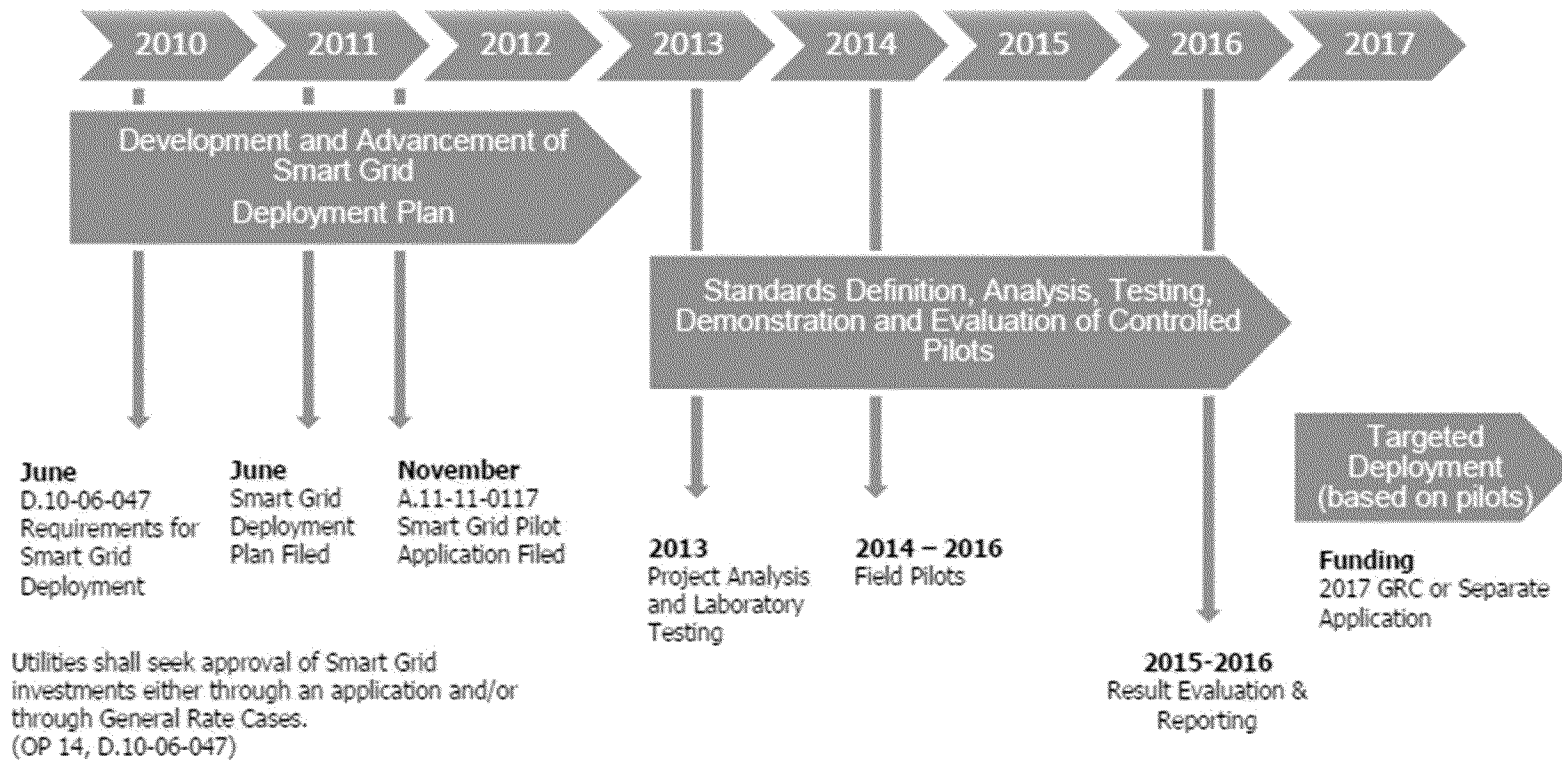


Smart Grid Pilot Deployment Project

December13, 2012

PG&E's Smart Grid Implementation Approach



- Data from pilots is needed to inform business cases to include full deployment projects in PG&E's 2017 GRC; therefore pilots need to commence no later than Q2 2013.
- PG&E will include pilot project status reports in the Annual Smart Grid Report filed each year on October 1

Smart Grid Pilot Deployment Projects: Technology Pilots

Initial evaluation of full deployment identified significant monetary, reliability, environment and other non-quantifiable benefits worth further investigation via pilots

Projects	Cost of Pilot	Expected Benefits Obtained From Pilots	Conceptual Benefits at Full Deployment; Pilots Needed to Verify			
			Monetary (in Millions)	Reliability	Climate	Other Non-Quantifiable Benefits
Smart Grid Line Sensors	\$16.8M	Information Regarding Monetary, Reliability, Societal, Other Non-Quantifiable Benefits	Avoided Operation and Maintenance \$28.7-\$43.1M	2.9-5.3% Improved Reliability		<ul style="list-style-type: none"> Improved public/system safety Customer Satisfaction Improved distributed renewable integration
Volt/VAR Optimization	\$38.5M		Avoided Energy Procurement \$536-\$1070M		1.6 to 2.2 MMT of Avoided CO2; Future Monetary Value of CO2	<ul style="list-style-type: none"> Improved distributed renewable integration Improved power quality Improved notification of equipment malfunctions Improved energy efficiency and demand response
Detect & Locate Line Faults	\$12.9M		Avoided Operation and Maintenance \$51.3-\$62.7M	2.1-3.7% Improved Reliability		<ul style="list-style-type: none"> Improved public/system safety Improved power quality Improved distribution system investments
Short-Term Forecasting Improvement	\$13.5M		Avoided Energy Procurement \$3.2-\$47.6 M			<ul style="list-style-type: none"> Improved ability to adapt to future mandates to forecast and settle load bids at more granular level.

Smart Grid Pilot Deployment Projects: Foundational Initiatives

- Foundational Initiatives, such as TEST and Customer Outreach, will enable PG&E to continuously improve the testing, application and implementation of Smart Grid technologies, as well as understand their customer's Smart Grid needs and preferences.
- TEST- \$12.2 M
 - Expected Benefits:
 - Avoided costs of selecting the wrong technology
 - Lower costs from improved operational efficiency from new technologies
 - Greater reliability, safety, security and identifying and deploying new technologies
 - Smart Grid standards that further advance technology deployment to meet California's needs and as required by SB 17
 - Verify performance of technologies in test environment prior to further development
- Smart Grid Customer Outreach - \$13.5 M
 - Expected Benefits
 - Better understand customers' interest in frequency and level of detail regarding Smart Grid that would be useful
 - Educate targeted customers about the facts, benefits and costs associated with Smart Grid technologies
 - Identify customer concerns associated with Smart Grid technology
 - Refine and determine an ongoing customer outreach and engagement strategy for large-scale Smart Grid deployment in PG&E's service territory