

WEBCAST

Straight Talk About Smart Grid Funding, Planning and Results

An EnergyBiz[®] Leadership Series Webcast

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Welcome & Introduction

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EnergyBiz Magazine,

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Complexities of Smart Grid Implementation

Greatest technological transformation since electricity grid was first created

- Rollout takes several years (evolutionary)
- Multi-layered investments by government, utilities, and end-users
- Requires integration of a number of new technologies
- Industry must adopt technical standards for smart grid interoperability and security



Smart Grid Investment Grant Program

- **As part of the American recovery and Reinvestment Act, the DOE announced it will expedite the development of a nationwide “smart electric power grid”**
 - A key DOE stimulus initiative is the Smart Grid Investment Grant program
 - A competitive, \$3B grant program offering up to 50% investment match (\$200M maximum award) for Smart Grid technology deployment
- **Utilities and DOE are aligned on Smart Grid**
 - Utility vision and the Smart Grid direction articulated by DOE are complimentary
 - Smart Grid enables a partnership between the utility and the customer that drives energy efficiency and increased reliability
- **Utilities must be well-positioned to compete for these funds**
 - Requires a vision for the future
 - Technology partners should be selected with care
 - Funding will go to those whose Smart Grid projects are “shovel ready”
- **Stimulus grant opportunities will mitigate external funding requirements**

The deadline for the first wave of Smart Grid Investment Grant program applications is July 29, 2009

Setting the Stage for Change

- Rising energy costs and environmental concerns are of great interest to our customers
- Utilities are operating in a very challenging environment
- The industry is on the front end of significant change in our industry
- Companies must change their relationship with customers



The Electric Utility Industry is Changing

Today

Customer meters manually read →

Dispatch crew to home for voltage complaints →

Customers call to report outages →

Dispatch switching manually →

Multiple crew hand offs to build or effect repairs or restoration →

Different systems used to manage work and customers →

Utility earnings based upon usage →

The Future

Meters have two-way communication

Read voltage remotely at customer premise

We know when customers are out

System reconfigures to minimize outages

Build it and fix it with the same crew

Technology, work processes, and policies leveraged for maximum efficiency and similar, positive customer experiences

Utility earnings decoupled from usage

The Smart Grid Vision

Transforming the customer experience and the way we work

Customer Benefits

- Enables more responsive customer service
- Puts decision making in customers' hands
- Helps customers manage energy bills
- Reduces outage duration

Environmental Benefits

- More efficient delivery of energy
- Enables renewable energy and distributed generation
- Promotes energy efficiency programs

Utility Benefits

- Deeper value proposition with the customer
- Operate more efficiently
- Optimize design and operation of the system

Advanced Metering Infrastructure (AMI)

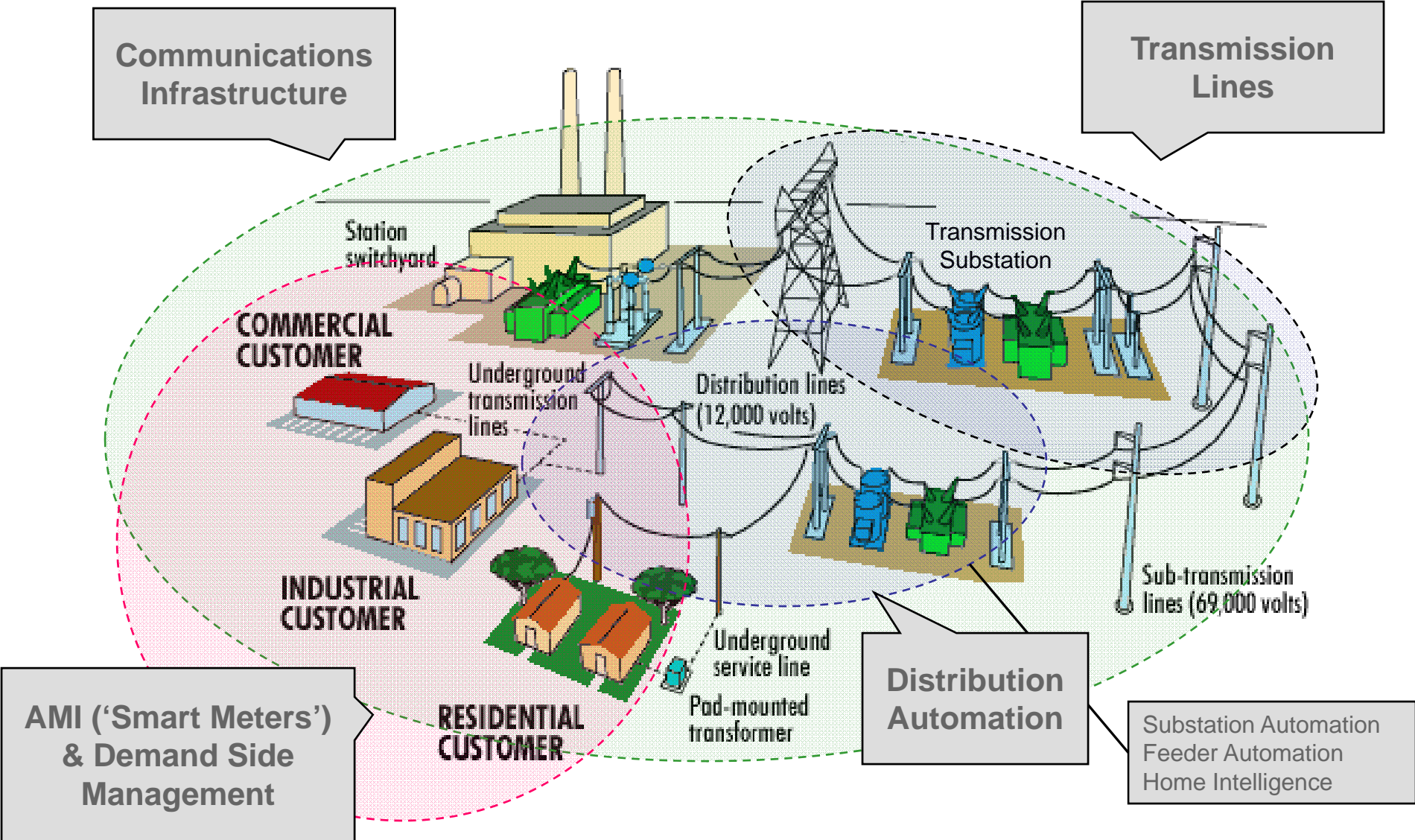
Communications Infrastructure

Energy Efficiency Programs

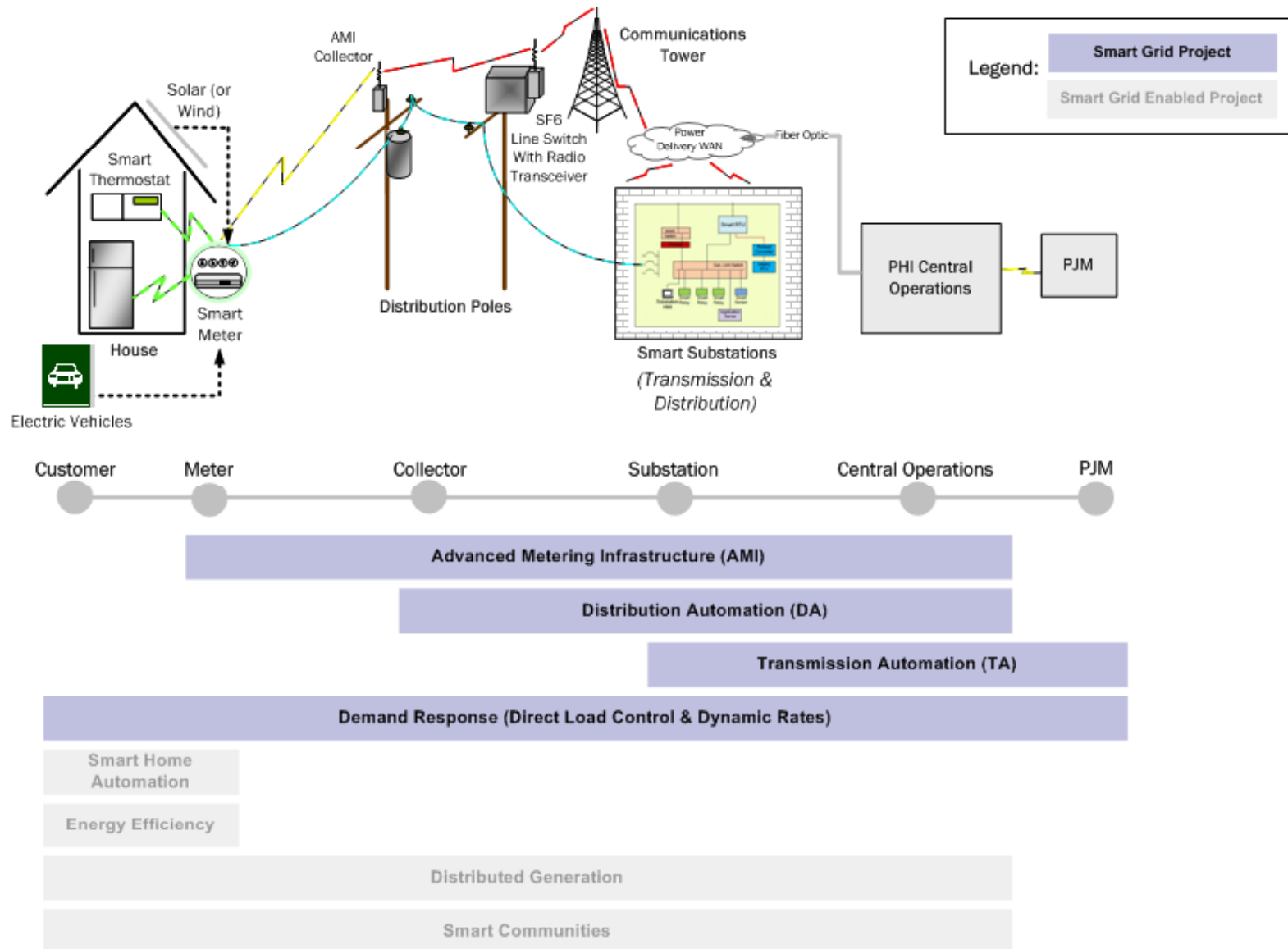
Demand Response Programs

Blueprint for the Future

Smart Grid Overview

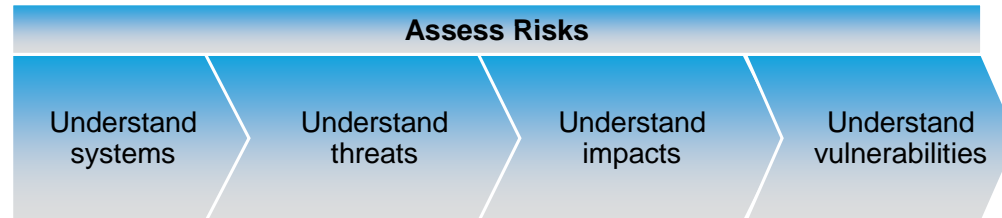


Smart Grid High Level Architecture

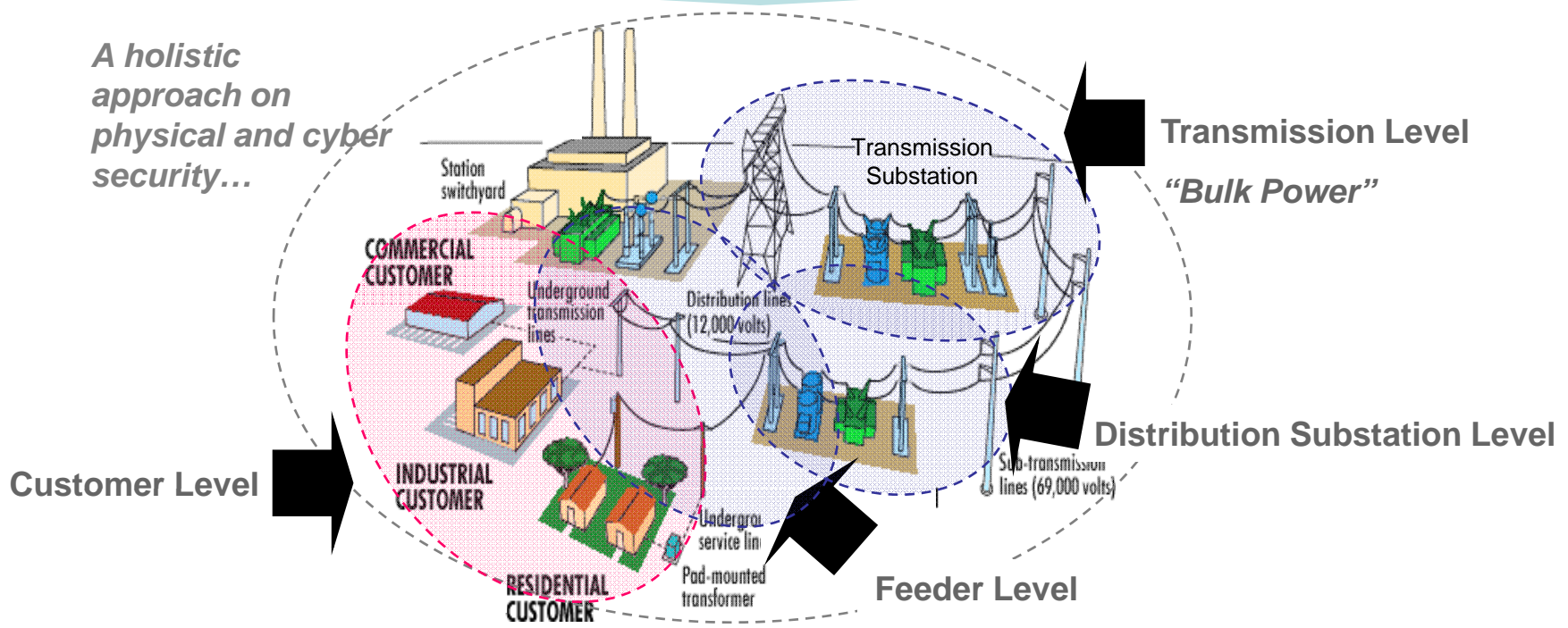


Addressing Cyber Security

Traditionally security was centered around SCADA controls – we now plan to extend that same rigorous approach to security to all other levels of the grid, down to the customer level.



We identify, evaluate and monitor risks across the entire grid, paying particular attention to data interfaces between levels, as shown below.



Benefits of the Smart Grid

- **Puts decision making in the hands of customers**

- Improved information, programs and pricing options will allow customers to make informed energy choices
- Provides better information about usage, conservation options, costs and prices
- Integrates smart thermostats, appliances and other consumer devices

- **Automatically accommodates changing conditions**

- Fault isolation, quick automatic restoration
- Reroute power flows, change load patterns, improve voltage profiles
- Promotes green energy initiatives by providing better integration of solar and other distributed resources
- Lessens workforce intervention for diagnostics, maintenance and repairs

- **Lets us operate the system with greater efficiency**

- Better asset management – optimize grid design
- Optimized grid operations
- Greater reliability and security

- **Improves grid adaptability**

- Electricity grid must be capable of integrating advanced electricity storage and peak shaving technologies, including plug-in electric and hybrid electric vehicles
-

Critical Issues

- **Customers**
 - Education/Awareness of Smart Grid benefits
 - Receptiveness to time of use/dynamic pricing
 - Cost of Smart Grid vs. ability to reduce energy use
- **Regulators**
 - Oversight of this transformation to deliver state/federal mandated energy consumption reduction goals
 - Providing recovery of investment in challenging economic times
 - Concerns of obsolescence
- **Utility**
 - Raising capital and cost recovery
 - Many new standards and continually evolving technology
 - Flawless installation
 - Maximizing federal stimulus grant opportunities



Blueprint Initiatives

- Maryland
 - Decoupling implemented in 2007, works effectively
 - Surcharges approved for energy efficiency and demand response programs
 - Smart Community demonstration is under consideration
 - Delaware
 - Decoupling approved; to be implemented in next rate case
 - Energy efficiency/conservation to be performed by 3rd parties; demand response programs under study
 - AMI approved; cost recovery mechanism established; smart meter installations begin in 2009
-

Blueprint Initiatives

- District of Columbia

- AMI approved; cost recovery mechanism established June 2009
- Decoupling approved in concept; hearings scheduled
- Energy efficiency/conservation/demand response to be performed by 3rd parties
- AMI pilot underway, live billing began in July 2008

- New Jersey

- Decoupling is under consideration
 - Energy efficiency/conservation/demand response being performed by 3rd parties now, but will transfer to ACE in 2010 after adequate cost recovery is agreed upon
 - Smart Community demonstration is under consideration
-



Ralph Cavanagh

Energy Program Co-Director,

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Questions & Answers

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