2013 Appalachian Ohio
State of the Region

Scott Rotruck
Vice President - Corporate Development & Government Relations
Chesapeake Energy
America’s Shale Bounty

Appalachian Ohio State of the Region
06/04/2013
Producing American Energy

There are currently 1764 rigs drilling for oil and gas in the United States*

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>1410</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>354</td>
</tr>
</tbody>
</table>

The majority are applying modern directional drilling techniques:

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional</td>
<td>232</td>
</tr>
<tr>
<td>Horizontal</td>
<td>1089</td>
</tr>
<tr>
<td>Vertical</td>
<td>450</td>
</tr>
</tbody>
</table>

* Baker Hughes Rig Count Summary 05/31/13
Shale Development on the Rise

EIA projections predict shale gas will be the dominant source of natural gas production for decades to come.

Source: EIA Annual Energy Outlook 2013
### State-by-State Operations

<table>
<thead>
<tr>
<th>State</th>
<th>Rig Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio</td>
<td>32</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>58</td>
</tr>
<tr>
<td>West Virginia</td>
<td>23</td>
</tr>
</tbody>
</table>

*Appalachian Ohio State of the Region 06/04/2013*

*Baker Hughes Rotary Rigs Running by State 05/31/13*
In West Virginia, shale development is concentrated in the north-central and northern panhandle portions of the state.

From Wetzel County up through the panhandle, operators are focusing on “wet” gas containing natural gas liquids like propane, ethane, and butane.

Source: West Virginia DEP 06/03/2013

Appalachian Ohio State of the Region
06/04/2013
Shale gas development in southwestern Pennsylvania is concentrated in Washington, Greene, Fayette, Westmoreland, and Butler Counties.

In addition, operators are tapping the Utica formation in Pennsylvania's Beaver County.
2012 production reports were submitted to the ODNR for 85 wells in the Utica formation

- 11 operators
- 18 counties
- Activity is currently concentrated in Carroll, Harrison, Guernsey, Noble, and Columbiana counties
- Downstream opportunities extend well beyond the active drilling region

*ODNR - 2012 Utica Shale Production 05/23/13
63 wells produced commercial volumes of oil and gas:

- 12,831,292 mcf natural gas - ~16% of Ohio’s Natural gas production
- 635,876 barrels oil (1 barrel = 42 US gallons) - ~12% of Ohio’s oil production

*ODNR - 2012 Utica Shale Production 05/23/13
Where’s the Gas Going? (US figures)

Figure 85. Natural gas consumption by sector, 1990-2040 (trillion cubic feet)

Source: EIA Annual Energy Outlook 2013
Fueling Industry Growth

EIA projections show an increased reliance on natural gas, NGLs, and renewables in the industrial sector over the next few decades.
Powering a Growing Nation

Natural gas and renewables are projected to experience the sharpest rise in use as an electricity generation fuel by 2040.
Providing an Alternative to Conventional Fuel

- CNG offers a clean-burning, affordable and homegrown alternative to conventional fuels
- CNG is safer to use than conventional fuels
- CNG typically costs ~50% less than gasoline and diesel
  - Quasar station in Zanesville - $2.25**
  - CNG Trans in Columbus - $1.89**
- CNG emits ~90% fewer emissions than gasoline

Source: CNGNow 06/03/2013
** CNGNow Fuel Finder 06/03/2013
EIA projections show a dramatic increase in the use of natural gas in the Heavy-Duty truck market.

Heavy-Duty trucks typically employ Liquefied Natural Gas (LNG).
As companies seek affordable fueling methods and comply with air emissions standards, more and more fleets are converting to natural gas.
Putting the Region’s Fuel to Work in the Transportation Sector - CNG/LNG

Fleets Adopting CNG/LNG
Shale Development Supports Local Jobs

**Direct Jobs**
- **120 New Jobs**
  - Ken Miller Supply
  - Wooster, Ohio

- **160 New Jobs**
  - US Steel
  - Lorain, Ohio

- **449 New Jobs**
  - Republic Steel
  - Lorain, Ohio

- **100 New Jobs**
  - BP
  - Warren, Ohio

- **700 New Jobs**
  - Baker Hughes
  - Massillon, Ohio

- **100 New Jobs**
  - Pipe Co.
  - Canton, Ohio

- **300 New Jobs**
  - Ariel Corp
  - Mt. Vernon, Ohio

- **100 New Jobs**
  - Kelchner
  - Dayton, Ohio

- **45 New Jobs**
  - CESO
  - Dayton, Ohio

- **300 New Jobs**
  - Halliburton
  - Zanesville, Ohio

- **145 New Jobs**
  - Tremcar
  - Dover, Ohio

**Indirect Jobs**

- **508 Jobs Saved**
  - USC Steel
  - Lorain, Ohio

- **489 Jobs Saved**
  - Republic Steel
  - Lorain, Ohio

- **100 Jobs Saved**
  - V&M Star
  - Youngstown, Ohio

- **350 Jobs Saved**
  - Weatherford
  - Youngstown, Ohio

- **> 650 Jobs Saved**
  - Chesapeake Energy
  - Louisville, Ohio

- **250 New Jobs**
  - Schlumberger
  - New Philadelphia, Ohio

Appalachian Ohio State of the Region
06/04/2013
Shale Development Supports Local Jobs

<table>
<thead>
<tr>
<th>Ohio Employment Contribution by State and Industry: Total Unconventional Activity</th>
<th>2012</th>
<th>Direct</th>
<th>Indirect</th>
<th>Induced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative &amp; Support Services</td>
<td>0</td>
<td>1,355</td>
<td>1,261</td>
<td>2,616</td>
<td></td>
</tr>
<tr>
<td>Professional, Scientific, &amp; Technical Services</td>
<td>21</td>
<td>1,575</td>
<td>981</td>
<td>2,578</td>
<td></td>
</tr>
<tr>
<td>Food Services &amp; Drinking Places</td>
<td>0</td>
<td>347</td>
<td>1,669</td>
<td>2,016</td>
<td></td>
</tr>
<tr>
<td>Fabricated Metal Product Manufacturing</td>
<td>153</td>
<td>1,593</td>
<td>229</td>
<td>1,976</td>
<td></td>
</tr>
<tr>
<td>Machinery Manufacturing</td>
<td>1,386</td>
<td>409</td>
<td>51</td>
<td>1,846</td>
<td></td>
</tr>
<tr>
<td>Primary Metal Manufacturing</td>
<td>515</td>
<td>1,004</td>
<td>77</td>
<td>1,596</td>
<td></td>
</tr>
<tr>
<td>Wholesalers</td>
<td>0</td>
<td>822</td>
<td>724</td>
<td>1,546</td>
<td></td>
</tr>
<tr>
<td>Ambulatory Health Care Services</td>
<td>0</td>
<td>0</td>
<td>1,204</td>
<td>1,205</td>
<td></td>
</tr>
<tr>
<td>Management of Companies &amp; Enterprises</td>
<td>0</td>
<td>836</td>
<td>354</td>
<td>1,190</td>
<td></td>
</tr>
<tr>
<td>Real Estate</td>
<td>0</td>
<td>333</td>
<td>800</td>
<td>1,132</td>
<td></td>
</tr>
<tr>
<td>Oil and Gas Extraction</td>
<td>1,006</td>
<td>44</td>
<td>13</td>
<td>1,064</td>
<td></td>
</tr>
<tr>
<td>Hospitals</td>
<td>0</td>
<td>0</td>
<td>1,037</td>
<td>1,037</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>208</td>
<td>609</td>
<td>192</td>
<td>1,009</td>
<td></td>
</tr>
<tr>
<td>Nursing &amp; Residential Care Facilities</td>
<td>0</td>
<td>0</td>
<td>741</td>
<td>741</td>
<td></td>
</tr>
<tr>
<td>Insurance Carriers &amp; Related Activities</td>
<td>22</td>
<td>109</td>
<td>572</td>
<td>703</td>
<td></td>
</tr>
<tr>
<td>All Other Industries</td>
<td>897</td>
<td>4,565</td>
<td>11,115</td>
<td>16,577</td>
<td></td>
</tr>
<tr>
<td>State Total</td>
<td>4,210</td>
<td>13,601</td>
<td>21,020</td>
<td>38,830</td>
<td></td>
</tr>
</tbody>
</table>

*Independent study by IHS - Released December, 2012

Research supported by the American Petroleum Institute, the Institute for 21st Century Energy, the American Chemistry Council, America’s Natural Gas Alliance and the Natural Gas Supply Association
Questions?