Improving Environmental Decisions Through Sector-based Approaches

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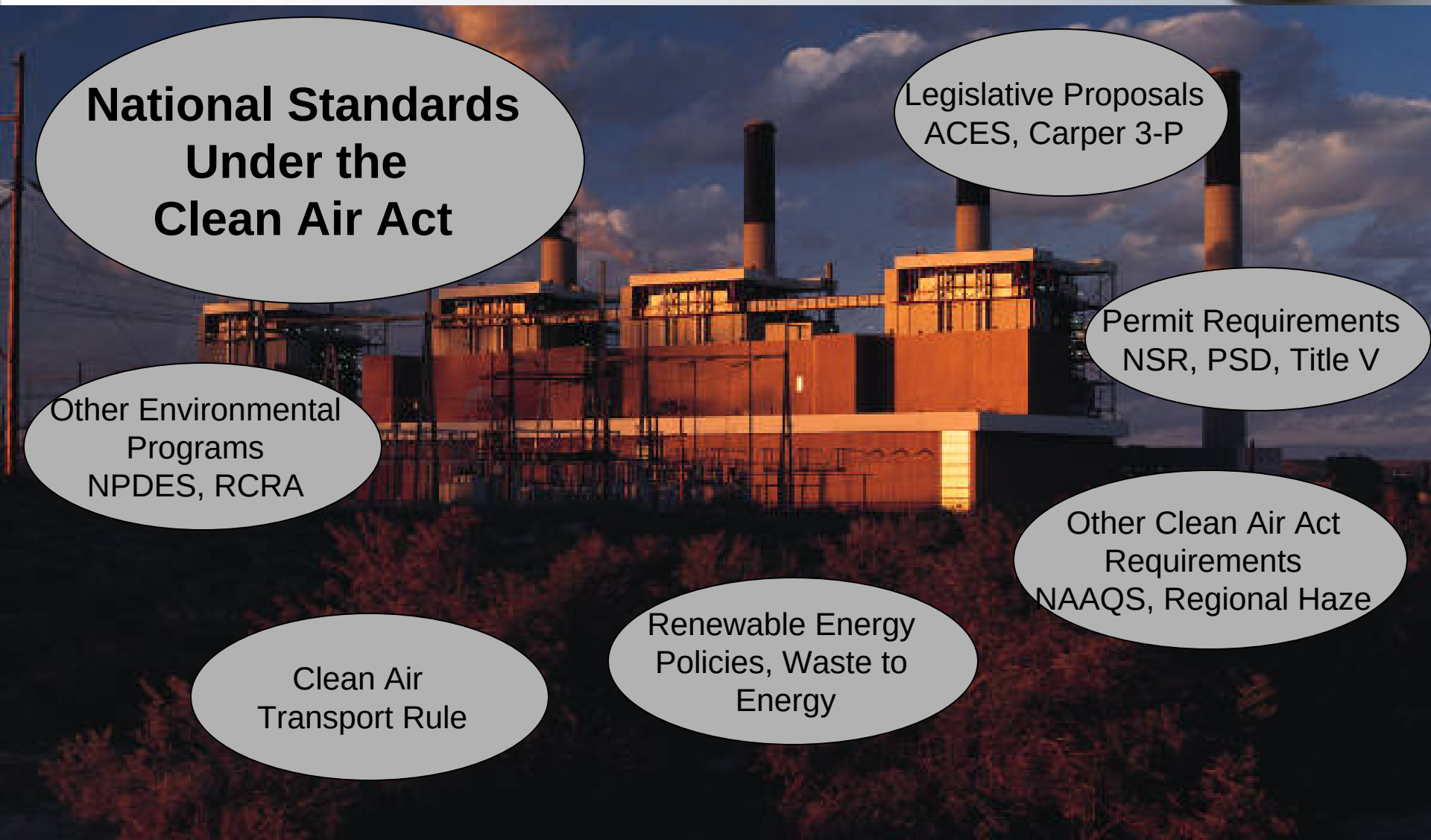
Outline

- Revisit the sector-based strategy
- Goal of the sector-based strategy
- Our approach to sector-based strategies and an example
- Moving forward with a Sector-based approach
- Conclusion

Regulatory and Legislative Impacts on Industrial Stationary Sources



CAA Requirements Results in Numerous Regulations on the Same Industries

Industry Group	Total	Area Source	CTG/183(e)	MACT/129	Pre-1990 NESHAP	NSPS
Chemical Production	75	14	18	31	1	11
Durable Goods Manufacturing	58	4	23	20		11
Metal Processes	48	16	1	15	3	12
Minerals	36	5	2	12	2	15
Agriculture and Forest Products	15	2	3	7		3
Oil and Gas Production and Distribution	15	2	5	5		3
Petroleum Refining	13		4	2	4	3
Energy and Combustion	12	1		5	1	5
Service Industries	11	2	6	2		1
Transportation Equipment	10		5	4		1
Waste Management	8			8		1
Chemical Usage	5	1	3	1		
Utilities	3			1		2
Institutions	1			1		
Transportation Infrastructure	0					
Total	**310**	**47**	**70**	**114**	**11**	**68**

Goal of Sector Strategy

- To group activities that are under common control and typically fall within a facility fenceline, and are used to make a product or group of products.
  - Activities comprise various equipment, control devices and air pollution sources
- To use these groupings to align elements of the federal stationary source emissions standards programs and set priorities
  - Synchronize rules, assign resources, maximize environmental benefits, regulatory certainty, etc.

Types of activities

- Process Em.
- Heaters
- Storage
- Waste
- Engines
- Furnaces

Sector Strategy Example

Petroleum Refineries

Emission Point	Current Regs
Boilers	NSPS: Db MACT
Process Heaters	NSPS: J, Ja
FCCU, Ref, SRP	NSPS: J, Ja MACT: UUU
Process Vents	MACT: CC
Wastewater	MACT: CC Part 61: FF NSPS QQQ
Storage	NSPS: Ka,Kb MACT: CC,EEE NESHAP
Loading	MACT: CC, EEE NESHAP
Equipment Leaks	MACT CC, UU, TT NSPS GGG,VV NESHAP

Regulatory Actions

NSPS Db tech review
New Boiler MACT(?)

NSPS tech review

UUU Residual Risk Rule and Technology Review

CC Residual Risk Rule and Technology Review

EEE Residual Risk Rule

NSPS tech reviews

Sector Approach

Sector Action

Sector Action

Sector Strategy Applied to Cement Industry

- Harmonize Section 111 and 112 regulatory timetables while considering multiple regulatory requirements
  - NSPS, NESHAP, Residual Risk
  - NSR, Regional Haze, PM NAAQS Attainment
- Concurrently analyze multiple regulatory requirements to evaluate control strategies and multi-pollutant benefits
  - Align alignment of VOC and CO limits from NSPS with THC limit from NESHAP
  - Alignment of PM limit from NSPS with PM limit from NESHAP
  - New PM limit reduces residual risk due to Chrome IV emissions
  - SO_2 reductions from existing kilns are possible as co-benefits of HCl and Hg limits on NESHAP and can be used for NSR netting or offset purposes
- Minimize administrative and compliance complexities
  - Align NSPS and NESHAP schedules allowing facilities to plan to maximize co-benefits of emission reductions while minimizing costs.
    - For example, a new facility with a moderate level of SO_2 emissions might decide to install a lime-spray dryer for SO_2 emission reductions under the NSPS and an ACI for Hg emission reductions under the NESHAP. If requirements are aligned, the facility might decide to install a wet scrubber to control SO_2, Hg, and HCl at the same time.
  - Align NSPS and NESHAP Monitoring, Recordkeeping and Reporting Requirements when pollutants and emission sources have similar characteristics

Interaction of Regulations in Cement Sector Strategy

Regulatory Actions	Pollutant									
	PM	SO_2	NO_x	Hg	THC	Chrome IV	VOC	HCl	CO	Condensable PM
NESHAP	Co-benefit	Co-benefit		X	X	X	Co-benefit	X	Co-benefit	Co-benefit
NSPS*	X	X	X	Co-benefit	Co-benefit	Co-benefit	X	Co-benefit		Potential
NSR		Incentive								
Regional Haze		Incentive								
PM2.5 SIP		Incentive								

NSR Incentive: to the extend that the reductions of SO_2 emissions are deemed "surplus at a cement plant, they can be used either as netting credits at the source or they can be sold as offsets to other sources in the same non-attainment area.

Regional Haze: States can use collateral criteria pollutant emissions reductions resulting from the application of MACT for Regional Haze SIPs

PM 2.5 SIP: States can use collateral criteria pollutant emissions reductions resulting from the application of MACT for PM2.5 SIPs

*NSPS just covers new and modified sources

Benefits of Sector Strategy

MANAGEMENT

Concentrates efforts on biggest reductions

Helps states move toward attainment goals

Reduces litigation and addresses backlog

Meets Clean Air Act obligations efficiently with synchronized timelines

Impact on Health and Environment

Evaluates whole facility and interaction of pollutants and processes

Gathers more comprehensive emissions data

Quantifies co-benefits

COSTS

May lower administrative costs for federal, state and local governments – short run effect may be an increase in costs to States as we transition

In the long run, avoids stranded costs in capital equipment for industry and provides regulatory certainty

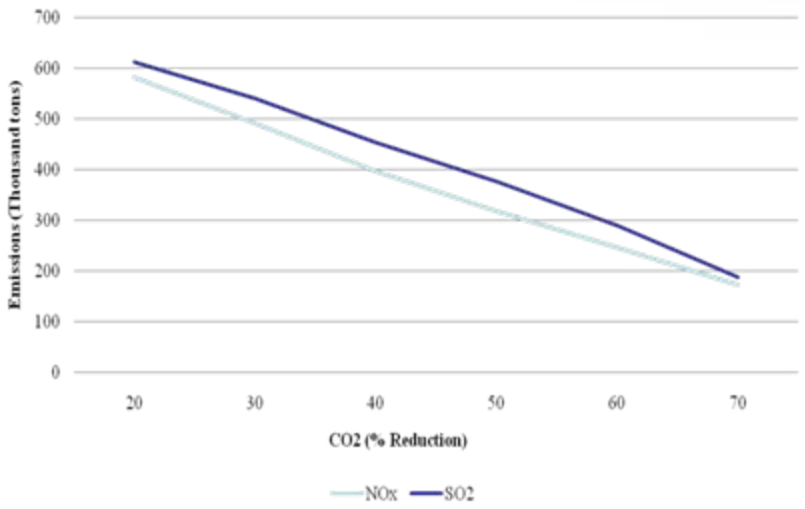
Eliminates redundancy

How does the Sector Approach Help Us Confront New Policies

- Encourages the evaluation of multi-pollutant impacts
- Allows for the evaluation of multiple competing policies on a sector
- Allows for the understanding of intra- and inter-sector economic competitiveness

Example Analysis of Co-Benefits in a Carbon Constrained Environment

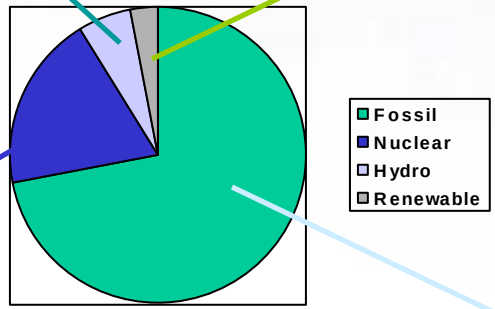
- Application of the Industrial Sectors Integrated Solutions (ISIS) Model to analyze multiple regulatory actions in a carbon constrained environment
  - Energy efficiency
  - Fuel switching
  - Carbon capture and storage
- Multi-pollutant analysis
  - Co-benefits of CO_2 Reductions with energy efficiency measures and CCS



Electricity Generation in the United States

Hydro (6%):
- Climate Change

Renewables (3%):
-Biomass
-Energy Recovery
-Geothermal
-Wind/Solar



Nuclear (19%):
-National Security

Transmission Grid:
-Aging infrastructure
- Smart Grid

Fossil (72%):
-Coal (50%)
-Natural Gas (21%)
-Oil (2%)

Policy Challenges for New Generation

- **Statutory**
  - New Source Performance Standards (NSPS)
    - Criteria Pollutants (NOx, SO_2, PM (direct, secondary)
    - GHGs?
  - Maximum Achievable Control Technology (MACT)
    - 112(g) – "Case by Case MACT"
    - 112(f) – "Residual Risk"
  - National Ambient Air Quality Standards (NAAQS)
    - State Implementation Plans (SIPs)
  - National Permitting Issues
    - New Source Review (NSR)
    - Prevention of Significant Deterioration (PSD)
    - Title V Reform
  - Definition of Solid Waste
    - Non-Hazardous Solid Waste – Section 129 Incineration Regulations
    - Fuels – Section 111 and 112 Requirements
- **Legislative**
  - Carper 3P Bill
    - NOx, SO_2 and Hg
  - Waxman-Markey Climate Bill
    - Capped Sources (> 25,000 tpy)
    - Non-Capped Sources
- **Hybrid Approaches**

Many Policies, Many Potential Directions:
Sector-based Approach Helps Evaluate Industry Response

Multi-Market Model plus ISIS equals competitiveness

- By modeling policy options across a sector one can see how those changes affect *other industries and consumption*.
- By modeling policy options *within* a sector one can see which policies will change *that industry.*
- A sector strategy needs a model that shows both:
  - *Environmental benefit within the industry*
  - *Competitiveness benefit for the sector*

Moving Forward with a Sector-based Strategy

- Sector strategy enables holistic air quality management
  - Maximize environmental benefit considering multiple pollutants and various control strategies
  - Understand tradeoffs in cost, health and welfare, and energy across policies
  - Build consistency across program
- Win-win-win-win storyline
  - Sector logic more understandable to public and can achieve better emission reductions
  - Maximize environmental benefits by setting regulatory priorities through collaboration with stakeholders
  - Synchronized timelines provide greater regulatory stability for industry
  - Help federal, state and local governments manage workload and get the most out of limited resources