Discovery Park Energy Center It will happen here.

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

Presented by:
Douglas J. Gotham
State Utility Forecasting Group

Presented to:
Indiana Chamber of Commerce Energy Committee

August 15, 2007

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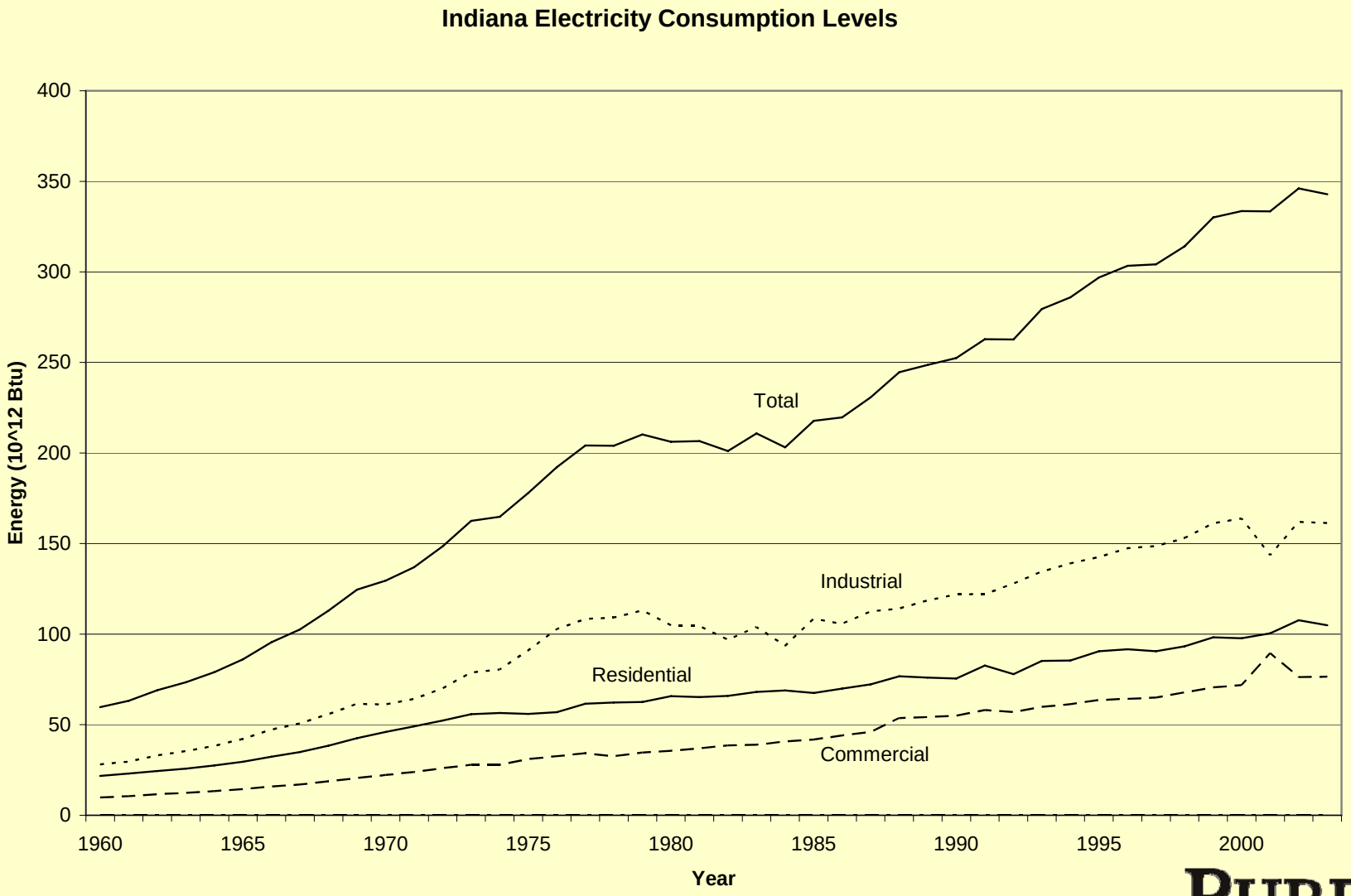
Electricity



Source: Energy Information Administration

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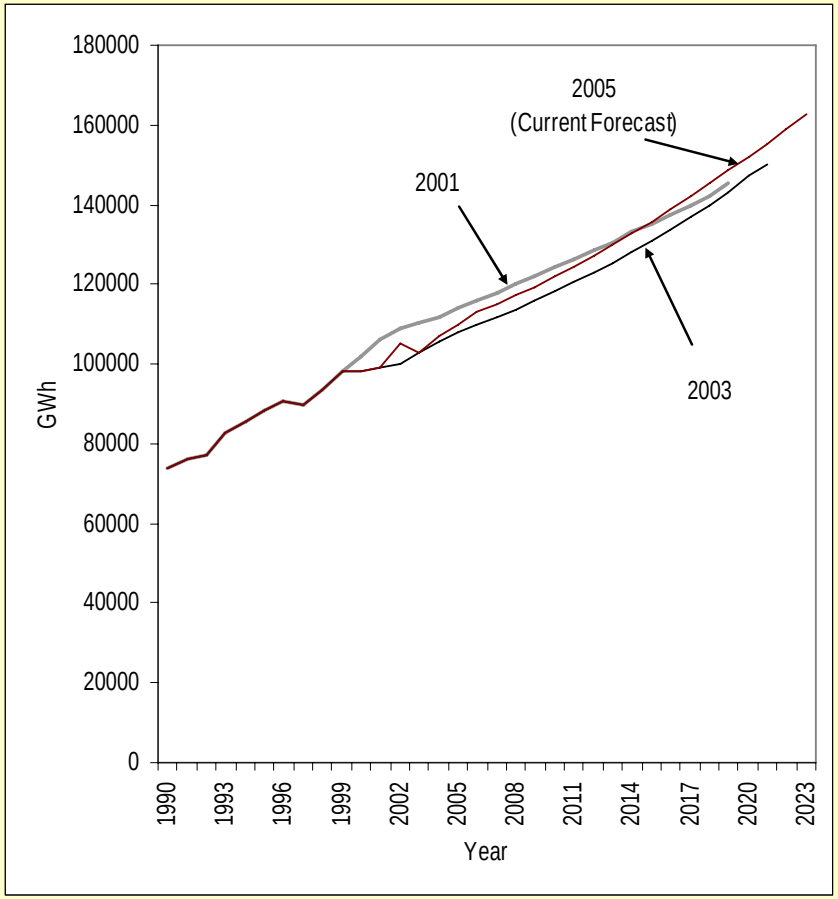
Indiana Electricity Requirements

- 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%



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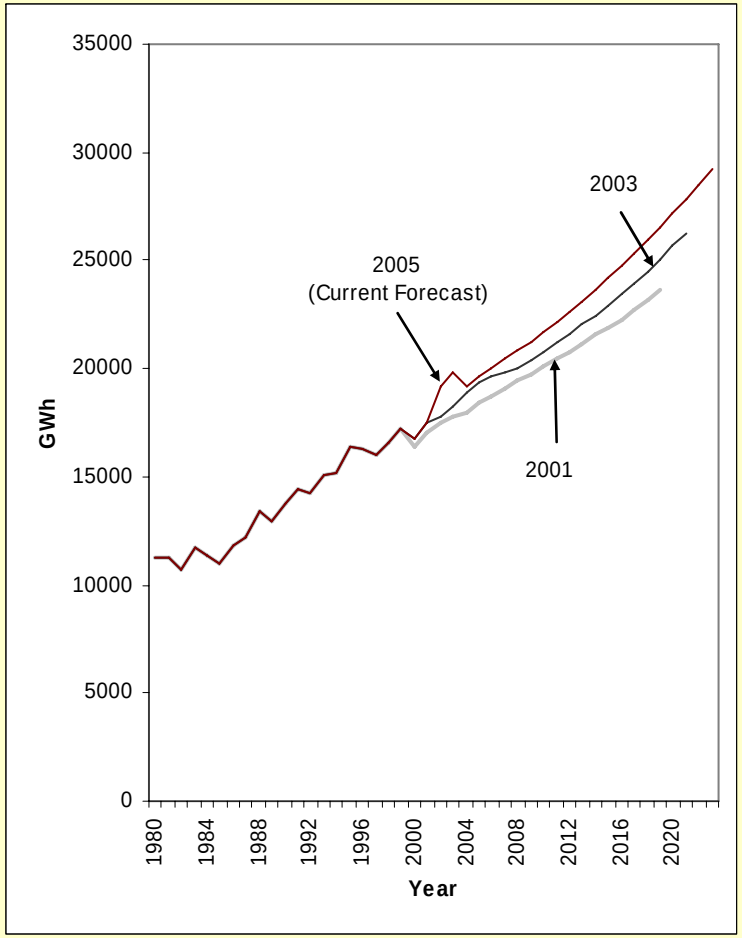
Indiana Peak Demand Requirements

- Peak demand is net of DSM and interruptible loads
- Growth rates
  - 2005 forecast: 2.24%
  - 2003 forecast: 2.07%



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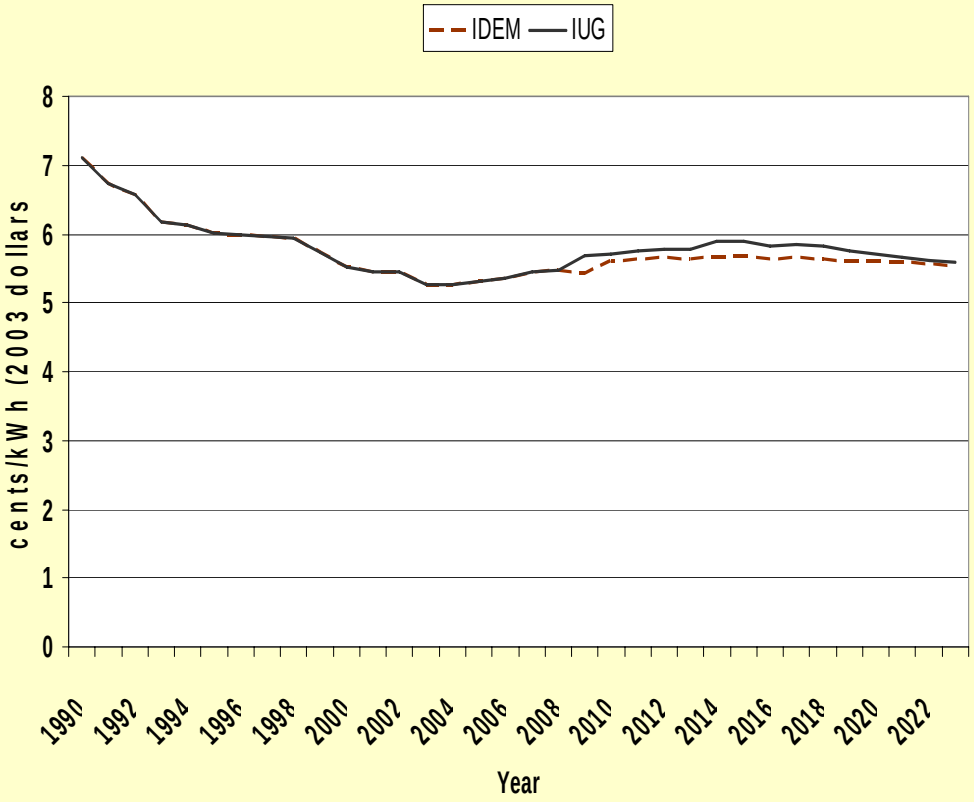
Indiana Real Price Projections (2003 $)

- 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



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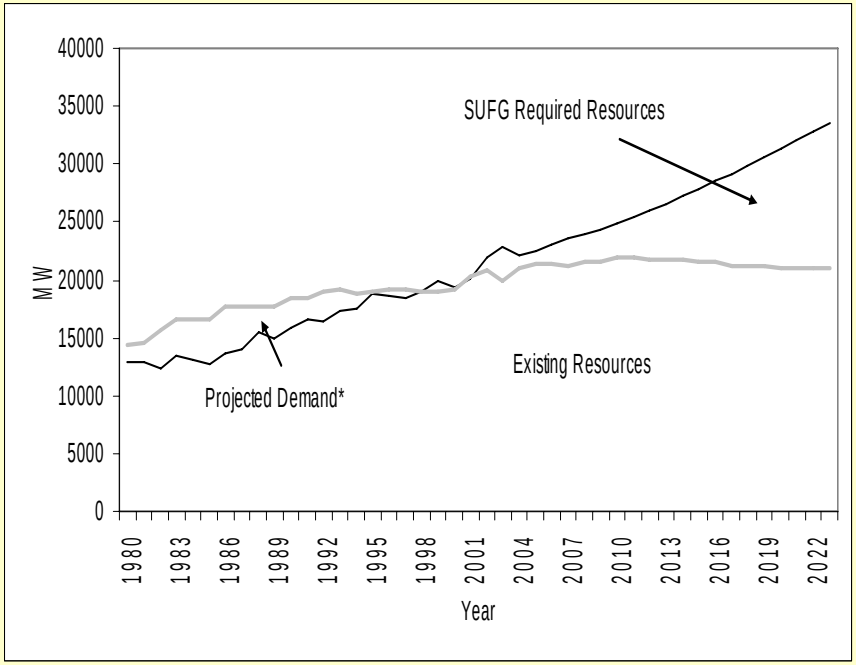
Indiana Resource Requirements

- 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

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Indiana Resource Requirements

	Uncontrolled Peak Demand	Interruptible	Net Peak Demand	Existing/ Approved Capacity	Incremental Change in Capacity	Projected Additional Resource Requirements				Total Resources	Reserve Margin
						Peaking	Cycling	Baseload	Total		
2003				19839							
2004	19917	750	19167	21058	1219	240	410	320	970	22028	15
2005	20361	761	19599	21355	296	410	470	450	1330	22685	16
2006	20833	781	20052	21345	-10	490	670	600	1760	23105	15
2007	21278	792	20486	21278	-67	620	860	750	2230	23508	15
2008	21624	804	20820	21493	215	760	930	670	2360	23853	15
2009	22018	817	21201	21493	0	890	1050	880	2820	24313	15
2010	22541	829	21712	21934	441	860	1170	940	2970	24904	15
2011	23006	839	22167	21869	-65	930	1190	1420	3540	25409	15
2012	23474	853	22620	21804	-65	1060	1250	1810	4120	25924	15
2013	23984	863	23121	21704	-100	1300	1340	2140	4780	26484	15
2014	24543	876	23666	21704	0	1460	1430	2490	5380	27084	15
2015	25096	890	24206	21601	-103	1730	1520	2840	6090	27691	15
2016	25694	903	24790	21601	0	1910	1610	3220	6740	28341	15
2017	26276	913	25362	21260	-341	2150	1960	3600	7710	28970	15
2018	26882	928	25954	21260	0	2330	2030	4030	8390	29650	15
2019	27512	938	26574	21260	0	2430	2110	4520	9060	30320	15
2020	28163	952	27211	21097	-163	2730	2180	5030	9940	31037	15
2021	28819	963	27855	21097	0	2860	2250	5540	10650	31747	15
2022	29503	977	28526	21044	-53	3090	2340	6030	11460	32504	15
2023	30185	989	29196	21044	0	3240	2420	6560	12220	33264	15

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.

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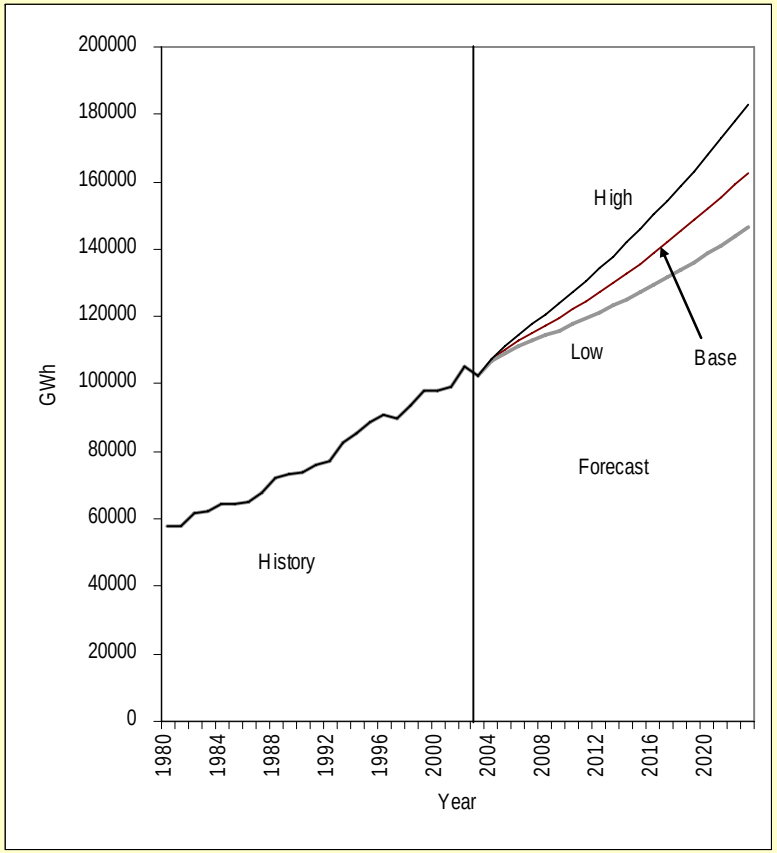
Alternative Scenarios

- 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



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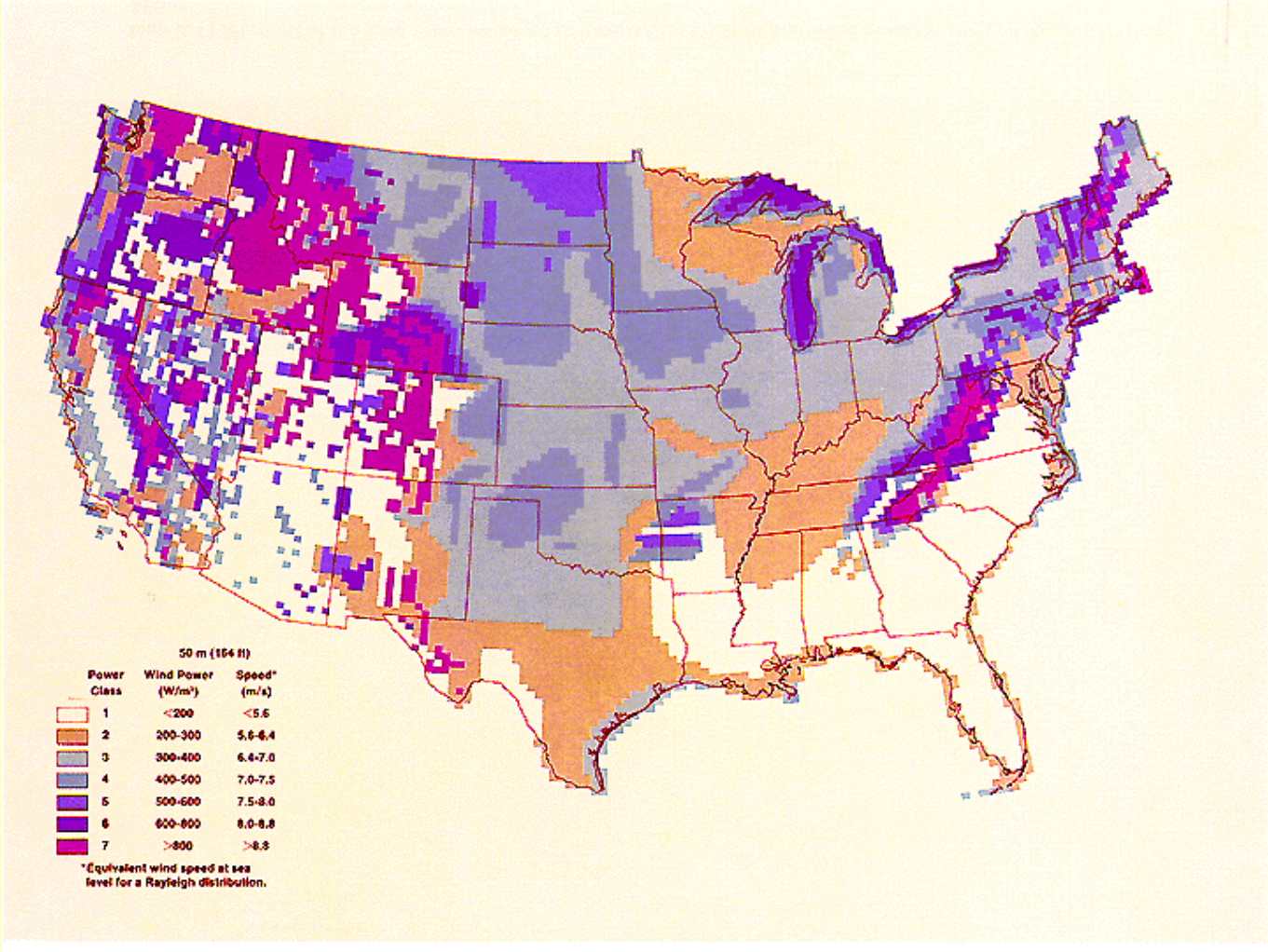
Fuel Sources for New Resources

- 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

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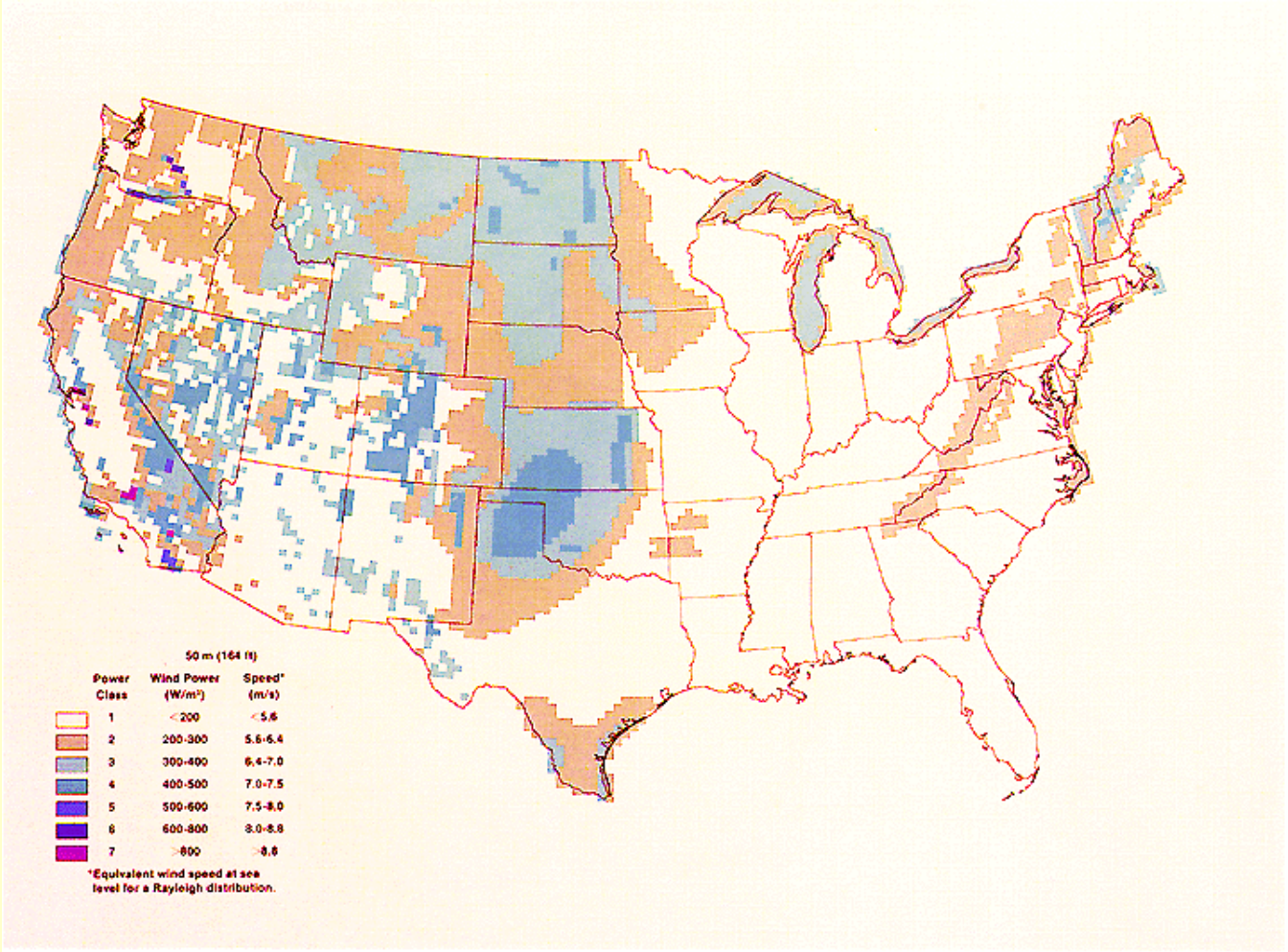
Summer Wind Resources (50m)



Source: NREL

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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

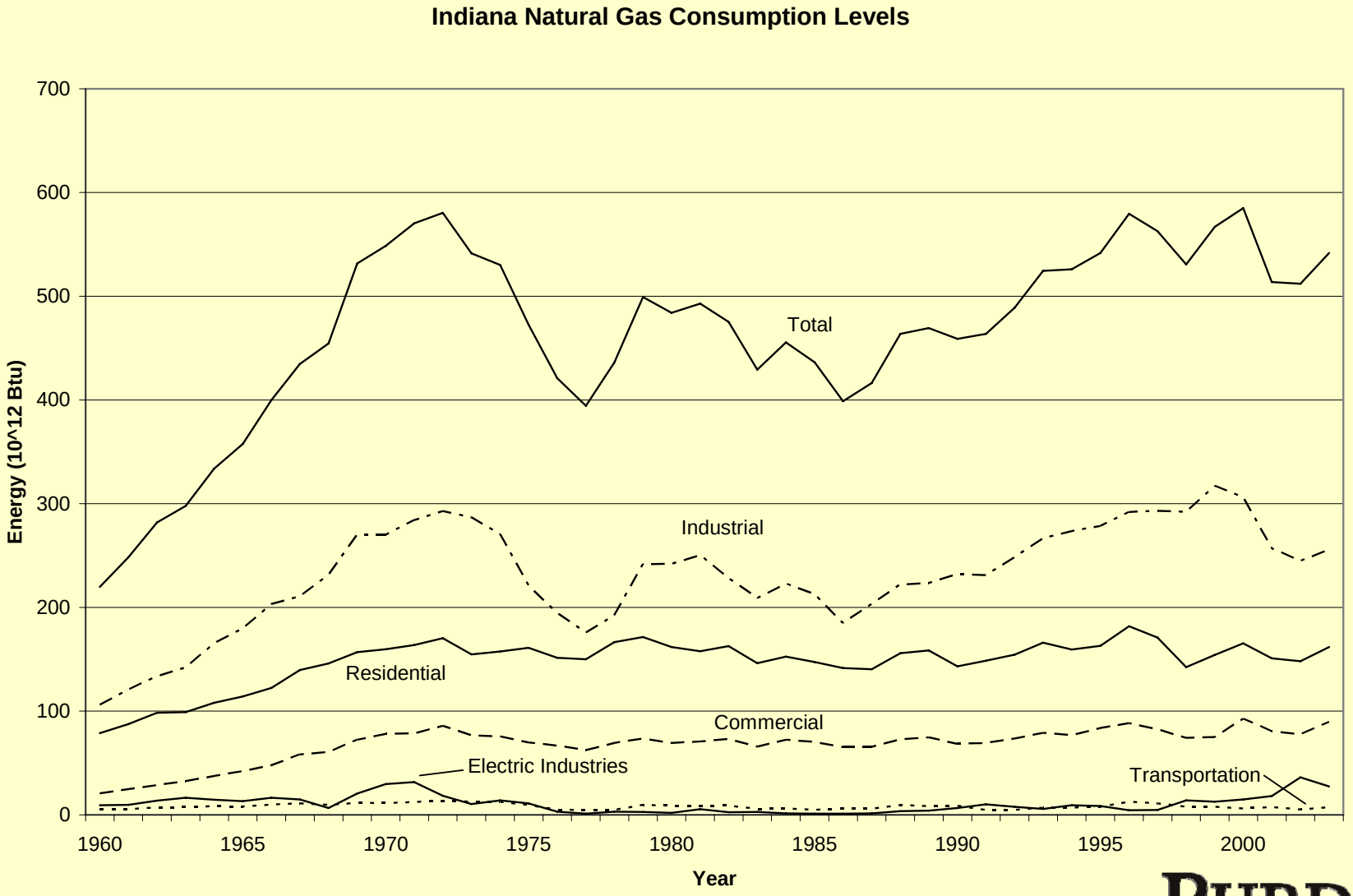
Organic Waste

- 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



Source: Energy Information Administration

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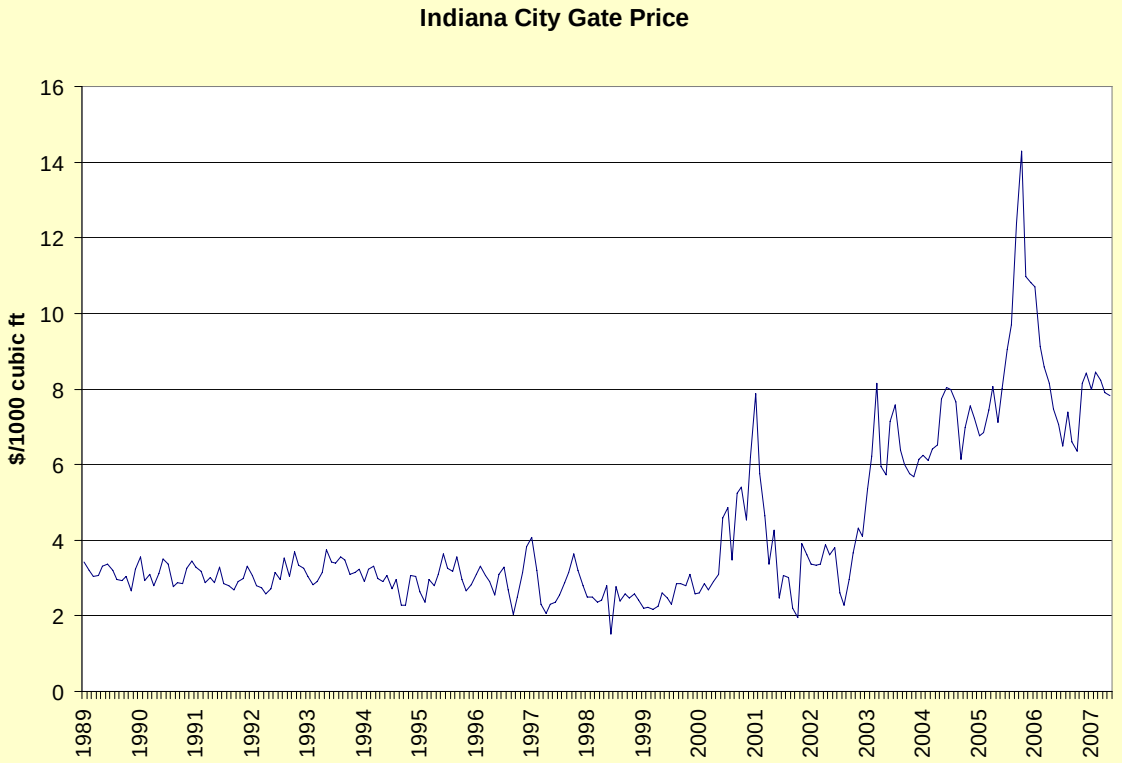
Natural Gas Prices

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



Source: Energy Information Administration

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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

- website: http://www.purdue.edu/dp/energy/SUFG/
- phone (main): 765-494-4223
- phone (personal): 765-494-0851
- email (main): sufg@purdue.edu
- email (personal): gotham@purdue.edu