Energy Conservation at Dominion

Virginia Energy and Environment Commission
November 19, 2008
Dominion’s Commitment to Conservation

• Conservation key to meeting Virginia’s growing energy needs while protecting the environment

• Fully committed to state’s goal of 10 percent electricity consumption reduction by 2022

• Developing portfolio of demand-side management programs
  – Plan to be filed with SCC in near future
  – Evaluating “smart” technologies

• Important part of an integrated strategy
Meeting Demand Requires a Diversified Strategy

*Dominion’s objective:*  
• Providing reliable, affordable energy for our customers while being environmentally responsible

*Dominion’s integrated strategy:*  
• Meeting the need with three major tools  
  - Conservation and efficiency  
  - Renewable generation  
  - Infrastructure development
Renewable Energy: Vital to the Equation

- Dominion supports Virginia goal of having 12 percent of power supply come from renewable resources by 2022

- Biomass at three VA power stations
  - Pittsylvania Power Station
  - Altavista Power Station
  - Virginia City Hybrid Energy Center

- Existing hydroelectric in VA and NC

- Bath County pumped storage facility (10% of U.S. pumped storage capacity): helps make renewable energy dispatchable

- Over 750 MW of wind power announced or operating
  - Joint agreement with BP to develop wind sites in VA

- Green energy option available to customers in 2009
Dominion’s Conservation Focus

- Energy Conservation Department expanded in 2007
- Demand-side management pilots

Power Cost Monitor
Demand-side Management: Two Key Elements

• Demand response
  – Reduces peak electricity demand, often by shifting usage to off-peak hours
  – Improves reliability
  – Easily measured and verified

• Conservation
  – Reduces consumption of electricity
  – Produces environmental benefits
  – Poses new set of challenges:
    • Requires change in customer behavior
    • Harder to measure and verify
Demand-side Management Pilots 2008

Peak Reduction Pilots
- Air Conditioning Cycling Device
- Programmable Thermostats
- Programmable Thermostat with Smart Meter/Critical Peak Pricing
- Distributed Generation

Consumption Reduction Pilots
- Compact Fluorescent Lighting
- Residential Energy Audits
- Commercial Energy Audits
- Energy Star Homes
- Energy efficiency welcome kits
- In-home energy display
Future DSM Programs

Demand Reduction
- A/C heat pump cycling
- Distributed generation
- Curtailable service

Consumption Reduction
- Compact fluorescent lights
- Low-income audits
- ENERGY STAR home
- In-home energy display
- Commercial HVAC upgrades
- Commercial lighting upgrades
- Refrigerator turn-in
- Heat pump tune-up
- Residential HVAC upgrades
Advanced Metering Infrastructure (AMI) Overview

- Intelligent systems open door for customers and utility to expand conservation and demand response efforts

- Allows two way communications between customers and the utility

- Being implemented across the U.S.

- Will save energy by allowing more precise voltage control

- Improves outage reporting and overall reliability
AMI: Communications

Utility Communications

Efficient Building Systems

Internet

Renewables

PV

Dynamic Systems Control

Distribution Operations

Advanced Metering

Control Interface

Plug-In Hybrids

Smart End-Use Devices

Data Management

Distributed Generation & Storage

Consumer Portal & Building EMS
Customer benefits

- Reduces off-peak energy consumption
- Improves electric reliability and outage communications
- Enhances pricing and conservation options
- Enables on-demand re-connect / disconnect
- Establishes foundation for more Smart Grid initiatives
AMI: Dominion’s Approach

- Limited testing through pilot currently underway
- Larger-scale tests planned
- Deployment of “smart” meters to C&I customers in high density areas
- Will utilize data from pilots to finalize “smart” grid strategy
Demand-side Management: the Future

- “Smart” technology makes pricing signals available to customers
- “Smart” technology enables wide-scale deployment of environmentally friendly plug-in hybrids – essential to managing load
- DSM not a panacea – new generation and transmission will still be needed.