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Smart METER

The California AMI Experience

Ted Reguly

Director, Smart Meter Program

San Diego Gas & Electric

San Diego, California

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Background

Smart METER

- 2000-2001 California energy crisis was catalyst
  - Peak electricity demand issues
  - No “Real-time” information for customers
- 2002 CPUC directs all CA-IOUs to develop Smart Meter programs
- Application approved April 2007
- More control over every day energy use, enhanced customer service and operations, foundational for longer term goals and benefits
- $572 million capital/O&M budget for 2007-2011

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SDG&E Smart Meter Goals

Smart METER

- Install Smart Meters for all customers - electric & gas; business & residential
  - 1.4 million smart meters
  - 900,00 gas modules
- Enhance customer service and improve utility operations
- Provide foundation for SDG&E's smart grid and smart premise
- Ensure delivery of net positive benefits
- Leverage this historic opportunity

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IT System Overview: Wave 1 Release

Smart METER

- **Primary Objective:**
  - Getting our IT systems ready to support the meter installation process, remote meter reading capability and online presentment
  - ***Prerequisite for mass meter deployment***

- **Target functionality:**
  - New Smart Meter applications to support AMI Technology (Head End, MDMS)
  - Legacy application enhancements to support business process changes and new data (CIS, GFMS, SAP, DW, SO and Portal)
  - New system integration platform (SOA)
  - Major infrastructure changes (Network, Head End, MDMS)

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IT System Overview: Wave 2 Release

Smart METER

- **Primary Objective:**
  - Getting our IT systems ready to support additional capacity and/or functionality to achieve remaining Smart Meter benefits (e.g. billing with new rates)

- **Target functionality:**
  - Upgrade new Smart Meter applications (Head End, MDMS, Online Presentment)
  - Legacy application enhancements to support business process changes and new data (CIS, CRM, OMS, DW and Portal)
  - Expand infrastructure, if necessary

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Accomplishments

Smart METER

- Launched mass deployment - March 2009
  - Installed 60k end points
- Over 60 business processes designed or redesigned
- Moved all IT systems into Production
- Established solid partnerships that allow for continuous milestone delivery
- Positive customer and employee feedback

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2009 Project Update

- **Installation ramp up**
  - 700 end points/day to 7000/day
  - 200,000 installations by year end
- **System Functionality**
  - Monthly Consumption Billing
  - Firmware Update
  - Interval Consumption Billing
  - HAN Proof of Concept

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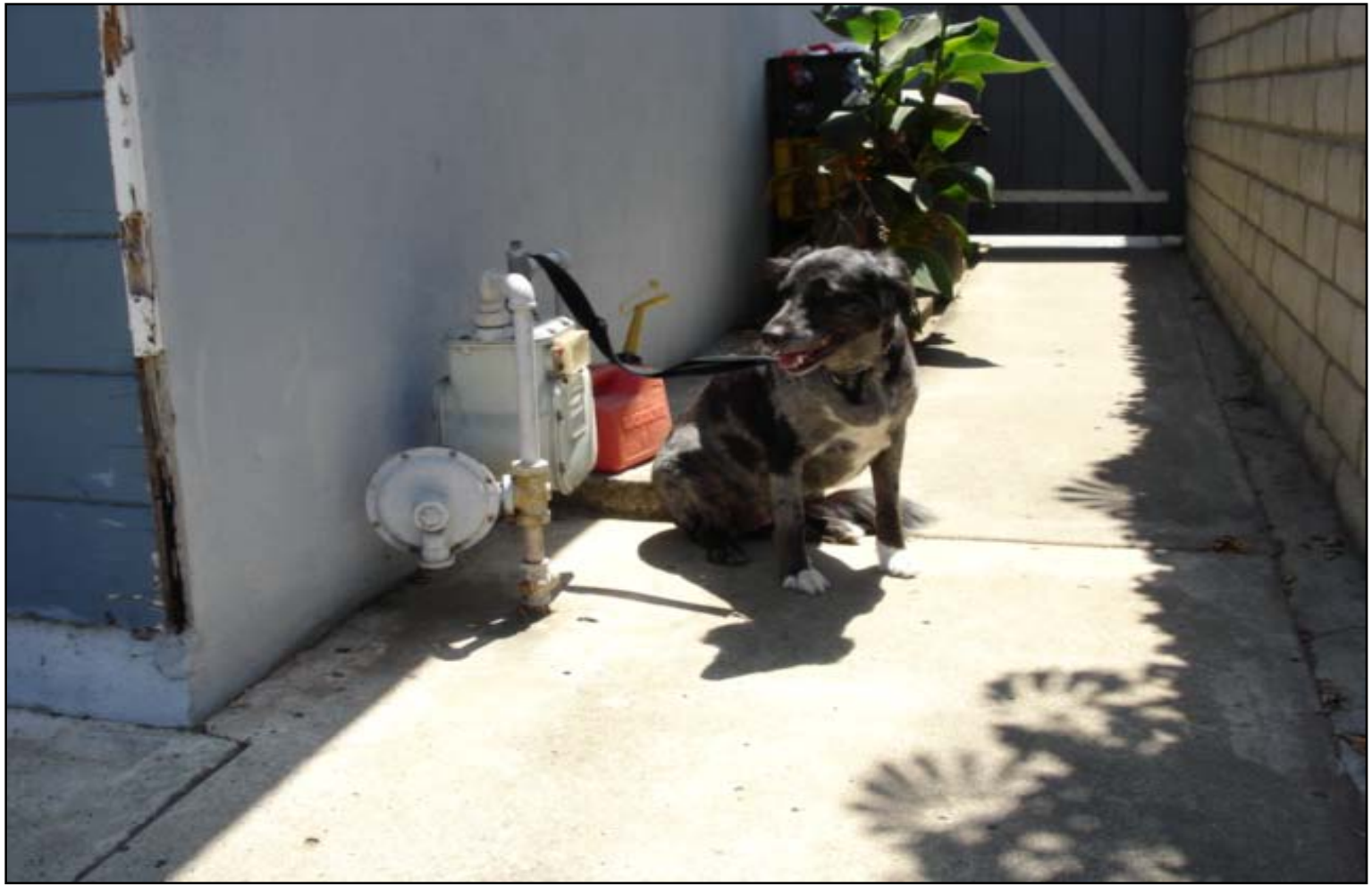
We have learned a lot

Smart METER



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Obstructions

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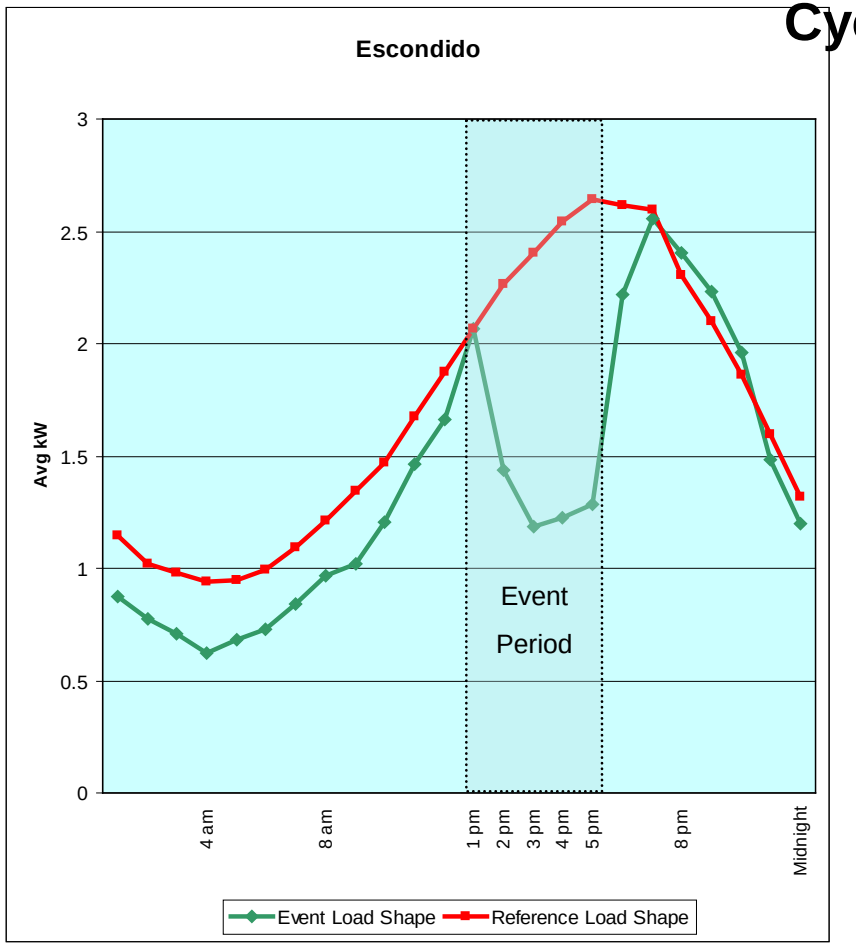
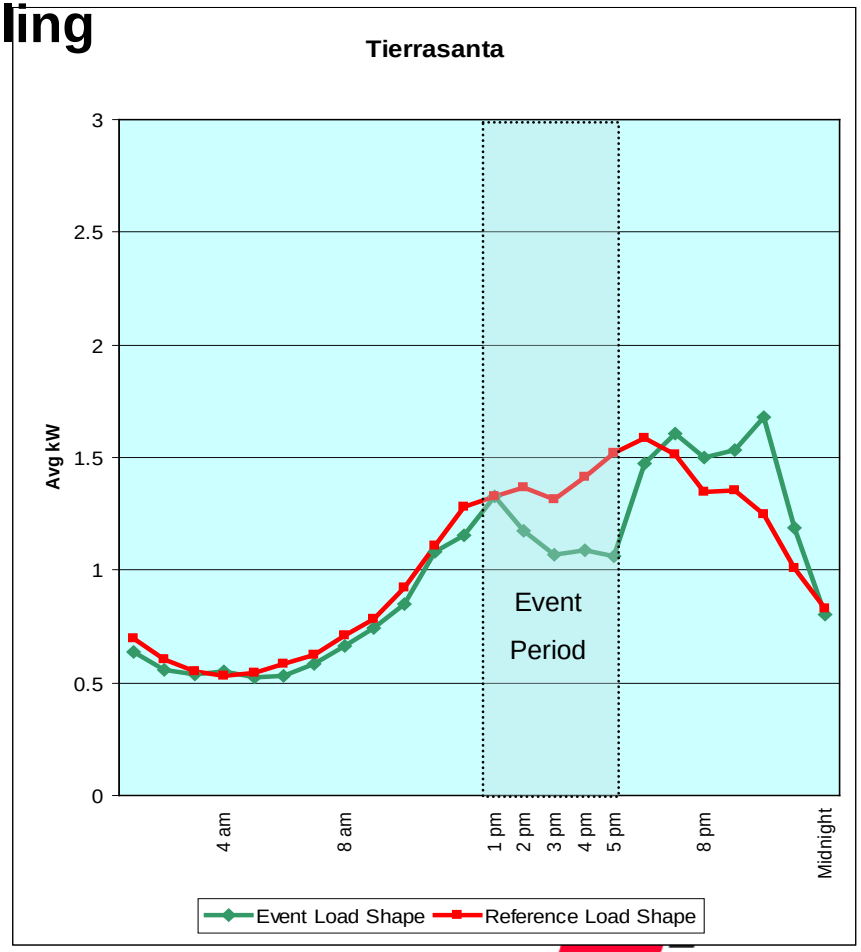
Real time information on Program Effectiveness

Summer Saver Event – 7/21/2009 Residential 100% A/C Cycling





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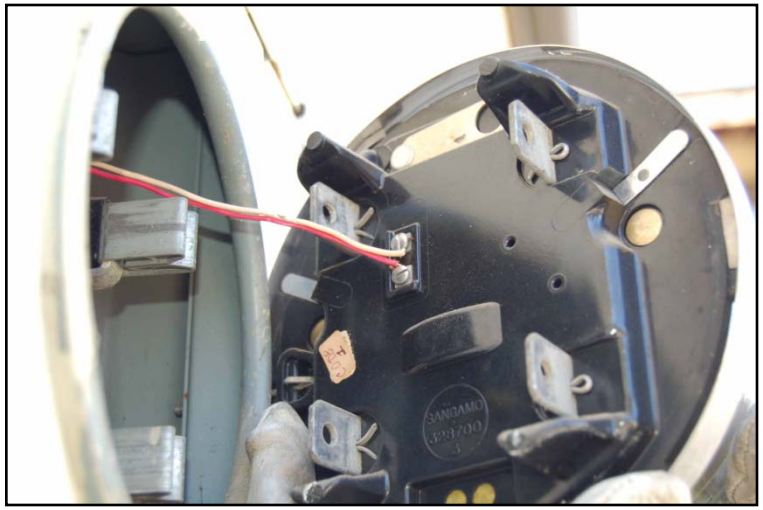
Tampered Meters



Customer added on/off switch

Customer added bypass

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Lessons Learned

Smart METER

What's worked

- Informing customers and stakeholders
- Focusing on driving to the benefits
- Confirming alignment and getting buy-in
- Learning from others
- Embracing the daily complexity
  - Devil in the details – Broken Screws
  - Low level requirements
  - Collaboration
- Managing opportunities

Things to Avoid

- Chasing Technology
- Working with high level requirements
- Changing Scope
- Re-planning

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Making the Right Impression

Smart METER

- Getting Customer Input
- Installers are:
  - Courteous & professional
  - Answer questions
  - Treat property with care
  - Clean up work area
- Community outreach events

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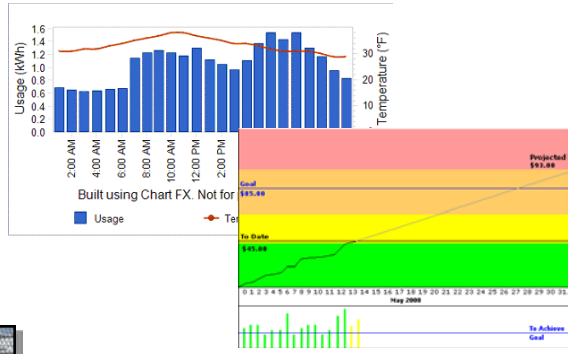
2010+ Timeline

Smart METER



Program Complete

Q1 2010 — **Consumption Information Available Online**

Q2 2010 — **C&I Installs Begin**

Q3 2010 — **Time of Use Rates**

Q4 2010 — **Begin Deploying HAN devices**

Q4 2010 — **Large C&I Installs Begin**

Q2 2011 — **Begin Dynamic Rates (PTR & CPP)**

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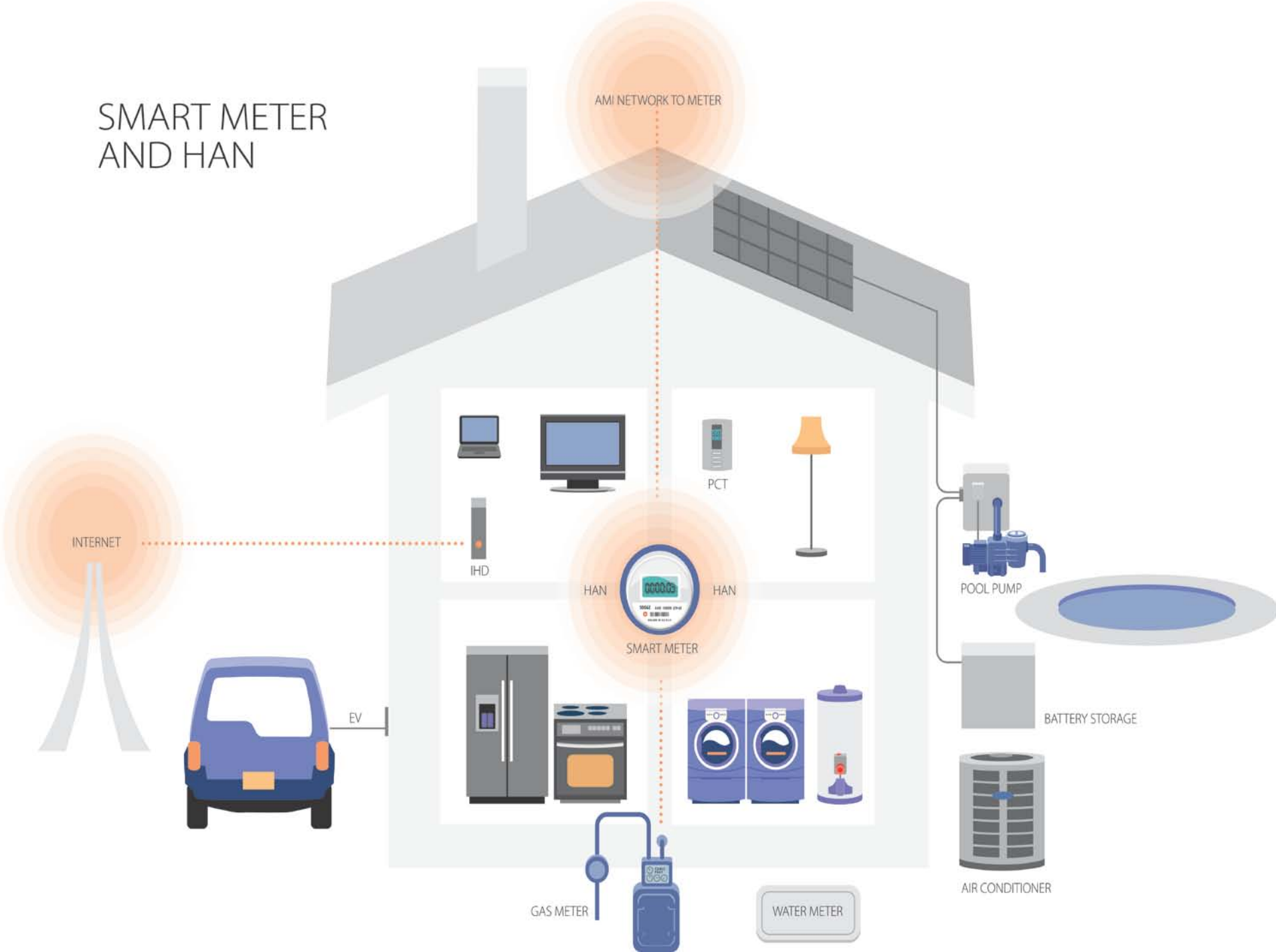
SMART METER AND HAN



Home Area Network (HAN) Plans

- Timeline
  - Q1 2010 Initial proof-of-concept pilots with employees
  - Q1 2010 IT integration; Develop marketing and education plans
  - Q4 2010 Start customer pilots
  - 2011 Expect broader customer HAN offers

- Continue to leverage meetings
  - California IOUs
  - ZigBee Alliance
  - UCA – Open HAN and Open SEC
  - National/world-wide utility counterparts

- Push for ZigBee Smart Energy Profile (SEP) 2.0 backward compatibili

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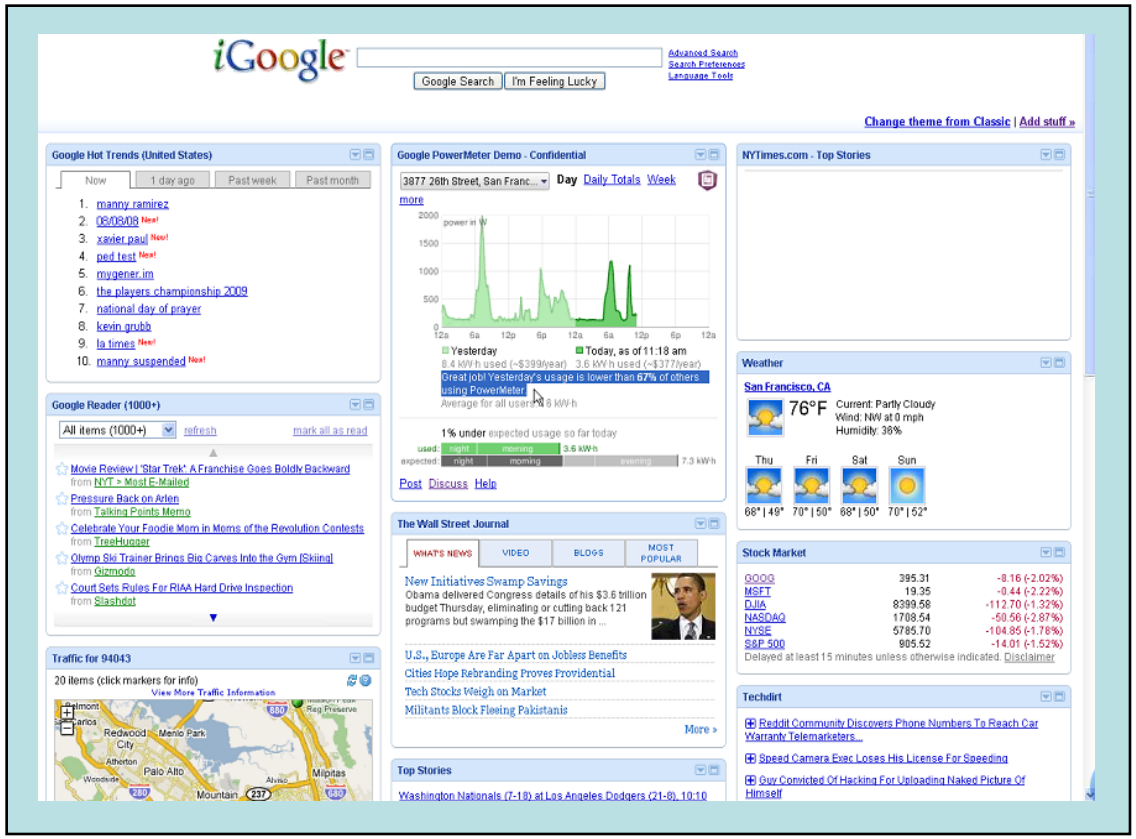
Customer Energy Network

Smart METER

- Allows customers a choice for viewing their energy usage inform
- Allows for multiple third-party providers
- Pilot with Google is the first test of application



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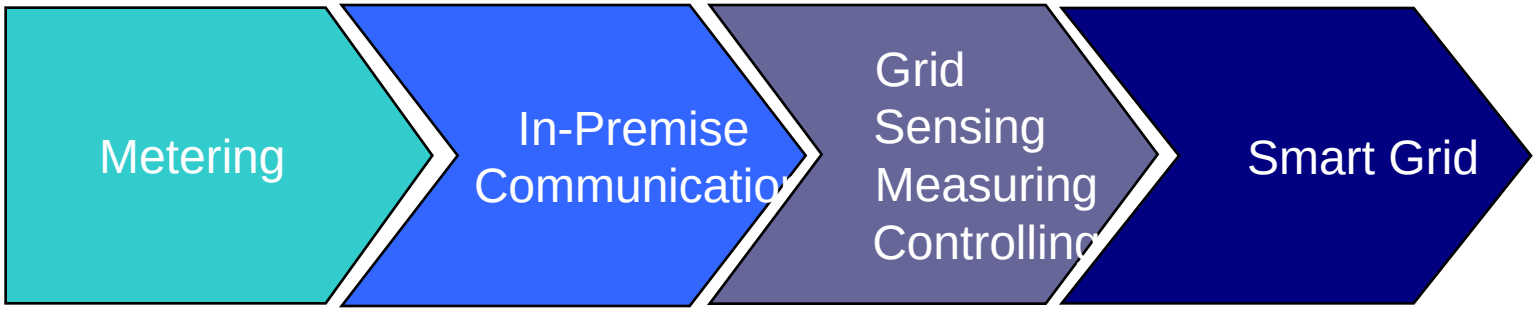
Smart Metering for a Modern Energy System

Smart METER

Smart metering will serve as the foundation for SDG&E's future service model, with an emphasis on improved service and operational efficiency.

An intelligent, modernized smart grid creates a digital energy system to meet future needs.



Smart Grid = Modernization of the aging grid system to generate and distribute electricity most effectively, economically and securely for future needs.

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Today vs. Vision

Smart METER

Current State

Utility:

- Centralized control
- Heavily dependent on humans
- Electro-mechanical
- Large carbon generator

Customer:

- Susceptible to blackouts
- Hard to predict restoration times
- Limited price signals

Future State

Utility:

- More relevant to Customer
- Situational awareness
- Frequent new technologies
- Distributed Energy Resources

Customer:

- Customer participation in market
- New storage / generation types
- Increased power quality needs

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It’s more than just installing meters…

Smart METER

WE'RE RECREATING OUR RELATIONSHIP WITH CUSTOMERS AND TRANSFORMING OUR COMPANY.

AND THE PROJECT IS ON TRACK!

Information available on www.sdge.com/smartmeter

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