U.S. Natural Gas Supply: A View from the Potential Gas Committee

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Proved Reserves vs Resources

- Known gas reservoirs
- Existing economic conditions
-Existing operating conditions

- Discovered
- Undiscovered
- Effects of technology
Figure 10. U.S. wet natural gas proved reserves, 1982-2012

Figure 3. Proved reserves of the top five U.S. gas reserve states, 2007-12

Note: Includes natural gas plant liquids.
Figure 13. Proved shale gas reserves of the top six U.S. shale gas states, 2007-12

Classic Shale-Gas Systems of the US: Where Significant Production Began

The Site of the First Gas Well in the United States. Lighted in Honor of General Lafayette’s Visit, June 4, 1825

Modified from Hill and Nelson, 2000
Potential Supply of Natural Gas in the United States

Report of the Potential Gas Committee
(December 31, 2012)

Washington, D.C.
April 9, 2013
Potential Gas Committee:

100 Volunteer Geoscientists & Petroleum Engineers

Biennial Assessment - since 1964 – of the Technically Recoverable U. S. Natural Gas Endowment

PGC + EIA Proved Reserves = Potential Future Supply
Natural Gas Resource Assessment of the Potential Gas Committee, 2013 (mean values)

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Gas Resources</td>
<td>2,225.6 Tcf</td>
</tr>
<tr>
<td>Coalbed Gas Resources</td>
<td>158.2 Tcf</td>
</tr>
<tr>
<td>Total U.S. Gas Resources</td>
<td>2,383.9 Tcf</td>
</tr>
<tr>
<td>Proved Reserves (EIA)*</td>
<td>322.7 Tcf</td>
</tr>
<tr>
<td>Future Gas Supply</td>
<td>2,706.6 Tcf</td>
</tr>
</tbody>
</table>

Totals are subject to rounding.

* Latest available value (wet gas), year-end 2012
PGC Resource Assessments, 1990-2012

Total Potential Gas Resources (Mean Values)

Data source: Potential Gas Committee (2013)
Some Elements of a Successful Shale Gas Play

- Organic Richness
- Maturation
- Gas-In-Place
- Permeability
- Pore Pressure
- Brittleness
- Mineralogy
- Thickness

Productivity
Regional Resource Assessment

U.S. Traditional (mean)* 2,225.6 Tcf
U.S. Coalbed (mean)* 158.2 Tcf
Grand Total U.S. (mean) 2,383.9 Tcf

Data source: Potential Gas Committee (2013) * Separately aggregated from all province data.
### PGC Resource Assessment 2012

**Total Traditional Resources (mean values) by category**

<table>
<thead>
<tr>
<th>Category</th>
<th>Year-end 2010 (Tcf)</th>
<th>Year-end 2012 (Tcf)</th>
<th>Total Traditional* (Tcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probable</td>
<td>536.6</td>
<td>708.5</td>
<td>1,739.2</td>
</tr>
<tr>
<td>Possible</td>
<td>687.7</td>
<td>952.3</td>
<td>2,225.6</td>
</tr>
<tr>
<td>Speculative</td>
<td>518.3</td>
<td>558.7</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,500,000</strong></td>
<td><strong>2,500,000</strong></td>
<td><strong>2,500,000</strong></td>
</tr>
</tbody>
</table>

*Total values are separately aggregated, not arithmetically additive.*

Data source: Potential Gas Committee (2013)
Total Traditional Resources (mean values) by category

Probable (existing fields) 708.5 Tcf
Possible (new fields) 952.3 Tcf
Speculative (frontier) 558.7 Tcf
Total* 2,225.6 Tcf

* Separately aggregated value.

Data source: Potential Gas Committee (2013)
Total Coalbed Gas Resources (mean values) by category

Data source: Potential Gas Committee (2013)
Total Coalbed Gas Resources (mean values) by category

- Probable (existing fields): 14.2 Tcf
- Possible (new fields): 48.3 Tcf
- Speculative (frontier): 95.8 Tcf
- Total**: 158.2 Tcf

* Total values are separately aggregated, not arithmetically additive.

Data source: Potential Gas Committee (2013)
Influences on Future Gas Supply

Resource Base

Environmental Issues

Skilled Workforce

Technology

Pipeline Capacity

Gas Price

Regulatory & Land Issues

Rig Availability

Sufficient Supply to Meet Demand