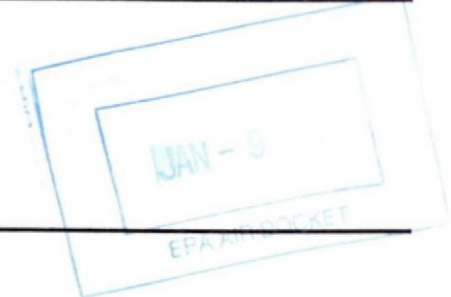


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U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, NC 27711

**** FAX Cover Sheet ****

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Phase II SIP Call NPR

Attached are changes generally as a result of the August 30, 2000 court order on the compliance date, an incorporated comment from you on the IC engine section, and several corrected tables. Please let me know if you would like to discuss any of these changes. Thank you.

(NAAQS). The EPA established statewide NOx emissions budgets for the affected States. Today's action addresses the issues remanded by the Court for notice-and-comment rulemaking: (i) the definition of electric generating units (EGUs) as it relates to cogeneration units, (ii) the control level for stationary internal combustion engines, (iii) the revised emissions budgets for Georgia and Missouri; (iv) a range of dates (128 days through 1 year from final promulgation of this rulemaking but no later than January 31, 2002) by which States would be required to submit a SIP to address the emissions reductions reflected by EPA's final action on the cogeneration unit and internal combustion engine issues and for Georgia and Missouri to submit full SIPs meeting the SIP Call; (v) the proposed changes to the statewide NOx budgets; and (vi) the exclusion of Wisconsin from the NOx SIP Call requirements. In addition, today's action addresses a related issue: the revised emissions budgets for Alabama and Michigan consistent with the Court's decision; and (ii) a range of SIP submittal due dates for Georgia and Missouri (128 days through 1 year from final promulgation of this rulemaking but no later than January 31, 2002).

Today's action also provides notice of how EPA's

("Phase II" SIPS) and partial state budgets for Georgia and Missouri is discussed below in sections II.J.1 and II.J.3. The proposed changes to the State's emissions budgets are discussed in section II.E.

For further information, refer to the April 11, 2000 letters to the Governors (www.epa.gov/ttn/rto/).

5. Compliance Date Court Order

On August 30, 2000, the D.C. Circuit ordered that the court order filed on June 22, 2000 be amended to extend the deadline for full implementation of the NOx SIP Call from May 1, 2003 to May 31, 2004. This extension was calculated in the same manner as the Court applied in extending the deadline for SIP submissions, so that sources in States subject to the NOx SIP Call will have 1,309 days for implementing the SIP as provided in the original NOx SIP Call. This action was in response to petitioning States' motion for stay of mandate pending petition for certiorari and of the motion of industry/labor petitions for ruling regarding the May 1, 2003 compliance deadline. The Court denied the motion to stay mandate.

C. Relationship to Section 126 Petitions

'Due to an error in the letters sent to Georgia and Missouri, EPA reissued corrected letters for those States on April 13, 2000.

C. Relationship to Section 126 Petitions

The EPA has also addressed interstate NOx transport in a January 18, 2000 final rule (January 18, 2000 Rule) that responds to petitions submitted by eight Northeast States under section 126 of the CAA (65 FR 2674). In this rule, EPA made findings that 392 sources in 12 States and the District of Columbia are significantly contributing to 1-hour ozone nonattainment problems in the petitioning States of Connecticut, Massachusetts, New York, and Pennsylvania. The States with sources affected by the January 18, 2000 Rule are: Delaware, Indiana, Kentucky, Maryland, Michigan, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Virginia, West Virginia, and the District of Columbia.⁵ The types of sources affected are large EGUs⁶ and large industrial boilers and turbines (non-EGUs). The rule establishes Federal NOx emissions limits that sources must meet by May 1, 2003. The EPA promulgated a NOx cap-and-trade program as the control remedy. All of the sources affected by this section 126 rule are located in States that are subject to the NOx SIP Call.

⁵For Indiana, Kentucky, Michigan, and New York, only sources in portions of the State are affected by that rule.

⁶The section 126 rule uses the same definition of EGUs that EPA is proposing for the NOx SIP Call in today's action.

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The January 18, 2000 Rule includes a provision to coordinate the section 126 rule with State actions under the NOx SIP call. This provision automatically withdraws the section 126 findings and control requirements for sources in a State if the State submits, and EPA gives final approval to, a SIP revision meeting the full NOx SIP Call requirements, including the originally promulgated May 1, 2003 compliance deadline. 40 C.F.R. 52.34(i) The EPA has already received NOx SIPs from several States that require reductions by May 1, 2003.⁷ While the court has changed the NOx SIP Call compliance deadline to 2004, EPA promulgated and justified the automatic withdrawal provision based on approval of a SIP with a May 1, 2003 compliance date. 64 FR 28274-76; 65 FR 2679-2684. Thus, the automatic withdrawal provision in the section 126 rule does not address any other circumstances. Additional issues regarding the interaction of the section 126 rule and SIPs under the NOx SIP Call may be addressed through future rulemaking.

⁷To date, EPA has received NOx SIPs from Connecticut, Rhode Island, Massachusetts, New Jersey, New York, and Maryland.

these definitions does not affect the budgets established under the final NOx SIP Call and the technical amendments.

- (2) The control level assumed for large stationary internal combustion engines. The EPA is proposing a range of possible control levels (82 to 91 percent) to the internal combustion engine portion of the budget.
- (3) Partial-State budgets for Georgia, Missouri, Alabama, and Michigan.
- (4) A range of SIP submission dates for the 19 States and the District of Columbia to address the Phase II portion of the budget, and for Georgia and Missouri to submit full SIPs meeting the SIP call: (128 days through 1 year from final promulgation of this rulemaking but no later than January 31, 2002).
- (5) Whether the proposed changes to the statewide NOx budgets reflect the appropriate increments of additional emissions reductions that States should be required to achieve with respect to three remanded issues (discussed above in numbers 1, 2, 3), beyond what the States are already required to address in their implementation plans by October 30, 2000.

requirements.

A. Definitions of EGU and non-EGU

Under the NOx SIP Call, the amount of a State's significant contribution to nonattainment in another State included the amount of highly cost-effective reductions that could be achieved for large EGUs and large non-EGUs in the State. No reductions for small EGUs or small non-EGUs were included. The EPA determined that reductions by large EGUs to 0.15 lb NOx/mmBtu and by large non-EGUs to 60 percent of uncontrolled emissions are highly cost-effective. In developing the States' budgets, EPA applied definitions of EGU and non-EGU and determined which sources were large EGUs or large non-EGUs.

In its March 3, 2000 decision, the D.C. Circuit upheld this approach, but determined that EPA did not provide sufficient notice and opportunity to comment for one aspect of EPA's definition of EGU and remanded the rulemaking to EPA for further consideration. Specifically, a petitioner claimed, and the Court agreed, that "EPA did not provide sufficient notice and opportunity for comment on [the] revision" of the EGU definition to remove the exclusion, from the "EGU" category, of cogeneration units with annual electricity sales of one-third or less of the units'

(TSD)¹⁸ for this proposal. Therefore, EPA proposes to assign a 90 percent emissions decrease on average for large natural gas-fired rich-burn, diesel, and dual fuel IC engines. The appropriate control technology and percent reduction for natural gas-fired lean-burn engines is discussed later in this notice. The time required from a request for cost proposal to field installation of NOx controls for IC engines is less than 11 months. Therefore, an implementation deadline of May 2003~~31~~, 2004 is reasonable for the SIP call action which calls for States to adopt and submit rules by ~~December 2000 or early in 2001~~.

For natural gas-fired rich-burn IC engines, NSCR provides the greatest NO_x reduction of all the highly cost-effective technologies considered in the ACT document and is capable of providing a 90 to 98 percent reduction in NO_x emissions.

For diesel and dual fuel engines, SCR provides the greatest NO_x reduction of all highly cost-effective technologies considered in the 1993 ACT document and is reported to provide an 80-90 percent reduction in NO_x.

¹⁸"Stationary Reciprocating Internal Combustion Engines Technical Support Document for NOx SIP Call Proposal" EPA, OAQPS, September 5, 2000 (IC Engines TSD).

Corrected ERRORS

Table 1. Fine Grid Counties in Georgia and Missouri

	Appling Co	Clarke Co	Floyd Co Johnson Co Atkinson Co Clay Co Forsyth Co Jones Co Bacon Co Clayton Co Franklin Co Lamar Co Baker Co Cobb Co Fulton Co Lanier Co
Georgia	Coffee Effingham Co	Gilmer Jefferson Co	Laurens Putnam Co
Baldwin Co	Coquitte Elbert Co	Jenkins Co	Rabun Co
Banks Co	Emanuel Co	Johnson Co	Richmond Co
Barrow Co	Evans Co	Jones Co	Rockdale Co
Bartow Co	Fannin Co	Lamar Co	Schley Co
Bibb Co	Fayette Co	Laurens Co	Screven Co
Bleckley Co	Floyd Co	Lincoln Co	Spalding Co
Bulloch Co	Forsyth Co	Lumpkin Co	Stephens Co
Burke Co	Franklin Co	McDuffie Co	Talbot Co
Butts Co	Fulton Co	Macon Co	Taliaferro Co
Candler Co	Gilmer Co	Madison Co	Taylor Co
Carroll Co	Glascok Co	Lee Marion Co	Barrow Towns Co
Catoosa Co			
Columbia Co Glynn Co Liberty Co Bartow Co Cook Chattahoochee Co	Gordon Co	Lincoln Meriwether Co	Treutlen Co
Ben Hill Co	Grady Co Long Co Berrien Co Crawford Co Greene Co		
Coweta Chattooga Co	Gwinnett Co	Lumpkin Monroe Co	Bibb Troup Co
Crisp Cherokee Co		McDuffie Morgan Co	Bleckley Twiggs Co
		McIntosh Co Brantley Murray Co	
Dade Clarke Co	Habersham Co	Co	Dawson Union Co
Clayton Co	Hall Co	Macon Muscogee Co	Upton Co
Bryan Co Decatur Cobb Co	Hancock Co	Madison Newton Co	Bulloch Walker Co
De Kalb Columbia Co	Haralson Co	Marion Oconee Co	Walton Co
Burke Co Dodge Coweta Co	Harris Co	Meriwether Oglethorpe Co	Butts Warren Co
Crawford Co	Hart Co	Paulding Co	Washington Co
Dade Co	Heard Co	Peach Co	White Co
Dawson Co	Henry Co	Pickens Co	Whitfield Co
De Kalb Co	Houston Co	Pike Co	Wilkes Co

Hart-Comtler	CamdenPolk Co	Wilkinson Co
Goathoun		Chattooga-CoFamih
GoDougherty		GoJefferson
Goheard		GoCherokee
GoNewtonJackson		GoFayette-Codenkins
Go		Go
Henry		
Googlethorpe		
GoCandler-CoBarly		
GoHouston		
GoPaudding		
GoCarroll		
GoBffingham		
GoIrwin-Copeach		
GoCatoosa		
GoBibbert		
GoDackson		
GoPickets		
GoChatham		
GoBmannet		
GoJasper Co		
GoBavis-Copulaski		
Go		
Missouri		
Bollinger Co	Oregon Co	St. Francois Co
Butler Co	Jefferson Co	St. Louis Co
Cape Girardeau Co	Lewis Co	St. Louis City
Carter Co	Lincoln Co	Scott Co
Clark Co	Madison Co	Shannon Co
Crawford Co	Marion Co	Stoddard Co
Dent Co	Mississippi Co	Warren Co
Dunklin Co	Montgomery Co	Washington Co
Franklin Co	New Madrid Co	Wayne Co
Gasconade Co		
Dooly Co		

Table 5. Proposed Partial State Emissions Budgets and Percent Reduction (82 Percent IC Engine Control & Proposed EGU Definition)
(tons/season)

State	Final Base	Proposed Budget	Tons Reduced	Percent Reduction
Georgia	184,664 209,914	142 150,656	59,244 42,42 +258	238%
Missouri	92,697	61,433	31,264	34%
Alabama	169,156	119,827	49,329	29%
Michigan	245,929	190,908	55,021	22%

Table 6. Proposed Partial State Emissions Budgets and Percent Reduction (91 Percent IC Engine Control & Proposed EGU Definition)
(tons/season)

State	Final Base	Proposed Budget	Tons Reduced	Percent Reduction
Georgia	184 209,914	150,246	59,664 41,8 3342,83 1668	238%
Missouri	92,697	61,403	31,294	34%
Alabama	169,156	119,290	49,866	29%
Michigan	245,929	190,860	55,069	22%

Table 8. Comparison of Phase I and Proposed Phase II State
 NOx Budgets Comparison
 (91 Percent IC Engine Control)
 (tons/season)

State	Phase I Budget	Proposed Phase II Budget	Phase II Incremental Difference
Alabama	124,795	119,290	5,505
Connecticut	42,891	42,849	42
Delaware	23,522	22,861	661
District of Columbia	6,658	6,658	0
Illinois	278,146	270,493	7,653
Indiana	234,625	229,913	4,712
Kentucky	165,075	162,242	2,833
Maryland	82,727	81,892	835
Massachusetts	85,871	84,838	1,033
Michigan	191,941	190,860	1,081
New Jersey	95,882	96,876	-994
New York	241,981	240,285	1,696
North Carolina	171,332	164,987	6,345
Ohio	252,282	249,241	3,041
Pennsylvania	268,158	257,551	10,607
Rhode Island	9,570	9,378	192
South Carolina	127,756	123,056	4,700
Tennessee	201,163	198,015	3,148
Virginia	186,689	180,154	6,535
West Virginia	85,045	83,822	1,223

F. Compliance Supplement Pools - Revisions

As further explained in section II.J.2, the compliance supplement pool is a pool of allowances that can be used in

the ~~years 2003 and 2004~~ beginning of the program to provide affected sources additional compliance flexibility in order to address concerns raised by commenters on the SIP Call proposal, regarding electric reliability. When the SIP Call was originally finalized, EPA allowed the compliance supplement pool to be used in the years 2003 and 2004 (See 63 FR 57428-57430 for further discussion of compliance supplement pool). Subsequently the DC Circuit Court has determined that the date by which sources must install controls to comply with the SIP Call is May 21, 2004, rather than May 1, 2003. Since sources will have an extra year to install controls and since EPA still believes that it would be possible for sources to install controls by May 1, 2003 (see section II.J.2), EPA is not proposing to extend the time that allowances from the compliance supplement pool can be used beyond September 30, 2004.

The EPA is not proposing to change the individual State compliance supplement pool values that were finalized in the March 2, 2000 technical corrections to the emission budgets (65 FR 11222) with the exception of Alabama, Georgia, Michigan, Missouri, and Wisconsin. Changing the State compliance supplement pools to reflect the State budget changes made in this notice would result in minimal impacts

on the size of any State's compliance supplement pool. Therefore, EPA has decided to maintain the compliance supplement pools at the levels determined in the March 2, 2000 notice with the exception of Alabama, Georgia, Michigan, Missouri, and Wisconsin.

Since the proposed required reductions in Georgia, Missouri, Alabama and Michigan are less than the required reductions of the September 24, 1998 NOx SIP Call reflecting full State emissions budgets, EPA proposes to make corresponding decreases to the compliance supplement pools for the portion of the State that is still subject to the SIP Call. The EPA proposes to calculate the partial-State compliance supplement pools by prorating the size of the full-State compliance pool by the ratio of the reductions that EPA is proposing for the partial-State to the reductions that EPA required in the March 2, 2000 Technical Amendment (65 FR 11222) with one exception. To be consistent with the way the compliance supplement pool was calculated in the other States, EPA is assuming a 90 percent reduction from IC engines for purposes of calculating the compliance supplement pool. In addition, since Wisconsin is not being required to make reductions at this time, Wisconsin is no longer receiving a share of the compliance

supplement pool. (Wisconsin's original compliance supplement pool was 6,920 tons.) For these reasons, the total compliance supplement pool is now less than 200,000 tons. The revised compliance supplement pools for Georgia, Missouri, Alabama, and Michigan are shown in Table 9.

Table 9. Compliance Supplement Pools (CSP) - revised TABLE

	Full State tons reduced (from March 2, 2000 FR Notice)	Partial State Tons Reduced with 90% IC engine control	Full State CSP	Partial State CSP with 90% IC engine control
GA	63,582	57,623	11,440	10,728
MO	62,242	31,291	11,199	5630
AL	64,954	49,806	11,687	8962
MI	63,118	55,064	11,356	9907

G. Three-State Memorandum of Understanding

In February 1999, Connecticut, Massachusetts, Rhode Island, and EPA signed a Memorandum of Understanding (the three-State MOU). The three-State MOU redistributed Connecticut, Massachusetts, and Rhode Island's EGU emissions budgets to minimize the size differential between their EGU budgets under the NOx SIP Call and Phase III of the Ozone Transport Commission (OTC) NOx Budget program. It also reallocated the three States' compliance supplement pools.

Under the three-State MOU, Connecticut, Massachusetts

level under the final rule for the NOx SIP Call. The justification for allowing trading across States is the test of significant contribution which underlies both the section 126 rulemaking and the NOx SIP Call. Therefore, at this time, only sources in the portions of the States for which a finding of significant contribution has been made would be allowed to participate in trading with sources in areas which are subject to either the NOx SIP Call or the section 126 rulemaking.

J. Dates

1. SIP Submittal Due Date for Phase II NOx Budgets

In today's action, EPA is proposing a range of due dates to submit SIPs meeting the Phase II NOx budgets and the partial State budgets for Georgia and Missouri established by the NOx SIP Call. The EPA believes that the appropriate time frame for SIP submittal is 128 days through 1 year from final promulgation of this rulemaking but no later than January 31, 2002, and is requesting comment on which date within this time frame is appropriate. ~~In the September 24, 1998 NOx SIP Call, EPA established May 1, 2003 as the compliance deadline. The reductions in transported NOx emissions are necessary by this date to assist ozone nonattainment areas in meeting their attainment dates.~~

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~~However, since it has taken some time to promulgate this rulemaking in response to the Court's remanded issues, EPA is establishing May 1, 2004 as the compliance deadline for the emissions reductions necessary to achieve the Phase II budgets.~~ The EPA believes that a deadline within the range of 128 days through 1 year from final promulgation of this rulemaking but no later than January 31, 2002 will allow adequate time for States to promulgate rules and for sources affected by a State's Phase II NOx strategy and by Georgia and Missouri's NOx strategy to comply with the regulations by May 31, 2004. Please see section J.2., below, for a discussion of the compliance date.

In the Court's June 22, 2000 order lifting the stay of the SIP Submission date for the NOx SIP Call (which EPA interpreted to be the Phase I SIP submittal date), the Court gave the States 128 days from the date of the order to submit their SIPs. The original submittal deadline was September 30, 1999. On May 25, 1999, the Court stayed that deadline pending further order. At the time of the stay, covered States had 128 days left to submit their SIPs. Therefore, the Court thought it appropriate that the States be given that amount of time to complete their plans for submittal to EPA. The EPA uses the same rationale for

new version of this section

2. Compliance Date

There are two primary issues that need to be considered

when determining a reasonable date by which sources covered by Phase II SIPs in the 19 States and District of Columbia, as well as SIPs in Georgia and Missouri, can install

controls to achieve the emission reductions required:

1) How long does it take to complete the design,

construction, and testing of the controls on large boilers used to generate electricity?

2) Does the amount of time that electric generating units (EGUs) are taken off-line to install controls adversely affect the reliability of the electric power system? In other words, does installation of controls reduce the amount of available generation to the point where no power can be supplied to certain users for a period of time?

The EPA is proposing a compliance date of May 31, 2004 for Phase II units²⁵ and for all affected units in Georgia and Missouri, and is taking comment on the feasibility of that date. The EPA maintains that a May 1, 2004 compliance date is feasible for Phase II units and affected units in Georgia and Missouri. However, in an effort to remain consistent with the August 30, 2000 District of Columbia Circuit Court of Appeals decision on the NOx SIP Call, EPA is proposing a compliance date of May 31, 2004.

Given a Phase II and Georgia and Missouri SIP submittal date as late as January 31, 2002, owners and operators of affected units subject to State control requirements would have about 28 months to install the necessary controls. As explained below, EPA maintains that it is technically

²⁵Phase I or Phase II units refer to those EGU's from which EPA assumed reductions to determine Phase I or Phase II budgets, respectively, under the NOx SIP Call.

feasible for all large EGUs that are in the NOx SIP Call region and that are not affected by the section 126 action to meet the emission reduction requirements of Phase II in a 24 month period and that installing controls in that time period will not have an adverse effect on the reliability of the electric power system. The discussion below supports a Phase II SIP submittal date as late as January 31, 2002 for the 19 States and District of Columbia, as well as a January 31, 2002 SIP submittal date for Georgia and Missouri, and submitting the SIP earlier would provide additional time for the installation of controls.

a. *Technical Feasibility of May 2004 Compliance Date*

As part of the NOx SIP Call, the Agency conducted a detailed examination of the feasibility of installing the NOx controls on large EGUs that EPA assumed in developing the emissions budgets for the affected States. See *Feasibility of Installing NOx Control Technologies By May 2003*, EPA, Office of Atmospheric Programs, September 1998, NOx SIP call rule, A-96-56, V-C-12 ("NOx SIP call Feasibility Study"). The Agency's findings are summarized in the NOx SIP call final rule (63 FR at 57447).

For today's proposed action, EPA examined the feasibility of affected units meeting a compliance date of

May 31, 2004 to install NOx controls based on a SIP

submission date as late as 28 months prior to May 31, 2004. Many sources that States could choose to regulate under the NOx SIP Call are already subject to regulation. Under the section 126, May 25, 1999 rule (64 FR 28250) and January 18, 2000 rule (65 FR 2674), EPA issued a final rule determining that sources in nine jurisdictions (Delaware, District of Columbia, Maryland, New Jersey, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia) and portions of four other jurisdictions (Indiana, Kentucky, Michigan, and New York) named in the NOx SIP Call significantly contribute to nonattainment in one or more of the petitioning States. That rule directly regulates sources within the 13 States

and requires compliance by May 1, 2003. Thus, the affected units in these States or parts of these States are required to meet a May 1, 2003 compliance date under the section 126 action. In addition, as part of the OTC NOx Budget Program, the remaining Northeast States covered in today's action (Connecticut, Massachusetts, New York and Rhode Island) have submitted SIPs for EPA approval to comply by May 1, 2003

with the NOx SIP call.

Assuming the sources covered by State rules already

adopted as part of the OTC NOx Budget Program and that

sources covered by the section 126 action will comply as required by May 1, 2003, EPA examined the feasibility of the May 31, 2004 compliance date for the Phase II affected units in the remaining States or parts of States that are not included in either the section 126 action or the OTC NOx Budget Program. These remaining States include: Alabama, Georgia, Illinois, Missouri, South Carolina, and Tennessee and portions of Indiana, Kentucky and Michigan. The EPA examined the time needed to install the post combustion controls (selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR)) on large boilers used to generate electricity because they represent the most time consuming NOx control retrofits. In this feasibility analysis, EPA looked at the retrofits EPA projected were needed for affected units in Georgia and Missouri and Phase II units in the remaining States to comply with the NOx SIP Call.

The time frame for completing installations of post-combustion NOx control devices depends on the type and number of control devices that must be installed on combustion units used to generate electricity. The EPA concluded that the amount of time required to install controls was driven by the plants which were projected to

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install SCR on the greatest number of units. For affected units in Georgia and Missouri and Phase II units in the remaining NOx SIP call States, EPA's analysis predicts that a maximum of two SCR retrofits will occur at a single plant, with three plants needing two SCRs and the remaining plants needing one or no SCR retrofits. August 2000 Feasibility Memorandum, docket #, item #. Based on the timing assumptions in the NOx SIP Call Feasibility Study, all the predicted retrofits for affected units in Georgia and Missouri and Phase II units in the remaining SIP call States (those plants with two or fewer SCR retrofits) could be completed in about 24 months. August 2000 Feasibility memorandum, docket #, item #.

The EPA notes that recent experience indicates that NOx control technologies can be installed on a faster time frame than those assumed in the NOx SIP Call Feasibility Study (which was completed in 1998). Recent OTC experience indicates that a single unit SCR retrofit can be completed in less than one year, as opposed to the 21 months assumed in EPA's feasibility analysis. (See Letter to Peter Tsirigotis, EPA, from Charles Carlin, Northeast Utilities Service Company, November 30, 1999; and "Selective Catalytic Reduction Retrofit of a 675 MWe Boiler at AES Somerset",

ICAC Forum 2000, March 2000; docket #, items # and #.)

These OTC SCR retrofits were designed for 90 percent removal efficiency (as opposed to the 80 percent removal efficiency assumed in EPA's analysis) and included the integration of engineering and construction to complete the retrofit project in a minimum amount of time.

b. Reliability

Concerns about electric reliability arise whenever units are down, particularly during periods of peak demand. Since units may need to be off-line for longer periods of time to install emission controls than they normally would be if the units ~~were just being shut down to perform other~~ scheduled maintenance, the installation of emission controls may increase concerns about reliability. The potential impact varies depending on the number of units that have to install controls, the additional time that these units have to be taken off line, and the number of units that are off-line at one time.

The EPA does not anticipate that the installation of NOx controls, including SCR, will threaten the reliability of the power supply, even during the summer months when the demand for electricity is highest. Since SCR is a post combustion control device that is not part of the boiler,

most of the SCR retrofit can be constructed while the boiler is operating to supply electricity. The boiler needs to be turned off only when the SCR is actually connected to the ducts leaving the boiler. Owners and operators of electric power plants normally schedule connections of these controls during off-peak periods (usually spring or fall), when they already plan to shut down the unit to perform other scheduled maintenance.

As discussed further below, EPA and other industry groups examined the reliability of the power supply in the context of a May 2003 compliance date for the entire NOx SIP call region. Based on these studies, EPA concludes that installation of NOx controls for the entire NOx SIP call region (includes Phase I and Phase II affected units and affected units in Georgia and Missouri) by May 1, 2003 will not threaten the reliability of the electric power supply. Therefore, EPA concludes that providing additional time for the installation of controls (an additional year and one month) will not threaten the reliability of the electric power supply.

i. EPA's reliability study

In the NOx SIP Call Feasibility Study, which focused on installing NOx controls by May 1, 2003, EPA examined the

effect that the installation of controls would have on reliability. First, EPA examined a scenario where SCR would have to be installed on 72.9 GW worth of capacity (amount of SCR predicted by EPA needed to comply with the NOx SIP call). Most of the SCR installations EPA has looked at both in the U.S. and abroad have required units to be off-line for less than five weeks and, in some cases, less than one week. Feasibility Study, Appendix B, Letter from Steag Environmental Engineering and Consulting.²⁶ The EPA also examined historical outage times and determined that the average unit underwent a 5-week maintenance outage. NOx SIP Call Feasibility Study at 12. Therefore, EPA's analysis assumed that all units underwent 5 week maintenance outages and that the SCR could be installed during these maintenance outages. The EPA also assumed that the longest amount of time any plant would need to install SCR would be 34 months. This time period was based on EPA's analysis of the longest amount of time that it would take any plant to install all

²⁶ This estimate is further supported by recent experience of sources in New Hampshire, Missouri, and Tennessee. (See Letter to Peter Tsirigotis, EPA, from Charles Carlin, Northeast Utilities Service Company, November 30, 1999; "Design and Initial Startup Results from the New Madrid SCR Retrofit Project", ICAC Forum 2000, March 2000; and "Implementation of SCR System at TVA Paradise Unit 2", ICAC Forum 2000, March 2000; docket #, items #, #, and #.

of the controls projected by EPA (i.e., installing six SCRs at a plant), as explained above. The EPA's analysis concluded that the reliability of the power supply would not be threatened by implementing the NOx SIP Call.

The EPA also performed a sensitivity analysis in which EPA shortened the available time to install controls and lengthened the time that a unit would have to be off-line. The worst case scenario that EPA examined was a situation in which SCR needed to be installed on 63 GW²⁷ worth of capacity, units needed to be taken off-line for 9 weeks (a 4 week extension of the typical maintenance outage) and there was only one year in which to install all of the controls. In this scenario, EPA still found that the power supply would not be threatened and that there was adequate capacity available to supply the needed electricity to thereby avoid brown-outs. Feasibility Study at 13 and 19. Furthermore, as discussed above, many sources in affected States have begun

²⁷ The EPA initially looked at a scenario requiring 63 GW of retrofitted SCR, rather than the 72.9 GW in the final rule (a 14 percent increase). An April 1, 2001 SIP submittal date would provide sources over 2 years to install controls, more than twice the 1 year assumed in EPA's most conservative reliability analysis. Because of the stringency of the assumptions, the initial analysis still supports the conclusion that reliability will not be impacted under a scenario with 72.9 GW of SCR installed over a 2-year time period.

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the planning (engineering studies) or installation of SCR retrofits for compliance with the NOx SIP Call and/or the section 126 actions. (See "Recent Experiences in SCR System Design," ICAC Forum 2000, March 2000, docket # ____, item #____; "Design and Initial Startup Results from the New Madrid SCR Retrofit Project", ICAC Forum 2000, March 2000, docket #____, item # ____; and "Implementation of SCR System at TVA Paradise Unit 2", ICAC Forum 2000, March 2000, docket #____, item #____, include list of installations). Some of these SCR retrofit projects are being planned for start-up in 2000 and 2001 to take advantage of early reduction credits. This early installation will also reduce system reliability concerns since less SCR will have to be installed in 2002 and the first half of 2003.

ii. Other reliability studies

Since EPA finalized the NOx SIP Call, the North American Electric Reliability Council (NERC), the Eastern Central Area Reliability Council (ECAR), and the Ozone Attainment Coalition (OAC) have also done studies on the effects that the NOx SIP Call could have on reliability. (cite documents and place in docket)

The OAC developed two reports that assessed the feasibility of NOx SIP Call compliance by affected sources

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in the context of electric system reliability. See *Electric System Reliability - A Red Herring to Delay Clean Air Progress*, Ozone Attainment Coalition, September 1998, and *NOx SIP Call Compliance and Electric System Reliability: Compatible Goals for Achieving Needed Air Quality Benefits*, Ozone Attainment Coalition, May 1999. The September 1998 report concluded that, even with conservative assumptions about outage periods for the installation of SCR controls, compliance with the NOx SIP Call can be achieved in aggregate by the affected sources. Additional OAC analysis, conducted in May 1999, examined a low growth and high growth case with SCR installations on 222 to 258 electric utility units (83.3 GW to 97.8 GW of capacity), as compared to EPA's estimate of 142 units (72.9 GW of capacity). The analysis also assumed a 6-week outage period for SCR hook-up, as compared to EPA's assumption of 5 weeks, and assumes that SCR hook-ups will occur outside of the ozone season. The OAC analysis predicts that the NOx SIP Call will result in approximately 1 percent additional capacity under the high growth case having to be off-line in each of the affected NERC control regions. The analysis concludes that the impacts under either case are small enough to be well within the variability of the forced outage rates to which

reliability planners routinely respond.

The NERC did a study on the entire NOx SIP Call region. As the report explains, "The scenarios discussed in this report were chosen after a screening study was performed to identify candidate scenarios that were likely to result in any significant adverse impact on reliability....As such, some scenarios may not be representative of conditions that are most likely to occur." One of the scenarios that NERC examined assumed that 72.9 GW worth of SCR would have to be installed, that there would be 18 months available to install the SCR, and that it would require an outage of 9 weeks. The amount of time to install the controls is shorter than that being proposed here and the outage time required to install controls is longer than has been needed in actual retrofits. Even under this conservative scenario, NERC determined that installation of controls would not adversely affect the reliability of the electric system.

The NERC did predict that there could be reliability problems in a scenario where there would be only 18 months to install NOx controls, 151.0 GW of SCR would have to be installed and average outages of 9 weeks would be required. The EPA believes that this combination of circumstances is very unrealistic. Based on EPA's compliance deadline,

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sources will have more than two years to install controls. With regard to the assumption of 151.0 GW of SCR, this is more than twice as much SCR as EPA has predicted. This assumption is based in part on the belief that SNCR cannot be installed on units that are larger than 350 MWe. In fact, SNCR has been installed on a number of units that are larger than 350 MWe (See "Cardinal Unit 1 Large Scale Selective Non-Catalytic Reduction Demonstration Project," ICAC Forum 2000, March 2000; and "Start-Up Results and Next Steps for the Commercial NOxOUT System at a 600 MWe Coal Fired Electric Utility Unit," 2000 NETL Conference on Selective Catalytic & Non-Catalytic Reduction for NOx Control, May 2000, docket #, items # and #). Further, as explained above, EPA believes that 5 weeks or less is a much more realistic estimate for the amount of time a unit needs to be shut down in order to install SCR.

The ECAR's study concludes that there would be a significant impact on reliability in all scenarios that ECAR considered. As explained below, EPA disagrees with a number of the assumptions in ECAR's study and therefore disagrees with the conclusion that there will be a significant impact in reliability under all scenarios. A key factor in ECAR's analysis is that, as part of the base case assumptions, each

unit would be available 80.3 percent of the time. As the report explains, this is the lowest average availability that the system could have without having reliability problems. Since this assumption is part of the base case, any additional time that units are assumed to be off-line to install controls further reduces the average availability, leading to the conclusion that any installation of controls would lead to a significant impact on reliability. However, the report fails to explain why 80.3 percent is an appropriate availability to assume for the base case. The ECAR has had an average availability over the last five years of 82.3 percent and the average over the last ten years is 81.6 percent. (ECAR's "Assessment of ECAR-Wide Capacity Margins 1999-2008.") The ECAR's reliability report also shows that if an average availability of 81.6 percent (ECAR average availability over the last ten years) is assumed, all of the SCR that it assumes is needed could be installed in an 18-month period, with a 4-week outage extension (total outage of 9 weeks) to install SCR, and without significantly impacting reliability.

Similar to NERC, ECAR also assumes that much more SCR will be needed than EPA does. The ECAR assumes that SCR will need to be installed on 55.6 GW of capacity in the ECAR

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region. The EPA projects that SCR will need to be installed on 36.3 GW worth of capacity in the ECAR Region. The ECAR study also makes overly conservative assumptions about the amount of generation that may come on line over the next several years. The ECAR assumes that approximately 9,900 MWe of generation will come on line by 2008. (ECAR's "Assessment of ECAR-Wide Capacity Margins 1999-2008). This equates to a little more than 1,200 MWe a year. The Electric Power Supply Association reports that over 10,000 MWe of capacity have been announced to come on line before 2003. (docket #, item #). This equates to over 3,000 MWe a year. Cambridge Energy Research Associates reports that over 3,000 MWe worth of capacity are currently under construction and scheduled to come on line in the year 2000. In the year 2001, another 3,000 MWe worth of capacity are proposed by electricity suppliers to come on line and over 1,000 MWe of this capacity is already under construction. In the year 2002, over another 5,000 MWe worth of capacity are proposed by electricity suppliers to come on line. (Docket #). Any additional capacity beyond that assumed by ECAR would reduce the potential impact of the installation of controls on reliability as projected by ECAR's analysis. In fact, the ECAR study explains that under all scenarios

considered, the impact on reliability would be negated if an additional 2,460 MWe worth of capacity were built in time for the 2002 ozone season. As noted, well over that amount of capacity is already under construction or is proposed to be built by the 2002 ozone season.

Furthermore, because of ECAR's capacity margin assumptions, the ECAR study also shows that most of its projected reliability problems will occur in the summer when units are not projected to shut down for the installation of controls. In its base case ECAR predicts monthly capacity margins (a measure used to determine system reliability) of less than 9.0 percent in July of 2001, 2002 and 2003. The lowest capacity margin it predicts during the summer months is 7.4 percent in July of 2002. Since ECAR does not anticipate companies installing controls in the summer (June, July and August), ECAR predicts these same summer time capacity margins in all of the scenarios that ECAR studied. Lower capacity margins lead to greater potential reliability problems. Consequently, the reliability problems projected to occur would occur with or without the installation of controls. In the worst case scenario, all controls were installed in an 18 month window and the lowest capacity margin predicted in a month where controls were

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actually being installed was 9.5 percent in September of 2002. Based on these assumptions, this clearly shows that, under the ECAR study, the likelihood of reliability problems is in the summer months during which no installation of emission controls are expected to occur. Thus, the projected reliability problems are largely independent of the NOx SIP Call.

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