Home Area Network
The Vision for California

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California IOU's HAN Vision

- Create responsive, smart energy environments within the home that are gracefully integrated with people.
- Smart energy environments include meters with the capability to communicate with customer devices inside the premises.
- Includes load control devices, usage monitoring devices, sub-metering and prepayment systems through a home area network (HAN).
- Based on open standards and protocols that comply with nationally recognized non-proprietary standards.

2. Adapted from Texas PUC smart meter ruling 5-07

Defined by the Industry

- California HAN Vision – this is not "just" SDG&E
- 3 California, 9 non-California utilities
- Many work groups
  - IEC standards
  - UCA User's Group
  - OpenAMI
  - UtilityAMI
  - OpenHAN
  - AMISEC
  - Home Plug Alliance
  - ZigBee Alliance

Smart Meter - It's more than meters, it's foundational

- Digital Meters
  - Data storage
  - Calibrated
  - Upgradeable Software
  - Bi-directional, secure communication
  - "near" real-time rates and energy measurement
- Remote connect and disconnect
- Home Area Network
- Designed for distribution automation, distributed generation, autonomous islanding
- Net metering for consumer generation choices
  - Hydrogen
  - Solar
  - Electric vehicles
- New utility applications – OMS, DMS, GIS, ERP, SOA
- Fiber and wireless everywhere – transmission and distribution
- Blurring the lines between IT and Electric T&D

Meter to Home

- Meter and meter communication system
  - Gateway between the utility and the consumer.
  - Remote disconnect.
  - View meter communication system as access to the consumer's programmable communicating thermostat (PCT) and other enabling technology.
- It all started with PCT functions
  - Utility controls load by communicating with PCT
  - Grid reliability demand-response (DR) program
  - For economics or calls a price responsive DR program
  - Two-way communication customer confirms DR event, but A/C was not on
  - Notification PCT no longer receiving/responding to communication network

Communications

- Designed for two-way information flow
  - New services could be added
  - Require WAN high-speed communications
- Home area network (HAN)
  - Open industry standards, non-proprietary, inter-operability
  - Working with the other CA IOU's
  - Secure means of sending information between utility and end points (tolerant of attacks)
- Communications infrastructure supports long-term vision to collect:
  - Power quality information
  - New sensor data for smart grid, building automation designs
  - Grid state (monitoring, automation)

Software

- Ability to leverage outage management systems to detect outages
- Ultimately enable transmission and distribution (T&D) operations to sense and review information from many data sources
  - Either aggregation or as finely detailed as necessary
- Communicate with consumer whereby system designed to add new functionality as customers require
  - Provide DR and energy efficiency information to consumer via PCT, in-home display, other enabling technology
  - May offer consumer centralized energy management system or allow use of information to manage own system

HAN Capabilities

- Supports a secure two way communication with the meter
- Supports load control integration
- Provides direct access to usage data
- Provides a platform for future customer owned products which leverage meter data and utility/grid information
- Supports three types of communications: public price signalling, consumer specific signalling and control signalling
- Supports solar/distributed generation and plug-in hybrid metering
- Supports gas and/or water meter communications

HAN Assumptions

- Consumer owns the HAN
- Meter Interface to HAN is based on open standards
- Implementation is appropriate given the high value and relative low cost
- Potential technology obsolescence is low due to multiple bridging options
- HAN interface choice isn't Betamax vs. VHS, rather Mac vs. PC

What the HAN Can NOT Do

- Broadband
- Telephone
- Video

Today versus Tomorrow

Today

- PCT
- Demand Response
- In-home Display
- Consumer information
- Gas & Water Meter
- Back office to Internet

Tomorrow

- Plug-in Electric Vehicle
- Appliance Control
- Sub-metering
- On-site generation, and energy storage monitoring and control
- Energy Management Systems
- Information monitoring and notification set by customer as preferences

Questions?

Thank you