The Utility Challenge 2010-2020: Environmental and Climate Regulation, Legislation and Litigation

U.S. Department of Energy
Electricity Advisory Committee

October 29, 2010

Scope of Remarks

- Industry "Prism"
- EPA Regulatory Pathway
  - Water, ash, air, carbon
- Climate Change Landscape
- Coal Fleet Transition Initiatives
  - Thinking outside the BAU box

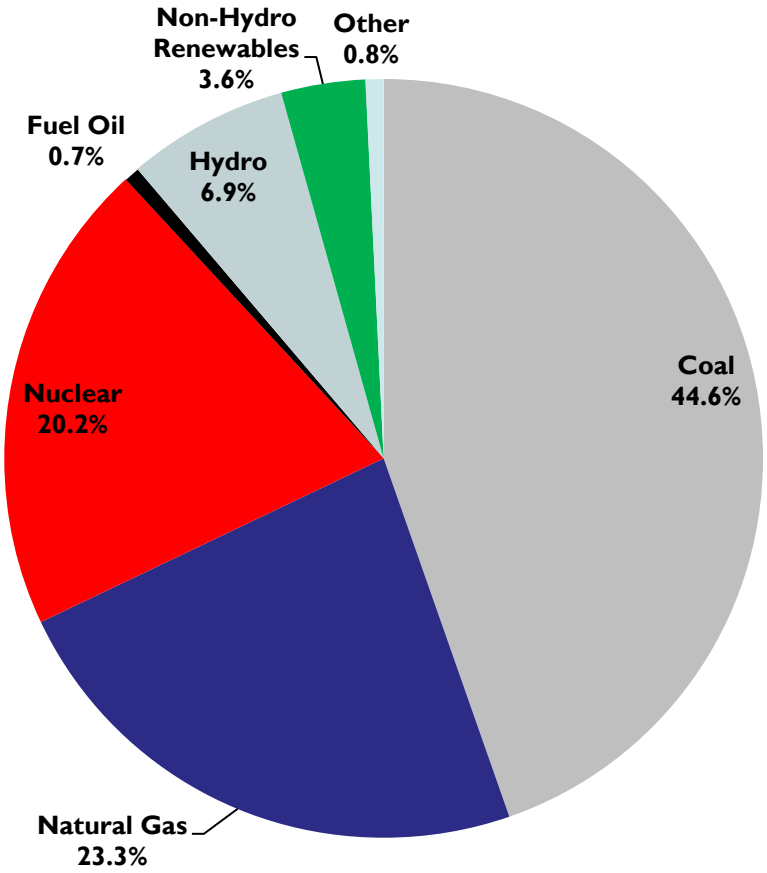
Industry Objectives

- Minimize economic impacts to consumers
- Continue environmental improvements
- Maintain system reliability
- Maintain fuel diversity options
- Develop and deploy new technologies
- Obtain access to capital and cost recovery
- Negotiate myriad political landscapes

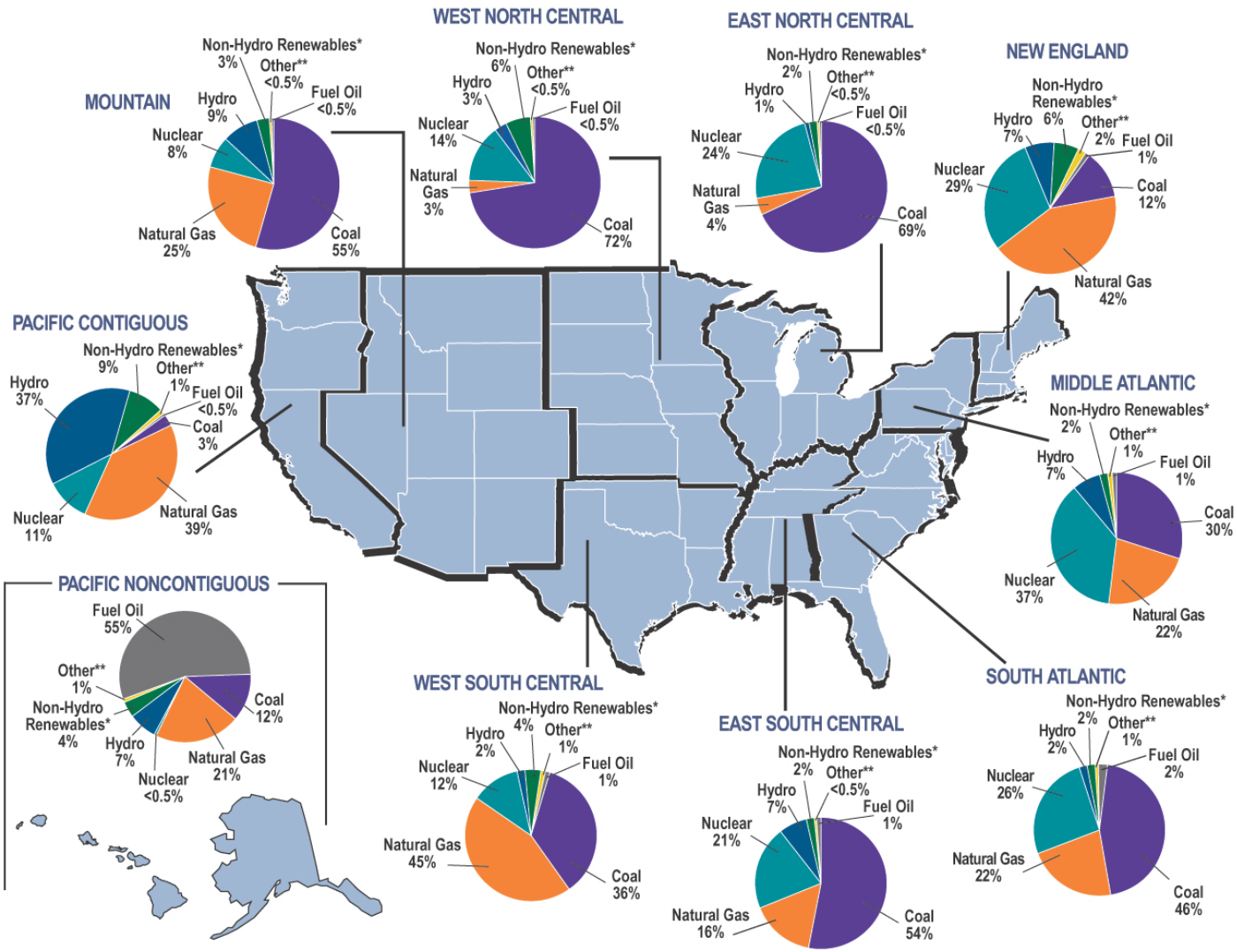
2010 Climate for Strategic Decisions

- Recession has dampened demand, but demand certainly will rebound and grow
  - Commodity, equipment and labor costs currently are down, generally making it an ideal time to build and prepare for future demand increases
- Utility industry at beginning of a major investment cycle
  - Driven by new technology, demand growth, efficiency, environmental CAPEX
- Addressing GHG emissions and EPA regulations will be costly
- Wall Street restructuring: access to capital markets and increasing cost of capital for needed utility investments
  - As a capital-intensive industry, reduced access to capital markets at higher costs places a premium on enhanced liquidity and financial flexibility

The U.S. Electricity Generation Portfolio as of 2009



Different Regions of the Country Use Different Fuel Mixes to Generate Electricity



*Includes generation by agricultural waste, landfill gas recovery, municipal solid waste, wood, geothermal, non-wood waste, wind, and solar.

** Includes generation by tires, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

Sum of components may not add to 100% due to independent rounding.

Source: U.S. Department of Energy, Energy Information Administration, Power Plant Operations Report (EIA-923); 2009 preliminary generation data.

May 2010

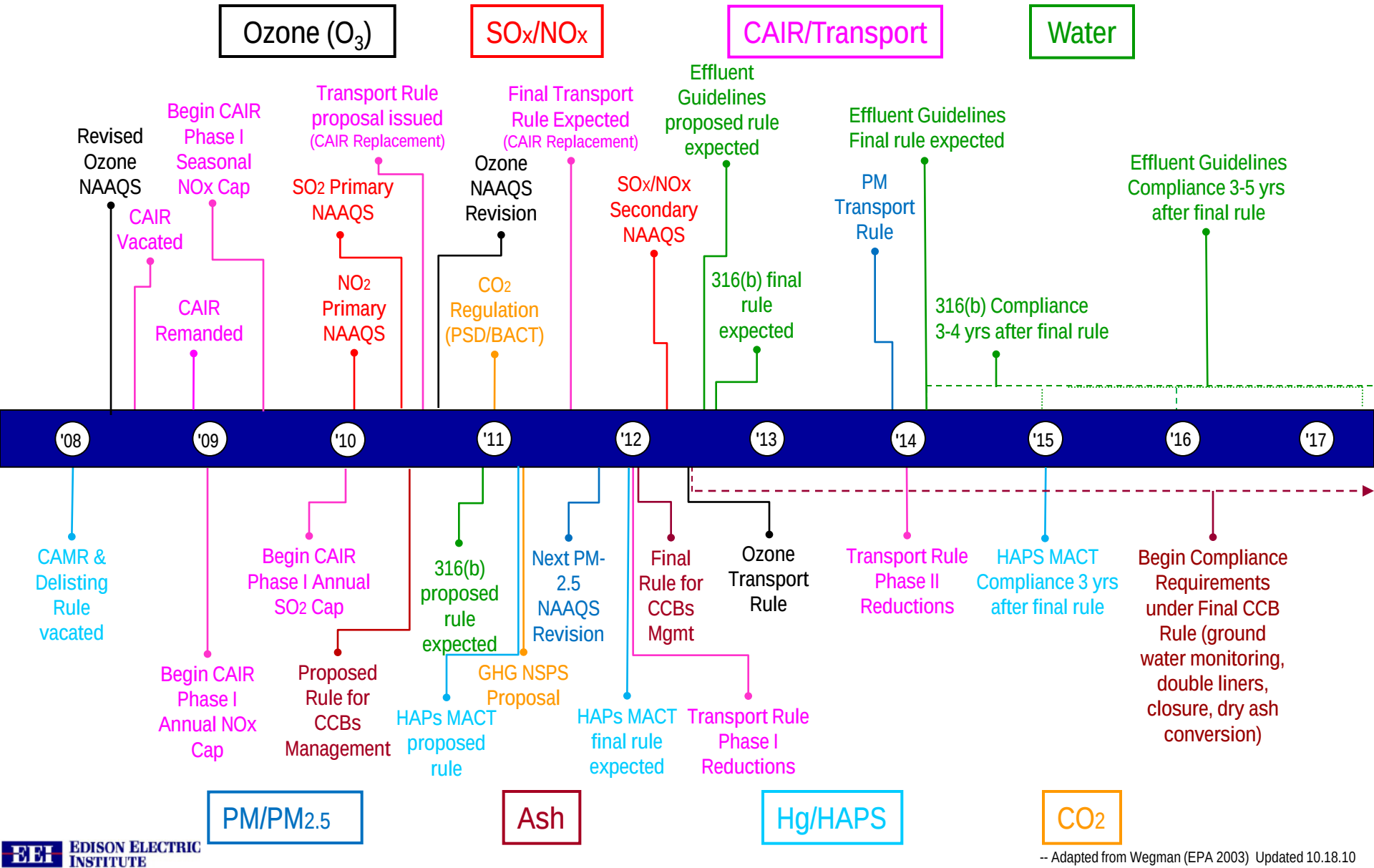
Coal Units by Age, Capacity and Emissions

U.S. Generating Units, 10 Year Increments

Age of Units*	Generating Units		Total Nameplate Capacity		Total Net Generation Year 2008		Total CO_2 Emissions Year 2008		Total SO_2 Emissions Year 2008		Total NO_X Emissions Year 2008	
	#	Percent of Total	GW	Percent of Total	GWH	Percent of Total	MTons	Percent of Total	Tons	Percent of Total	Tons	Percent of Total
0-10 Years	16	1.4%	5.3	1.6%	19,788	1.1%	28.7	1.4%	18,083	0.2%	13,779	0.5%
11-20 Years	64	5.8%	14.9	4.5%	78,261	4.2%	78.1	3.8%	137,803	1.9%	108,115	3.8%
21-30 Years	186	16.7%	86.1	26.1%	541,408	29.0%	615.0	29.6%	1,336,033	18.0%	763,207	26.9%
31-40 Years	238	21.4%	122.5	37.1%	724,206	38.8%	780.7	37.6%	2,750,025	37.1%	1,053,259	37.1%
41-50 Years	270	24.3%	60.8	18.4%	316,029	16.9%	352.2	16.9%	1,879,152	25.4%	533,038	18.8%
51-60 Years	304	27.3%	39.3	11.9%	187,473	10.0%	220.7	10.6%	1,265,388	17.1%	356,902	12.6%
61-70 Years	30	2.7%	0.9	0.3%	1,166	0.1%	2.5	0.1%	19,223	0.3%	6,554	0.2%
> 70 Years	4	0.4%	0.0	0.01%	5	0.0003%	0.1	0.004%	87	0.001%	484	0.02%
Coal Unit Totals	1,112	100.0%	329.95	100.0%	1,868,336	100.0%	2077.9	100.0%	7,405,794	100.0%	2,835,339	100.0%

Source: Ventyx, Inc.—EV Suite
MTon = million tons
* Does not include units that came online in 2009

Possible Timeline for Environmental Regulatory Requirements for the Utility Industry



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-- Adapted from Wegman (EPA 2003) Updated 10.18.10

Climate Legislation

- Senate progress, but unable to close the deal
- Some House members taking hits for "yes" votes on Waxman-Markey
- Lame duck activity?
- Prospects in next Congress?
  - Cap-and-trade on life support
  - All proposals have same problem: need 60 votes
- Pending EPA activity remains a catalyst

Congressional Focus on EPA Progress

- Murkowski (R-AK) Resolution of Disapproval to prevent EPA regulation of GHGs under Clean Air Act
  - Failed to get 60 votes in June
- Rockefeller (D-WV) introduced bill to delay EPA regulation by 2 years – message bill?
  - Reid promised a vote: unclear whether it could get 60 votes
- Similar House efforts have failed, likely to be unavailing
  - Landscape changes if Republicans assume control
- Unlikely to survive Presidential veto if passed…
- …*but* drumbeat of concern regarding costs continues

Industry's Predicament

- Have to comply with pending EPA regulations on air (SO_2, NO_x, mercury, *etc.*), water, and coal ash on or around 2015
  - Will require retrofit, retirement or replacement of substantial portion of existing coal fleet in short period of time
  - Could impact reliability; need to assess feasibility; regional differences
- Could cost up to $200 billion/year in CAPEX by 2015
  - Industry already has capital expenditures of $80 billion annually
  - Can it be raised? Assuming so, at what cost?
- Need carbon policy or face possibility of stranding investments
  - Dramatically changes economic outlook and impacts on coal fleet
  - Implementation of EPA regulation of stationary sources begins in 2011
  - Congress unlikely to pass climate legislation this year; next Congress?
  - Regulation is less certain than legislation; litigation likely
- Need resolution to help smooth transition of current coal fleet
  - Need planning and investment certainty to meet future demand; ensure industry can meet regulations while maintaining system reliability

The Next 10 Years Are Critical

- Need better coordination within EPA on air, water and waste rules; carbon too
- EPA coordination with sister agencies
- New technologies need to be encouraged (and funded) and phased in logically
- Implementation schedule must factor in material and labor needs, retrofit windows
- Need to expedite consideration of permits

Generation Fleet Initiative

- Options for "transforming" the coal fleet over the next ~10 years in the most cost effective and reliability sensitive manner (*i.e.*, a path to avoid the "train wreck")
- Look at traditional pollutants and CO_2:
  - Methodical retrofits over a reasonable timeline
  - Continued environmental improvements
  - Minimization of impacts to consumers
  - Deployment of advanced coal technologies
- Likely would require Congressional action

APPENDIX

Cooling Water Intake Structures

- EPA implementing 316(b) in several phases:
  - Timing: revised proposal due ~February 2011; final rule in 2012, but could slip
  - Technology: whether cooling towers are Best Technology Available
  - Flexibility: whether to allow cost-benefit analyses to balance environmental impacts of a technology
- Any retrofit mandate could cause premature closures, extended outages, and significantly impact rates and capacity margins

Coal Combustion Residuals (CCR)

- Co-proposal of two options in June (75 Fed. Reg. 35128):
  - Subtitle C, "Special" hazardous waste listing; Subtitle D regulations
  - Beneficial use exempt from regulation
  - Soliciting input on other options, restrictions on beneficial use
- Subtitle C option would reverse 1993 & 2000 Regulatory Determinations
- Majority of states, ash recyclers, industry groups, large number in Congress oppose hazardous waste regulations
- Will significantly impact operations: closure of ash ponds, construction of additional disposal capacity, reductions in beneficial use
- Comments due in November; Final Rule not likely before 2012

Mercury / HAPs Regulation

- Clean Air Mercury Rule: trading rejected by court
- EPA will regulate all HAPs for coal and oil units
- March 2011 proposal; November 2011 final decision
- 3-yr compliance period (1-yr extension possible)
- ICR data collection/testing program (almost $100M)
- New units before final rule: case-by-case MACT
- Issues: stringency, sub-categorization
- Implications: Various combinations of FGD, SCR, baghouses, ACI to control acid gases, metals, organics

"Transport Rule"

- Proposal affects power companies in 31 eastern states
  - State emission budgets for NO_x and/or SO_2 (both for most states)
- Some EEI member companies able to meet requirements due to combination of individual company approaches to addressing environmental issues, state requirements, fuel mix, and settlement agreements; other EEI members have concerns:
  - New reduction requirements must be met only 6 and 30 months after final Transport Rule issued in mid-2011
  - Provides little long-term certainty because requirements will be superseded in near-future by subsequent Transport Rules addressing the 2010 ozone standards and the 2011 particulate matter standards
  - Constraints on emissions trading

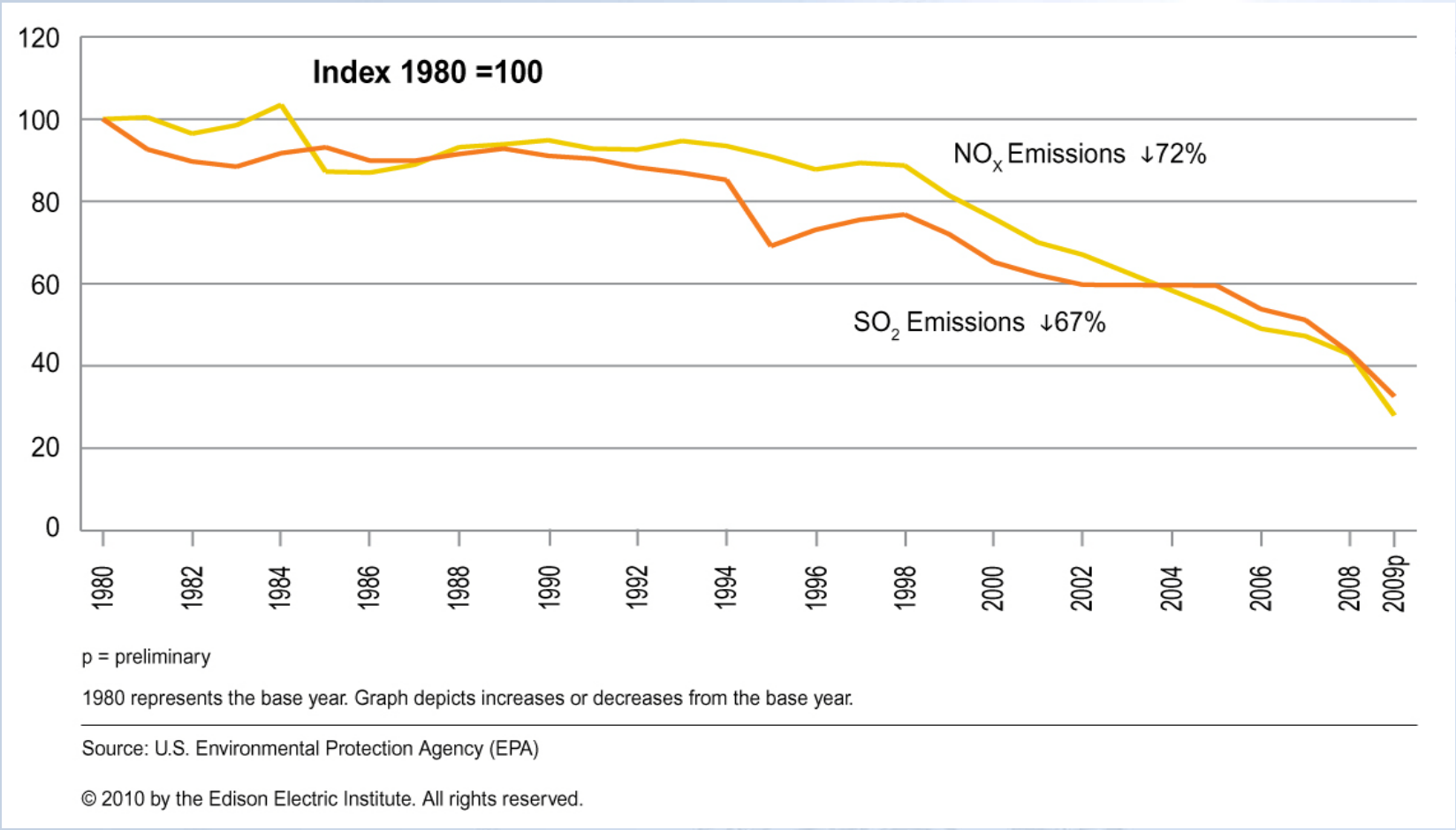
National Ambient Air Quality Standards

- New 1-hour NO_2 standard (January 2010) and new 1-hour SO_2 standard (June 2010) present permitting challenges
  - The new SO_2 standard must be met via both monitoring and modeling for an area to be "in attainment"
- Tightening of 2008 ozone standard expected ~October 2010
  - EPA has predicted implementation cost in 2020 of $50-90 billion (for all emission sources) for the low end of its proposed range (0.06 ppm)
- Tightened PM proposal expected ~February 2011
- New ozone and PM standards will drive new Transport Rules
- State Implementation Plans: EGUs in bulls-eye due to perceived cost-effectiveness

Sector SO_2 and NO_x Emissions Down

- EPA's Clean Air Markets Division website:
  - National SO_2 emissions from power plants in 2009 were 64 percent lower than in 1990
  - National power plant NO_x emissions declined 70 percent over the same time period
  - Power generation NO_x emissions during the ozone season in the 20-state Eastern region regulated for summer ozone declined 81 percent since 1990

Electric Power SO_2 and NO_X Emissions



p = preliminary

1980 represents the base year. Graph depicts increases or decreases from the base year.

Source: U.S. Environmental Protection Agency (EPA)

Minimizing Consumer Impacts

- Long investment horizons (20-30 years) require some 'educated predictions' of expected future legislative, regulatory and policy actions
  - Proper planning means that utilities cannot – and do not – plan one rule at a time; utilities need to take a comprehensive view
- Avoid the cost, uncertainty and delay of litigation

Minimizing Consumer Impacts (2)

- PUC approvals processes
  - Approval of Integrated Resources Plans (IRPs)
  - Prudency review of expenditures
  - Least-cost compliance demonstration
- Avoiding stranded assets (aka premature or improper shutdowns and retirements)
- Coordination within a state or region – integrated resource planning requirements, reliability organizations

Maintaining System Reliability

- Preserve system integrity through transmission and by maintaining adequate reserve margins
  - Transmission issues (voltage support, load pockets, *etc.*) can dictate what units must run
  - Timing and integration of new construction (*i.e.*, before retirement of "old" units)
  - Adequate base load, peaking capacity and renewable capacity
  - Coordinated maintenance programs to accommodate retrofit outages

State Climate Activities

- Regional programs continuing, albeit at different levels
  - RGGI (12 states)
  - MGGA (6 states)
  - WCI (6 states)
- CA law to take effect in 2012; ballot initiative pending
- Overall state activity could increase in absence of federal legislation…
- … *but* level of state opposition to increased costs in this economic landscape also is growing

Climate Litigation

- Some courts have allowed states/individuals to sue GHG emitters under common law tort principles:
  - Connecticut v. AEP (2d Cir., Sept. 21, 2009): federal common law action that seeks CO_2 emissions reductions from five electric utilities; four have sought Supreme Court review
  - Comer v. Murphy Oil (5^{th} Cir., Oct. 16, 2009): federal and state tort law suit that seeks monetary damages from CO_2 emitters for Hurricane Katrina impacts; may be headed for Supreme Court
  - Kivalina v. ExxonMobil: native community seeking damages for moving village because of rising sea levels; district court disallowed suit, but appeal pending in 9^{th} Circuit
- In absence of legislation, tort suits against GHG emitters are expected to increase, following tobacco and asbestos precedents

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