Colstrip: Montana’s Existing Coal Generation Resource

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Introduction

- Talen Montana is operator and part-owner of the Colstrip Steam Electric Station, and through its affiliates, supplies power to a number of customers throughout the state
  - ~360 employees, mostly in Colstrip
  - 50% owner of Colstrip Units 1&2 (307 MW)
  - 30% owner of Colstrip Unit 3 (222 MW)
Current State of Coal Generation

- Electricity generated from coal has furthered economic growth in US for last 70 years
  - In Montana, Colstrip Station has provided safe, reliable, low-cost power since 1970s
    - Colstrip is ~33% of state’s installed generation capacity and ~89% of its installed coal capacity
  - Today, affordable electricity from coal generation enables Montana’s energy-intensive industries, such as mining, refining and manufacturing, to remain competitive

- Coal generation technology has evolved to be more efficient and address environmental needs
  - Newest plants produce more electricity per ton of fuel while employing technologies to limit environmental impact
  - Older plants retrofitted with emission control technologies
    - Technologies to reduce NOx, SO2, Particulates and Mercury are mature
    - Carbon capture technology continues to develop with demonstration projects underway

1Source: S&P Market Intelligence
Current State of Coal Generation (cont’d)

• Over last 7 years, cheap natural gas and environmental concerns have stopped new plant development and driven retirements
  – From 2000-2010, US installed coal generating capacity constant at ~300,000 MW¹
  – Since 2010, capacity down ~15%, or ~45,000 MW¹
  – By 2025, coal generating capacity expected to drop additional 5%, or ~16,000 MW¹

• As the electricity system evolves, it is vital to our economic and national security interests to maintain system reliability and resilience without significantly increasing cost to customers
  – Existing lower-emitting, lower-cost coal plants must continue to be part of our resource mix into the foreseeable future
  – With proper maintenance, Colstrip 3&4 (1,480 MW) will continue to safely and reliably supply Montana’s energy needs for 25 years or more

¹Source: S&P Market Intelligence
Colstrip – Reliable & Resilient

• Utilizing its share of Colstrip (529 MW), Talen Montana can meet the needs of NorthWestern Energy’s customers in a way that others cannot
  – As an existing generator, Colstrip has demonstrated its ability to reliably provide energy, capacity, and ancillary services at reasonable cost
  – Colstrip’s mine-mouth arrangement provides system resilience by mitigating the risk that generation is lost due to fuel supply disruption

• Since it is dispatchable, Talen Montana’s share of Colstrip can provide a variety of products in varying volumes
  – Energy
  – Capacity
  – Ancillary Services
    • Regulation Up/Down
    • Operating reserves (spin/non-spin)
    • Voltage/Reactive Power

![Capacity Factor last 3 years EEI](source: Plant Data, Edison Electric Institute)
Environmental Protection & Safety Excellence

• Since 2000, Colstrip has invested $300 million on environmental protection projects
  – $150 million on water related controls (pond liners, solids disposal, and groundwater remediation)
  – $150 million on air emission controls
    • SO₂ emissions – ↓58%
    • NOx emissions – ↓66%
    • Particulate emissions – ↓61%
    • Mercury emissions – ↓85%

• Colstrip’s emission improvements are evident¹:
  – SO₂ emissions lower than 68% of US coal plants
  – NOx emission lower than 40% of US coal plants
  – CO₂ emissions lower than 40% of US coal plants

• Earlier this year additional NOx controls installed on Unit 3 to further reduce its NOx emissions by 25%

• Colstrip continues to monitor and support development of carbon capture technology, but technology is not yet economically viable

• In July 2017, Colstrip was recognized by OSHA with STAR Status for its efforts as part of the agency’s Voluntary Protection Program (VPP)

¹Source: 2016 Data – U.S. EPA Emissions Database
Benefitting Montana Customers

- As an existing generator, Colstrip already provides significant benefits to Montana customers and the state overall

- **Jobs**
  - Plant employs ~350 people while Rosebud mine employs ~400 people
  - Contractors at the plant will employ as many as 750 people during a major overhaul
  - The plant and adjacent mine combined pay more than $82M/year in compensation and benefits to employees\(^1\)

- **Taxes**
  - During a typical year, Colstrip and Rosebud Mine pay over $70M in state and local taxes\(^1\)
  - Plant and mine employees pay another $6M in state and local taxes\(^1\)

- **Statewide Economic Impact** (if Colstrip was not operating)\(^1\):
  - Loss of more than 3,700 jobs, with nearly 2,700 in the private sector
  - Personal income reduced by ~$360M/year
  - Montana’s net economic output reduced by $638M/year

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Montana Coal Power for Montana Customers

• Talen Montana has a long history of generating electricity for Montana customers and wants to ensure the Colstrip plant continues to operate for many years to come

• We believe it is in the best interests of Montana customers to utilize an existing in-state coal fired resource like Talen Montana’s share of Colstrip to meet future supply needs
  – NorthWestern Energy’s customers will benefit from a dispatchable resource with proven reliability that can provide a variety of products

• From jobs to taxes to affordable electricity, Colstrip Station has provided significant economic benefits to Montana for the last 4 decades and can continue to do so well into the future
  – Ensuring plant continues to operate is best way to support community
  – Requires Montana’s leaders and other stakeholders to support solutions that maintain long-term economic viability of Units 3&4