



Edison Electric Institute

Power by AssociationSM

Balancing Regulatory Requirements and Environmental Concerns

The Rapidly Changing Electric Power Sector and Environmental Policy Landscape

US Association of Energy Economics

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Washington, DC

Challenges & Balance



4 Significant Trends

- Improved energy efficiency; low/flat demand; declining sales
- Grid Modernization (i.e., aging infrastructure)
- National vision of power from cleaner/decentralized sources (e.g., renewables, RPS, etc.)
 - alternative to traditional utility service exists (cell v. landline)
- Customers place a higher value on reliability (tools employed at work, home and social media)

Power Sector 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

Environmental Regulatory Challenges: *2013 and Beyond*

Air

Mercury & Air
Toxics
(MATS)

Interstate
Transport
(CAIR/CSAPR)

Regional
Haze/Visibility

Multiple
NAAQS

New Source
Review (NSR)

Climate

NSPS- New
Sources

NSPS-
Existing
Sources

BACT
Permitting

International
Negotiations

Water

316(b)

Effluent
Guidelines
Limitations

Waters of the
United States

Total
Maximum
Daily Loads

Waterbody-
Specific
Standards

Land & Natural Resources

Transmission
Siting and
Permitting

Avian
Protection

Endangered
Species

Vegetation
Management

Waste & Chemical Management

Coal Ash

PCBs in
Electrical
Equipment

HazMat
Transport

Power Sector Response

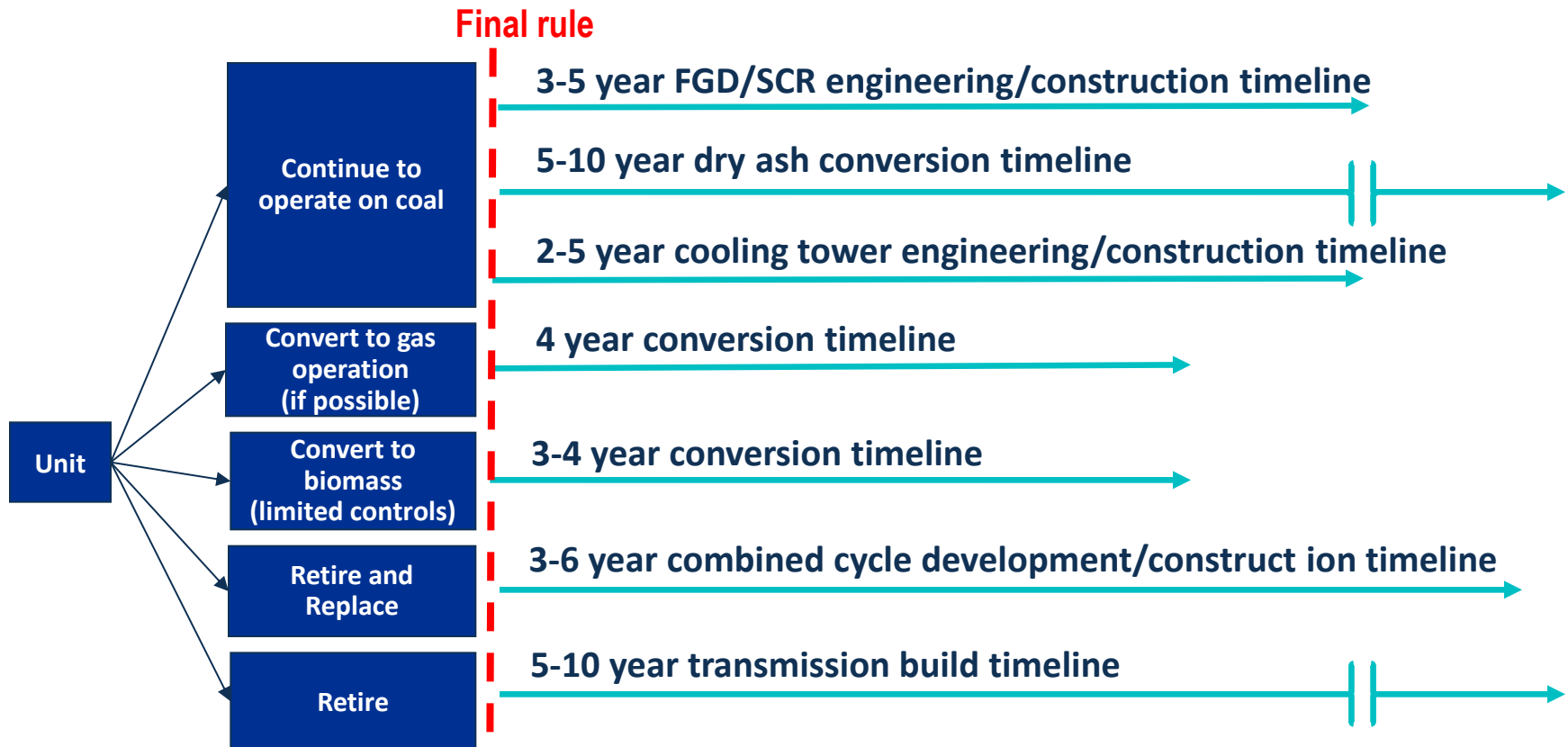
- Capital Expenditures – Historical High
 - Annual Avg Capex = \$85 billion through 2014
- Transmission & Distribution Investment – cleaner, smarter, more efficient infrastructure = \$\$
 - \$30 billion in 2012
- Retirements / Conversions
 - ~60GW taking place between 2012-2022
 - 18% of the 339 GW of total coal-based generation in 2010
- Natural Gas Prices
 - Low prices have financial and operational implications
 - Can natural gas be a reliable, affordable & stable fuel?

Timetable of Rule Implementation and Compliance Deadlines



Source: EPA Impact Analysis: Impacts from the EPA Regulations on MISO (October 2011)

Specific Time Frames for Installation of Environmental Controls



Time frames vary by unit--Fleet considerations may extend the time needed for any specific unit conversion

316(b) & ELGs Impacts

- Virtually entire existing fleet affected by both rules
- 316(b) compliance as much as \$100 billion; final rule expected June 2013
- 316(b) could require plants to be re-engineered to replace once-through cooling systems with cooling towers when alternative technologies are available
 - Fuel neutral; energy penalty; consumer price impacts
- Industry urging a more site-specific alternative approach
- ELGs: Anticipate increased treatment for possibly 7 separate waste streams
 - April 2013 draft; Final May 2014
- Many options not cost effective or feasible
 - Dry bottom ash handling alone capital cost of \$6.4-29 million / facility
 - Orders of magnitude more to remove TWPE than EPA has done in past (\$2,000-\$40,000/TWPE)
- Rigid rule could result in plant closures, reliability concerns and job losses expected

Challenges & Balance



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