

US EPA ARCHIVE DOCUMENT

## **Section F: Allocations**

# Distribution of Allowances under Clear Skies

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- **The distribution of emission allowances under the Clear Skies Act occurs through the combination of an auction and an allocation:**
  - During the first year of the new trading program, 99% of the SO<sub>2</sub>, NO<sub>x</sub> and mercury allowances would be allocated to affected units with an auction for the remaining 1%.
  - Each subsequent year, an additional 1% of the allowances for twenty years, and then an additional 2.5% thereafter, will be auctioned until eventually all the allowances are auctioned.
- **For the first twenty years of the trading programs, the majority of allowances are distributed *for free* via the allocation. Because of the time value of money, allowances allocated for these earlier years are generally more valuable in the allowance market than allowances allocated for later years.**
  - EPA analyzed the net present value (NPV) of the stream of allowances that would be distributed through 2030, as well as through 2061.

**Despite the prevalence of the auction in the later years, EPA's analysis shows that the vast majority of the net present value of the allowances is distributed for free via allocation:**

**For the period between 2008/2010 and 2030, 90-92% of the total NPV is allocated.**

**For the period between 2008/2010 and 2061, approximately 80% of the total NPV is allocated.**

**Note:** The net present value calculations are based on allowances prices in IPM.

# Allocations in Clear Skies

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- **SO<sub>2</sub> Allocation:** 95% of the total amount of allowances allocated each year will be allocated based on the amount of SO<sub>2</sub> allowances allocated under the Acid Rain Program for 2010 and thereafter and that are held in allowance accounts in the Allowance Tracking System on the date 6 months after enactment. A discount is applied to allowances issued after 2010.
  - The remaining 5% of allowances are allocated to units that did not receive allowances under the Acid Rain Program, because they were subject to the program and had a zero allocation or because they were simply not subject to the program.
- **NO<sub>x</sub> and Mercury Allocation:** Allowances are allocated to affected units based on the proportionate share of their baseline heat input to total heat input of the units.
  - For NO<sub>x</sub>, the allocation occurs separately in each zone.
  - For Hg, only coal units are affected; the baseline heat input for each unit is adjusted for coal type (See additional discussion of these factors on subsequent slide).
- **Auctions:** During the first year of the new trading program, 99% of the SO<sub>2</sub>, NO<sub>x</sub> and Hg allowances will be allocated to affected units with an auction for the remaining 1%.
  - An additional 1% of the allowances will be auctioned for the first twenty years.
  - Thereafter, an additional 2.5% will be auctioned until eventually all allowances are auctioned.

# SO<sub>2</sub> Allocation

- Most sources in Clear Skies are already receiving allowances under the CAA Title IV SO<sub>2</sub> programs.
- The Clear Skies SO<sub>2</sub> allocation builds upon the Title IV allocation method to provide for a smooth transition between programs.

*Phase II SO<sub>2</sub> Allocations and Projected 2020 Emissions (tons)*

<b>Fuel</b>	<b>2000 SO<sub>2</sub> Emissions <sup>1</sup></b>	<b>2010 CAA Title IV Allocation <sup>2</sup></b>	<b>Estimated Clear Skies Phase II SO<sub>2</sub> Allocation in 2020 <sup>3</sup> (cap - auction)</b>	<b>Projected 2020 Clear Skies Emissions <sup>4</sup></b>
<b>Coal</b>	10,709,830	7,804,600	<b>2,396,031</b>	<b>4,213,000</b>
<b>Gas</b>	490	73,855	<b>22,674</b>	<b>[1,000] <sup>5</sup></b>
<b>Oil</b>	491,790	716,260	<b>219,894</b>	<b>[1,000] <sup>5</sup></b>
<b>Total</b>	<b>11,202,110</b>	<b>8,697,550 <sup>6</sup></b>	<b>2,670,000</b>	<b>4,213,000</b>

**Notes:**

1 Year 2000 emissions data is from EPA's Clean Air Markets Division, 2003.

2 Year 2010 allocations are from the Allowance Tracking System.

3 Numbers may not sum due to rounding. The Title IV allocations can be considered a "proxy" for allocations under legislation since the CSA allocation is largely based on the number of allowances in the Title IV accounts. This simplified calculation does not take into account any futures trading that may have occurred. The calculation takes into account the allowances that are auctioned, as well as the allowances that are distributed for the early scrubber incentive program. This simple estimate of CSA allocations was developed by multiplying the 2010 Title IV allocation for each fuel type by 0.307 (or 2.67 million/8.69 million).

4 Data is from EPA's modeling in 2003, without the safety valve. Results with safety valve would be very similar.

5 While IPM projects zero emissions from these sources, some emissions are expected. These values are not included in the total.

6 The 2010 Title IV cap is 8.95 million tons, however approximately 250,000 allowances are auctioned annually. Also, almost 100,000 tons of allowances are allocated to plants that have shut down.

# NOx Allocation

- NOx allowances are distributed to Clear Skies units on a “fuel neutral” basis, which does not differentiate by fuel type.
- Coal, as a group, is a net buyer of allowances in the east and the west:
  - On a unit-by-unit basis, however, some coal units buy and some sell; many coal and gas-fired units are emitting below their allocation.

**West:**

*Phase II NOx Allocations and Projected 2020 Emissions*

Fuel	2000 NOx Emissions <sup>1</sup>	Estimated Clear Skies Phase II Allocation (cap - auction) <sup>2</sup>	Projected 2020 Clear Skies Emission <sup>3</sup>	Phase II Allocation relative to 2020 Emissions
Coal	823,458	<b>361,196</b>	<b>460,000</b>	79%
Gas	105,726	<b>114,807</b>	<b>78,000</b>	148%
Oil	5,005	<b>2,817</b>	<b>Negligible</b>	-
Total	934,190	<b>478,820</b>	<b>538,000</b>	-

**East:**

*Phase II NOx Allocations and Projected 2020 Emissions*

Fuel	2000 NOx Emissions <sup>1</sup>	Estimated Clear Skies Phase II Allocation (cap - auction) <sup>2</sup>	Projected 2020 Clear Skies Emission <sup>3</sup>	Phase II Allocation relative to 2020 Emissions
Coal	3,767,226	<b>850,248</b>	<b>1,053,000</b>	81%
Gas	219,082	<b>121,827</b>	<b>145,000</b>	84%
Oil	185,875	<b>62,105</b>	<b>Negligible</b>	-
Total	4,172,183	<b>1,034,180</b>	<b>1,198,000</b>	-

**Notes:**

1 Year 2000 emissions data is from EPA's Clean Air Markets Division, 2003.

2 Phase II allocations are estimates. The allocation estimate considers the removal of allowances for the auction. The allocations were calculated based on each fuel type's percentage of total heat input in the EPA scorecard for 2000. Data is based on the bill introduced in 2003.

3 Values presented here are approximated. Data is from EPA's modeling in 2003 without the safety valve. Results with safety valve would be very similar.

# Mercury Allocation – General Approach

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- **Background:** Under Phase I, mercury emissions will be reduced from current levels to 26 tons, a reduction which current modeling suggests can be achieved primarily through the installation of NO<sub>x</sub> and SO<sub>2</sub> controls.
- If allowances were distributed proportional to these reductions, then all plants would need to reduce emissions by 46% or purchase allowances:
  - Different types of coal may have different mercury reductions from PM, SO<sub>2</sub> and NO<sub>x</sub> controls.
  - If allowances were allocated proportional to the overall reduction, then the coal types that are less able to get co-benefit reductions will have to purchase relatively more allowances.
- **Approach:** Under the proposed methodology, bituminous units would be allocated a share of the allowances 1.0 times their share of the overall heat input, subbituminous units would be allocated at 1.25 times their share, and lignite units would be allocated at 3.0 times their share.
  - By inflating the number of allowances issued to lignite and subbituminous plants, the allocation scheme partially compensates for the 46% reduction required under Phase I.
  - Lignite units might still have to purchase some allowances, but because their allowances were adjusted upward based on the 3.0 factor, the costs are more manageable.

# Mercury Allocations

Coal Type	1999 Hg Emissions <sup>1</sup>	Estimated Phase I Allocations <sup>2</sup>	2010 Emissions in Clear Skies <sup>3</sup>	Phase I Allocation Relative to 2010 Emissions
Bituminous	28.2	12.7	14.6	87%
Subbituminous	15.9	9.8	9.4	104%
Lignite	4.4	3.5	2.0	175%
<b>Total</b>	<b>48.5</b>	<b>26.0</b>	<b>26.0</b>	-

**Notes:**

1 Data is actual Hg emissions from coal-fired power plants from the 1999 ICR.

2 A factor of 3.0 was used for lignite coal-fired units, 1.25 was used for the subbituminous units and 1.0 was used for bituminous units.

3 Emissions are from EPA's 2003 modeling. For units burning subbituminous and bituminous fuel, the unit was classified as the coal with higher fuel use. The estimated 2010 emissions reflect data on Clear Skies without the safety valve. Estimating emissions for Clear Skies with the safety valve would show higher emissions and would presuppose borrowing against some future allocations.