Investing in America's Electric Future

Bill Brier
Vice President, Policy & Public Affairs
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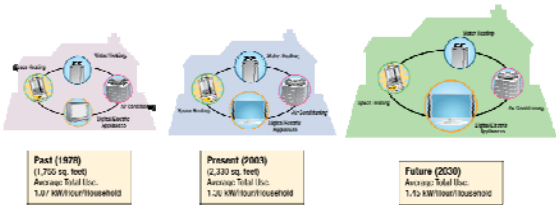
Overview

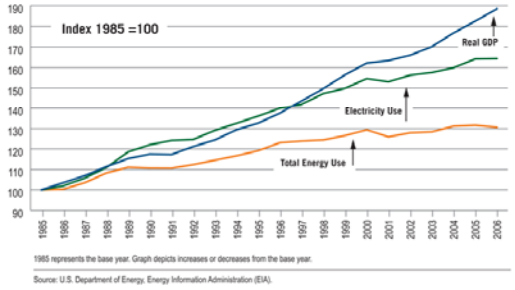
- Customers are consuming more electricity: Utilities are meeting that demand
- Energy efficiency, demand-side management: Making a difference
- Resource diversity: Key to reliability and environmental responsibility
- Environmental standards: Impact on planning and costs

Electricity use in the typical U.S. home



Sources: The Brattle Group, National Association of Home Builders

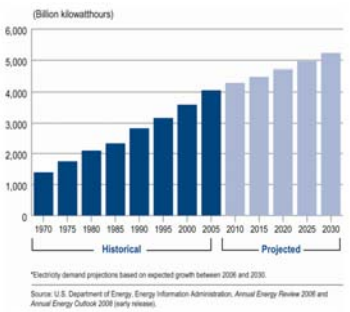
U.S. economic growth: Linked to electricity growth



1985 represents the base year. Graph depicts increases or decreases from the base year.

Source: U.S. Department of Energy, Energy Information Administration (EIA).

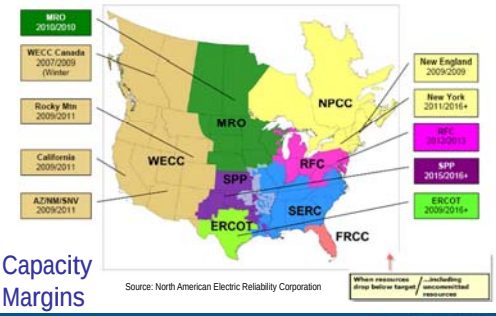
Demand for electricity: Projected to increase 30% by 2030



*Electricity demand projections based on expected growth between 2006 and 2030.

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2006* and *Annual Energy Outlook 2008* (early release).

Electricity Supply Margins Projected to Fall Below Minimum Target Levels in Some Areas of North America in Next 2-3 Years



Capacity Margins

Source: North American Electric Reliability Corporation

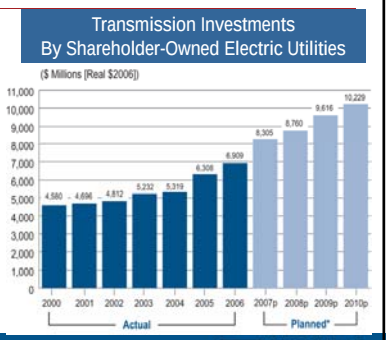
Investments in Generation

- Inefficient, older power plants will be retired; new plants built.
- 240 gigawatts (GW) of new capacity will be needed by 2030.*
- New capacity costs likely will be in excess of $400 billion.

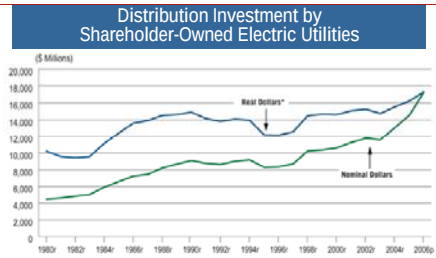
*Source: Energy Information Administration

Transmission Investments

- Nearly $75 billion will have been invested between 2000 and 2010.
- Customers will benefit from newer technologies and reliability.



Distribution Investments



Since 2000, the industry has invested almost $109 billion in the nation's distribution system.

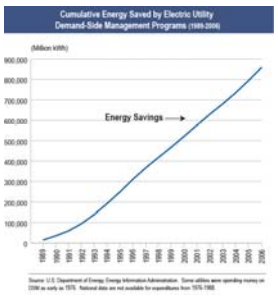
Environmental Compliance Costs

- From 2002-2005, the electric utility industry spent at least $21 billion to comply with federal environmental laws; state and local rules drive costs even higher.
- EPA estimates that two rulemakings—the Clean Air Interstate Rule and the Clean Air Mercury Rule—will cost electric utilities and their customers almost $50 billion from 2007 to 2025.*
- New technologies are needed to reduce greenhouse gas (GHG) emissions, but will come with a cost.

* CAMR is currently being resolved in the courts

The Role of Energy Efficiency

Energy-efficiency makes a difference



- Demand-side management (DSM) programs saved enough to power more than 76 million homes for a year.
- Savings equal output of 110 baseload power plants rated at 800 megawatts (MW) each.
- Electric utilities have spent more than $32.1 billion on DSM programs from 1989-2006.

EEI's Energy-Efficiency Initiatives

Five key efforts underway:

- Encouraging "smart" and energy-efficient buildings
- Promoting "smart" and energy-efficient appliances and electric technologies
- Commercializing plug-in hybrid electric vehicles (PHEVs)
- Accelerating development of "smart" grid and advanced metering infrastructure
- Developing "smart" rates to give customers more control over electricity bills

The regulatory dilemma

- State regulatory agencies must balance several priorities:
  - Affordable electricity prices
  - Reliable service
  - Environmental protection
- Agencies may reach different conclusions about right path for their states

The Role of Renewables

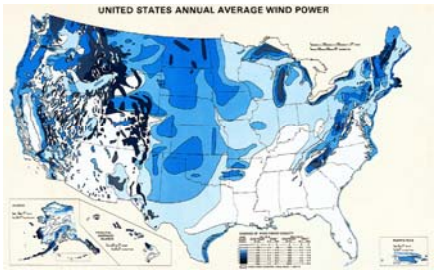
Benefits of Renewables

- Help promote fuel diversity
- Reduce environmental impact
- Low or no fuel costs

Challenges of renewables

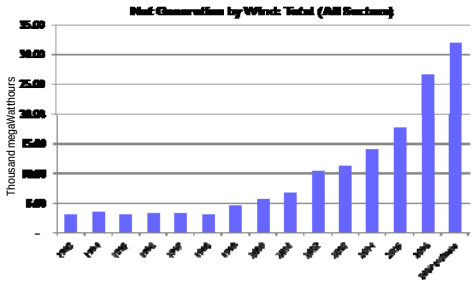
- High initial capital costs
- Geographic limitations
- Intermittent nature
- Transmission availability and cost
- Frequent expiration of production tax credit
- Environmental and aesthetic challenges (NIMBY)

U.S. wind resources



Source: NREL, Wind Energy Resource Atlas of the United States

Wind generation



Source: U.S. Energy Information Administration, *Electric Power Monthly*, December 2007.

Environmental Standards

Environmental planning and costs

EEI supports federal action or legislation to reduce GHG emissions that:

- Ensures the development and cost-effective deployment of a full suite of "climate-friendly" technologies, and helps provide for their funding;
- Minimizes economic disruption to customers and avoids harm to the competitiveness of U.S. industry;
- Utilizes an economy-wide approach to GHG reductions.

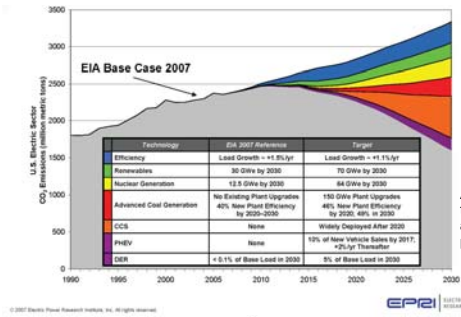
* The full text of the EEI climate change principles is available at www.eei.org.

What Will It Take?

Addressing climate change requires an aggressive and sustained commitment to a full set of technologies:

- Efficiency
- Renewables
- Clean coal technologies
- Carbon capture and storage
- Nuclear
- Plug-in hybrid electric vehicles

CO_2 Reductions… What's technically feasible?



Achieving all targets is very aggressive, but potentially feasible

Key technology challenges

According to EPRI, the U.S. electricity sector will need ALL of the following to significantly reduce CO_2 emissions:

1. Smart grids and communications infrastructures.
2. A grid infrastructure able to operate with up to 30% intermittent renewable generation.
3. Significant expansion of nuclear energy and a viable strategy for managing spent fuel.
4. New coal-based generation units operating with 90+% CO_2 capture and storage in a variety of geologies.

Source: Electric Power Research Institute

Key Funding Challenges

- According to EPRI, it will cost up to $1.8 trillion to dramatically reduce CO_2 emissions by 2050.
- Investing now in research and development could reduce overall costs. EPRI believes investments of about $1.4 billion per year, through 2030, could decrease the cost to $900 billion.
- After technology reaches commercialization phase, continued investment is needed to operate and maintain technologies.

Source: "The Power to Reduce CO_2 Emissions," Discussion Paper, August 2007, EPRI.

Review

- The industry is in a "build" phase to meet demand projections.
- The industry promotes energy efficiency and demand-side management.
- Resource diversity is the key to reliability and environmental responsibility.
- Environmental standards impact planning and costs.

Questions?