U.S. Chemicals in a Global Context
Shifting Dynamics & Impact

CSG Natural Gas Policy Academy

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Petrochemicals are a key link in the consumer product value chain - The Wellhead to Wal-Mart

American Consumers

Energy

Petrochemicals

Retail

U.S. Petrochemicals

Intermediates

Finished Goods

Consumers

Retail Intermediates

Energy Intermediates

U.S. Petrochemicals

Finished Goods
A variety of petrochemicals & end products are produced from energy—e.g. Polyethylene

**LDPE**
- Clarity Films
- Extrusion Coating
- Shrink Wrap

**LLDPE**
- Trash Bags
- Stretch Film
- Rotational Molding

**HDPE**
- Bottles
- Pipe
- Buckets, Pails, Crates
- Grocery Bags
The petrochemical industry interacts with a broad base of leading entities
Shale has dramatically changed global manufacturing competitiveness

- Shale is expected to nearly halve USGC natural gas prices in 2015 vs. 2005 levels while increased LNG has raised APAC.

- Corresponding electricity prices also substantially reduced for U.S. industrial consumers.

- Other regions see increases; in Germany legislation has dramatically increased electricity costs.

### Fuel, $/MMBTU

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2015</th>
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<tbody>
<tr>
<td>U.S.</td>
<td>8.28</td>
<td>4.20</td>
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<tr>
<td>China</td>
<td>13.90</td>
<td>14.12</td>
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<tr>
<td>Germany</td>
<td>19.60</td>
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<tr>
<td>Japan</td>
<td>5.97</td>
<td>10.82</td>
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### Electricity (¢/kw-hr)

<table>
<thead>
<tr>
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<th>2015</th>
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</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>China</td>
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<tr>
<td>Germany</td>
<td>0.15</td>
<td>0.20</td>
</tr>
<tr>
<td>Japan</td>
<td>0.09</td>
<td>0.12</td>
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Driven by shale, US capital investment surges as the rest of the world slows
Off-shoring Trend is Slowing or Reversing

WE'RE INVESTING IN AMERICAN JOBS
Over the next 10 years, Walmart is investing $250 billion in products that support American jobs.

Investing in American Jobs
At Walmart, we believe in making a difference on the issues our customers and communities care about. We believe we can create more American jobs by supporting more American manufacturing. Jump-starting the manufacturing industry and rebuilding the middle class requires a national effort by companies, industry leaders, lawmakers and others.

Together, we can help spark a revitalization of U.S.-based manufacturing. By making a commitment to manufacturing in America, we can further support a strong, thriving American economy.
Closing Observations

- The U.S. Petrochemical Industry is a strategic supplier of materials impacting our daily lives
- A decline in America’s share of global petrochemical production has been reversed by our advancements in shale oil and gas fields
- Companies transforming petrochemicals into finished goods turned to offshore locations for new plants to supply the U.S. market – now, they are investing here
- Development of a U.S. low-cost position in global petrochemical markets is a game-changing event