



# Smart Grid Project

## Mass Technology Leadership Council

April 15, 2009

# Agenda

- Smart Grid Overview
- Current Smart Grid Implementation at NSTAR
- Expanding the Smart Grid – Typical Communication Technology
- “Smart” approach to Smart Grid – Maximizing Use of Existing Facilities

## The Three Ingredients to Smart Grid

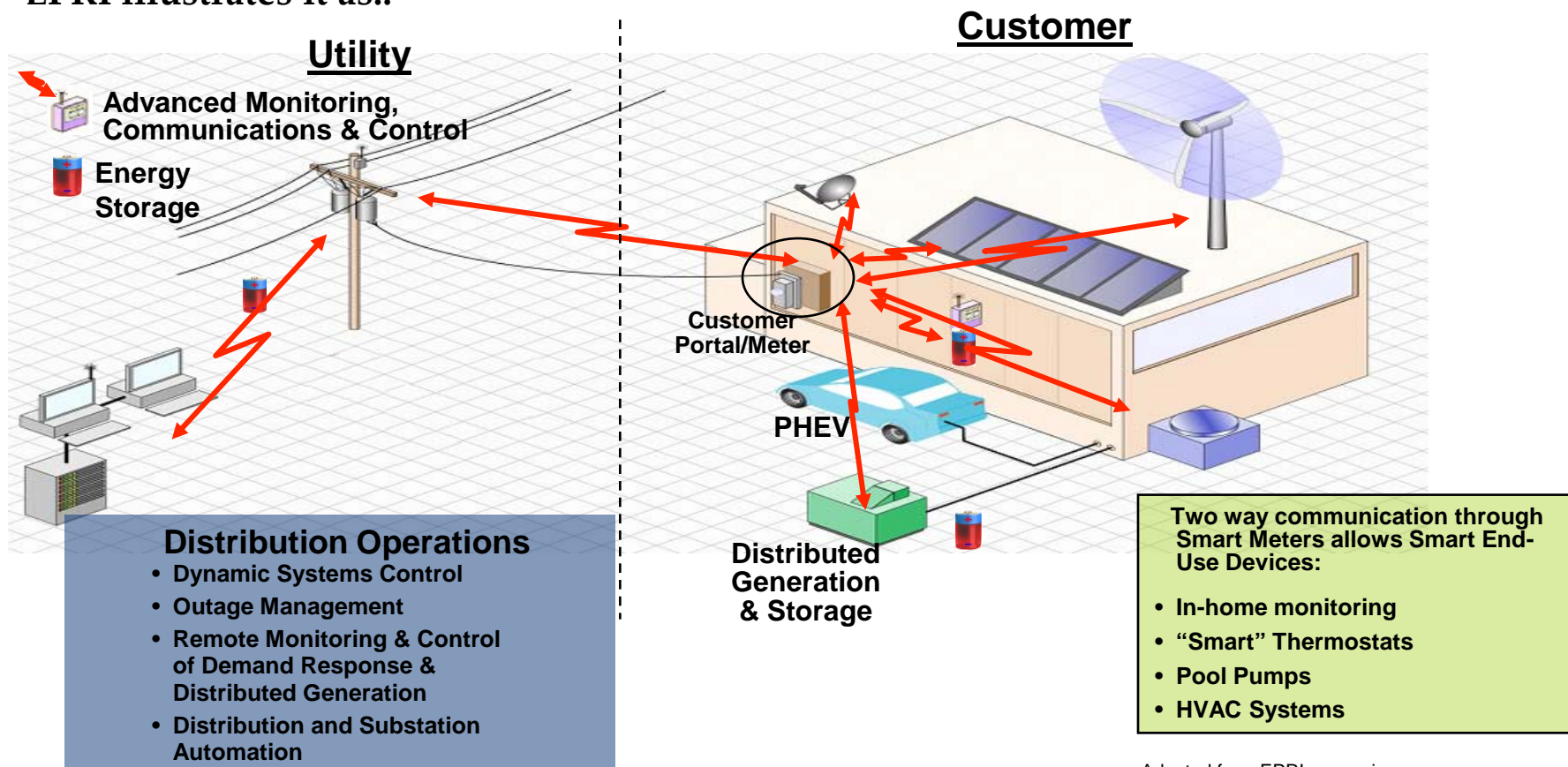
- **Changing Consumer Behavior –Reduce energy usage during critical peaks, reduce customer cost.**
- **Near Real Time information – Enable Customers and Utilities to make informed decisions**
- **Electric Grid Performance- Reduce outages, grid self healing, reduce carbon footprint**

# What is Smart Grid?

EEI defines it as..

The Smart Grid concept envisions the use of advanced sensing, communication and control technologies to generate and distribute electricity more effectively, economically and securely from generation all the way to consumer appliances and equipment.

EPRI illustrates it as..



Adapted from EPRI source image

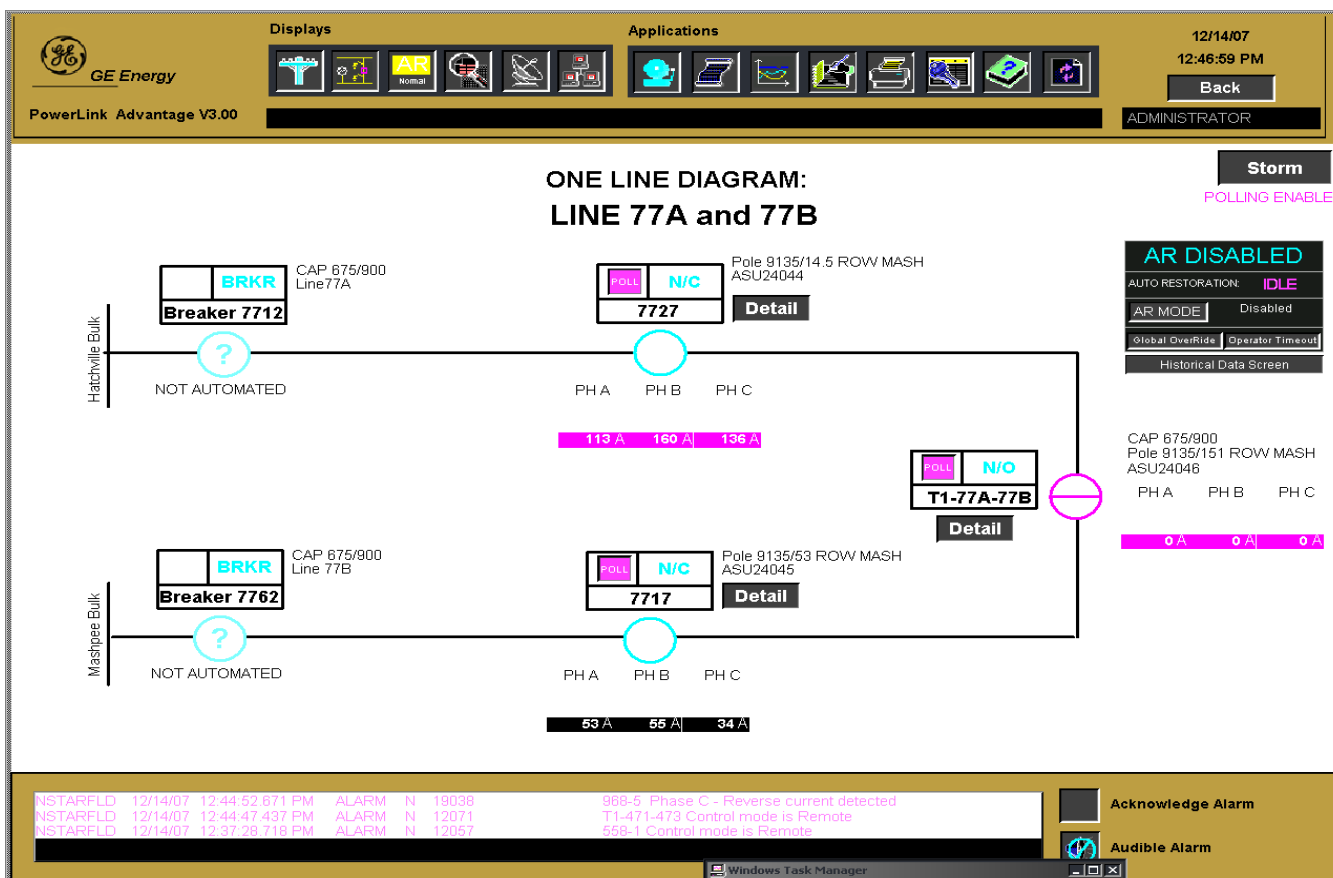
## NSTAR Is A Leader In Integrating Smart Grid Technologies

- Distribution and substation automation
- SCADA Systems
- Outage Management System
- \$26M investment over last 6 years



# NSTAR Smart Grid – Self Healing

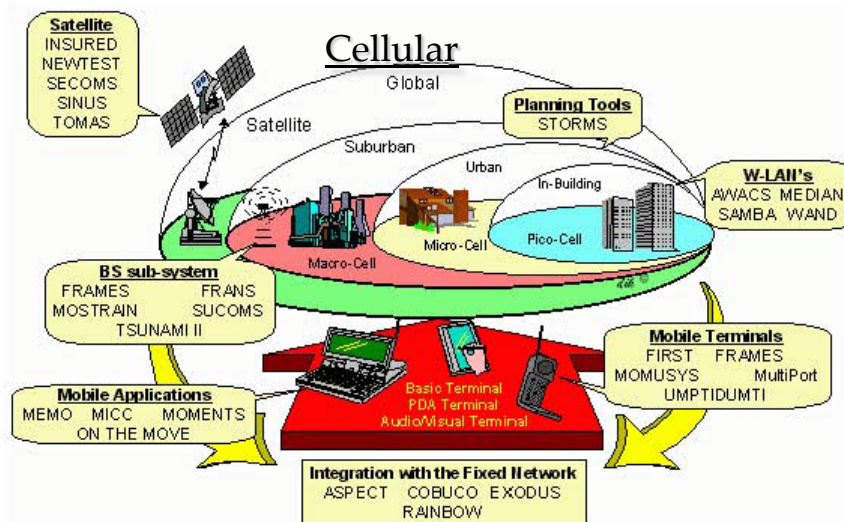
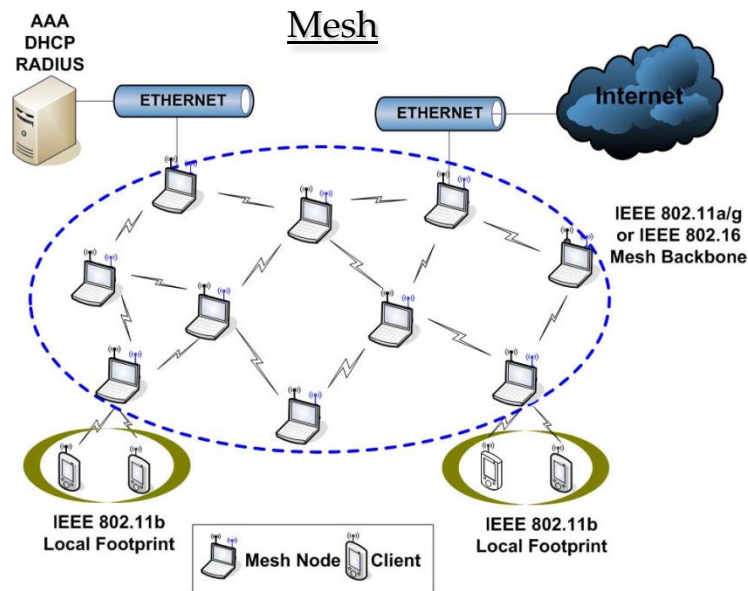
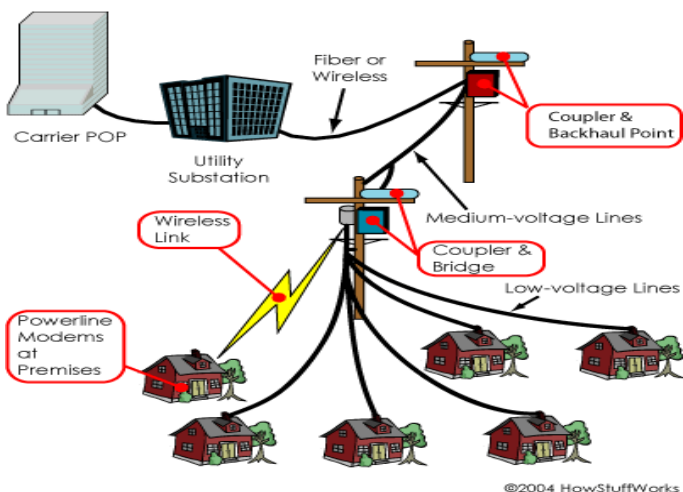
- 1,500 SMART switches installed with over 7,500 sensors
- “Local intelligence” automatically sectionalizes to limit outage scope
- Real-time information on grid performance



# Typical Communication Options for Providing Near Real Time Information for Customers & Utilities

- Very High Cost
- Pilot: \$30-40 million

## Broad Band over Power Line



## Near Real Time Information for Customers & Utilities

Two-Way Communications over Customer's Broadband Service  
Is a Much Lower Cost Solution

