

Technical Support Documentation (TSD)

for the proposed Revisions to Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate  
Matter and Ozone

Docket ID No. EPA-HQ-OAR-2009-0491

# **Assessment of Impact of Consent Decree Annual Tonnage Limits on Transport Rule Allocations**

U.S. Environmental Protection Agency

Office of Air and Radiation

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This Technical Support Document (TSD) provides information that supports EPA’s analysis of the impact of emission constraints specified in existing federally-enforceable judicial consent decrees (referred to hereafter as consent decrees) on allowance allocations under the Transport Rule. The analysis is described in section III.B of the preamble to the proposed Revisions to Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone. This TSD is organized as follows:

1. Overview
2. Annual tonnage limits and shut down requirements
  - a. Apportioning the annual tonnage limits for unit-level allocations
  - b. Unit-level caps for Transport Rule units affected by a consent decree annual tonnage limit or shut down requirement
3. Emission rate limits

## 1. Overview

As discussed in section III.B. of the proposed Revisions to Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone preamble, EPA properly incorporated emission reduction requirements specified in consent decrees into state budgets calculations.<sup>1</sup> However, after the final Transport Rule was published, EPA determined that the unit-level allowance allocations under the Transport Rule FIPs did not properly account for those consent decree provisions. Some of the consent decree provisions effectively require the surrender, or restrict the trading, of “excess” Transport Rule allowances. As a result, Transport Rule allowance allocations to certain units may unintentionally reduce the availability of some of those allowances to other sources due to the consent decree restrictions on the use and/or transfer of those allowances by the unit receiving the allocation. EPA analyzed three general consent decree provisions to determine their impact on Transport Rule allowance allocations and state budgets. The first of these provisions was an annual tonnage limit (ATL) expressed as the maximum allowable mass emissions per year from a system or facility as defined in the consent decree. The ATL is, in essence, an annual cap on system- or facility-wide mass emissions. The second provision was a forced shut down or repowering to natural gas of one or more units. The third provision was a maximum emission rate, typically expressed in pounds per million Btu (lb/mmBtu) of heat input. If a consent decree includes surrender or trading restriction provisions, any allowances allocated in excess of an ATL or mass emissions constraint (i.e., the maximum emission rate multiplied by the actual heat input) would not be available to other sources for compliance, effectively reducing the state budget. Similarly, allowances allocated to a unit that shut down due to consent decree requirements would not be available to other sources for compliance.

EPA developed an approach to resolve this inconsistency by adding a constraint on unit-level allocations. This constraint aligns unit-level allocations for units affected by consent decree ATLs with the consent decree ATLs by preventing heat input-based allocations from exceeding the terms of the ATLs for SO<sub>2</sub> and/or NO<sub>x</sub>.

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<sup>1</sup> The consent decree with Northern Indiana Public Service Company (NIPSCO) was finalized after EPA determined, and was not reflected in, the relevant base case projections and state budget in the final Transport Rule. However, EPA believes it is appropriate to address the NIPSCO consent decree because it will otherwise result in removal of a portion of the relevant state budget that was intended to be available for use in complying with Transport Rule emission reduction requirements.

EPA first reviewed the 22 consent decrees for U.S. coal-fired power plants (a full list is available at: <http://www.epa.gov/compliance/resources/cases/civil/caa/coal/index.html>) to determine if the consent decrees: a) apply to Transport Rule-affected units, b) apply to Transport Rule SO<sub>2</sub>, NO<sub>x</sub> annual, or NO<sub>x</sub> ozone season allowances, or c) contain ATLS, shut down provisions, and/or maximum emission rates. EPA determined that 19 of the 22 consent decrees apply to units in the Transport Rule region and 16 consent decrees may apply to allowances of one or more Transport Rule programs – five to Transport Rule SO<sub>2</sub> allowances, 13 to Transport Rule NO<sub>x</sub> annual allowances, and 15 to Transport Rule NO<sub>x</sub> ozone season allowances. Table 1 summarizes the applicability of the consent decrees to Transport Rule-affected units and Transport Rule allowances.

Utility consent decree	Units in TR region	TR SO <sub>2</sub> allowances	TR NO <sub>x</sub> annual allowances	TR NO <sub>x</sub> ozone season allowances
Tennessee Valley Authority	Yes	Yes	Yes	Yes
Northern Indiana Public Service Company	Yes	No <sup>1</sup>	Yes	Yes
Hoosier Energy Rural Electric Cooperative	Yes	Yes	Yes	Yes
American Municipal Power	Yes	Yes	Yes	Yes
Westar Energy	Yes	Yes	Yes	Yes
Duke Energy	Yes	Yes	No <sup>2</sup>	No <sup>2</sup>
Ohio Edison Company	Yes	No <sup>1</sup>	Yes	Yes
Kentucky Utilities	Yes	No <sup>1</sup>	No <sup>3</sup>	No <sup>3</sup>
Salt River Project Agricultural Improvement and Power District	No	No	No	No
American Electric Power Service Corporation	Yes	No <sup>1</sup>	No <sup>4</sup>	No <sup>4</sup>
East Kentucky Power Cooperative	Yes	No <sup>1</sup>	Yes <sup>5</sup>	Yes <sup>5</sup>
Nevada Power Company	No	No	No	No
Alabama Power Company	Yes	No <sup>1</sup>	No <sup>2</sup>	No <sup>2</sup>
Minnkota Power Cooperative	No	No	No	No
Illinois Power Company	Yes	No <sup>1</sup>	Yes	Yes
South Carolina Public Service Authority	Yes	No <sup>1</sup>	Yes	Yes
Southern Indiana Gas and Electric Company	Yes	No <sup>1</sup>	Yes <sup>5</sup>	Yes <sup>5</sup>
Wisconsin Electric Power Company	Yes	No <sup>1</sup>	Yes	Yes
Virginia Electric Power Company	Yes	No <sup>1</sup>	Yes <sup>5</sup>	Yes <sup>5</sup>
ALCOA	Yes	No <sup>1</sup>	Yes	Yes
PSEG Fossil	Yes	No <sup>1</sup>	No <sup>6</sup>	Yes
Tampa Electric Company	Yes <sup>7</sup>	N/A <sup>7</sup>	N/A <sup>7</sup>	Yes

<sup>1</sup> Limited to Title IV allowances.

<sup>2</sup> Does not include NO<sub>x</sub> allowance constraints.

<sup>3</sup> Limited to NO<sub>x</sub> ozone season allowances allocated or issued by the state of Kentucky.

<sup>4</sup> Limited to Clean Air Interstate Rule (CAIR) allowances.

<sup>5</sup> No definition is provided for NO<sub>x</sub> allowances so EPA assumed the broadest definition possible.

<sup>6</sup> Limited to NO<sub>x</sub> ozone season allowances.

<sup>7</sup> Affected units are not included in the Transport Rule SO<sub>2</sub> or NO<sub>x</sub> annual program.

## 2. Annual Tonnage Limits and Shut Down Requirements

After determining the applicability of a consent decree on Transport Rule-affected units and Transport Rule allowances (see Table 1), EPA determined the potential impact of ATLs and shut down requirements. For the purpose of analyzing the potential impact of consent decree emission constraints, EPA applied an implicit ATL of zero to units that are required to shut down. Similarly, if a unit is required to repower to natural gas EPA applied an implicit ATL of zero for SO<sub>2</sub>.

To determine the potential impact of the system- and facility-wide ATLs, EPA compared the ATL expressed in tons per year to the system or facility's annual Transport Rule allowance allocations as determined using the approach in the Final Transport Rule (76 FR 48287 and 48289-90) and listed in the "Final CSAPR Unit Level Allocations under the FIP" (<http://www.epa.gov/crossstaterule/actions.html>). Because some ATLs decline from year-to-year, EPA assessed the potential impact on each year through 2016. For all but two consent decrees, the ATLs remain constant after 2016. This date also provide states sufficient time to prepare and submit State Implementation Plans (SIPs) that include allowance allocation methodologies. For Tennessee Valley Authority (TVA) and Hoosier Energy Rural Electric Cooperative (Hoosier) consent decrees, the ATLs continue to decline until 2019 and 2017, respectively. Therefore, EPA assessed the potential impact of those two consent decrees until the ATLs remain constant (i.e., 2019 for TVA and 2017 for Hoosier). EPA determined that six consent decrees contain ATLs lower than the aggregate Transport Rule allowance allocations listed in the "Final CSAPR Unit Level Allocations under the FIP" for the affected units – one for SO<sub>2</sub>, NO<sub>x</sub> annual, and NO<sub>x</sub> ozone season emissions; one for SO<sub>2</sub> and NO<sub>x</sub> annual emissions; two for SO<sub>2</sub> emissions; and two for NO<sub>x</sub> annual emissions. The detailed results are presented in Tables 2 – 13.

In Tables 2 – 13, the allocation column represents the aggregate Transport Rule SO<sub>2</sub> or NO<sub>x</sub> annual allowance allocations listed in the "Final CSAPR Unit Level Allocations under the FIP" for those units affected by the consent decree ATL. The ATL column is the system- or facility-wide SO<sub>2</sub> or NO<sub>x</sub> ATL for the units affected by the consent decree. The surplus allocation column is the number of allowances from the allocation column in excess of the limit in the ATL column. If EPA determined the consent decree did not apply to Transport Rule SO<sub>2</sub> or NO<sub>x</sub> annual allowances, no assessment is shown below.

**Table 2 – Tennessee Valley Authority: Potential Impact of Annual Tonnage Limits**

Year	SO <sub>2</sub>			NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation	Allocation	ATL (tons)	Surplus allocation
2012	250,105	285,000	None	70,461	100,600	None
2013	250,105	235,518	14,587	70,461	90,791	None
2014	128,819	228,107	None	52,469	86,842	None
2015	128,819	220,631	None	52,469	83,042	None
2016	128,819	175,626	None	52,469	70,667	None
2017	128,819	164,257	None	52,469	64,951	None
2018	128,819	121,699	7,120	52,469	52,000	469
2019	128,819	110,000	18,819	52,469	52,000	469

**Table 3 – Northern Indiana Public Service Company: Potential Impact of Annual Tonnage Limits**

Year	NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation
2012	15,060	15,537	None
2013	15,060	13,752 <sup>1</sup>	1,308
2014	14,880	13,464 <sup>1</sup>	1,416
2015	14,880	12,870 <sup>1</sup>	2,010
2016	14,880	12,870 <sup>1</sup>	2,010

<sup>1</sup> The ATL is based on the utility's plans to install SNCR at R.M. Schahfer and SCR at Michigan City. If the utility pursues alternatives allowed in the consent decree, the ATLs vary between 15,247 tons and 11,704 tons.

**Table 4 – Hoosier Energy Rural Electric Cooperative: Potential Impact of Annual Tonnage Limits**

Year	SO <sub>2</sub>			NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation	Allocation	ATL (tons)	Surplus allocation
2012	20,881	28,500	None	7,731	5,869	1,862
2013	20,881	27,000	None	7,731	5,395	2,336
2014	11,550	26,000	None	7,639	5,395	2,244
2015	11,550	19,889	None	7,639	4,800	2,839
2016	11,550	19,889	None	7,639	4,800	2,839
2017	11,550	18,750 <sup>1</sup>	None	7,639	4,800	2,839

<sup>1</sup> The ATL declines to 15,500 tons if one of the F.E. Ratts units is retired or repowered.

Year	SO <sub>2</sub>			NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation	Allocation	ATL (tons)	Surplus allocation
2012	3,663	21,000	None	1,065	2,100	None
2013	3,663	0 <sup>1</sup>	3,663	1,065	0 <sup>1</sup>	1,065
2014	1,587	0 <sup>1</sup>	1,587	1,004	0 <sup>1</sup>	1,004
2015	1,587	0 <sup>1</sup>	1,587	1,004	0 <sup>1</sup>	1,004
2016	1,587	0 <sup>1</sup>	1,587	1,004	0 <sup>1</sup>	1,004

1 The R.H. Gorsuch facility must shut down or repower.

Year	SO <sub>2</sub>			NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation	Allocation	ATL (tons)	Surplus allocation
2012	16,565	6,600	9,965	11,529	None	None
2013	16,565	6,600	9,965	11,529	None	None
2014	16,565	6,600	9,965	9,580	12,400	None
2015	16,565	6,600	9,965	9,580	12,400	None
2016	16,565	6,600	9,965	9,580	9,600	None

Year	SO <sub>2</sub>		
	Allocation	ATL (tons)	Surplus allocation
2012	2,987	20,447	None
2013	2,987	0 <sup>2</sup>	2,987
2014	1,652	0 <sup>2</sup>	1,652
2015	1,652	0 <sup>2</sup>	1,652
2016	1,652	0 <sup>2</sup>	1,652

<sup>1</sup> The consent decree ATL applies to Gallagher Unit 1 and Unit 3 only.

<sup>2</sup> Gallagher Units 1 & 3 must be retired or repowered by 2013.

**Table 8 – Ohio Edison Company: Potential Impact of Annual Tonnage Limits**

Year	NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation
2012	9,835	11,863	None
2013	9,835	11,863	None
2014	9,279	11,863	None
2015	9,279	11,863	None
2016	9,279	11,863	None

<sup>1</sup> The consent decree ATL applies to WH Sammis only.

**Table 9 – East Kentucky Power Cooperative: Potential Impact of Annual Tonnage Limits**

Year	NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation
2012	6,934	11,500	None
2013	6,934	8,500	None
2014	6,285	8,500	None
2015	6,285	8,500	None
2016	6,285	8,500	None

**Table 10 – Illinois Power Company: Potential Impact of Annual Tonnage Limits**

Year	NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation
2012	8,177	13,800	None
2013	8,177	13,800	None
2014	8,177	13,800	None
2015	8,177	13,800	None
2016	8,177	13,800	None

**Table 11 – South Carolina Public Service Authority: Potential Impact of Annual Tonnage Limits**

Year	NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation
2012	17,341	20,000	None
2013	17,341	20,000	None
2014	17,341	20,000	None
2015	17,341	20,000	None
2016	17,341	20,000	None

**Table 12 – Wisconsin Electric Power Company: Potential Impact of Annual Tonnage Limits**

Year	NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation
2012	12,970	23,400	None
2013	12,970	17,400	None
2014	12,439	17,400	None
2015	12,439	17,400	None
2016	12,439	17,400	None

**Table 13 – Virginia Electric Power Company: Potential Impact of Annual Tonnage Limits**

Year	NO <sub>x</sub> Annual		
	Allocation	ATL (tons)	Surplus allocation
2012	24,837	50,000	None
2013	24,837	30,250	None
2014	24,215	30,250	None
2015	24,215	30,250	None
2016	24,215	30,250	None

*a) Apportioning the annual tonnage limits for unit-level allocations*

The consent decrees that include a system- or facility-wide ATL do not apportion the limit to individual units affected by those consent decrees. However, Transport Rule allowances are allocated to individual units. Therefore, as described in section III.B of the proposed Revisions to Federal Implementation Plans to Reduce



Interstate Transport of Fine Particulate Matter and Ozone preamble, EPA developed a methodology for apportioning the consent decree system- or facility-wide ATL to the units affected by the ATL for 2012 and later years. The apportionment of a system- or facility-wide ATL is solely for the purposes of allocations of Transport Rule allowances and does not modify, or create additional, consent decree requirements or limitations.

To determine the unit-level caps for calculating allocations, EPA first calculated a ratio comparing the consent decree system- or facility-wide ATL to the aggregate allocations listed in the “Final CSAPR Unit Level Allocations under the FIP” for units covered by the consent decree ATL. EPA then multiplied this ratio by the unit-level allocation listed in the “Final CSAPR Unit Level Allocations under the FIP” for each unit covered by the system- or facility-wide ATL (equation 1).

$$\text{Equation 1: Unit-level cap} = \left(\frac{A}{B}\right) \times C$$

- Where
- A = Applicable consent decree system- or facility-wide ATL
  - B = For units affected by the consent decree ATL, the sum of the unit-level allocations listed in the “Final CSAPR Unit Level Allocations under the FIP”
  - C = Applicable unit-level Transport Rule allocation listed in the “Final CSAPR Unit Level Allocations under the FIP”

This can be best illustrated with an example. In this example, EPA determines that facility ABC consists of two units – Unit 1 and Unit 2 – that are subject to the Transport Rule NO<sub>x</sub> annual program and a consent decree ATL for NO<sub>x</sub> emissions. The consent decree ATL for 2012 is 3,000 tons of NO<sub>x</sub> and the 2012 NO<sub>x</sub> annual allowance allocation as determined using the approach in the Final Transport Rule is 4,000 allowances for Unit 1 and 2,000 allowances to Unit 2 – a total of 6,000 allowances. Because, in this example, EPA determined the consent decree surrender provisions apply to Transport Rule NO<sub>x</sub> annual allowances, any allocation in excess of the ATL may be subject to surrender, reducing the number of allowances available for sources to comply with the Transport Rule, effectively reducing the state budget.

EPA must calculate unit-level caps for Unit 1 and Unit 2 by apportioning the consent decree ATL. First, the ATL is divided by the sum of the unit-level allocations as determined using the approach in the Final Transport Rule (3,000 / 6,000 = 0.5). This ratio is then multiplied by each unit’s allocation as determined using the approach in the Final Transport Rule to determine the respective unit’s unit-level cap (Unit 1: 0.5 X 4,000 = 2,000 and Unit 2: 0.5 X 2,000 = 1,000).

*b) Unit-level caps for Transport Rule units affected by a consent decree annual tonnage limit or shut down requirement*

Unit-level caps were calculated only for units affected by a consent decree ATL that is below the sum of the unit-level allocations listed in the “Final CSAPR Unit Level Allocations under the FIP” for those units. In other words, unit-level caps were not calculated for units for which the ATL is greater than the aggregate allocations listed in the “Final CSAPR Unit Level Allocations under the FIP”, such as the East Kentucky Power Cooperative consent decree units (see table 9). The results of EPA’s calculations are listed in Tables 14 – 16 for SO<sub>2</sub>, NO<sub>x</sub> annual, and NO<sub>x</sub> ozone season emissions, respectively.

Table 14: EPA-calculated Unit-level Caps for Purposes of Calculating Transport Rule SO <sub>2</sub> Allowance Allocations												
Utility consent decree	Plant Name	State	ORIS	Boiler ID	Unit-level caps (SO <sub>2</sub> tons)							
					2012	2013	2014	2015	2016	2017	2018	2019
AMP	R Gorsuch	Ohio	7253	1		0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	2		0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	3		0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	4		0	0	0	0	0	0	0
Duke	R Gallagher	Indiana	1008	1		0	0	0	0	0	0	0
Duke	R Gallagher	Indiana	1008	3		0	0	0	0	0	0	0
TVA	Colbert	Alabama	47	1		3,333					3,295	2,978
TVA	Colbert	Alabama	47	2		3,196					3,160	2,856
TVA	Colbert	Alabama	47	3		3,270					3,235	2,924
TVA	Colbert	Alabama	47	4		3,187					3,151	2,848
TVA	Colbert	Alabama	47	5		6,459					6,386	5,772
TVA	Paradise	Kentucky	1378	1		9,472					4,089	3,696
TVA	Paradise	Kentucky	1378	2		10,023					4,326	3,910
TVA	Paradise	Kentucky	1378	3		13,474					5,816	5,257
TVA	Shawnee	Kentucky	1379	1		2,220					958	866
TVA	Shawnee	Kentucky	1379	10		1,897					819	740
TVA	Shawnee	Kentucky	1379	2		2,240					967	874
TVA	Shawnee	Kentucky	1379	3		2,253					972	879
TVA	Shawnee	Kentucky	1379	4		2,142					925	836
TVA	Shawnee	Kentucky	1379	5		2,224					960	868
TVA	Shawnee	Kentucky	1379	6		2,197					949	857
TVA	Shawnee	Kentucky	1379	7		2,320					1,001	905
TVA	Shawnee	Kentucky	1379	8		2,231					963	870
TVA	Shawnee	Kentucky	1379	9		2,161					932	843
TVA	Allen	Tennessee	3393	1		5,217					1,686	1,524
TVA	Allen	Tennessee	3393	2		4,984					1,611	1,456
TVA	Allen	Tennessee	3393	3		5,025					1,624	1,468
TVA	Bull Run	Tennessee	3396	1		14,384					4,649	4,202
TVA	Cumberland	Tennessee	3399	1		8,300					8,029	7,258
TVA	Cumberland	Tennessee	3399	2		9,665					7,999	7,231
TVA	Gallatin	Tennessee	3403	1		4,997					1,615	1,460
TVA	Gallatin	Tennessee	3403	2		5,120					1,655	1,496
TVA	Gallatin	Tennessee	3403	3		5,703					1,843	1,666
TVA	Gallatin	Tennessee	3403	4		5,901					1,907	1,724
TVA	John Sevier	Tennessee	3405	1		3,338					1,079	975
TVA	John Sevier	Tennessee	3405	2		3,352					1,084	979
TVA	John Sevier	Tennessee	3405	3		3,411					1,102	997
TVA	John Sevier	Tennessee	3405	4		3,365					1,087	983
TVA	Johnsonville	Tennessee	3406	1		2,329					753	681

Utility consent decree	Plant Name	State	ORIS	Boiler ID	Unit-level caps (SO <sub>2</sub> tons)							
					2012	2013	2014	2015	2016	2017	2018	2019
TVA	Johnsonville	Tennessee	3406	10		2,660					860	777
TVA	Johnsonville	Tennessee	3406	2		2,373					767	693
TVA	Johnsonville	Tennessee	3406	3		2,470					798	722
TVA	Johnsonville	Tennessee	3406	4		2,200					711	643
TVA	Johnsonville	Tennessee	3406	5		2,134					690	623
TVA	Johnsonville	Tennessee	3406	6		2,271					734	663
TVA	Johnsonville	Tennessee	3406	7		2,462					795	719
TVA	Johnsonville	Tennessee	3406	8		2,696					872	788
TVA	Johnsonville	Tennessee	3406	9		2,614					845	763
TVA	Kingston	Tennessee	3407	1		2,675					864	781
TVA	Kingston	Tennessee	3407	2		2,670					863	780
TVA	Kingston	Tennessee	3407	3		2,869					928	839
TVA	Kingston	Tennessee	3407	4		2,705					875	791
TVA	Kingston	Tennessee	3407	5		3,862					1,248	1,128
TVA	Kingston	Tennessee	3407	6		3,736					1,207	1,091
TVA	Kingston	Tennessee	3407	7		3,684					1,190	1,076
TVA	Kingston	Tennessee	3407	8		3,695					1,194	1,079
TVA	Kingston	Tennessee	3407	9		3,754					1,213	1,096
TVA	Widows Creek	Alabama	50	1		1,771					1,752	1,583
TVA	Widows Creek	Alabama	50	2		1,709					1,690	1,528
TVA	Widows Creek	Alabama	50	3		1,844					1,823	1,648
TVA	Widows Creek	Alabama	50	4		1,921					1,900	1,717
TVA	Widows Creek	Alabama	50	5		1,672					1,653	1,494
TVA	Widows Creek	Alabama	50	6		1,934					1,912	1,728
TVA	Widows Creek	Alabama	50	7		7,284					7,204	6,511
TVA	Widows Creek	Alabama	50	8		6,463					6,484	5,860
Westar	Jeffrey Energy Center	Kansas	6068	1	2,270	2,270	2,270	2,270	2,270	2,270	2,270	2,270
Westar	Jeffrey Energy Center	Kansas	6068	2	2,197	2,197	2,197	2,197	2,197	2,197	2,197	2,197
Westar	Jeffrey Energy Center	Kansas	6068	3	2,133	2,133	2,133	2,133	2,133	2,133	2,133	2,133

**Table 15: EPA-calculated Unit-level Caps for Purposes of Calculating Transport Rule NO<sub>x</sub> Allowance Allocations**

Utility consent decree	Plant Name	State	ORIS	Boiler ID	Unit-level caps (NO <sub>x</sub> annual tons)								
					2012	2013	2014	2015	2016	2017	2018	2019	
AMP	R Gorsuch	Ohio	7253	1		0	0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	2		0	0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	3		0	0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	4		0	0	0	0	0	0	0	0
Hoosier	FE Ratts	Indiana	1043	1SG1	550	506	506	451	451	451	451	451	451
Hoosier	FE Ratts	Indiana	1043	2SG1	578	532	532	473	473	473	473	473	473
Hoosier	Merom	Indiana	6213	1SG1	2,384	2,192	2,192	1,950	1,950	1,950	1,950	1,950	1,950
Hoosier	Merom	Indiana	6213	2SG1	2,357	2,165	2,165	1,926	1,926	1,926	1,926	1,926	1,926
NIPSCO	Bailly	Indiana	995	7		883	865	827	827	827	827	827	827
NIPSCO	Bailly	Indiana	995	8		1,517	1,485	1,419	1,419	1,419	1,419	1,419	1,419
NIPSCO	Michigan City	Indiana	997	12		2,112	2,068	1,977	1,977	1,977	1,977	1,977	1,977
NIPSCO	Michigan City	Indiana	997	4		0	0	0	0	0	0	0	0
NIPSCO	Michigan City	Indiana	997	5		0	0	0	0	0	0	0	0
NIPSCO	Michigan City	Indiana	997	6		0	0	0	0	0	0	0	0
NIPSCO	RM Schahfer	Indiana	6085	14		2,266	2,218	2,120	2,120	2,120	2,120	2,120	2,120
NIPSCO	RM Schahfer	Indiana	6085	15		2,671	2,616	2,501	2,501	2,501	2,501	2,501	2,501
NIPSCO	RM Schahfer	Indiana	6085	17		2,126	2,081	1,989	1,989	1,989	1,989	1,989	1,989
NIPSCO	RM Schahfer	Indiana	6085	18		2,177	2,131	2,037	2,037	2,037	2,037	2,037	2,037
TVA	Colbert	Alabama	47	1								1,115	1,115
TVA	Colbert	Alabama	47	2								1,069	1,069
TVA	Colbert	Alabama	47	3								1,094	1,094
TVA	Colbert	Alabama	47	4								1,066	1,066
TVA	Colbert	Alabama	47	5								2,162	2,162
TVA	Paradise	Kentucky	1378	1								3,141	3,141
TVA	Paradise	Kentucky	1378	2								3,323	3,323
TVA	Paradise	Kentucky	1378	3								4,466	4,466
TVA	Shawnee	Kentucky	1379	1								735	735
TVA	Shawnee	Kentucky	1379	10								628	628
TVA	Shawnee	Kentucky	1379	2								742	742
TVA	Shawnee	Kentucky	1379	3								746	746
TVA	Shawnee	Kentucky	1379	4								710	710
TVA	Shawnee	Kentucky	1379	5								737	737
TVA	Shawnee	Kentucky	1379	6								728	728
TVA	Shawnee	Kentucky	1379	7								769	769
TVA	Shawnee	Kentucky	1379	8								739	739
TVA	Shawnee	Kentucky	1379	9								717	717
TVA	Allen	Tennessee	3393	1								575	575
TVA	Allen	Tennessee	3393	2								549	549
TVA	Allen	Tennessee	3393	3								553	553

Utility consent decree	Plant Name	State	ORIS	Boiler ID	Unit-level caps (NO <sub>x</sub> annual tons)							
					2012	2013	2014	2015	2016	2017	2018	2019
TVA	Bull Run	Tennessee	3396	1							1,584	1,584
TVA	Cumberland	Tennessee	3399	1							2,735	2,735
TVA	Cumberland	Tennessee	3399	2							2,725	2,725
TVA	Gallatin	Tennessee	3403	1							550	550
TVA	Gallatin	Tennessee	3403	2							564	564
TVA	Gallatin	Tennessee	3403	3							628	628
TVA	Gallatin	Tennessee	3403	4							650	650
TVA	John Sevier	Tennessee	3405	1							368	368
TVA	John Sevier	Tennessee	3405	2							370	370
TVA	John Sevier	Tennessee	3405	3							376	376
TVA	John Sevier	Tennessee	3405	4							371	371
TVA	Johnsonville	Tennessee	3406	1							257	257
TVA	Johnsonville	Tennessee	3406	10							293	293
TVA	Johnsonville	Tennessee	3406	2							262	262
TVA	Johnsonville	Tennessee	3406	3							272	272
TVA	Johnsonville	Tennessee	3406	4							242	242
TVA	Johnsonville	Tennessee	3406	5							235	235
TVA	Johnsonville	Tennessee	3406	6							250	250
TVA	Johnsonville	Tennessee	3406	7							272	272
TVA	Johnsonville	Tennessee	3406	8							297	297
TVA	Johnsonville	Tennessee	3406	9							288	288
TVA	Kingston	Tennessee	3407	1							294	294
TVA	Kingston	Tennessee	3407	2							294	294
TVA	Kingston	Tennessee	3407	3							316	316
TVA	Kingston	Tennessee	3407	4							298	298
TVA	Kingston	Tennessee	3407	5							425	425
TVA	Kingston	Tennessee	3407	6							411	411
TVA	Kingston	Tennessee	3407	7							405	405
TVA	Kingston	Tennessee	3407	8							407	407
TVA	Kingston	Tennessee	3407	9							413	413
TVA	Widows Creek	Alabama	50	1							593	593
TVA	Widows Creek	Alabama	50	2							572	572
TVA	Widows Creek	Alabama	50	3							616	616
TVA	Widows Creek	Alabama	50	4							643	643
TVA	Widows Creek	Alabama	50	5							560	560
TVA	Widows Creek	Alabama	50	6							647	647
TVA	Widows Creek	Alabama	50	7							2,437	2,437
TVA	Widows Creek	Alabama	50	8							2,716	2,716

Utility consent decree	Plant Name	State	ORIS	Boiler ID	Unit-level caps (NO <sub>x</sub> ozone season tons)								
					2012	2013	2014	2015	2016	2017	2018	2019	
AMP	R Gorsuch	Ohio	7253	1		0	0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	2		0	0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	3		0	0	0	0	0	0	0	0
AMP	R Gorsuch	Ohio	7253	4		0	0	0	0	0	0	0	0

### 3. Emission Rate Limits

Many of the consent decrees include other emission constraints such as maximum emission rates (e.g., pounds of NO<sub>x</sub> per million Btu of heat input), pollution control installation and operation requirements, and pollution control performance specifications. EPA did not analyze the impact of the latter two constraints directly because EPA believes that the maximum emission rates are generally designed to be consistent with, and account for, these additional requirements.

EPA did estimate the potential impact of maximum emission rates on allocations of Transport Rule allowances. The impact of a maximum emissions rate on a unit's allowable mass emissions depends on the actual utilization of the unit involved in future years when the emission rate applies. The product of a maximum emissions rate (in lb/mmBtu) and the unit's actual future heat input (in mmBtu) is a mass emission value that, after conversion from pounds to tons, limits the use of the unit's allocated allowances. However, in order to estimate the potential impact of a unit's maximum emission rate on allowance allocations, EPA must make assumptions about each unit's future heat input. For the purpose of this analysis, EPA multiplied a unit's maximum emission rate as listed in the consent decree by the average of the respective unit's three highest non-zero annual or ozone season heat input values from 2006 to 2010. These are the same heat input values used for allocating allowance and listed in the "Final CSAPR Unit Level Allocations under the FIP".<sup>2</sup> The results of this analysis are shown in Tables 17 – 19 for SO<sub>2</sub>, NO<sub>x</sub> annual, and NO<sub>x</sub> ozone season emissions, respectively.

EPA selected 2013 for this analysis because it represents the greatest potential impact of consent decree maximum emission rates because maximum emission rates do not begin for some units until 2013 and the 2012 – 2013 allowance allocations are generally greater than in future years (i.e., allowance allocations decline in 2014 for many units). EPA determined the maximum emission rates in the consent decrees potentially have the following impacts:

- Transport Rule SO<sub>2</sub> annual trading program: 4,335 SO<sub>2</sub> allowances may be affected, approximately 0.13% of the total allowances allocated.
- Transport Rule NO<sub>x</sub> annual trading program: 1,585 NO<sub>x</sub> annual allowances may be affected, approximately 0.13% of the total allowances allocated.

<sup>2</sup> In the case of the Hoosier Energy Rural Electric Cooperative consent decree, one unit at the Merom facility has the option of operating the FGD at 95% removal efficiency or meeting an emission rate of 0.15 pounds per million Btu of heat input. Based on fuel purchase records reported to EIA for 2010 and 2011, the 95% removal efficiency equates to an emission rate of 0.27 pounds per million Btu and was used for this analysis.

- Transport Rule NO<sub>x</sub> ozone season trading program: 1,123 NO<sub>x</sub> ozone season allowances may be affected, approximately 0.19% of the total allowances allocated.

Based on this analysis of potential impact on allowance allocations, EPA concluded that the consent decree emission constraints other than ATLS would affect few allowances in the Transport Rule trading programs. Any effort to reallocate the allowances affected by maximum emission rate would require EPA to make assumptions about individual units' future utilization and heat input. Because this would require the use of unit-level projections whose application in setting unit-level allocations would be difficult to support and because few allowances are potentially at risk, EPA chose not to adjust allocations to reflect maximum emission rates defined in the consent decrees.

In Tables 17 – 19 below, the allocation column represents the unit-level allocation of SO<sub>2</sub> or NO<sub>x</sub> allowances listed in the “Final CSAPR Unit Level Allocations under the FIP” or, for units with a unit-level cap calculated by EPA, tables 14 – 16 of this document. The avg heat input column is the average of the three highest non-zero heat input values from 2006 – 2010 as listed in the “Final CSAPR Unit Level Allocations under the FIP” (tables 17 and 18 use the annual heat input values and table 19 uses the ozone season heat input values). The emission rate is the maximum SO<sub>2</sub> or NO<sub>x</sub> emission rate listed in a consent decree. The potential constraint is the product of the values from the average heat input and emission rate columns. The surplus allocation is the number of allowances in the allocation column in excess of the potential constraint column.

Utility consent decree	Plant Name	State	ORIS	Boiler ID	Allocation	Avg heat input	SO <sub>2</sub> emission rate	Potential constraint	Surplus allocation
Hoosier	Merom	Indiana	6213	1SG1	8582	38089260	0.272	5180	3402
Duke	R Gallagher	Indiana	1008	1	0	6521304	1.7	5543	None
Duke	R Gallagher	Indiana	1008	2	1658	7359549	0.6	2208	None
Duke	R Gallagher	Indiana	1008	3	0	6892599	1.7	5859	None
Duke	R Gallagher	Indiana	1008	4	1587	7045742	0.6	2114	None
Westar	Jeffrey Energy Center	Kansas	6068	1	2270	55683277	0.07	1949	321
Westar	Jeffrey Energy Center	Kansas	6068	2	2197	53900154	0.07	1887	310
Westar	Jeffrey Energy Center	Kansas	6068	3	2133	52319190	0.07	1831	302
TVA	Shawnee	Kentucky	1379	1	2220	10394599	1.2	6237	None
TVA	Shawnee	Kentucky	1379	10	1897	8884355	1.2	5331	None
TVA	Shawnee	Kentucky	1379	2	2240	10491296	1.2	6295	None
TVA	Shawnee	Kentucky	1379	3	2253	10551380	1.2	6331	None
TVA	Shawnee	Kentucky	1379	4	2142	10031659	1.2	6019	None
TVA	Shawnee	Kentucky	1379	5	2224	10415210	1.2	6249	None
TVA	Shawnee	Kentucky	1379	6	2197	10286868	1.2	6172	None
TVA	Shawnee	Kentucky	1379	7	2320	10867445	1.2	6520	None
TVA	Shawnee	Kentucky	1379	8	2231	10445226	1.2	6267	None
TVA	Shawnee	Kentucky	1379	9	2161	10119178	1.2	6072	None

**Table 18: Potential Impact of Consent Decree NO<sub>x</sub> Maximum Emission Rates on Transport Rule NO<sub>x</sub> Annual Allowance Allocations**

Utility consent decree	Plant Name	State	ORIS	Boiler ID	Allocation	Avg heat input	NO <sub>x</sub> emission rate	Potential constraint	Surplus allocation
NIPSCO	Bailly	Indiana	995	7	883	11732774	0.150	880	3
NIPSCO	Bailly	Indiana	995	8	1517	20143261	0.150	1511	6
NIPSCO	Michigan City	Indiana	997	12	2112	28055936	0.120	1683	429
NIPSCO	RM Schahfer	Indiana	6085	14	2266	30081712	0.12	1805	461
NIPSCO	RM Schahfer	Indiana	6085	15	2671	35484866	0.15	2661	10
NIPSCO	RM Schahfer	Indiana	6085	17	2126	28235898	0.2	2824	None
NIPSCO	RM Schahfer	Indiana	6085	18	2177	28911962	0.2	2891	None
Hoosier	Frank E Ratts	Indiana	1043	1SG1	506	8796939	0.25	1100	None
Hoosier	Frank E Ratts	Indiana	1043	2SG1	532	9240250	0.25	1155	None
Hoosier	Merom	Indiana	6213	1SG1	2192	38089260	0.12	2285	None
Hoosier	Merom	Indiana	6213	2SG1	2165	37630329	0.08	1505	660
Alcoa	Sadow	Texas	52071	5A	505	9930008	0.1	497	8
Alcoa	Sadow	Texas	52071	5B	486	9560604	0.1	478	8

**Table 19: Potential Impact of Consent Decree NO<sub>x</sub> Maximum Emission Rates on Transport Rule NO<sub>x</sub> Ozone Season Allowance Allocations**

Utility consent decree	Plant Name	State	ORIS	Boiler ID	Allocation	Avg heat input	NO <sub>x</sub> emission rate	Potential constraint	Surplus allocation
NIPSCO	Bailly	Indiana	995	7	371	4543682	0.180	409	None
NIPSCO	Bailly	Indiana	995	8	640	7844654	0.180	706	None
NIPSCO	Michigan City	Indiana	997	12	1100	13476406	0.16	1078	22
NIPSCO	RM Schahfer	Indiana	6085	14	1177	14412841	0.16	1153	24
NIPSCO	RM Schahfer	Indiana	6085	15	1165	14274662	0.15	1071	94
NIPSCO	RM Schahfer	Indiana	6085	17	1017	12455922	0.2	1246	None
NIPSCO	RM Schahfer	Indiana	6085	18	1020	12489622	0.2	1249	None
Hoosier	Frank E Ratts	Indiana	1043	1SG1	307	3763381	0.25	470	None
Hoosier	Frank E Ratts	Indiana	1043	2SG1	308	3777533	0.25	472	None
Hoosier	Merom	Indiana	6213	1SG1	1232	15095987	0.12	906	326
Hoosier	Merom	Indiana	6213	2SG1	1289	15787732	0.08	632	657
Alcoa	Sadow	Texas	52071	5A	321	8024562	0.1	401	None
Alcoa	Sadow	Texas	52071	5B	298	7547740	0.1	377	None