Montana Energy
Good News – and Challenges

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What one thing about energy is most important to you?

1. Go to pollev.com/bber297 to respond

or,

2. Text BBER297 to 22333 once to join
   Then text your response.
What one thing about energy is most important to you?
In your daily life, what one primary source of energy does it seem you most depend on?
The context

*America is approaching energy independence*
U.S. energy flows
...show production near 90% of consumption

Source: EIA MER
Its an energy revolution… for consumers

U.S. population
million people

GDP per capita
thousand dollars per person

Energy intensity
thousand British thermal units per dollar

Carbon intensity
metric tons CO2 per billion British thermal units

2018 EIA AEO Reference case
Montana energy is about:

- Abundant, diverse resources
- Reliability
- Use and costs
- Economic contributions
- Changing demand dynamics and renewables integration
Montana energy use

Source: EIA 2016 data
Shale revolution continues
*Tight oil plays more efficient*

**Bakken Breakeven**

*Estimates – selected counties*

- Dunn $11
- McKenzie* $12
- Mountrail $12
- Burke $46
- Golden Valley $100
- ND Statewide $13

Source: EIA

3Q 2018 NDIC DMR 11/16/18
Shale revolution

Technology and efficiency are key

Big data
Downhole sensors
Fiber optic communication
Remote, centralized, monitoring
AI
Immediate adjustments
Drilling accuracy and rig efficiency
Fracture improvements
Better water handling and re-use

= Lower costs
Oil & natural gas in Montana
Signs of optimism and stability

Production still down, but with movement

Increased investment interest
Including for enhanced recovery…

Communities seeing improvements
Montana oil & gas (cont’d)…

Monthly Oil Production by County

MT Board of Oil and Gas, 2018 Data
Montana oil & gas (cont’d)…

59 new-well permits by 12/18
35 in all of 2017

Increased investment interest
Montana in top ten E&P places

Communities seeing improvements
Coal in Montana
Challenges for a key sector

Markets

U.S. declines, global increases

U.S. coal consumption (1950-2018) million short tons

- total
- electric power sector

U.S. thermal coal exports to North Asia

- U.S. thermal coal to Japan
- U.S. thermal coal to China
- U.S. thermal coal to South Korea
- U.S. thermal coal to North Asia

Financial Contributions to Counties via Treasure State Endowment Program

Due to Montana Coal Sector

Total Federal Revenue State 2017: $2.2 million
Montana coal (cont’d)…

Production up in 2018

On pace for +3-million tons?

Critical future factors: demand & competition, infrastructure, politics
Renewables in Montana

Exceptional hydro

Montana 5th in production

Excellent wind potential

Growth in capacity; questions

Wind Generation (monthly)

Capacity Factor (monthly)

WindAction: 2017 MT EIA Data
Montana renewables (cont’d)...

Solar and biomass niches

Storage, integration, transmission, challenges and opportunities

Gordon Butte PHS
Montana Energy…

*It’s about meeting the challenges*

Thank you