SmartMeter™ Technical Issue Update

December 2010

TAP Meeting Materials

SmartMeter Identified Technical Issues

that may have an impact on customer accounts:

- **Meters with accuracy exceptions**
  Meters determined to incorrectly record the measurement of electricity usage
- **Communication errors**
  Meters that are not currently connected consistently with the network
- **Data storage issues**
  Meters found to measure energy consumption accurately; but the meter memory or internal function of the meter may corrupt the retention of data

Accuracy Exceptions

Location / customer type	SmartMeter technology	Date Installed / Removed	Failure Type	Failure Analysis	Procedure Change
Lemoore, residential	Generation 1	5/3/07 - 1/20/09	Slow – 6%	Mechanical failure	Generation 1 meters to be replaced
Bakersfield, residential	Generation 1	10/19/07 - 5/27/10	Slow – 3%	Corrected in Field	Generation 1 meters to be replaced
New meter QA, never set in field	Generation 1	N/A	Slow	Undetermined	Generation 1 meters to be replaced
Fresno, commercial	Generation 2	3/16/09 - 12/1/09	Fast – undetermined	Memory corruption	System monitoring for failed memory values
Arvin, residential	Generation 2	9/10/09 - 11/23/09	Fast - undetermined	Corrupt scaling factor	System review of scaling factors
San Jose, commercial	Generation 2	12/4/09 – 2/9/10	Fast – 5%	Undetermined	Not yet determined
Manteca, commercial	Generation 2	9/14/09 – 2/18/10	Fast – 3%	Improper register accumulation at low load conditions	Firmware patch to update registers
Union City, residential	Generation 2	11/6/09 – 2/12/10	Erratic	Memory corruption	System monitoring for failed memory values
Esparto, residential	Generation 2	12/9/08 – 11/16/09	Erratic	Memory corruption	System monitoring for failed memory values
San Mateo, residential	Generation 2	9/16/10 - 4/28/2010	Fast - undetermined	Corrupt scaling factor	System review of scaling factors
Lincoln, residential	Generation 2	6/2/09 – 5/21/10	Fast – 2.5x	Corrupt voltage factor	System review of voltage factors

Communication Errors

	Meter Type	Description	Current Count
1	GE and L+G	**COMMUNICATION FAILURES:** Electric meters not currently in connection with the network. May be due to a weak network meshing with this meter or a failure of a component within the radio communications. If the condition persists through the bill cycle, the result is an estimated bill.	Gen 1: 1,396 Gen 2: 2,220 Total : 3,616
2	Aclara	**COMMUNICATION FAILURES:** Gas meter/modules not currently in connection with the network. May be due to a weak connection to DCUs; or a failure of a component within the gas module. If the condition persists through the bill cycle, the result is an estimated bill.	3,399
	Sub-total		7,015

Note: as of 11/19/10

Steps taken by PG&E to repair these errors:

- Additional network devices may be deployed
- Meters may be replaced and returned under warranty
- Meters may be repaired by a field visit
- Accounts may be placed back on manual meter reading routes

Electric Meter Data Storage Issues

	Meter Type	Description	Original Estimate	Current As of 11/19/10
1	L+G FOCUS	Reset alarm: meter register falls back to previous reading following a power outage •Required a network applied meter firmware (or meter was removed)	9,928	171
2	All	Internal meter memory alarm: memory data retention capability is corrupt •Meters is replaced	765	2,245
3	All	Various meter alarm indicating data retention issues •Meter is replaced	611	12
4	GE KV2C	Time Synchronization error: Meters measured usage accurately, however, the time keeping capability of the communication module did not report the measured usage into proper 15-minute intervals •Required network applied firmware	0	4,731
	Sub-total		11,304	7,159

- **Meter alarms are monitored daily; some meter alarms are informational, some become problematic when combined with other alarms, some need immediate attention**

TAP Meeting Materials

SmartMeter™ Accuracy Testing – 11/26/10 UPDATE

1. **Test results: Customer requested Field or Shop tests – June 2007 through November 26, 2010 (within +/- 2.0%)**

	Meters Tested	Meters Passed	Failed Accuracy – Confirmed
DCSI & Hex	1,193	1,191	2
SSN	19,788	19,780	8
TOTAL	20,981	20,971 (99.9%)	10

Data Source: MIB

2. **Test results: PG&E Testing of meters received - Jan 1, 2007 through November 26, 2010 (within +/- 0.5%)**

	Processed	Accepted	Rejected
SSN Lots QA Tested	153	150	3[1]
Total SSN Meters Received	284,850	282,306	2,544

	Meters Tested	Meters Passed	Meters Failed – Accuracy	Meters Not passed
SSN Meters	5,094	5,085[2]	0	9[2]

Data Source: Smart Track

3. **Test results: Independent testing of meters received – April 2010 though October 29, 2010 (within +/- 0.5%)**

	Meters Tested	Meters Passed	Failed – Accuracy
SSN Meters Tested	10,578	10,578	0

Data Source: Applied Metering Reports

4. **Test results: Re-instated Random Field Tests – April 2010 through November 12, 2010 (within +/- 2.0%)**

	Meters Tested	Meters Passed	Failed – Accuracy	Unable to Test
SSN Meters Tested	2,276	2,270	0	6

Data Source: Field Test Records

Note:
[1] Two KV2c shipments were rejected with incorrect settings, one I-210 shipment from GE was rejected as the badge should have been colored blue

[2] One meter had a blank screen, two radio failures, six electrical failures