



**Legislative Comparison of Multipollutant Proposals S. 366, S. 485, and S. 843.<sup>1</sup> Version 05/16/03.**

<b>Features</b>	<b>S. 366 – Jeffords (108<sup>th</sup>)</b>	<b>S. 485 – Clear Skies (108<sup>th</sup>)</b>	<b>S. 843 – Carper (108<sup>th</sup>)</b>
<b>Affected Facilities</b>	Electricity-generating facilities with a nameplate capacity of 15 MW or more.	Electricity-generating facilities with a nameplate capacity of 25 MW or more.	Electricity-generating facilities with a nameplate capacity greater than 25 MW.
<b>National Annual Allowance Allocation Caps</b>			
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	2.25 million tons in 2009. Split into two regions. <sup>2</sup>	4.5 million tons in 2010. 3.0 million tons in 2018.	4.5 million tons in 2009. 3.5 million tons in 2013. 2.25 million tons in 2016.
<b>Nitrogen Oxides (NO<sub>x</sub>)</b>	1.51 million tons in 2009.	2.1 million tons in 2008. 1.7 million tons in 2018. Split into two regions. <sup>3</sup>	1.87 million tons in 2009. 1.7 million tons in 2013.
<b>Mercury</b>	5 tons in 2008. Facility specific emissions limitations without trading.	26 tons in 2010. 15 tons in 2018.	24 tons in 2009. 10 tons in 2013. Facility-specific limitations apply. <sup>4</sup>
<b>Carbon Dioxide (CO<sub>2</sub>)</b>	2.05 billion tons in 2009. <sup>5</sup>	Clear Skies does not include a CO <sub>2</sub> policy.	2.57 + billion tons in 2009. <sup>6</sup> 2.47 + billion tons in 2013. <sup>7</sup> + additional tonnage through sequestration incentives.

<sup>1</sup> Prepared by David Lankton, Billy Pizer, Karen Palmer, and Dallas Burtraw. This document can be found at [www.rff.org/multipollutant/](http://www.rff.org/multipollutant/).

<sup>2</sup> Under S. 366, the western region has a 0.275 million ton cap on SO<sub>2</sub> and the non-western region has a 1.975 million ton cap on SO<sub>2</sub>.

<sup>3</sup> Under S. 485, the western region has a 0.538 million ton cap on NO<sub>x</sub> and the eastern region has a 1.562 million ton cap on NO<sub>x</sub>. The eastern NO<sub>x</sub> cap is reduced to 1.162 million tons in 2018.

<sup>4</sup> For S. 843, from 2009 to 2012, mercury emissions cannot exceed 50% of the total mercury present in delivered coal at each affected facility. After 2012, the percentage drops to 30%. Also, emissions may not exceed an output-based rate determined by the administrator.

<sup>5</sup> The CO<sub>2</sub> cap is specified in S. 366 and it approximates 1990 level CO<sub>2</sub> emissions from the electricity sector.

<sup>6</sup> The S. 843 2009 allowance cap is equal to 2006 electricity sector CO<sub>2</sub> emissions as projected by EIA in the most recent report as of date of enactment. The number we report is EIA's *AEO 2003* projection for 2006.

<sup>7</sup> The S. 843 2013 emissions cap is equal to actual 2001 electricity sector CO<sub>2</sub> emissions. The number we report is EIA's *AEO 2003* projection for 2001.

Features			
Allowance Allocation Cap Changes and Additional Annual Allowance Availability			
<b>High Costs “Safety Valve”</b>	None except to exercise penalty provisions for excess emissions.	<b>SO<sub>2</sub>, NO<sub>x</sub></b> : Units can purchase future (per ton) allowances for current use for \$4,000 each. <b>Mercury</b> : Units can purchase future (per ounce) allowances for current use for \$2,187.50 each. <sup>8</sup>	None except to exercise penalty provisions for excess emissions.
<b>Carryover from Title IV SO<sub>2</sub> and NO<sub>x</sub> SIP Call programs</b>	<b>SO<sub>2</sub>, NO<sub>x</sub></b> : Banked pre-2008 Title IV NO <sub>x</sub> and SO <sub>2</sub> allowances can be traded 4:1 for S. 366 NO <sub>x</sub> and SO <sub>2</sub> allowances, respectively. <b>SO<sub>2</sub>, NO<sub>x</sub></b> : SO <sub>2</sub> and NO <sub>x</sub> allowances banked as a result of meeting new source performance standards between 2001 and 2008 are considered full value S. 366 allowances of the appropriate type.	<b>SO<sub>2</sub></b> : Banked pre-2010 Title IV SO <sub>2</sub> allowances can be traded 1:1 for S.485 SO <sub>2</sub> allowances. <b>NO<sub>x</sub></b> : Banked allowances from the regional, seasonal SIP Call trading program can be traded 1:1 beginning in 2008.	<b>SO<sub>2</sub></b> : Banked pre-2009 Title IV SO <sub>2</sub> allowances carryover 1:1 for S.843 SO <sub>2</sub> allowances.
<b>Additional Allocations for Out-of-Program Emission Reductions</b>			<b>CO<sub>2</sub></b> : Additional CO <sub>2</sub> allowances for carbon sequestration are added to the annual CO <sub>2</sub> allowance cap. See “CO <sub>2</sub> -Specific Allocation Methods” below. <b>CO<sub>2</sub></b> : Allowances from other international or U.S. CO <sub>2</sub> reduction programs may be used. <sup>9</sup>
<b>Localized Reductions and National Ambient</b>	The administrator may limit localized emissions to avoid significant adverse health impacts.	S. 485 does not interfere with states continued authority over local compliance with NAAQS.	The federal or state government may limit emissions from a specific facility to address local air

<sup>8</sup> For S. 485, purchased allowances reduce the amount of allowances (of the purchased type) that would otherwise be auctioned the next year. If these allowances are not used, they are taken by the administrator (without refund) and put back in the auction. Prices are adjusted for inflation based on the Consumer Price Index. If more allowances were sold than would have otherwise been auctioned off the next year, auctions in the following years will also have reduced quantities until the sold allowances are accounted for.

<sup>9</sup> S. 843 establishes an independent review board consisting of members from the EPA, DOE, state governments, the electricity sector, and environmental organizations that must certify additional CO<sub>2</sub> allowance allocations.

Features			
<b>Air Quality Standards (NAAQS)</b>	<b>Non-Attainment:</b> Units contributing to non-attainment of the ozone standard must submit three NO <sub>x</sub> allowances for each ton of NO <sub>x</sub> emitted. Units contributing to non-attainment of the PM-2.5 standard must submit two SO <sub>2</sub> allowances for each ton of SO <sub>2</sub> emitted.		quality problems. <b>Non-Attainment:</b> After 2008, sources within non-attainment areas would no longer be required to obtain offsets for emissions.
<b>Allowance Cap Reductions From Small Source Emissions</b>	For 2009 and each following year, the allowance caps are reduced by the emissions from small electricity generators (< 15 MW) in the second preceding year.		
<b>New Information “Re-opener”</b>	Each year, any additional reductions the administrator finds necessary to protect public health and welfare may be made.	The administrator must submit to Congress, no later than July 1, 2009, a recommendation on whether to adjust the allowance limitations starting in 2018. This recommendation will be based on a study conducted by the administrator in consultation with the Secretary of Energy.	Within 15 years of enactment, the administrator must determine whether or not to adjust the annual allowance allocation caps. If it is determined that adjustments are required, they will take effect 20 years after enactment.
<b>Allowance Banking and Trading Programs</b>			
<b>Banking Restrictions</b>	<b>Mercury:</b> Cannot be banked.		
<b>Trading Restrictions</b>	<b>SO<sub>2</sub>:</b> Allowances cannot be traded between regions. <b>Mercury:</b> Cannot be traded.	<b>NO<sub>x</sub>:</b> Allowances cannot be traded between regions.	
<b>Western Regional Air Partnership (WRAP)</b>		Two measures trigger the start of the WRAP program: 1) After 2013, the third year after which the SO <sub>2</sub> emissions from	Two measures trigger the start of the WRAP program: 1) Any year from 2016 or later that is the third year after

Features			
		<p>WRAP states are <i>projected</i> to exceed 271,000 tons.</p> <p><b>OR</b></p> <p>2) After 2018, beginning the third year after which <i>actual</i> SO<sub>2</sub> emissions from states in the WRAP exceed 271,000 tons.</p> <p>As of the start date, the administrator will allocate 271,000 SO<sub>2</sub> allowances to electricity-generating units (EGUs) in those states each year. Only these allowances may be used by EGUs in the WRAP states.</p>	<p><i>projected</i> WRAP SO<sub>2</sub> emissions exceed 271,000 tons</p> <p><b>OR</b></p> <p>2) Any year 2021 or later that is the third year after <i>actual</i> WRAP SO<sub>2</sub> emissions exceed 271,000 tons.</p> <p>As of the start date, SO<sub>2</sub> emissions from WRAP states may not exceed the number of SO<sub>2</sub> allowances allocated to units in WRAP states. The administrator will determine the method and number of these allocations by 2013.</p>
<b>Treatment of Pre-existing NO<sub>x</sub> Programs</b>	The regional summertime NO <sub>x</sub> SIP Call trading program would exist separate from S. 366.	The regional summertime NO <sub>x</sub> SIP Call trading program would terminate after 2007.	The regional summertime NO <sub>x</sub> SIP Call trading program would exist separate from S. 843.
<b>Potential for Trading Across Pollutants</b>		Within six years of enactment the administrator will submit a study to Congress regarding the environmental and economic effects of inter-pollutant trading of NO <sub>x</sub> and SO <sub>2</sub> .	
<b>Potential for International Trading</b>		Within two years of enactment the administrator will submit a study to Congress regarding the feasibility of international trading of SO <sub>2</sub> , NO <sub>x</sub> , and mercury permits.	
Allowance Allocation Methods			
<b>In General</b>	Auctions with revenues returned to consumers and allowances set aside for impacted sectors.	Grandfathering, with a gradual shift to auctions. Auction revenues go to the federal government.	Grandfathering for SO <sub>2</sub> and output-based allocations for NO <sub>x</sub> , mercury and CO <sub>2</sub> .
<b>Methods</b>	<b>Existing Sources; SO<sub>2</sub>, NO<sub>x</sub>,</b>	<b>Existing Sources; SO<sub>2</sub>, NO<sub>x</sub>,</b>	<b>New Unit Reserve; SO<sub>2</sub>, NO<sub>x</sub>,</b>

Features			
<p><b>Applicable to Multiple Pollutants</b></p>	<p><b>CO<sub>2</sub>:</b> 10% of all SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> allowances in 2009 will be grandfathered to affected units based on their share of electricity generation in 2001. Allocations decrease by 1% until 2018.</p> <p><b>Transition Assistance; SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>:</b> 6% of all SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> allowances in 2009 are allocated to non-electricity generating firms for transition assistance. This amount declines by 0.5% until 2018. Of these allowances, 80% go to dislocated workers and adversely impacted communities. The remaining 20% go to producers of electricity-intensive products.</p> <p><b>Renewable Generation and Clean Product Incentives; SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>:</b> Not more than 20% of all SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> allowances will be allocated each year to renewable generation facilities and owners of energy-efficient buildings, producers of energy-efficient products, entities that carry out energy-efficient projects, owners of new clean fossil-fuel electricity generating units, and</p>	<p><b>Mercury:</b> 99% of all allowances will be grandfathered to firms in the first year of each program. This share will decline by 1% per year for 20 years. It will then decline by 2.5% for 32 years, reaching 0% exactly 52 years after each program begins.</p> <p><b>Allowance Auctions; SO<sub>2</sub>, NO<sub>x</sub>, Mercury:</b> Allowances that are not grandfathered to existing units are auctioned and proceeds are deposited in the U.S. Treasury.</p>	<p><b>Mercury, CO<sub>2</sub>:</b> The administrator and the Secretary of Energy will determine the size of the new unit reserve every five years for the next five-year period based on projections of electricity output from new units.</p>

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	<p>owners of combined heat / power generators.<sup>10</sup></p> <p><b>Household Allocations; SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>:</b> Any allowances not allocated to other sectors are given to electricity consumers through an appointed trustee. Households receive allowances based on the number of people in the household and their state's ratio of residential electricity consumption to national residential electricity consumption.</p>		
<p><b>SO<sub>2</sub> Specific Allocation Methods</b></p>		<p><b>Grandfathering Rules; SO<sub>2</sub>:</b><sup>11</sup> 95% of all allowances are allocated to holders of Title IV allowances as of enactment of S. 485, based upon their share of discounted post-2009 Title IV allowances.</p> <p>5% of the grandfathered allowances are given to facilities that did not receive allowances under the Acid Rain Program, but become affected units by December 31, 2004. These</p>	<p><b>Existing Sources: SO<sub>2</sub>:</b> Existing fossil-fuel-fired units (includes Title IV existing units and units built at least three years before the current year) receive allowances based on Title IV allowance allocation rules, pro-rated to comply with the difference between the S. 843 allowance cap and the new unit reserve for SO<sub>2</sub>.<sup>12</sup></p> <p><b>New Sources: SO<sub>2</sub>.</b> New units receive allowances based on future regulations promulgated by the</p>

<sup>10</sup> For S. 366, renewable electricity-generating units receive an allocation based on renewable electricity production and the national average emissions per MWh by all electricity-generating facilities. For energy efficiency, the allocation is based on electricity or natural gas saved and the national average emissions per MWh or cubic foot of natural gas. For new, clean fossil-fuel-fired electricity generating units, allocations are based on the previous year's MWhs produced by new, clean fossil-fuel-fired electricity generating units and one half of the national average emissions per MWh. For combined heat and power electricity generating facilities, allocations are the product of Btu produced and put to use by each facility and the previous year's national average quantity of emissions per pollutant per Btu.

<sup>11</sup> For S. 485, in the first three years, the number of grandfathered SO<sub>2</sub> allowances is reduced by 0.083 million allowances. These allowances are offered via competitive bidding to coal-fired facilities that reduce their SO<sub>2</sub> emissions through improved technology.

<sup>12</sup> For S. 843, allocation to existing units that are not specifically mentioned in Title IV is determined by the administrator on a fair and equitable basis.

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		<p>allocations are based on baseline heat input, or baseline heat input ratios, if necessary.</p> <p>A total of 250,000 allowances (that would otherwise have been grandfathered) are allocated over the first three years of the program as incentives for SO<sub>2</sub> control technology.</p>	<p>administrator.</p>
<p><b>NO<sub>x</sub> Specific Allocation Methods</b></p>		<p><b>Grandfathering Rules; NO<sub>x</sub>:</b> Allowances are given to affected electricity-generating units based on baseline heat input relative to total baseline heat input across all affected units within a particular region (east or west).</p>	<p><b>Existing Sources; NO<sub>x</sub>:</b> Existing fossil-fuel-fired units receive allowances equal to the product of 1.5 pounds of NO<sub>x</sub> per MWh times the quotient of the average quantity of electricity generated during the most recent three-year period in MWh divided by 2,000 pounds of NO<sub>x</sub> per ton. If this total is not equal to the difference between the allowance cap and the new unit reserve for NO<sub>x</sub>, allowances are allocated on a pro-rata basis.</p> <p><b>New Sources; NO<sub>x</sub>:</b> New units receive allowances based on projected emissions.</p>
<p><b>Mercury Specific Allocation Methods</b></p>	<p><b>Emissions Limitations; Mercury:</b> Mercury emissions are not to exceed 2.48 grams per 1,000 MWh. This is an emissions limitation, not an allocation of allowances, and may not be banked or traded.</p>	<p><b>Grandfathering Rules; Mercury:</b> Allowances are given to affected electricity-generating units based on baseline heat input relative to total baseline heat input across all affected units.</p>	<p><b>Existing Sources; Mercury:</b> Existing coal-fired units receive allowances equal to the product of 0.0000227 pounds of mercury per MWh multiplied by the average quantity of electricity generated during the most recent 3-year</p>

Features			
			<p>period in MWh. If this total is not equal to the difference between the allowance cap and the new unit reserve for mercury, allowances are allocated on a pro-rata basis.</p> <p><b>New Sources; Mercury:</b> New units receive allowances based on projected emissions.</p>
<p><b>CO<sub>2</sub> Specific Allocation Methods</b></p>	<p><b>Sequestration Incentives; CO<sub>2</sub>:</b> Not more than 0.075% of total CO<sub>2</sub> allowances shall be allocated to encourage biological carbon sequestration and not more than 1.5% of total CO<sub>2</sub> allowances shall be allocated to encourage geological carbon sequestration.</p>		<p><b>Sequestration Incentives; CO<sub>2</sub>:</b> Additional CO<sub>2</sub> allowances are allocated for carbon sequestration and for programs to reduce greenhouse gas emissions. In 2009, allocations are made for projects from 1990 to 2008, and these allowances are limited to 10% of the CO<sub>2</sub> allowance cap for 2009. After 2009, allocations are made for current projects, and there is no limitation on the number of additional allowances.</p> <p><b>Existing Sources; CO<sub>2</sub>:</b> Existing fossil-fuel-fired, nuclear,<sup>13</sup> and renewable<sup>14</sup> units receive allowances equal to their average generation over the most recent three-year period divided by the total average generation over the same period by all such units</p>

<sup>13</sup> For S. 843, nuclear units receive (and must submit) allowances based only on their incremental generation from 1990 levels.

<sup>14</sup> For S. 843, renewable units include wind, organic waste (excluding incinerated municipal solid waste), biomass, fuel cells, hydroelectric, geothermal, solar thermal, photovoltaic, and other non-fossil fuel, non-nuclear sources.

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			<p>multiplied by the difference between the allowance cap and the new unit reserve for CO<sub>2</sub>.</p> <p><b>New Sources; CO<sub>2</sub>:</b> New fossil-fuel-fired and renewable units receive allowances based on their projected share of total generation.</p>
Compliance With Legislation			
<b>Penalties for Excess Emissions</b>	<p><b>SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>:</b> Three times the excess emissions in tons (or failed allowance submissions) multiplied by the average annual market price for the appropriate allowances.</p> <p><b>Mercury:</b> Three times the excess emissions in grams multiplied by the average cost of mercury controls.</p>	<p><b>SO<sub>2</sub>, NO<sub>x</sub>, Mercury:</b> The excess emissions in tons (for NO<sub>x</sub>, SO<sub>2</sub>) or ounces (for Mercury) multiplied by the most recent auction price (within 30 days of noncompliance and if the excess emissions are offset). If 30 days have passed and the emissions are not offset, the penalty is tripled.</p>	<p><b>SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, Mercury:</b> Excess emissions must be offset in a future year, as determined by the administrator. Also:</p> <p><b>SO<sub>2</sub>:</b> \$2,000 (1990\$) penalty for each ton of excess emissions.</p> <p><b>NO<sub>x</sub>:</b> \$5,000 penalty for each ton of excess emissions.</p> <p><b>CO<sub>2</sub>:</b> \$100 penalty for each ton of excess emissions.</p> <p><b>Mercury:</b> \$10,000 penalty for each pound of excess emissions.</p> <p><b>SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, Mercury:</b> Fees are adjusted by the CPI.</p>
<b>Monitoring and Record Keeping Requirements</b>	<p>Each affected facility must install and operate a continuous emissions monitoring system. Facilities must provide the administrator with data on emissions and emissions per MWh for each covered pollutant. The administrator will keep an inventory of emissions from all small electricity-generating facilities (less than 15 MW).</p>	<p>Each affected facility must install and operate a continuous emissions monitoring system. Facilities must provide the administrator with data for opacity, volumetric flow, and emissions of SO<sub>2</sub>, NO<sub>x</sub>, and mercury.</p>	<p>The administrator will promulgate regulations for monitoring requirements.</p> <p><b>SO<sub>2</sub>:</b> Title IV reporting for SO<sub>2</sub> is required.</p> <p><b>NO<sub>x</sub>, CO<sub>2</sub>, Mercury:</b> At least quarterly, facilities must submit to the administrator a report on the emissions of NO<sub>x</sub>, CO<sub>2</sub>, and mercury.</p>

Features			
	Coal-fired facilities with an aggregate generating capacity of 50 MW or more must monitor ambient air quality within a 30-mile radius of the facility.		
<p><b>Modernization and the New Source Review Program (NSR)</b></p> <p><b>Lowest Achievable Emissions Rate (LAER) and Best Available Control Technology (BACT)</b></p>	Beginning on January 1, 2014, or 40 years after the beginning of generation at a facility (whichever date is later), the facility is subject to emissions limitations reflecting best available control technology (BACT) on a new source facility of the same generating capacity.	<p>A unit whose hourly emissions of a pollutant increases at maximum capacity from modifications must either meet the national emissions standards for affected units or apply best available control technology.</p> <p>Facilities that are more than 50 kilometers from a Class I area can exempt themselves from new source review and best available retrofit control technology if they commit within three years to meeting a limit for particulate matter (PM) of .03 lb/MMBtu, have begun to operate control technology to reduce PM emissions, or otherwise reduce PM emissions according to best operational practices.</p>	<p><b>NSR:</b> Construction of a new unit (including existing boiler replacement) or any modification to an existing unit that increases the hourly emissions rate of an NSR covered pollutant will subject that facility to the NSR program. Beginning in 2020, each facility which began construction before August 17, 1971 must meet performance standards of 4.5 lbs / MWh and 2.5 lbs / MWh for SO<sub>2</sub> and NO<sub>x</sub>, respectively.</p> <p><b>LAER and BACT:</b> Identified biennially. The cost of LAER may not exceed twice that of BACT.</p> <p><b>Non-Attainment:</b> As noted above, sources within non-attainment areas would no longer be required to obtain offsets for emissions after 2008.</p>
<p><b>Non-NSR Regulatory Relief</b></p>		The bill delays until 2009 EPA action on petitions by downwind states to reduce emissions in upwind states under section 126 of the Clean Air Act.	Some units would be exempt from mercury emissions standards under section 112 of the Clean Air Act (CAA) and visibility protection requirements (haze) under section 169 of the CAA.