ELECTRICITY COMMITTEE
Energy and Regulatory Transitions: State Updates
Electricity Committee

Moderator
Hon. Judith Williams Jagdmann, Virginia

Panelists
Hon. Kara Fornstrom, Wyoming
Hon. Charlotte Mitchell, North Carolina
Hon. Anthony O’Donnell, Maryland
Hon. Richard Lozier, Jr., Iowa
Energy and Regulatory Transitions:

State Updates

Kara B. Fornstrom, Chairman, Wyoming Public Service Commission
November 18, 2019
Today’s Presentation

- Why the Future of Coal Matters to Wyoming
- Pressures on Coal-Fired Electricity
- Wyoming’s Response
- What’s Impeding Utilities from Investing in CCUS Technology?
- Potential Regulatory Mechanisms
- Conclusion/Questions
Why the Future of Coal Matters to Wyoming

- Wyoming Coal Mines
- Wyoming Coal-Fired Generation Plants
2017 U.S. Coal Production by State

- Wyoming, 41%
- West Virginia, 12%
- 16 Other States, 12%
- Other states: 6%, 5%, 4%, 3%
Wyoming’s Coal Mines
Coal-Fired Power Plants Fueled by the Powder River Basin

Source: https://wildearthguardians.org/climate-energy/maps/powder-river-basin-coal-plants/
Wyoming’s Coal-Fired Plants

- Dry Fork Station, 380 MW
- Wyodak Complex, 687 MW
- Dave Johnston, 760 MW
- Laramie River Station, 1710 MW
- Naughton, 687 MW
- Jim Bridger, 2111 MW
Coal Revenue for Wyoming

Total estimated contribution: $891,397,681 in 2017

*Based on 2016 production year

Note: The last federal coal lease was awarded in 2010 and the final coal bonus bid was paid in 2017, leaving a gap in major funding sources for Wyoming school construction.
Pressures on Coal-Fired Electricity

- National Energy Policy
- Natural Gas Prices
- Legal Rulings
- State Energy Policy
- Impact on Wyoming
State Energy Policy

States and territories with Renewable Portfolio Standards

States and territories with a voluntary renewable energy standard or target

States and territories with no standard or target
100% Clean or Renewable Electricity Targets
Anticipated, Proposed or Enacted 100% Standards and Studies

Source: EQ Research Policy Visits™ Legislative Tracking Database as of March 15, 2019.

Note: Map assumes New Mexico SB 489 is enacted.

Change in Tax Revenue, Adjusted for Inflation
Wyoming’s Response = LEAD

- Legal Framework: State and Federal
- Technology: CCUS & Integrated Test Center
- CO2 Pipeline Corridors
- Regulatory Incentives?
Technology: Integrated Test Center

- Carbon XPrize
  - Breathe (Bangalore, India)
  - C4X (Suzhou, China)
  - Carbon Capture Machine (Aberdeen, Scotland)
  - CarbonCure (Dartmouth, Canada)
  - Carbon Upcycling UCLA (Los Angeles, CA, USA)

- Japan Coal Energy Center (JCOAL) and Kawasaki Heavy Industries, Ltd.

- University of Kentucky Center for Applied Energy Research (CAER)
CO2 Pipeline Corridors: Wyoming’s Infrastructure

Citation: "Carbon Capture and Sequestration in the Cowboy State: A Primer for the Wyoming Lawyer, Kipp Coddington, March 14, 2019."
Are Regulatory Incentives the Missing Piece?
What’s Impeding Utilities From Investing in CCUS Technology?

- Traditional Rate Making Model
- Utility Risk Profile - Risk Tolerance
Utility Risk Profile: Risk Profile By Industry

Beta by Industry as of January 2019
Are Regulatory Mechanisms the Missing Piece?
CCUS Regulatory Mechanisms

- Integrated Resource Planning
- Innovative Ratemaking
CO2 as a Revenue Stream

- How can CO2 be turned into a profitable commodity?
- Treated as Pass-On Application?
- Sharing Bands?
- CO2 Revenues outside Calculation of Return on Equity
- Novel Concepts Encouraged
Conclusion/Questions?

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EVOLUTION of ELECTRIC GENERATION in IOWA

The Answer is Blowing in the Wind

Richard Lozier
Iowa Wind Facts (2019)

1st state to adopt an RPS in 1983 ~ 105 MW

#2 in nation for percent of electricity generated by wind: 33.7%

#2 in nation for installed capacity: 8,957 MW

#3 in nation for the number of turbines: 4,859

Source: https://www.awea.org/Awea/media/Resources/StateFactSheets/Iowa.pdf
Iowa’s Wind Landscape

Source: https://www.awea.org/Awea/media/Resources/StateFactSheets/Iowa.pdf
# Iowa Generation Mix
## 2007 v. 2017

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2017</th>
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<tbody>
<tr>
<td></td>
<td>MWh</td>
<td>Percent</td>
</tr>
<tr>
<td>Coal</td>
<td>37,985,566</td>
<td>76%</td>
</tr>
<tr>
<td>Wind</td>
<td>2,756,855</td>
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<tr>
<td>Nuclear</td>
<td>4,518,875</td>
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<tr>
<td>Natural Gas</td>
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<td>Hydro &amp; Other Renewables</td>
<td>1,125,306</td>
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<tr>
<td>Petroleum</td>
<td>311,915</td>
<td>1%</td>
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<tr>
<td>Total</td>
<td>49,789,396</td>
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Iowa Generation Mix
2007 v. 2017

Advanced Ratemaking Principles

• 2001 Legislation (Iowa Code § 476.53)

• Purpose: to encourage the development of generating facilities in Iowa by reducing the risk of rate recovery for new generating facilities.

• Allows a rate-regulated utility to receive binding regulatory assurances related to the treatment of electric power generating facilities, when the costs of the new facility are included in electric rates.
Advanced Ratemaking Principles

• Applies to:
  – Electric generation constructed, leased or owned by any Iowa rate-regulated utility.

• Electric Generation includes:
  – New baseload electric generating facility > 300 MW.
  – Combined-cycle electric power generating facility.
  – Alternate energy production facility as defined in Iowa Code § 476.42.
  – Any significant alteration of any existing electric generating facility.
    (such as: conversion of coal fueled facility into a gas fueled facility; addition of biomass fueled capability to a coal fueled facility; or repowering of an alternate energy production facility.)
Tax Credits

• Iowa offers:
  – Production tax credits
    • Wind energy tax credits (§ 476B).
    • Renewable energy tax credits (§ 476C).
  – Investment tax credits
    • Solar energy system tax credits (§ 422.11L).
Tax Incentives

• Iowa offers:
  – Property tax exemptions
    • Methane gas conversion property (§ 427.1(29)).
    • Wind conversion property (§ 427B.26).
    • Renewable energy systems (§ 441.21(8)).
  – Sales tax exemptions:
    • Wind energy conversion property (§ 423.3(54)).
    • Solar energy equipment (§ 423.3(90)).
Solar Development in Iowa has lagged behind other states.

Recent Solar Projects:
- 100 MW Project in Eastern Iowa
  - First Utility Scale Solar Project in Iowa
  - Generating Certificate Issued
  - Construction Ready to Begin
SOLAR

• Four Projects Pending in North Iowa
  • 300 MW in Northeast Iowa – Petition filed
  • 300 MW in North Central Iowa – Petition filed
  • 149 MW in North Central Iowa – Petition filed
  • 250 MW in Northwest Iowa – Petition on hold for now; anticipate will be filed in next few months
CONCLUSION

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