REINHOLD ENVIRONMENTAL Ltd.

2011 APC Round Table & Expo Presentation

July 11-12, 2011, in Cleveland, OH / Hosted by FirstEnergy

Addressing the Challenges of a Changing Electric Industry with Technology

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Executive Vice President
FirstEnergy Corp.

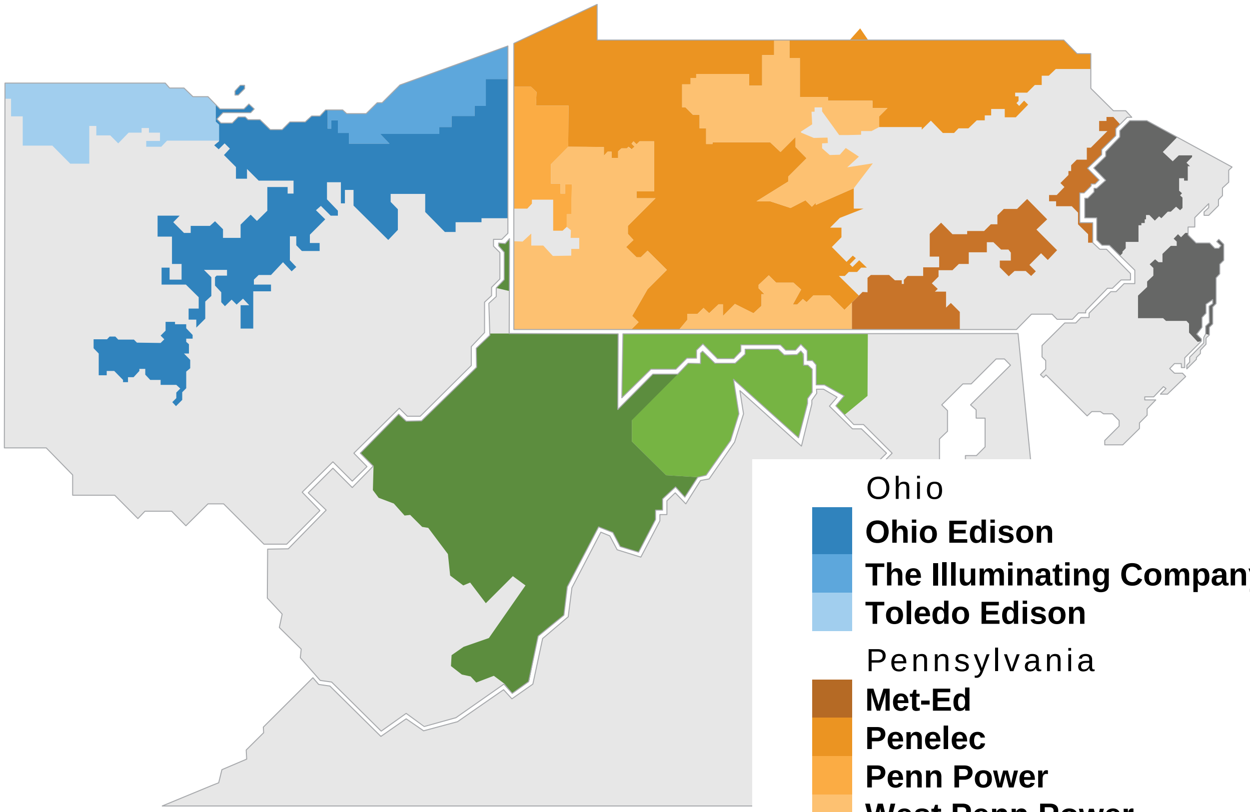
Air Pollution Control Roundtable
Renaissance Hotel, Cleveland, Ohio

July 11, 2011

FirstEnergy Profile

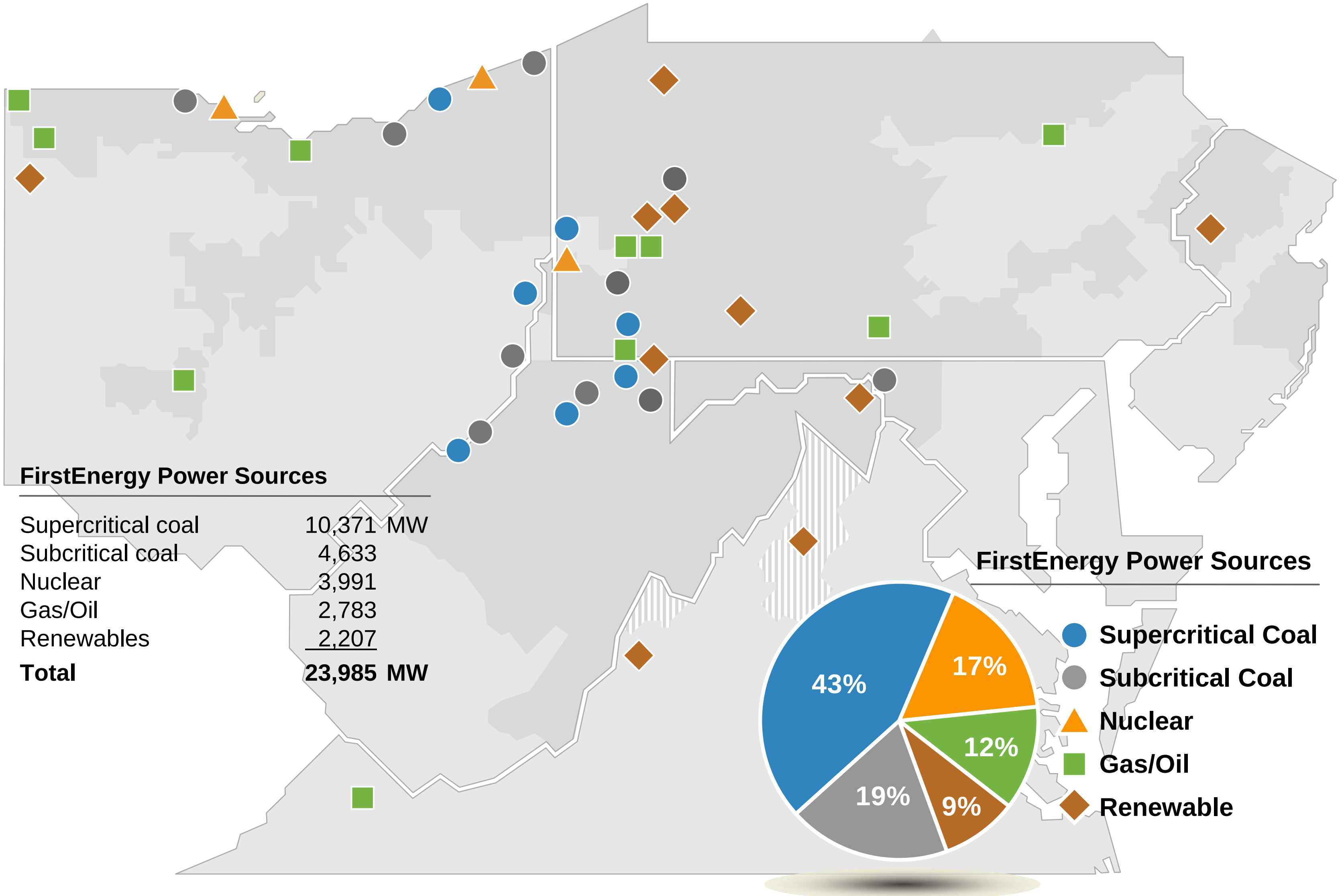
- **Headquartered in Akron, Ohio**
- **Largest investor-owned electric system in U.S. based on 6 million customers served**
- **10 utility operating companies**
- **65,000-square-mile service area stretching from Ohio-Indiana border to New Jersey shore**
- **More than 24,000 megawatts (MW) of generating capacity**
- **More than 17,000 employees**

FirstEnergy Regulated Service Area



	Customers	Square Miles
Ohio		
Ohio Edison	**1,035,836**	**7,000**
The Illuminating Company	**752,173**	**1,600**
Toledo Edison	**309,793**	**2,300**
Pennsylvania		
Met-Ed	**549,574**	**3,300**
Penelec	**588,798**	**17,600**
Penn Power	**159,552**	**1,100**
West Penn Power	**716,107**	**10,364**
West Virginia/ Maryland/Virginia		
Mon Power	**385,504**	**13,005**
Potomac Edison	**383,749**	**5,182**
New Jersey		
Jersey Central Power & Light	**1,094,195**	**3,200**

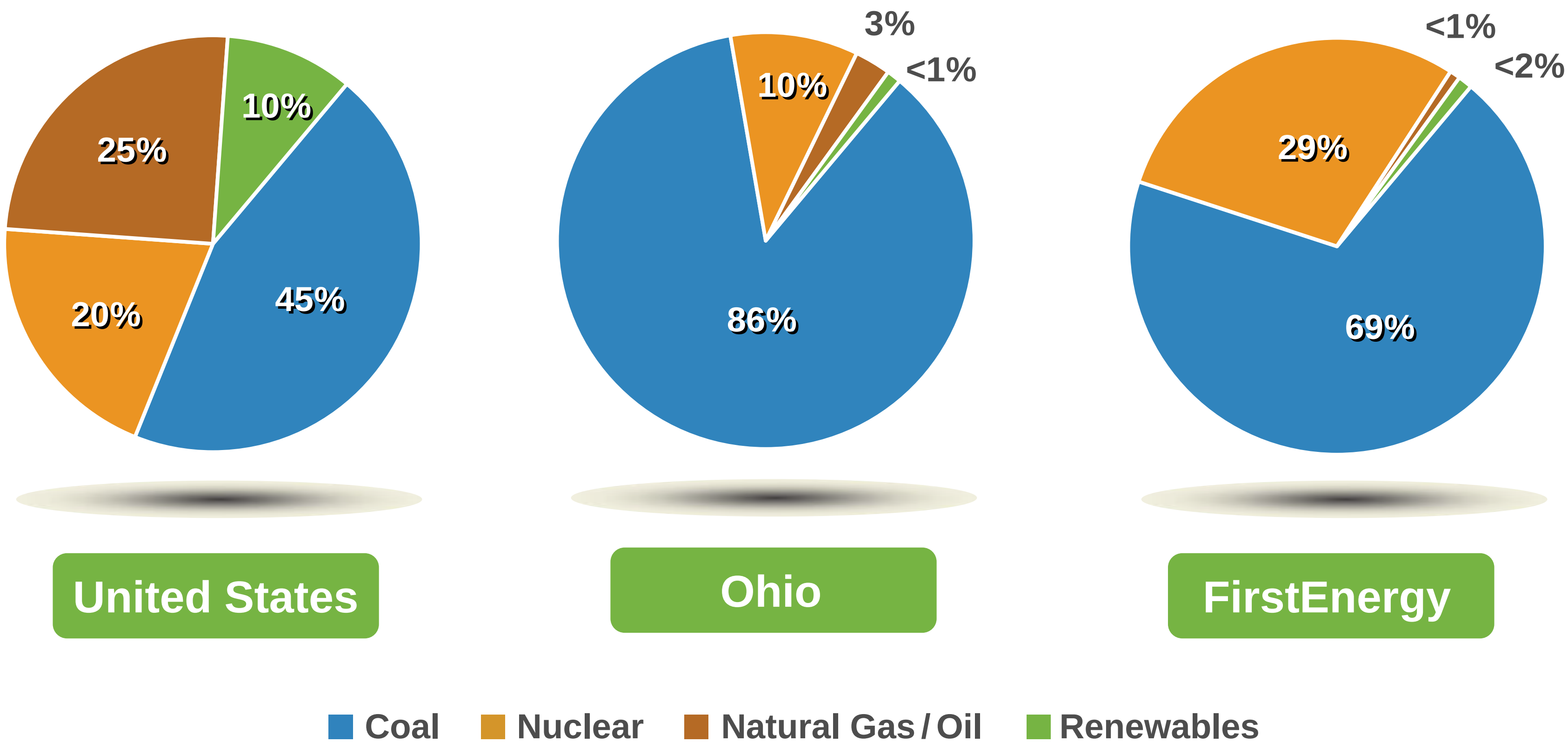
FirstEnergy Diverse Generating Sources



FirstEnergy Power Sources

Supercritical coal	10,371	MW
Subcritical coal	4,633	
Nuclear	3,991	
Gas/Oil	2,783	
Renewables	2,207	
Total	**23,985**	**MW**

Fuel Sources as Percentage of Total Generation Output (MWH)



Sources: U.S.: DOE/EIA, May 2010. Ohio: DOE/EIA, State Profiles, 2009

FirstEnergy's Existing Asset Portfolio

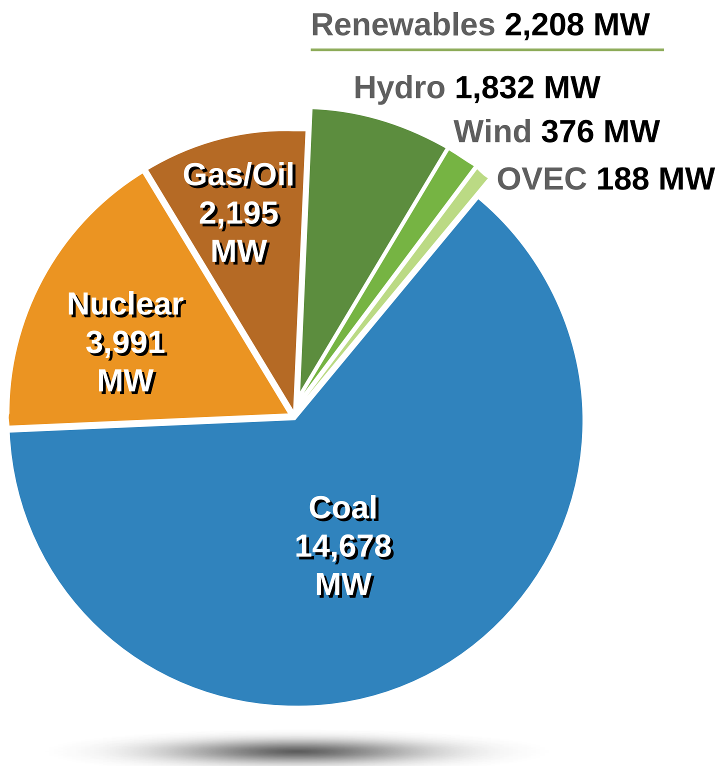
Featuring Diverse Generation Sources

Hydro	MW
Bath County (Part R)	1,110
Seneca	451
Yards Creek (R)	200
Lake Lynn	52
Other	19
Total	**1,832**

Gas/Oil*	MW
AE Springdale 1-5	638
West Lorain 1-6	545
Richland 2-6	432
AE Chambersburg 12 & 13	88
AE Gans 8 & 9	88
Forked River	86
Mitchell 2	82
Mad River	60
Hunlock	45
Buchanan	43
Other	88
Total	**2,195**

Nuclear	MW
Beaver Valley 1& 2	1,815
Perry	1,268
Davis-Besse	908
Total	**3,991**

* As of March 1, 2011, excludes Fremont



Total Capacity*	23,260 MW	
Competitive	20,324 MW	(87%)
Regulated	2,936 MW	(13%)

(R) Fully Regulated or Partially Regulated units

Super-critical Coal	MW
Mansfield 1-3	2,490
Harrison 1-3 (Part R)	1,984
Hatfield 1-3	1,710
Pleasants 1-2 (Part R)	1,300
Sammis 6 & 7	1,200
Fort Martin 1 & 2 (R)	1,107
Eastlake 5	597
Total	**10,388**

Sub-Critical Coal	MW
Sammis 1-5	1,020
Eastlake 1-4	636
Bay Shore 1-4	631
Armstrong	356
Albright 1-3 (R)	292
Mitchell 3	288
Lake Shore	245
Ashtabula	244
Willow Island 1 & 2 (R)	242
Rivesville 5 & 6 (R)	126
R. Paul Smith 3 & 4	116
R.E. Burger 3	94
Coal Sub-critical	**4,290**
OVEC (Part R)	188
Total	**4,478**

Fossil Generation Fleet

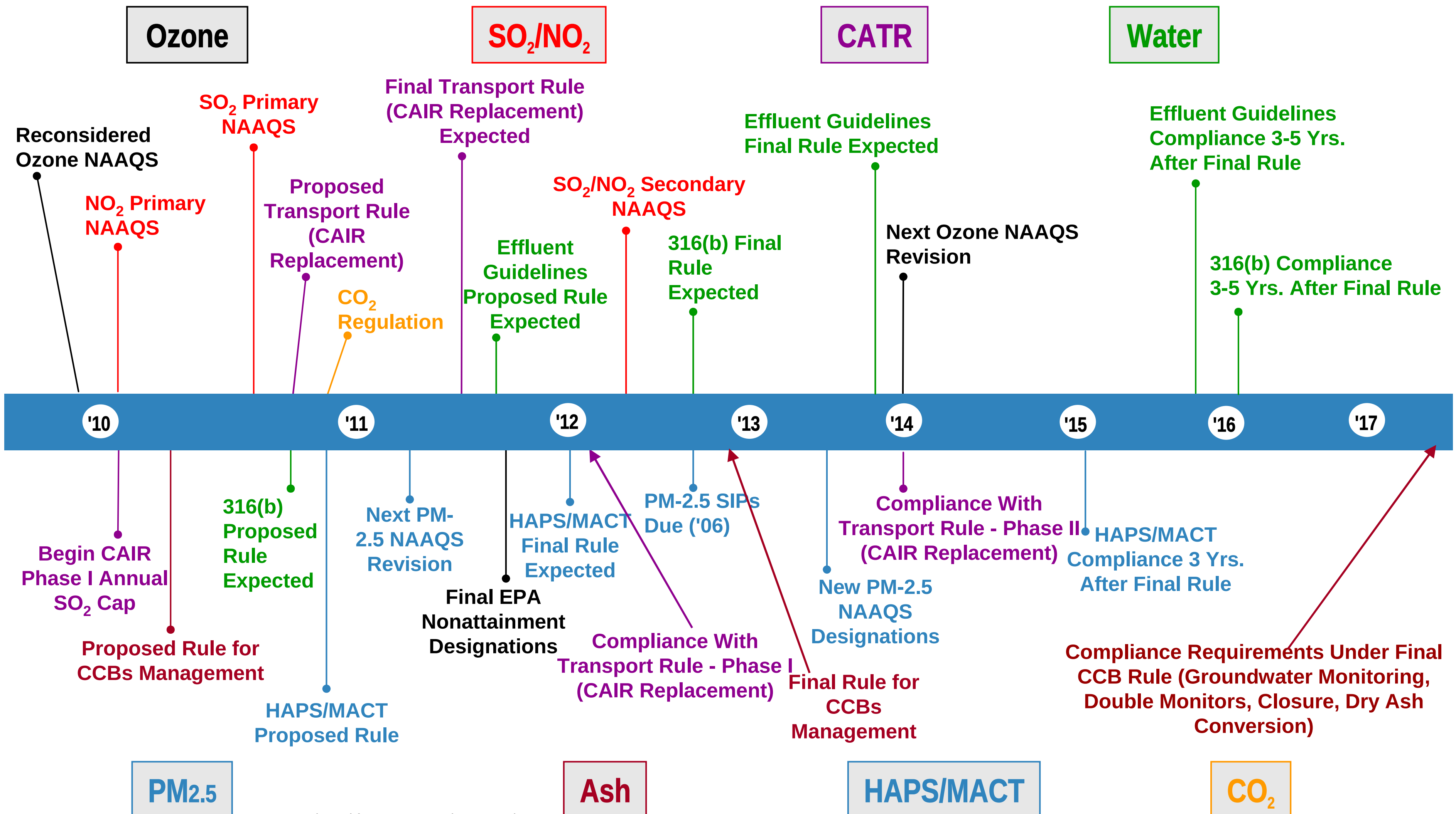
Plant	Capacity	IS Dates	Type
Mansfield 1-3	2,490	1976-1980	Super-Critical
Harrison 1-3 (Part Reg)	1,984	1971-1973	Super-Critical
Hatfield 1-3	1,710	1969-1971	Super-Critical
Pleasants 1 & 2 (Part Reg)	1,300	1979-1980	Super-Critical
Sammis 6 & 7	1,200	1969-1971	Super-Critical
Fort Martin 1 & 2 (Reg)	1,107	1967-1968	Super-Critical
Eastlake 5	597	1972	Super-Critical
Total Super-Critical Fleet	10,388		
Sammis 1-5	1,020	1959-1967	Sub-Critical
Eastlake 1-4	636	1953-1956	Sub-Critical
Bay Shore 1	136	1955	CFB
Bay Shore 2-4	495	1959-1968	Sub-Critical
Armstrong 1 & 2	356	1958-1959	Sub-Critical
Albright 1-3 (Reg)	292	1951-1953	Sub-Critical
Mitchell 3	288	1963	Sub-Critical
Lake Shore	245	1962	Sub-Critical
Ashtabula 5	244	1958	Sub-Critical
Willow Island 1 & 2 (Reg)	242	1949 - 1960	Sub-Critical
Rivesville 5 & 6 (Reg)	126	1942-1951	Sub-Critical
R. Paul Smith 3 & 4	116	1947 – 1958	Sub-Critical
Burger 3	94	1950	Sub-Critical
Total Sub-Critical Fleet	4,290		
Total Coal Fleet	14,678		

Current Environmental Controls

Plant	NOx Controls		SO_2 Controls		Particulate		Cooling Towers
	SCR	Other[1]	Scrubbers	Other[2]	Baghouse	ESP/Other[3]	
Mansfield 1-3	✓	✓	✓			✓	✓
Harrison 1-3 (Part Reg)	✓	✓	✓	✓		✓	✓
Hatfield 1-3		✓	✓	✓		✓	✓
Pleasants 1 & 2 (Part Reg)	✓	✓	✓	✓		✓	✓
Sammis 6 & 7	✓	✓	✓			✓	
Fort Martin 1 & 2 (Reg)		✓	✓	✓		✓	✓
Eastlake 5		✓		✓		✓	
Sammis 1-4		✓	✓		✓		
Sammis 5		✓	✓			✓	
Eastlake 1-4		✓		✓		✓	
Bay Shore 1*		✓		✓	✓		
Bay Shore 2-4		✓		✓		✓	
Armstrong 1 & 2		✓				✓	
Albright 1-3 (Reg)		✓		✓		✓	✓
Mitchell 3			✓			✓	
Lake Shore				✓		✓	
Ashtabula 5		✓		✓		✓	
Willow Island 1 & 2 (Reg)		✓				✓	
Rivesville 5 & 6 (Reg)						✓	
R. Paul Smith 3		✓				✓	
R. Paul Smith 4		✓			✓		
Burger 3						✓	

[1]Other NOx Controls can include: Selective Non-Catalytic Reduction (SNCR), Low NOx Burners (LNB) & Over-Fire Air (OFA) and/or the Circulating Fluidized Bed (CFB) Boiler
[2]Other SO_2 Controls include Low-Sulfur Fuel and the CFB Boiler
[3]Particulate Controls can include Venturi Scrubber, Baghouse or Electrostatic Precipitator (ESP)
*Circulating Fluidized bed boiler is the advance control mechanism for NOx and SO_2
As of March 1, 2011

Today's Challenges
The "Train Wreck" – Environmental Regulatory Timeline



-- adapted from Wegman (EPA 2003)

Key Regulations

Air	■ **Transport Rule** ■ **Hazardous Air Pollutants Regulations** ■ **Greenhouse Gas Regulation** ■ **National Ambient Air Quality Standards**
Water	■ **Cooling Water Intake Regulations**
Waste	■ **Coal Combustion Residue Regulations**

EPA Regulatory Challenges

Clean Air Transport Rule (CATR) or Cross State Air Pollution Rule (CSAPR)

- **Regulates Emissions of NOx/SO_2**
  - Higher reductions for NOx/SO_2 by earlier dates than overturned rule
  - Interstate trading for SO_2 is limited to the “Group” designation
  - Creates new allowance program
- **Impact**
  - Requires higher percentage reductions of SO_2 in Group 1 states by 2014
  - Compliance with the new program will require additional controls
- **Timing**
  - Proposed – August 2010
  - Final – July 7, 2011
  - Compliance – January 1, 2012, Phase I
January 1, 2014, Phase II

EPA Regulatory Challenges

Hazardous Air Pollutants Regulations (HAPS/MACT)

- **Electric Generating Unit MACT for Hazardous Air Pollutants**
  - Maximum Achievable Control Technology for five categories – mercury, heavy metals, acid gases, organic compounds, and dioxin/furans
  - Emission limits for mercury and acid gases are equivalent to a 91 percent reduction
  - Plant-wide emissions averaging available
- **Impact**
  - Installation of additional controls technology for mercury, acid gases, and particulates
  - Will result in billions of dollars of pollution control investments
- **Timing**
  - Proposed – March 16, 2011
  - Final – December 2011
  - Compliance – 2015

EPA Regulatory Challenges

Climate Change

- **Greenhouse Gas**
  - "Cap and Trade" failed in Congress
  - EPA responds with regulatory approach
    - "Tailoring Rule"
      - Temporarily excludes small sources; legal challenges filed
      - Effective January 2, 2011
    - Best Available Control Technology Regulation
      - EPA issued permitting guidance for new and existing sources and delegated decision-making to the states
      - Effective January 2, 2011
    - New Source Performance Standards Regulation
      - Rule will set standards for new and modified fossil generating plants
      - Timing – 2012 Final Rule

EPA Regulatory Challenges

National Ambient Air Quality Standards

- **National Ambient Air Quality Standards (NAAQS)**
  - Stringent standards resulting in widespread nonattainment for SO_2, ozone, fine particulate, and NOx
  - Impact – Additional controls for transportation, area sources, and industrial sector
  - Timing – All require attainment between 2014 and 2015

EPA Regulatory Challenges

Cooling Water Intake Regulations §316(b)

- **Clean Water Act §316(b)**
  - Reduce aquatic impacts from cooling water intake structures
  - Significant latitude for state regulatory agencies
- **Impact**
  - Ranges of outcomes from improved screens to cooling towers
- **Timing**
  - Proposed – April 20, 2011
  - Final – July 27, 2012, accordance with a court order
  - Compliance – Expected 3-5 years after final rule

Louvers installed at Bay Shore Plant to divert fish from intake.

EPA Regulatory Challenges

Coal Combustion Residue

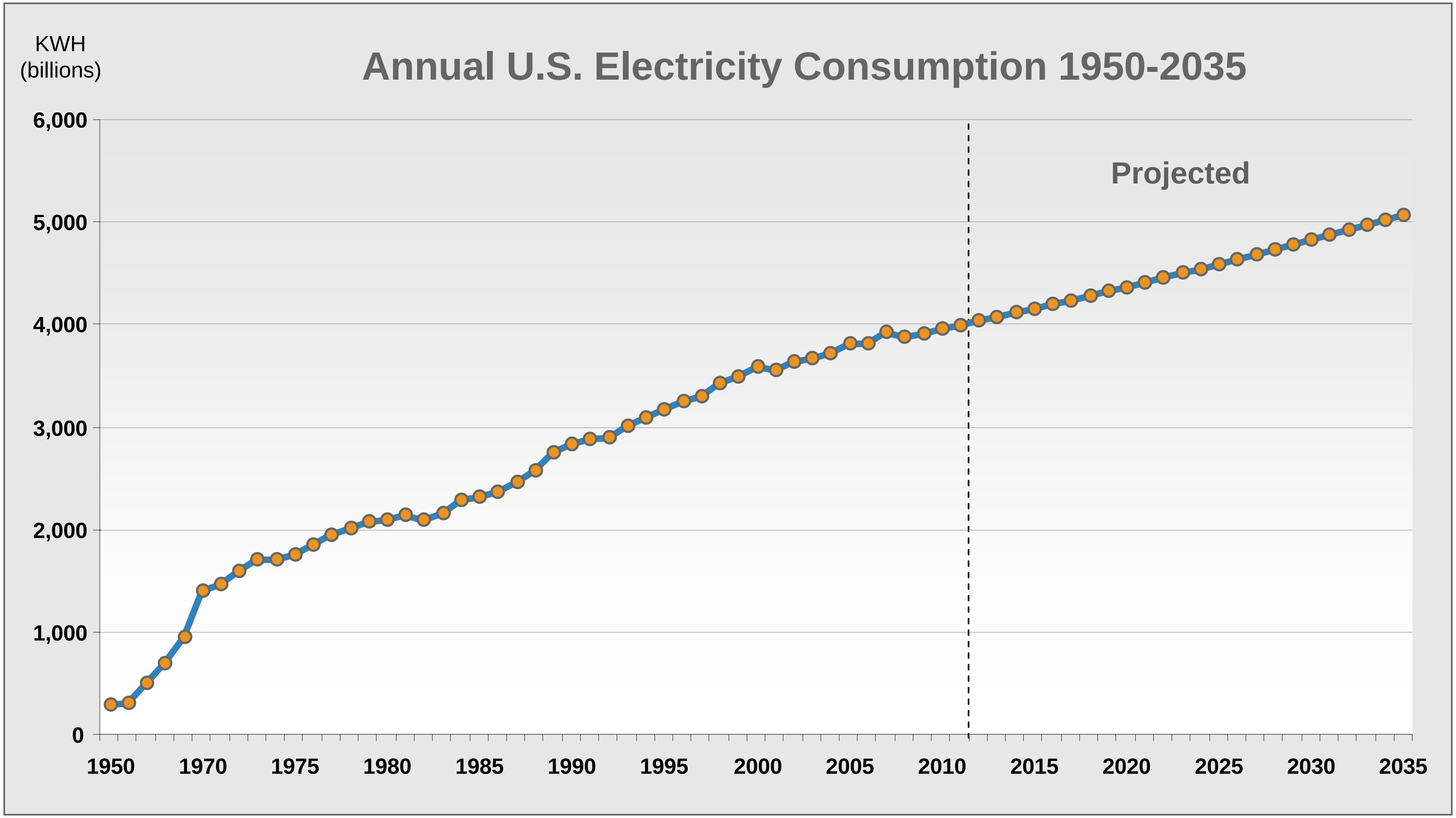
- **Regulation of coal combustion by-products – a long-simmering issue**
  - TVA Kingston event – December 2008
  - EPA lacking enforcement authority
- **Coal Combustion Residue Rule – two options proposed**
  - Non-hazardous waste
    - Minor changes required
  - Hazardous waste
    - Increased handling and disposal costs
    - Longer time frame to permit and construct
    - Reduced beneficial use due to hazardous stigma (approximately 50 percent beneficially reused)
- **Timing**
  - Proposed – June 21, 2010
  - Final – Late 2012 – Early 2013
  - Compliance – Expected 2019-2020

What's Next

- **Legislative reaction**
  - Congressional attempts to delay, deconstruct, eliminate
    - Greenhouse gas regulations
    - Coal ash regulation
    - Clean Air Act regulations
- **No unified utility industry position**
  - Legislative success or significant regulatory change is difficult
- **Cumulative impact requires capital decisions/fleet decisions**
  - Potential reliability impacts from these decisions

U.S. Electricity Consumption

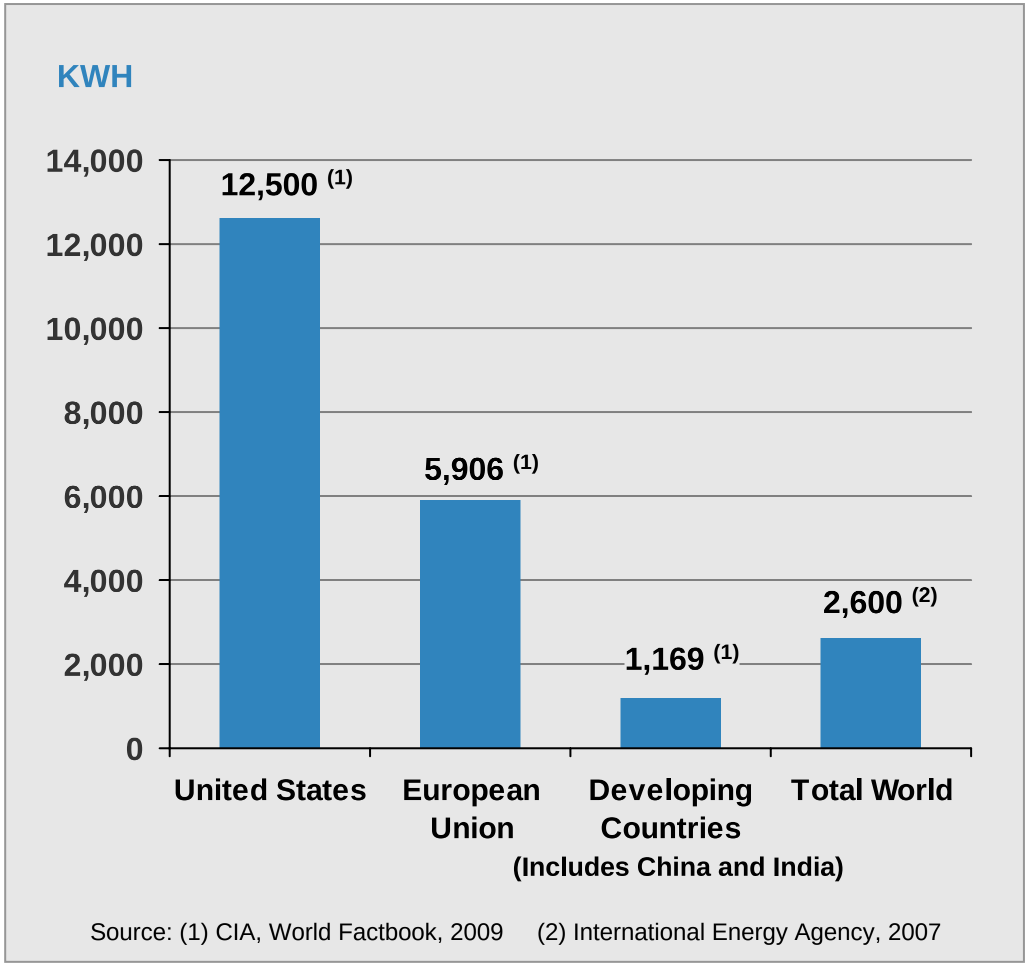
Expected to Grow 30% by 2035



Source: DOE, Energy Information Administration, December 2010

Per Capita Consumption of Electricity

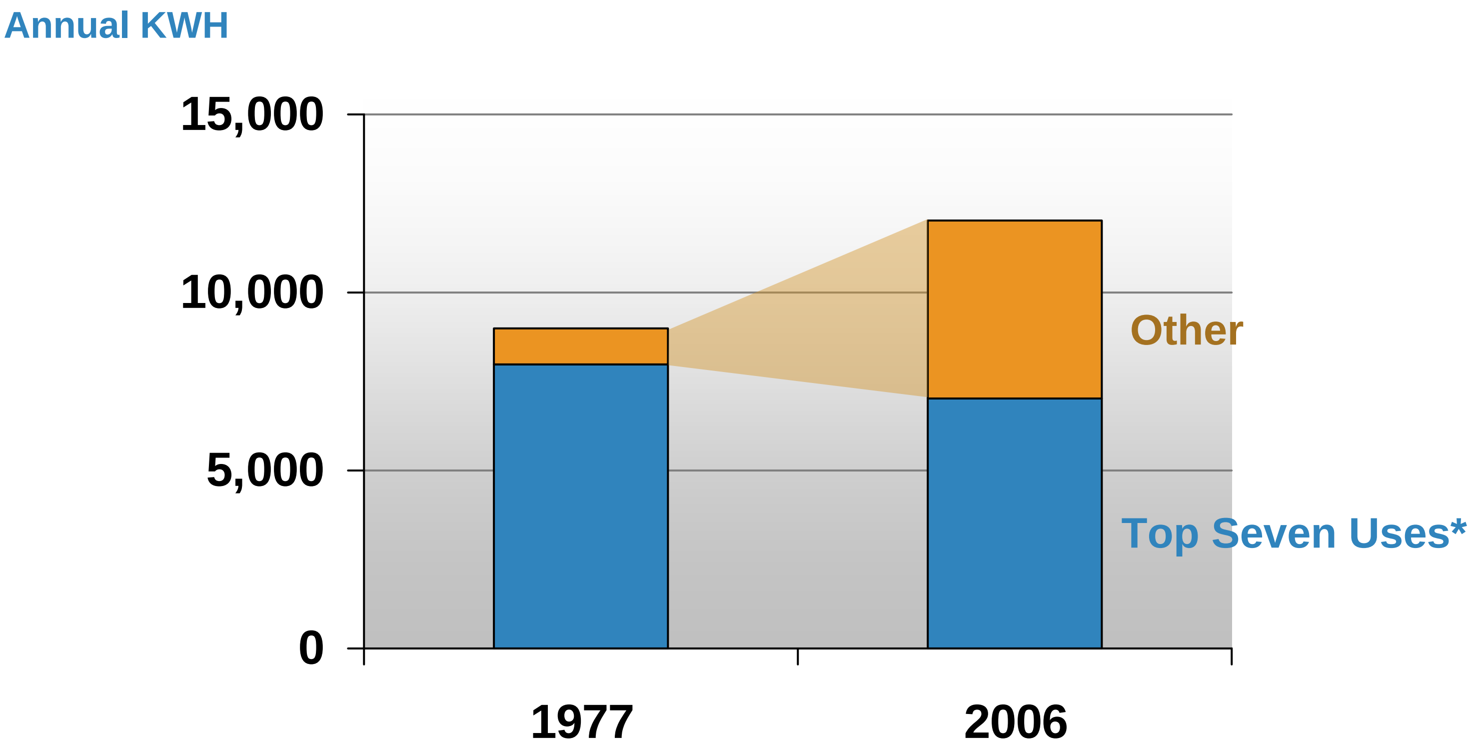
- Population growth
- Larger houses
- Air conditioning
- Comfort
- Security
- Entertainment



Despite Efficiency Gains …

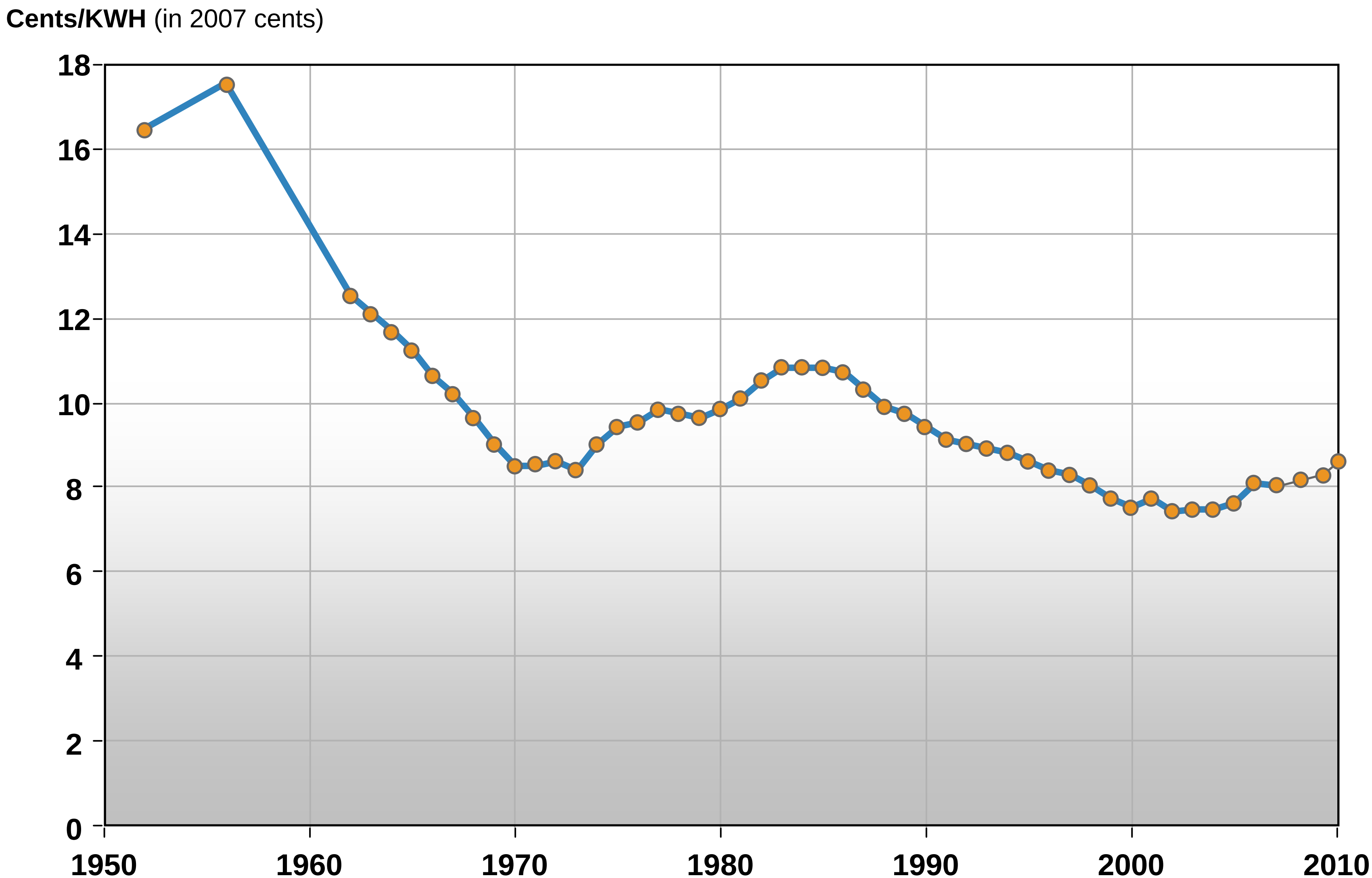
Household Electricity Consumption Rising

But Composition Changing



* Top seven uses: space heating, water heating, refrigerators, freezers, ranges/ovens, space cooling and lighting
Source: IHS CERA, Building a New Energy Future, May 2010

History of U.S. Retail Electricity Prices



Source: Electric Power Research Institute, Inc., 2010

Renewable Energy Sources

Wind

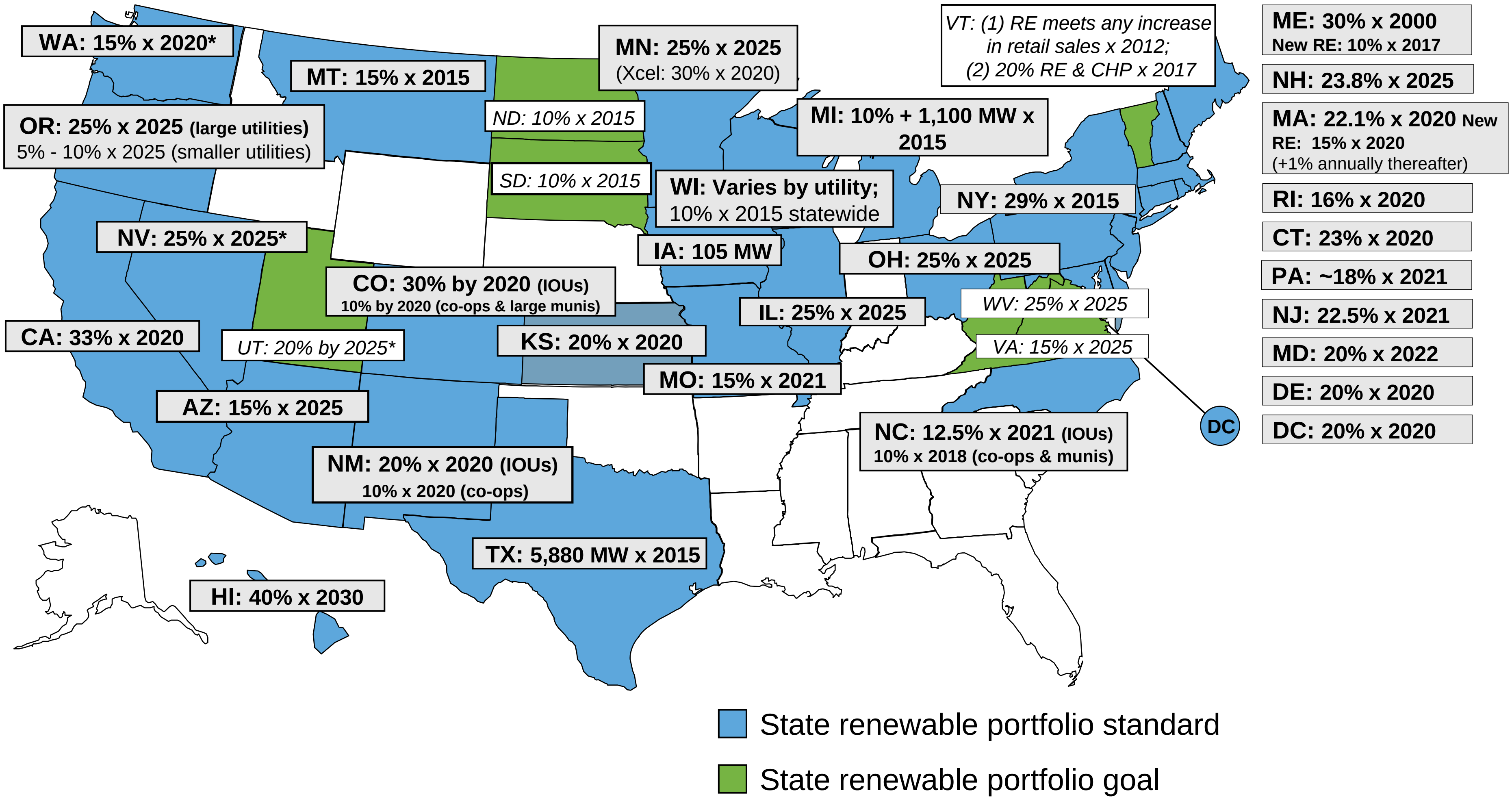
- More than 40,000 MW of wind currently installed in U.S.
- Supply is variable; capacity factor for wind is 30 to 40 percent, depending on location
- Transmission hurdles
- Economics depend on incentives

Solar

- Nearly 2,000 MW of photovoltaic and concentrating solar power installed in the U.S.
- Solar technology scaling up to meet utility requirements
- Transmission hurdles
- Economics depend on incentives

Sources: U.S. Energy Information Administration, 2010; Solar Energy Industries Association 2010

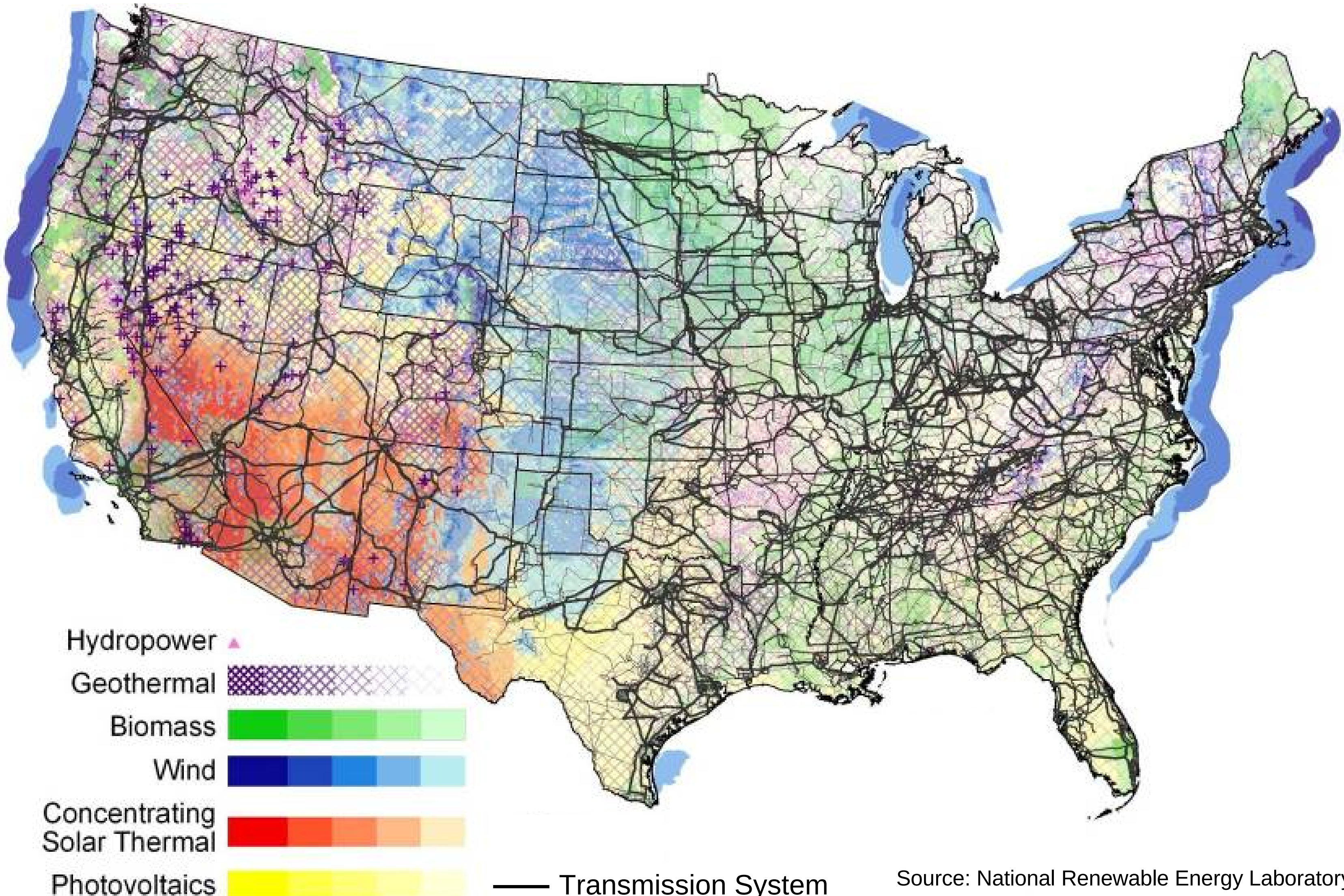
U.S. Renewable Portfolio Standards



www.dsireusa.org, May 2010

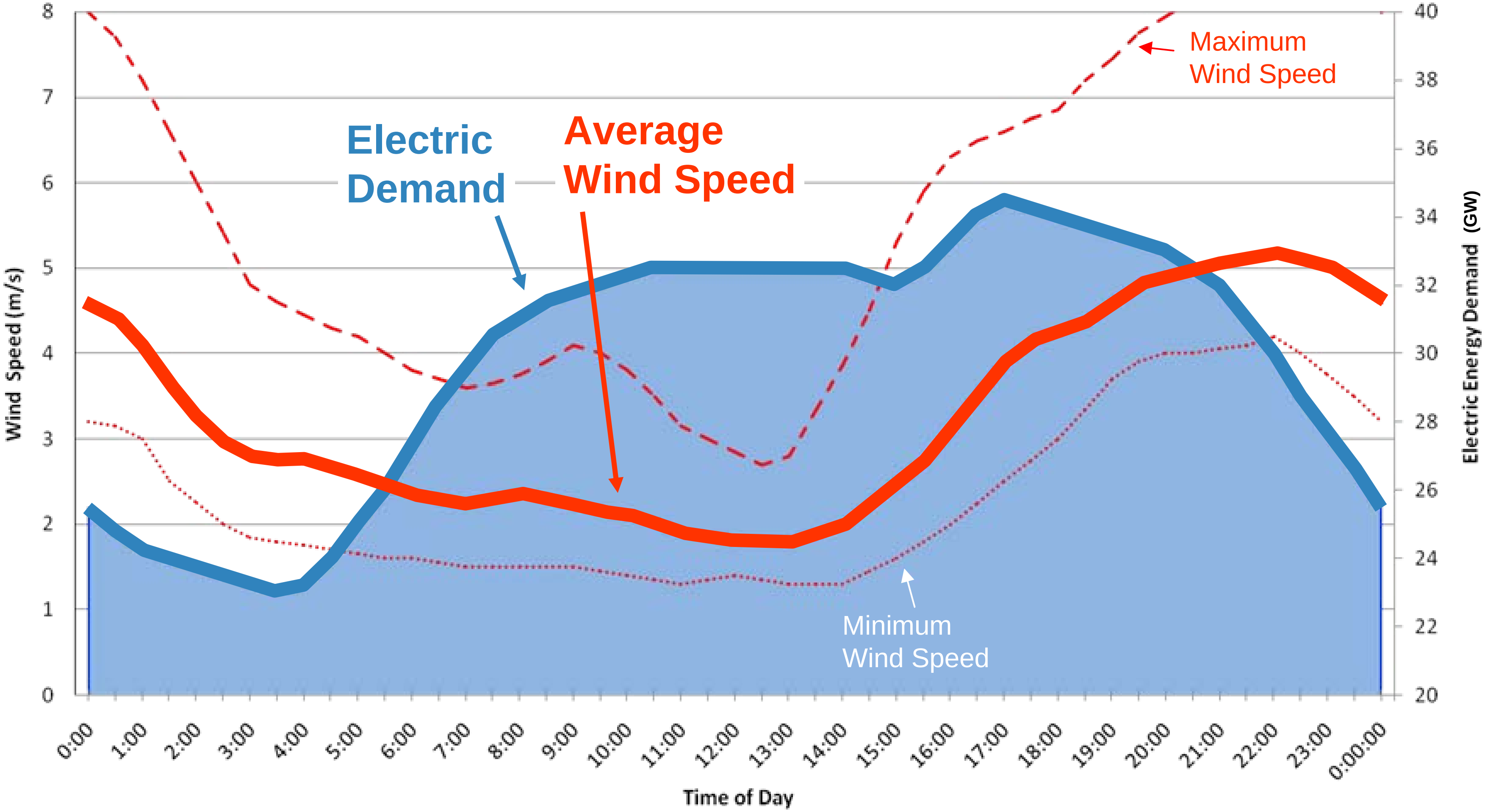
Note: "Renewable" definition varies by state

U.S. Renewable Energy Sources



Source: National Renewable Energy Laboratory
August 2009

Electricity Demand and Available Wind Power Are Almost Anti-Cyclical



Utility-Scale Energy Storage

Energy Storage Technologies			
Pumped Storage Hydro	Compressed Air Energy Storage	Batteries	Flywheels

Environmental, economic and energy diversity benefits

- Responds to intermittent renewable sources
- Helps meet peak demand
- Improves efficiency, reliability and security of transmission grid
- Not a substitute for baseload generation

Hydro Generation and Storage

Conventional Hydro

- **About 4,000 units; 78,000 MW of capacity, 7% of U.S. total**

Pumped-Storage Hydro

- **About 150 units; 22,000 MW of capacity, 2% of U.S. total**
- **Net generating losses due to pumping water uphill, evaporation and turbine/pump efficiency**

Further deployment hindered by land use and licensing challenges

Renewable Energy Source

Norton Energy Storage Project

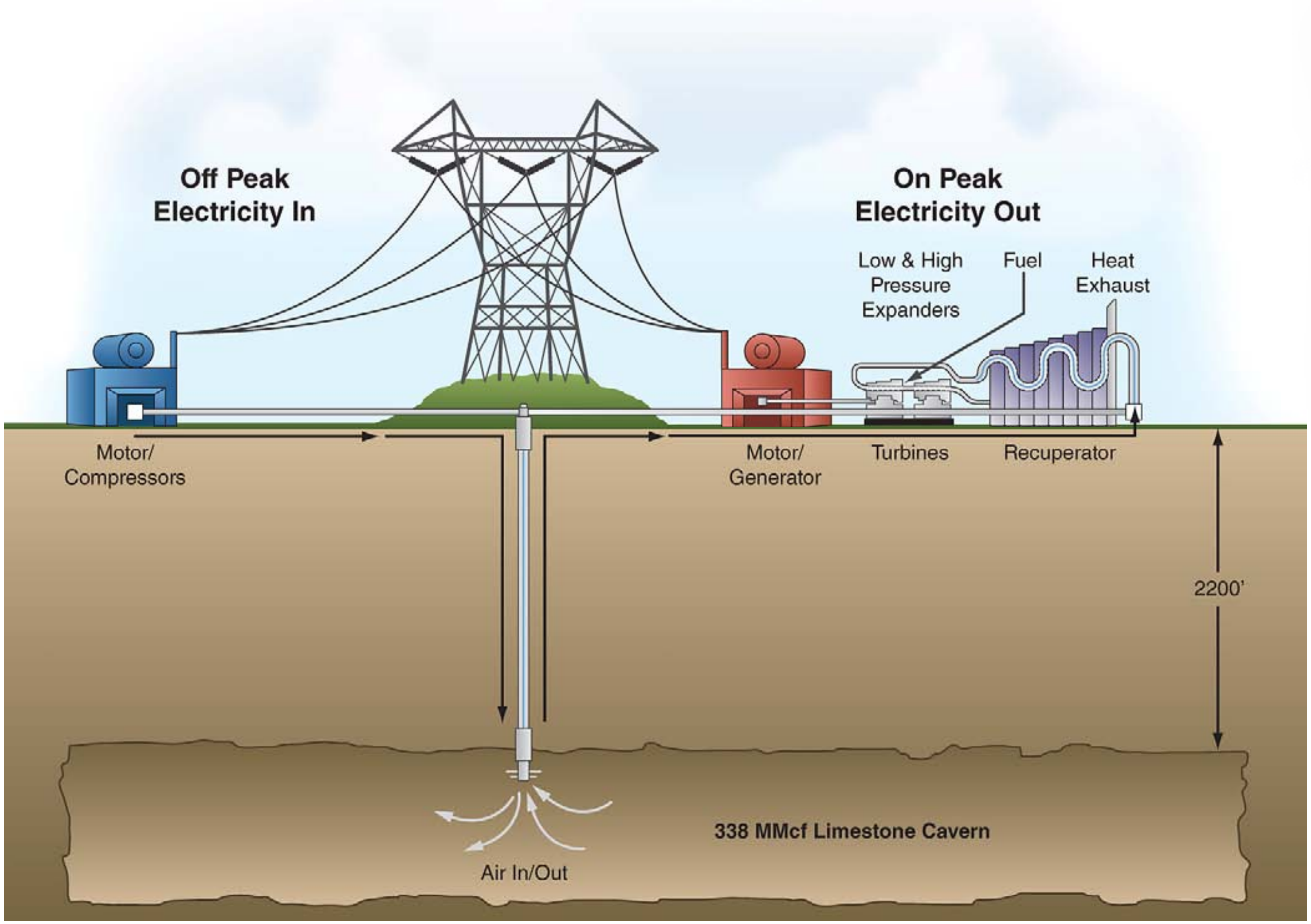
Innovative Compressed-Air Energy Storage (CAES) Technology

- **Highly responsive**
  - Compressor operates at night, serves load during the day
  - Responds to spikes and other challenges
- **Helps meet mandates for renewable power**
  - Could enhance feasibility and cost-effectiveness of renewable energy
- **Lowers overall emissions**
  - As baseload plants run more efficiently, lower-emitting units “follow” customer load
- **Serves as a low-cost power source**
  - Combines stored, compressed air with natural gas

Renewable Energy Source

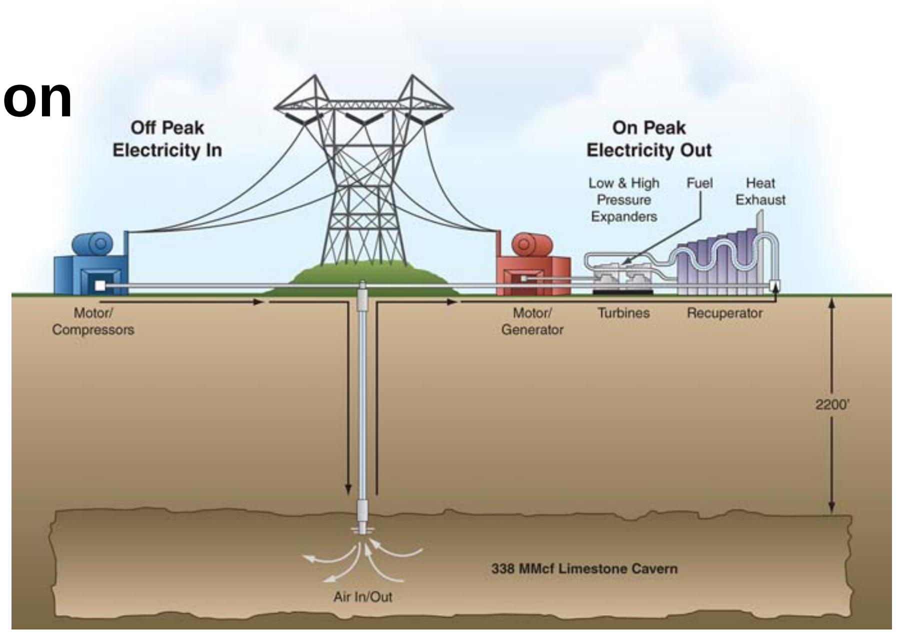
Norton Energy Storage Project

Innovative Compressed-Air Energy Storage (CAES) Technology



Project Status

- FirstEnergy has development rights to project
- Ohio Power Siting Board/OEPA permits secured
- Application filed for Generator Interconnection
- Discussions underway with equipment vendors on plant design
- Continued economic evaluation



FirstEnergy

Clean Energy Fuel Cell Demonstration

- **Multi-year test of one of the world's largest utility-scale fuel cell systems**
  - One-megawatt hydrogen-powered fuel cell
    - Located at our Eastlake Plant in Ohio
  - Produces only heat and water as byproducts
- **Testing capability to deploy power during peak-use periods**

Electricity from Nuclear Energy

- **Nuclear power plants provide 15% of global electricity generation**

China	2%	United States	20%	France	75%

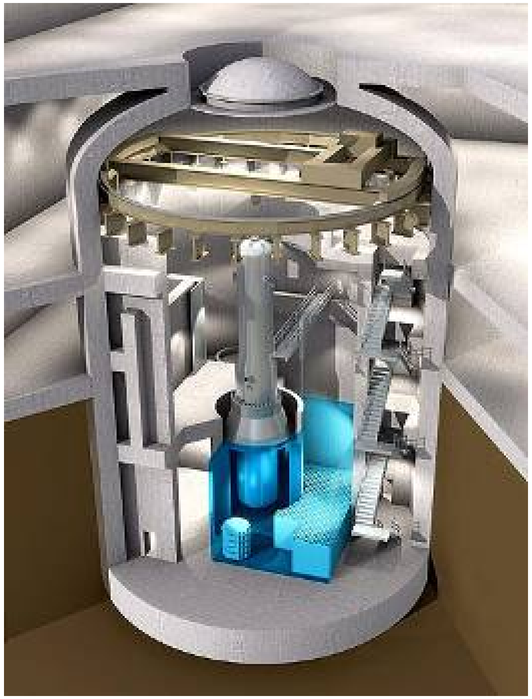
- **Safety**
  - Plants are safe, reliable, well-protected and well-run
  - Supported by multiple safety systems as well as independent, redundant electrical supplies
  - Lessons learned in Japan will lead to improvements that will make our fleet even safer
- **Environmental**
  - Largest source of clean-air, carbon-free electricity, producing no greenhouse gases or air pollutants
- **Reliability**
  - Industry capacity factor: 91%
- **Cost effectiveness**
  - Lowest-cost producer of baseload electricity
  - Average variable production cost of 2 cents per KWH

World Nuclear Association, Public Information Service, 2010

New Frontier: Small Modular Reactors (SMRs)

Potential for altering shape of nuclear power industry

- **Reduced investment risk**
- **Potential to replace retiring coal units**
- **Operating and licensing simplicity**
  - 150-MW modules
  - Factory assembled and shipped to site
  - Underground containment
  - Security and emergency planning
  - Spent fuel integral to module



Babcock & Wilcox, 150-MW SMR

Challenges Create Opportunities

- **Meeting future demand for electricity creates challenges**
  - Must produce electricity safely, economically, and in an environmentally sound manner
- **Continuing to advance technologies**
- **Creating opportunities for engineers and technicians**
- **Strategic planning**
  - Critical in meeting the regulatory uncertainty of today’s environment

Thank You

Questions & Answers

Forward-Looking Statements: This presentation includes forward-looking statements based on information currently available to management. Such statements are subject to certain risks and uncertainties. These statements include declarations regarding management's intents, beliefs and current expectations. These statements typically contain, but are not limited to, the terms "anticipate," "potential," "expect," "believe," "estimate" and similar words. Forward-looking statements involve estimates, assumptions, known and unknown risks, uncertainties and other factors that may cause actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Actual results may differ materially due to: the speed and nature of increased competition in the electric utility industry, the impact of the regulatory process on the pending matters in the various states in which we do business including, but not limited to, matters related to rates, the status of the PATH project in light of PJM's direction to suspend work on the project pending review of its planning process, its re-evaluation of the need for the project and the uncertainty of the timing and amounts of any related capital expenditures, business and regulatory impacts from ATSI's realignment into PJM Interconnection, L.L.C, economic or weather conditions affecting future sales and margins, changes in markets for energy services, changing energy and commodity market prices and availability, financial derivative reforms that could increase our liquidity needs and collateral costs, replacement power costs being higher than anticipated or inadequately hedged, the continued ability of FirstEnergy's regulated utilities to collect transition and other costs, operation and maintenance costs being higher than anticipated, other legislative and regulatory changes, and revised environmental requirements, including possible GHG emission, water intake and coal combustion residual regulations, the potential impacts of any laws, rules or regulations that ultimately replace CAIR and the effects of the EPA's recently released MACT proposal to establish certain mercury and other emission standards for electric generating units, the uncertainty of the timing and amounts of the capital expenditures that may arise in connection with any NSR litigation or potential regulatory initiatives or rulemakings (including that such expenditures could result in our decision to shut down or idle certain generating units), adverse regulatory or legal decisions and outcomes (including, but not limited to, the revocation of necessary licenses or operating permits) and oversight by the NRC, including as a result of the incident at Japan's Fukushima Daiichi Nuclear Plant, adverse legal decisions and outcomes related to Met-Ed's and Penelec's transmission service charge appeal at the Commonwealth Court of Pennsylvania, the continuing availability of generating units and changes in their ability to operate at or near full capacity, the ability to comply with applicable state and federal reliability standards and energy efficiency mandates, changes in customers' demand for power, including but not limited to, changes resulting from the implementation of state and federal energy efficiency mandates, the ability to accomplish or realize anticipated benefits from strategic goals, efforts, and our ability, to improve electric commodity margins and the impact of, among other factors, the increased cost of coal and coal transportation on such margins, the ability to experience growth in the distribution business, the changing market conditions that could affect the value of assets held in FirstEnergy's nuclear decommissioning trusts, pension trusts and other trust funds, and cause FirstEnergy to make additional contributions sooner, or in amounts that are larger than currently anticipated, the ability to access the public securities and other capital and credit markets in accordance with FirstEnergy's financing plan, the cost of such capital and overall condition of the capital and credit markets affecting FirstEnergy and its subsidiaries, changes in general economic conditions affecting FirstEnergy and its subsidiaries, interest rates and any actions taken by credit rating agencies that could negatively affect FirstEnergy's and its subsidiaries' access to financing or their costs and increase requirements to post additional collateral to support outstanding commodity positions, LOCs and other financial guarantees, the continuing uncertainty of the national and regional economy and its impact on the major industrial and commercial customers of FirstEnergy's subsidiaries, issues concerning the soundness of financial institutions and counterparties with which FirstEnergy and its subsidiaries do business, issues arising from the recently completed merger of FirstEnergy and Allegheny Energy, Inc. and the ongoing coordination of their combined operations including FirstEnergy's ability to maintain relationships with customers, employees or suppliers, as well as the ability to successfully integrate the businesses and realize cost savings and any other synergies and the risk that the credit ratings of the combined company or its subsidiaries may be different from what the companies expect, the risks and other factors discussed from time to time in FirstEnergy's and its applicable subsidiaries' SEC filings, and other similar factors. The foregoing review of factors should not be construed as exhaustive. New factors emerge from time to time, and it is not possible for management to predict all such factors, nor assess the impact of any such factor on FirstEnergy's business or the extent to which any factor, or combination of factors, may cause results to differ materially from those contained in any forward-looking statements. FirstEnergy expressly disclaims any current intention to update any forward-looking statements contained herein as a result of new information, future events or otherwise.