SmartMeter™ Program Structure Report

The Structure Group Completed their independent investigation in September

- The Structure Group was identified as the CPUC's independent assessment consultants and began their work in April of 2010
- Working under the supervision of the CPUC, the evaluation process addressed the following areas:
  - Whether PG&E's SmartMeter™ system is measuring and billing electric usage accurately, both now and since meter deployment began
  - Independent analysis of the high bill customer complaints; and
  - Analysis of PG&E's SmartMeter™ Program's past and current operational and deployment processes, policies, and procedures

The Structure Group Report Key Findings

- Generally consistent with industry standards for the Advanced Metering Infrastructure (AMI) program approved by the CPUC
- Accurate from metering, end-to-end system data processing, and customer billing perspectives
- No relevant correlation between installation of SmartMeters™ and residential Customer high bill complaints
- Cyber-security framework meets the objectives of the Smart Grid's AMI system security requirements
- Some PG&E practices are non/ or only partially–compliant with industry Best Practices
- Various factors contributed to high bill complaints including customer usage changes, weather, rate changes, and gaps in customer service and complaint resolution processes

The Structure Group Meter Testing Evaluation

- **Laboratory Meter Testing:**
  - 100% of SmartMeters™ passed (156/156), no deficiency finding

- **Field Meter Testing:**
  - 100% (611/611) of field-tested SmartMetersTM passed accuracy testing. An additional 37 meters were tested in dual socket side-by-side testing with no issues noted.
  - 2 meters were noted as untestable:
    - One meter was damaged in transit prior to installation at the customer site
    - One meter had been identified as a meter failure in the Data Storage category but had not yet been worked through the established replacement campaign -- *PG&E reports meter failures and issues weekly*
  - 95.92% (141/147) of electromechanical meters tested passed accuracy testing -- *PG&E has reported approximately 1% residential failure rates in other reports containing larger samples of tested meters*

The Structure Group End-to-End System Testing Evaluation

- No deviations were found in the meter billing system's accuracy

- This test was performed in two parts, the first using 5 meters in a lab with the establishment of 5 proxy accounts in the PG&E billing system. The meters were subjected to common exceptions such as outages, voltage swells, voltage sags, and loss of radio reception. The second part involved 19 field meters installed as dual socket tests at High Bill complaining customer locations. The test successfully demonstrated PG&E's capability to perform validation, editing, and estimating in compliance with CPUC rules, and without introducing errors into customer bills

- During the execution of these tests, PG&E mailed the initial bills to the premise address rather than the billing address provided by Structure. Per Structure's request, these fictitious proxy test accounts were setup manually for Structure outside of normal business processes. PG&E's normal business processes for account set up include control points to ensure the correct mailing address is utilized in instances where the premise address and billing address are different. Here, the accounts were set up manually outside of PG&E's normal process and there were no automatic control points to change the default setting from premise address to the distinct billing address specified by Structure

The Structure Group High-Bill Complaint Analysis

- **Test of 73 detailed account reviews and 20 one-on-one interviews. No pervasive issues found with meter data or billing systems, however Structure identified several gaps in PG&E's approach to resolve Customer complaints, including:**
  - PG&E did not address concerns associated with the new equipment
  - Customer skepticism about SmartMeter™ was not addressed in a timely manner
  - Customers did not always agree with PG&E that the complaint was resolved; and
  - PG&E did not always use available interval data to help customers understand their usage patterns
- **Additionally, these process issues were identified:**
  - Some customers were not happy with meter exchange notification or the installation personnel
  - Transition to billing time lag increased to 131 days; and
  - Billing quality control was not stringent enough, resulting in multiple cancel/rebills

The Structure Group Best Practices Evaluation

- Structure considered the PG&E SmartMeter™ program in comparison to other programs in 160 areas.
- This Best Practices comparison included San Diego Gas & Electric and Sacramento Municipal Utilities District (SDG&E and SMUD).
- The Program was compared historically and currently, acknowledging that PG&E has already taken certain best practice process improvements over time
- The following slides summarize the tested areas and the results of their analysis

Summary of Structure Group Evaluation of 160 Best Practice areas

- A total of 19 items out of 160 Best Practices reviewed were identified as currently being in partial- or non-compliant status at PG&E

	PG&E Historical Practice						PG&E Current Practice					
Best Practices Compliance Analysis	Credit	Items	Percent	Full	Partial	Non	Credit	Items	Percent	Full	Partial	Non
Meter Manufacturing Quality Control PG&E Compliance	25.0	25.0	**100%**	25.0	-	-	25.0	25.0	**100%**	25.0	-	-
Meter Installation Standards	48.5	50.0	**97%**	47.0	3.0	-	48.5	50.0	**97%**	48.0	1.0	1.0
Meter Equipment Safety	7.0	7.0	**100%**	7.0	-	-	7.0	7.0	**100%**	7.0	-	-
Meter Deployment	14.5	15.0	**97%**	14.0	1.0	-	14.0	15.0	**93%**	13.0	2.0	-
Meter Data Management Interfaces	14.0	15.0	**93%**	13.0	2.0	-	14.0	15.0	**93%**	13.0	2.0	-
Validating, Estimating, and Editing	12.5	16.0	**78%**	10.0	5.0	1.0	12.5	16.0	**78%**	10.0	5.0	1.0
Account Billing	18.0	24.0	**75%**	17.0	2.0	5.0	19.5	24.0	**81%**	18.0	3.0	3.0
High Bill Complaint Troubleshooting	6.0	8.0	**75%**	6.0	-	2.0	7.5	8.0	**94%**	7.0	1.0	-
Summary	**145.5**	**160.0**	**91%**	139.0	13.0	8.0	**148.0**	**160.0**	**93%**	141.0	14.0	5.0
Full Compliance		**139.0**	**87%**					**141.0**	**88%**			
Partial Compliance		**13.0**	**8%**					**14.0**	**9%**			
Non-Compliant		**8.0**	**5%**					**5.0**	**3%**			
Total Items Reviewed		**160.0**	**100%**					**160.0**	**100%**			

Detail of Areas Reviewed By Structure Group for Best Practices

Best Practices Compliance Analysis	PG&E Historical Practice						PG&E Current Practice					
	Credit	Items	Percent	Full	Partial	Non	Credit	Items	Percent	Full	Partial	Non
Meter Manufacturing Quality Control PG&E Compliance												
Customer Related Processes Audit Areas	4.0	4.0	100%	4.0			4.0	4.0	100%	4.0		
Design and Development Audit Areas	2.0	2.0	100%	2.0			2.0	2.0	100%	2.0		
Purchasing Audit Areas	3.0	3.0	100%	3.0			3.0	3.0	100%	3.0		
Production and Service Provision Audit Areas	6.0	6.0	100%	6.0			6.0	6.0	100%	6.0		
Measurement, Analysis, and Improvement Audit Areas	10.0	10.0	100%	10.0			10.0	10.0	100%	10.0		
	25.0	25.0	100%	25.0	-	-	25.0	25.0	100%	25.0	-	-
Meter Installation Standards												
Detailed Approach and Methodology	2.0	2.0	100%	2.0			2.0	2.0	100%	2.0		
Detailed Project Management Plan	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
Staffing Plan	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
Tools	1.5	2.0	75%	1.0	1.0		2.0	2.0	100%	2.0		
Installer Training	2.0	2.0	100%	2.0			2.0	2.0	100%	2.0		
Identification	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
Communication	1.5	2.0	75%	1.0	1.0		2.0	2.0	100%	2.0		
Installation Plan	4.0	4.0	100%	4.0			3.0	4.0	75%	3.0		1.0
Key Performance Indicators (KPI)	2.0	2.0	100%	2.0			2.0	2.0	100%	2.0		
Exchange Meter	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
Premise Access	3.0	3.0	100%	3.0			3.0	3.0	100%	3.0		
Access to System Data	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
Reporting Framework	6.0	6.0	100%	6.0			6.0	6.0	100%	6.0		
Customer Service/Complaints	3.0	3.0	100%	3.0			3.0	3.0	100%	3.0		
Inventory Management	18.5	19.0	97%	18.0	1.0		18.5	19.0	97%	18.0	1.0	
	48.5	50.0	97%	47.0	3.0	-	48.5	50.0	97%	48.0	1.0	1.0
Meter Equipment Safety	7.0	7.0	100%	7.0			7.0	7.0	100%	7.0		
Meter Deployment	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
Communication Network Deployment	5.5	6.0	92%	5.0	1.0		5.0	6.0	83%	4.0	2.0	
Meter Deployment	8.0	8.0	100%	8.0			8.0	8.0	100%	8.0		
	14.5	15.0	97%	14.0	1.0	-	14.0	15.0	93%	13.0	2.0	-
Meter Data Management Interfaces												
Meter Data Management System (MDMS)	14.0	15.0	93%	13.0	2.0	-	14.0	15.0	93%	13.0	2.0	-
Validating, Estimating, and Editing	12.5	16.0	78%	10.0	5.0	1.0	12.5	16.0	78%	10.0	5.0	1.0
Account Billing												
Pre-Bill Audits	9.5	12.0	79%	9.0	1.0	2.0	11.0	12.0	92%	10.0	2.0	
Post-Bill Audits	1.0	3.0	33%	1.0		2.0	1.0	3.0	33%	1.0		2.0
Timeliness	3.0	3.0	100%	3.0			3.0	3.0	100%	3.0		
Billing Estimation	3.5	5.0	70%	3.0	1.0	1.0	3.5	5.0	70%	3.0	1.0	1.0
Data Traceability	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
	18.0	24.0	75%	17.0	2.0	5.0	19.5	24.0	81%	18.0	3.0	3.0
High Bill Complaint Troubleshooting	-	2.0	0%	-		2.0	1.5	2.0	75%	1.0	1.0	
Customer	1.0	1.0	100%	1.0			1.0	1.0	100%	1.0		
Customer Information System/Billing System	5.0	5.0	100%	5.0			5.0	5.0	100%	5.0		
	6.0	8.0	75%	6.0	-	2.0	7.5	8.0	94%	7.0	1.0	-

SmartMeter™ Program Process Improvements (1 of 2)

#	Process Improvement Item	Estimated Completion	Action Plan Details
1	Enhance Contractor verify closing read of the removed meter	Q1 2011	➢ Developed enhancement to existing process that captures photographic evidence of electric meter closing reads at specified high and low tolerance levels
2	Validate Maximum demand check for demand billed customers	Completed	➢ Implemented system changes to eliminate use of estimated intervals to derive demand
3	Group customers together for Validation and Editing	Q1 2011	➢ Capability is being delivered via MDM upgrade as part of "Release I" - currently in Testing phase
4	Workflow functionality for resolving errors in MDMS rather than reports	Q1 2011	➢ Capability is being delivered via MDM upgrade as part of "Release I" - currently in Testing phase
5	Support Configurable Rules for Estimation processes	Q1 2011	➢ Capability is being delivered via MDM upgrade as part of "Release I" - currently in Testing phase
6	Validation processes should flag exception conditions that may indicate pending failure	Completed	➢ Validation process implemented to flag exception conditions that may indicate pending failure
7	Pre-bill audits to examine kWh usage data and at a minimum zero use on active accounts	Completed	➢ Implemented reporting to identify and processes to examine zero use on active accounts
8	Limit number of consecutive account estimations and total in one year	Completed	➢ Implemented process to limit consecutive estimations >60 days
9	Improve high bill complaint trouble shooting	Completed	➢ Process improvements underway building upon existing practices consistent with this best practice

SmartMeter™ Program Process Improvements (2 of 2)

#	Process Improvement Item	Estimated Completion	Action Plan Details
10	Enhance Identification of cause of complaints and billing issues Enhance resolution communication back to customers	Complete	➢ Process improvements implemented enhancing resolution communication with customers and identification of root cause.
11	Improve use of Interval data used in customer complaint resolution	Complete	➢ Increased availability of interval usage data and its use in complaint resolution procedures
12	Enhance logging of Complaints into Service History	Complete	➢ Implemented enhanced training and quality assurance procedures to enhance the consistency of existing standard procedure
13	Improve addressing Customer Skepticisms Improve Professionalism of representatives	Complete (short-term activities)	➢ Implemented additional call center training and additional resources in parallel with process improvements to enable improved customer response ➢ Implemented performance management improvements to improve customer service accountability