



Cross-State Air Pollution Rule (CSAPR): 2015 Reboot

*Prepared For EMA 2014 Annual Meeting
Oct 23, 2014*



Business Overview

Company Overview

- Founded in 2000 by current management team
- Market leader in the global energy and environmental commodities sector
- Privately held
- ~60 employees in New York, San Francisco, Houston, London, Cape Town, Singapore, and Shanghai
- Award-winning, client-focused services
- Focused on intermediary role only, free from conflict

Large and Diverse Relationship Network

- Fortune Global 500 firms
- Investment Banks
- Hedge Funds
- Utilities
- Industrials
- Developers
- Investors

2

Market Pioneer

- Largest dedicated environment and energy markets brokerage
- Advised market design of carbon programs in EU, California, and Northeast US
- Facilitated first trades in EU ETS, California carbon, RGGI, and RECs in NEPOOL, Texas, & PJM
- Evolution principals launched weather derivatives market
- Forefront of US coal and nuclear fuels markets

Service Offerings

- Brokerage and transaction advisory services
- Due diligence support
- Investment origination
- Monetization and structuring of environmental commodity off-take agreements
- Renewable power purchase agreement structuring
- Customized advisory and consulting services
- Market intelligence, data and custom research

Our Service Offerings

Intermediation

- Professional OTC brokerage services for energy and environmental market participants (financial and natural)
- Introductory futures brokerage services
- Futures trade execution and give up services
- EvoScreen™ electronic transaction platform
- EvoAuction™ online auction platform

Advisory

- Transaction and market strategy support
- Investment due diligence
- Business opportunity assessment
- Market entry support
- Renewable energy project development advisory
- Monetization of environmental commodities

Structured Transactions

- Environmental asset origination and sale
- Coal supply sourcing and offtake agreement structuring and sales
- Power Purchase Agreement (PPA) negotiation
- Carbon credit project origination
- Carbon finance investments
- Logistics and physical delivery transactions

Market Data/Analytics

- **evo.ID** online market data and risk management resources
- **evo.DB** energy and environmental markets price database
- Energy and environmental market analysis
- Customized assessments and transaction support

Our Markets

Clean Power

- Global renewable power markets; US renewable energy certificates
- Clean power purchase agreement structuring and negotiation
- Clean energy policy analysis
- US State energy efficiency credit markets

Environmental Attributes

- Global carbon compliance markets; Regional GHG markets
- Voluntary offsets; “Impact” carbon
- US Federal and State emissions markets

Clean Fuels

- Global biomass and biofuel markets
- Nuclear fuel supply, risk management and hedging
- Physical natural gas

Power/Natural Gas

- Integrated brokerage service for US power markets (PJM, MidCon, NEPOOL, Texas) and US natural gas markets

Energy Options

- Global energy options coverage, including crude, natural gas, coal, and power



ENVIRONMENT

EMISSIONS

WEATHER

CARBON

ENERGY EFFICIENCY

RENEWABLE ENERGY

WATER



ENERGY

COAL

NUCLEAR FUELS

POWER

BIOFUELS

NATURAL GAS

OIL

BIOMASS



FINANCE

STRUCTURED TRANSACTIONS

CARBON FINANCE

Global Footprint



EVOLUTION
MARKETS



Leadership in the Markets We Serve

Since Evolution Markets was founded in 2000, we have received more than 140 awards for excellence in brokerage. Below you will find a sample of our most recent awards from 2013/2014. For the full list our awards, please visit www.evomarkets.com



Annual Customer Survey

2013

- Best Broker, Options (EUAs, CERs) 
- Best Broker, Spot & Futures (EUAs, CERs) 
- Best Broker, Secondary Market Kyoto Project Credits 
- Best Broker, North American Markets (California) 
- Best Broker, North American Markets (RGGI) 
- Best Broker, Renewable Energy Certificates, North America 

RISK MANAGEMENT • TRADING • FINANCE

energy risk

Best Broker, U.S. Coal

Annual Commodity Rankings

2014



RISK MANAGEMENT • TRADING • FINANCE

energy risk

Annual Awards

House of the Year: U.S. Coal (2010)

Specialist Broker of the Year (2008)

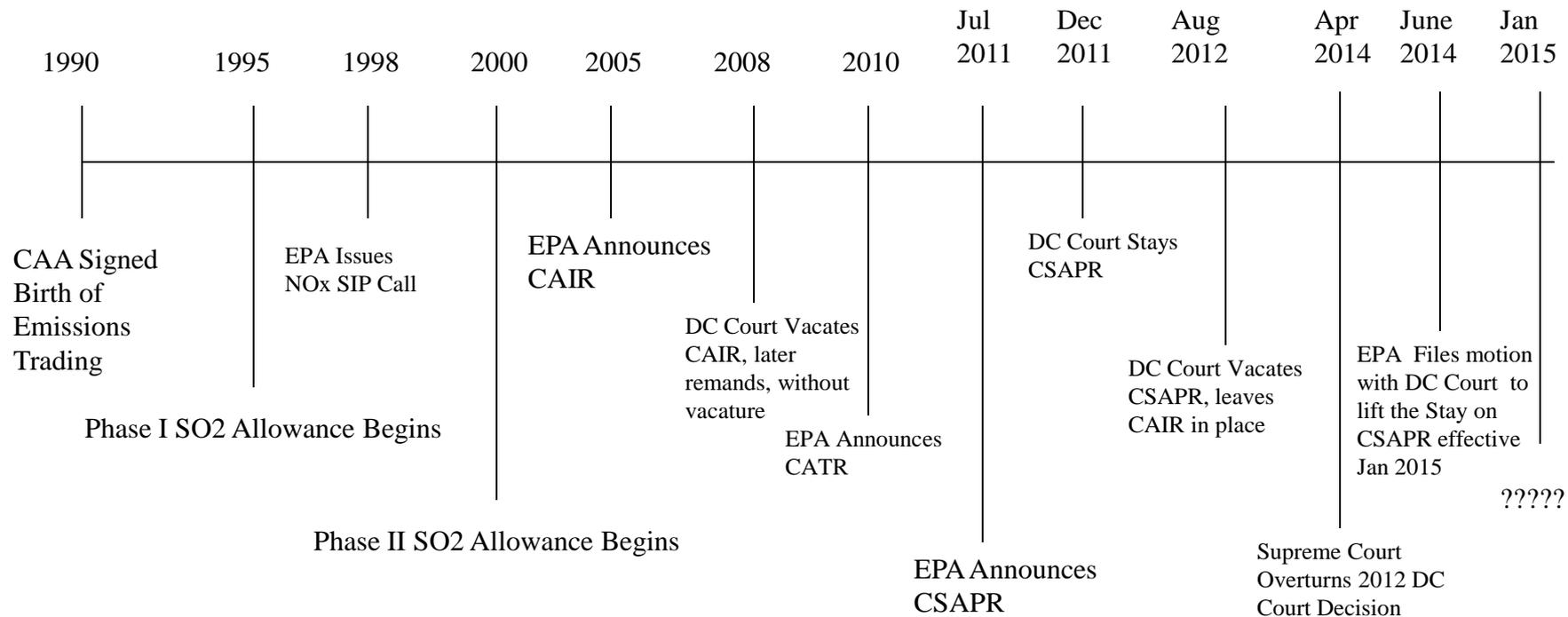
House of the Year: European Emissions (2007)

House of the Year: Weather / Emissions (2004)

*category runner-up

Regulatory Timeline

Regulatory Timeline



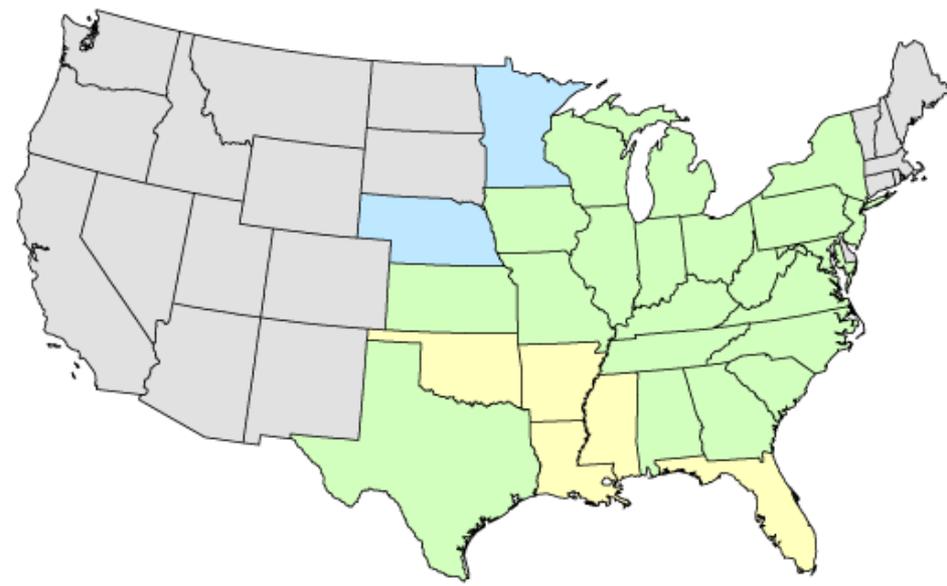
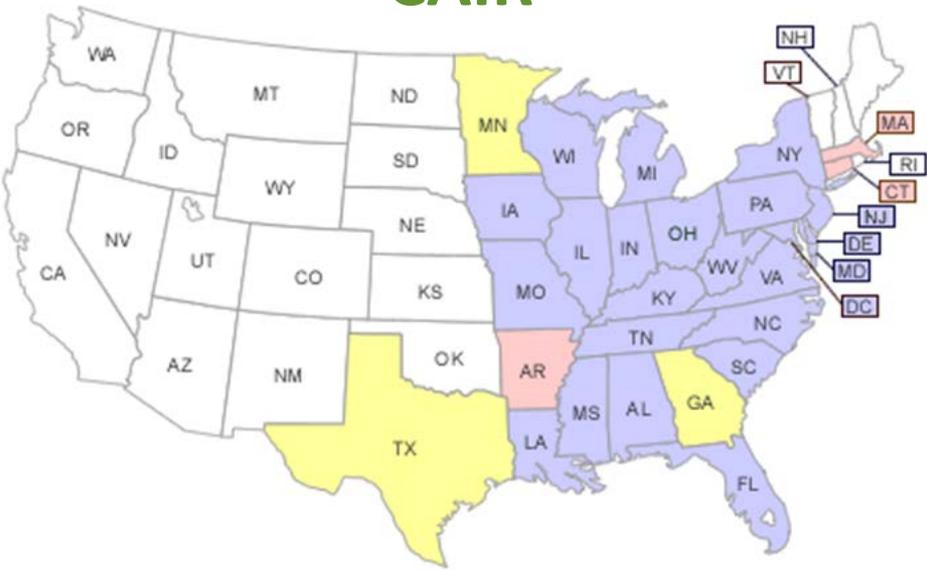
Final Cross-State Air Pollution Rule

- **Final Cross-State Air Pollution Rule (CSAPR) signed by the Environmental Protection Agency (EPA) on July 6, 2011**
 - Promulgated to address the flaws of the court-vacated Clean Air Interstate Rule (CAIR)
 - Covers 27 states, with a Supplemental Notice of Proposed Rulemaking (SNPR) that would increase the number of covered states to 28
- **Creates Four New Emission Markets**
 - Annual NO_x
 - Seasonal NO_x
 - Group 1 SO₂
 - Group 2 SO₂
- **CSAPR: a 2 phase program**
 - States make an initial emission reduction beginning in January 2012
 - States make an additional reduction in January 2014

EPA Clean Air Interstate Rule (CAIR) and Cross-State Air Pollution Rule (CSAPR) Regions

CAIR

CSAPR



-  SO2 Cut, Seasonal NOx Cap, Annual NOx Cap
-  Seasonal NOx Cap Only
-  SO2 Cut, Annual NOx Cap
-  Not Affected by CAIR Rule

-  States controlled for both fine particles (annual SO2 and NOx) and ozone (ozone season NOx) (21 States)
-  States controlled for fine particles only (annual SO2 and NOx) (2 States)
-  States controlled for ozone only (ozone season NOx) (5 States)
-  States not covered by the Cross-State Air Pollution Rule



States that are Included in CSAPR

State	SO ₂	Annual NO _x	Seasonal NO _x	SO ₂ Group
Alabama	X	X	X	2
Arkansas			X	
Florida			X	
Georgia	X	X	X	2
Illinois	X	X	X	1
Indiana	X	X	X	1
Iowa	X	X	X (SNPR)	1
Kansas	X	X	X (SNPR)	2
Kentucky	X	X	X	1
Louisiana			X	
Maryland	X	X	X	1
Michigan	X	X	X (SNPR)	1
Minnesota	X	X		2
Mississippi			X	
Missouri	X	X	X (SNPR)	1
Nebraska	X	X		2
New Jersey	X	X	X	1
New York	X	X	X	1
North Carolina	X	X	X	1
Ohio	X	X	X	1
Oklahoma			X (SNPR)	
Pennsylvania	X	X	X	1
South Carolina	X	X	X	2
Tennessee	X	X	X	1
Texas	X	X	X	2
Virginia	X	X	X	1
West Virginia	X	X	X	1
Wisconsin	X	X	X (SNPR)	1
Total No. of States	23	23	26	
Total Group 1 SO2	16			
Total Group 2 SO2	6			
Total States Included in CSAPR	28			

Separate SO₂ Control Groups

- Establishes group exclusive interstate trading

- Group 1 sources can trade only with Group 1 sources

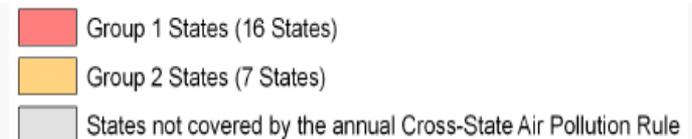
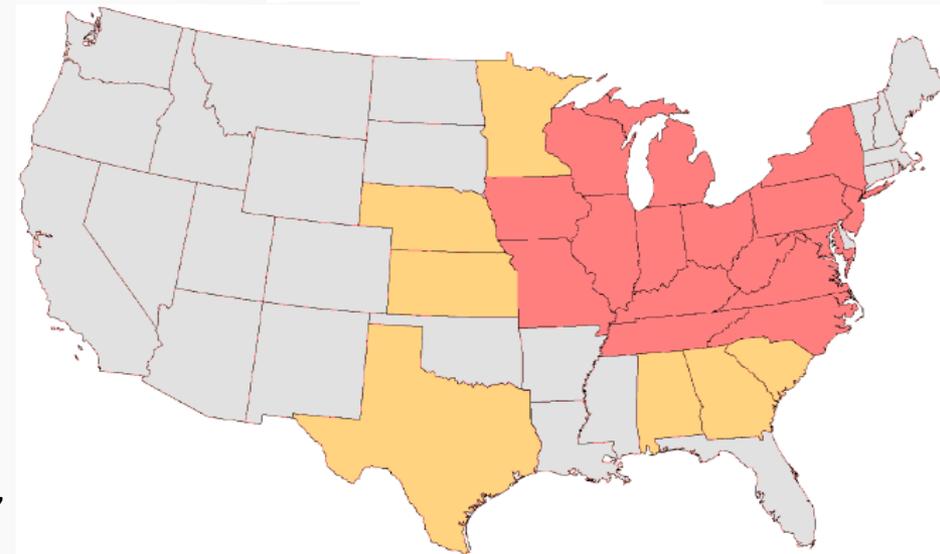
- Group 2 sources can trade only with Group 2 sources

- Group 1 SO₂ States:

- Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Missouri, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and Wisconsin

- Group 2 SO₂ States:

- Alabama, Georgia, Kansas, Minnesota, Nebraska, and South Carolina



CSAPR's Relation to Previous Emission Programs

CSAPR

- Designed to be an Independent Program
- Functions separately from Title IV Acid Rain Program

CAIR

- Starting in 2012, will cease to exist
- Replaced by CSAPR

Title IV

- States covered by CSAPR must comply with the Title IV program in addition to CSAPR
- Title IV allowances are distinct from CSAPR allowances
- Large bank makes Title IV Compliance somewhat a formality for sources covered by CSAPR

CSAPR - Trading Rules

- **Covered sources can trade and bank allowances**
 - Structure similar to CAIR and other cap and trade programs
 - Banking is allowed in all CSAPR programs
- **Sources have unlimited trading within each program**
 - However, they must comply with state assurance provisions
- **Assurance Provisions designed to ensure state emissions stay within their budget, plus a variability limit**
- **Separate SO₂ control groups are separate & autonomous programs**
- **Current CAIR SO₂ and NO_x allowances do not carry over to new program**
- **Title IV Acid Rain allowances cannot be used for CSAPR compliance**

CSAPR - Allowance Allocation to Existing Units

- **EPA allocates both state budgets and unit allowances through Federal Implementation Plans (“FIP”) for 2012**
 - States can create a new unit allocation methodology using a State Implementation Plan (“SIP”) beginning in 2013
- **Allocations to existing units based on the lesser of:**
 - the source’s proportion of the total state heat input
 - the source’s maximum historical emission from 2003-2010
- **EPA proposes to set aside 2-8% of each state’s emission budget for new units**

CSAPR – Allocation to New Units

- 2-8 % of each state’s budget is set aside for new units
- 2 Rounds of allocations, with 2 public notices
- Remaining allowances are allocated to existing units at a pro-rata share

State	Annual SO ₂	Annual NO _x	Ozone Season NO _x
Alabama	2%	2%	2%
Arkansas	n/a	n/a	2%
Florida	n/a	n/a	2%
Georgia	2%	2%	2%
Illinois	5%	8%	8%
Indiana	3%	3%	3%
Iowa	2%	2%	n/a
Kansas	2%	2%	n/a
Kentucky	6%	4%	4%
Louisiana	n/a	n/a	3%
Maryland	2%	2%	2%
Michigan	2%	2%	n/a
Minnesota	2%	2%	n/a
Mississippi	n/a	n/a	2%
Missouri	2%	3%	n/a
Nebraska	4%	7%	n/a
New Jersey	2%	2%	2%
New York	2%	3%	3%
North Carolina	8%	6%	6%
Ohio	2%	2%	2%
Pennsylvania	2%	2%	2%
South Carolina	2%	2%	2%
Tennessee	2%	2%	2%
Texas	5%	3%	3%
Virginia	4%	5%	5%
West Virginia	7%	5%	5%
Wisconsin	5%	6%	n/a

Compliance Timing

- **Control Periods for Programs:**
 - January 1st – December 31st for annual programs
 - May 1st – September 30th for seasonal programs
- **True up Timing:**
 - For annual programs: March 1 of the year following the control period
 - For the seasonal program: December 1 in the same year as the control period
- **Can use vintage of control period, or any earlier banked allowance for compliance**

CSAPR Compliance Penalties

- **Compliance penalties are triggered if sources do not hold sufficient allowances to cover their emissions**
 - For each ton emitted by a source in excess of their allowances, each source must provide:
 - 1 allowance as an offset
 - 1 allowance as a penalty
 - Allowances must be of vintage of the control period or earlier for compliance
 - In addition, sources are subject to a discretionary civil penalty for violation of the Clean Air Act (CAA)
 - Maximum discretionary penalty = # tons of excess pollutant * days in control period * \$37,000 (inflation-adjusted)
 - Depending on the circumstances that led to noncompliance, EPA has the authority to fine sources an amount they deem appropriate

Assurance Provisions

- Assurance Provisions are triggered if a state exceeds its “cap” – the sum of its budget plus its variability limit
- Designed to ensure states elimination of emissions contributing to nonattainment
- Allow states to emit the amount in their budget, plus a variability limit
 - Require penalties if triggered in a state
- Source of market complexity and uncertainty

State Variability Limit Percentage of State Budgets

SO ₂	Annual NO _x	Seasonal NO _x
18%	18%	21%

CSAPR Assurance Provisions Penalties

- **After submitting allowances for compliance, EPA determines which states (if any) exceeded their budget plus their variability limit**

–EPA determines sources responsible for exceeding the state cap and calculate each source's penalty:

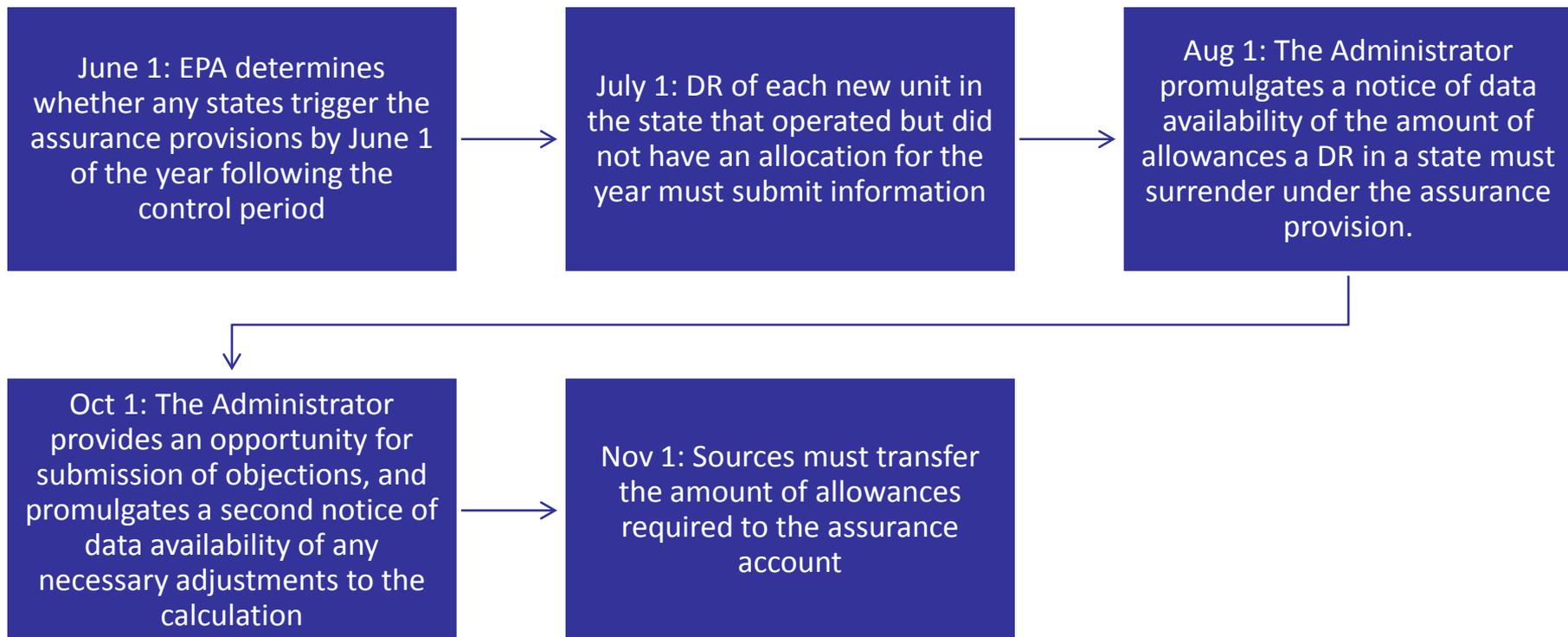
- Sources surrender 2 allowances per ton over its share of emissions above allocation and share of variability in addition to the ton originally submitted for compliance
- Maximum assurance penalty is 3 allowances for every ton over sources budget and variability limit

–If a source violates the assurance provisions, they are not subject to a Clean Air Act discretionary penalty

- Source must transfer sufficient allowances to their assurance account to be surrendered for their share of the assurance penalty
- Sources are only subject to this discretionary penalty if they do not hold sufficient allowances in the account when instructed to by EPA

–Source only have to surrender allowances if the state exceeds its budget plus its variability limit

Assurance Provision Timing



Assurance Provision Example

	Allowances Allocated	Allocation + Share of Variability	Total Emissions	Emissions above Allocation	Emissions above Allocation + Share of Variability	Share of State Exceedance	Penalty (Allowances Surrendered)
DR 1	60	71	75	15	4	25%	8
DR 2	20	24	33	13	9	56%	17
DR 3	10	12	15	5	3	19%	6
DR 4	10	12	10	0	-2	0%	-
TOTAL	100	118	133	33	15	100%	30

Important Parameters:

- Sum of sources emissions above allocation/share of variability above assurance provisions
- Total state emissions above allocation and share of variability

SO₂ Group 1 Allocation vs Emissions

States	SO2 Allocation 2012 (tons)	SO2 Allocation 2014 (tons)	SO2 Emissions 2010	SO2 Emissions 2013	SO2 Emission Reduction 2010 to 2013	SO2 2012 Allocation minus 2010 Emissions	SO2 2012 Allocation minus 2013 Emissions	SO2 2014 Allocation minus 2013 Emissions
Illinois	234,889	124,123	220,085	135,866	38%	14,804	99,023	(11,743)
Indiana	290,762	166,449	414,764	264,634	36%	(124,002)	26,128	(98,185)
Iowa	107,085	75,184	104,650	76,844	27%	2,435	30,241	(1,660)
Kentucky	232,662	106,284	271,509	188,115	31%	(38,847)	44,547	(81,831)
Maryland	30,120	28,203	28,670	25,117	12%	1,450	5,003	3,086
Michigan	229,303	143,995	242,182	194,390	20%	(12,879)	34,913	(50,395)
Missouri	207,466	165,941	236,217	141,430	40%	(28,751)	66,036	24,511
New Jersey	7,670	5,574	13,011	2,432	81%	(5,341)	5,238	3,142
New York	36,296	27,556	46,796	17,797	62%	(10,500)	18,499	9,759
North Carolina	136,881	57,620	116,627	48,154	59%	20,254	88,727	9,466
Ohio	315,393	142,240	572,106	282,023	51%	(256,713)	33,370	(139,783)
Pennsylvania	278,651	112,021	393,196	252,082	36%	(114,545)	26,569	(140,061)
Tennessee	148,150	58,833	118,659	56,405	52%	29,491	91,745	2,428
Virginia	70,820	35,057	91,775	38,778	58%	(20,955)	32,042	(3,721)
West Virginia	146,174	75,668	106,088	86,201	19%	40,086	59,973	(10,533)
Wisconsin	79,480	47,883	109,472	62,434	43%	(29,992)	17,046	(14,551)
Subtotal Group 1	2,551,802	1,372,631	3,085,807	1,872,704	39%	(534,005)	679,098	(500,073)

SO₂ Group 2 Allocation vs Emissions

States	SO2 Allocation 2012 (tons)	SO2 Allocation 2014 (tons)	SO2 Emissions 2010	SO2 Emissions 2013	SO2 Emission Reduction 2010 to 2013	SO2 2012 Allocation minus 2010 Emissions	SO2 2012 Allocation minus 2013 Emissions	SO2 2014 Allocation minus 2013 Emissions
Alabama	216,033	213,258	204,189	106,155	48%	11,844	109,878	107,103
Georgia	158,527	135,565	218,836	80,949	63%	(60,309)	77,578	54,616
Kansas	41,980	41,980	45,251	30,021	34%	(3,271)	11,959	11,959
Minnesota	41,981	41,981	41,574	24,366	41%	407	17,615	17,615
Nebraska	68,162	68,162	64,184	65,824	-3%	3,978	2,338	2,338
South Carolina	96,633	96,633	94,613	26,776	72%	2,020	69,857	69,857
Texas	294,471	294,471	461,642	365,508	21%	(167,171)	(71,037)	(71,037)
Subtotal Group 2	917,787	892,050	1,130,290	699,599	38%	(212,503)	218,188	192,451



Annual NO_x Allocation vs Emissions

State	NOx Annual Allocation 2012 (tons)	NOx Annual Allocation 2014 (tons)	2010 Annual Nox Emissions	2013 Annual Nox Emissions	Annual NOx Reduction 2010 to 2013	ANox 2012 Allocation minus 2010 Emissions	ANox 2012 Allocation minus 2013 Emissions	ANox 2014 Allocation minus 2013 Emissions
Alabama	72,691	71,962	63,290	48,086	24%	9,401	24,605	23876
Georgia	62,010	53,738	60,522	35,599	41%	1,488	26,411	18139
Illinois	47,872	47,872	76,297	55,596	27%	(28,425)	(7,724)	(7724)
Indiana	109,726	108,424	120,924	103,121	15%	(11,198)	6,605	5303
Iowa	38,335	37,498	44,443	33,666	24%	(6,108)	4,669	3832
Kansas	31,354	31,354	48,938	28,542	42%	(17,584)	2,812	2812
Kentucky	85,086	77,238	91,824	84,964	7%	(6,738)	122	(7726)
Maryland	16,633	16,574	18,572	14,454	22%	(1,939)	2,179	2120
Michigan	65,421	63,040	76,130	65,728	14%	(10,709)	(307)	(2688)
Minnesota	29,572	29,572	31,173	24,855	20%	(1,601)	4,717	4717
Missouri	52,400	48,743	58,364	75,943	-30%	(5,964)	(23,543)	(27200)
Nebraska	30,039	30,039	37,417	27,557	26%	(7,378)	2,482	2482
New Jersey	8,218	7,945	6,436	5,714	11%	1,782	2,504	2231
New York	21,722	21,722	23,589	24,150	-2%	(1,867)	(2,428)	(2428)
North Carolina	50,587	41,553	49,611	48,672	2%	976	1,915	(7119)
Ohio	95,468	90,258	104,839	86,399	18%	(9,371)	9,069	3859
Pennsylvania	119,986	119,194	125,486	136,476	-9%	(5,500)	(16,490)	(17282)
South Carolina	32,498	32,498	26,794	14,311	47%	5,704	18,187	18187
Tennessee	35,703	19,337	30,990	21,656	30%	4,713	14,047	(2319)
Texas	137,701	137,701	144,565	135,268	6%	(6,864)	2,433	2433
Virginia	33,242	33,242	33,085	28,315	14%	157	4,927	4927
West Virginia	59,472	54,582	51,393	60,111	-17%	8,079	(639)	(5529)
Wisconsin	34,101	32,871	33,289	25,600	23%	812	8,501	7271
Total	1,269,837	1,206,957	1,357,971	1,184,783		(88,134)	85,054	22,174



Seasonal NO_x Allocation vs Emissions

State	NOx OS Allocation 2012 (tons)	NOx OS Allocation 2014 (tons)	2010 Ozone Season Nox Emissions	2013 Ozone Season Nox Emissions	Seasonal NOx Reduction 2010 to 2013	SNOx 2012 Allocation minus 2010 Emissions	SNOx 2012 Allocation minus 2013 Emissions	SNOx 2014 Allocation minus 2013 Emissions
Alabama	31,746	31,499	27,469	22,096	20%	4,277	9,650	9,403
Arkansas	15,110	15,110	18,300	17,339	5%	(3,190)	(2,229)	(2,229)
Florida	28,644	27,825	34,283	27,081	21%	(5,639)	1,563	744
Georgia	27,944	24,041	26,779	14,801	45%	1,165	13,143	9,240
Illinois	21,208	21,208	28,040	21,315	24%	(6,832)	(107)	(107)
Indiana	46,876	46,175	52,553	43,215	18%	(5,677)	3,661	2,960
Kentucky	36,167	32,674	39,030	34,433	12%	(2,863)	1,734	(1,759)
Louisiana	18,115	18,115	22,869	17,789	22%	(4,754)	326	326
Maryland	7,179	7,179	8,979	5,991	33%	(1,800)	1,188	1,188
Mississippi	12,429	12,429	16,088	11,321	30%	(3,659)	1,108	1,108
New Jersey	4,128	3,731	3,532	2,869	19%	596	1,259	862
New York	10,369	10,369	11,605	10,849	7%	(1,236)	(480)	(480)
North Carolina	22,168	18,455	22,457	22,634	-1%	(289)	(466)	(4,179)
Ohio	41,284	39,013	47,547	37,151	22%	(6,263)	4,133	1,862
Pennsylvania	52,201	51,912	54,910	58,688	-7%	(2,709)	(6,487)	(6,776)
South Carolina	13,909	13,909	13,017	7,354	44%	892	6,555	6,555
Tennessee	14,908	8,016	14,469	11,253	22%	439	3,655	(3,237)
Texas	65,560	65,560	67,772	62,442	8%	(2,212)	3,118	3,118
Virginia	14,452	14,452	15,907	12,982	18%	(1,455)	1,470	1,470
West Virginia	25,283	23,291	23,437	25,470	-9%	1,846	(187)	(2,179)
Iowa	16,532	16,207	18,725	15,254	19%	(2,193)	1,278	953
Kansas	13,536	10,998	22,333	12,740	43%	(8,797)	796	(1,742)
Michigan	28,041	27,016	32,877	28,659	13%	(4,836)	(618)	(1,643)
Missouri	22,788	21,099	25,467	31,482	-24%	(2,679)	(8,694)	(10,383)
Oklahoma	36,567	22,694	34,916	23,462	33%	1,651	13,105	(768)
Wisconsin	14,784	14,296	14,480	10,864	25%	304	3,920	3,432
Total	641,928	597,273	697,841	589,534	16%	(55,913)	52,394	7,739

Response to Rules

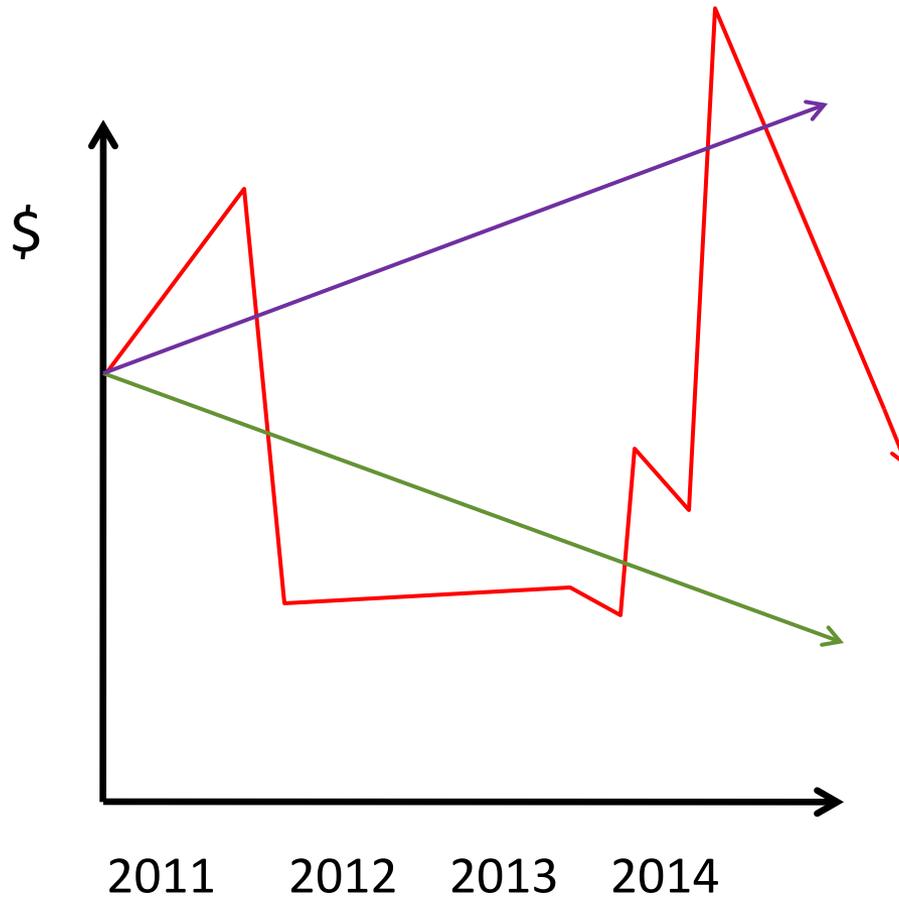
INDUSTRY QUOTES

- “As far as we’re concerned, there’s no way we can comply with this rule on Jan. 1. It’s too soon and it’s too quick”
- “Our concern is that the timing of the new requirements – effective Jan. 1, 2012 – is unreasonable because it does not allow enough time to implement operational responses to ensure reliability”
- “There is no quick replacement for the generation capacity that could be reduced as a result of CSAPR”
- “We think that any new control that might be required would be difficult if not impossible within the time constraint”

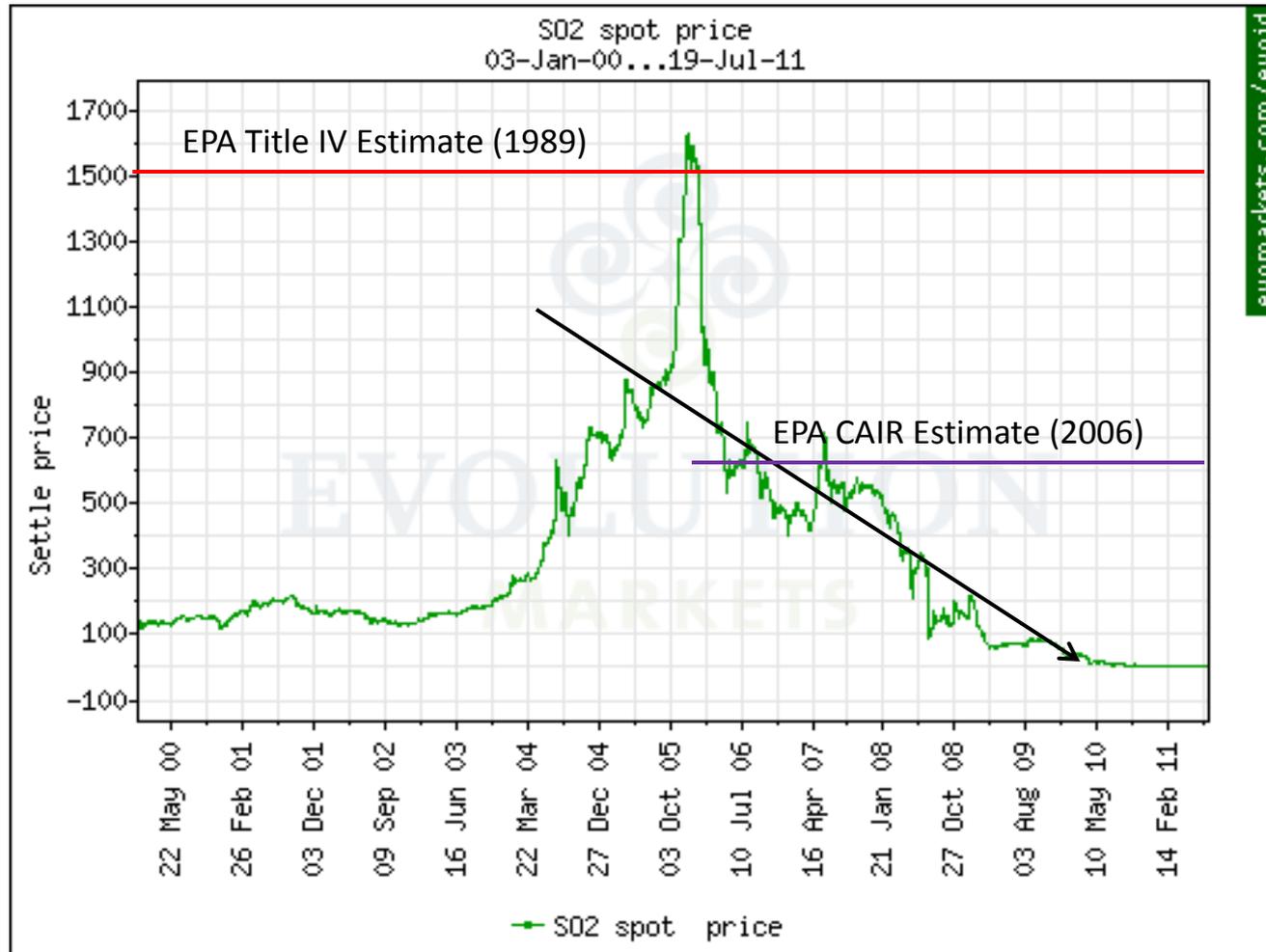
EPA QUOTES

- “There is no surprise here for facilities... this is not an onerous rule”
- “All the sources will be able to meet deadlines.”
- “Utilities have known that these emission reduction requirements were coming”

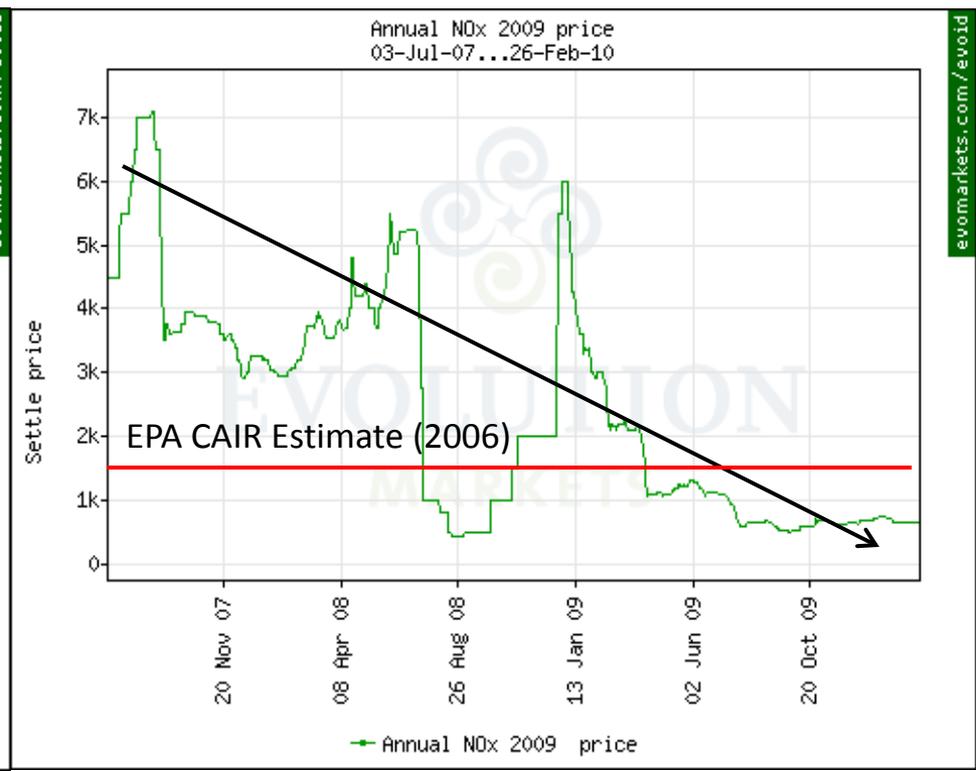
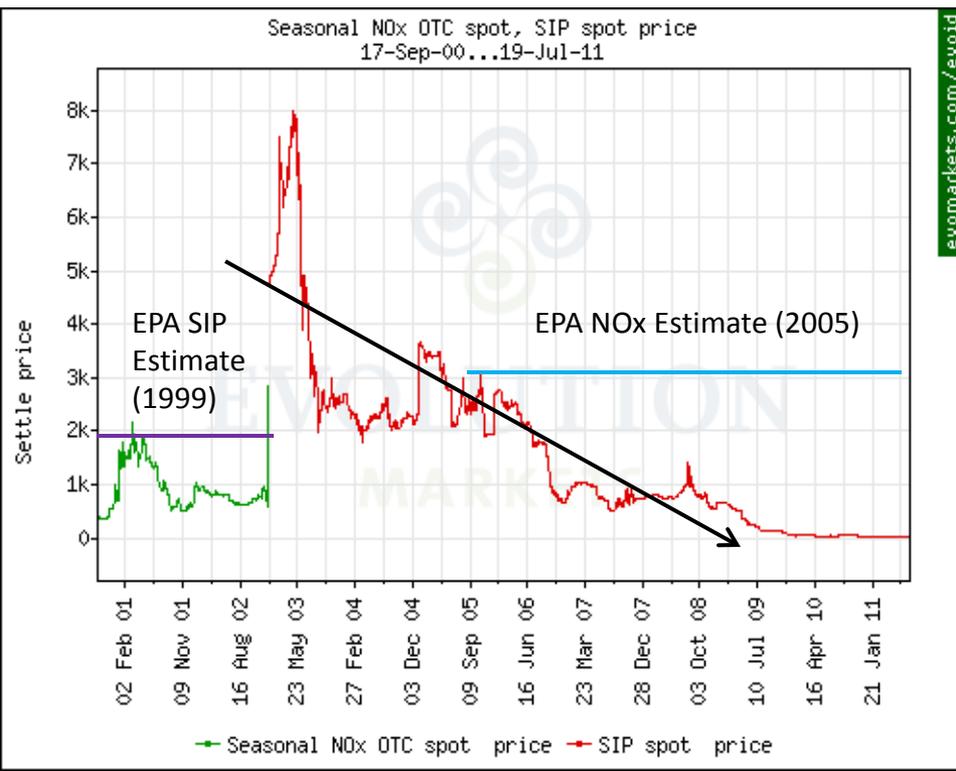
CSAPR Allowance Prices



Historic Pricing of SO₂



Historic NO_x Pricing



Market Pricing

- EPA seems to assume that market will be in compliance – prices reflect marginal costs
- Likely to have high initial pricing, reflecting the inelasticity of plants to modify emissions
- Higher prices motivate companies to change operations – causing lower future prices.

EPA Emission Allowance Price Estimation (2007\$/ Ton)

	2012	2014
Annual SO ₂ Group 1 Trading Program	\$1,000	\$1,100
Annual SO ₂ Group 2 Trading Program	\$600	\$700
Annual NO _x Trading Program	\$500	\$600
Ozone Season NO _x Trading Program	\$1,300	\$1,500

Market Pricing

Approx Current Market Pricing (12/14/2011)

- **CS SO2 Group 1 \$225-\$400**
 - **CS SO2 Group 2 \$600 - \$1000**
 - **CS Vin 12 A NOx \$350-\$750**
 - **CS Vin 12 S NOx \$550-\$900**
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- **Estimated CSPAR Prices Jan 2015**
 - **CS SO2 Group 1 \$125 - \$250**
 - **CS SO2 Group 2 \$250 - \$500**
 - **CS Vin 15 A NOx \$125 - \$250**
 - **CS Vin 15 S NOx \$175 - \$350**

EPA Emission Allowance Price Estimation (2007\$/ Ton)

	2012	2014
Annual SO ₂ Group 1 Trading Program	\$1,000	\$1,100
Annual SO ₂ Group 2 Trading Program	\$600	\$700
Annual NO _x Trading Program	\$500	\$600
Ozone Season NO _x Trading Program	\$1,300	\$1,500

Market Challenges

- **Regulatory Uncertainty**
 - Will DC Court Lift the Stay ? When do we Start ?
- **Allowance price discovery**
 - NO price discovery prior to start of compliance period, difficult to plan
- **Assurance provision and state caps**
 - Penalty above state cap will motivate units to keep emissions below their unit caps, even if not economical, reducing market liquidity
- **Banking in Phase 1 for Phase 2**
 - Long Phase 1 – Short or Flat in Phase 2

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