THE OUTLOOK FOR ENERGY
Montana Energy Industries
Another Difficult Year Ahead

By Terry Johnson
Top Energy Development – CO₂ Emissions

World Top 10 Contributors in 2012

- China, 25%
- United States, 16%
- India, 6%
- Russia, 6%
- Japan, 4%
- Germany, 2%
- Korea, South, 2%
- Saudi Arabia, 2%
- Iran, 2%
- Canada, 2%

All Other 34%

Remainder, 43%

Source: US Energy Information Administration
Top Energy Development – C0₂ Emissions

Growth in C0₂ Emissions 2008 to 2012

China: 38.2%
United States: -9.8%
Iran: 17.9%
Korea, South: 25.9%
Germany: -3.0%
Russia: 9.4%
India: 26.4%
Japan: 3.5%
Saudi Arabia: 38.2%
Canada: -4.1%

Source: US Energy Information Administration
Top Energy Development – CO₂ Emissions

EPA’s Clean Power Plan

• EPA’s final rule for the Clean Power Plan aimed at reducing CO₂ emission rates for power plants released August 3, 2015

• Percentage reduction for Montana mandated by the rule in 2030 is higher than any other state (47% below 2012 baseline for emission rates).

• As a state where targeted coal facilities make up more than 95 percent of fossil fuel electric energy production, easy options for compliance do not exist.

Source: Bureau of Business and Economic Research
Top Energy Development – CO₂ Emissions

EPA’s Clean Power Plan Impact on Colstrip

Source: Bureau of Business and Economic Research
West Texas Intermediate Oil Price

Further Oil Price Declines

Source: US Energy Information Administration
Baker Hughes Oil Rig Count
Oil Rig Count Free Fall

Source: Baker Hughes
US Oil Production
Low Prices & Rigs – Flat Production

Source: US Energy Information Administration
World Oil Trends
Production / Consumption Imbalance

Source: US Energy Information Administration
US Crude Oil Storage Levels
Storage Levels Explode

Source: US Energy Information Administration
US Natural Gas Henry Hub Price Trends
Continued Nat. Gas Price Weakness

Source: US Energy Information Administration
US Natural Gas Production
Weak Prices, Production Accelerates

Year over Year Change Million Cubic Feet

<table>
<thead>
<tr>
<th>Year</th>
<th>Change Million Cubic Feet</th>
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<tbody>
<tr>
<td>2001</td>
<td>0.327</td>
</tr>
<tr>
<td>2002</td>
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<td>2007</td>
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<td>2009</td>
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<td>2010</td>
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<tr>
<td>2011</td>
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<tr>
<td>2012</td>
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<tr>
<td>2013</td>
<td>-0.20</td>
</tr>
<tr>
<td>2014</td>
<td>-0.020</td>
</tr>
</tbody>
</table>

Source: US Energy Information Administration
US Natural Gas Production By State

Marcellus Leads the Way

- **Pennsylvania**: 56.63%
- **Texas**: 3.18%
- **Oklahoma**: 3.76%
- **Louisiana**: 5.32%
- **Alaska**: -1.33%
- **Wyoming**: -1.73%
- **Other**: 0.63%

Average Annual Growth Since 2007

Total US: 3.48%
US Natural Gas Consumption

Nat. Gas Usage Up, Coal Down

Source: US Energy Information Administration
US Coal Production Declining

Source: US Energy Information Administration
US Coal Exports

Coal Exports on the Decline

Source: US Energy Information Administration
US Total Energy Components

Fossil Fuels Down, Renewable Up

Change From 2000 to 2014

-40% -20% 0% 20% 40% 60% 80%

Total Energy: -0.33%
Total Fossil Fuels: -5.19%
Oil: -8.85%
Coal: -20.31%
Natural Gas: 15.38%
Renewables: 58.13%
Nuclear: 5.94%

Source: US Energy Information Administration
US Total Energy Use

Fossil Fuels Still Dominant

Fossil Fuels 81.57%
Nuclear 8.46%
Renewables 9.80%

Hydro 2.51%
Wind 1.76%
Solar 0.43%
Biomass 4.89%
Other 0.22%

Source: US Energy Information Administration
Montana Energy Outlook

Oil, Natural Gas, Coal, Renewables

- Montana Outlook
  - Oil
    - Declining Production
    - Stable Prices Trending Upward
  - Natural Gas
    - Increased Production
    - Prices Remaining at Low Levels
  - Coal
    - Declining Production
    - Stable Prices Trending Downward
  - Renewables
    - Further Development
Questions

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