A managed approach to the successful deployment of a cost effective residential and small commercial AMI, Demand Response, and Automatic Load Control

Prepared for
Southern California Edison
January 28, 2005
Release 2.0

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Return on Investment

AMI can provide a significant Return on Investment if:

- The cost is low.
- The system provides many functions & multiple pay back cost centers
- Allows the generation of new revenue streams through non-core opportunities

The “Right Economics”

The “Right Economics” will require:

- **Support bi-directional communications between the customer and utility**
- **Include an in-home customer interface to:**
  - **Automatic real-time transfer of current rate information from utility to customer**
  - **Provide real-time consumption feedback**
  - **Provide accumulated cost from start of bill cycle**
  - **Customer presentation of end of month bill**
  - **Provide means for consumer to set and monitor a budget**

The "Right Economics" (cont'd)

The in-home customer interface will also need to:

- **Allow load reduction through communications with thermostats and appliance modules**
- **Support prepayment option in conjunction with all advanced tariffs over network or customer inserted Smart Card**
- **Allow delivery of messaging and media content from utility to customer**
- **Allow downloading of data to customer inserted Smart Card**

Advanced Metering Functionality

Provide advanced metering functionality to support:

- Peak demand rates
- Time interval rates
- CPP rates
- Real time pricing
- Prepayment of service with all complex tariffs
- Subscriber side billing capability to support all complex tariffs for reduction of network communications traffic and congestion
- Theft of service remote reporting
- Low cost optional remote service connect/disconnect
- Local power factor monitoring
- Service outage and service restoration reporting
- Forty-five day archival of billing determinants for complex tariffs
- Serve as a communications hub between utility, gas, water, and other meters & devices for monitoring and control.
- End point termination of wide area network data telemetry communications

Realistic Feasibility

Technology wise, the functional and cost goals are very realistic.

- **A single vendor "off the shelf" solution offering the above does not exist as of Q1 2005**
- **The meter company's have not invested in this solution because of a lack of market demand**
- **Application wise, technology must be refined and integrated to reduce cost**
- **Production wise, Enel Electric in Italy has shown the feasibility of producing and installing over 500,000 meters per month on a sustainable basis**

A Low Risk Managed Approach

- SCE is working with Los Angeles County and USCL for deployment of 350 USCL EMS-2020 units
- EMS-2020 units and associated ANSI compliant revenue kWh meters offer:
  - Download of current rate information from utility to customer
  - Provide real-time consumption feedback
  - Provide accumulated cost from start of bill cycle
  - Customer presentation of end of month bill
  - Provide means for consumer to set and monitor a budget
  - Allow load reduction through communications with thermostats and appliance modules
  - Support prepayment option in conjunction with all advanced tariffs over network or customer inserted Smart Card
  - Allow delivery of messaging and media content from utility to customer
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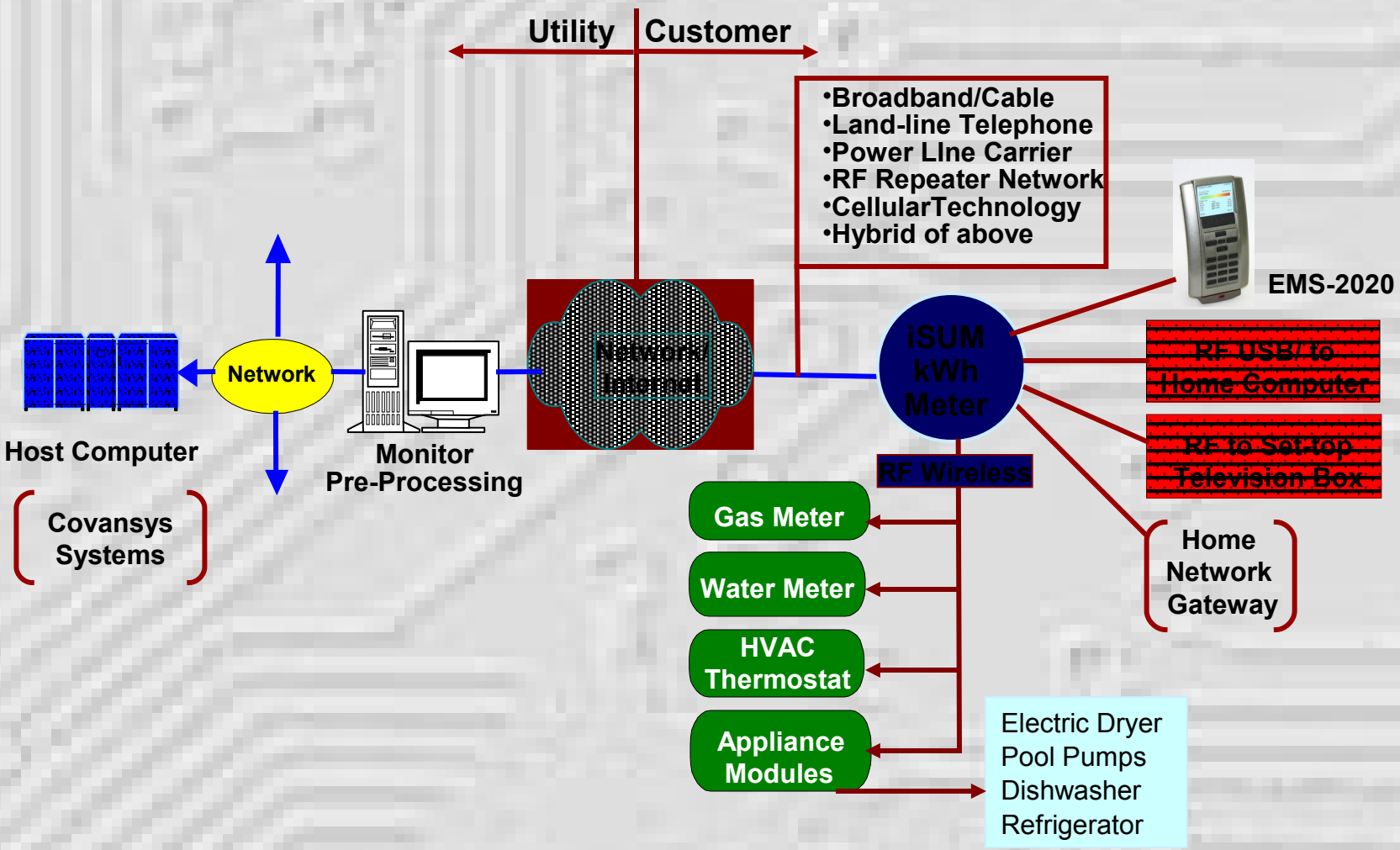
A Low Risk Managed Approach (cont'd)

- Expand project to include form 12S poly phase meters
- Expand project to include a cross section of customers beyond those of the LA County low income housing
- Gather design, operational, and mtbf feedback
- Partner with USCL to incrementally reduce device cost through further engineering and development of proprietary ASCI (application specific integrated circuit) technology
- Manage quantifiable development, test and product rollout plan based on cost objectives performance criteria
- Product line to include basic low cost consumer display with limited functionality and B&W display as baseline product
- Offer more functionality and enhanced display and performance product to customers on a purchase basis
- Commercialize product for sales to other utilities; SCE to participate in revenue stream from royalty or business partnership
- Work with "Flex Your Power" group for advertising co-op funds

Low Cost Pricing and Monitoring, all in Real-Time!



EMS-2020 & AMR Topology USCL Integrated Solutions

Additional Benefits to be Modeled

- Cost savings associated with wholesale power acquisition at peak demand times
- Lower costs in maintaining Transmission and Distribution system at peak demand times
- Cost reduction in service connection and disconnection in selected accounts
- Cost reduction associated with reduction of customer service inquiries
- Reassignment of traditional meter reading resources
- Cost reduction associated with accurate service outage and restoration reporting

Revenue Stream Examples to be Modeled

- Sales of product upgrade (EMS-2020) to customers
- Retail messaging transaction fees
- Retail electronic in-service coupon fees
- In-home wiring insurance and preventive maintenance service based on local power factor monitoring & signature analysis
- Increase in sales velocities of SCE retail product offerings
- Contract meter data collection services for gas & water utilities; emergency remote gas shut-off (earthquake event as an example)