

“Utility Of The Future”
Integrated Energy Management

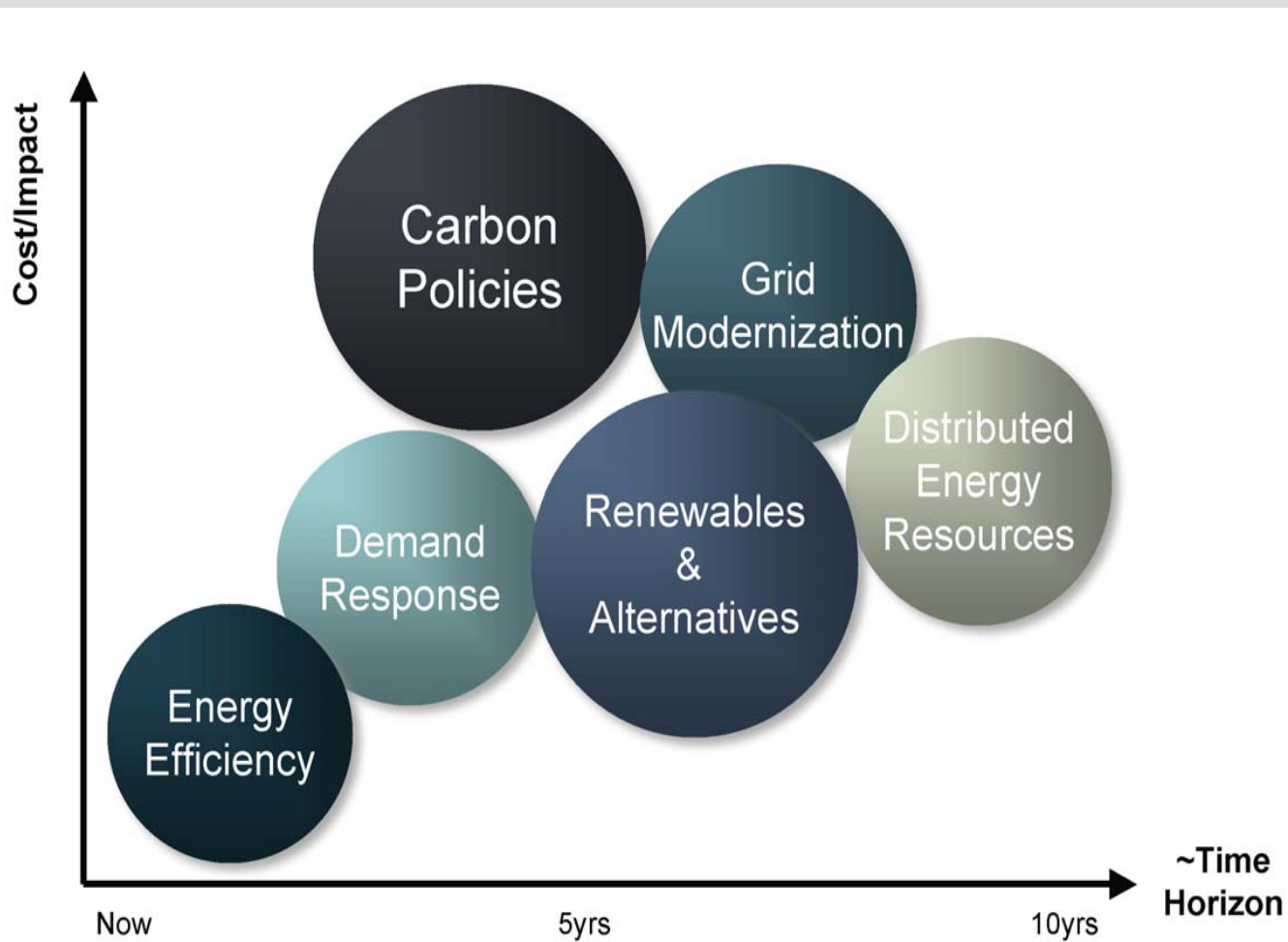
ENOI IRP Discussion Session
November 19, 2008



The Big Picture

Landscape of Utility Issues

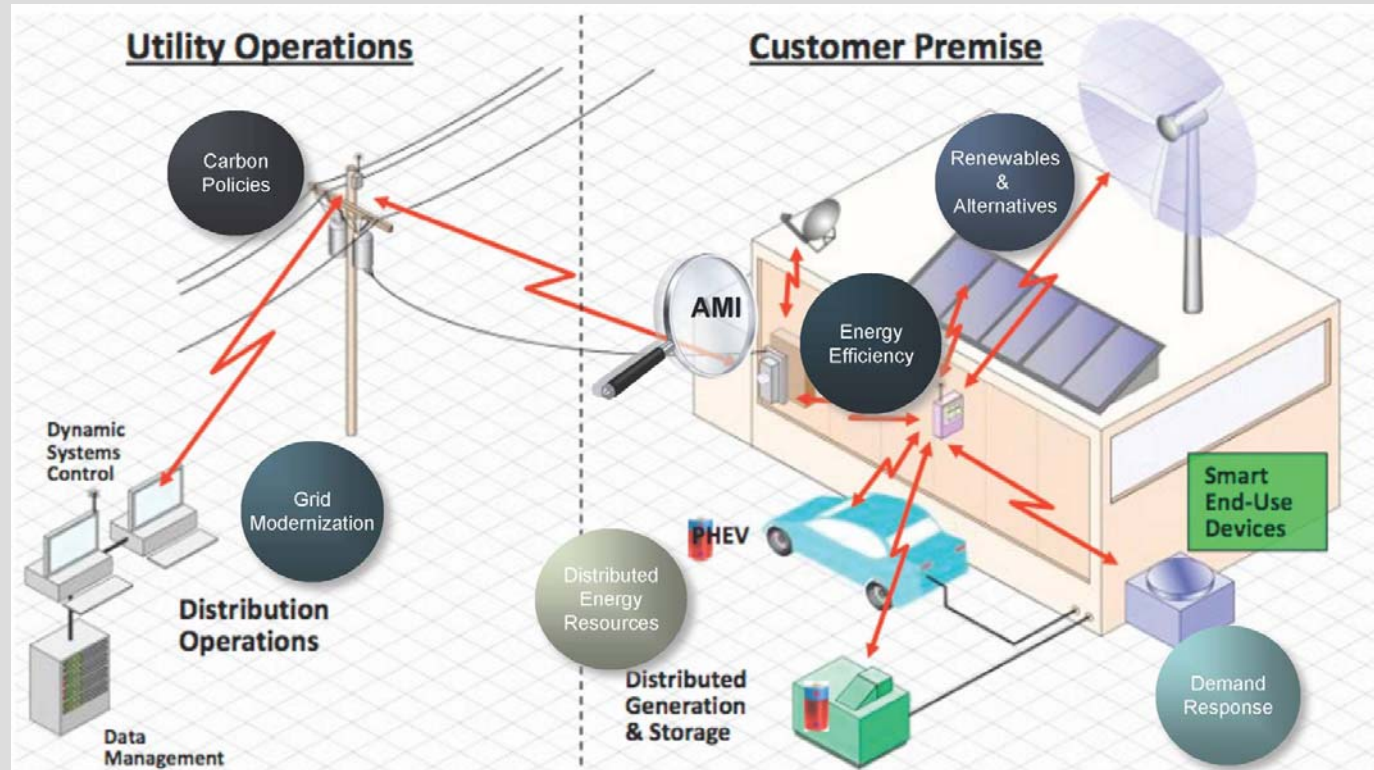
There are multiple business drivers creating changes in the utility industry with no two companies exactly alike. Challenges that the Utility industry face could require financial investment. The key to making optimal decisions is to understand the drivers, areas of change, potential effects on operational processes, customer needs, environmental issues, economic pressures and capability of major information technology systems.



Source: Elster Integrated Solutions

Utility Of The Future

Blueprint for Utility of the Future



Source: Elster Integrated Solutions

The utility industry appears to be approaching the edge of a paradigm shift – not just a fad or a technology evolution. The shift could change the industry at multiple levels and make the customer, more than ever, the largest stakeholder in the utility enterprise.

The convergence of environmental issues, fuel costs, looming infrastructure replacement, technological advancements, and economic pressures will drive change.

Integrated Energy Management (IEM) Organization

Purpose and Scope

IEM Organization Objectives

Objective	Scope
Develop a focused strategy that integrates energy management initiatives (AMI, Smart Grid, energy efficiency, demand-side mgmt, technology, renewables, climate change, supply-side mgmt)	<ul style="list-style-type: none"> ▪ Define point of view and plan for each major focus area and identify key strategies, technologies, business models and rate each of them on commercial value and consistency with company policy / point of view ▪ Ensure alignment with corporate goals and aspirations
Establish long term (5 – 10 year) energy management objectives and aspirations	<ul style="list-style-type: none"> ▪ Promote environmental responsibility, enable customer management of consumption, and create shareholder value
Utilize benchmarking and best practice efforts	<ul style="list-style-type: none"> ▪ Evaluate and assess which programs, projects, technologies, and regulatory and legislative strategies to employ
Design regulatory and business models that enable execution of initiatives and realization of benefits for all stakeholders	<ul style="list-style-type: none"> ▪ Establish a fundamental view on customer values and real returns on the invested capital
Prioritize Roadmap critical elements and short-term objectives	<ul style="list-style-type: none"> ▪ Optimize the use of enterprise-wide assets and resources (people and equipment) for investment decisions
Establish controls and performance metrics	<ul style="list-style-type: none"> ▪ Provide governance for business plan execution, decisions, priorities, and accountability

IEM Organizational Focus Areas

IEM Focus Area	Scope
1. Energy Efficiency / DSM 2. AMI / SmartGrid 3. Renewable Resource Portfolio	<ul style="list-style-type: none">▪ Strategy, policy, & plan development▪ Project / program design▪ Customer program development▪ Vendor / product analysis, testing, quality▪ Field deployment
4. Technology Solutions	<ul style="list-style-type: none">▪ System architecture / telecom engineering▪ Technology portfolio development▪ Vendor product analysis▪ Electric transportation strategy
5. Financial & Regulatory Bus. Case	<ul style="list-style-type: none">▪ Financial & regulatory business case development▪ Financial compliance▪ Benefit realization
6. Project / Programs Management	<ul style="list-style-type: none">▪ Project management planning & execution▪ Program controls, governance, & reporting▪ Program scope & risk management▪ Vendor performance management

IEM Organizational Focus Areas

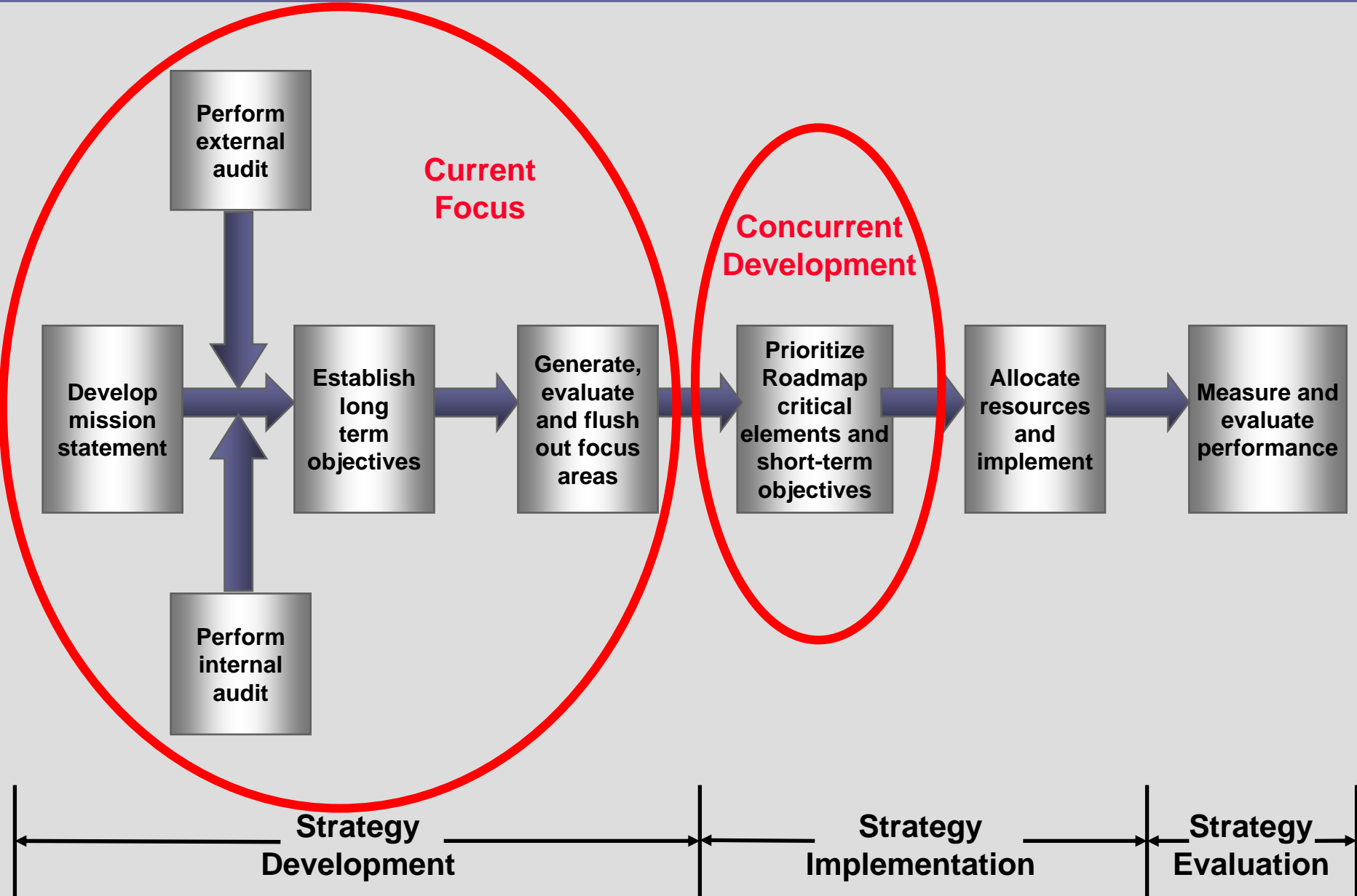
Integration – Other Energy Groups	Scope
Load Planning & Supply	<ul style="list-style-type: none">▪ Energy Efficiency, DSM, AMI, SmartGrid program alignment with system resource plan▪ Renewable generation strategy
Climate Change Management	<ul style="list-style-type: none">▪ Alignment with corporate goals / aspirations▪ Positively impact CO2 policy▪ Reduce CO2 footprint
Organizational Readiness	<ul style="list-style-type: none">▪ Internal and external communication plan▪ Training and education strategy and plan▪ Stakeholder engagement – business readiness
Customer Products / Services	<ul style="list-style-type: none">▪ Product identification & plan▪ Consumer services▪ Marketing strategy & plan

Business Drivers – Why?

Why is this movement important now?

- **With rising energy prices, increased environmental concerns and a customer base that is shifting to a more participatory focus relative to energy demand ...utility innovation must accelerate to meet changing customer, regulator and shareholder expectations.**
- **We will need to move toward smart grid-enabled levels of customer experience and control.**
- **Our service territory is challenged with slow sales growth and our industry is facing increasing costs.**
- **Entergy acknowledges and believes that sufficient scientific evidence exists linking the burning of fossil fuels and vehicle emissions to climate change.**
- **Entergy's service area is particularly vulnerable to the physical risks of climate change such as more frequent and intense hurricanes, sea level rise and the loss of wetlands.**

Strategy Development Template



What is Smart Grid?

What is Smart Grid?

Intelligent, auto-balancing, self-monitoring power grid

Enables real-time two-way communication between the consumer and utility

- **Transforms any source of fuel into a consumer's end use with minimal human intervention**
- **Utility devices (monitors, switches, fuses, etc.) for communication throughout the grid**
- **Devices at consumers' premises (meters, monitors, device / appliance controls, logic)**

Enables active participation by consumers in demand response

Self-healing from power disturbance events

Uses data management tools and neural networks - integration logic

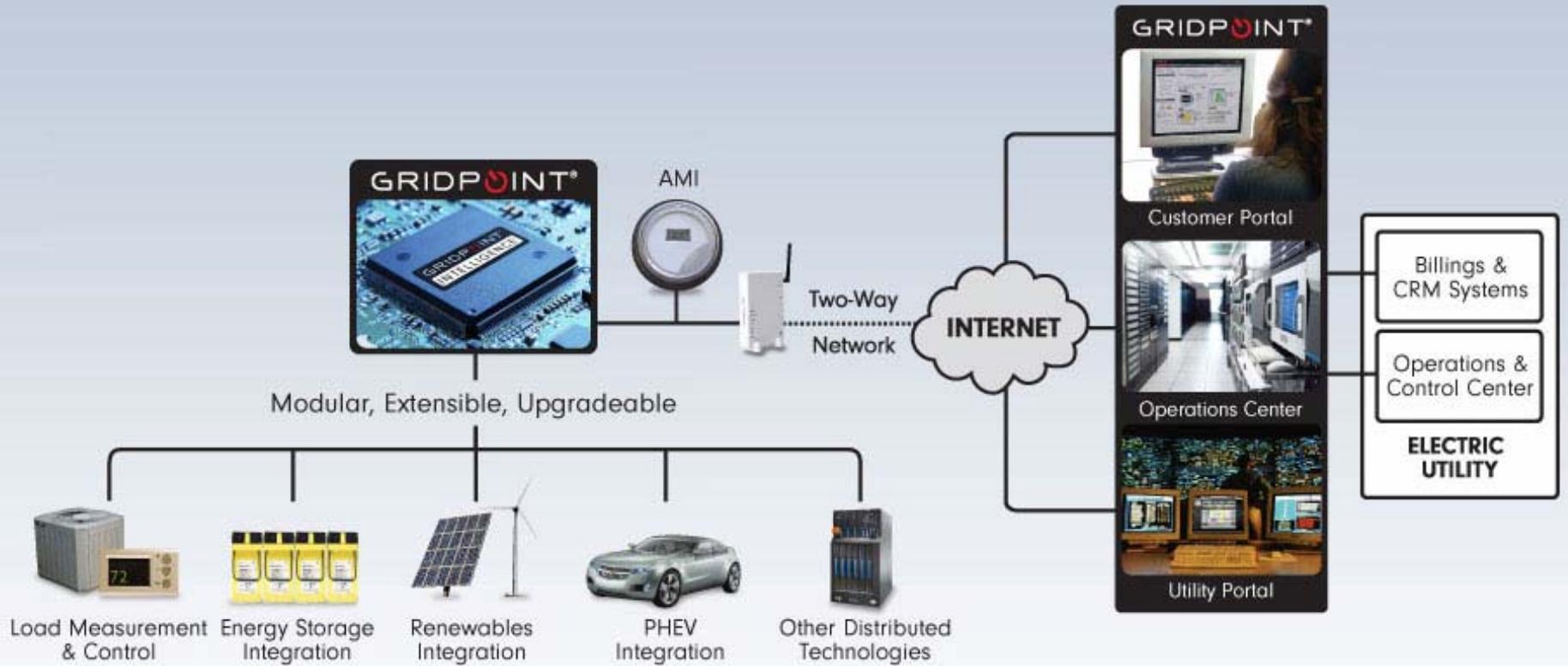
Optimizes renewable energy sources and minimizes environmental footprint

Potential Benefits

- ✓ **Reductions in residential peak demand consumption**
 - **Real-time price and environmental signals with advanced in-home technologies**
- ✓ **Reductions in distribution losses from optimal power factor performance and balancing**
 - **Carbon footprint reduction**
- ✓ **Increased reliability from improved ability to predict and/or prevent potential outages**
- ✓ **Cost savings from remote and automated disconnects and reconnects**
- ✓ **R&D from other products and services such as electric transportation opportunities**

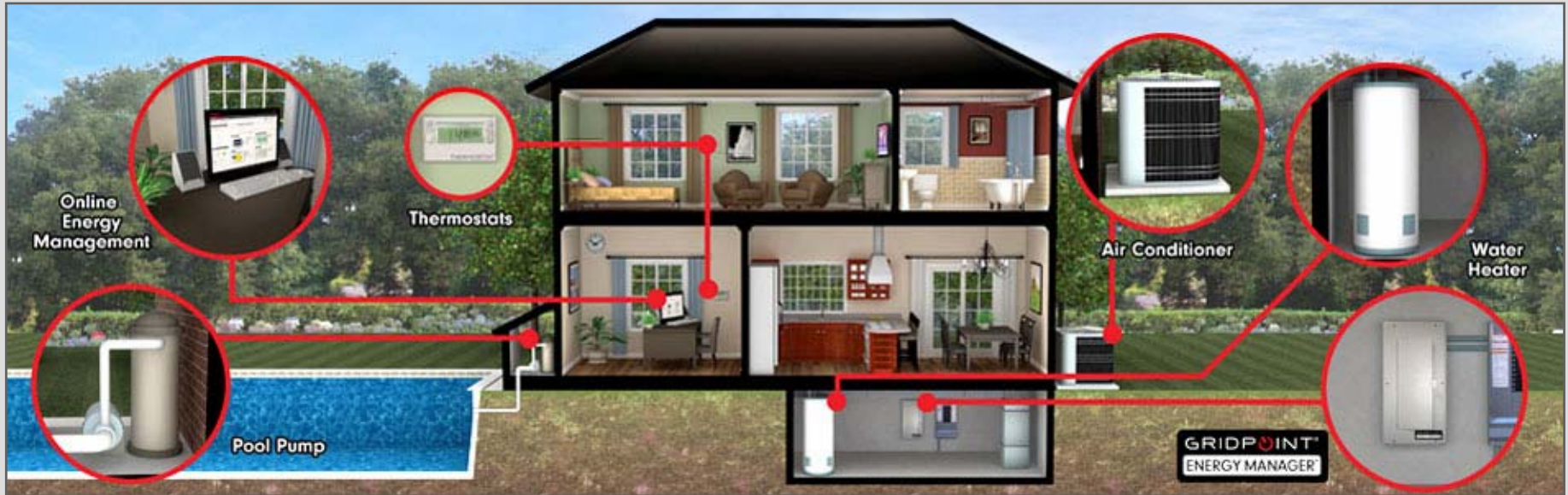
Smart Grid Platform

Smart Grid Illustration



Demand Side Management

Demand Side Management Illustration



- Culture and behavioral changes for customers
- Effective implementation of enabling technology
- Market participation in customer side of meter
- Adequate cost recovery mechanisms
- In-home devices / granularity of customer control

Current Advanced Metering Infrastructure (AMI) Initiatives

AMI Initiatives in Entergy Jurisdictions

Advanced Metering Infrastructure (AMI) initiatives are under way in Louisiana and Arkansas to test business functionality, customer behavior, and technical feasibility.

Additionally a planning effort is underway to develop an AMI strategy and implementation plan for all jurisdictions.

AR	Arkansas Rice Wells pilot - 100 meters to be installed with 48 having load control capability and receiving participation credit; scheduled mid-July through September 1
LA	<p>Baton Rouge Pilot: functional pilot of 3,400 meters to determine if anticipated savings and services can be supported; required LPSC update filed on August 8, 2008, final report to LPSC February 2009</p> <p>Baton Rouge DSM Pilot: Up to 200 customers to test customer acceptance of new programs intended to monitor and control usage; 50 customers signed up of which 20 have been installed; exploring pilot extension to meet desired participation</p> <p>Fort Polk Pilot: 300 meter pilot in rural area to address operational challenges; meter installations completed, installation of modems and collectors in progress</p>
NO - LA	Gas Rebuild Advanced Meter Reading Technology: remote (drive by) metering reading capability added to gas meters as part of ENOI rebuild effort; remote read capability now on ~7,000 gas meters in rebuild area and ~5,500 meters outside the rebuild area

Entergy is Environmental Leadership

Climate change is not only a societal responsibility...it is our passion.

- Our Environmental Vision Statement details our commitment to operate our business in ways that preserve and protect our environment
- We are aggressive advocates of positive action on global climate change at all levels of government and within our communities
- We participate in 10 organizations advocating equitable regulation of greenhouse gases in all industries
- First utility to make a *voluntary* commitment to reduce CO2 emissions by 20% below 1990 levels by 2005
- We made a second *voluntary* commitment to stabilize our own carbon dioxide emissions at 20 percent below year 2000 levels from 2006 to 2010.
- **The “real impact” – 32 million tons CO2 avoidance**
- We provided more than \$230,000 in funding to Restore America’s Estuaries & Lake Pontchartrain Basin Foundation
- First phase of 3-phase recycling program:
 - ◆ 30 percent recycled paper in copiers, fax machines and printers
 - ◆ Saved more than 2,100 million BTUs of total energy
 - ◆ Reduced more than 142,100 pounds of solid waste and more than 1.1 million gallons of wastewater
 - ◆ Prevented more than 266,600 pounds of CO2 from entering the atmosphere

Five Guiding Principles

1. **Meaningful Action Is Needed Now**
2. **Use Market Forces Intelligently**
3. **Be Realistic About Carbon Prices**
4. **Support Research and Development**
5. **Understand the Social Effects**

Integrated Energy Management (IEM)

Current / Next Steps

- Complete staffing for core IEM organization
- Overall integrated strategy and program development
- Benchmarking other utilities and energy sector companies to glean best practices
- Lead collaboration with other SmartGrid leadership companies
- Engaged with Electric Power Research Institute (EPRI) AMI-SmartGrid collaboration
- Participate in EPRI-GM-Utility Plug-in Hybrid Electric Vehicle (PHEV) collaboration
- Work with EPRI to identify potential electric transportation technology opportunities
- Participate on Edison Electric Institute (EEI) Efficiency Project Review Team
- Develop strategy and plan for energy efficiency, DSM, AMI and SmartGrid opportunities
- Develop comprehensive IEM communication plan
- Develop alternatives for T&D load capacity challenges
- Identify building and office efficiency opportunities
- Align IEM strategy and plan with environmental and climate change point of view