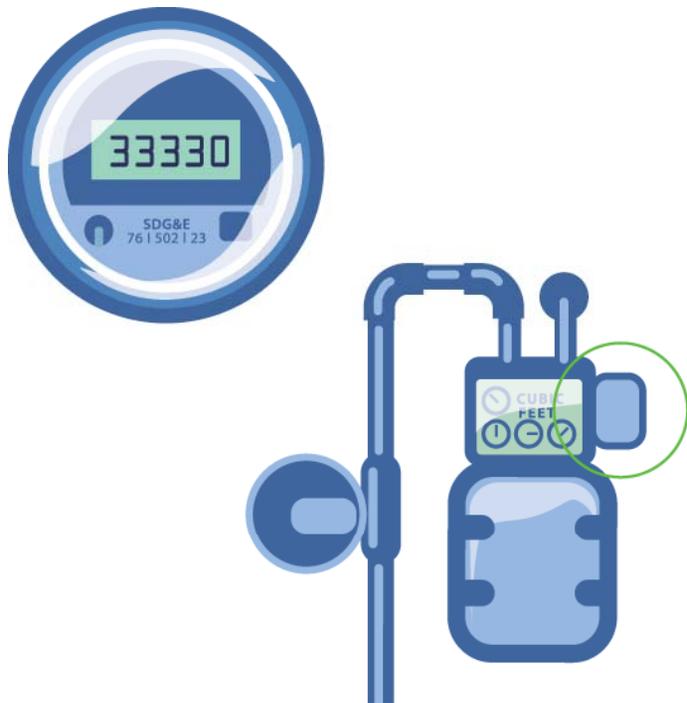




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CEC Load Management
Proceeding
AMI Business Case
May 27, 2008



Program Objectives

- Install AMI/smart metering for all San Diego County and Southern Orange County electric and gas customers
- Enhance customer service and improve utility operations
- Provide foundation for SDG&E's smart grid and smart home
- Ensure net positive benefit case based on thorough business case development

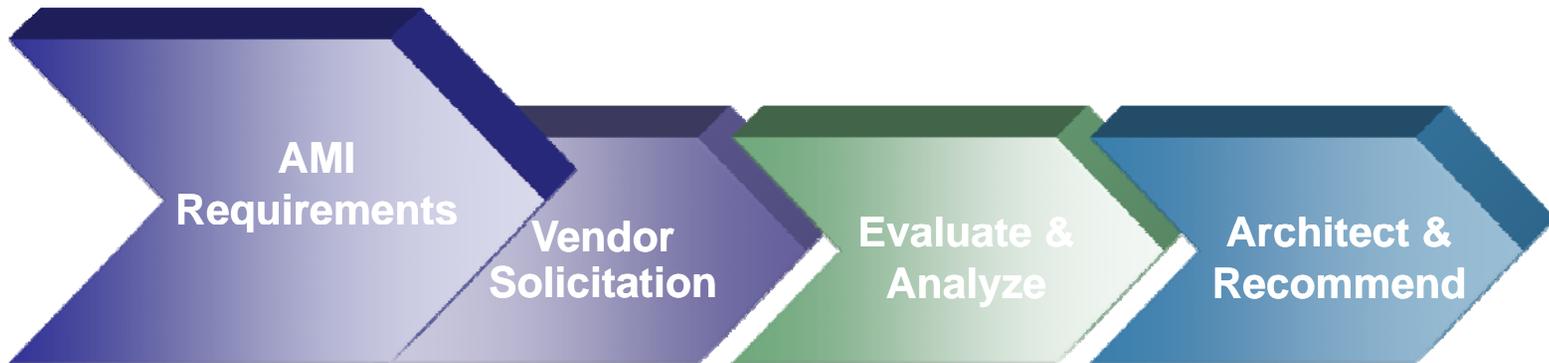
SDG&E's Business Case Development ("Solution Implementation Roadmap")

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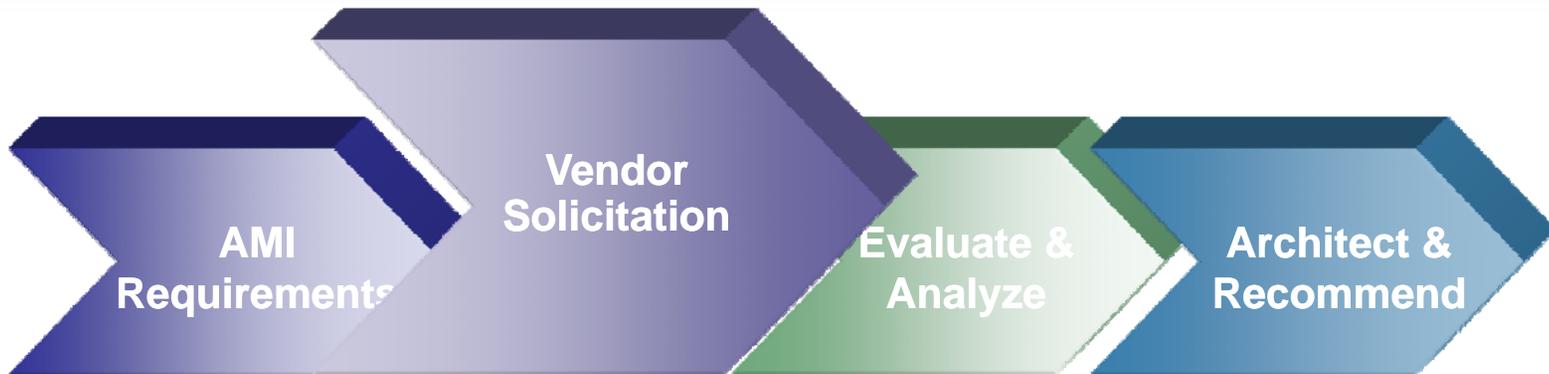
- Systematic & logical approach begun in 2005
 - Benefits driven
 - Business process design required to achieve benefits
 - Requirements needed to achieve business process changes
 - AMI technologies & information systems needed to achieve requirements
 - TCO model
 - Vendor solicitation & evaluation
 - Solution implementation roadmap

Develop AMI Requirements



- Target AMI Benefits
 - Operational, Customer Service, Asset Mgmt, Energy Efficiency
- Develop “To-Be”, AMI enabled, business processes
 - Best Practice models
- Gap “To-Be” versus “As-Is” business processes
 - Identify what has to change
- Identify functional & information requirements of “To-Be” business processes
 - Quantify changes
- Identify future IT/System requirements & gap versus current
 - AMI + IT infrastructure
- Develop customer segmentation strategy
 - Explore viable cost/benefit implementation scenarios
- Develop preliminary TCO & Benefit Model
 - Quantified benefits & industry metrics

Develop Vendor Solicitations



- Define business & functional requirements
 - Prioritize and categorize identified requirements
 - Translate requirements to vendor solicitations
- Define technical & integration requirements
 - Performance, accuracy, reliability, & integration specification of AMI systems per defined segmentations
 - System integration matrix & requirements
- Define project implementation & deployment requirements
 - Deployment requirements/services
 - Configuration/customization/integration requirements/services
 - Testing & training requirements/services
 - Operations, maintenance & support requirements/services
 - Documentation requirements/services

Evaluate Candidate AMI Systems

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- Develop response evaluation criteria
 - Technical, implementation, deployment, cost/benefit
 - Experience, effectiveness, responsiveness, stability
- Evaluate candidate systems
 - Score vendors against requirements
 - Evaluate segmentation scenarios, assess alternatives
 - Assess TCO & risk factors
- Finalize customer segmentation
 - Based on vendor technical & cost responses

Solution Architecture, Roadmap, & Recommendations

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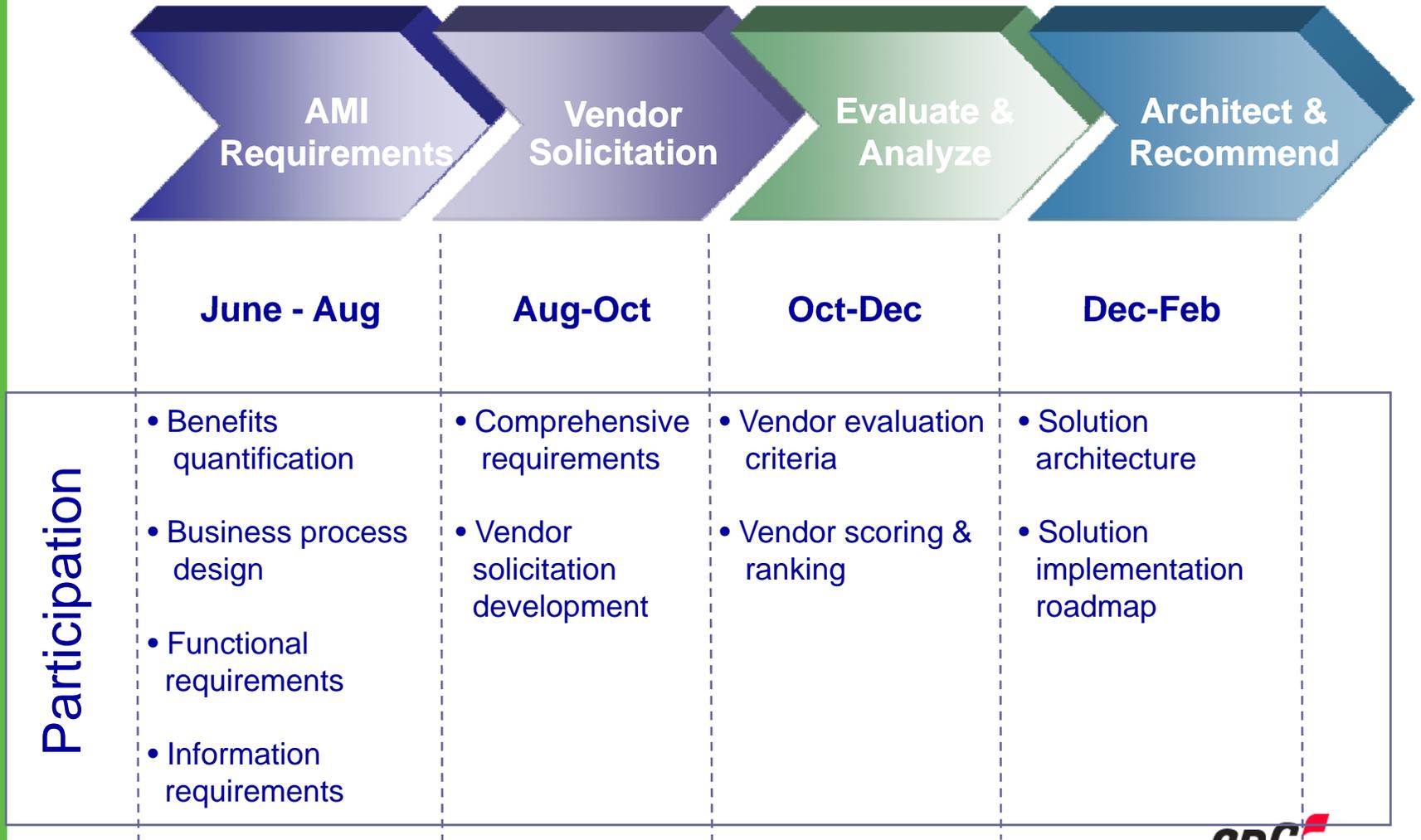
- Solution Architecture
 - AMI & IT system constraints & assumptions
 - Logical & physical architectures
 - Components, functional/information flow, physical instantiation
 - Architecture principles
 - Availability, reliability, scalability, performance
- Solution Implementation Roadmap
 - Business process changes & supporting system implementation
 - Implementation plans & milestones, Costs & Benefits by milestone
 - AMI deployment strategy by customer segment
 - Risk analysis
- Final TCO & Benefits
 - Benefits & Lifecycle costs

• Recommendations

Initial Solution Implementation Roadmap

Timeline & Participation 2005-2006

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Initial Benefit Sessions

- Meter Reading (Gas and Electric)
- Finance & Accounting
- Energy Procurement (Electric)
- Customer Billing
- Customer Call Centers
- Outage Management (Electric)
- Transmission & Distribution (Electric)
- Load Research (Electric)
- Meter Operations (Gas and Electric)
- Information Technology
- Credit & Collections
- Demand Response Programs
- Follow-up Meetings (as needed)

Business Process Design (BPD) Sessions

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- CEC's Six Policy Goals
- Tactical and Strategic Initiatives at SDG&E (related to AMI)
- IT Applications Overview (Customer care, Utility Operations, Shared Services)
- Customer Service Strategy & Priorities
- T&D Strategy & Priorities (Electric)
- Load Research (Electric)
- Demand Response Planning, Execution & Benefits Realization
- Meter Reading (Gas and Electric)
- Customer Billing
- Customer Call Centers
- Meter Operations (Gas and Electric)
- Energy Procurement (Electric)
- Information Technology – Strategy & Standards
- Information Technology – Current Applications & Data Marts
- Credit & Collections
- Revenue Management
- Demand Response Programs

BPD Sessions Cont.

- Information Infrastructure & Strategy (E&O, Network, Business partners & strategic planning)
- Outage Management
- Planned Outages
- Reliability Reporting / Public Communications
- Storm / Event Management
- Transformer Load Management
- T&D Maintenance Planning
- T&D System Planning
- Distribution Engineering
- Distribution Automation
- Follow-up Meetings (as needed)

- **Install 1.4 million smart/AMI electric meters for all customers**
 - Solid-state electric meter technology
 - 2-way communications, 4-channel metering, next-day availability of data
 - Interval data – residential hourly, C&I every 15 mins.
 - Support price responsive tariffs
 - Customer access to personal energy usage data
 - Information systems, integration with legacy systems
 - Home area network (HAN)
 - Remote disconnect/connect integrated within meter
 - Adding module to existing 900,000 gas meters
 - Interface with load control technology
 - Programmable communicating thermostats (PCTs) or other load management devices for Small/Medium C&I
 - Vendor and technology neutral

Illustrative Benefits

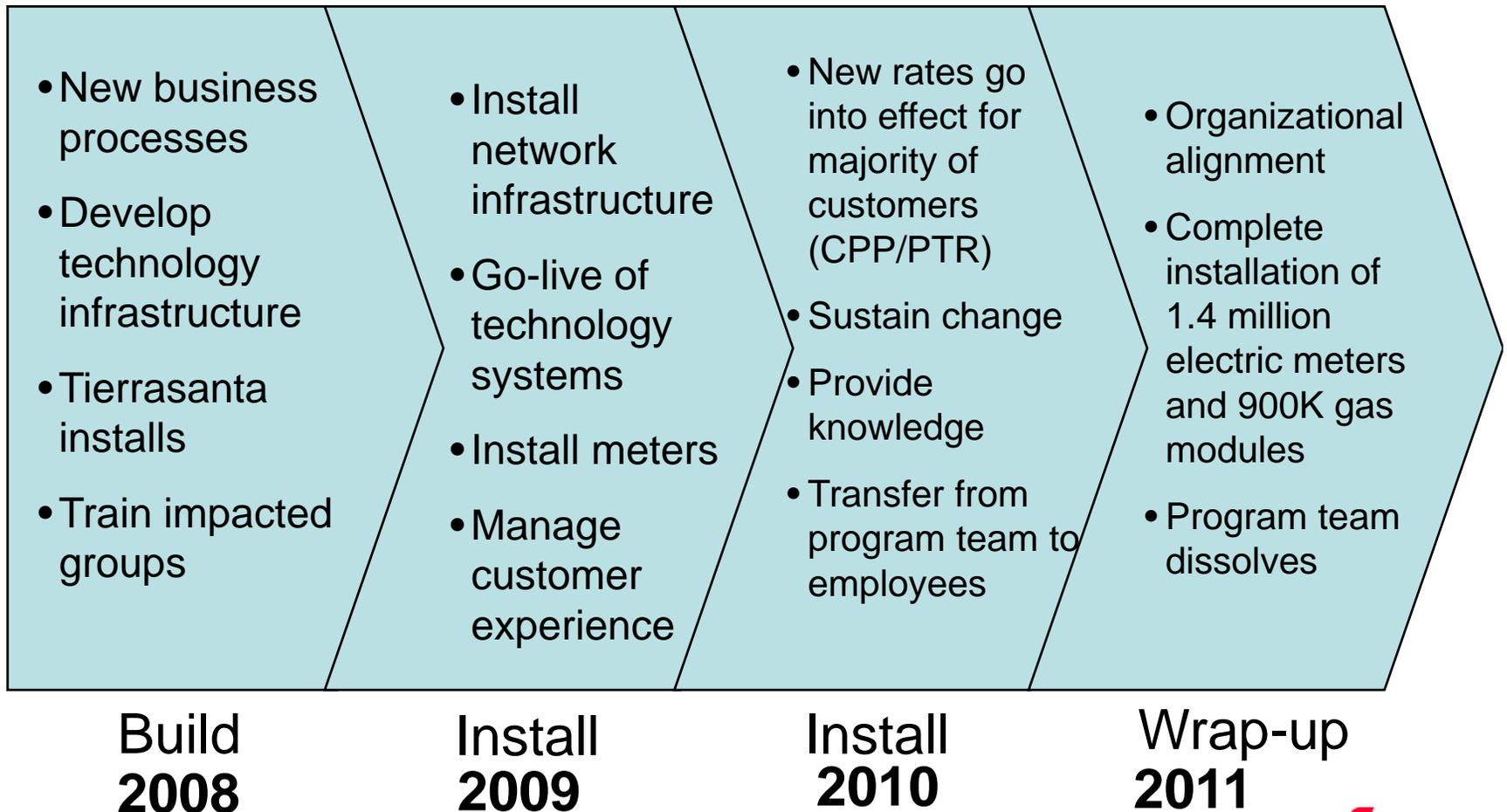
More Than Just Interval Data

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Benefit Categories <i>order by magnitude</i>	Current State	Future State
Meter Reading Automation	Manual meter reading	Automated meter reading – lower cost
Avoided Energy and Capacity	Targeted megawatts from Demand Response (DR) programs and incentive rates	Megawatts from DR rates (CPP/PTR), conservation and incentive programs
Other Management Cost Reductions	Numerous C&I day-ahead DR programs	Avoided future day-ahead DR programs
Unmetered Energy Usage	Theft, meter error, meter changes	VEE, meter reprogramming
Capital Efficiency / Deferrals	Planning for peak load w/ limited feeder visibility	Planning for managed peak w/meter interval data
Access and Re-Bill	Rebills - late reads / read errors	Fewer rebills
Other Customer Service & Operations Reductions	Load Research Sampling	Improved research / compliance processes
Outage Management	Customer outage reporting and manually initiated response analysis	Automated outage / restoration reporting and analysis

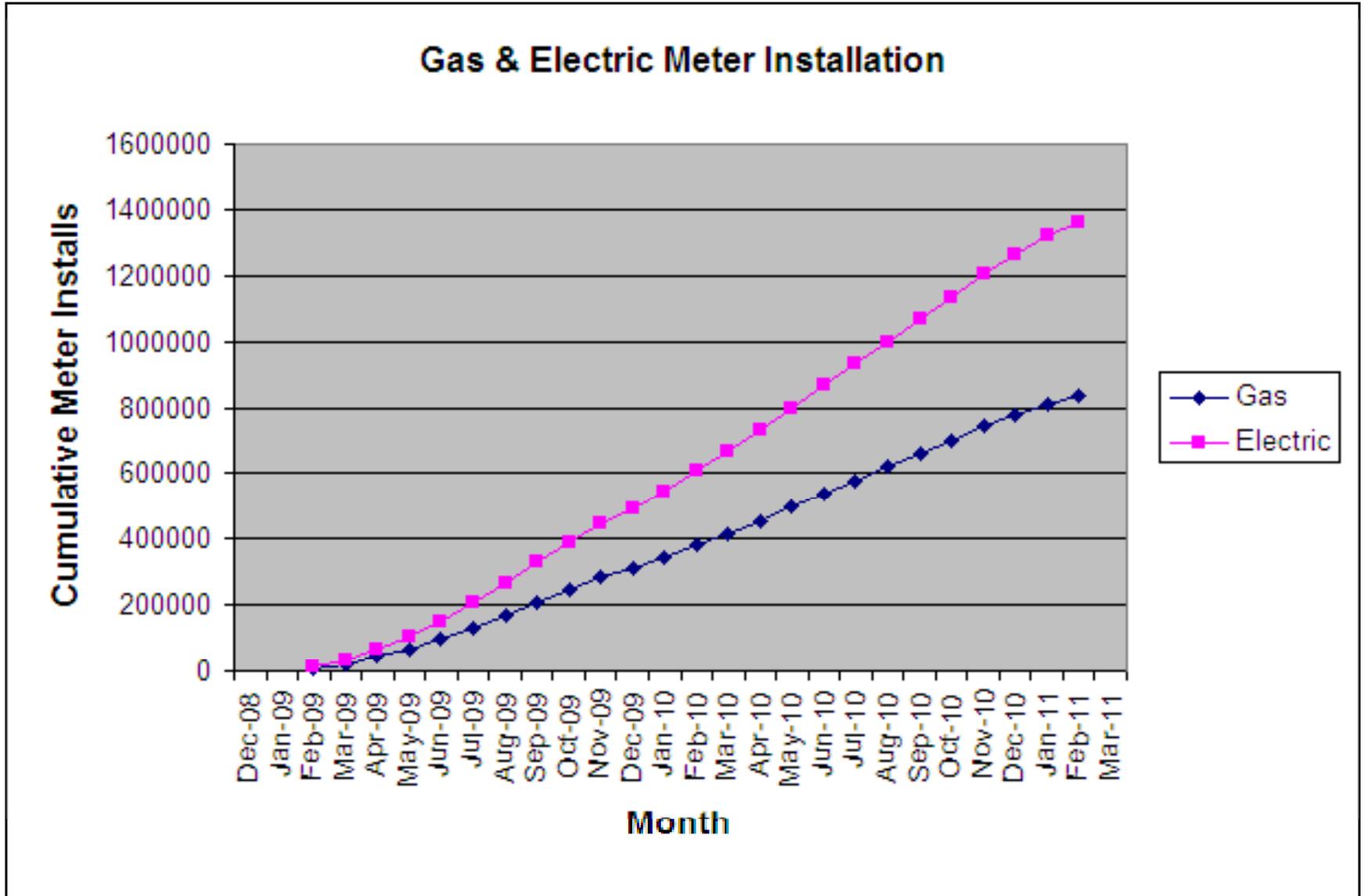
SDG&E Smart Meter Schedule

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SDG&E Deployment Schedule

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Home Area Network (HAN)

