Members

Sen. Beverly Gard, Chairperson
Sen. James Buck
Sen. Frank Mrvan
Sen. Karen Tallian
Rep. David Wolkins
Rep. James Baird
Rep. Ryan Dvorak
Rep. Matt Pierce
Doug Meyer
Dave Wyeth
Dwayne Burke
John Hardwick
Calvin Davidson
Thomas Easterly
Heather Hill

ENVIRONMENTAL QUALITY SERVICE COUNCIL

Legislative Services Agency
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Authority: IC 13-13-7

MEETING MINUTES[1]

Meeting Date:	**August 30, 2011**
Meeting Time:	**1:00 P.M.**
Meeting Place:	**State House, 200 W. Washington St., Senate Chambers**
Meeting City:	**Indianapolis, Indiana**
Meeting Number:	**2**

Members Present: **Sen. Beverly Gard, Chairperson; Sen. James Buck; Rep. David Wolkins; Rep. James Baird; Rep. Ryan Dvorak; Rep. Matt Pierce; Dave Wyeth; Dwayne Burke; John Hardwick; Calvin Davidson; Thomas Easterly.**

Members Absent: **Sen. Karen Tallian; Doug Meyer; Sen. Frank Mrvan; Heather Hill.**

Call to Order: Senator Gard called the meeting to order at 1:03 p.m.

Administrative Matters: The Chair reviewed the day's agenda and the preliminary agenda for the next meeting September 29th in northwest Indiana. Additional information to members will be sent after Labor Day.

Mint Distillation: Tom Easterly, IDEM Commissioner, made a presentation entitled *Mint Distillation Operations.* (Exhibit 1, slides 2-30). Answering questions presented by Council members, Commissioner Easterly:

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[1] These minutes, exhibits, and other materials referenced in the minutes can be viewed electronically at http://www.in.gov/legislative Hard copies can be obtained in the Legislative Information Center in Room 230 of the State House in Indianapolis, Indiana. Requests for hard copies may be mailed to the Legislative Information Center, Legislative Services Agency, West Washington Street, Indianapolis, IN 46204-2789. A fee of $0.15 per page and mailing costs will be charged for hard copies.

- Explained the enforcement action that IDEM took on Materna Farms for discharge without a National Pollutant Discharge Elimination System (NPDES) Permit and EPA and DOJ's criminal enforcement action against the farm. The Commissioner stated that at least 16 mint farms have been identified and that they either have obtained a NPDES permit or do not discharge outside their containment areas.
- Explained that the concern for mint distillation operations air emission stemmed from observations made during the Materna Farms investigation. There was no information to determine the potential to emit (PTE).
- Reported that subsequent preliminary samples from Lawrence Farm mint operations produced approximately 0.01841 pounds of volatile organic compound (VOC) emissions per pound of mint oil.
- Explained PTE calculations for operations that are not conducted year-round by using an hourly emission rate.
- Stated that while preliminary calculations of VOC emissions are below thresholds that require permitting, some of the boilers used may be subject to other federal requirements.
- Discussed why mint distillation boilers should be subject to different rules since they only operate during a short period of time during each year in contrast to other distillation operations.
- Explained his concern that defining mint distilling operations as "farm operations" would exempt the operations from IDEM regulations, including the department's ability to provide certain protections, but would not exempt farms from federal inquiries or rules.
- Described IDEM's efforts to obtain additional mint distillation data to document PTE calculations that should support its conclusion that mint farms are exempt from air permit requirements, and its communications with EPA regarding an exemption; stated that EPA requires at least five years of information.
- Explained IDEM's recommendations that mint distillation air emissions receive an exemption similar to that allowed for country grain elevators, or the exemption allowed for emergency generators using 500 hours of operation per year.

After IDEM's presentation, several mint farmers offered testimony as follows:

Mr. Larry Wappell described the farming process of mint plants, the distillation of oil, and why he believes that mint distilling operations should be considered "farm operations." He stated that his farm is family owned and uses standard farming equipment. He described mint as a perennial crop that is dormant for 6 months. In explaining his distillation practices, Mr. Wappell testified that he uses no caustic chemicals, uses clean water, and vaporizes water with high pressure boilers. The water and mint oil vapors are captured and cooling condenses it to liquid. He further explained that the separation process uses gravity and temperature to extract oil. In response to Council members' questions, Mr. Wappell:

- Stated that mint distillation on his farm takes place during four weeks, or about 24 days of the year.
- Stated that mint oil produced in the Midwest (Indiana, Michigan, and Wisconsin) comprises about 40% of the United States' production, while Washington, Oregon, and Idaho account for the remaining 60% of production.
- Explained the differences between Midwest mint oil and far west mint oil, pointing out that the chemical makeup is different and that mint oil produced in the Midwest tends to be more expensive due to the shorter production period.
- Stated that mint oil is sold as a commodity at about $225/lb.
- Stated that permitting is not required in other states producing mint oil.

Mr. Randy Mathys described his mint farm operations, stating that it operated an approximate total of 380 hours and produced about 65,000 to 68,000 pounds of mint oil this season. Answering Council members' questions, Mr. Mathys:

- Stated that other states producing mint oil view the production as an agricultural process instead of an industrial process.
- Stated that spearmint season was from about July 5th to August 19th.
- Stated that harvesting/distilling is one of the costliest parts of the operation.

Mr. Todd Lawrence provided a historical context to the production of mint oil. He stated that Indiana was the national leader of mint oil production during the 1920s, and now ranks fourth. Mr. Lawrence testified that his Starke County family farm produces peppermint, corn & soybeans. He explained his decision to obtain a NPDES permit to ensure that his operations are environmentally sound. Mr. Lawrence explained that testing showed no pollutants discharged above actionable levels, and that steam distillation has been the most effective process. In response to Council members' questions, Mr. Lawrence:

- Stated that mint farmers should not be required to obtain discharge permits to operate if water does not leave the farm and is maintained in retention areas. He testified about the presence of a ditch system on his farm, and said that water would have to be mechanically pumped into a waterway.
- Stated that his operation is zoned as agricultural.
- Stated that his farm's harvest/distillation process takes about 330 hours total, and uses about 3 million gallons of cooling water.

Mr. Dan Gumz testified that mint farms have been historically considered farm operations. He added that mint farms should be included as "farm operations" under Indiana law because mint farms produce commodities and not man-made products. In addition, their yield is expressed as pounds of oil per acre.

Upon conclusion of this topic, Sen. Gard indicated that the Council's final meeting October 27th will be devoted to providing recommendations including the mint distillation issue.

Other Air Issues:

Mr. Bernie Paul, B. Paul Consulting, LLC, made a presentation entitled *EPA's Air Quality Initiatives* concerning new standards, regulatory challenges, and associated economic impacts on Indiana due to coal being the major source of energy and older plants not equipped with required controls. (Exhibit 2).

Ms. Jennifer Curran, Midwest Independent Systems Operator, made a presentation entitled *EPA Impact Analysis* concerning the new Clean Water Act, Coal Combustion Residuals, Cross State Air Pollution Rule, and Mercury and Air Toxic Standards regulatory effects on MISO according to the study presented.(Exhibit 3, slides 2-9).

Adjournment Senator Gard adjourned the meeting at 3:48 p.m.

Ex. 1
EQSC

8/30/2011

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
of Protecting Hoosiers and Our Environment

Environmental Quality Service Council
Mint Distilling Operations
August 30, 2011

Thomas W. Easterly, P.E., DEE, QEP
Commissioner, Indiana Department of Environmental Management

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Agenda

- History of the Issue
- Legislation
- IDEM Tests and Sampling
- Options and Possible Exemptions
- IDEM Recommendation

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History of the Issue

- Sunday, August 8th, 2010
  - IDEM received a complaint concerning high temperature water in a ditch.
  - The complainant claimed that contact with the water resulted in burns to his legs and the death of his dog.
  - IDEM inspector responded same day as complaint and observed an unpermitted discharge of high temperature water coming from Materna Farms.

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History of the Issue

- Sunday, August 8th, 2010 (Continued)
  - A newspaper reported that the water discharge temperature was 190 degrees F.
  - IDEM directed the owner to bring the discharge within water quality standards.
  - IDEM inspector was onsite for nearly two weeks monitoring the discharge.

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History of the Issue

- Cooling the Discharge
  - High temperature of water was due to a failed transformer that powered the flow augmentation system
  - Materna obtained a backup generator, repaired cooling water pumps, reduced production, and drilled an additional well

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History of the Issue

- Cooling the Discharge
  - Goal was to get the discharge below 90 degrees Fahrenheit, Indiana's water quality standard for the month of August.
  - IDEM inspector measured water temperatures daily.
  - Temperature in receiving ditch was reduced gradually
    - August 12, 2010: 109°F
    - August 14, 2010: 95°F
    - August 17, 2010: 85°F

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History of the Issue

- IDEM Enforcement Action
  - IDEM took enforcement action on Materna Farms for the discharge without a National Pollutant Discharge Elimination System (NPDES) Permit and for violating Indiana's water quality standards
- Agreed Order Requirements
  - Must receive NPDES permit
  - Pay civil penalty of $40,040
    - $32,032 of civil penalty could be offset by a Supplemental Environmental Project
- Agreed Order signed by owner: 8-12-11

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History of the Issue

- U.S. EPA and the U.S. DOJ also pursued a criminal environmental enforcement action against Materna.
- IDEM wanted to make sure that we didn't have other farms potentially subject to similar federal enforcement actions and found that there are at least 15 other mint farms with distilling operations.
- In order to ensure that all farms were in compliance with state and federal regulations, IDEM reached out to the other farmers.

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History of the Issue

- All of the known farms, including Materna, now either have waste water discharge (NPDES) permits or do not discharge.
- During the monitoring and inspection of the Materna water discharge, it was observed that the distilling process may also have air emissions that might be above regulatory thresholds.

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History of the Issue

- IDEM advised the mint farms that in addition to properly permitting their waste water discharges, they may also need to apply for an air permit
  - Air permitting requirements are based upon Potential to Emit (PTE)
- The farmers did not have the information needed for IDEM to determine their PTE.
- Some were also concerned about IDEM raising air concerns, since the issue started over water.
- Farmers asked their legislators for help.

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Legislation – HB 1451

- HB 1451; Authored by Rep. Dermody
  - Referred to House Ag and Rural Development Committee
- Introduced Version
  - Mint distilling operations would be considered, by statute, to be a "farm operation" as defined by Indiana Administrative Code 326 IAC 1-2-28.
  - By applying this definition, mint distilling operations would be exempt from Indiana air regulations under 326 IAC 2-1.1-3(e)(31).
  - This definition would not give an exemption from the federal rules.

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Legislation – HB 1451

- IDEM asked the Committee to consider amending the bill
  - IDEM's goal is to ensure that all entities that require an environmental permit receive a State permit that satisfies all federal requirements.
  - Exempting mint operations on the state level will not exempt operations from federal rules.

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Legislation – HB 1451

- HB 1451 was amended to require IDEM to wait for the EQSC to study mint farm air emissions, report findings, and make recommendations before requiring any air permits for those operations.
- EQSC study topics include:
  - The actual and potential air emissions from mint distilling operations
  - Whether mint distilling operations should be considered a "farm operation" per 326 IAC 1-2-28 for the purpose of requiring a permit under IC 13-17
- Passed House: 95-3
- Passed Senate: 50-0

IDEM Tests and Sampling

- The Lawrence Farm allowed IDEM to sample air emissions from their mint still during operation this summer.
  - We do not yet have the written test report from the stack testing company, based upon conversations with the stack testers, we believe that there may be 0.01841 lbs of VOC emissions per pound of mint oil produced.

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IDEM Tests and Sampling

- The USDA reports that total mint oil production in Indiana as:
  - 373,500 pounds in 2008
  - 518,000 pounds in 2009
  - 740,000 pounds in 2010
- The corresponding calculated Indiana VOC emissions are:
  - 3.44 tons in 2008
  - 4.77 tons in 2009
  - 6.81 tons in 2010

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IDEM Tests and Sampling

- These calculated annual VOC emissions are well below the levels that would require air permitting.
- The PTE, used to determine air permitting requirements is normally based upon operation every hour of the year (8,760 hours).

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IDEM Tests and Sampling

- Even at the PTE, we do not believe that the distillation VOC emissions would trigger air emissions permitting requirements.
- However, the estimated emissions from operating the boilers associated with mint distillation for 8,760 hours per year would result in all but 2 farms needing some type of air permit.

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IDEM Tests and Sampling

- As discussed later, IDEM believes that there are alternative methods to calculate the potential to emit for these boilers that could result in all of them being exempt, but we need additional information to make those calculations.
- Whether permitted or not, some boilers may be subject to other federal requirements (NSPS, NESHAPS).

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IDEM Tests and Sampling

- Worst case PTE calculations show 10 farms (all of those using oil as a boiler fuel and 4 of the gas fired units) require Minor Source Operating Permits (MSOP). ($4,000 or $4,500 initial permit fee and $200 per year annual fee)
- Four farms would require registration. ($1,100 one time fee)
- Two would be exempt. ($100 one time fee)

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Options and Possible Exemptions

- Statutorily define a mint distilling operation as a "farm operation"
  - Defining a mint distilling operation as a "farm operation" per 326 IAC 1-2-28 will allow for an exemption under 326 IAC 2-1.1-3(e)(31).
  - Since the calculated PTE is below federal permitting thresholds, the mint farms will not be subject to federal permitting requirements, but there will be no documentation of that fact.

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Options and Possible Exemptions

- EPA Potential to Emit Calculation Guidance; Country Grain Elevators:
  - EPA guidance document that explains how to calculate PTE for those operations "whose potential emissions are, as a practical matter, restricted by inherent operational limitations."

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Options and Possible Exemptions

- EPA Potential to Emit Calculation Guidance; Country Grain Elevators
  - The example used for the guidance document is Country Grain Elevators, which "The EPA recognizes that country grain elevators are clearly constrained in their operation, to the extent that they are designed to service, and as a matter of operation only service, a limited geographic area from which a finite amount of grain can be grown and harvested."

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Options and Possible Exemptions

- EPA Potential to Emit Calculation Guidance; Country Grain Elevators
  - IDEM believes that this same thought process and/or guidance could be applied to mint distilling operations which are limited by the amount of mint available to distill for each farm.
  - We have not yet discussed this option with U.S. EPA.

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Options and Possible Exemptions

- EPA Potential to Emit Calculation Guidance; Country Grain Elevators
  - A potential disadvantage is that U.S. EPA requires actual production information for the last five years to support the use of this exemption—some farms may consider this confidential business information.
  - We do not believe that this guidance has ever been applied to boilers.

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Options and Possible Exemptions

- EPA Potential to Emit Calculation Guidance; Emergency Generators
  - U.S. EPA allows the calculation of PTE for emergency generators using 500 hours of operation per year. If we used this calculation method, all of the boilers would have PTE below the exemption level.
  - This would allow IDEM to document that each farm has considered its emissions and is exempt.

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Options and Possible Exemptions

- Permitting: The most conservative option, based upon the PTE information IDEM currently has, is permitting. This would result in very legally defensible decisions, but could cost up to 6 farms $4,500 in initial fees and $200 per year, 4 farms $4,000 in initial fees and $200 per year, 4 farms $1,100 in initial fees and 2 farms $100 in initial fees for a total initial cost to Indiana's businesses of $47,600 and an annual cost of $2,000. If all farms can be exempted the total fees would be $1,600.

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Conclusions

- Based upon preliminary emission test results and IDEM's current understanding of mint farm operations, IDEM believes that it is possible to calculate a PTE that shows mint farms are exempt. However, we will need some more farm specific information to document these calculations.
- IDEM has not yet discussed this conclusion with U.S. EPA.

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IDEM Recommendations

- Allow IDEM to review the actual test results to verify our conclusions.
- Allow IDEM to discuss our conclusion that these mint farms are exempt from permitting with U.S. EPA for concurrence.
- Allow mint farms that want the legal protection of the permit process to apply for an air permit and receive the proper permit or a written exemption that also includes NSPS and NESHAP verification.

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IDEM Recommendations

- Allow mint farms that do not wish to pursue the permit process to continue to operate under IDEM's preliminary conclusion that they are exempt from air permitting, understanding that they are at risk of needing to respond to possible federal inquiries.
- Do not define these sources at "farm operations" because that prohibits IDEM from giving permits to farms that want them and does not provide protection from federal inquiries.

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QUESTIONS?

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EPA's air quality initiatives

Environmental Quality Service Council, August 30, 2011

Ex. 2 - Aug. 30th
EQSC

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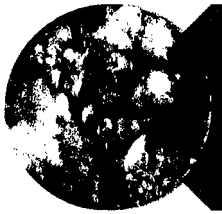
Agenda

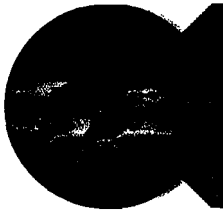
- New/upcoming EPA air regulations
- Implementation challenges
- Economic impacts
- Context

EPA air quality initiatives

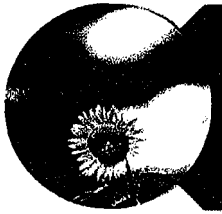


Tighter ambient air quality standards [NAAQS]

New programs to meet existing air quality standards [Cross-State Air Pollution Rule]

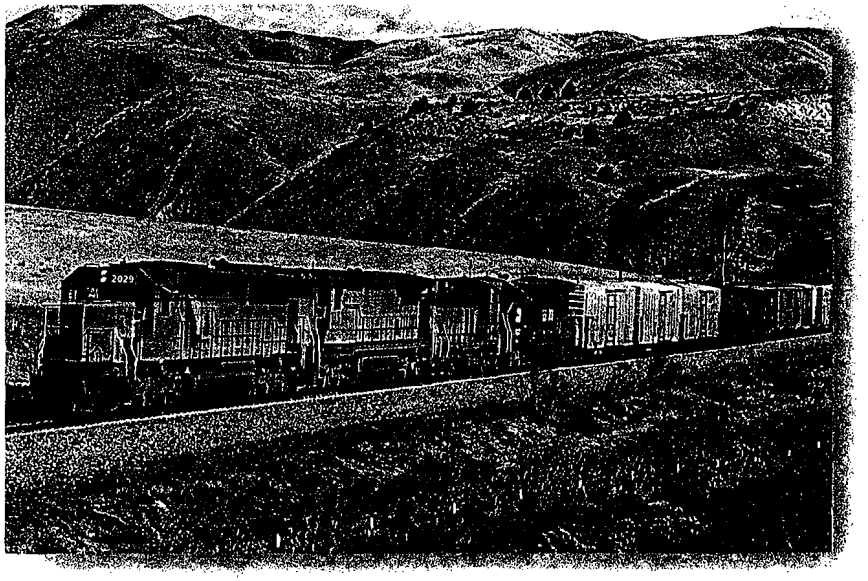


New air toxics rules as a result of litigation [Utility MACT, Boiler MACT]

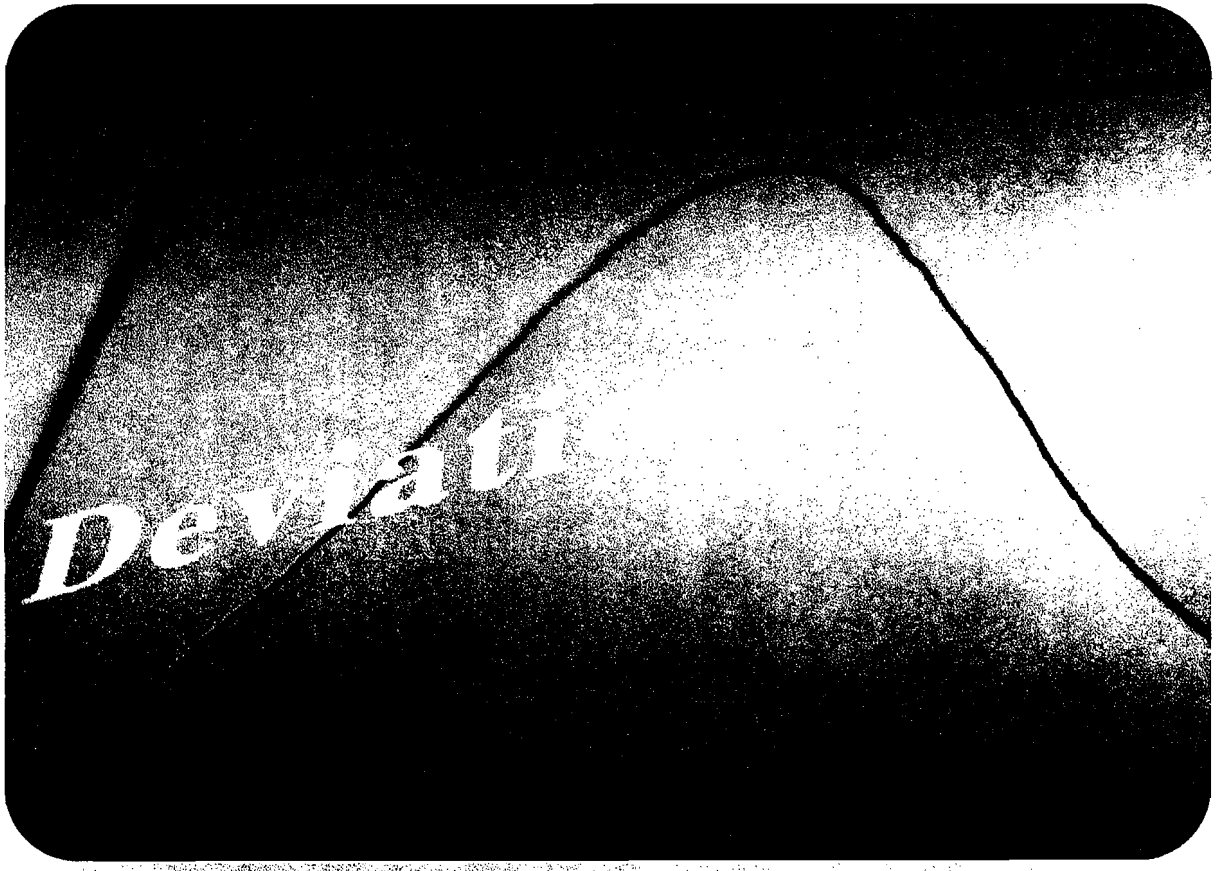


New rules on greenhouse gases

The Big Picture



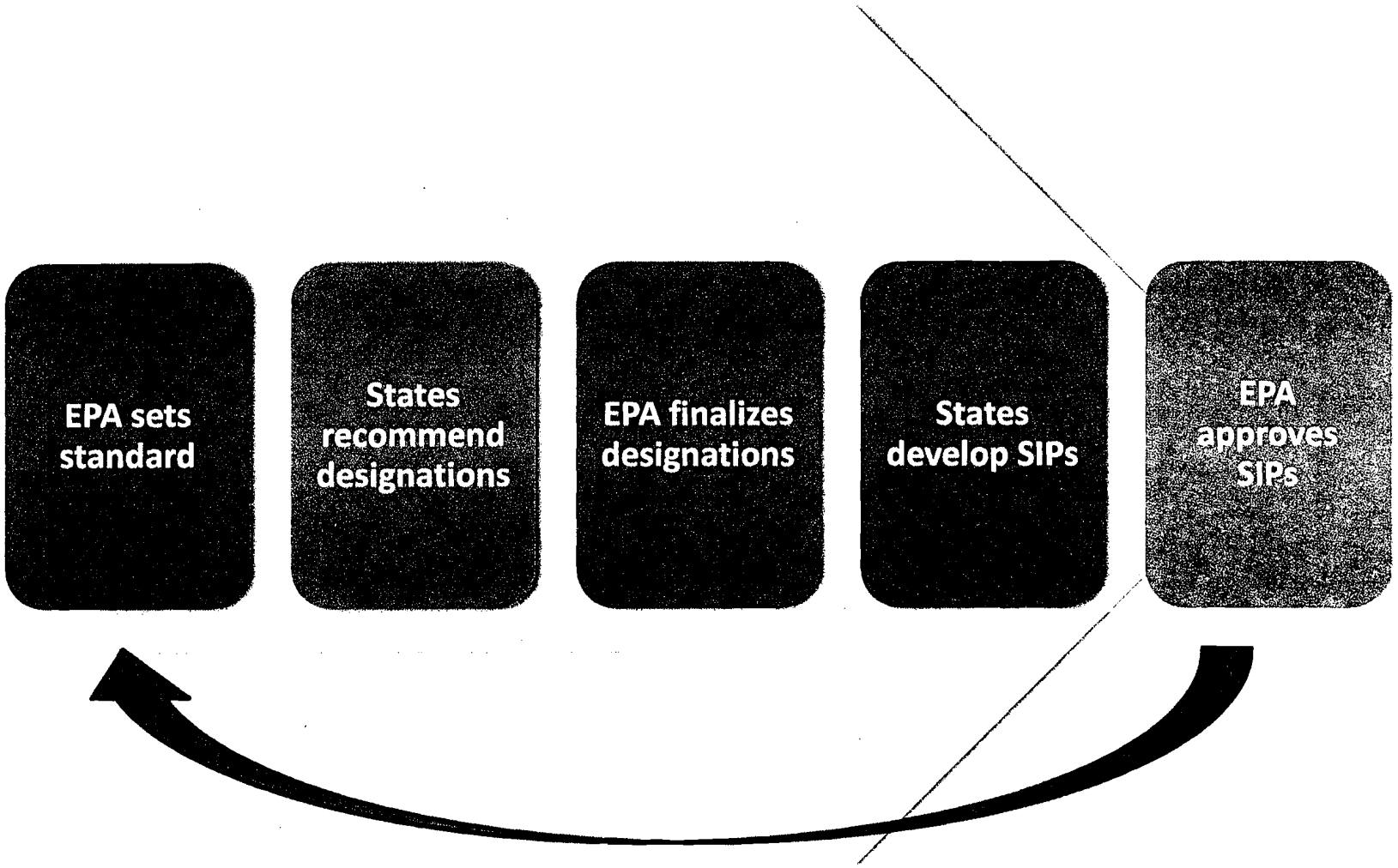
- Criticism of EPA
  - "Train wreck"
  - "War on coal"
  - "The last nail" in manufacturing's coffin?
- Overlap in purpose and impact of these rules
- Much uncertainty; difficult decisions
  - Shutdown/replacement
  - Fuel switching
  - Emission controls
  - Timing



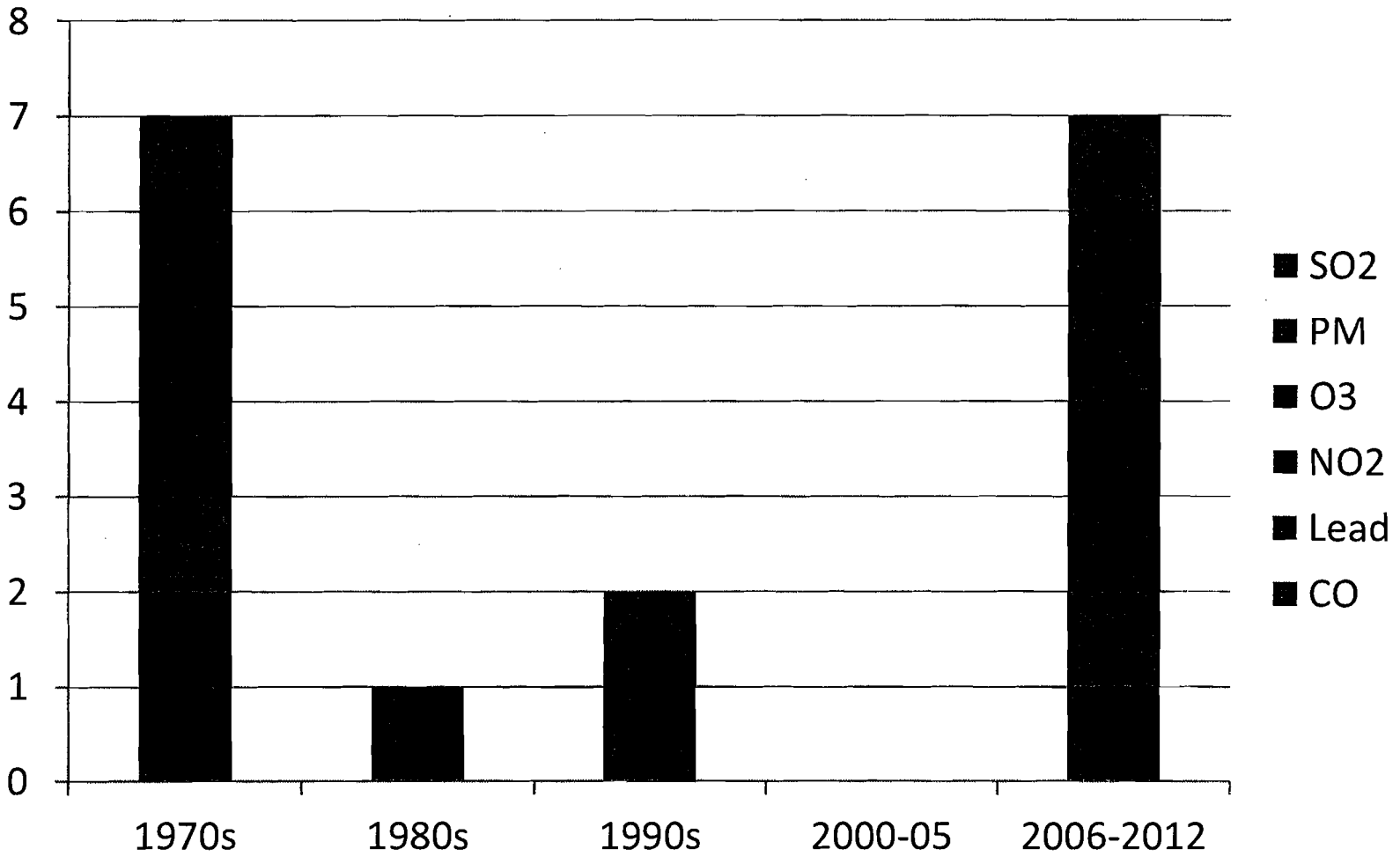
"Essentially, all models are wrong. Some are useful."

George E. P. Box

NAAQS process



NAAQS revision history



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NAAQS Updates

Pollutant	Old standard	Current standard	Proposed standard
Carbon monoxide	Same as current	9 ppm (8 hour) 35 ppm (1 hour) Retained 2011	Next review due ~ 2016
Lead	1.5 ug/m3	0.15 ug/m3 [2008]	Next review due ~2013
Nitrogen dioxide	53 ppb (annual)	53 ppb (annual) 100 ppb (hourly)	Next review due ~2015
Ozone	80 ppb	75 ppb	60-70 ppb
Particulate matter	65 ug/m3 (daily) 15 ug/m3 (annual)	35 ug/m3 daily 15 ug/m3 annual	30-33 daily 11-14 annual
Sulfur dioxide	140 ppb (daily) 30 ppb (annual)	75 ppb (hourly)	Next review due ~2015

Impact of new NAAQS

Obvious	Subtle

• More nonattainment areas
• New emission control requirements on existing manufacturing and utilities
  • Installation of controls/retrofits
  • Fuel switches
  • Shutdowns and closures are possible
	• New business development bypasses nonattainment areas
	• Permits for new facilities are much harder to get
	  • Computer modeling to get approval can be very difficult

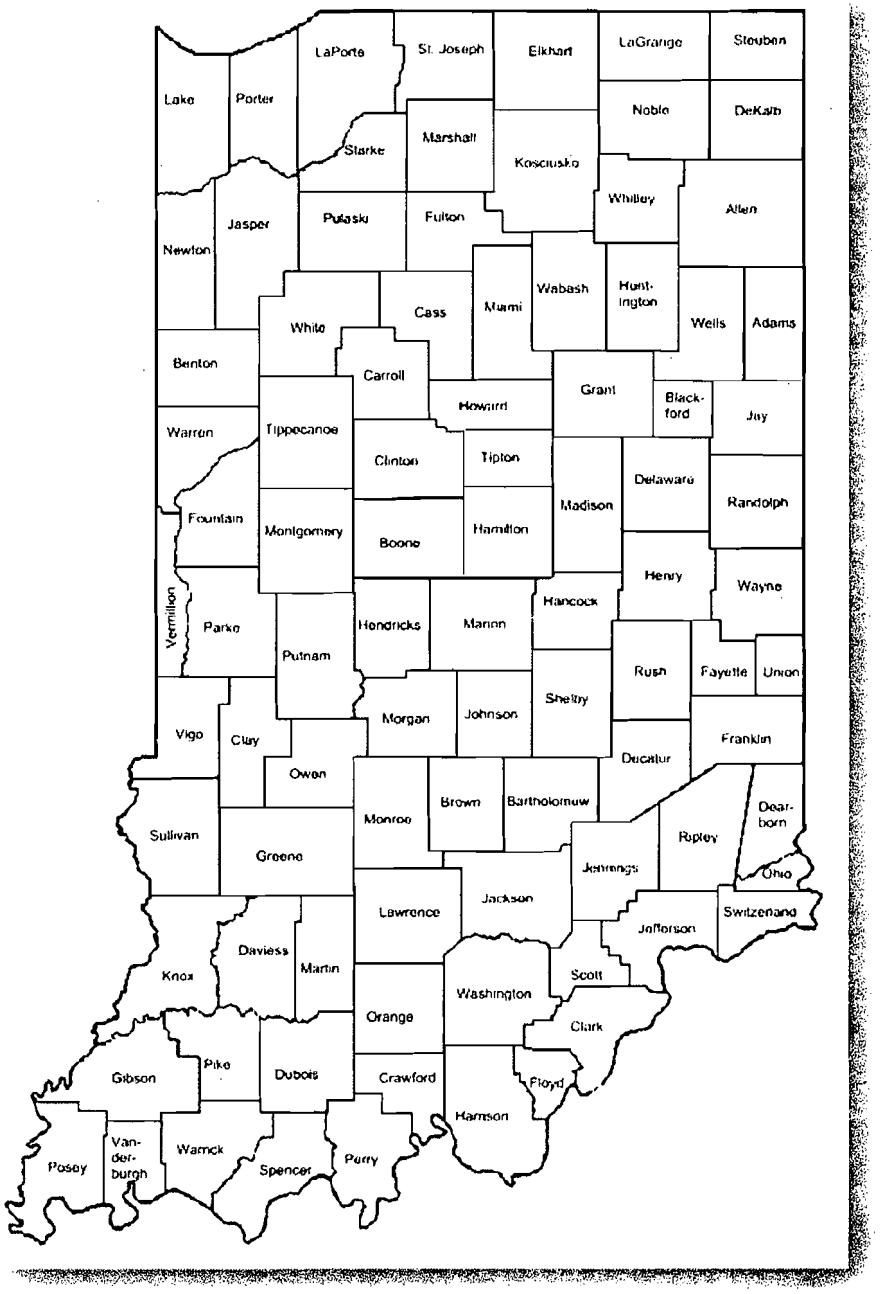
Sulfur dioxide [SO2]

Old SO2 NAAQS	New SO2 NAAQS

• 2 standards
  • Annual
  • 24 hour
• < 10 nonattainment areas in entire country
	• ***1 hour standard***
	• 10 counties recommended nonattainment in Indiana

Modeling emissions against a 1-hr standard will present significant challenges

Potential SO2 Nonattainment areas



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1-hr SO2 NAAQS

- Emission reduction targets
  - Manufacturing sites burning coal/oil for steam
  - Cement plants
  - Steel plants
  - Refineries
  - Brick and glass factories
  - Diesel engine testing
  - Power plants burning coal

75-100 sources in state potentially affected

IDEM SO2 SIP Development Process

Current stage

IDEM source info request [03/2011]

IDEM conducts source modeling 3Q2011

Consult with sources and develop strategy 3Q2011

Add new SO2 limits in rules [SIP] 2012-13

Submit SIP to EPA: June 2013 or Feb 2014

- 1-hour potential/allowable emission rates [NOx, PM, SO2]
- Stack parameters [height, temp, flow]
- Building dimensions
- Fenceline locations

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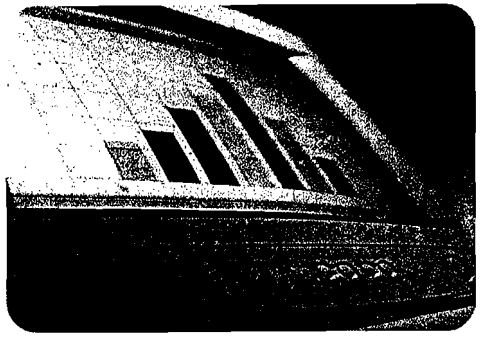
SO2 NAAQS Challenges



Complex and conservative modeling

Areas with multiple sources

Difficult financial decisions

1-hr NO2 NAAQS

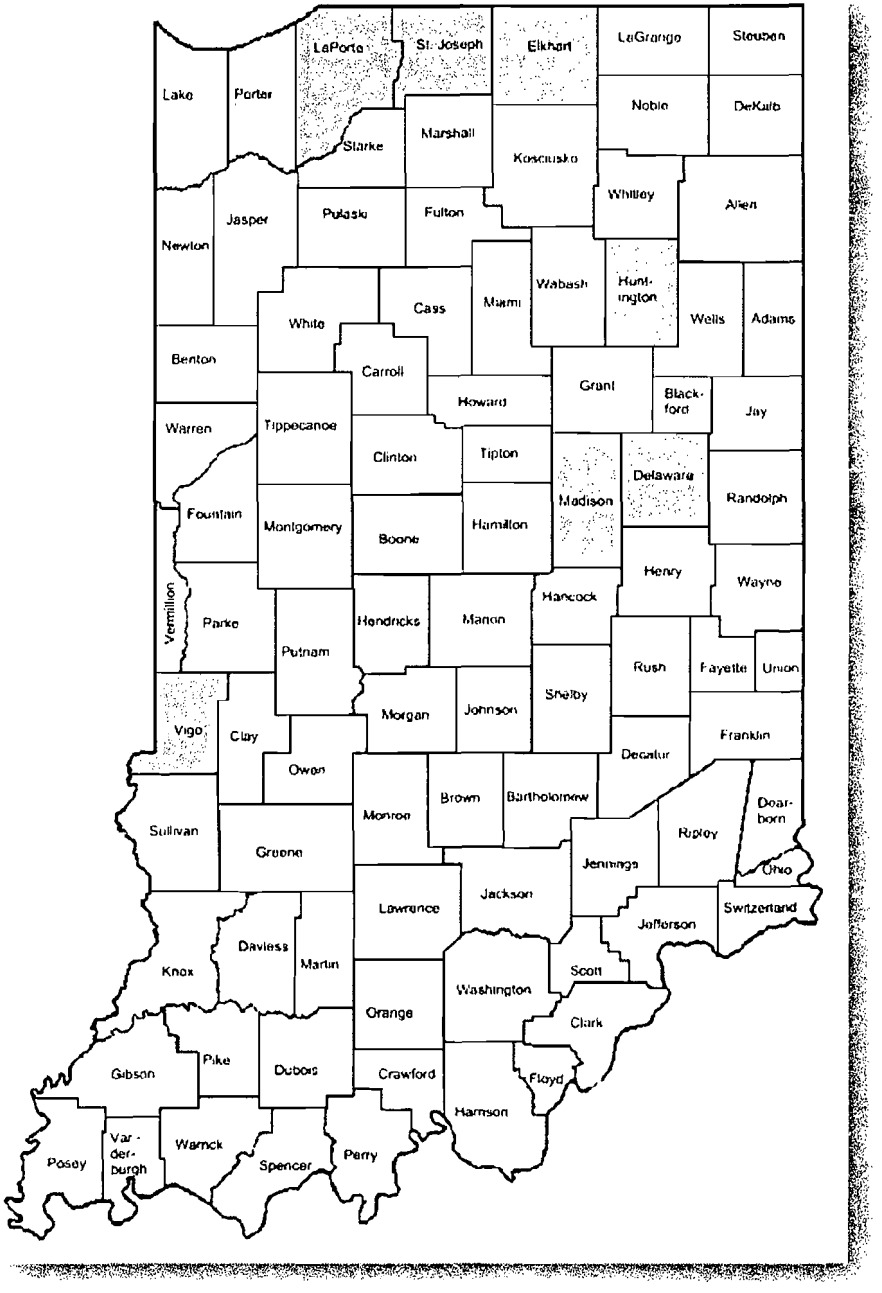
- Current monitoring does not show problems
- First step – more ambient monitoring
- Bigger issue for new permits
  - Modeling compliance is difficult

Ozone NAAQS

- 1971 – 8-hr standard – 80 ppb
- 1979 – 8-hr std – 120 ppb
- 1997 –1-hr standard – 84 ppb
  - Overturned by US Ct. of Appeals
  - Reinstated by Supreme Court
- 2008 – 1 hr standard reduced to 75 ppb
- 2010 – Reconsideration – reduce to 60 to 70 ppb?
- 2011? – New standard finalized? – 70 ppb?

Potential O3 Nonattainment areas

6 counties @ 70 ppb [pink]
20 counties @ 65 ppb [pink + yellow]
27 counties @ 60 ppb [all colors]



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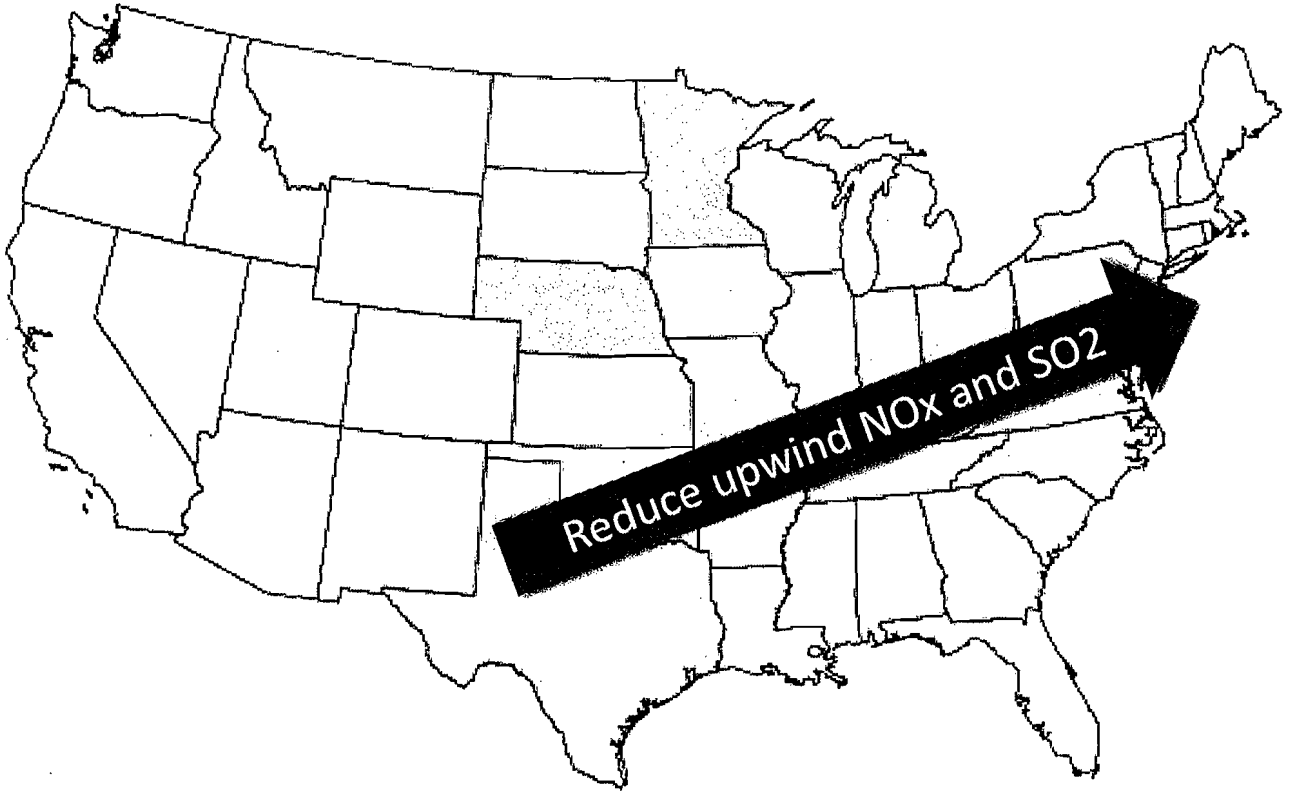
Ozone NAAQS

- VOC emissions from industry are well controlled
- Cars are getting cleaner – both VOCs and NOx
- Utility NOx emissions are going down
- From where will next emission reductions come?

PM2.5 (fine particulate matter)

- 1997 - first PM2.5 standards established [24-hour and annual]
- 2006 – annual PM2.5 standard tightened
- 2010 – proposed tightening both 24-hour and annual standards]

Cross-State Air Pollution Rule



Reduce downwind O3 and PM2.5 levels

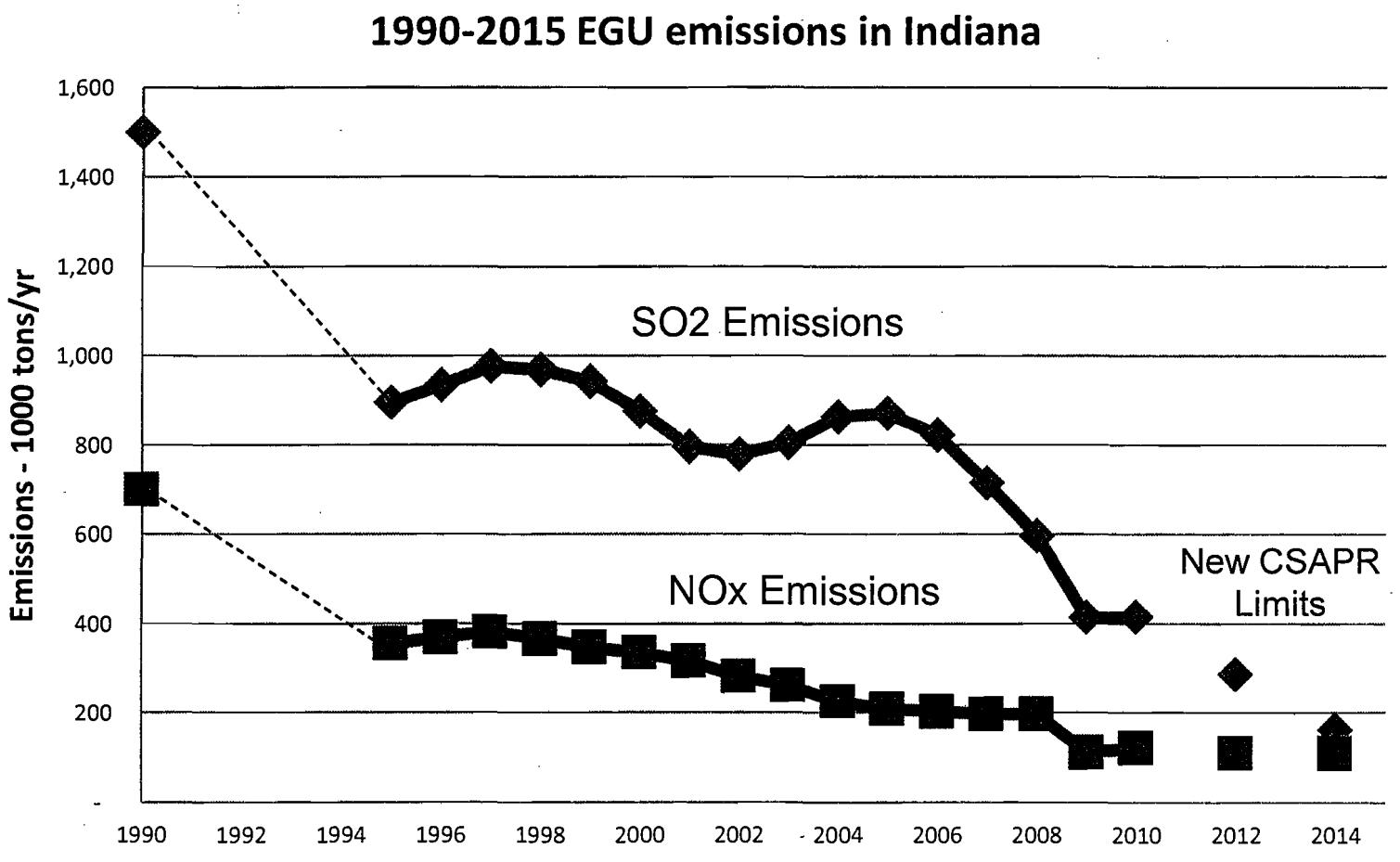
Indiana emission budget reductions

NOx	SO2
54%	73%

Individual EGUs granted an "allocation" of "allowances"

- Sources may trade allowances to comply

Power Plant Emissions



B Paul Consulting, LLC

Utility MACT

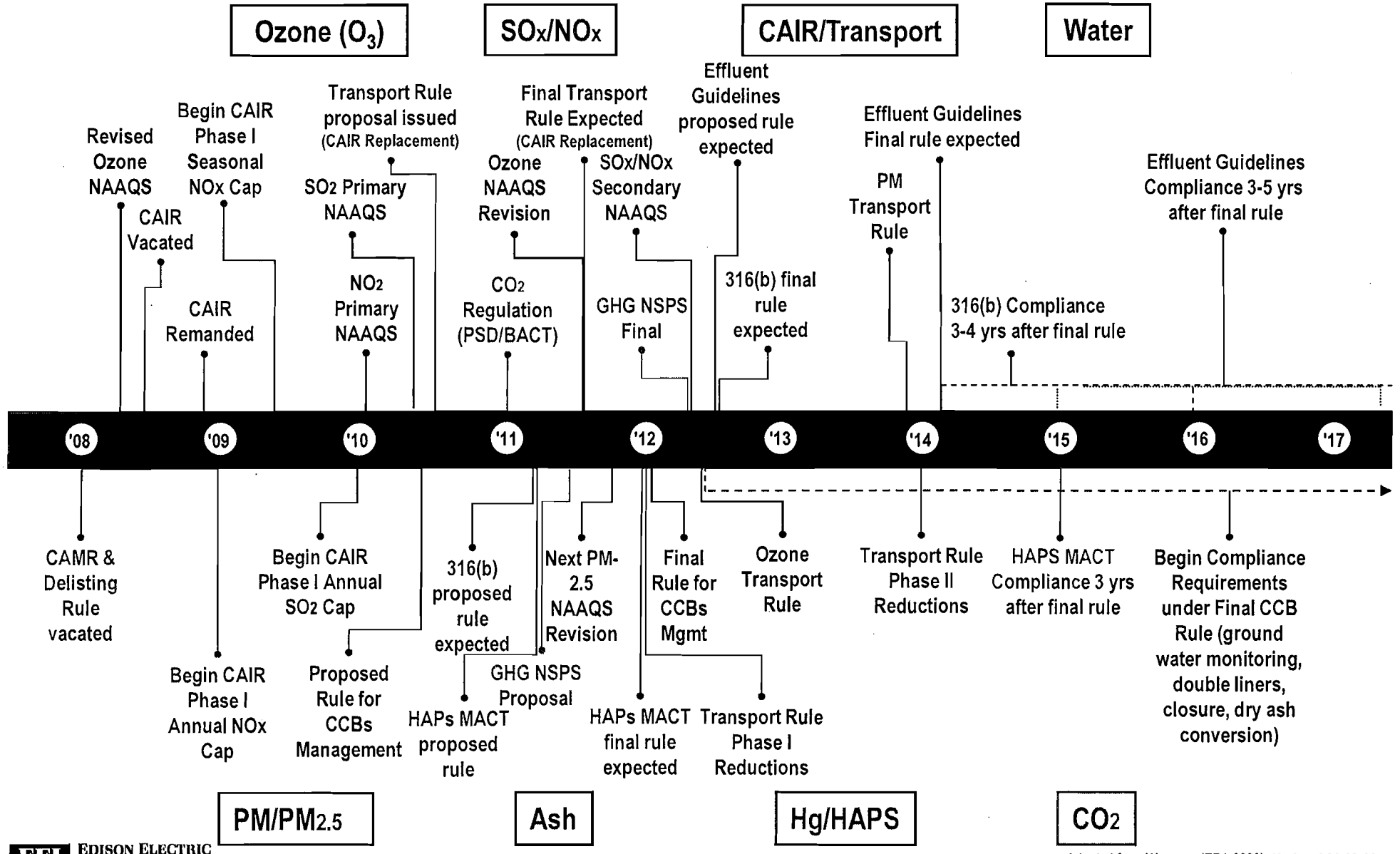
- Proposed in May/Final in November?
- Target pollutants
  - Mercury
  - Acid gases [HCl/SO2]
  - Particulate matter

- Will require $billions in investment in emission controls
  - Sorbent injection
  - Scrubbers

- Issues
  - Most benefits in rule attributable to PM and SO2 reductions – not HAPs
  - Legal decisions
  - Franken-MACT – no new coal plants

- Compliance deadline - 2014
  - Not enough time for utilities to retrofit, upgrade or refuel
  - Significant reliability issues

Possible Timeline for Environmental Regulatory Requirements for the Utility Industry



EEI EDISON ELECTRIC INSTITUTE

-- Adapted from Wegman (EPA 2003) **Updated 01-12-11**

CSAPR costs & benefits [EPA]

	Lives saved	Benefits	Costs
United States	13,271– 33,827	$112 - $274 billion	$3 billion
Indiana	530 - 1,400	$4.5 - $11 billion	

Impacts – Utility MACT + CSAPR

30,000 – 70,000 MW of retirements [28,000 MW already announced]

- AEP – Tanner's Creek 1-2 [280 MW]
- Dominion – State Line 1-4 [515 MW]
- Duke – Edwardsport 7-8 [120 MW]
- Duke – Gallagher 1 & 3 [300 MW]
- Duke – Wabash River 4 [85 MW]
- NiSource – Mitchell [486 MW]

Increased utility rates – 10% to 30%

50,000 Hoosier job losses

Significant hit to Indiana coal industry

Compliance deadlines strain reliability of system

Overall impacts for AEP

$6 billion to $8 billion investment to:

- Retire 6,000 MW
- Refuel/retrofit 11,000 MW.
- Temporarily (1 – 4 years) idle / curtail 1,500 MW – 5,200 MW.
- Build approximately 1,700 MW of new generation.

Impacts:

- Abrupt rate increases ranging from 10% to 35%.
- Significant reliability concerns from 2014 – 2016.
- Transmission system upgrades to help manage reduction in generating capacity.

AEP decisions - economic impacts to employees and communities

- **Net loss of 600 jobs with annual lost wages of approximately $40 million.**
- Indirect job losses - every MW of coal-fueled generation supports an average of three additional indirect jobs.
- In 2015
  - Payroll taxes could decline more than $20 million.
  - Property tax payments could decline approximately $12 million.

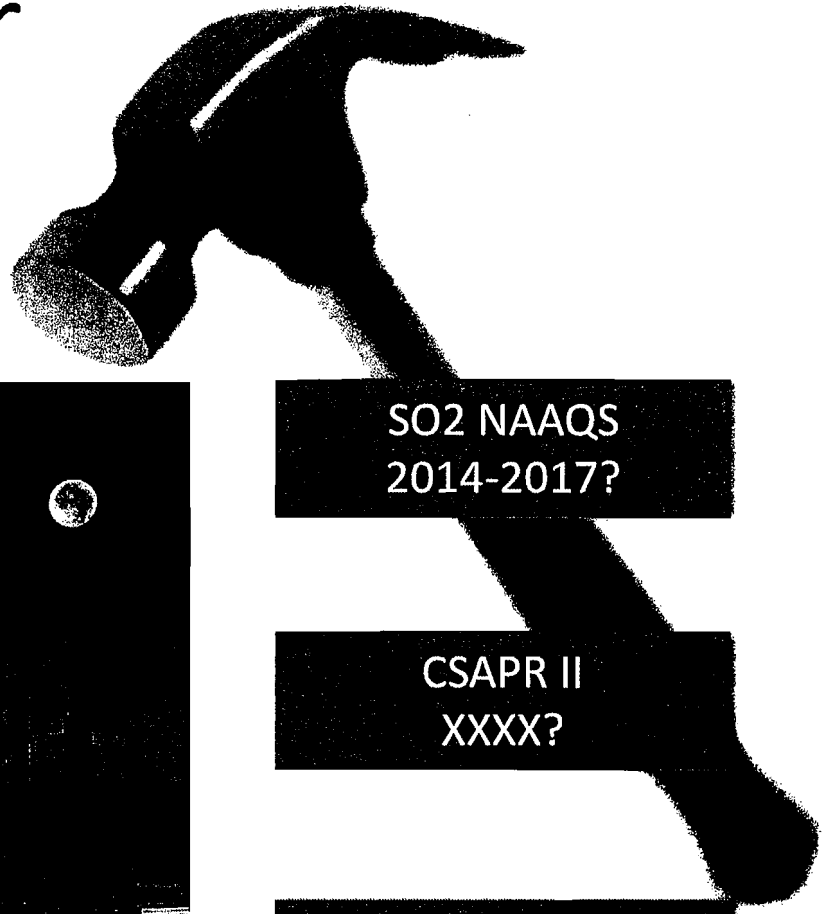
Indiana Michigan Electric

Retirements			
Unit(s)	MW	Lost jobs	Date
Tanners Creek 1 - 3	495	65	Dec. 31, 2014

Retrofit-Refuel-Upgrade		
Unit(s)	Type	New jobs
Rockport 1	FGD, SCR	40
Rockport 2	FGD, SCR	40
Tanners Creek 4	DSI and ACI	

Other Impacts	
Customer rates Indiana Michigan	 25% - 30% 25% - 30%
Taxes (Indiana) Payroll Property	$1.2 million (net reduction) $ 46,500 (increase) $1.2 million (reduction)
Wages (Indiana)	$1.0 million (increase)

The "last nail" for manufacturing?



Boiler MACT
2014-2015?

NO2 NAAQS
XXXX?

PM2.5 NAAQS
XXXX?

SO2 NAAQS
2014-2017?

CSAPR II
XXXX?

O3 NAAQS
XXXX?

Boiler MACT

Pollutants

- HCl
- Metals
- Mercury
- Carbon monoxide

Applicability

- Solid, liquid and gas-fired boilers
- MACT for major sources
- GACT for small sources

Limits

- Tight limits for existing boilers
- Extremely tight limits for new boilers

Industrial Boiler MACT

200,000 boilers affected

$10 - $20 billion in compliance costs

40,000 – 60,000 job losses

Will require > $1 billion investment in Indiana

- Fuel switching/new boilers
- Sorbent injection
- Scrubbers

Currently on administrative hold

Subject to litigation

Congressional oversight

Franken-MACT – impossible for new solid fuel units to comply

Greenhouse gases

Clean Air Act is not set up to regulate GHGs effectively

- EPA regulating vehicle emissions

PSD permitting requirements

- What is state-of-the-art for GHGs?
- Uncertainty and vulnerability – new determinations will be challenged
  - Second guessing by USEPA
  - Appeals of permits

New source Performance Standards for power plants and refineries

- Propose later this year?

Congressional action

- Cap and trade – dead?
- Renewable energy standard?
- Limit EPA regulatory authority

What's next?

EPA will continue to issue regulations

Congress will continue to watch closely and threaten EPA

- Will Congress step in and establish more reasonable targets and timelines?

Litigation

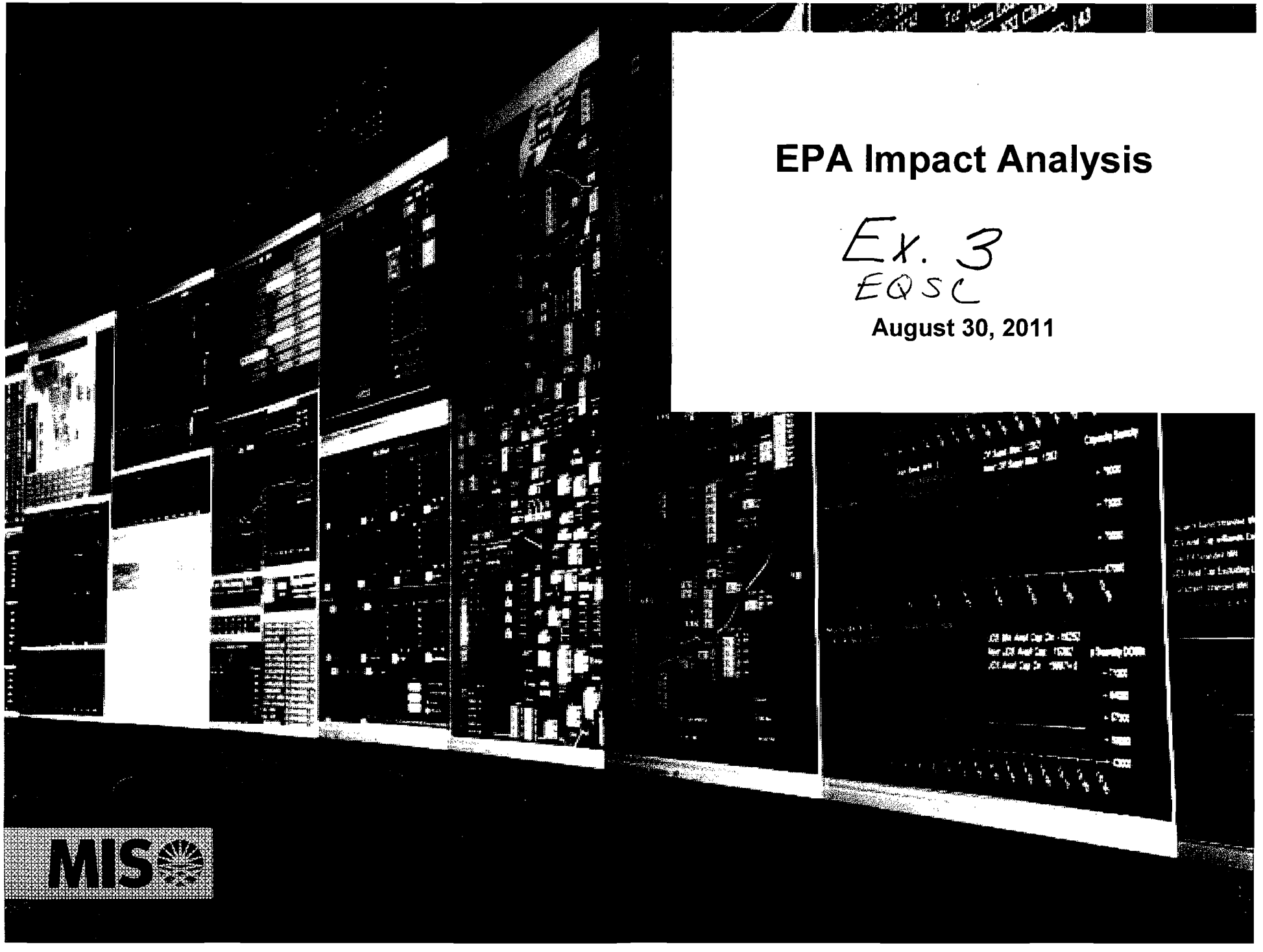
Difficult decisions by companies

Great uncertainty

EPA Impact Analysis

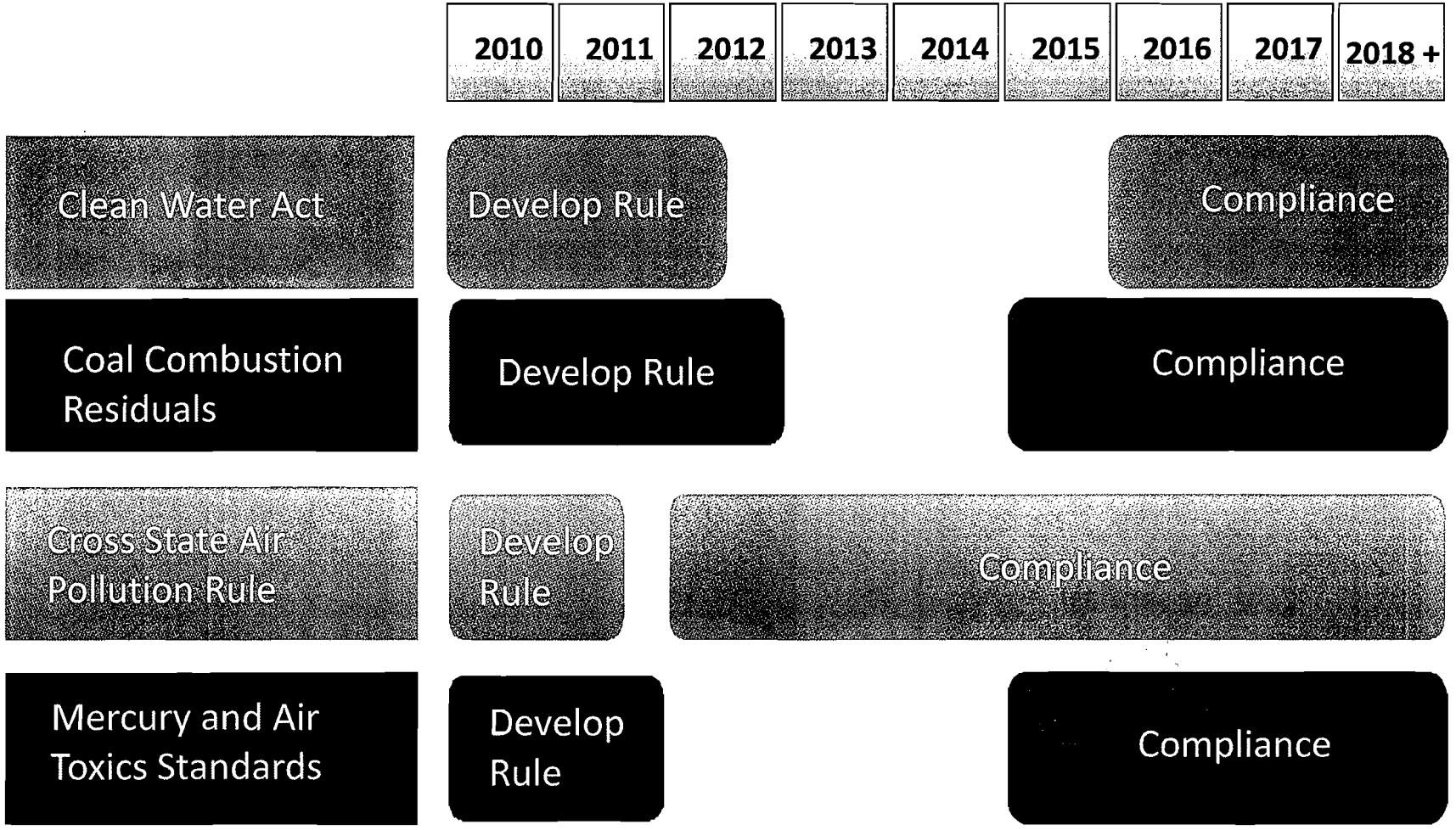
Ex. 3
EQSC

August 30, 2011



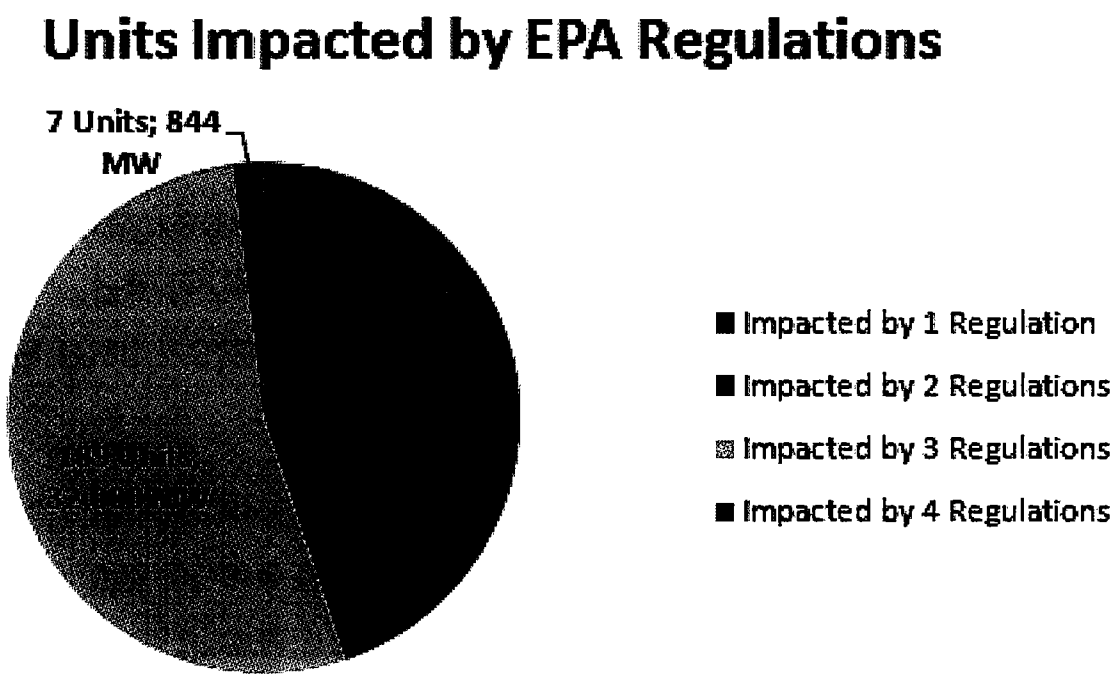
MIS

Environmental Protection Agency Proposing Four New Regulations



MISO

EPA Regulations Will Impact MISO Coal Fleet



- 355 Coal Units totaling 77,261 MW- 100% of the MISO coal fleet - will be impacted by one or more of the proposed regulations
- Impacts will range from installation of control equipment to redispatch to retirement

MISO

Study Overview

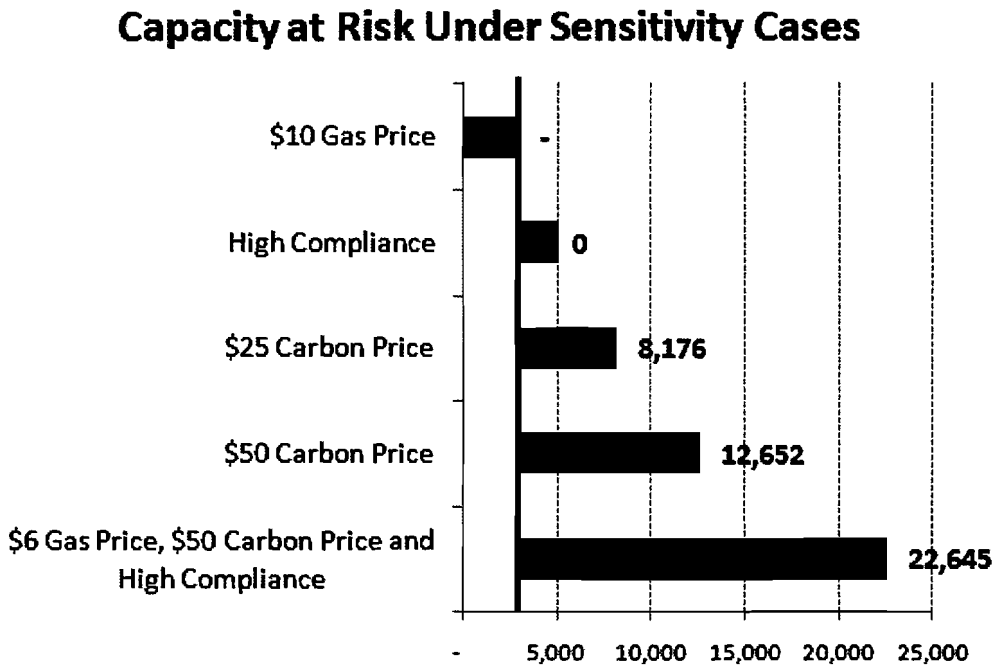
- Study goal is to address four key questions:
  - Are there resource adequacy risks?
  - Are there transmission adequacy risks?
  - What are the impacts on the energy markets?
  - What are the impacts on capital costs to the system?

- A multi-step study methodology was applied
  - Performed 400 sensitivity screens which identified 13,000 MW at risk of retirement
  - Considered at-risk units in the regional resource forecast model to determine whether retirement or retrofit was the more economic option
  - Evaluated localized impacts to system reliability from unit retirement
  - Estimated impacts to energy prices from generation portfolio changes

MISO

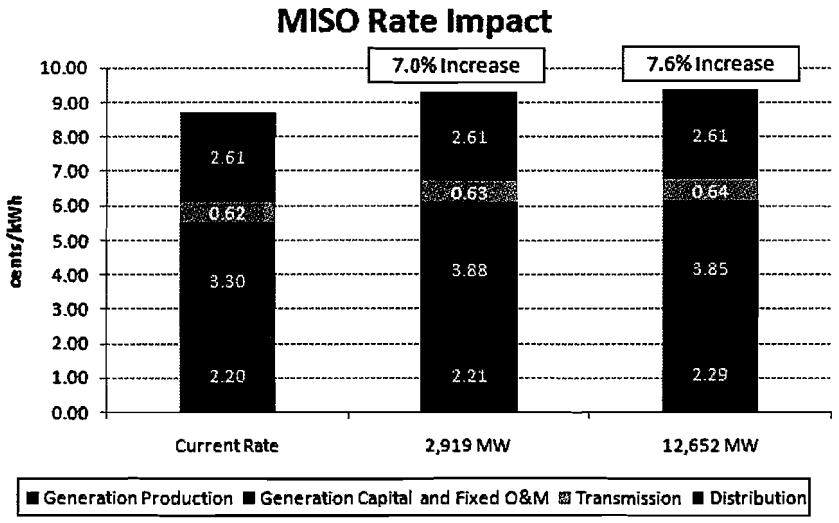
Impact of the Four Rules

- 2,919 MW at-risk for retirement at $4.50/MMBtu natural gas price and $0/ton carbon cost
- Additional costs:
  - Capital Investment: $31.6 to $33.0 Billion
  - Energy Impacts: $1 to $5/MWh

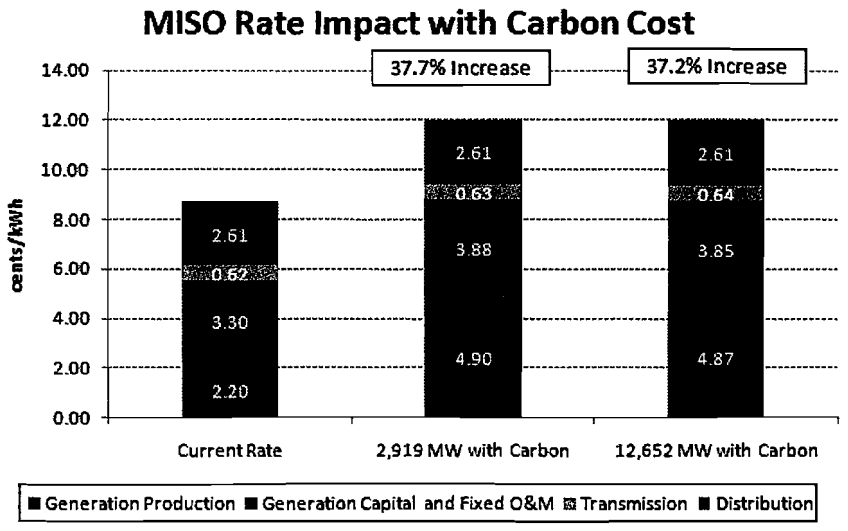


MISO

Rate Impact Evaluation



•At $4.50 gas, the potential impact to rates is similar at both the lower and higher retirement levels



MISO

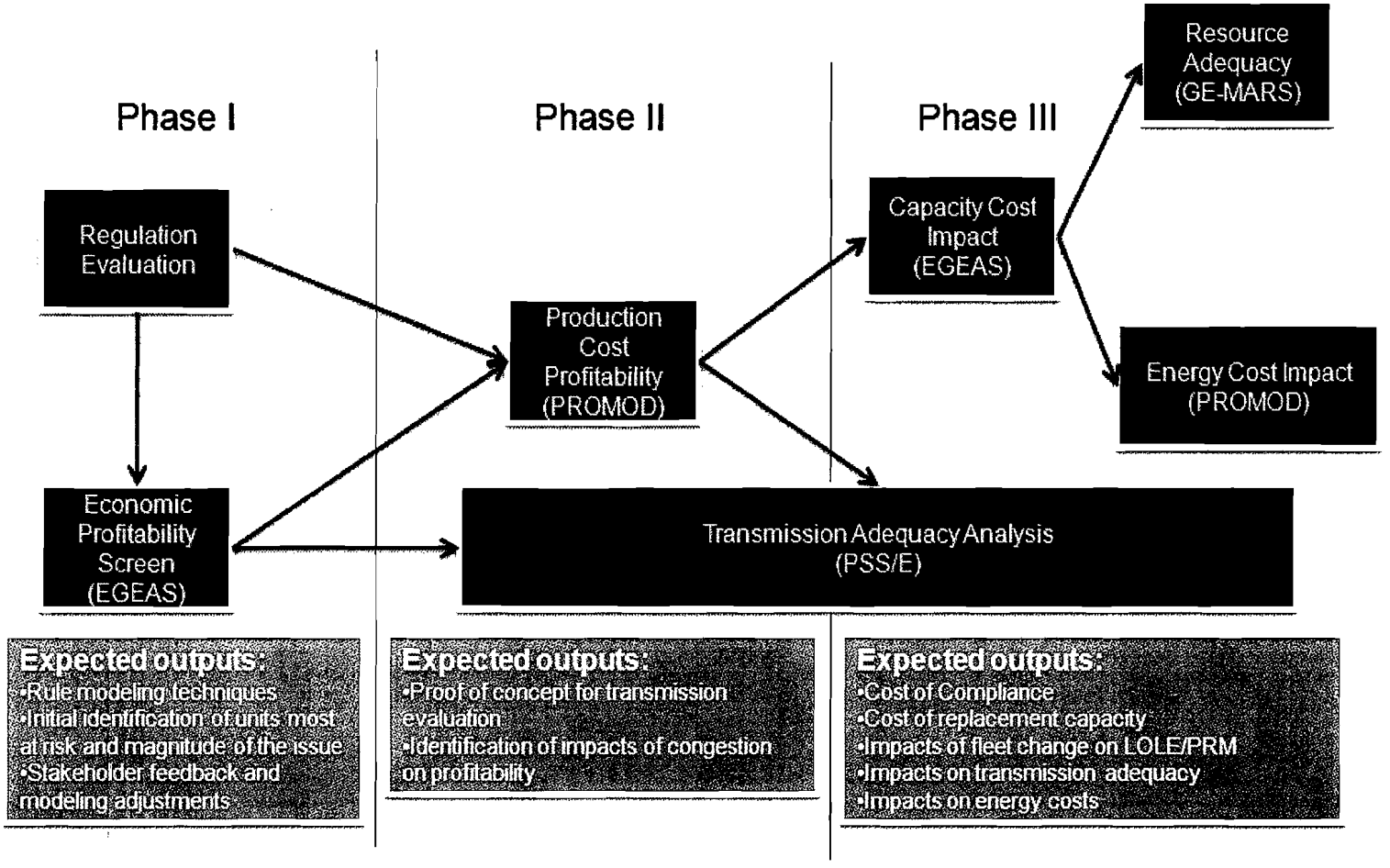
Next Steps

- Update impacts to reflect final Cross State Air Pollution Rule
- Evaluate adequacy of natural gas infrastructure

MISO

APPENDIX

Study Process



MISO