

Indiana Electricity Price Projections

Presented by:

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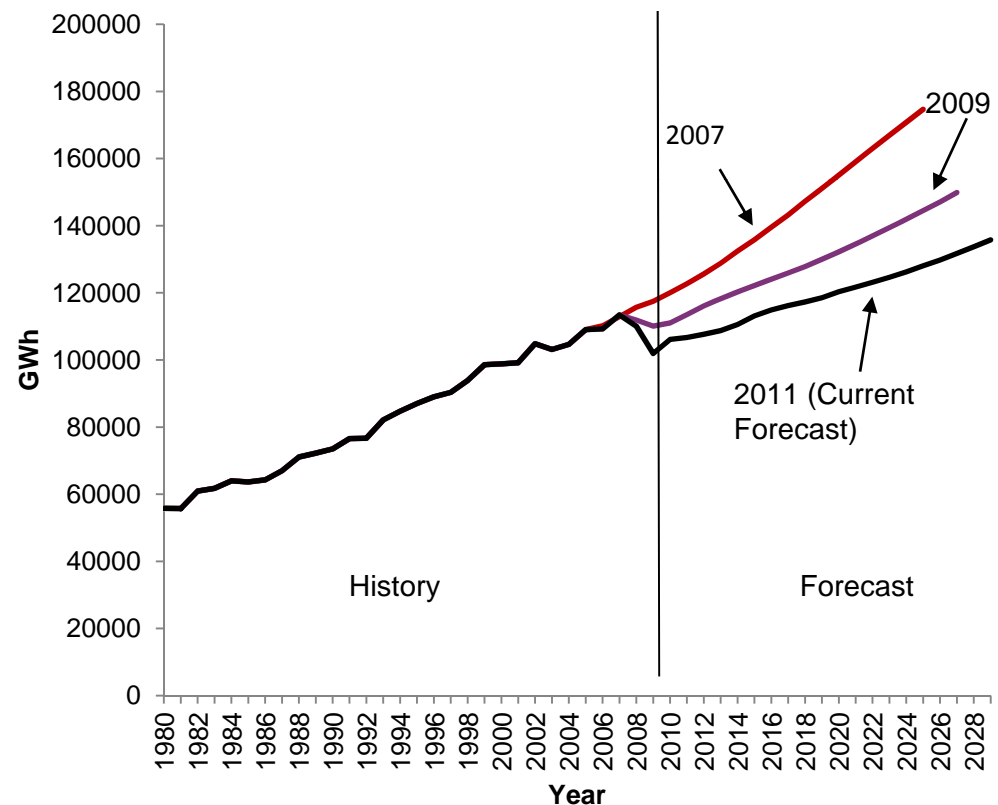
Presented to:

Indiana Chapter
International Association of Electrical Inspectors
Lafayette, IN

February 21, 2013

Indiana Electricity Requirements

- Retail sales by investor owned and not-for-profit utilities
- Includes estimated transmission and distribution losses
- Growth rates
 - 2011 forecast: 1.30%
 - 2009 forecast: 1.55%
 - 2007 forecast: 2.46%

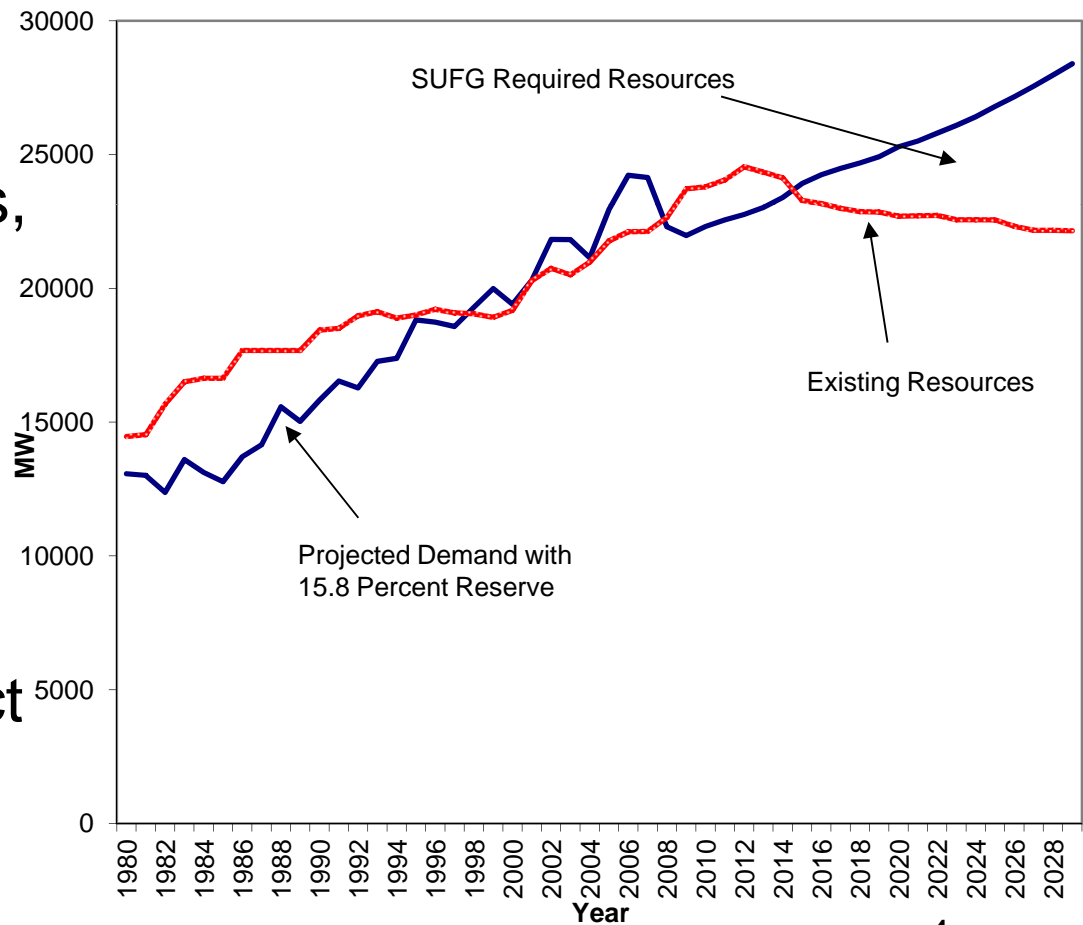


Why Do We Project Slower Growth?

- 2011 forecast indicates higher levels of energy efficiency than previous forecasts for three reasons
 - utility sponsored programs due to regulatory requirements
 - federal standards
 - customer-driven efforts in response to increasing prices

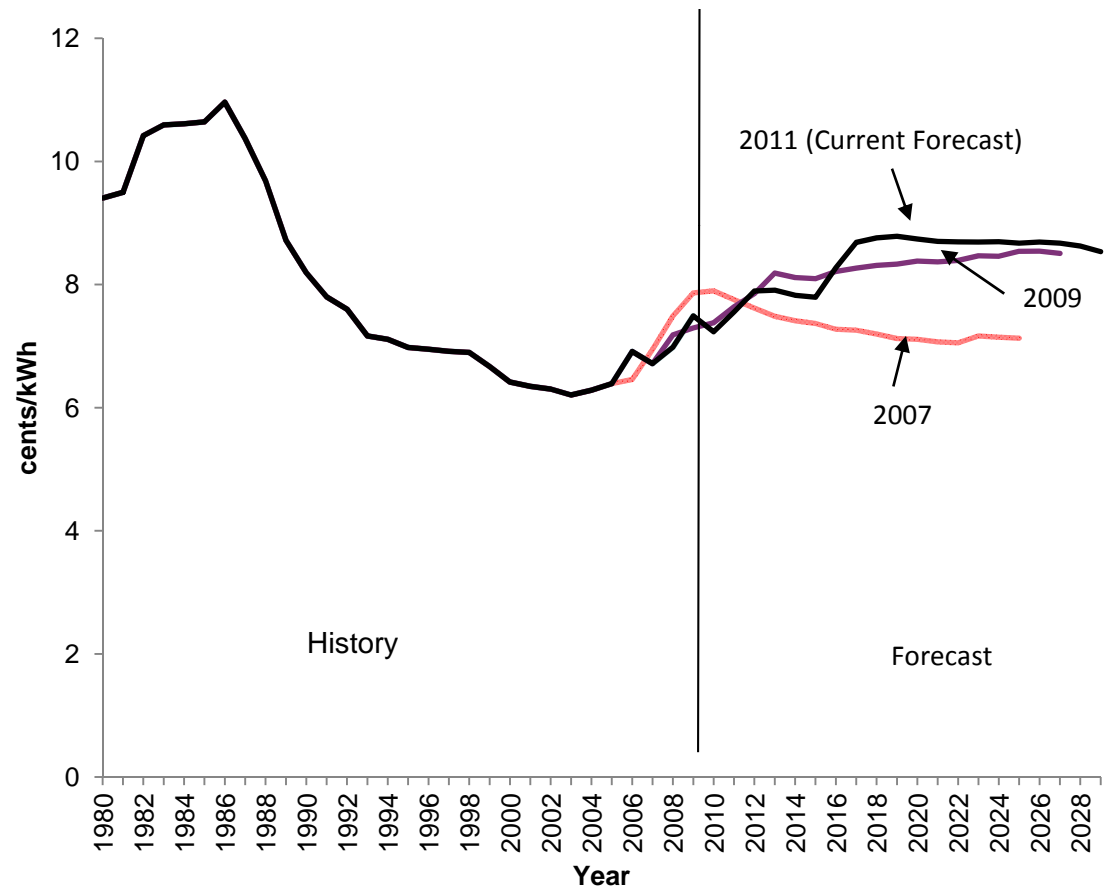
Indiana Resource Requirements

- 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 Real Price Projections (2009 \$)

- Effect of inflation removed
- Average across sectors for IOUs
- Includes the cost of new resources
- Does not include cost of expected EPA regulations
 - unless utility has already taken steps or included costs in data request



Why Do We Project Increasing Prices?

- Cost of new resources to meet future demand
- Cost of extending the lifetimes of existing generation
- Cost of complying with environmental rules

Characteristics of Indiana Electricity Generation

- Mostly coal-fired
 - roughly 85% of our electricity comes from coal
- Mostly older units
 - almost all of our coal fleet is at least 30 years old
- Potentially affected by future environmental regulations

Environmental Regulations

- SUG performed a follow up study of the expected impacts of recent, proposed, and expected EPA regulations
 - Cross-State Air Pollution Rule
 - Mercury and Air Toxics Standards
 - Greenhouse gases
 - Cooling water
 - Coal ash

Cross-State Air Pollution Rule

- Final rule issued in July 2011
- August 2012 – Court of Appeals (D.C. Circuit) vacates rule
- October 2012 – U.S. EPA requests rehearing from full Court of Appeals
- Reduces emissions caps for sulfur dioxide (SO₂) and nitrogen oxides (NO_x) in 2012
- Further reductions in 2014

Mercury and Air Toxics Standards

- Final rule issued in December 2011
- Replaces court vacated Clean Air Mercury Rule
- Reduces emissions from mercury, acid gases, and other pollutants
- Prevents release of 91% of mercury
- Expected to go into effect in 2015-16

Greenhouse Gases

- Final rule issued in March 2012
 - after SUFG study released
- Establishes carbon dioxide (CO₂) emissions standards for new fossil-fueled electric utility generators
- Output-based standard of 1,000 pounds of CO₂ per MWh
 - Cannot be met with current coal-fired technology without carbon capture

Cooling Water Intake Structures

- Proposed rule issued in April 2011
- Final rule expected in June 2013
- Intended to reduce damage to aquatic life
 - impingement – trapping against inlet screen
 - entrainment – drawn into cooling system
- Compliance actions include enhanced screening, reducing water flow rate, and installing cooling towers
- Uncertainty over timing

Coal Combustion Residuals

- Proposed rule issued in June 2010
- No date has been released for final rule
- In response to concerns over the potential failure of coal ash facilities
- Two options
 - classify as special hazardous waste (~2020)
 - regulate as non-hazardous waste (~2018)

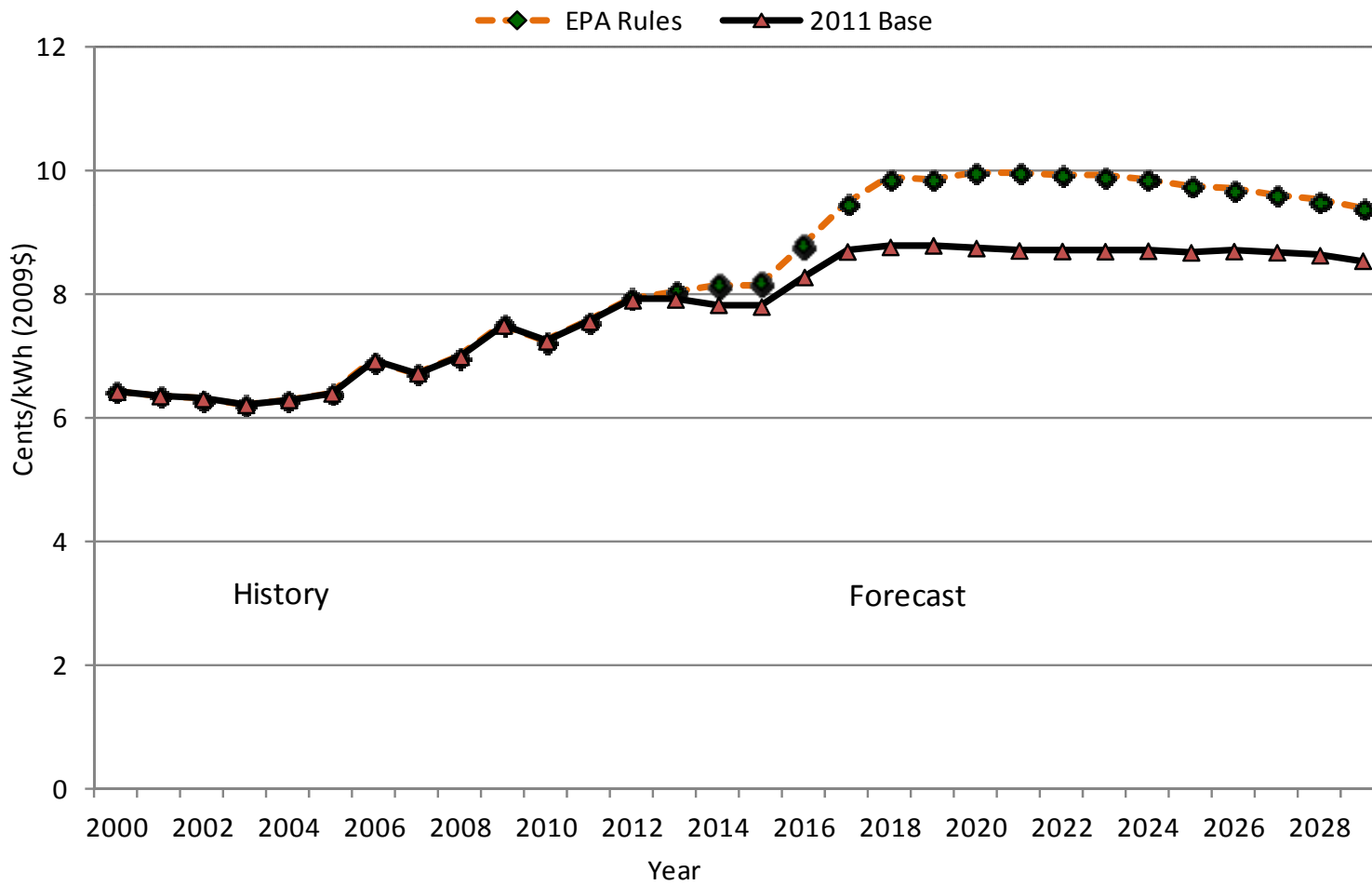
SUFG Study Inputs

- Model inclusion of SO₂ scrubbers (wet FGD), NO_x control (SCR), and mercury control (activated charcoal injection with bag house)
- Conversion of cooling water systems to recirculating
- Conversion of ash disposal from wet to dry

Retire vs. Retrofit

- For each unit, if the cost of retrofitting was greater than the cost of replacing it with a natural gas combined cycle facility, the unit was considered retired for the study
- If not, the retrofit costs were included
- Approximately 2,280 MW modeled as retired

Results



Comparison to Base Forecast (2009 cents/kWh)

Year	2011 Base	EPA Rules	Change
2015	7.80	8.14	4.4%
2020	8.74	9.96	13.9%
2025	8.67	9.76	12.5%

Caveats

- Uncertainty in EPA rules
- Impact on transmission investment
- Fuel switching option
- Accuracy of price elasticity modeled
- Macroeconomic effects
- Technological innovations
- Compliance strategies
- Engineering considerations
- Materials and labor premiums
- Efficiency and outage impacts

What Does This Mean To You?

- Electricity rates are expected to increase significantly through the end of the decade
- This makes alternatives to simply buying electricity from the local utility more attractive
 - energy efficiency
 - customer-owned, distributed generation

Further Information

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