Current and Future Status of Indiana’s Electricity and Natural Gas Industries

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State Utility Forecasting Group

Presented to:
Indiana Chamber of Commerce Energy Committee

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Electricity
Indiana Electricity Consumption Levels

Year | Total | Industrial | Residential | Commercial
----|-------|------------|-------------|-------------
1960 |       |            |             |             
1965 |       |            |             |             
1970 |       |            |             |             
1975 |       |            |             |             
1980 |       |            |             |             
1985 |       |            |             |             
1990 |       |            |             |             
1995 |       |            |             |             
2000 |       |            |             |             

Source: Energy Information Administration
Indiana Electricity Requirements

- Retail sales by investor owned and not for profit utilities
- Includes estimated transmission and distribution losses
- Growth rates
  - 2005 forecast: 2.22%
  - 2003 forecast: 2.16%
Indiana Peak Demand Requirements

- Peak demand is net of DSM and interruptible loads
- Growth rates
  - 2005 forecast: 2.24%
  - 2003 forecast: 2.07%
Indiana Real Price Projections (2003 $)

- Effect of inflation removed
- Includes the cost of new emissions control devices for CAIR and CAMR
  - two control scenarios shown
- Includes the cost of new resources
Indiana Resource Requirements

- Resources may be provided by conservation measures, contractual purchases, purchases of existing assets, or new construction.
- This forecast identifies a relatively balanced need for the three types of resources (peaking, cycling and baseload) in the short term.

*Projected Demand includes 15% Reserve margin*
# 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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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.
Alternative Scenarios

- Any forecast contains uncertainty
- CEMR provides alternative low and high growth econometric forecasts
- Low and high growth scenarios are intended to give a plausible bound to uncertainty
Fuel Sources for New Resources

- **Coal**
  - Environmental permitting, construction time

- **Natural gas**
  - Fuel cost

- **Nuclear**
  - Permitting, public opposition, construction time

- **Wind**
  - Limited resource, intermittent supply

- **Solar**
  - Limited resource, cost, intermittent supply

- **Biogas**
  - Limited resource
Wind

- 330 MW of announced capacity expected available in 2008
- Others have studied or expressed interest
- Availability during summer peak periods is a concern
- While capacity value of wind is low, it can be a valuable part of a utility’s portfolio
Winter Wind Resources (50m)

Source: NREL
Summer Wind Resources (50m)

Source: NREL
Biomass

- Biomass can be used for energy purposes through a number of means, either through dedicated crops or waste material
  - Direct combustion/co-firing
  - Production of transportation fuels
  - Methane
Energy Crops

• A number of factors affect the viability of using land for energy crops
  – price of crop and competing land uses
  – environmental regulations
  – transportation costs
  – government subsidies

• Large scale use of energy crops can have far-ranging effects
Organic Waste

• Livestock waste (anaerobic digesters)
  – Economics may limit them to the larger facilities
  – SUFG estimates maximum potential to be about 1% of total natural gas usage or 0.3% of electricity usage

• Landfill gas
  – 33 MW currently in place with some additional under development
  – Economics may limit them to larger, older facilities
  – SUFG estimates maximum potential to be 88 MW

• Wastewater treatment facilities
  – Economics may limit them to the larger facilities
  – SUFG estimates potential to be 8.4 MW
Major Inputs to the 2007 SUFG Forecast

- Total employment grows at 0.8% (CEMR)
- Total real Gross State Product grows at 3.2% (CEMR)
- Real personal income grows at 2.1% (CEMR)
- Utility real coal prices fall at 0.1% (EIA)
- Utility real natural gas prices fall at 0.7% (EIA)
Natural Gas
Indiana Natural Gas Consumption Levels

Source: Energy Information Administration
Natural Gas Prices

- Natural gas prices have increased dramatically and become more volatile over the past decade.

Source: Energy Information Administration
Natural Gas

- Indiana has little direct control of natural gas prices
- In 2005, according to EIA (billion cubic feet)
  - Indiana production: 3
  - Indiana imports: 2,333
  - Indiana exports: 1,804
- Options for reducing exposure to high prices are limited
  - Futures prices are high
  - Increase production (syngas, biogas)
    - Proposed syngas plant capacity is over 10 times current Indiana natural gas production but less than 1/10th of current Indiana consumption
  - Reduce consumption (efficiency)
Further Information

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