



AEP's gridSMARTsm Initiative

TechColumbus Panel

August 14, 2009

George Bjelovuk

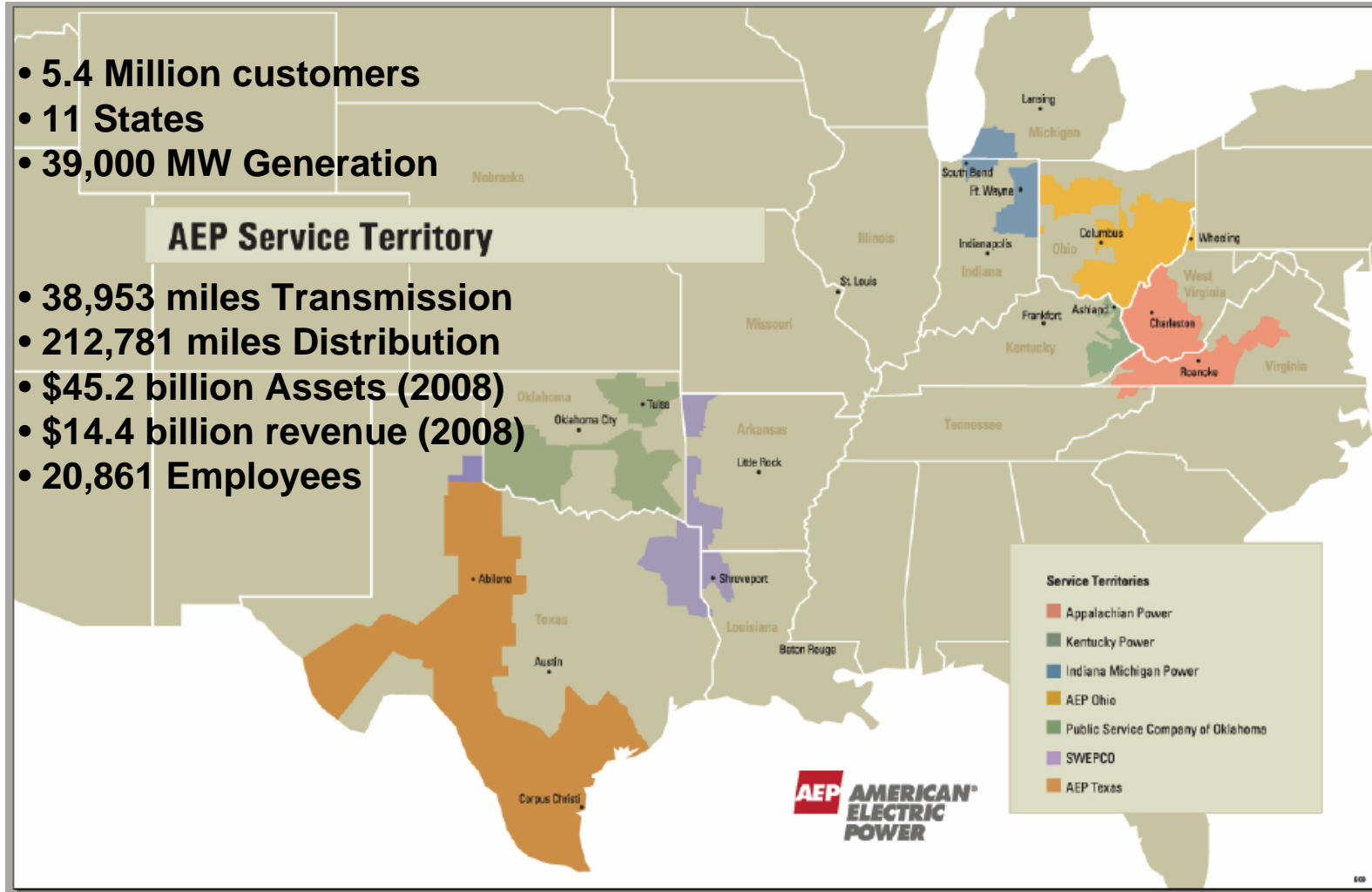
Managing Director - Marketing, Research & Program Development

AEP Overview

- 5.4 Million customers
- 11 States
- 39,000 MW Generation

AEP Service Territory

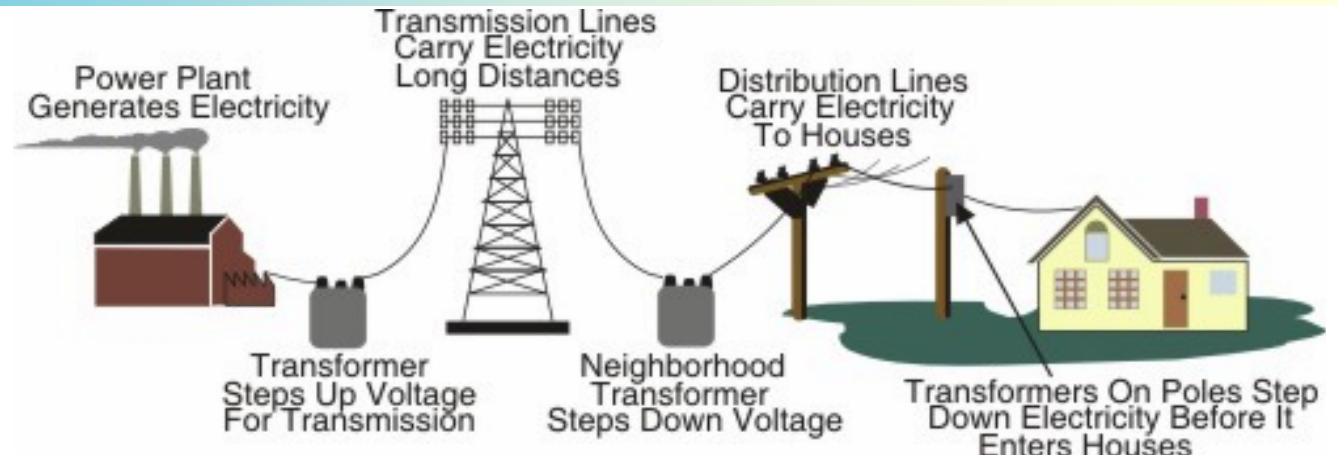
- 38,953 miles Transmission
- 212,781 miles Distribution
- \$45.2 billion Assets (2008)
- \$14.4 billion revenue (2008)
- 20,861 Employees



The Evolution of the Electric Utility System

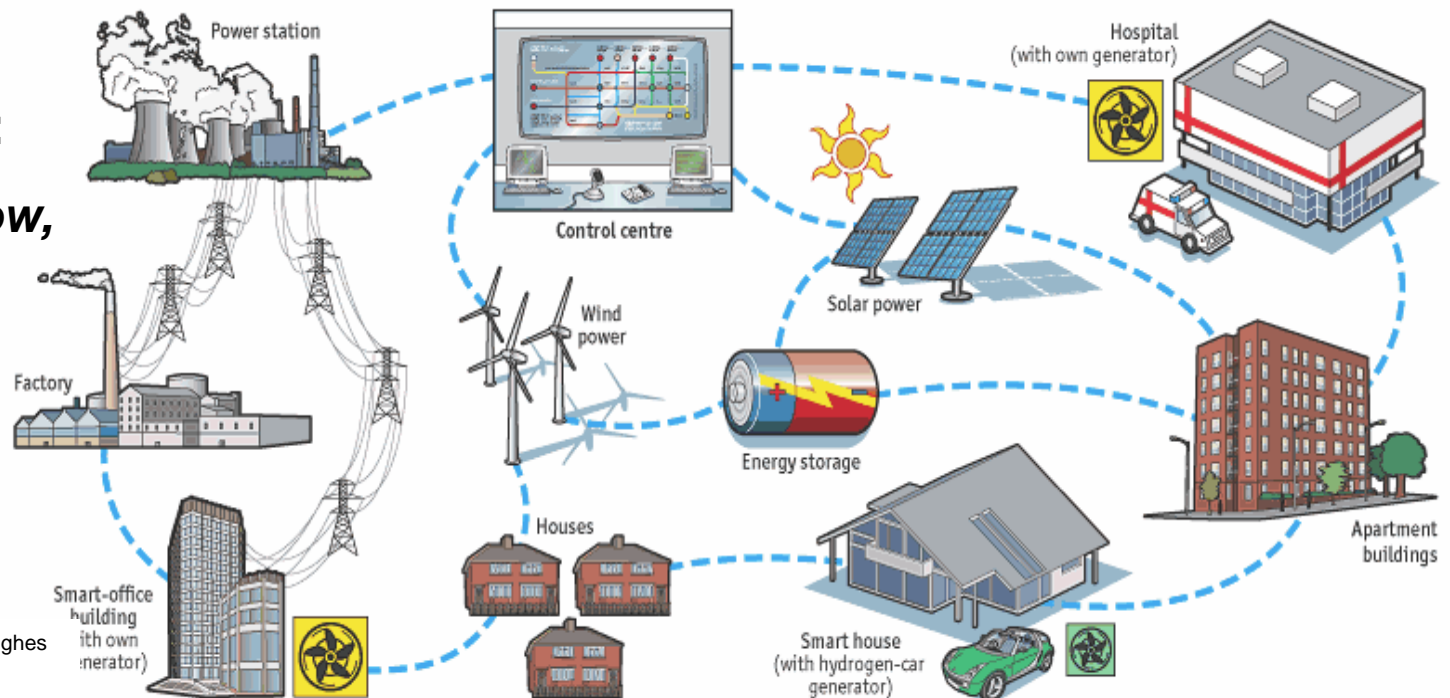
Before Smart Grid:

*One-way power flow,
simple interactions*



After Smart Grid:

*Two-way power flow,
multi-stakeholder
interactions*



Adapted from EPRI Presentation by Joe Hughes
NIST Standards Workshop
April 28, 2008

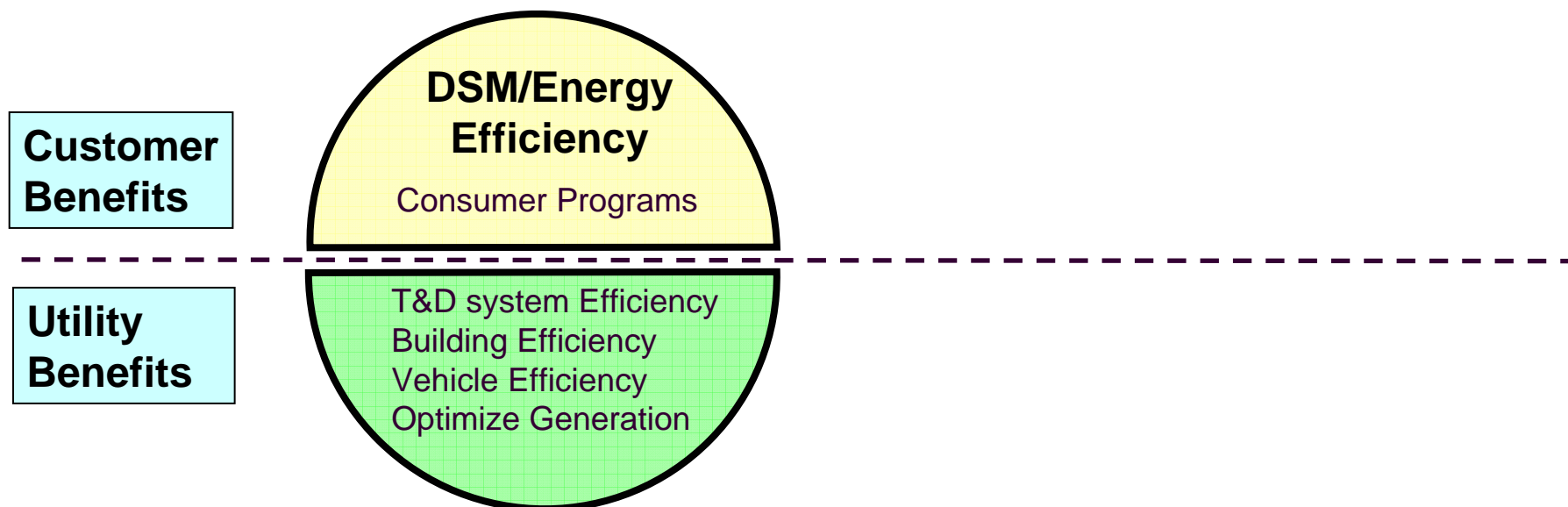
Operational Challenges to the Utility Business

To name a few....:

- Consumer demands for more control over energy consumption to control costs.
- Renewable generation, owned and operated by AEP customers, has grown by a factor of 1000 in a decade, and now doubling each year
- Customer renewable DG is intermittent, often not available when needed and out of the control of the utility operator
- Plug-in Electric Vehicle (PHEV) is coming
- Proper timing and maximizing the impact of invested capital

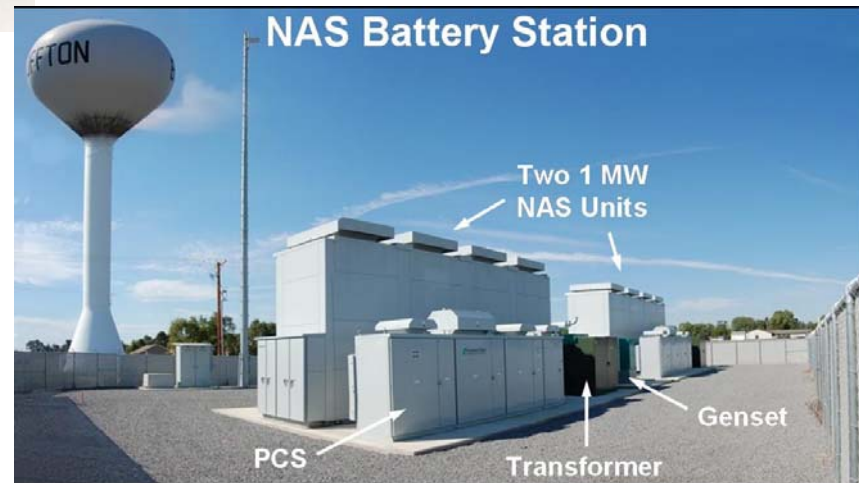
The “Smart Grid” is the key to mitigating these impacts

AEP's *gridSMART*SM Initiative



AEP has a corporate goal to help reduce demand by 1,000 MW and 2,250 GWH by 2012, and are focused on both consumer programs and internal energy use.

AEP's *gridSMART*SM Initiative



AEP has been piloting a variety of distributed energy resources, and leads the nation in the deployment of energy storage systems, including 2MW in Bluffton, Ohio

AEP's *gridSMART*SM Initiative

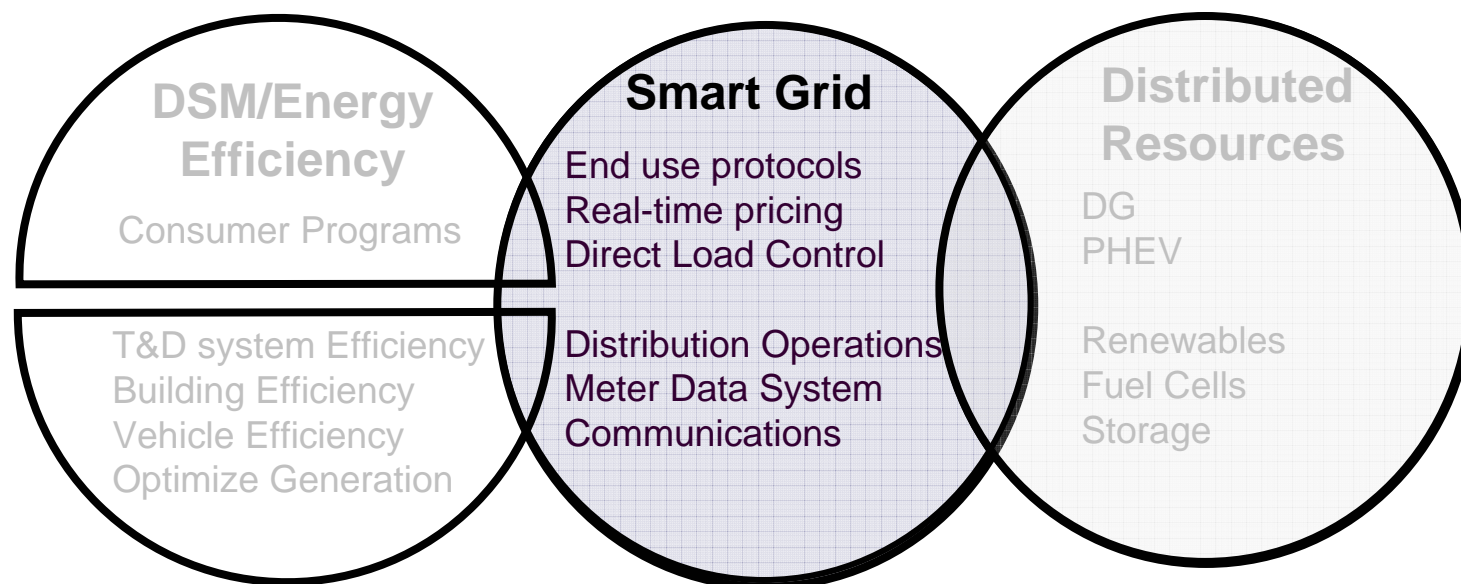
Distributed Resources

DG
PHEV

Renewables
Fuel Cells
Storage

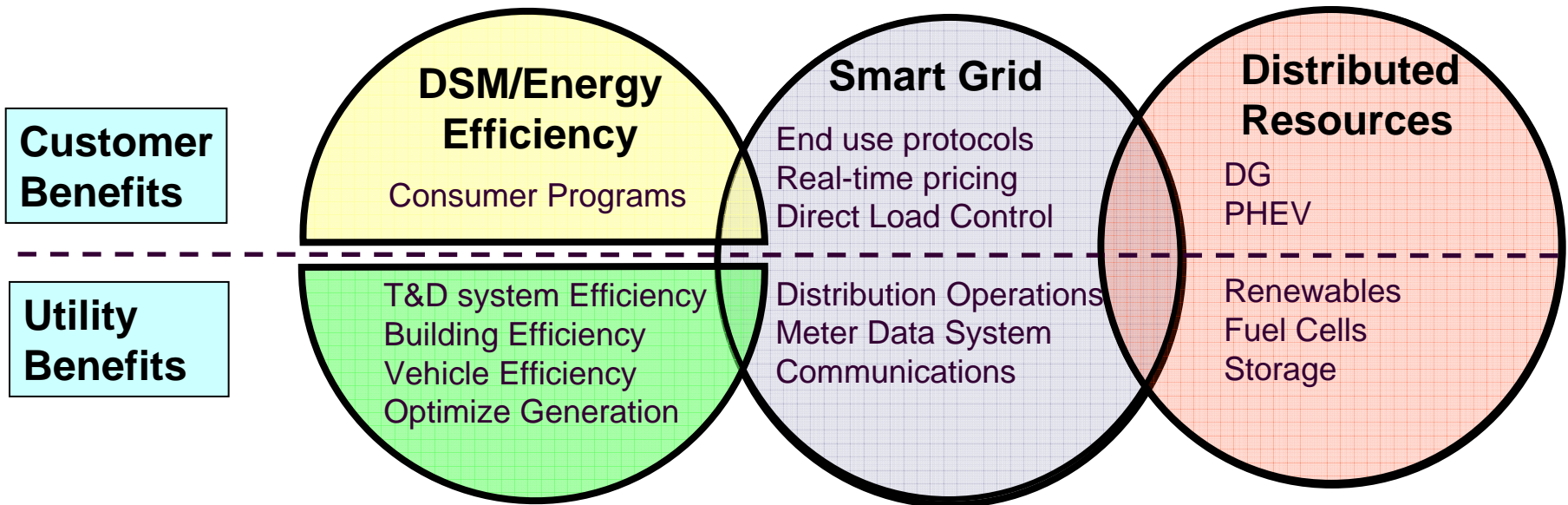
AEP's *gridSMART*sm initiative is evaluating the impact of advanced technologies on the grid

AEP's *gridSMART*SM Initiative



AEP's deployment of "smart grid" technologies is focused on creating an integrated platform from which to deploy next generation services

AEP's *gridSMART*SM Initiative



AEP's *gridSMART*sm initiative is a comprehensive approach to modernizing the electric system

Advanced Metering Infrastructure (AMI) - the Foundation for the “Smart Grid”

- AEP’s goal to install five million smart meters by 2015
- Provide customers time-based usage information
- Allow utility monitoring and control of the delivery of electricity at the meter
 - Remote Connect/Disconnect
 - Delivery Status
- Enables “Demand Response” Programs
- Provides communications foundation for distribution automation and grid management



AEP completed deploying approximately 10,000 meters in South Bend, Indiana, and is pursuing additional deployments ranging from “model city deployments” (Columbus, Ohio) to one million meters (Texas).



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