Sector-Based Multipollutant Approaches for Stationary Sources

Matthew Witosky
Sector Policies and Programs Division
Office of Air Quality Planning
and Standards (OAQPS)

CAAAC Subcommittee Meeting
Sector Discussion
Washington D.C.
May 26, 2010

Clean Air Act Requirements for Direct Federal Stationary Source Regulation and Guidance

as of March 2009

Section 112 **Air Toxics** National Emissions Standards for Hazardous Air Pollutants (NESHAPs) Post-1990 NESHAPs called maximum achievable control technology (MACT standards)	**Source category list review**	Every 8 years
	Pre-1990 NESHAP reviews (11 rules)	Every 8 years
	MACT technology review (96 rules)	Every 8 years
	MACT residual risk review (96 rules)	8 years after promulgation
	Area source rules (47 area source & 12 MACT rules cover 70 source categories)	Varies
	Area source rules review (70 technology, 12 residual risk)	Every 8 years
Section 129 **Solid Waste Incineration**	**Technology reviews** (5 rules)	Every 5 years
	Residual risk reviews	8 years after promulgation
Section 111 **NSPS** New Source Performance Standards	**NSPS technology review** (68 rules)	Every 8 years
	New NSPS Rules	2 years after listing
	Control Techniques Guidelines (CTG)/ Alternative Control Techniques (ACT)	Varies

Remands/Reconsiderations

3 Sec 111, 6 Sec 112, 4 Sec 129 (13 current)/ 12 MACTs under litigation

Sector Strategy

Seeing the forest for the trees

Emission points are like the trees.

Sector strategy helps EPA see the forest.

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**

Overview of the Sector Approach

The Sector-based Multipollutant approach strives to address stationary source regulation with a strategy that

- Achieves better environmental benefits and public health protection;
- Uses a more holistic, multipollutant approach;
- Minimizes regulatory and administrative burdens; and
- Leverages federal, state, and local resources more efficiently and effectively

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

Benefits of Sector Approach

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

SCIENCE AND ANALYSIS

Evaluates whole facility and interaction of pollutants and processes

Gathers more comprehensive emissions data

Eliminates redundancy

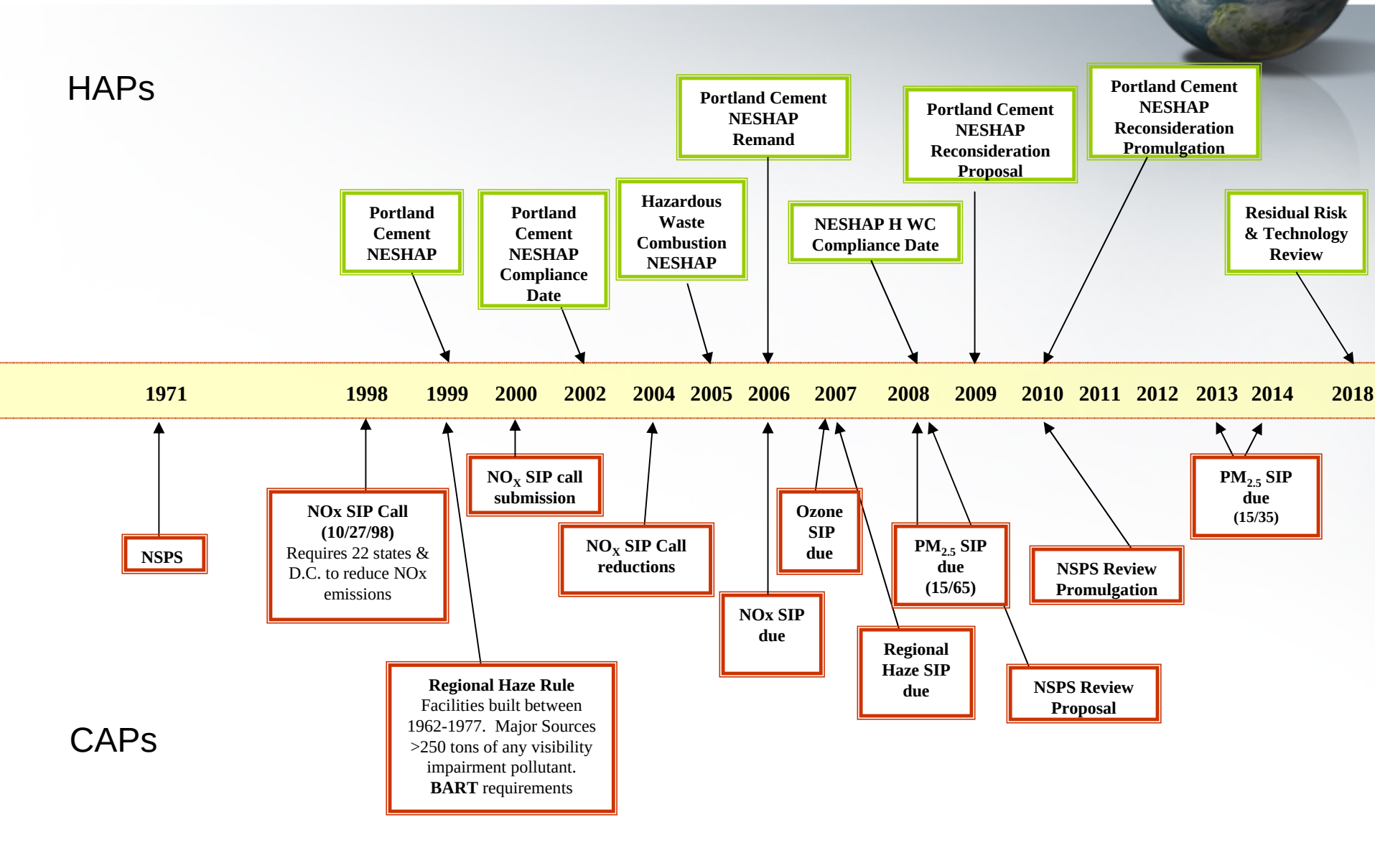
Quantifies co-benefits

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

Portland Cement Manufacturing Industry – Regulatory Landscape



Sector Strategy Example: Portland Cement Manufacturing

Control Technologies	Pollutant									
	PM	SO2	NOx	Hg	THC	Chrome IV	VOC	HCl	CO	Condensable PM
Wet scrubbers*		X		X				X		X
Dry Lime Injection		X						X		
Activated Carbon Injection (ACI) [1]*	X			X	X		X			
Regenerative Thermal Oxidizer (RTO) [2]*		X			X		X	X	X	X
SNCR			X							
SCR			X	X	X					
Fabric Filter with membrane bags	X					X				

[1] ACI needs a fabric filter therefore PM emission reductions are co-benefits
[2] RTO needs a WS therefore SO_2, Hg, HCl and condensable PM emission reductions are co-benefits. A direct increase of 1– 2 percent of CO_2 is possible
* CO2 indirect emissions increase due to the electrical demands for: ACI, wet scrubbers, and in some cases for RTOs
[3] SCR oxidizes Hg making it easier to collect in other controls such as a wet scrubber or ACI

Cement: Technology Selection under Separate Rulemakings vs. Sector Approach

Separate rulemaking – requirements not aligned

Rulemaking	Pollutant Controlled	Control Device	Control Efficiency
NSPS	SO2	Lime Injection	70-90 %
NESHAP	Hg	ACI	90%
NESHAP	HCl	Lime Injection	90% +

Combined rulemaking – requirements aligned

Rulemaking	Pollutant Controlled	Control Device	Control Efficiency
NSPS	SO2	Wet Scrubber	95 % +
NESHAP	Hg	Wet Scrubber	90 % See Note 1
NESHAP	HCl	Wet Sc rubber	95 %+

Other Benefits – Control of condensable PM (levels currently unknown) and additional control of non-condensable PM.
The cost of SO2 removal ($/ton) is potentially reduced due to shared controls. This could justify a lower SO2 limit.

Note 1. Current test data indicates a Hg control efficiency up to 80%. Bench scale testing indicates the use of certain additives may allow wet scrubbers to achieve Hg control levels comparable to ACI.

Developing Analytical Tools

- Industrial Sectors Integrated Solutions Model (ISIS)
  - Dynamic model designed to provide information on:
    - the optimal industry operation to meet the demand for the commodity and any emission reduction requirements,
    - the suite of cost-effective controls needed to meet the emission limits,
    - the engineering cost of controls, and
    - the economic response of industry to the policy.

Moving Forward with Sector Opportunities

SHORT TERM

- Synchronize timelines
- Multipollutant analysis
  - Highlight interaction of emission limits and control technologies
    - One control may have significant co-benefits
  - May help inform tough decisions on individual rules and EPA priorities
- Leverage resources (human and financial) more effectively

LONG TERM

- Collect better data
- Lower costs
- Deter lawsuits
- Foster innovation
  - Integrate limits on criteria air pollutants, toxic air pollutants
- Provide greater regulatory stability

Sector-Based Multipollutant Approaches for Stationary Sources

Thank you for your attention

CAAAC Subcommittee Meeting
Sector Discussion
Washington D.C.
May 26, 2010