

What's Next For Lignite?

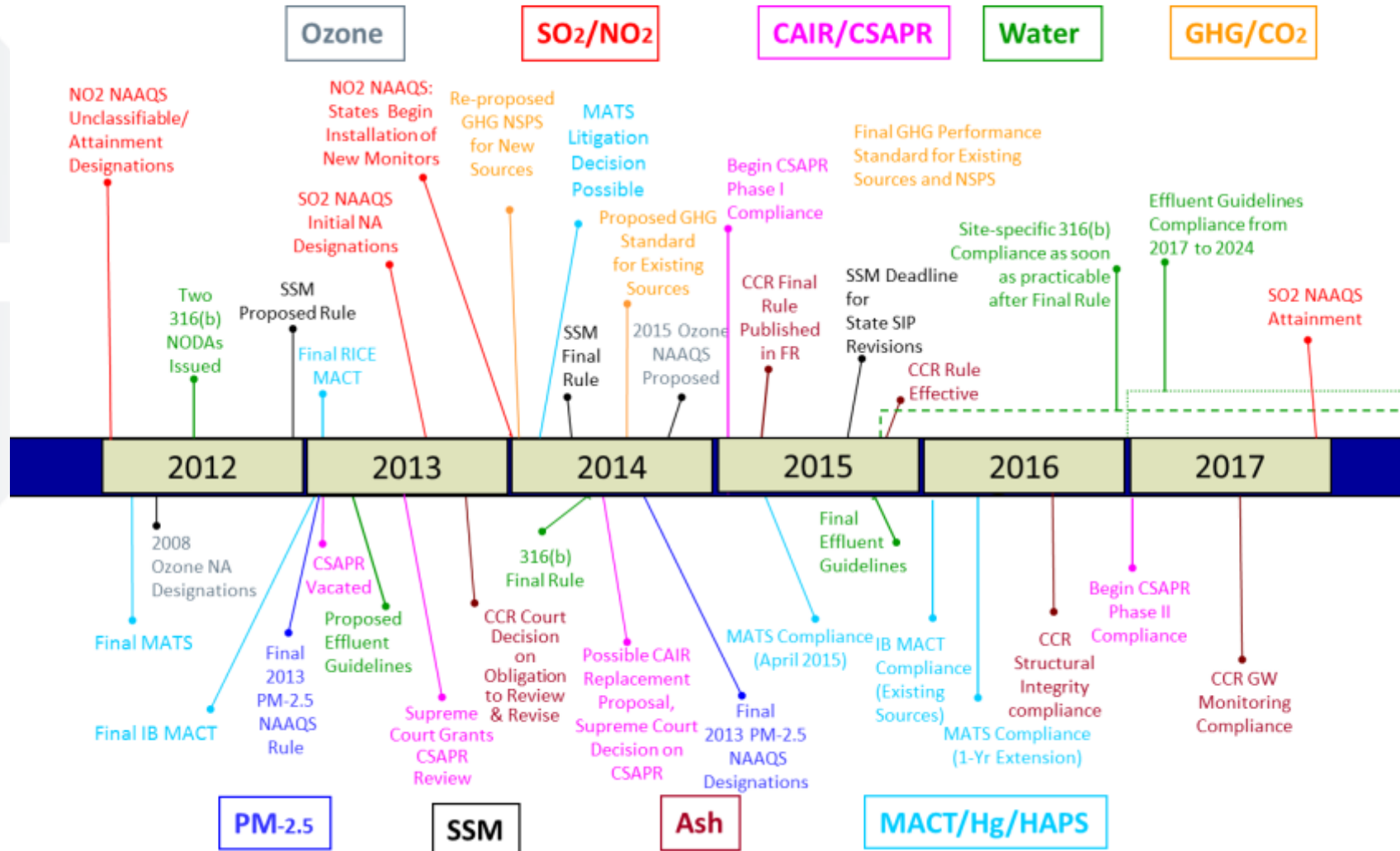
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Regulatory “Trainwreck”

EPA REGULATORY TIMELINE

(Updated 5/2015)





Affordable Clean Energy Rule

- Supreme Court stayed the CPP
- *Mass v. EPA* still requires CO2 rule
- President Trump announced he would unveil a replacement
- LEC traveled to DC to meet with EPA, Senators and Congressmen
- Submitted Comments
- August 21, Affordable Clean Energy Rule released



Affordable Clean Energy Rule

- Clean Air Act regulates “point sources” of emissions
 - “Inside the fence”
- Clean Power Plan attempted to regulate everything that touched generation and use of electricity
 - “Building blocks”
 - “Building blocks” were anything from inside the fence to inside your home



Affordable Clean Energy Rule

– Increased Flexibility

- Reverts to traditional understanding of Cooperative Federalism
- States can take into account “remaining useful life” and work with industry experts to define such terms
- States determine which “candidate technologies” are appropriate for each covered plant
- Instead of rigid “interim goals” that would have driven coal plants out of business, timeline now allows plants time to implement those “candidate technologies”



Affordable Clean Energy Rule

- Bottom Line
 - States will work with Industry experts on candidate technologies
 - Power plants can make necessary upgrades without risk of New Source Review
 - 45% of North Dakota generation is no longer at risk due to CO2 regulations
- That's the Good News

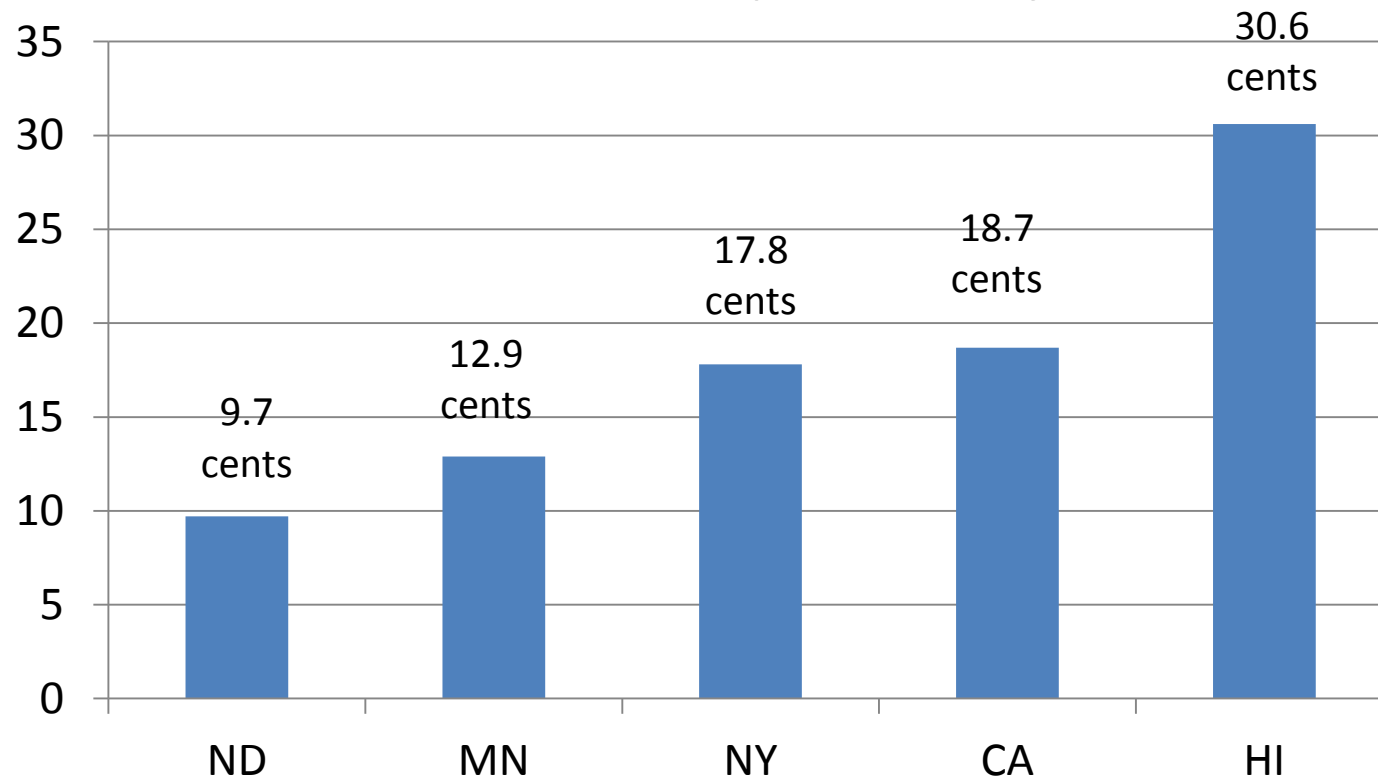


Market Risk > Regulatory Risk

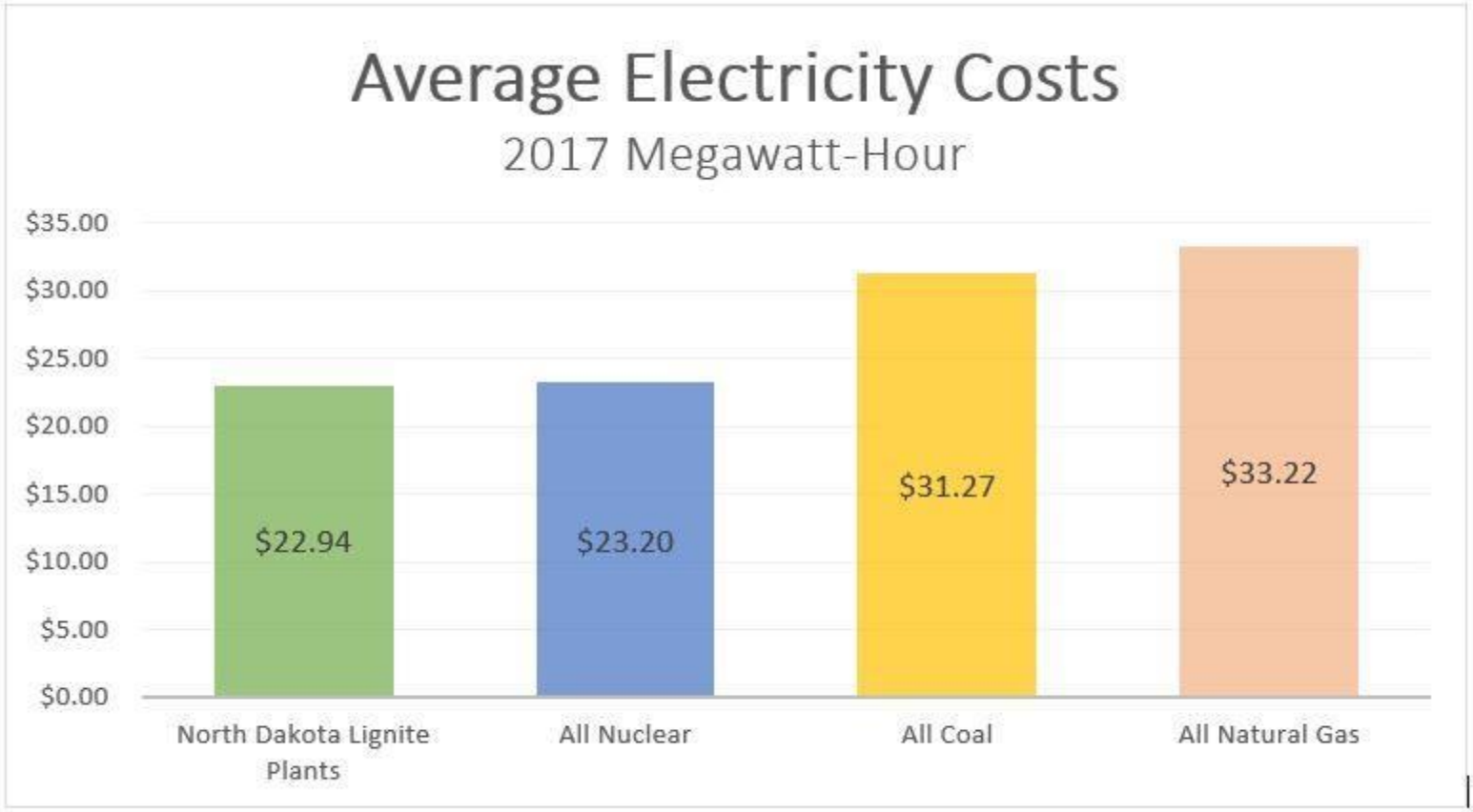
- Has market risk superseded regulatory risk?
- Lignite Coal operates in a competitive market
- This is not a free market
 - Its not always a fair market
- But when we can compete fairly, we can win definitively

Still leading the region in low cost power

**Average 11/1/17 residential electricity prices –
Source EIA (Table 5.6.A)**



We are increasing our relative competitive advantage over nuclear, coal



Source: [Ventyx](#)



Lignite Challenges

- Even as cheap as it is, its hard to compete with “free”
 - Subsidized wind
- How to position lignite for the future?



Strategic Priorities

- Management Committee Meetings
 - December 2017, March 2018, April 2018
- New Strategic Priorities
 - Emerging Markets
 - Resilience Recognition
 - Research and Development
 - Tax Policy

Emerging Markets

- Why New Uses?
 - Electricity markets are currently stacked against us
 - “Free” wind is sold first
- Megawatt vs. Megawatt, we are still cheaper, BUT
 - Wind isn’t just megawatts, its megawatts PLUS a subsidy
- How do we face that reality?
 - One way is to develop our own, “Megawatt PLUS X”
 - “X” is a new use or developing market
 - May even just be increased demand



Emerging Markets

- Rare Earth Elements
- Greenhouse Partnerships
- Activated Carbon
- Soil Amendments
- Synthetic Graphite
- Electric Vehicles
- Data driven computer/cloud/blockchain applications
- Carbon Fiber/Carbon Black/Carbon Nanotubes



Rare Earths

- Megawatt PLUS rare earth
 - Present in clay seams and ash
 - We believe they exist in commercially viable amounts
 - Ongoing research through the LRC and federal agencies
 - Stay tuned!



Electric Vehicles

- What we know
 - Increasing Demand
 - 1.1 million in worldwide sales in 2017
 - 11 million by 2025
- What do we need to know?
 - How do EV's change demand cycles
 - Nighttime charging cycles
 - Smoothing of “shoulders”
 - What infrastructure needs do we have?
 - What policy changes do we need?
 - Will people buy them in ND?



Resilience Recognition

- What is resilience?
 - Its an attribute that coal electricity provides to the grid
 - Its something we aren't being compensated for
 - It allows the grid to function in weather and demand extremes
 - Its what makes an “all of the above” policy possible
- What are we doing?
 - Positioning ourselves as a stakeholder in MISO to provide a voice for coal and resilience
 - Working with federal agencies as they develop programs to take resilience into account
 - Educating policy makers about different attributes of coal fired electricity, such as “resilience” and “dispatchability”



Research and Development

- What are we doing?
 - Focus on building Lignite Research Fund capabilities beyond the lab and into the commercial markets
 - Enhanced state-matched funding for next-generation technologies
- Focus on carbon dioxide solutions
 - Allam Cycle
 - CarbonSafe
 - Project Tundra



Tax Reform and Incentives

- What are we doing?
 - Working to ensure that tax incentives are appropriate to ensure the long term viability of the coal industry
 - Briefings with federal and state leaders, as well as DOE officials
- Why is this a strategic priority?
 - Next generation technologies have always been incentivized through the tax code
 - EOR tax incentives are needed to ensure industry participation and investment



Tax Reform and Incentives

- What are our goals?
 - 45(q) reform, increasing tax credits for the sequestration of CO₂ in either geologic formations or for enhanced oil recovery
 - For the most part this has been achieved
 - 48(a) reform, enabling an investment tax credit for advanced coal projects
 - IRS certainty regarding ultimate disposition and liability of sequestered CO₂ and well classification
 - Long term certainty for the refined coal tax credit



Final Thoughts

- These strategic priorities make us stronger
 - They recognize that we aren't simply fighting hostile regulations anymore
 - They focus us on keeping us competitive in electricity markets
 - They set us up for the future
 - They can bring both sides to the table