Global Coal Markets Update – Opportunities for US Coal Exports

John Lowell, Senior Analyst
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The Global and US Coal Markets – a 30,000 foot view

- US demand for power is slowing
  - Annual power growth was as follows:
    - ‘50s: 9.4%, ‘60s: 7.4%, ‘70s: 4.6%, ‘80s: 2.4%, ‘90s: 2.2%, ’00s: 1.1%, ‘10s: -1.3%
  - Renewables and natgas taking market share

- Price and demand volatility likely once inventories drop
  - Will transportation system be able to handle volatility?

- US exports play increasingly significant role
  - Asia is growth market, but not natural partner for US
    - Long haul distance
    - Coking coal quality does not fit as well as with Europe
  - China dominates supply and demand, but other countries play key roles
  - International prices currently high

- US exports are strong after weak 2016
  - Thermal coal prices very high, but backwardated
  - Coking coal prices very volatile, dependent on outside factors
Exports have played an important role for the U.S. coal industry—although that has changed through time:

- That role has become more influential for some regions
- Export price influences domestic prices more in regions where exports are a larger share of the market
- Makes life difficult because the variables affecting this market are greater than the domestic market
- Highlights risks for producers and transporters

Source: U.S. Census and DTC Research
Despite being in shadow of coking coal, thermal coal prices have had a nice run.

Prompt month prices are as follows:
- API2 (coal delivered into Northern Europe) - $84.00/MT
- NEWC (fob Newcastle, Australia) - $100.60/MT
- Capp - $64.75/ton
- PRB 8800 - $12.50/ton
- HCC FOB Australia - $220/MT

NEWC at $80/MT still is profitable for exports.

Atlantic prices supported by supply challenges in Asia and South Africa, and Colombian coal increasingly moving to Asia.

Pacific prices supported by Chinese utility restocking demand paired with increased safety and environmental checks at Chinese mines.
Atlantic Basin Netbacks – U.S. ‘In the Money’

Sources: DTC Research, Evolution Markets, FIS, CME, GlobalCoal, IHS, Lloyd’s List, Tullett Prebon, Coaldesk, AxsMarine, SSY, China Coal Resource
Forward Prices Heavily Backwardated

- API2 and Newcastle curves backwardated for last 18 months
- Spread for Newcastle was $15/MT in April 2017, but has steadily increased to ~$20/MT
- Backwardated strip is good news for coal producers who otherwise would overproduce and destroy price rally
  - Capital is kept at bay
- NEWC at $80/MT still is profitable for exports
US Coal Supply and Demand

- US utility demand expected to decline
- Exports are primary growth driver for US coal demand
  - Coking coal exports expected to rise 14 mm tons to 55 mm tons in 2017, fall to 54 mm in 2018
  - Thermal exports expected to rise 23 mm tons to 42 mm tons in 2017, flat in 2018

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Central App</td>
<td>127.1</td>
<td>116.4</td>
<td>90.0</td>
<td>66.7</td>
<td>79</td>
<td>78</td>
<td>73</td>
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<tr>
<td>Colorado/Utah</td>
<td>41.2</td>
<td>41.9</td>
<td>33.3</td>
<td>26.4</td>
<td>29</td>
<td>31</td>
<td>27</td>
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<td>Illinois Basin</td>
<td>132.2</td>
<td>137.2</td>
<td>123.8</td>
<td>98.4</td>
<td>103</td>
<td>109</td>
<td>106</td>
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<tr>
<td>Northern App</td>
<td>122.5</td>
<td>133.0</td>
<td>115.8</td>
<td>101.9</td>
<td>107</td>
<td>111</td>
<td>108</td>
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<td>Powder River (WY, MT)</td>
<td>430.2</td>
<td>440.2</td>
<td>417.6</td>
<td>329.8</td>
<td>352</td>
<td>351</td>
<td>355</td>
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<tr>
<td>Other Regions</td>
<td>131.6</td>
<td>131.3</td>
<td>116.4</td>
<td>105.0</td>
<td>104</td>
<td>97</td>
<td>96</td>
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<tr>
<td><strong>Total U.S. Production</strong></td>
<td><strong>984.8</strong></td>
<td><strong>1000.0</strong></td>
<td><strong>897.0</strong></td>
<td><strong>728.2</strong></td>
<td><strong>774</strong></td>
<td><strong>777</strong></td>
<td><strong>765</strong></td>
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<tr>
<td>Waste Coal</td>
<td>11.3</td>
<td>12.1</td>
<td>9.9</td>
<td>9.2</td>
<td>9</td>
<td>8</td>
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<tr>
<td>Imports</td>
<td>8.9</td>
<td>11.3</td>
<td>11.3</td>
<td>9.9</td>
<td>8</td>
<td>8</td>
<td>8</td>
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<tr>
<td><strong>Total Supply</strong></td>
<td><strong>1005.0</strong></td>
<td><strong>1023.5</strong></td>
<td><strong>918.2</strong></td>
<td><strong>747.3</strong></td>
<td><strong>791</strong></td>
<td><strong>793</strong></td>
<td><strong>781</strong></td>
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<tr>
<td>Utilities</td>
<td>858.0</td>
<td>851.6</td>
<td>738.4</td>
<td>677.3</td>
<td>668</td>
<td>666</td>
<td>655</td>
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<tr>
<td>Coking Coal-Domestic</td>
<td>21.5</td>
<td>21.3</td>
<td>19.7</td>
<td>16.5</td>
<td>18</td>
<td>19</td>
<td>19</td>
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<td>Industrial</td>
<td>43.1</td>
<td>42.9</td>
<td>38.5</td>
<td>34.6</td>
<td>34</td>
<td>33</td>
<td>31</td>
</tr>
<tr>
<td>Residential/Comm.</td>
<td>2.0</td>
<td>1.9</td>
<td>1.5</td>
<td>1.2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Exports-Coking Coal</td>
<td>65.7</td>
<td>60.1</td>
<td>46.3</td>
<td>41.3</td>
<td>55</td>
<td>54</td>
<td>46</td>
</tr>
<tr>
<td>Exports-Thermal</td>
<td>52.0</td>
<td>37.2</td>
<td>28.0</td>
<td>18.9</td>
<td>42</td>
<td>42</td>
<td>35</td>
</tr>
<tr>
<td><strong>Total Exports</strong></td>
<td><strong>117.7</strong></td>
<td><strong>97.3</strong></td>
<td><strong>74.3</strong></td>
<td><strong>60.3</strong></td>
<td><strong>97</strong></td>
<td><strong>96</strong></td>
<td><strong>81</strong></td>
</tr>
<tr>
<td><strong>Total Demand</strong></td>
<td><strong>1042.1</strong></td>
<td><strong>1015.0</strong></td>
<td><strong>872.4</strong></td>
<td><strong>789.8</strong></td>
<td><strong>818</strong></td>
<td><strong>815</strong></td>
<td><strong>787</strong></td>
</tr>
</tbody>
</table>

Source: DTC Monthly Update
US Thermal Coal Exports by Destination

- Exports to Europe have always been reliable due to geography and quality
  - Nearly half of US thermal exports were to Europe
- Exports to Asia are important for western thermal (PRB and Rocky Mountain coal) and met
  - West Coast exports, important for thermal, is limited by port access
US Met Coal Exports by Destination

- Natural market: Europe
  - Transportation advantage
  - Quality fit with blast furnaces
  - Stable to declining market with few growth prospects
- Growth market: Asia

Sources: US Census and DTC Research

met Coal Exports by Destination

2017: 46% Europe, 28% Asia, 9% North America, 15% Other Europe
2016: 45% Europe, 27% Asia, 11% North America, 17% Other Europe

million short tons
Europe

- Key importer of US coal
- Weak growth forecast
- EU stockpiles at normal levels
- SCoTA (Standard Coal Trading Agreement) favors higher CV coal
  - Opportunity for ILB coal, but high sulfur must be blended to meet standards
  - Blending can be done at export terminal, receiving terminal or at plant
  - Approx. 2 tons of low sulfur Russian coal blended with 1 ton of ILB yields product that works in European boilers
  - High sulfur ILB coal faces penalty of approx. $15-$20/ton compared to API2 price
- Ukraine production down 9% to 23.6 mm MT in 2017
  - 0.7 mm MT will be imported from US
  - 99% of thermal and 80% of coking coal currently imported from Russia
- Long-standing relationships between US and Europe
- High-vol coal in demand in Europe
- Australia making inroads into Europe
China

- China imported over 271 mm MT during ‘17 (of which approximately 196 mm MT was seaborne thermal)
  - Largest supply of seaborne thermal originates in Indonesia followed by Australia and Russia
- Imports make up gap between domestic production and consumption
  - Imports make up <10% of Chinese demand, but account for roughly 20% of global trade
- China is not a major buyer of US coal but the secondary effect it has on global trade is critical

Source: China Coal Daily
India

- Coal India produced 384 mm MT (Apr-Dec ‘17, first nine months of current financial year), 6% below plan, likely to miss 600 mm MT production goal by > 50 mm MT
- Power station stocks averaged nine days of burn in December – up from six days in the year prior
- Thermal coal imports down 6% to 137 mm MT for 2017
  - Monsoon and high prices kept foreign coal out
  - Private generators awaiting drop in price due to fixed tariffs on power purchase agreements
  - Gov’t-owned plants told to not take imports
- Top 3 coking coal importer
- Domestic transportation constraints
- Approaching rapid steel growth phase
- 60% of steel production with EAF
Indonesia

- Largest supplier of thermal coal
  - Mostly to China and India
- Official target was 477 mm MT
  - Heavy rains all year
  - Despite weather, production grew 1.5% YoY to 462 mm MT in 2017
- Domestic Market Obligation (DMO)
  - 121 mm MT in 2017
  - 240 mm MT in 2024
- 35 GW of new capacity coming online
- Rising domestic coal demand will reduce coal available for export
  - 365 mm MT estimated as exported in 2017
  - 160 mm MT forecasted to export in 2024

<table>
<thead>
<tr>
<th>Targeted vs Actual Indonesian Coal Production (mm MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Target</td>
</tr>
<tr>
<td>Actual</td>
</tr>
<tr>
<td>Export</td>
</tr>
<tr>
<td>Domestic</td>
</tr>
</tbody>
</table>

2017 revised production target, original target was 413 mm MT
Actual and domestic figures for 2017 provided by Platts, DTC estimate for exports
Colombia

- Repositioning of Sales
  - Western Europe viewed as a declining market
    - Diverting SCoTA - quality shipments away from Europe
  - Turkey is the largest importer of Colombian coal followed by Mexico
  - US imports coal from Colombia – primarily in the Southern Company system
  - Exports to Asia increasing especially into S. Korea

- Heavy rains in ‘17 hampered output
- Mines are dealing with lower-grade seams
Australia

- Supplied 372 mm MT of seaborne coal exports in 2017, down 5% YoY
- Exports were 46% coking, 54% thermal
  - ~65% annual world seaborne coking coal trade
- Coal export infrastructure fragile, Cyclone Debbie knocked out ~13.3 mm tons of production along Aurizon rail network
- Labor issues continue to emerge
- Strong AUS dollar hurts producers
U.S. Gulf Coast & East Coast Coal Exports

- Thermal exports increased sharply in 2017 due to relative competitiveness of high heat, high sulfur coals via Baltimore and New Orleans.
- Conditions on Ohio and Mississippi Rivers challenged coal export movements in 2017.
- Met export growth in 2017 favored rail-served loadports.

<table>
<thead>
<tr>
<th>Product / Loadport</th>
<th>2017</th>
<th>2016</th>
<th>YoY Δ</th>
</tr>
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<tbody>
<tr>
<td>Thermal</td>
<td></td>
<td></td>
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<tr>
<td>Baltimore</td>
<td>12.63</td>
<td>6.92</td>
<td>82.6%</td>
</tr>
<tr>
<td>New Orleans</td>
<td>12.42</td>
<td>5.24</td>
<td>137.0%</td>
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<tr>
<td>Hampton Roads</td>
<td>7.63</td>
<td>2.32</td>
<td>229.0%</td>
</tr>
<tr>
<td>Houston</td>
<td>0.54</td>
<td>0.05</td>
<td>914.0%</td>
</tr>
<tr>
<td>Mobile</td>
<td>0.01</td>
<td>0.96</td>
<td>-99.0%</td>
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<tr>
<td>Thermal Subtotal</td>
<td>33.23</td>
<td>15.33</td>
<td>116.8%</td>
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<tr>
<td>Metallurgical</td>
<td></td>
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<tr>
<td>Hampton Roads</td>
<td>27.28</td>
<td>19.66</td>
<td>38.8%</td>
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<tr>
<td>Mobile</td>
<td>9.52</td>
<td>6.14</td>
<td>55.0%</td>
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<tr>
<td>Baltimore</td>
<td>7.95</td>
<td>7.62</td>
<td>4.4%</td>
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<tr>
<td>New Orleans</td>
<td>0.19</td>
<td>0.57</td>
<td>-66.8%</td>
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<tr>
<td>Metallurgical Subtotal</td>
<td>44.94</td>
<td>34.00</td>
<td>32.2%</td>
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<tr>
<td>Total</td>
<td>78.17</td>
<td>49.32</td>
<td>58.5%</td>
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</table>

Source: T. Parker Host Inc
Thermal Coal Exports via New Orleans

- Midstreaming provided 2017 flex capacity
- Spain, India and North Africa diversified thermal trade out of New Orleans

<table>
<thead>
<tr>
<th>Destination</th>
<th>2017 (mm short tons)</th>
<th>2017 (Share)</th>
<th>2016 (mm short tons)</th>
<th>2016 (Share)</th>
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<tbody>
<tr>
<td>Netherlands</td>
<td>4.5</td>
<td>36.0%</td>
<td>3.4</td>
<td>65.5%</td>
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<tr>
<td>United Kingdom</td>
<td>1.3</td>
<td>10.3%</td>
<td>0.1</td>
<td>2.3%</td>
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<tr>
<td>Germany</td>
<td>1.2</td>
<td>9.4%</td>
<td>0.8</td>
<td>15.9%</td>
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<tr>
<td>India</td>
<td>1.0</td>
<td>8.3%</td>
<td>0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Spain</td>
<td>1.0</td>
<td>8.3%</td>
<td>0.2</td>
<td>3.5%</td>
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<tr>
<td>Morocco</td>
<td>0.8</td>
<td>6.4%</td>
<td>0.0</td>
<td>0.0%</td>
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<tr>
<td>Mexico</td>
<td>0.4</td>
<td>3.6%</td>
<td>0.1</td>
<td>2.5%</td>
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<tr>
<td>Egypt</td>
<td>0.4</td>
<td>3.3%</td>
<td>0.0</td>
<td>0.0%</td>
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<tr>
<td>Poland</td>
<td>0.3</td>
<td>2.0%</td>
<td>0.0</td>
<td>0.0%</td>
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<tr>
<td>Jamaica</td>
<td>0.2</td>
<td>1.4%</td>
<td>0.0</td>
<td>0.7%</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td><strong>11.1</strong></td>
<td><strong>89.2%</strong></td>
<td><strong>4.7</strong></td>
<td><strong>90.4%</strong></td>
</tr>
<tr>
<td>Rest of World</td>
<td>1.3</td>
<td>10.8%</td>
<td>0.5</td>
<td>9.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12.4</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>5.2</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Source: T. Parker Host Inc

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New Orleans Thermal Exports in 2018

- **Supply**
  - U.S. producers have publicly made clear importance of exports in production plans for 2018
  - Potential strike in Colombia at Cerrejon (last strike in Feb. ‘13 lasted 32 days)

- **Demand**
  - Turkey may raise sulfur cap on imports opening market to ILB coal
  - India pet coke restrictions may result in greater opportunities for ILB coal

- **International Pricing**
  - Pricing supports exports in first half, will have to see about second half of 2018
Summary

- Strong international demand, but weak domestic demand for coking coal and thermal coal
  - Asia continues to show demand strength with declining exports from key producers
    - Lack of western US terminal capacity hurts western producers
  - European demand is relatively weak, but is natural consumer for US coal
    - High sulfur blended with low sulfur

- Weak capital investment in new production
  - Wall St favors US dividends and buybacks, but does not reward growth
  - Reduced CAPEX – equipment, high grading, maintenance, labor
  - New mine development – limited at this time
  - Current ownership more focused on returns and providing value to shareholders

- Backwardated price curve

- Increased volume volatility will be difficult for production/transportation chain to absorb

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