Retirements, Repowering and New Construction: The Expected Impact on Coal and Natural Gas Demand

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Recent Events

- NIPSCO announces shutdown of Mitchell Generating Station (December 2001)
- Indiana Utility Regulatory Commission approves Cinergy’s plan to convert Noblesville Generating Station from coal to natural gas (December 2001)
- According to the Indianapolis Star, Indianapolis Power & Light is considering the fate of its Eagle Valley Generating Station, formerly known as Pritchard (April 2, 2002)
Other Events

- In late 1990s, Cinergy buys out coal gasification contract at Wabash River Repowering Project; switches from gasified coal to natural gas

- In 1993, American Electric Power retires Breed Generating Station

- In late 1990s, IPALCO retires Perry Generating Station from producing electricity (still makes steam)

- The last 3 years has seen a large number of new natural gas-fired plants coming on-line
Causes of Retirements/Repowering

- Environmental regulations
  - $\text{SO}_2$, $\text{NO}_x$, mercury
  - New source review

- Age of plants
  - Maintenance costs
  - Efficiency
Characteristics of Affected Plants

- Old
- Small
- Not equipped with SO$_2$ removal system
- Entire station retired or retrofitted, not just individual units
Are There Other Plants with Similar Characteristics?

- **Eagle Valley**
  - All units installed in the 1950s
  - All units less than 100 MWs

- **Edwardsport**
  - Units installed in 1940s and 1950s
  - All units less than 100 MW

- Other stations have a mix of older, smaller and relatively newer/larger units
Coal-fired Generating Capacity by Decade Installed

<table>
<thead>
<tr>
<th>Decade</th>
<th>MW</th>
<th># of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940s</td>
<td>45</td>
<td>1</td>
</tr>
<tr>
<td>1950s</td>
<td>1937</td>
<td>20</td>
</tr>
<tr>
<td>1960s</td>
<td>2415</td>
<td>10</td>
</tr>
<tr>
<td>1970s</td>
<td>6799</td>
<td>17</td>
</tr>
<tr>
<td>1980s</td>
<td>4373</td>
<td>9</td>
</tr>
</tbody>
</table>
Characteristics of Coal Burned at Affected Plants

- Mitchell: low Btu/sulfur
- Noblesville: high Btu/sulfur
- Wabash River Repowering: high Btu/sulfur
- High Btu/sulfur coal is typical of Illinois Basin, low Btu/sulfur coal is typical of western U.S.
How Will This Affect Coal Consumption?

- Indiana ranks #2 in the nation in the amount of coal consumed by electric utilities.
- Only 45% of the coal comes from Indiana (many plants use low sulfur coal from other sources for some or all of their needs).
- Affected plants do not have SO\textsubscript{2} scrubbers; therefore, repowering/retrofit should loosen emission allowance market.
## Coal Consumed in 2000

<table>
<thead>
<tr>
<th>Location</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of Indiana</td>
<td>70.6 million tons</td>
</tr>
<tr>
<td>Electric Utilities</td>
<td>57.7 million tons</td>
</tr>
<tr>
<td>Mitchell</td>
<td>1.124 million tons</td>
</tr>
<tr>
<td>Noblesville</td>
<td>207 thousand tons</td>
</tr>
<tr>
<td>Wabash River Repowering</td>
<td>124 thousand tons</td>
</tr>
</tbody>
</table>
Possible Future Threats

- Equipment failure

- Environmental
  - Triggering new source review
  - Future restrictions (mercury, particulates, additional SO\textsubscript{2} or NO\textsubscript{x}, CO\textsubscript{2})
What Caused the Recent Rush to Natural Gas?

- State (and region) has been long on baseload capacity and short on peaking capacity
- Fear of deregulation and stranded costs made utilities avoid large investments
- Price spikes of 1998 and 1999 brought new players to the market (merchant plants)
- All of the above favor new generation that is low construction cost/high operating cost (natural gas) over high construction cost/low operating cost (coal)
## Indiana Merchant Plant Activity

<table>
<thead>
<tr>
<th># of Plants</th>
<th>Proposed/ Pending Approval</th>
<th>Approved/ Under Construction</th>
<th>In Operation</th>
<th>Simple Cycle Gas</th>
<th>Combined Cycle Gas</th>
<th>Coal</th>
<th>Other</th>
<th>Total MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>3340</td>
<td>5738</td>
<td>1961</td>
<td>4071</td>
<td>6418</td>
<td>550</td>
<td>0</td>
<td>11039</td>
</tr>
</tbody>
</table>
Increase in Gas Consumption from Merchant Plants

Billions of Cubic Feet

Year

1987 1989 1991 1993 1995 1997 1999 2001 2003 2005

All Plants
Approved Plants
Existing Plants
No New Plants
Historical Consumption in Indiana

Natural Gas (Bcf)

Coal (Million Tons)
Will There Be New Coal-fired Plants?

- Illinois and Kentucky have established tax incentives and/or low interest loans for new coal-fired plants.
- Indiana has established the potential for an increased return on investment for new coal plants (Senate Enrolled Act 29).
- SUFG has identified a need for new baseload capacity (2001 forecast).
- Some utilities expressed an interest in new coal plants in their presentations to the Indiana Utility Regulatory Commission this week.
- Uncertainty over future environmental regulation is a concern.