

ENVIRONMENTAL PROTECTION AGENCY**40 CFR Parts 51, 52, 96, and 97****Availability of Documents for the Response to the Remands
in the Ozone Transport Cases Concerning the Method for
Computing Growth for Electric Generating Units**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of data availability for the NO_x SIP Call and the Section 126 Rule.

SUMMARY: The EPA is providing notice that it has placed in the dockets for the two main rulemakings concerning ozone-smog transport in the eastern part of the United States—the Nitrogen Oxides State Implementation Plan Call (NO_x SIP Call) and the Section 126 Rule—data relevant to the remands by the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) concerning growth rates for seasonal heat input by electric generating units (EGUs). In both the NO_x SIP Call and Section 126 rulemakings, EPA determined control obligations with respect to EGUs through the same computation, which included, as one component, estimates of growth in heat input by the EGUs from 1996 to 2007. In two cases decided earlier this year challenging the Section 126 rulemaking and a pair of rulemakings that made technical corrections to the NO_x SIP Call, the D.C. Circuit

considered challenges to EPA's calculation of the growth estimate and its use of growth factors. In virtually identical decisions, the Court remanded the growth component to EPA for a better response to certain data presented by the affected States and industry concerning actual heat input, and for a better explanation of EPA's methodology. The EPA is in the process of responding to those remands. The EPA's preliminary view is that its growth calculations were reasonable and can be supported with a more robust explanation, based on the existing record, that takes into account the Court's concerns. In addition, EPA is considering new data that have recently been placed in the dockets for the NOx SIP Call and Section 126 Rule. These new data appear to confirm the reasonableness of the growth calculations. The EPA is providing a 30-day period for the public to comment on these new data.

DATES: Documents were placed in the docket on or about July 27, 2001. The EPA is authorizing a 30-day comment period, ending on **[insert date 30 days from the date of publication]**. Comments must be postmarked by the last day of the comment period and sent directly to the Docket Office listed in ADDRESSES below (in duplicate form, if

possible). In addition, EPA encourages commenters to send copies of their comments directly to the contacts identified below under the section, FOR FURTHER INFORMATION CONTACT.

ADDRESSES: Comments may be submitted to the Office of Air and Radiation Docket and Information Center (6102), Attention: Docket No. A-96-56 for the NOx SIP Call and Docket No. A-97-43 for the Section 126 Rule, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460, telephone (202) 260-7548. The EPA encourages electronic submission of comments following the instructions under SUPPLEMENTARY INFORMATION of this document. The e-mail address is A-and-R-Docket@epa.gov. No confidential business information should be submitted through e-mail.

Copies of all of the documents have been placed in the docket for the NOx SIP Call rule, Docket No. A-96-56, and have been incorporated by reference in the docket for the Section 126 Rule, Docket No. A-97-43. These new documents, and other documents relevant to these rulemakings, are available for inspection at the Docket Office, located at 401 M Street SW, Room M-1500, Washington, DC 20460, between 8:00 a.m. and 5:30 p.m.,

Monday through Friday, excluding legal holidays. A reasonable fee may be charged for copying. Some of the documents have also been made available in electronic form at the following EPA website:

<http://www.epa.gov/airmarkets/fednox/126noda/>.

FOR FURTHER INFORMATION CONTACT: Questions concerning today's document should be directed to Kevin Culligan, Office of Atmospheric Programs, Clean Air Markets Division, 6204M, 1200 Pennsylvania Ave. NW, Washington, DC 20460, telephone (202) 564-9172, e-mail culligan.kevin@epa.gov; or Howard J. Hoffman, Office of General Counsel, 2344A, 1200 Pennsylvania Ave. NW, Washington, DC 20460, telephone (202) 564-5582, e-mail hoffman.howard@epa.gov. General questions about the Section 126 Rule or the NOx SIP Call may be directed to Carla Oldham, Office of Air Quality Planning and Standards, Air Quality Strategies and Standards Division, MD-15, Research Triangle Park, NC, 27711, telephone (919) 541-3347, e-mail oldham.carla@epa.gov.

SUPPLEMENTARY INFORMATION:

Submitting Electronic Comments

Electronic comments are encouraged and can be sent directly to EPA at A-and-R-Docket@epa.gov. Electronic

comments must be submitted as an ASCII file avoiding the use of special characters and any form of encryption. Comments will also be accepted on disks in WordPerfect 8.0 or ASCII file format. All comments in electronic form must be identified by Docket No. A-96-56 for the NOx SIP Call and Docket No. A-97-43 for the Section 126 Rule. Electronic comments may be filed online at many Federal Depository Libraries.

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I. Background

A. Rulemakings

1. The NOx SIP Call. In a final action published October 27, 1998, EPA promulgated, "Finding of

Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone," 63 FR 57356 (the NOx SIP Call). This rulemaking was the culmination of a multi-year study -- begun by a cooperative group of States, industry, and citizen groups called the Ozone Transport Assessment Group (OTAG) -- of the causes and extent of ozone-smog transport in the eastern half of the United States. In the NOx SIP Call, EPA determined that NOx emissions from 22 States and the District of Columbia contributed significantly to ozone nonattainment problems downwind, under Clean Air Act (CAA) section 110(a)(2)(D). Accordingly, EPA promulgated a requirement that each of the 23 jurisdictions submit a SIP revision containing controls that would yield specified levels of NOx emissions reductions, and thereby eliminate that jurisdiction's significant contribution.

Under the rulemaking, the appropriate level of NOx reductions is the amount of NOx emissions that could be eliminated through use of highly cost-effective controls. In the NOx SIP Call, EPA did not require States specifically to impose controls on any particular sources, but rather EPA determined the amount of

emissions reductions that would correspond to the implementation of highly cost-effective controls, and required States to submit SIP revisions that provide for that amount of reduction. Although EPA determined the amount of required reduction by examining several categories of sources, EPA based most of its required emissions reductions on the availability of highly cost-effective controls for large EGUs.

In studying EGU NO_x emissions and associated issues, EPA relied heavily on a computerized simulation of the electric utility industry termed the Integrated Planning Model (IPM).¹ The IPM used by EPA covers 48 contiguous U.S. States and incorporates information over a multi-year period as to expected demand for electricity, the physical characteristics of electricity generators, transmission grids, characteristics of the fuels used, amounts of NO_x and other pollutant emissions, types of emissions controls, and the various costs involved. Based on these inputs, the IPM provides reasonable projections, over a multi-year period, of, among other things, the amount of electricity generation that will be

¹IPM and the manner in which EPA programmed it is discussed in "Report on Analyzing Electric Power Generation Under the CAAA," A-96-56, V-C-03 (March 1998).

needed in various areas, which sources will generate how much electricity, to which region that electricity will be transmitted, what amounts of heat input will be needed, the amount of pollution that will be emitted, what pollution controls will be required on which sources, what costs will be incurred, and how much new generation capacity will be built in various regions.

For the NOx SIP Call, EPA conducted the IPM simulations for the years 2001 to 2020, inclusive. Further, EPA programmed the model to provide detailed data outputs for the years 2001, 2003, 2007, 2010, and 2015. Of particular relevance for present purposes, IPM provided projections for heat input for 2001 and 2010, as well as projected NOx emissions for 2007.

EPA determined the amount of reductions attributable to EGUs as highly cost effective in the following manner: For each of the 23 jurisdictions, EPA determined the amount of actual heat input used by all large EGUs in the jurisdiction during the 1995 and 1996 ozone seasons. EPA selected the higher of the 1995 or 1996 amounts as the baseline heat input. EPA then applied a growth factor to this baseline amount, to grow it from the 1996 level (which, for some States, included the 1995 amount) to a

2007 base level. EPA determined the growth factor by determining the average annual growth rate in heat input projected by IPM between the years 2001 and 2010 inclusive.

EPA then applied to the 2007 projected heat input, the control level that EPA determined to be highly cost effective. This calculation yielded an amount of NOx emissions, which may be referred to as the 2007 EGU Budget. EPA subtracted this amount from the amount of NOx emissions IPM had projected for 2007 without assuming NOx controls. The remainder constituted a portion of the amount of NOx emissions reductions--the portion attributable to EGUs--that each jurisdiction was required to achieve.

2. Technical Amendments. When it promulgated the NOx SIP Call rule, EPA decided to reopen public comment on the source-specific data used to establish each State's 2007 EGU Budget (63 FR at 57427). EPA further extended this comment period by notice dated December 24, 1998 (63 FR 71220). EPA indicated that it would entertain requests to correct the 2007 EGU Budgets to take into account errors or updates in some of the underlying emissions inventory and certain other specified data (63

FR at 57427).

Following its review of the comments received, EPA published a rulemaking providing Technical Amendments to, among other things, the 2007 EGU Budgets. "Final Rule; Technical Amendment to the Finding of Significant Contribution and Rulemaking for Certain States for Purposes of Reducing Regional Transport of Ozone," (64 FR 26298; May 14, 1999). In response to additional comments received, EPA published a second rulemaking, making additional Technical Amendments to the 2007 EGU Budgets. "Final Rule; Technical Amendment to the Finding of Significant Contribution and Rulemaking for Certain States for Purposes of Reducing Regional Transport of Ozone," (65 FR 11222; March 2, 2000). (These two rulemakings may be referred to, together, as the Technical Amendments.) In promulgating the Technical Amendments, EPA kept intact its method for determining the 2007 EGU Budgets, including the method for determining growth to 2007. EPA simply made adjustments concerning whether particular sources were large EGUs, and made the appropriate adjustments in the 1996 baseline (which included 1995 heat input values for some States) for those sources.

3. Section 126 Rulemaking. In a final action published January 18, 2000, EPA granted petitions from four Northeast States making findings that NOx emissions from large EGUs, among other sources, in 12 Midwest, Southeast, and Northeast States and the District of Columbia contributed significantly to ozone nonattainment in the petitioning Northeast States. "Findings of Significant contribution and Rulemaking on Section 126 Petitions for Purposes of Reducing Interstate Ozone Transport," 65 FR 2674 (Section 126 Rule). As a remedy, EPA promulgated control requirements for the EGUs. These control requirements were based on the 2007 EGU Budgets from the NOx SIP Call (as revised by the Technical Amendments). Specifically, EPA established a 2007 EGU Budget for each affected State, and then allocated the State's 2007 EGU Budget to each of the large EGUs in the State, according to a formula.

B. Court Decisions; Remands

All three sets of rulemakings -- the NOx SIP Call, the Technical Amendments, and the Section 126 Rule -- were challenged by various groups of States and industries in the U.S. Court of Appeals for the District of Columbia Circuit (the D.C. Circuit).

1. **Michigan v. EPA (NOx SIP Call)**. On March 3, 2000, a panel of the D.C. Circuit largely upheld the NOx SIP Call in Michigan v. EPA, 213 F.3d 663 (D.C. Cir. 2000).

Although partially vacating and remanding the SIP Call on certain specific issues, the Court generally upheld the regulatory approach adopted by EPA, including finding that EPA reasonably interpreted the CAA as "providing it with the authority to determine a state's NOx significant contribution level," as reflected in each State's budget. Id. at 687. No party to that litigation specifically raised any issue concerning the EPA's method for computing the growth component for the EGU Budget.

2. **Appalachian Power v. EPA (Section 126 Rule)**. On May 15, 2001, a panel of the D.C. Circuit largely upheld the Section 126 Rule in Appalachian Power v. EPA, 249 F.3d 1032 (D.C. Cir. 2001). In response to a direct challenge by parties to EPA's method for determining EGU growth rates, the Court remanded that part of the rule to EPA.

At the outset, the Court turned aside a challenge by the Midwest and Southeast States that EPA's emissions growth projections were arbitrary and capricious because they relied on IPM growth projections that were significantly lower than certain individual state

projections. The Court upheld "EPA's judgment [that] the IPM offered a more comprehensive and consistent means of allocating emission allowances than sorting through the various state-specific projections." Id. at 1053.

However, the Court went on to remand EPA's EGU growth projections. The Court objected that EPA never articulated why it adopted its methodology for projecting growth. In addition, the Court noted information provided by the petitioners challenging the rule that--

EPA's projections significantly underestimated growth rates in some States. In Michigan and West Virginia, for example, actual utilization in 1998 already exceeded the EPA's projected levels for 2007.

The Court stressed that "future growth projections that implicitly assume a baseline of negative growth in electricity generation over the course of a decade appear arbitrary," and that EPA did not provide a record explanation of this disparity.²

The Court then observed that although EPA relied on IPM projections for the 2001-2010 period, EPA had admitted that it had IPM projections for 2007, as well as for the 1996-2001 period. The Court quoted statements in

²EPA did observe that heat input may vary from year to year, but the Court found "no plausible explanation for how interannual variation can explain utilization rates in 2007 substantially lower than those observed in 1998."

EPA's Response to Comments document indicating that EPA relied on the 2001-2010 IPM growth projections to grow emissions from 1996 and thereby determine the 2007 EGU budgets, but then relied on IPM growth projections for 1996-2001 and 2001-2010 to analyze the costs of complying with those budgets. The Court concluded that EPA failed to explain why it used two sets of growth rates for different purposes.³ For these reasons, the Court remanded "so that the agency may fulfill its obligation to engage in reasoned decisionmaking on how to set EGU growth factors and explain why results that appear arbitrary on their face are, in fact, reasonable determinations." Id. at 1053-55.

3. Appalachian Power v. EPA (Technical Amendments). On June 8, 2001, a third panel of the D.C. Circuit decided challenges to the Technical Amendments. Appalachian Power Company v. EPA, 251 F.3d 1026 (D.C. Cir. 2001). Although largely upholding the Technical Amendments, the Court remanded the EGU growth rates. The Court recognized that it "confronted nearly identical challenges to the EPA's use of growth factors to estimate

³As described below, EPA's statements in the Response to Comments document that it relied on IPM growth projections for 1996-2001 were misleading.

baseline NOX emissions for 2007 in the section 126 litigation," and remanded for the same reasons. Id. at 1034-35.

II. New Documents

EPA is placing the information described below in the docket. This information is being placed in the NOx SIP Call rulemaking docket, A-96-46; and incorporated by reference into the Section 126 rulemaking docket, A-97-43, II-L-01.

1. 1995 through 2000 ozone season heat input values for EGUs, at the unit level, in the SIP Call Region. For units subject to the Acid Rain Program, these values were calculated based on hourly data reported to EPA for compliance with the Acid Rain Programs. For other units not subject to the Acid Rain Program, these values were based on monthly data reported to the Energy Information Administration (EIA). The 1995 and 1996 unit level data is the same data used during the SIP Call rulemaking. Most of the 1997 and 1998 data was placed in the docket as part of the Section 126 rulemaking, but data for some additional units for those years has been added. In addition, post-1998 data has been added. Docket no. A-96-56, XIV-C-01. Table 1 summarizes 1995-2000 ozone

season heat input values for EGUs on a State-by-State.

Table 1: Actual Heat Input, 1995-2000 (ozone season, total mmBtu)

State	1995	1996	1997	1998	1999	2000
AL	350,059,204	350,907,982	350,328,372	369,978,200	389,364,461	400,689,850
CT	48,093,524	61,678,648	64,381,511	56,591,808	75,967,544	61,324,920
DC	2,026,082	128,205	645,846	3,113,446	3,173,633	1,153,593
DE	42,077,856	45,204,267	39,315,387	45,932,682	39,394,171	35,185,752
GA	356,963,346	335,977,013	351,207,750	403,716,898	387,781,101	420,260,694
IL	347,985,300	379,029,184	406,127,886	450,929,580	418,420,171	436,052,570
IN	514,611,872	523,672,522	536,772,484	577,059,852	582,006,636	523,711,122
KY	410,472,859	414,304,687	406,480,534	431,861,492	455,747,249	426,732,829
MA	124,983,468	113,298,531	123,844,201	136,001,859	147,443,919	124,327,323
MD	143,395,098	136,794,146	146,128,637	182,217,612	183,980,736	148,950,008
MI	362,883,707	351,493,214	356,684,564	408,239,157	396,605,048	379,638,744
MO	283,776,902	276,038,736	298,106,042	314,731,878	335,273,139	332,332,587
NC	320,845,066	340,609,864	325,299,250	372,494,163	351,368,932	330,683,806
NJ	106,479,866	88,074,347	92,928,677	78,088,747	113,385,505	106,900,335
NY	374,784,148	286,550,572	291,440,062	360,671,489	408,149,310	347,004,497
OH	554,457,657	566,131,821	543,431,600	596,937,824	590,290,990	571,651,486
PA	527,611,362	566,917,544	534,849,419	578,757,472	478,728,990	502,320,833
RI	16,066,757	43,102,370	12,029,849	11,140,079	34,133,203	30,158,008
SC	136,790,135	156,359,804	148,194,438	175,584,043	186,256,000	187,329,450
TN	281,896,512	269,960,693	268,808,769	256,156,350	261,568,838	281,169,294
VA	154,233,310	172,633,028	155,669,990	195,693,832	226,235,721	215,558,939
WV	347,687,307	341,738,426	364,757,289	386,442,663	391,592,231	380,868,435
TOTAL	5,808,181,338	5,820,605,605	5,817,432,557	6,392,341,126	6,456,867,528	6,244,005,074

2. Ozone season utility sales data for the years 1995 - 2000, as reported to EIA. Docket no. A-96-56, XIV-C-02.
3. Generation data for various sources for 1995-2000, as reported to EIA:
 - a. Generation data-utility ozone season fossil-fuel net generation. Docket no. A-96-56, XIV-C-03.
 - b. Generation data-utility ozone season hydroelectric net generation. Docket no. A-96-56, XIV-C-04.
 - c. Generation data-utility ozone season nuclear net generation. Docket no. A-96-56, XIV-C-05.
4. EIA State summaries of information related to electrical generation and use (1988, 1993, and 1998)
 - a. Historic annual power generation and sales. Docket no. A-96-56, XIV-C-06.
 - b. Historic fossil-fuel-fired generation and all generation. Docket no. A-96-56, XIV-C-15.
5. "Power Companies Efforts to Comply with the NOx SIP Call and Section 126," NESCAUM (May 31, 2001). This document summarizes published reports regarding power companies' intentions to install selective catalytic reduction (SCR) to meet the requirements of the NOx SIP Call. Docket no. A-96-56, XIV-C-07.
6. Information as to the geographic location of units

owned by particular utility companies. Docket no. A-96-56, XIV-C-08.

7. Information concerning effectiveness of SCR in achieving emissions reductions greater than 90 percent.

a. Press release from American Electric Power (AEP) announcing plans to install SCR at the John E. Amos Plant and the Mountaineer Plant (Jan. 29, 2000). Docket no. A-96-56, XIV-C-09.

b. Press release from AEP announcing plants to install SCR at the Big Sandy Plant (April 6, 2000). Docket no. A-96-56, XIV-C-10.

c. "Commissioning Experience on the SCR Retrofit at Pennsylvania Power and Light's 775 MW Montour Station Unit 2," Tom Robinson, Babcock Borsig Power Inc, .presented at 2001 Conference on Selective Catalytic Reduction and Non-Catalytic Reduction for NOx Control, May 16-18, 2001. Docket no. A-96-56, XIV-C-11.

d. "First Year's Operating Experience with SCR on 600 MW PRB-Fired Boiler," Dave Harris, Black and Veatch, presented at 2001 Conference on Selective Catalytic Reduction and Non-Catalytic Reduction for NOx Control, May 16-18, 2001. Docket no. A-96-56, XIV-C-12.

8.a. "Review of Potential Efficiency Improvements at Coal

Fired Power Plants," April 17, 2000. Docket no. A-96-56, XIV-C-13.

b. "Increasing Electricity Availability from Coal-Fired Generation in the Near Term," National Coal Council, May 2001. Docket no. A-96-56, XIV-C-14.

9. "The Changing Structure of the Electric Power Industry -- 2000; An Update", Energy Information Administration (October 2000). Docket no. A-96-56, XIV-C-16.

EPA may place additional documents in the docket, and if EPA does so, EPA will announce their availability by posting a notice on the <http://www.epa.gov/airmarkets/fedNOx/126noda/> web site.

III. EPA's Response to Remands

EPA is considering its response to all issues raised by the Court in its remand of the EGU growth issue. Our preliminary view, based on the record in the NOx SIP Call and Section 126 rulemakings, is that EPA's growth rate methodology was reasonable. As a result, we intend to provide a more robust rationale for that methodology, taking into account the concerns expressed by the Court. We are also examining additional data. Our preliminary review of that data indicates that they appear to confirm

the reasonableness of the growth rate methodology. We invite comment on the new data.

As described above, to determine each State's 2007 EGU Budget, EPA began with each State's heat input, expressed in million Btu (per ozone season for large fossil-fuel-fired units), for 1995 and 1996, and chose the higher of those two amounts as the 1996 baseline for that State. EPA then computed a growth factor equal to the average annual increase in heat input predicted by IPM for that State from 2001 to 2010. EPA applied each State's growth factor to each State's baseline, to grow the baseline from 1996 to 2007. EPA then applied the emission rate of 0.15 pounds of NO_x per million Btu to each State's predicted 2007 heat input. The result is each State's 2007 EGU Budget, expressed in tons of NO_x emissions per ozone season.

As described above, the Court expressed several concerns with EPA's growth rate methodology. In particular, the Court was concerned that some States had higher levels of heat input in 1998 than EPA had projected for 2007. More broadly, the Court was concerned that EPA did not adequately explain why it used its method, rather than another method, including the

direct use of IPM's projected 2007 heat input. The Court was also concerned with EPA's explanation of why the accuracy of its projections on a regional level offset possible inaccuracies in individual State projections. Finally, the Court was also troubled by EPA's apparent use of two different sets of growth rates for different purposes (the establishment of the budgets and the analysis of the costs of the control measures).

A. Actual Heat Input; Reasons for State-by-State Fluctuations

To begin to address the Court's concerns that some States' actual heat input levels already exceed EPA's projections for 2007, we are examining available data concerning actual heat input for the affected States. These include the amounts of actual heat input for each state affected by the SIP Call and Section 126 rulemakings for the years 1995-2000. A summary table of these amounts is included in Table 1 above.

In the Section 126 Case, some litigants identified two States, Michigan and West Virginia, as having actual heat input in 1998 higher than EPA's 2007 projection, which led the Court to express concern about the accuracy of EPA's method of projecting growth. We note, however,

that both States had actual heat input in 2000 that was more consistent with what EPA projected for the year 2007. Michigan's 2000 heat input was substantially lower than its heat input in 1998 as well as the 2007 projection. West Virginia's heat input for 2000 was also lower than in 1998 or 1999. This indicates that there can be considerable variability in the year-by-year heat input amounts for individual States.

Indeed, a review of the State-by-state heat input amounts for the years 1995 to 2000 in Table 1 does indicate that many States experienced substantial fluctuations on a year-by-year basis as well as sharply differing multi-year patterns from each other. To return to Michigan, that State's heat input fell between 1995 to 1997, rose substantially in 1998, and fell again during 1999 and 2000. Indiana's heat input rose steadily from 1995 to 1999, but in 2000, fell to 1996 levels. New Jersey's pattern was almost the opposite of Indiana's.

Many factors may combine to cause heat input amounts for any particular State for any particular year to vary widely over a short-term period. These factors include, among others,

C Forced outages (generating units may be required to

shut down for unexpected reasons, which would shift heat input to another State);

C Variations in energy costs (e.g., a drop in natural gas prices may attract generation to natural gas fired units in one State and away from coal fired units in another State);

C The implementation of environmental controls by the sources in one State (which may shift heat input to another State);

C The start-up of new units that are more efficient (and thereby take up more generation and reduce overall heat input);

C Electricity transmission problems (which may require a State that imports electricity to do so from a different geographic area, which may, in turn, result in heat input shifts);

C Weather patterns;

C Economic variability (industry in one region may experience a boom and require more electricity);

C Variations in availability of non-fossil-fuel-fired units, including nuclear or hydropower.

It should be noted that fossil fuel heat input growth and decreases do not directly correlate to growth

and decreases in electricity generation.⁴ Indeed, from 1998-2000, electricity generation in the SIP Call area increased, but heat input decreased. These results seem to be attributable in part to some of the factors noted above, including the greater efficiency in 2000 of some units, and greater reliance in 2000 on nuclear or other non-fossil-fuel fired units. Short-term swings in fuel costs and electricity demand (either of which could be related to the weather, among many other factors) could also result in significant year-by-year, and State-by-state, variations in heat input. To further analyze the difference between heat input and electricity generation, EPA is reviewing electrical generation and electrical sales data compiled by EIA.

It should be emphasized that EPA's method for projecting heat input for the year 2007 was not designed to predict accurately heat input on a state-by-state basis for years before 2001. This is because some of assumptions built into the IPM model for the later years in the 2001-2010 period may differ from what exists in

⁴In the Section 126 Case, the Court noted that EPA's method implicitly assumed negative growth in "electricity generation" over the course of a decade. The Court appears to have confused electricity generation with heat input. 249 F.3d at 1053.

the pre-2001 period. For example, in 1998, utility boilers subject to Phase II of Title IV of the Clean Air Act (the Acid Rain Program), were not constrained by any emission limitations under the Acid Rain Program. By 2007, these units will be subject to both SO₂ and NO_x limitations. These limits are likely to increase operating costs. As a result, the state-by-state pattern of heat input projected by the IPM model once these limits are in place would differ from the pattern of heat input that would occur during the pre-2001 period.

In particular, the different schedules for implementation of NO_x emission controls required by individual States appear to have been a factor contributing to the significant fluctuations in heat input levels seen during the 1998-2000 period. During these years, EGUs in the Northeast States were implementing controls at levels that generally are more stringent than those required in the rest of the SIP Call region. For the most part, sources in the Midwest and Southeast were not yet implementing the Section 126 Rule-level controls. In some instances, sources in these three regions compete against each in the same transmission grids. This difference in timing of control

costs could be expected to give EGUs in the Midwest and Southeast a competitive advantage over their Northeast counterparts, which would constitute one factor leading towards higher heat input levels in those States, and lower levels in the Northeast, during this time.

Implementation by the Midwest and Southeast utilities of the section 126 or NOx SIP Call controls in the coming years would be a factor leading towards lower heat input in those States, and higher heat input in the Northeast States.

Although these differences in control assumptions would lead to different patterns of heat input on a state-by-state basis in 2000 than in 2007, they would not have as significant an impact on regionwide heat input. For this reason, EPA continues to believe that regionwide heat input figures are a better measure of the accuracy of EPA's methodology for growth calculations than state-by-state figures.

Most importantly, we note that if our method were applied to the year 2000, that is, if our growth factor were applied to grow the 1996 baseline out to 2000, our prediction of regionwide heat input would be 6,250,350,677 mmBtu. Compared to the actual heat input

of 6,228,694,532 mmBtu, our projection differed by less than 0.5 percent. EPA fully realizes that regionwide heat input may vary significantly year-to-year due to various factors that are difficult to predict. For example, regionwide heat input was higher in 1998 and 1999 than in 2000, a phenomenon that we believe may have been due in part to unseasonably hot summer weather in 1998 and 1999 in significant portions of the NOx SIP Call region, strong economic conditions, and the temporary shut-down of large non-fossil-fuel powered generation resources such as the Cook Nuclear Power Plant in Michigan. Even so, we believe that the match-up of the 2000 actual heat input figure and the figure that our growth rate would have projected does suggest that our method is within the range of reasonable accuracy.

B. Reasons for Calculated Approach

Our method constitutes a calculated method, which relies on both a baseline amount and a growth factor. EPA selected this approach, instead of others, such as directly using IPM's projected 2007 heat input, for several reasons. In particular, the baseline component of this method offers several advantages. First, because EPA chose for the baseline actual heat input for the 1995

or 1996 year, the baseline is reality based. As a result, this baseline necessarily gives the EPA method a more accurate beginning point than any model could provide.

Moreover, using a calculation method with a baseline based on actual heat input in a given year created the opportunity to mitigate a significant problem inherent in heat projection methodology: large, year-to-year swings in projected heat input on an individual state basis. That is, the amount of heat input for any given year could fluctuate widely from the year before or the year after due to an unusual confluence of factors. This phenomenon gives rise to risk that in 2007, an individual State might have an unusually high heat input. Mindful of this risk, EPA, in selecting the baseline for each State, selected the higher of 1995 or 1996 actual heat input. By giving States an artificially higher baseline, the EPA method allowed a cushion to protect States and sources against undue fluctuations in heat input.

Finally, the EPA method readily allowed for updates of the baseline when revised or more detailed information for individual sources became available during the rulemaking. At the outset of the rulemaking process for

the NOx SIP Call, EPA gathered the most accurate information available concerning the heat input of EGUs as of 1995. However, EPA was aware that this information would be subject to updating and refinement. Indeed, States and sources provided EPA with a steady stream of revisions to this baseline data, which resulted in the publication of a supplemental notice of proposed rulemaking for the SIP Call, extensions of the comment periods, and two rulemakings providing Technical Amendments. EPA found it much more practical to accommodate these updates by periodically updating the baseline number (and thereby moving it up or down) and arithmetically recomputing the 2007 EGU budget for the State, rather than to input revised data into the IPM and re-run the model, which would be expensive and time-consuming.

C. Growth Factor

To the baseline, EPA applied a growth factor based on IPM projections for heat input from 2001 to 2010. Specifically, as noted above, for each State, EPA divided the heat input projected for the year 2010 by the heat input for the year 2001. EPA then arithmetically converted this 9-year growth factor to an 11-year growth

factor, and used it to grow the 1996 baseline (including, if higher, the 1995 heat input) to 2007.

At the outset, it should be noted that EPA considered a growth rate based entirely on modeled projections for both beginning point (in this case, 2001) and end point (in this case, 2010) to be the most accurate method possible. EPA chose not to develop a growth rate based on a State's actual 1996 baseline heat input as the beginning point and a modeled heat input projection (for example, the IPM projection for 2007 heat input) as the end point. The reason is simply that either method would need to rely on the modeled endpoint; and the modeled endpoint would necessarily include some degree of systemic inaccuracy due to the need to make simplifying assumptions in a model that may vary from the real world, or due to unavoidable inaccuracies of the model. EPA believed that these limitations may be mitigated to some extent if both a modeled beginning point and end point were used. On the other hand, if an actual beginning point and a modeled end point are used, the limitations of the model could be exaggerated.

For example, in many cases, EPA depended on information from various sources concerning the

electricity generating capacity of the EGUs. If the information provided to EPA concerning a particular source were incorrectly high, IPM would project incorrectly higher electricity generation from the EGU, which, in turn, would lead IPM to project incorrectly high heat input for the State in which the EGU is located. With a modeled beginning point (2001 heat input projection) and end point (2010 heat input projection), the effect of this error would, as a matter of arithmetic, be minimized. By comparison, with an actual beginning point (e.g., a 1996 actual baseline), the incorrectly higher heat input in the modeled endpoint would be a factor tending towards greater inaccuracy.

In understanding why EPA selected the years 2001 to 2010, it is important to recognize that in promulgating the NOx SIP Call, EPA programmed IPM to project heat input and other output for certain years between 2000 and 2021, but not for any years prior to 2001.⁵ IPM's

⁵EPA stated in a Response to Comments document that it had relied on IPM "growth rates" for 1996-2001 for purposes of determining cost effectiveness. Upon further review, EPA realizes that those statements were ambiguous and confusing. "Responses to Significant Comments on the Proposed Findings of Significant Contribution and Rulemaking on Section 126 Petitions for Purposes of Reducing Interstate Ozone Transport," A-97-43, VI-C-01, at 112-13. EPA intended to refer to IPM projections for

projections, which included heat input, NOx emissions, control costs, and other outputs, were important for regulatory purposes in and after the year 2001, but not before. To have generated outputs, such as heat input, for years prior to 2001 would have required a large number of inputs for those years, such as availabilities of various types of generation units (fossil-fuel fired, nuclear, hydropower, or renewable), fuel costs, costs to build new units, and performance characteristics of new units. Developing those inputs for the earlier years would have been costly. Furthermore, increasing the length of the model's projection period increases the complexity of the programming for the model. To run the model, EPA must make certain simplifying assumptions (such as combining units, as noted above). Adding run years may have required making more simplifying assumptions, such as the number of control options available to plants. More simplifying assumptions would reduce the accuracy of the modeled projections. EPA did not believe that reprogramming the model to calculate heat input for earlier years was worth these tradeoffs.

growth in demand for electricity, not growth in heat input.

Accordingly, EPA programmed IPM to provide outputs for only during and after 2001.

In selecting the post-2000 period upon which to rely for the growth factor, EPA decided to rely on the 2001 to 2010 period, instead of, for example, the 2001 to 2007 period. Cognizant that its task was to project average annual growth over an 11-year period, from 1996 to 2007, EPA believed that relying on a projection over a 9-year period, 2001-2010, was a reasonably accurate way to do so. The nine-year period for projecting growth seemed to be a reasonably close approximation to the 11-year period, 1996-2007, for which the growth projection was required. Although relying on the 2001-2007 period would have had the advantage of leaving the end-point of the projection period (2007) the same as the year for which the projection was being made, this shorter, six-year period would have been further afield from the 11-year period for which the growth projection was required.

D. Consistency of Use of Heat Input Growth Factors for Budget Purposes and for Cost Purposes

In the Section 126 Case, the Court expressed concern that EPA had used the EPA Growth Method to determine 2007 levels of heat input for purposes of establishing State

budgets, but EPA had relied on IPM projections for 2007 heat input for purposes of developing EPA's cost estimates. The Court based this view on statements EPA made in the Response to Comments document, noted above. The Court concluded that EPA offered no cogent explanation for using different sets of growth rates for different purposes. 249 F.3d at 1054.

EPA's statements in the Response to Comment document are discussed above, and EPA acknowledges that those statements are ambiguous and confusing. In fact, however, EPA did not use IPM 2007 heat input projections as an input for purposes of determining cost estimates. Rather, EPA relied on its own projections for 2007 heat input for calculating the budget, and then used IPM to test the cost effectiveness of that budget. The following summarizes EPA's procedure.⁶

First, EPA computed its projection for each State's 2007 heat input, using the EPA Growth Method. Then, to determine the emission rate that was highly cost effective and, at the same time, to determine the costs of that emission rate, EPA applied, one at a time,

⁶EPA discussed its procedure in the proposal for the NOx SIP Call rulemaking, 62 FR 60,318, 60350-53 (November 7, 1997).

different emissions rate limits to each State's 2007 heat input. For example, EPA applied the emission rates of 0.12 lbs/mmBtu (that is, 0.12 pounds of NOx emitted per million British thermal units), 0.15 lbs/mmBtu, 0.2 lbs/mmBtu, and others. Application of each emission rate yielded, for each State, a different amount of emissions (the "2007 Control Case Emissions"). EPA added the 2007 Control Case Emissions for each State for each emission rate applied, which resulted in amounts of regionwide NOx emissions that varied with the different emission rates applied. Thus, EPA determined the amount of regionwide NOx emissions that would result from a 0.12 lbs/mmBtu emission rate, the amount of regionwide NOx emissions that would result from a 0.15 lbs/mmBtu emission rate, and so on. EPA input into IPM the amount of regionwide NOx emissions that corresponded to each emission rate--which amounted to a constraint on NOx emissions--and then EPA ran IPM for each amount of the regionwide NOx emissions constraint. This determined the cost of generating electricity with the constraint of the regionwide NOx emissions level being tested. Then, EPA subtracted that cost from the cost of generating electricity in 2007 that IPM projected without any NOx

emissions constraints. In this manner, EPA was able to compute a cost figure for the controls necessary to assure that regionwide, no more than the specified amount of NOx would be emitted. EPA compared the cost figures for each of the IPM runs, and selected the figure that EPA considered to be highly cost effective. This figure was the emission rate of 0.15 lbs/mmBtu. EPA assigned to each State an EGU budget based on the same methodology—the use of an 0.15 lbs/mmBtu emission rate and the EPA 2007 growth projection for heat input. Thus, EPA used the same determination of each State's 2007 heat input for the purpose of determining both costs and each State's budget.

E. Utilities' Multi-State Operations

EPA is aware that many utilities have operating units in several States that are linked to the same transmission grid. As a result, utilities are able to alter dispatches from one unit to another, and thereby minimize costs while maintaining the same level of electricity generation.

According to the Energy Information Administration (EIA), "By the end of 2000, the number of electric holding companies will decrease to 53 and the generation capacity

they own will increase to about 86 percent of the total investor owned utility capacity, primarily because of mergers and acquisitions. This statistic suggests that relatively large companies are becoming even larger."

The Changing Structure of the Electric Power Industry -- 2000; An Update, EIA (October 2000).

http://www.eia.doe.gov/cneaf/electricity/chg_stru_update/update2000.pdf p. 91. This statement indicates that an increasing amount of the generation capacity is owned by companies with multistate operations. EPA's preliminary review indicates that over 60 percent of the capacity in the SIP Call Region is owned by companies that operate generating units in two or more States. The American Electric Power Company, for example, owns units in numerous States, including six in the SIP Call region. The fact that many utilities operate units in different States appears to soften the adverse impact if EPA's projected heat input for 2007 for individual States are not completely accurate.

IV. Comments

EPA is soliciting comments on the new data placed in the docket and set out in Table 1 above. EPA asks that commenters provide us with their comments within **[insert**

date 30 days from date of publication]. EPA intends to complete its response to the Court's remands by or about mid-November, 2001.

The EPA is not soliciting comment on IPM itself or on state-specific approaches for determining 2007 heat input levels. EPA understands the Court's opinion to have held as reasonable EPA's reliance on IPM as a regionally uniform methodology for determining each States 2007 EGU Budget. In addition, EPA is reviewing the actual heat input data in Table 1 solely in the context of the growth rate issue,

and EPA is not re-opening any issues related to allowances allocated under the Section 126 Rule or the amount of the 1996 baseline determined under the NOx SIP Call Rule.

Dated:

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