Indiana Energy Status:
A View From 30,000 Feet

presented to
Indiana Chamber of Commerce
June 15, 2010

presented by
Doug Gotham
State Utility Forecasting Group
Data Sources

- Bureau of Economic Analysis (Commerce)
  - gross domestic product
- Bureau of Labor Statistics (Labor)
  - Employment
- Energy Information Administration (Energy)
  - electricity prices, electricity sales, fuel prices
Indiana
An Industrial State with Relatively Low Cost Electricity

<table>
<thead>
<tr>
<th>Sector</th>
<th>U.S. lowest price rank</th>
<th>U.S. highest sales rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Commercial</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>Industrial</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>
2008 Industrial Demand as Percentage of Total
Impacts of the Economy

• The industrial sector tends to be the most sensitive to economic ups and downs

• Unfortunately, state-specific data for 2009 is generally not available yet
Changes in Indiana Electricity Sales from 2007 to 2008

- Residential sector: -1.9%
- Commercial sector: -0.8%
- Industrial sector: -3.2%
- Total: -2.2%
Was it the Economy?

- Indiana Gross Domestic Product dropped by 0.6% from 2007 to 2008
- But the summer of 2008 was considerably cooler than 2007, which affected electricity demand
  - Cooling degree days in Indianapolis dropped by 30% from 2007
Manufacturing Employment

• Indiana manufacturing employment dropped by 5 percent from 2007 to 2008
• Also dropped an additional 15.6 percent from September 2008 to September 2009
• But manufacturing employment has been dropping for several years
Indiana Total Electricity Sales vs. Selected Drivers

- Real GDP
- Mfg employment
- Electricity sales
2009 – Effects were More Pronounced

• Economic impact largely confined to last quarter of 2008
• Economic impact was felt across all 4 quarters of 2009
• The summer of 2009 was even milder
  – cooling degree days were down another 11% from 2008
Anecdotally

- Sales for 2009 were below 2008
- Sales for 2010 have been generally higher than they were in 2010
  - likely due to a combination of weather and economic factors
Nationally
U.S. Gross Domestic Product (trillions of 2005 dollars)
### Annual Change in U.S. Electricity Sales

<table>
<thead>
<tr>
<th>Category</th>
<th>2007-08</th>
<th>2008-09</th>
</tr>
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<tbody>
<tr>
<td>Industrial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2007-08</td>
<td>-1.8%</td>
<td></td>
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<tr>
<td>- 2008-09</td>
<td>-12.6%</td>
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<tr>
<td>Commercial</td>
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<tr>
<td>- 2007-08</td>
<td>0%</td>
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<tr>
<td>- 2008-09</td>
<td>-1.0%</td>
<td></td>
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<tr>
<td>Residential</td>
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<tr>
<td>- 2007-08</td>
<td>-0.9%</td>
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<tr>
<td>- 2008-09</td>
<td>-1.2%</td>
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<tr>
<td>Total</td>
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<tr>
<td>- 2007-08</td>
<td>-0.8%</td>
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<tr>
<td>- 2008-09</td>
<td>-4.2%</td>
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</table>
U.S. Retail Industrial Electricity Sales (TWh)
U.S. Retail Residential Electricity Sales (TWh)
U.S. Retail Commercial Electricity Sales (TWh)

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

2007: [Bars for each month]
2008: [Bars for each month]
2009: [Bars for each month]
EIA May Short-Term Outlook

• U.S. industrial electricity sales increased by an estimated 2.7% in the 1st quarter of 2010 relative to the 1st quarter of 2009
  – first year-to-year increase since 2008
EIA May Short-Term Outlook

- EIA projects U.S. total electricity consumption to increase by 2.7% in 2010 and again by 1.3% in 2011
  - note: sales and consumption are not interchangeable, but they do tend to follow each other closely
Fossil Fuels
Natural Gas Futures ($/mmBtu)
Coal Spot Price (from EIA)
Environmental Uncertainty

- SO2
- NOx
- CO2
- Mercury
- Particulates
- Coal ash
- Water
SUFG 2009 Forecast
Indiana Electricity Requirements

- Retail sales by investor owned and not-for-profit utilities
- Includes estimated transmission and distribution losses
- Growth rates
  - 2009 forecast: 1.55%
  - 2007 forecast: 2.46%
  - 2005 forecast: 2.22%
Indiana Resource Requirements

- Resources may be provided by conservation measures, contractual purchases, purchases of existing assets, or new construction.
- Existing resources are adjusted into the future for retirements, contract expirations, and IURC approved new resources.
## Indiana Resource Requirements

<table>
<thead>
<tr>
<th>Year</th>
<th>Uncontrolled Peak Demand</th>
<th>Interruptible Net Peak Demand</th>
<th>Existing/Approved Capacity</th>
<th>Incremental Change in Capacity</th>
<th>Projected Additional Resource Requirements</th>
<th>Total Resources</th>
<th>Reserve Margin</th>
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<tbody>
<tr>
<td>2007</td>
<td>20,687</td>
<td>855</td>
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<td>527</td>
<td>110</td>
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</tr>
</tbody>
</table>

1. Uncontrolled peak demand is the peak demand without any interruptible loads being called upon.
2. Net peak demand is the peak demand after interruptible loads are taken into account.
3. Existing/approved capacity includes installed capacity plus approved new capacity plus firm purchases minus firm sales.
4. Incremental change in capacity is the change in existing/approved capacity from the previous year. The change is due to new, approved capacity becoming operational, retirements of existing capacity, and changes in firm purchases and sales.
5. Projected additional resource requirements is the cumulative amount of additional resources needed to meet future requirements.
6. Total resource requirements are the total statewide resources required including existing/approved capacity and projected additional resource requirements.
Indiana Real Price Projections (2007 $)

- Effect of inflation removed
- Includes the cost of meeting CAIR
- Includes the cost of new resources
- Does not include CO2 restrictions or RPS
Further Information

• State Utility Forecasting Group
  – http://www.purdue.edu/dp/energy/SUFG/

• Energy Information Administration
  – http://www.eia.doe.gov/

• Bureau of Economic Analysis
  – http://www.bea.gov/

• Bureau of Labor Statistics
  – http://www.bls.gov/