California, Berkeley, we've entered the era of the "industrial revolution of data." The equivalents of "data factories" generate UPC barcode reads, RFID scans and GPS location data. Sensors are extending from heating, ventilation and air control (HVAC) and industrial plant monitoring to automotive sensors and motion detection in gaming. For this streaming or event processing data, individual packets may be quite modest in size but start to become "big data" when aggregated and analyzed over many days, months and years.

For example, the **PG&E SmartMeter** records electric and natural gas usage data from homes and businesses in 15-minute increments and communicates that to PG&E via a dual-architecture wireless sensor network. According to PG&E, the intermittent signals sent over the wireless network by each SmartMeter add up to an average of only 45 seconds a day. As PG&E SmartMeter data is aggregated for entire states and regions and is integrated into the analysis of the national energy grid, data volumes become much more substantial.

PG&E SmartMeter Wireless Network Architecture

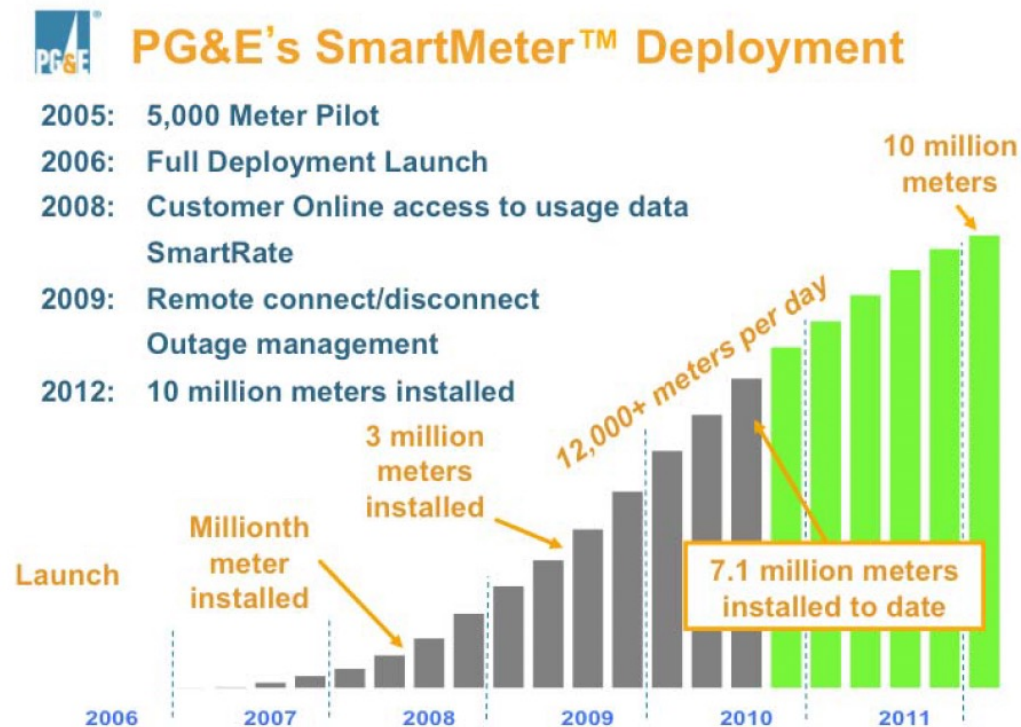


Source: PG&E SmartMeter Program Overview, April 2009



Despite early stumbles in poor customer service and insufficient customer education for SmartMeter installations, PG&E is making progress with its large-scale SmartMeter deployment, as shown below. Forty-five seconds of communications a day for an individual SmartMeter sounds inconsequential, but multiply that by 10 million meters for multiple customer segments with both real-time and historical data and PG&E may start to face “big data” challenges.

PG&E SmartMeter Deployment Schedule



2025 Update

PG&E has deployed approximately 9.3 million SmartMeters across its service territory in northern and central California, USA. This includes both electric and natural gas meters, with roughly 5.3 million electric and 4.2 million natural gas meters, according to the California Public Utilities Commission.

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