Technical Support Document (TSD)

for the Transport Rule

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

Analysis to Quantify Significant Contribution

U.S. Environmental Protection Agency

Office of Air and Radiation

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This Technical Support Document (TSD) provides information that supports the EPA's analysis to quantify upwind state emissions that significantly contribute to nonattainment or interfere with maintenance of the National Ambient Air Quality Standards (NAAQS) in downwind states. The analysis is described in detail in section IV.D in the preamble to the proposed Transport Rule. This TSD is organized as follows:

A. Background on EPA's Analysis to Quantify Emissions that Significantly Contribute or Interfere with Maintenance

Preamble section IV describes EPA's proposed approach to determine upwind state's emissions that significantly contribute to nonattainment or interfere with maintenance downwind with respect to the existing 1997 and 2006 $PM_{2.5}$ NAAQS and the 1997 ozone NAAQS. As described in the preamble, the approach uses air quality analysis to identify monitoring sites with nonattainment and maintenance problems for the $PM_{2.5}$ and ozone NAAQS. As further described in the preamble, the approach also uses air quality analysis to identify upwind states whose contributions to downwind air quality monitoring sites with nonattainment and maintenance problems exceed specified threshold amounts. See section IV.C in the preamble for a detailed discussion of these air quality analyses. Also see the Air Quality Modeling TSD.

Next, the approach would quantify the portion of each upwind state's contribution that constitutes its significant contribution and interference with maintenance. Section

IV.D in the preamble describes the methodology that EPA developed to quantify these emissions. Section IV.E in the preamble includes state emissions budgets (before accounting for inherent variability in power system operations). Section IV.F discusses variability in power system operations and proposes variability limits on the state budgets. Section IV.G describes how the proposed approach to define significant contribution and interference with maintenance is consistent with judicial opinions.

As discussed in the preamble, EPA's proposed approach expands upon the methodology used in the NO_X SIP Call and CAIR, but modifies it in significant respects. In the NO_X SIP Call and CAIR, EPA's methodology relied upon defining significant contribution as those emissions that could be removed with the use of "highly cost effective" controls. In the proposed Transport Rule, rather than relying solely on determining reductions based on "highly cost effective" controls, EPA uses a number of factors that account for both cost and air quality improvement. Furthermore, unlike the NO_X SIP Call and CAIR where EPA only defined an amount of reductions needed to address significant contribution to nonattainment, EPA is proposing to define an amount of emissions reductions that addresses both significant contribution to nonattainment and interference with maintenance.

The methodology takes into account both the D.C. Circuit Court's determination that EPA may consider cost when measuring significant contribution, Michigan, 213 F.3d at 679, and its rejection of the manner in which cost was used in the CAIR analysis, North Carolina, 531 F.3d at 917. It also recognizes that the Court accepted -- but did not require -- EPA's use of a single, uniform cost threshold to measure significant contribution. Michigan, 213 F.3d at 679.

The methodology defines each state's significant contribution and interference with maintenance as the emissions that can be eliminated for a specific cost. Unlike the NO_X SIP Call and CAIR, where EPA's significant contribution analysis had a regional focus, the methodology used in the Transport Rule proposal focuses on state-specific factors. The methodology uses a multi-step process to analyze costs and air quality impacts, identify appropriate cost thresholds, quantify reductions available in each state at those thresholds, and consider the impact of variability in electric generating unit (EGU) operations.

As described in preamble section IV.D, after identifying upwind-to-downwind linkages based on air quality contribution thresholds, EPA's uses the multi-step process to quantify each state's significant contribution and interference with maintenance. The first step in the process (after identifying upwind-to-downwind linkages) identifies the emissions projected to occur in each state at ascending costs per ton of emissions reductions. See section B in this TSD for discussion of the analysis used in this step. Next, the process uses an air quality assessment tool to estimate the impact of the upwind state reductions on downwind state air quality at different cost-per-ton levels. See section C in this TSD for discussion of the development and use of the air quality assessment tool used in this step.

As further described in section IV.D, the methodology then examines costs of control and air quality information and, using a multi-factor assessment, determines the specific cost levels that define the amount of emissions that represent significant contribution to nonattainment and interference with maintenance in each upwind state. As discussed in the preamble, the factors considered include both air quality and cost considerations. Once EPA quantifies the emissions reductions available in each upwind state at the appropriate cost threshold, state emissions budgets are developed that represent the remaining emissions in a state, in an average year, after elimination of significant contribution and interference with maintenance. Variability limits are then identified for each state emissions budget to account for the inherent variability in power sector operations as described in preamble section IV.F.

Preamble section IV.D discusses the above steps in detail and presents the resulting specific cost thresholds that define each state's significant contribution and interference with maintenance. As explained in the preamble, emissions that can be reduced at or below the specified cost thresholds (which were determined using the multi-factor assessment) would be considered a state's significant contribution and interference with maintenance. Preamble section IV.D explains that the methodology results in two different cost thresholds for SO_2 reductions (for two different groups of states) reflecting the stringency of SO_2 reductions necessary to eliminate each state's significant contribution to nonattainment and interference with maintenance. The methodology results in one cost threshold for annual NO_X and one for ozone season NO_X reductions.[1]

As discussed in preamble section IV.D, the resulting cost threshold for SO_2 reductions in the SO_2 group 1 states is $2,000 per ton. The resulting cost threshold for SO_2 reductions in the SO_2 group 2 states is the cost at which EGUs operate all installed controls, continue to burn coals with sulfur contents consistent with what they were burning in 2009, and operate any additional controls they are currently planning to install by 2014. For annual NO_X reductions the cost threshold is the cost at which EGUs operate all installed controls and operate any additional controls they are currently planning to install by 2014 (around $500 per ton). Similarly, the cost threshold for ozone season NO_X reductions is $500 per ton. (Cost thresholds are in 2006 dollars.)

Each of the steps in the multi-step process discussed previously is described in detail in preamble section IV. This TSD provides additional information in support of the step that analyzes cost. See section B, below. This TSD also provides additional information in support of the step that analyzes air quality impacts. See section C, below.

B. Electric Generating Unit Significant Contribution Cost Analysis

As explained earlier, EPA used a multi-step process that defines each upwind state's significant contribution and interference with maintenance as the emissions that can be eliminated for a specific cost. This section of the TSD describes EPA's cost analysis.

EPA began by analyzing the SO_2, annual NO_X, and ozone season NO_X emissions reductions available from EGUs at various cost levels in each upwind state. EPA used version 3.02 EISA of the Integrated Planning Model (IPM) for this EGU cost analysis. See IPM Documentation in the docket for the Transport Rule; Docket ID No. EPA-HQ-OAR-2009-0491. The IPM is a multiregional, dynamic, deterministic linear programming model of the U.S. electric power sector that EPA uses to analyze cost and emissions impacts of environmental policies.

As part of EPA's IPM analysis for the proposed Transport Rule we modeled a Base Case scenario, i.e., a scenario absent any new controls that would be required for

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[1] As discussed in preamble section III.A, the EPA proposes to define the ozone season, for purposes of emissions reductions requirements in the Transport Rule, as May through September

the Transport Rule. The Base Case modeling is described in sections IV.A and IV.C in the preamble and in the IPM Documentation in the rulemaking docket. The Base Case modeling includes the Title IV SO_2 cap and trade program; NO_X SIP Call regional ozone season cap and trade program; settlements; and state and federal rules through February 3, 2009. An important feature of this Base Case--as discussed in the preamble and the IPM documentation--is that it assumes that the Clean Air Interstate Rule (CAIR) is not in effect.

Using IPM, the EPA modeled the emissions that would occur within each state at ascending costs per ton of emissions reductions. To do this, EPA designed a series of IPM runs that imposed increasing marginal costs for reduction of SO_2, annual NO_X, or ozone season NO_X emissions and tabulated those projected emissions at each cost level. EPA refers to these tabulations as "cost curves" in preamble section IV.D.

EPA constructed a series of IPM runs for this analysis by modifying the Base Case run to impose, for each state included in the control region, a marginal cost on all fossil-fuel-fired EGUs with a capacity above 25 MW.[2] In each of these runs we imposed the marginal costs starting in 2012 and continuing through 2014 and later years. For SO_2 emissions, the lowest marginal cost that EPA modeled is $100 per ton and the highest is $2,400 per ton. For annual NO_X emissions, the marginal costs modeled range from $500 per ton to $2,500 per ton. For ozone season NO_X emissions, the marginal cost modeled range from $500 per ton to $5,000 per ton. See Table A-1 in Appendix A for a list of IPM runs.

In these IPM runs EPA imposed the marginal cost on all states in the modeled control region at once, both for the feasibility of analyzing 38 states and to prevent the results from merely reflecting generation shifts among states in response to emissions costs. Because of the time required to build advanced pollution controls, no new add-on controls such as SCR or scrubbers (other than those built in the Base Case) were allowed to be built in 2012 in these runs. These runs did allow low NO_X burners to be built in 2012.

[2] For this series of IPM runs, EPA imposed these controls on the same region of states covered in the air quality modeling, i.e., the region extending from Texas northward to North Dakota and eastward to the East Coast and including 38 states (including the District of Columbia).

Each pollutant (SO_2, ozone-season NO_X, and annual NO_X) was analyzed separately with no policy assumed for the other two (see Appendix Table A-1). For example, the SO_2 runs did not include assumptions for NO_X controls (beyond the NO_X policies in the Base Case). Besides providing simple interpretation of the results, this approach reflected the need to estimate emissions reduced for each pollutant relative to the Base Case. Even beyond obvious interactions between simultaneous annual and ozone season NO_X requirements, reductions required for either NO_X or SO_2 may have influenced the cost of reducing the other pollutant, even as the requirements for both were being analyzed. This is especially relevant in 2012, when reduction requirements for one pollutant (i.e., SO_2) could cause switching to gas-fired units and therefore greatly impact emissions of the other pollutant (i.e., NO_X).

Notably, these interactions have much smaller impacts at the cost levels ultimately determined through the significant contribution analysis (the cost levels are summarized in section A of this TSD, earlier). At \$500 per ton of NO_X, reductions result largely from operating post-combustion controls, which has little effect on SO_2 emissions even in 2012. Conversely, SO_2 requirements in 2014 are primarily met through add-on scrubbers at coal-fired plants and coal switching, neither of which affects NO_X emissions significantly.

The IPM-projected EGU emissions at each cost level are shown in Tables 1-1 through 1-6. Tables 1-1 and 1-2 present annual NO_X emissions for 2012 and 2014, 1-3 and 1-4 present SO_2 emissions for 2012 and 2014, and Tables 1-5 and 1-6 present ozone season NO_X emissions for 2012 and 2014. The IPM runs are listed in Table A-1 in Appendix A. Table A-1 lists the name of each IPM run next to a description of the run. The runs themselves can be found in the rulemaking docket. In the preamble, the emissions are presented, rounded to the nearest thousand ton. In Tables 1-1 through 1-6, the emissions are presented, rounded to the nearest ton.

EPA applied emissions results shown in Tables 1-1 through 1-6 in the use of an air quality assessment tool (AQAT) to estimate the impact that the combined reductions available from upwind contributing states and the downwind state, at different cost-per-ton levels, would have on air quality at downwind monitor sites that had nonattainment and/or maintenance problems. In AQAT, the emissions at each cost-per-ton level, were taken directly from the IPM runs. Section C in this TSD describes EPA's development and use of the AQAT and the results from our AQAT analysis. Section C also compares the AQAT results to those produced using the Comprehensive Air Quality Model with Extensions (CAMx).

C. Analysis of Significant Contribution Using the Air Quality Assessment Tool

During the process of delineating an approach for defining significant contribution and interference with maintenance, it was clear that quantitative as well as qualitative methods were beneficial for understanding, evaluating, and rejecting (or accepting) the approaches.

Quantitative methods were useful for evaluation of significant contribution approaches. In particular, it was obvious that air quality modeling, where emissions can be directly linked to estimated downwind air quality impacts, would be useful in the evaluation process. However, it was clear that time and resource limitations (in particular the amount of time needed to set up, run the CAMx model, and analyze the results for a single model run) would preclude the use of air quality modeling for all but a few situations. Since EPA was evaluating a range of different approaches, each with different possible emissions scenarios, it would not be possible to use air quality modeling to elucidate all cases.

This fact led EPA to develop a simplified air quality assessment tool to estimate the downwind air quality impacts from different upwind emissions "test" scenarios. In a "test" scenario, the state-by-state emissions are specified following a potential significant contribution approach, and then the air quality impacts are found using the air quality assessment tool. The simplified tool allows the Agency to analyze many more potential scenarios than would otherwise be possible. The remainder of section C of this document will:

- Present an introduction and overview of the air quality assessment tool (AQAT)
- Describe the construction of the tool
- Describe the results of the analysis for the proposed approach
- Compare the results of a recent evaluation of AQAT estimates with CAMx (model) estimates for the proposed approach

- Describe some potential improvements.

1. Introduction: Use and development of the air quality assessment tool.

EPA used AQAT to estimate the impact of the upwind emissions reductions on downwind ambient concentrations. While less rigorous than the air quality models used for attainment demonstrations, EPA believes this simplified tool is acceptable for estimating the air quality impacts of upwind emissions reductions in the process of assessing numerous approaches and options for defining significant contribution[3]. A step-by-step description of the tool is found in section C.2 of this document.

A critical factor in AQAT is the establishment of a relationship between emissions reductions and reductions in downwind air quality impacts. For the purposes of using a tool to compare the potential impacts of iterative emissions reductions on air quality, we assume that changes in air quality contributions are proportional to changes in emissions. Specifically, in AQAT:

- A reduction in SO_2 emissions leads to a proportional decrease in downwind $PM_{2.5}$ sulfate contributions;
- A reduction in NO_X emissions leads to a proportional decrease in downwind $PM_{2.5}$ nitrate contributions;
- A reduction in NO_X emissions leads to a proportional decrease in downwind ozone contributions.

In AQAT, the base relationships between upwind emissions and downwind air quality are defined using the 2012 base case air quality modeling. As described in section IV.C of the preamble, we established a unique relationship between pollutant emissions from each upwind state and the estimated air quality impact at each downwind air quality monitor for the 2012 base case emission scenario using the CAMx air quality model with

[3] Different variations of the tool were developed to help explore many of the alternative approaches for significant contribution that were evaluated. The proportional relationship between state-by-state pollutant emissions and the downwind air quality affect of those emissions on a particular monitor was constant among all variations of the tool. The variations of the tool differed from each other based on how the emission reductions were specified. For example, the magnitude of the emission reductions could be specified using a cost criterion (e.g., all emissions that could be removed from EGUs at a marginal cost of $1,000/ton). Alternatively, the magnitude of the emission reduction could be specified using an air quality criterion (e.g., the emission reduction that might be needed to decrease the downwind impact by 0.3 $\mu g/m^3$).

state-by-state source apportionment. We also assume that if emissions in an upwind state were completely eliminated (from all source sectors), that the downwind air quality contribution from that state would also be eliminated at all downwind monitors.

The assumption of proportionality between emissions and air quality impact means that, for example, in AQAT, a specific percent reduction in SO_2 emissions would lead to the same percent reduction in air quality sulfate contribution from that upwind state. Consequently, if a state made a 50 percent reduction in SO_2 emissions, its sulfate contribution to any monitor downwind is assumed to be reduced by 50 percent. In other words, in AQAT, we assume that a ton of emissions of a particular pollutant from the upwind state has an equivalent air quality effect downwind (on an air quality impact per ton basis), regardless of source sector. For example, a ton of emissions of SO_2 from the power sector is assumed to have the same downwind effect as a ton of emissions of SO_2 from the mobile source sector. By consequence, emissions reductions are assumed to be distributed proportionally across the state. Thus, if an emissions reduction of 10 percent is called for under the "test scenario", all sources in the state, regardless of location or source sector, reduce their emissions by 10 percent.

Section C.2 is a technical explanation of the construction of AQAT. Readers who prefer to access the results of the analysis using the AQAT tool are directed to section C.3.

2. Details on the construction of the air quality assessment tool (with a focus on the variation of the tool used for the proposed approach).

(a) Overview of the AQAT for the proposed approach.

This section describes the step-by-step development process for the AQAT, which in turn was used to help develop the proposed approach (see section IV.D of the preamble for a description of the proposed approach for defining significant contribution and interference with maintenance). In AQAT, we link state emissions and resulting air quality contributions to downwind monitoring sites (from the 2012 base case state-by-state source apportionment air quality modeling from CAMx, based on the 2012 base case emissions inventory) with the state-by-state modeling of emissions reductions (from IPM) available at different marginal cost per ton values. Using the AQAT, we then estimate the emissions reductions needed to reduce each upwind state's air quality contributions such that the 2012 base case average design value (DV) and maximum DV at each downwind monitoring location are brought below the level of the NAAQS standard[4]. Only states that are "linked" to the downwind monitor (i.e., contributing an air quality impact above the 1 percent -- of the NAAQS standard -- air quality threshold) as well as the state that contains the monitor (regardless of that state's contribution) are assumed to make reductions beyond the base case level.

Thus, the key estimates from the AQAT for each pollutant are:

- For an upwind state that is contributing above the 1 percent air quality threshold (or, the state containing the monitor), the air quality contribution to each downwind monitor from each upwind state as a function of its emissions at each marginal cost per ton level
- For an upwind state that is not above the 1 percent air quality threshold to each downwind monitor, its air quality contribution to that monitor (noting that base level emissions are reduced in future years due to mobile source and other source-sector reductions).

The results of the analysis using AQAT can be found in section C.3 of this document.

(b) Data needed to construct the AQAT for the proposed approach and the domain examined.

For each contributing pollutant, three major data sources were needed to construct the AQAT for the proposed approach. These were the 2012 base case emissions inventories used in the source apportionment (CAMx) air quality modeling, the 2012 source apportionment air quality modeling contributions (CAMx) for each upwind state to each downwind monitor, and the EGU emissions (IPM) at each marginal cost per ton level. The base case emissions inventories for estimated 2012 and 2014, as well as the 2012 source apportionment air quality modeling results, can be found in preamble section IV.C. The emissions at each marginal cost level for each year (estimated using IPM) can be found in Tables 1-1 through 1-6.

[4] The average DV is a measure for estimating attainment of the NAAQS, while the maximum DV is a measure for estimating interference with maintenance. Design values for each of the NAAQS standards are defined in section IV.C.2.a of the preamble. The method for determining the average and maximum design values is described in section IV.C.2.b of the preamble.

As described in section IV.C of the preamble, the 2012 base case air quality contributions from each modeled state were identified for numerous downwind monitor locations. While nearly all of these locations were examined using AQAT, the analysis for significant contribution focused on monitoring locations that were modeled to be above the NAAQS standards in 2012 for either their average or maximum DVs. The monitor identification number (monid) and name of the state and county containing the monitors examined for annual $PM_{2.5}$, daily $PM_{2.5}$, and ozone can be found in Tables 2-1, 2-2, and 2-3. These tables also list the 2012 average and maximum DVs. The air quality contributions and emissions were modeled for the following 38 states: Alabama, Arkansas, Connecticut, Delaware, District of Columbia[5], Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, and Wisconsin. Thus, in AQAT, these states had the possibility of making reductions in emissions leading to changes in air quality contributions at the downwind monitors. The contributions and emissions from all other states were assumed to be invariant.

Some of the downwind monitoring sites were not located within states included in the air quality and emissions modeling (e.g., sites in Wyoming and New Mexico). Consequently, air quality changes as a function of emissions for those locations did not factor in to any of the assessments (they may have been calculated, but the results were not used). The emissions and contributions of all pollutants aside from SO_2 and NO_x were assumed to be invariant.

(c) Detailed outline of the process for constructing the AQAT for the proposed approach.

[5] Maryland was treated as a separate state in this analysis, rather than as combined with the District of Columbia. Its emissions were totaled separately and the changes in emissions occurring at different marginal costs were applied to upwind contributions from Maryland alone. Even without including emissions from the District of Columbia, analysis using AQAT showed Maryland's maximum contribution to a downwind receptor remaining above 0.35 for daily $PM_{2.5}$ at $2,000 per ton of SO_2. Because, even at $2,000 per ton, the District of Columbia showed very little reduction in tons of SO_2, EPA believes adding its emissions to Maryland's total would have little or no effect on that result. The emissions for the District of Columbia and Maryland at the marginal costs analyzed for SO_2 are shown in Table 1-3.

The goal of the AQAT is to estimate the response in air quality contributions to upwind emissions reductions (at different marginal cost levels) at each of the downwind monitoring sites whose DVs are above the NAAQS levels. In the AQAT, the percent reduction in emissions of an upwind state is assumed to result in a similar percent reduction in air quality contribution (a decrease in pollutant contribution) at the downwind location. The critical objective for the AQAT is to estimate the change in air quality at downwind monitors. We identify the percent change in emissions (reductions) for each state relative to the 2012 base case emissions, then multiply this percent change by the 2012 base case air quality contribution to estimate the change in the air quality at a downwind monitor[6].

First, the state-by-state 2012 base case relative air quality contributions of sulfate, nitrate, and ozone from the CAMx air quality modeling (see preamble section IV.C and the Air Quality Modeling TSD[7]) were examined at each of the downwind monitoring sites for each of the respective NAAQS standards. These are the contributions that are modulated based on the ratio of the emissions in the “test” scenario to the base case. Examples of the 2012 state-by-state base case source apportionment modeling contributions (the annual sulfate, nitrate, and total sulfate and nitrate $PM_{2.5}$ contributions) made to three monitoring sites can be found in Table 2-4. These monitors (identification numbers 420030064, 010730023, and 390618001) are located in Allegheny County, PA, Jefferson County, AL, and Hamilton County, OH, respectively. These three monitors are used throughout this TSD in explanatory examples of the AQAT results.

Starting with the 2012 base case emissions inventory of SO_2 and NO_X for the annual and daily $PM_{2.5}$ assessment tools and NO_X for the ozone assessment tool, the base case emissions from each upwind state for each emissions sector were identified. State-by-state emissions for SO_2 and NO_x in 2012 and 2014 for the EGU sector and “all other” sectors (the sum of Non-EGU point, Nonpoint, Mobile Nonroad, Mobile Onroad, and Fires) are summarized in Table 2-5. More information on the emissions inventories can be found in preamble section IV.C. For each state and pollutant, the ratio of the total

[6] For all the calculations and tables presented here, the values have been rounded in the final step. Consequently, using the rounded values from intermediate tables can result in small differences between the values calculated and the values presented here.
[7] Information about access to the contributions of nitrate, sulfate, and ozone can be found in the Air Quality Modeling TSD.

emissions in the "test" scenario to the 2012 base case scenario was found. This ratio of emissions was multiplied by the 2012 base case air quality contributions to estimate the air quality contributions for the "test" scenario. Specifically, on a pollutant-by-pollutant basis, each state's contribution to each downwind monitor is estimated by multiplying the 2012 base case air quality contribution from the source apportionment modeling by the ratio of the emissions in the "test scenario" to the 2012 base emissions. This is done independently for both SO_2 and NO_X for the $PM_{2.5}$ assessment tools, and just for NO_X emissions for the ozone assessment tool. Therefore, for each state, specification of the emissions in the "test" scenario was important because it was used to determine the percentage of the total base case emissions (and the percentage of the air quality contributions).

In the proposed approach, on a downwind monitor-by-monitor basis, the emissions reductions for each upwind state are associated with one of two marginal cost per ton levels (either the base case emissions level for that year or a particular marginal cost level). States that are contributing above the air quality threshold (i.e., 1 percent contribution of total sulfate and nitrate for the annual and daily $PM_{2.5}$ AQAT) to the monitor,[8] as well as the state containing the monitor, make emissions reductions available at the particular marginal cost per ton level. All other states remain constant with emissions at the base case marginal cost level for the year examined (either 2012 or 2014). For example, examining the column in Table 2-4 that shows the total sulfate and nitrate contributions in the 2012 base case for the annual $PM_{2.5}$ standard at monitor 420030064 in Allegheny, PA, we see that there are nine states whose contributions are larger than the 1 percent air quality threshold (0.15 $\mu g/m^3$). The states are Illinois, Indiana, Kentucky, Michigan, New York, Ohio, Tennessee, West Virginia, and Pennsylvania. These states are the ones that had their emissions changed to the non-base

[8] This approach was taken on a monitor-by-monitor basis for each downwind location. For a particular monitor, if an upwind state contributed above the 1 percent air quality contribution threshold to a certain monitor (but not another), it would make reductions in emissions for just the monitor that it was contributing to over the threshold. As described in section IV.D of the preamble, \$500/ton NOx emission reductions were applied to all states contributing above the 1 percent threshold. The results (e.g., whether a state was contributing over the threshold, and the resulting marginal cost level that the state needed to meet) were assessed across all monitors in the final steps of the process. This process ensures that only states that are above the air quality threshold for a particular monitor are required to make reductions affecting that particular monitor; it is not required to make reductions for a monitor it does not impact.

case marginal cost level (Pennsylvania would have been included in this group, regardless of its contribution, because it is the state containing the monitor).

At this point, for the Allegheny monitor (and for each of the other monitors, in turn), the question becomes, what non-base case marginal cost levels (one for SO_2 and one for NO_x) should be applied to these nine states? The answer is: the particular marginal cost that would be required to bring the "test" scenario average (or maximum) DV to the level of the standard (e.g., 15 $\mu g/m^3$ for annual $PM_{2.5}$). For example, for the Allegheny monitor and annual $PM_{2.5}$ standard (shown in Table 2-4), the 2012 base case average and maximum design values are 18.9 and 19.31 $\mu g/m^3$, respectively. Thus, the new contributions of sulfate and nitrate in the "test" scenario need to lead to more than18.9-15.05 and 19.31-15.05 $\mu g/m^3$, or more than 3.85 and 4.26 $\mu g/m^3$ of air quality improvement. Since we do not have an *a priori* reason to know what marginal cost levels might be required, we can use the AQAT to estimate the air quality at numerous marginal cost levels.

The emissions levels used were created from IPM modeling of state-by-state marginal costs associated with various emissions reductions. These emissions levels were modeled for both 2012 and 2014. Tables 1-1 and 1-2 in this TSD show the annual NO_X emissions from the EGU sector (in tons) by state at various marginal cost per ton levels of reduction for 2012 and 2014, respectively. Tables 1-3 and 1-4 show the annual SO_2 emissions from the EGU sector (in tons) by state at various marginal cost per ton levels of reduction for 2012 and 2014, respectively. Similarly, Tables 1-5 and 1-6 show the ozone season NO_X emissions from the EGU sector (in tons) by state at various marginal cost per ton levels of reduction for 2012 and 2014, respectively. Note that these tables are rounded to the ton, whereas similar tables in preamble section IV.D were rounded to the thousand tons.

The marginal cost levels (2006 $) modeled using IPM for annual SO_2 were $0, $100, $200, $300, $400, $500, $600, $800, $1,000, $1,200, $1,400, $1,600, $1,800, $2,000, and $2,400 per ton. For annual NO_X, the marginal cost levels (2006 $) were $0, $500, $750, $1,000, $1,250, $1,500, and $2,500[9] per ton. For ozone season NO_X, the

[9] EPA modeled annual NO_X reductions at $2,500 per ton using IPM but did not analyze this cost level using AQAT. The projected NO_X emissions in each state at $2,500 per ton are shown in Tables 1-1 and 1-2. As

marginal cost levels were $0, $500, $1,000, $1,500, $2,000, $2,500, $3,000, $3,500, and $5,000 per ton. Each marginal cost per ton level was related to a specific level of pollutant emissions for each state and, therefore, a specific change in emissions relative to the 2012 base emissions level.

The remainder of this section focuses on the step-by-step details used in the construction of the AQAT (i.e., how the emissions changes for an upwind state were associated with changes in the downwind air quality impact of that state). Section C.3 of this TSD describes some of the results from the AQAT used in the proposed approach. Section IV.D of the preamble describes how the results from the AQAT were applied, along with other metrics, to define significant contribution and interference with maintenance.

For each state, the fraction of EGU emissions for particular marginal cost levels was determined from the IPM marginal cost modeling relative to the 2012 base case emissions (the $0/ton marginal cost level in 2012). A full set of tables for both 2012 and 2014 for annual NO_X, annual SO_2, and ozone season NO_X can be found in Tables 2-6 through 2-11).

For example, the fractional reduction of EGU SO_2 emissions at $1,200/ton for Alabama in 2014 relative to the 2012 base case is 0.5222. This was calculated by subtracting the emission value for SO_2 in 2014 at $1,200 per ton for Alabama (160,520 tons as seen in Table 1-4) from the emission value in the 2012 base case (335,967 tons as seen in Table 1-3) and then dividing that difference by the 2012 base case value (335,967 tons as seen in Table 1-3). Explicitly, (335,967 -160,520)/ 335,967 = 0.5222 as can be seen in Table 2-9. This would be the fractional reduction in EGU contributions at a marginal cost of $1,200 per ton (which assumes that Alabama is over the 1% threshold for that particular monitor). The fraction of remaining emissions would be 1-0.5222, or 0.4778. If Alabama is not over the 1 percent air quality contribution threshold for the particular monitor, its contribution remains at the 2014 base case ($0 per ton) level.

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discussed in preamble section IV.D, the potential reduction in EGU NO_X emissions increases slowly above $500 per ton and up to at least $2,500 per ton. Using the multi-factor assessment discussed above in section A, the EPA determined that $500 per ton is the appropriate significant contribution cost threshold for annual NO_X reductions (see detailed discussion in preamble section IV.D). Because $500 per ton was determined to be the appropriate cost threshold, it was not necessary to analyze costs as high as $2,500/ton using AQAT.

Consequently, for the 2014 base case situation, Alabama's SO_2 EGU emissions are estimated to be 322,362 tons (Table 1-4). Following the same mathematical procedure as for the $1200 per ton, the fractional reduction would be (335,967 -322,362)/ 335,967 =0.0405 (Table 2-9). The fraction of remaining emissions would be 1-0.0405, or 0.9595.

One minus the fraction of base case EGU emissions reductions from each state (e.g., 1.0 minus the values in Table 2-9) were multiplied by the tons of emissions from EGUs from the base case air quality modeling inventory (Table 2-5 and preamble section IV.C) to give the number of tons of EGU emissions (relative to the air quality modeling). This process reconciles the slight differences[10] present between the EGU emissions inventory used in the contribution air quality modeling and the IPM modeling using equivalent percent differences (e.g., a given reduction in tons from EGUs at a specific cost from IPM equated to a specific percent reduction). A full set of tables for both 2012 and 2014 for annual NO_X, annual SO_2, and ozone season NO_X can be found in Tables 2-12 through 2-17).

For example, for Alabama for SO_2, the 2012 base case IPM modeling emissions were 335,967 tons (Table 1-3), while in the 2012 base case inventory used in the air quality modeling the emissions were 335,734 tons (Table 2-5). Thus, for Alabama in the 2014 base case scenario, the number of tons of SO_2 from EGUs in AQAT is the fraction of emissions from the IPM modeling (1-0.0405, or 0.9595) multiplied by the 2012 air quality modeling base case emissions (335,734 tons), resulting in 332,139 tons (Table 2-15). Similarly, for the 2014 $1,200 per ton level for SO_2 from Alabama, the fraction of EGU emissions relative to the 2012 IPM base case was 1-0.5222, or 0.4778. This value is multiplied by the 2012 air quality modeling base case emissions (335,734 tons) resulting in EGU emissions in AQAT of 160,408 tons (Table 2-15).

The small differences in emissions inventories can be seen by comparing the 2012 base case emissions from Table 2-5 and Tables 1-1 or 1-3, for NO_X and SO_2, respectively. The emissions at various marginal costs from IPM reported in Tables 1-1 through 1-6, and used in the assessment tool are from "all units" (which contain the

[10] In future iterations of AQAT these small differences in inventories will be reconciled. Since the emissions between the two cases are identical in the base case (in terms of total tons of emissions for the state), the difference in tons between the base case and "test" case in IPM represents the actual total estimated change in tons from the EGU sector.

emissions from “all fossil” units as well as from some “additional units”). A description of the EGU emission inventory used in the air quality modeling and its relationship to the IPM emissions inventory can be found in preamble section IV.C.

For each year and marginal cost of reduction level, for each state, and for each pollutant, the emissions from EGUs for the “test” scenario (after being adjusted using the method described above) were added to the emissions from “all other” sectors, resulting in a “total” emissions (by pollutant). A full set of tables, showing the total emissions by state, for both 2012 and 2014 for annual $NO_{X,}$ annual SO_2, and ozone season NO_X can be found in Tables 2-18 through 2-23).

Thus, following the SO_2 example with Alabama in 2014 at $1,200 per ton, the EGU emissions of 160,408 tons are added to the “all other” emissions of 124,923 tons (Table 2-5) resulting in total emissions of 285,332 tons (this can also be seen in Table 2-21, though the total is slightly different due to differences in rounding). For Alabama in 2014, the total SO_2 emissions are estimated to be 447,062 tons.

Since the 2012 base case air quality contributions for each state (for each monitor) are based on the pollutant-specific 2012 base case total emissions, changes in these contributions are related to changes in the pollutant-specific total emissions. Thus, for each pollutant, the “test scenario” air quality contributions are equal to the 2012 base case air quality contributions multiplied by the ratio of the total emissions. The ratio of the total emissions equals the total emissions in the “test scenario” divided by the total emissions in the 2012 base. The percent of the total base case emissions was determined by adding the remaining tons of EGU emissions (relative to the air quality modeling emissions) to the contribution from “all other” emission source sectors (non-EGU point sources, onroad and nonroad mobile, fires, etc.), which are constant for a particular year, and dividing this total by the total of the EGU and all other source sector emissions from the 2012 air quality base case.

A full set of tables, showing the ratio of the total remaining emissions relative to the 2012 base case emissions total, by state, for both 2012 and 2014 for annual SO_2, annual NO_x, and ozone season NO_x can be found in (Tables 2-24 through 2-29).

For example, following the Alabama examples for SO_2 emissions described above, the ratio would be the total emissions in 2014 (at $1,200 per ton = 285,332 tons) divided by the 2012 total base case emissions (462,297 tons, from Table 2-5). This ratio is 285,332/462,297=0.6172 (as can be seen in Table 2-27).

Note that, when examining emissions in 2014, for many states, there were changes in emissions (relative to the 2012 base case emissions) from "all other" sectors (primarily from changes in mobile source emissions), but also sometimes from changes in emissions from the EGU sector. The base case EGU emissions (at $0 per ton marginal cost) in 2014 are different (and often lower) than the base case EGU emissions in 2012. Consequently, even for states whose contributions to a particular monitor are below the 1 percent threshold limit, their contribution in 2014 is usually estimated to be different than it was in 2012.

For the ozone season AQAT, change in overall NO_X emissions was assessed as if the reductions continued to be applied over an annual time scale so that emissions from EGUs could be compared with total emissions (including emissions from "all other" emission source sectors, where ozone season emissions were not readily available). The relative changes in ozone-season NO_X emissions from the EGU sector were scaled to annual EGU NO_X emissions. In other words, if ozone season NO_X emissions from EGUs decreased by 25 percent during the ozone season relative to the 2012 base case ozone season EGU emissions, the annual NO_X emissions from EGUs were decreased by 25 percent.

Tables 2-30 through 2-32 show the fraction reduction in total emissions at various marginal costs of control in 2014 relative to base case emissions 2014, for annual SO_2, annual NO_X, and ozone season NO_X. (rather than the base of 2012 as is seen in Tables 2-24 through 2-29. These are calculated by taking 1 minus the ratio of the 2014 total emissions at a marginal cost to the 2014 base case total emissions (these total emission values can be found in Tables 2-18 through 2-23). The values in Table 2-31 were used to create figures IV.D-1 through IV.D-4 in the preamble.

One of the final steps in AQAT is to multiply the emissions ratios for each state by the state's air quality contributions to each downwind monitor. The "test scenario" air quality contributions at each monitor location were estimated by multiplying the base case air quality contributions from each state (at that monitor) by the percentage of base case emissions from that state. As an example, Table 2-33 shows estimated annual sulfate and nitrate, and total sulfate and nitrate, contributions in 2014 for the three monitors (Allegheny County, PA; Jefferson County, AL; and Hamilton County, OH), where states above the 1 percent threshold make reductions at $1,200/ton for SO_2 and $500/ton for NO_x, while the other states make reductions at 2014 base case levels for both pollutants. New estimated total contributions at each monitor were found by adding the state contributions together. This was done for each pollutant.

Estimated design values (average or maximum) for the "test scenario" were found by taking the 2012 base case air quality design value (average or maximum), subtracting the total contributions for each pollutant from each state from the base case and adding the new total contributions estimated using AQAT. In other words, we subtract the sum of the 2012 base case contributions of sulfate and nitrate from the 2012 design value (Table 2-4), and then add the sum of the "test" scenario contributions (Table 2-33). This new estimated design value was then compared to the specified air quality level (the NAAQS). The total contributions added and subtracted are identical for both the average and maximum design values. Both the new estimated average and maximum design values were compared with the specified air quality level. A description of the three NAAQS standards can be found in the preamble. The three NAAQS examined here are the 1997 and 2006 fine particulate matter ($PM_{2.5}$) and the 1997 ozone. In AQAT, the estimated value of the average design value was used to estimate whether the location will be out of attainment, while the estimated maximum design value was used to estimate whether the location will be out of maintenance.

For the proposed approach, the marginal cost per ton values were incrementally increased, changing the emissions (and the resulting estimated air quality contributions) until each monitoring location went below the specified air quality level (or the maximum cost was reached). The marginal cost per ton values were incrementally applied in increasing marginal cost levels. As the cost per ton value increased, the estimated design values decreased. The three air quality levels used were 15.05 $\mu g/m^3$, 35.5 $\mu g/m^3$, and 85 ppb to represent the 1997 and 2006 fine particulate matter ($PM_{2.5}$) and the 1997 ozone standards, respectively. The critical marginal costs that were applied, just after the estimated average and maximum air quality design values from AQAT went below the air quality level, were found. (More information about the application of AQAT with the proposed approach can be found in section 3.)

3. Description of the results of the analysis using AQAT for the proposed approach.

The focus of this section is to describe the results of the analysis using the AQAT for the annual $PM_{2.5}$, daily $PM_{2.5}$, and ozone standards. In section C.2(c) of this TSD, we described the construction of the AQAT for the proposed approach. The specific application of the tool is described in this section. As part of the preliminary investigation of this approach, we imposed various combinations[11] of SO_2 and NO_X emissions reductions within AQAT and examined the resulting estimated air quality on a monitor-by-monitor basis. For example, for one of the first variations of the proposed approach using the AQAT, we estimated the levels of emissions reductions needed to reduce air quality contributions in order to bring each downwind monitor (the average DV as well as the maximum DV) to the level of the NAAQS, assuming that the marginal costs of both pollutants were incremented in concert. We also examined the air quality response to emissions reductions at different marginal costs for each pollutant, separately. For ozone, we examined the air quality response to ozone season NO_X emissions reductions at different marginal costs.

The emissions for annual NO_X for 2012 and 2014 can be found in Tables 1-1 and 1-2. The emissions for annual SO_2 for 2012 and 2014 can be found in Tables 1-3 and 1-4. The NO_X emissions during ozone season, for 2012 and 2014, can be found in Tables 1-5 and 1-6.

For each monitor, we applied emissions reductions on a state-by-state basis. As described in section C.2(c) of this TSD, for annual and daily $PM_{2.5}$ standards, NO_X and SO_2 emissions reductions beyond the base case level for the year examined were applied to the state containing the monitor, as well as to upwind states contributing above the 1 percent air quality threshold to that particular monitor. For each monitor and at each marginal cost level for both NO_X and SO_2, we summarized the estimated air quality

[11] As described in section B of this TSD, the IPM emission estimates for both SO2 and NOx were modeled independently (assuming that emissions for the other pollutant were held constant at base case levels for the modeled year). Similarly, in AQAT, we assume that PM2.5 formation from NO_x and SO_2 is not affected by chemical interactions between NO_x and SO_2.

reductions from all states -- the upwind states above the 1 percent threshold, the state containing the monitor (making reductions as if it was over the 1 percent threshold), and the remaining states (making reductions at the base case level). For the ozone season, a similar process was followed except that only NO_X emissions reductions were applied.

For annual $PM_{2.5}$ in 2014, the total estimated air quality response in $\mu g/m^3$ to different receptor monitors for both NO_X and SO_2 marginal cost levels can be found in Tables 3-1, 3-2, and 3-3 for all states, the state containing the monitor, and upwind states, respectively. For daily $PM_{2.5}$ in 2014, on a monitor-by-monitor basis, the total estimated air quality response in $\mu g/m^3$ for both NO_X and SO_2 marginal cost levels can be found in Tables 3-4, 3-5, and 3-6 for all states, the state containing the monitor, and upwind states, respectively.

For ozone in 2012, the total estimated air quality response in ppb for ozone season NO_X marginal cost levels can be found in Tables 3-7, 3-8, and 3-9 for all states, the state containing the monitor, and upwind states, respectively. Similarly, for ozone in 2014, the total estimated air quality response in ppb for ozone season NO_X marginal cost levels for the same three cases can be found in Tables 3-10, 3-11, and 3-12.

For annual and daily $PM_{2.5}$, based on the relationship between the magnitude of NO_X emissions reductions and increasing marginal cost (and the resulting estimated air quality changes in $PM_{2.5}$ using AQAT), it became clear that the overwhelming air quality improvement in nitrate reductions would be attained at a relatively low cost (e.g., $500/ton) as described in preamble section IV.D.4.a.

The remaining steps in the analyses for annual $PM_{2.5}$ and daily $PM_{2.5}$, estimating the SO_2 marginal cost per ton needed by each monitor to reach the nonattainment/maintenance level, we assume NO_X marginal emissions reductions at the $500/ton level applied on a monitor-by-monitor basis to states contributing above the 1 percent threshold and to the state containing the monitor.

The estimated marginal cost per ton of reductions needed so that the estimated air quality improvement necessary for each monitor to lower its 2012 base case average and maximum DVs to a value below the level of the annual $PM_{2.5}$, daily $PM_{2.5}$, and ozone standards in 2014 can be found using Tables 3-1, 3-4, and 3-10 (the values for ozone in 2012 can be found using Table 3-7).

SO_2 EGU marginal costs equal to >$2,400/ton for the annual and daily $PM_{2.5}$ standards indicate that a higher marginal cost value than $2,400 is needed (the value could be substantially higher than $2,400, however $2,400/ton was the highest marginal cost modeled in IPM for SO_2). Similarly, the value of >$5,000/ton for the ozone standard indicates that a value larger than $5,000/ton is needed (the highest EGU marginal cost per ton of reductions modeled in IPM for ozone-season NO_X).

As an illustrative example showing how the nitrate and sulfate reductions and "critical" marginal cost levels are estimated, consider monitor 360610056 in New York, New York which has a 2012 base case maximum daily $PM_{2.5}$ DV of 38 $\mu g/m^3$. Thus, considering the rounding convention for the NAAQS, an air quality improvement of more than 2.5 $\mu g/m^3$ would be needed for the estimated maximum DV to be below 35.5 $\mu g/m^3$. Examining Table 3-4, showing the AQAT estimates for this monitor, we see that in the 2014 base case (0$/ton for both NO_X and SO_2 emissions), there is a reduction of 0.94 $\mu g/m^3$. Based on the way that the air quality reduction tables are set up, care must be taken not to count the base case reduction in 2014 twice, when adding up air quality reductions from NO_X and SO_2 emissions reductions.

At the $500/ton NO_X marginal cost (with $0/ton SO_2 emissions), there is a total reduction of 1.17 $\mu g/m^3$ (Table 3-4). Similarly, at $200/ton SO_2 marginal cost (with $0/ton NO_X emissions), there is a total reduction of 2.27 $\mu g/m^3$. Thus, at the $500/ton NO_X marginal cost and $200/ton SO_2 marginal cost, there is a 0.23 $\mu g/m^3$ (1.17-0.94 $\mu g/m^3$) reduction in nitrate and a 1.33 $\mu g/m^3$ (2.27-0.94 $\mu g/m^3$) reduction in sulfate. Adding 0.94 to 0.23 and 1.33 equals a total of 2.5 $\mu g/m^3$ reduction from the 2012 base case level. This amount of air quality improvement would bring the estimated maximum DV monitor to a level of 35.5 $\mu g/m^3$ in 2014, and therefore, almost into attainment with the standard. The next increment of control (the $300/ton marginal cost level) is estimated to bring the value below 35.5 $\mu g/m^3$. Thus, as seen in Table 2-2, the estimated critical maximum DV $/ton value is $300/ton.

The total number of estimated remaining nonattainment and maintenance monitors as a function of particular marginal cost levels is shown in Tables 3-13, 3-14, and 3-15. Monitors are only counted if their critical estimated marginal cost level (using

Tables 3-1, 3-4, 3-7 and 3-10) is greater than the marginal cost level in the summary tables. For example, the maximum 2014 average and maximum DV critical SO_2 marginal costs are $1,800/ton and greater than $2,400/ton, respectively, for the annual $PM_{2.5}$ standard for monitor number 420030064 located in Allegheny, PA. In Table 3-13, at $1,600/ton SO_2 marginal cost, this monitoring site accounts for the value of 1 in both the nonattainment and nonattainment/maintenance categories. At the $1,800/ton SO_2 marginal cost level, there are no estimated remaining nonattainment monitors with values greater than $1,800/ton (Allegheny's critical nonattainment value was $1,800/ton), but there is 1 estimated remaining maintenance site (Allegheny's critical maintenance value was greater than $2,400/ton). Tables 3-13, 3-14, and 3-15 were summarized in preamble Tables IV.D-3, IV.D-4, and IV.D-9.

On a monitor-by-monitor basis, Table 3-6 shows the estimated air quality improvement ($\mu g/m^3$) as a function of various SO_2 marginal costs (in 2014) just from states that are upwind of the monitor. In the preamble section IV.D, we present the average air quality improvement in daily $PM_{2.5}$ from upwind states for all of the monitors whose 2012 base case DVs were greater than the daily $PM_{2.5}$ NAAQS level (see preamble Table IV.D-4). These data are the average of the values in Table 3-6, and are presented in Table 3-16 in this TSD. Table 3-16 shows the air quality improvement in 2014 referenced to the 2012 and 2014 base case levels (e.g., subtract 1.3 $\mu g/m^3$ from all of the values to achieve the 2014 base value of 0.0 $\mu g/m^3$). In preamble Table IV.D-4 the values are relative to the 2014 base case value. In addition, in preamble Table IV.D-4, we show the average air quality improvement for "six" sites and "three" sites. The average air quality improvements for these sites as well as their monitor ID numbers and locations are presented in Table 3-16.

One of the final aspects of this TSD is to show the estimated average and maximum design values for each downwind monitor when the $500/ton NO_x and $2,000/ton SO_2 marginal cost levels for annual $PM_{2.5}$ and daily $PM_{2.5}$ are applied within AQAT (following the procedure described in this subsection for states that are above the 1% air quality contribution threshold for a particular monitor). These results can be found in Table 3-17 for annual PM2.5 and in Table 3-18 for daily PM2.5. Similarly, the estimated average and maximum design values when $500/ton ozone season NO_x was applied within AQAT are shown in Tables 3-19 and 3-20 for 2012 and 2014. These estimates followed the procedure described in this subsection for states that are above the 1% air quality contribution threshold for a particular monitor.

Lastly, once the proposed remedy was implemented in IPM and budgets for each state were estimated, it was possible to estimate air quality concentrations at each downwind receptor using AQAT. Average and maximum design value estimates in 2014 for annual PM2.5, daily PM2.5 can be found in Tables 3-17 and 3-18. Air quality estimates for ozone season average and maximum design values in 2012 and 2014 can be found in Tables 3-19 and 3-20. Air quality estimates were also made using CAMx (see the Air Quality Modeling TSD for details). Some comparisons between AQAT and CAMx estimates are shown in section 4 of this TSD.

4. Comparison between the air quality assessment tool estimates and CAMx air quality modeling estimates.

Understanding the relationship between emissions and air quality involves looking at some of the chemical reactions involved in the formation of $PM_{2.5}$ and ozone. $PM_{2.5}$ concentration is comprised of several chemical species including related forms of particulate sulfate and particulate nitrate. The atmospheric chemical reactions that convert SO_2 and NO_X to particulate sulfate and nitrate, respectively, are central to understanding the relationship between emissions and particulate formation. Both gas-phase and aqueous-phase processes can be important in the formation of particulates.

In both phases, the reaction is presumably dependent on complex effects from oxidants, possibly leading to a nonlinear response in sulfate formation (particularly for the aqueous phase)[12]. In the gas phase, the reaction depends on hydroxyl radical (OH) concentrations, which depend indirectly on NO_X and VOC concentrations, as well as sunlight intensity. In the aqueous phase, the rate of formation in solution is dependent on oxidants in solution such as H_2O_2 and O_3. During certain times and situations, such as the winter months when H_2O_2 concentrations may be low and SO_2 concentrations are high, the response in sulfate formation may be nonlinear[12]. Conversion of NO_X to particulate nitrate is less straightforward. The same general reactions apply, though the

[12] Atmospheric Chemistry and Physics: From Air Pollution to Climate Change (2nd Edition). 2006. John H. Seinfeld & Spyros N. Pandis. Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

relation between emissions and particulate is thought to be nonlinear[12]. The chemical relationships that influence ozone formation are very complex and can be nonlinear[12]. Some of the factors and reagents (among others) affecting the reactions include NO_X and VOC concentrations, sunlight intensity, and temperature.

The air quality assessment tool was not designed or intended to account for the these non-linear relationships between emissions and air quality, as indicated in section C, above. In contrast to the assessment tool, the CAMx modeling explicitly accounts for interactions and nonlinearities in the atmospheric reactions, the effects of transport and diffusion, and the uneven geographic distribution of sources and controls across a state. Following the CAMx modeling performed to evaluate the air quality effects of the proposed approach as described in the preamble, it was possible to evaluate the air quality assessment tool using the model predictions from CAMx. A comparative analysis was done between the assessment tool and the CAMx modeling. This analysis focused on comparing the average and maximum design value concentrations at the downwind monitoring sites for both the 2014 base case as well as the 2014 control case. Examination of the results of the CAMx modeling for 2014, implementing the proposed remedy, shows that nearly all of the air quality monitoring locations of interest are estimated to be brought into attainment and maintenance for both the ozone and annual PM standards (see section IV.D of the preamble). Qualitatively, these results are quite similar to those from the assessment tool. However, for the daily PM standard, a number of locations are estimated to remain out of attainment and/or maintenance. Information about the particular locations estimated to remain out of attainment/maintenance, as well as an explanation of some of the reasons why, can be found in the Air Quality Modeling TSD. In summary, it appears that the rates of atmospheric chemistry reactions differ between summer and winter, leading to seasonal differences in the effectiveness of SO_2 emissions reductions to lower $PM_{2.5}$ concentrations.

EPA compared the air quality estimates from the air quality assessment tool and the CAMx modeling at a number of monitoring locations for both the 2014 base and 2014 control cases, with a focus on estimates for the daily $PM_{2.5}$ standard. The comparisons for six monitoring locations can be found in Table 4-1. Results for all monitoring sites estimated to be nonattainment and/or maintenance in the 2012 base case air quality modeling for the daily PM2.5 average and maximum DVs can be found in Table 4-2, and 4-3, respectively. We found that the air quality assessment tool nearly always overestimated total reductions in $PM_{2.5}$ relative to the estimates from the CAMx modeling. The differences are smaller for the 2014 base case, than for the 2014 proposed remedy case. This is the result of the significantly larger emission reductions in the 2014 proposed remedy case resulting in larger air quality improvements. Assessed across all of the sites that were estimated to be nonattainment in the 2012 base case, the average difference between the air quality assessment tool and the CAMx modeling of the 2014 base case was -0.6 $\mu g/m^3$. For the 2014 proposed remedy case, the average difference between the assessment tool and the CAMx modeling for the daily average DV was -5.7 $\mu g/m^3$ of reduction.

An analysis to characterize the residual nonattainment/maintenance problems for the 24-hour PM2.5 NAAQS is provided in the Air Quality Modeling TSD. In brief, this analysis indicates that there are seasonal differences in the response of sulfate concentrations to changes in SO2 emissions. In particular, the sulfate reductions predicted by CAMx for the "warm" seasons (i.e., 2nd and 3rd calendar quarters) were greater than during the "cool" seasons (i.e., 1st and 4th quarters). The response of sulfate to emissions changes in the warm seasons were generally proportional to the regional change in SO2 emissions. The response was much less and more site specific during the cool seasons. The results of this analysis that the assumption of proportionality between emissions and concentrations in the AQAT may be appropriate for warm season sulfate concentrations, while for winter, the air quality assessment tool overestimated the magnitude of sulfate reductions compared to CAMx.

Table 1-1. 2012 Annual NO_x EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons).

Year	2012	2012	2012	2012	2012	2012	2012**
Marginal Cost per Ton	$0	$500	$750	$1,000	$1,250	$1,500	$2,500
State							
AL	122,344	69,649	69,595	69,590	69,563	69,506	68,946
AR	43,342	23,673	23,645	23,728	23,858	23,823	23,821
CT	7,940	7,931	7,931	7,935	7,935	7,935	7,936
DE	4,685	4,934	4,918	4,735	4,734	4,734	4,733
DC	933	938	938	939	939	939	938
FL	211,836	144,657	117,197	116,801	115,889	115,784	115,187
GA	78,184	75,972	75,998	76,033	76,045	75,815	75,442
IL	78,142	57,240	57,337	57,232	57,240	57,307	57,250
IN	203,235	116,588	116,322	115,707	115,212	113,766	111,980
IA	66,427	54,366	51,496	51,083	50,843	50,856	49,958
KS	70,915	33,000	33,793	33,608	33,188	32,947	32,610
KY	149,221	73,900	73,694	73,055	72,568	72,360	71,521
LA	44,858	36,137	36,143	36,034	35,978	35,970	36,039
ME	8,113	7,904	7,833	7,794	7,794	7,794	7,794
MD	33,055	33,113	33,113	33,122	33,124	33,124	33,016
MA	12,343	12,737	12,737	12,737	12,737	12,736	12,744
MI	98,217	67,765	67,775	67,800	67,836	67,816	67,578
MN	53,783	36,969	37,020	37,207	37,369	37,365	37,372
MS	37,924	19,209	19,223	18,864	18,677	18,677	18,686
MO	77,610	76,684	73,974	72,404	70,389	68,873	65,178
NE	52,878	34,383	34,383	34,383	34,269	33,954	33,460
NH	11,052	11,012	11,012	10,950	10,950	10,950	10,865
NJ	19,405	15,897	15,897	15,915	15,926	15,778	15,562
NY	33,759	33,684	33,648	33,624	33,617	33,595	33,507
NC	62,503	62,409	62,409	62,411	62,411	62,477	62,477
ND	59,573	49,114	49,114	48,643	48,540	47,442	47,332
OH	159,630	99,649	99,553	99,266	98,488	98,637	97,999
OK	86,982	51,722	51,646	51,646	51,551	51,490	50,856
PA	198,637	119,015	118,096	118,257	117,876	116,942	116,735
RI	274	280	280	281	281	281	281
SC	47,993	36,417	36,417	36,365	35,939	35,953	35,598
SD	15,507	13,597	13,597	12,681	12,630	12,577	11,606
TN	68,568	28,502	28,496	28,499	28,499	28,499	28,502
TX	160,077	134,928	134,871	134,875	134,879	134,566	132,855
VT	793	793	793	793	793	793	793
VA	41,258	40,850	40,851	40,850	40,850	40,856	40,772
WV	102,718	56,129	55,993	55,148	54,747	54,660	52,192
WI	49,880	40,554	40,020	39,986	39,658	39,241	39,139

*Source: Integrated Planning Model run by EPA, 2010. See Appendix A for list and description of these IPM runs. Emissions have been rounded to the nearest ton. For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

**This marginal cost level was not included in the current version of AQAT.

Table 1-2. 2014 Annual NO_x EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons).

Year	2012	2014	2014	2014	2014	2014	2014	2014**
Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500	$2,500
State								
AL	122,344	118,955	62,301	62,343	62,275	62,323	62,133	49,890
AR	43,342	44,911	24,916	24,931	24,958	24,646	24,631	24,160
CT	7,940	7,991	8,008	8,008	8,001	7,994	7,987	7,984
DE	4,685	5,790	6,021	6,020	5,832	5,830	5,829	5,823
DC	933	933	938	938	939	939	939	938
FL	211,836	196,373	138,406	114,384	113,634	113,351	113,011	80,450
GA	78,184	48,267	45,711	45,309	45,316	45,336	45,121	44,943
IL	78,142	80,451	56,449	56,245	56,139	56,167	56,088	55,591
IN	203,235	201,027	114,362	113,798	113,826	113,408	113,841	107,055
IA	66,427	68,259	56,063	52,776	52,187	51,896	50,348	46,612
KS	70,915	79,018	37,804	37,916	37,469	37,309	35,922	35,230
KY	149,221	148,551	72,449	72,209	71,893	71,694	71,601	70,598
LA	44,858	45,551	37,215	37,238	37,286	37,293	37,293	28,415
ME	8,113	7,509	7,303	7,195	6,699	6,347	6,347	6,351
MD	33,055	35,944	36,148	36,148	36,158	36,189	36,189	36,234
MA	12,343	12,650	13,018	13,018	13,018	12,995	12,988	12,989
MI	98,217	98,941	68,279	68,117	67,804	67,800	67,615	66,114
MN	53,783	55,283	38,047	38,302	38,166	38,160	38,070	37,789
MS	37,924	37,549	18,732	18,732	18,730	18,730	18,730	13,031
MO	77,610	83,019	82,000	80,337	79,891	72,461	61,126	55,365
NE	52,878	53,029	34,446	34,511	34,454	28,334	28,322	28,318
NH	11,052	11,052	11,021	11,021	11,021	11,021	10,950	10,865
NJ	19,405	27,127	23,496	23,493	23,496	23,394	23,389	19,811
NY	33,759	36,352	35,392	32,943	32,842	32,663	31,514	31,204
NC	62,503	62,608	62,532	62,289	62,320	62,365	62,326	60,934
ND	59,573	59,582	49,123	49,123	48,752	31,826	31,460	25,916
OH	159,630	164,947	103,596	103,147	102,638	101,952	97,623	87,834
OK	86,982	81,189	50,086	50,162	50,206	50,211	50,143	43,230
PA	198,637	204,950	123,203	122,970	122,857	122,664	122,408	86,153
RI	274	333	308	308	308	308	308	308
SC	47,993	47,742	35,966	35,653	35,607	35,580	35,602	34,808
SD	15,507	15,528	13,618	13,618	1,946	1,946	1,943	1,943
TN	68,568	68,914	28,812	28,811	28,815	28,809	28,704	28,554
TX	160,077	166,515	145,734	144,910	144,718	142,279	142,222	140,521
VT	793	793	793	793	793	793	793	793
VA	41,258	37,630	37,133	37,133	37,321	37,430	37,079	36,416
WV	102,718	100,095	54,122	53,919	53,657	53,540	49,420	45,311
WI	49,880	54,515	44,298	44,348	43,786	43,515	43,023	40,779

*Source: Integrated Planning Model run by EPA, 2010. See Appendix A for list and description of these IPM runs. Emissions have been rounded to the nearest ton. For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

**This marginal cost level was not included in the current version of AQAT.

Table 1-3. 2012 SO_2 EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons).

	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State															
AL	335,967	314,011	275,149	245,077	198,855	186,736	187,271	186,641	169,375	168,590	164,259	162,219	155,849	155,614	155,190
AR	85,115	85,129	84,596	84,713	84,784	84,531	82,685	82,539	82,539	82,632	82,673	82,693	82,685	82,738	83,055
CT	6,141	6,140	6,141	6,141	6,141	6,141	6,141	6,141	6,141	6,141	6,153	6,160	6,160	6,160	6,160
DE	7,841	8,901	8,924	8,923	8,920	8,913	8,913	8,904	8,903	8,900	8,900	8,899	8,898	8,898	8,881
DC	176	177	177	177	177	177	177	177	177	179	177	177	177	177	177
FL	230,284	206,030	172,791	175,899	144,929	122,875	123,091	121,957	122,230	114,847	112,519	111,975	109,279	99,391	98,571
GA	552,053	549,262	277,192	276,302	274,899	279,576	272,614	271,335	256,333	243,311	243,052	240,730	235,419	235,756	233,931
IL	724,665	467,401	374,588	332,986	272,990	267,135	267,319	263,565	261,495	256,144	249,211	247,118	245,231	244,040	240,113
IN	830,119	507,793	416,088	375,174	367,665	346,034	341,438	320,864	318,902	288,350	282,709	281,817	278,010	274,388	272,232
IA	169,040	149,965	133,422	129,273	127,692	126,858	114,764	104,689	104,763	104,889	104,183	103,184	102,990	102,653	103,185
KS	59,567	60,991	61,847	53,815	58,933	48,304	44,936	44,709	42,266	41,809	41,750	41,674	41,591	41,142	39,865
KY	718,983	294,697	282,337	274,776	264,347	253,006	243,697	227,353	216,029	213,447	202,339	194,765	187,421	186,709	168,279
LA	100,280	99,273	95,750	95,750	95,750	95,750	95,340	95,340	95,340	95,340	95,340	95,340	93,771	93,771	90,655
ME	17,100	17,100	16,277	16,306	16,306	16,306	16,306	11,763	9,998	9,698	6,798	3,933	1,980	2,127	2,127
MD	51,644	51,658	51,658	51,658	44,974	43,555	42,973	43,007	42,896	40,230	39,467	39,565	39,282	39,186	34,311
MA	17,265	18,192	18,192	18,192	9,954	9,953	9,953	9,953	9,953	9,953	9,953	9,953	9,940	9,940	9,940
MI	288,082	272,635	256,807	246,635	213,198	211,069	209,072	206,513	207,611	207,688	206,963	205,007	205,906	205,917	203,517
MN	54,019	54,217	50,924	48,668	48,047	48,117	48,117	48,113	48,317	48,274	48,264	48,743	48,274	47,808	47,306
MS	46,559	46,559	46,559	46,559	46,150	46,135	46,143	46,140	46,559	46,461	46,472	46,460	46,465	45,687	45,636
MO	445,643	248,353	223,797	221,589	218,297	217,311	210,831	198,137	195,095	194,323	194,029	193,878	193,167	197,487	202,781
NE	120,790	119,894	119,367	117,763	113,884	106,859	79,097	75,357	74,253	73,744	73,610	72,734	72,444	72,444	71,530
NH	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823	7,823
NJ	38,141	38,141	25,786	25,688	25,147	19,240	19,240	19,240	19,078	19,469	19,469	19,378	19,307	19,307	19,307
NY	145,482	145,482	145,482	144,837	144,945	144,508	143,583	143,464	129,447	120,511	119,829	118,609	110,040	109,768	100,114
NC	126,959	116,105	124,212	119,154	114,972	111,719	111,569	107,203	106,016	105,916	100,144	101,670	99,471	98,548	96,844
ND	77,383	75,748	75,748	75,675	75,675	75,675	44,229	44,229	44,229	43,144	43,144	43,144	43,100	43,100	43,100
OH	946,672	564,836	459,346	434,213	406,457	361,166	329,412	301,076	292,565	290,058	263,389	248,316	243,743	240,220	228,386
OK	156,032	159,773	155,287	134,188	112,796	115,548	104,644	104,644	104,644	104,644	104,644	104,644	104,644	104,644	104,644
PA	967,093	846,489	413,029	367,639	351,629	318,683	305,736	290,153	285,259	277,030	241,953	234,846	231,259	230,820	224,224
RI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SC	149,619	142,423	146,806	144,465	140,106	139,380	137,867	136,653	128,450	122,156	121,620	119,331	118,908	118,643	114,563
SD	13,453	13,453	12,782	12,782	12,782	11,919	11,919	11,919	11,919	11,919	11,919	11,919	11,919	11,919	11,919
TN	596,992	244,526	130,745	128,848	127,323	127,180	127,180	126,188	126,187	126,330	126,151	123,283	121,993	109,883	108,972
TX	327,905	326,761	319,175	317,904	317,771	295,435	295,414	294,338	294,246	294,038	293,902	293,903	293,902	293,903	293,411
VT	351	351	351	351	351	351	351	351	351	351	351	351	351	351	351
VA	146,252	146,225	134,706	122,916	122,244	122,244	121,554	119,814	115,806	111,245	111,026	108,757	108,249	106,645	103,914
WV	588,392	208,559	188,135	170,963	148,949	143,292	141,357	131,943	126,186	125,069	122,866	120,442	119,232	116,186	114,165
WI	107,459	101,520	98,700	98,356	101,756	92,268	92,426	87,125	86,986	86,256	89,965	91,477	90,662	90,684	92,054

*Source: Integrated Planning Model run by EPA, 2010. See Appendix A for list and description of these IPM runs. Emissions have been rounded to the nearest ton. For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest SO_2 cost).

Table 1-4. 2014 SO_2 EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons).

	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State																
AL	335,967	322,362	306,933	257,312	230,817	176,783	171,088	167,586	166,413	166,146	160,520	146,477	103,618	101,322	83,830	70,655
AR	85,115	88,234	88,257	85,409	85,444	85,443	85,440	85,440	85,471	85,456	85,500	84,258	83,426	81,771	71,133	12,955
CT	6,141	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	3,366	3,366	3,366	3,279	2,860
DE	7,841	8,079	9,074	9,096	9,114	9,114	9,116	9,120	9,120	9,121	8,690	8,706	8,706	8,524	7,906	7,906
DC	176	176	177	177	177	177	177	177	177	177	179	177	177	177	177	177
FL	230,284	194,723	177,737	171,182	170,919	138,373	117,043	117,381	116,952	113,041	112,263	111,050	84,486	78,538	73,918	69,775
GA	552,053	173,257	165,553	135,977	136,844	133,563	133,346	131,652	129,218	116,733	107,461	101,239	95,120	91,506	85,579	66,893
IL	724,665	200,484	184,625	165,125	164,288	165,090	165,032	165,133	165,128	163,548	164,857	164,764	163,667	160,541	155,172	143,139
IN	830,119	804,425	478,464	432,781	351,997	343,820	328,129	325,582	312,579	290,932	287,151	284,471	259,408	241,634	227,254	189,715
IA	169,040	163,966	140,426	129,873	120,245	112,214	106,014	105,592	104,644	105,229	104,510	103,923	103,377	102,461	101,378	70,136
KS	59,567	65,125	64,354	55,834	48,971	49,130	49,058	47,206	46,551	45,973	45,694	45,557	45,096	32,897	30,687	24,316
KY	718,983	739,595	275,464	270,358	252,998	248,542	247,921	243,033	231,846	195,511	185,866	178,058	161,365	126,830	115,417	99,511
LA	100,280	94,866	94,866	94,867	94,933	94,933	94,933	94,933	94,952	94,952	94,951	94,951	94,951	94,532	82,250	35,711
ME	17,100	12,991	12,991	12,991	10,233	9,261	9,167	9,167	9,167	4,737	1,596	1,596	1,614	1,614	1,614	1,614
MD	51,644	45,037	45,307	45,310	45,315	45,296	45,298	45,298	45,302	45,302	45,326	45,331	45,342	41,724	41,505	40,269
MA	17,265	17,265	18,192	18,192	18,088	9,794	9,794	9,794	9,794	9,792	9,792	9,792	9,409	9,409	9,229	6,471
MI	288,082	275,961	254,380	253,322	246,264	216,119	213,931	210,814	210,186	209,109	208,361	207,278	204,634	176,901	162,980	115,797
MN	54,019	62,033	56,968	54,688	51,157	51,086	48,746	48,109	48,036	48,100	48,137	48,246	48,399	48,340	47,594	46,266
MS	46,559	48,276	46,298	46,882	46,189	46,147	46,246	46,559	46,559	46,559	46,559	46,559	45,687	45,403	42,735	17,415
MO	445,643	500,649	289,438	238,428	229,132	223,609	212,894	213,315	213,507	212,383	211,506	212,023	208,787	195,815	182,709	94,413
NE	120,790	115,695	119,247	113,044	88,485	77,709	74,013	73,103	73,070	72,597	71,540	71,124	70,532	69,112	45,402	32,604
NH	7,823	7,141	7,141	7,141	7,141	7,141	7,141	7,075	7,823	7,823	7,823	7,823	7,823	7,823	7,810	4,594
NJ	38,141	39,721	39,583	26,693	26,686	20,649	20,711	20,801	20,633	20,640	20,620	20,408	17,881	17,880	17,176	13,986
NY	145,482	142,762	141,614	142,656	141,729	137,090	135,360	131,533	119,236	118,192	114,146	113,574	109,958	100,464	69,530	63,119
NC	126,959	140,924	140,923	140,900	133,991	134,061	130,021	128,974	115,452	114,107	112,745	104,291	98,126	98,536	90,688	63,246
ND	77,383	80,320	75,758	75,758	57,992	44,238	44,238	44,238	44,236	44,233	43,147	43,144	43,144	34,749	34,704	33,536
OH	946,672	841,199	582,611	553,120	519,216	416,607	408,417	360,017	322,162	294,000	279,388	260,273	240,024	236,063	220,824	202,875
OK	156,032	165,773	165,774	125,850	110,863	110,863	110,863	110,863	110,928	110,928	110,922	110,922	110,922	108,996	109,139	26,385
PA	967,093	974,644	825,128	441,481	399,513	351,513	336,913	233,928	224,990	202,085	179,705	174,643	154,882	153,541	144,861	125,195
RI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SC	149,619	156,200	138,182	136,788	136,174	135,090	133,783	130,689	128,119	125,319	117,547	82,933	80,482	78,322	57,010	42,183
SD	13,453	13,459	13,458	13,459	12,788	12,788	12,788	12,066	11,513	11,047	11,046	11,044	11,044	11,044	11,044	2,592
TN	596,992	600,071	154,093	130,672	127,444	127,171	127,171	127,171	127,315	125,697	123,102	108,200	109,097	107,590	100,131	78,916
TX	327,905	373,978	369,800	369,021	368,499	368,112	345,840	345,856	345,723	345,278	342,660	343,326	340,570	337,658	309,256	143,341
VT	351	351	351	351	351	351	351	351	351	351	351	351	351	351	351	351
VA	146,252	136,831	133,900	133,525	110,471	110,002	108,977	107,564	107,294	105,985	102,708	92,542	74,914	65,380	54,111	44,761
WV	588,392	496,307	178,643	169,763	163,899	161,910	160,746	160,334	155,448	159,653	158,379	142,503	138,889	131,869	118,927	97,614
WI	107,459	117,397	111,279	107,783	108,244	107,403	97,496	96,133	94,401	92,357	91,623	89,262	88,288	86,707	80,561	63,992

*Source: Integrated Planning Model run by EPA, 2010. See Appendix A for list and description of these IPM runs. Emissions have been rounded to the nearest ton. For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest SO_2 cost).

Table 1-5. 2012 NO_x Ozone Season EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons).

Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State									
AL	29,937	30,004	30,005	29,904	29,562	29,562	29,537	29,439	29,185
AR	20,558	11,225	11,303	11,393	11,338	11,434	11,341	11,355	11,438
CT	3,438	3,418	3,418	3,418	3,418	3,418	3,418	3,422	3,426
DE	1,944	2,117	2,117	2,094	2,055	2,054	2,055	2,055	2,054
DC	391	393	393	393	394	394	394	393	394
FL	101,367	73,740	59,664	58,754	58,650	58,533	58,506	57,733	57,302
GA	35,194	33,320	33,343	33,177	33,151	32,956	32,956	32,956	32,831
IL	24,346	24,407	24,526	24,570	24,616	24,643	24,639	24,693	24,592
IN	50,923	50,081	48,632	47,708	47,317	46,697	46,558	46,024	45,801
IA	28,574	23,662	22,101	22,067	21,819	22,048	22,189	22,085	21,447
KS	30,594	14,542	14,838	14,929	14,225	14,287	14,122	14,002	13,963
KY	30,989	30,676	30,340	30,065	30,053	29,539	29,407	29,215	28,575
LA	21,672	17,204	17,103	16,997	17,017	17,075	17,107	17,110	17,112
ME	3,062	3,007	3,007	3,007	3,007	3,007	3,007	3,007	3,007
MD	14,134	14,130	14,130	14,098	13,993	13,893	13,895	13,879	13,897
MA	5,166	5,532	5,532	5,532	5,536	5,536	5,534	5,534	5,533
MI	29,583	29,667	29,694	29,702	29,733	29,589	28,640	28,386	28,326
MN	23,540	16,310	16,487	16,524	16,532	16,450	16,489	16,566	16,302
MS	16,883	8,498	8,236	8,236	8,238	8,238	8,238	8,238	8,249
MO	33,983	33,552	31,972	31,161	31,299	30,455	30,527	30,199	27,310
NE	23,125	15,020	15,020	14,700	14,508	14,508	14,508	14,508	14,510
NH	4,724	4,684	4,622	4,622	4,537	4,537	4,537	4,452	4,135
NJ	7,096	7,098	7,098	6,956	6,934	6,720	6,705	6,669	6,624
NY	15,836	15,795	15,805	15,811	15,792	15,770	15,858	15,849	15,760
NC	27,046	27,051	27,064	27,021	27,021	27,021	27,021	27,077	26,909
ND	26,038	21,465	20,891	20,529	20,529	20,529	20,025	19,509	19,311
OH	41,988	41,471	41,361	41,170	41,315	41,555	41,834	41,761	41,585
OK	43,180	27,194	27,119	26,831	26,693	26,468	26,364	26,300	26,125
PA	50,954	50,915	50,967	50,632	50,375	49,992	49,871	49,528	47,567
RI	116	116	117	117	117	117	117	117	117
SC	15,842	15,842	15,717	15,310	15,310	15,239	14,960	14,910	14,962
SD	6,796	5,960	5,960	5,960	4,957	4,957	4,592	4,599	4,578
TN	11,634	11,630	11,628	11,628	11,628	11,628	11,628	11,628	11,644
TX	78,868	66,964	66,930	66,863	66,551	65,779	65,814	65,814	65,817
VT	333	333	333	333	333	333	333	333	333
VA	17,622	17,603	17,601	17,594	17,575	17,553	17,485	17,442	16,770
WV	24,004	23,700	23,393	23,467	22,199	22,535	22,088	22,297	18,237
WI	21,220	16,924	16,826	16,775	16,623	16,649	16,644	16,471	16,376

*Source: Integrated Planning Model run by EPA, 2010. See Appendix A for list and description of these IPM runs. Emissions have been rounded to the nearest ton. For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

Table 1-6. 2014 NO_x Ozone Season EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons).

Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost perTon	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State										
AL	29,937	26,995	27,102	27,095	27,063	26,826	26,830	26,746	26,455	25,641
AR	20,558	21,667	11,925	11,930	11,661	11,502	11,213	11,326	11,474	11,556
CT	3,438	3,446	3,446	3,446	3,446	3,446	3,446	3,446	3,446	3,446
DE	1,944	2,367	2,565	2,567	2,565	2,565	2,566	2,564	2,565	2,561
DC	391	391	393	393	393	394	394	394	393	394
FL	101,367	94,686	71,803	57,578	56,977	56,527	55,991	52,694	43,185	37,490
GA	35,194	21,947	20,211	20,006	19,786	19,786	19,813	19,595	19,618	19,390
IL	24,346	24,167	24,243	24,365	24,415	24,398	24,355	24,233	24,255	24,337
IN	50,923	49,023	48,444	47,697	47,202	46,755	46,566	46,046	43,754	43,044
IA	28,574	29,960	24,828	23,165	23,048	23,080	22,585	22,004	21,742	20,410
KS	30,594	34,537	16,476	16,498	16,447	16,402	16,207	15,947	14,998	14,850
KY	30,989	29,927	29,940	29,622	29,254	29,259	29,011	28,973	28,756	28,062
LA	21,672	21,443	17,361	17,364	17,401	17,411	17,411	17,411	13,266	12,895
ME	3,062	3,061	2,991	2,991	2,991	2,855	2,690	2,615	2,621	2,637
MD	14,134	15,244	15,352	15,379	15,369	15,466	15,490	15,449	15,464	15,431
MA	5,166	5,323	5,542	5,542	5,542	5,543	5,555	5,574	5,567	5,550
MI	29,583	29,934	29,944	29,958	29,799	28,534	28,554	28,541	28,539	28,043
MN	23,540	24,072	16,584	16,765	16,947	16,706	16,816	16,837	16,787	16,502
MS	16,883	16,955	8,274	8,274	8,271	8,271	8,271	8,271	8,268	6,561
MO	33,983	36,185	35,880	34,838	34,456	34,006	33,900	32,805	26,189	24,308
NE	23,125	23,324	15,104	15,170	15,170	15,162	12,547	12,575	12,553	12,552
NH	4,724	4,724	4,693	4,693	4,622	4,622	4,622	4,537	4,537	4,537
NJ	7,096	10,470	10,376	10,335	10,317	10,164	10,121	10,115	10,116	8,547
NY	15,836	17,257	16,982	16,776	15,761	15,749	15,621	14,951	14,940	14,756
NC	27,046	27,018	26,949	26,918	27,008	26,958	26,820	26,793	26,776	25,957
ND	26,038	26,042	21,471	21,471	20,897	20,536	13,544	13,540	13,512	11,336
OH	41,988	44,753	44,032	43,328	43,372	41,984	41,906	41,549	41,458	37,715
OK	43,180	38,546	24,302	24,302	24,195	24,057	22,833	22,745	22,572	19,622
PA	50,954	53,263	52,820	52,208	52,154	52,357	52,132	51,949	51,950	40,883
RI	116	126	115	115	115	115	115	120	119	119
SC	15,842	15,730	15,542	15,269	15,200	15,083	14,871	14,793	14,744	14,655
SD	6,796	6,814	5,978	5,978	5,978	873	873	883	883	883
TN	11,634	12,021	12,017	11,997	11,739	11,722	11,739	11,739	11,747	11,719
TX	78,868	79,572	68,842	68,152	68,003	67,485	66,388	66,270	66,310	66,066
VT	333	333	333	333	333	333	333	333	333	333
VA	17,622	16,327	16,195	15,672	15,626	15,625	15,589	15,661	15,622	15,276
WV	24,004	24,339	24,251	23,919	21,381	21,554	20,261	20,286	19,024	18,899
WI	21,220	23,454	18,878	18,869	18,704	18,614	18,467	18,079	18,014	17,442

*Source: Integrated Planning Model run by EPA, 2010. See Appendix A for list and description of these IPM runs. Emissions have been rounded to the nearest ton. For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

Table 2-1. The Monitor Identification Number, State, County, and Average and Maximum Design Values (DV) in the 2012 Base Case for Annual $PM_{2.5}$*. Monitors Are in Order by Decreasing Average DV.

Monitor Identification Number	Receptor State	Receptor County	2012 Base Case Avg. DV	2012 Base Case Max. DV
420030064	Pennsylvania	Allegheny	18.9	19.31
010730023	Alabama	Jefferson	17.15	17.32
390618001	Ohio	Hamilton	16.93	17.27
390610014	Ohio	Hamilton	16.69	16.93
261630033	Michigan	Wayne	16.57	17.19
171191007	Illinois	Madison	16.56	16.85
390610042	Ohio	Hamilton	16.33	16.71
390350038	Ohio	Cuyahoga	16.26	16.95
390350060	Ohio	Cuyahoga	16.02	16.54
131210039	Georgia	Fulton	16.01	16.04
010732003	Alabama	Jefferson	15.99	16.35
180190006	Indiana	Clark	15.96	16.16
180970081	Indiana	Marion	15.93	16.24
180970083	Indiana	Marion	15.77	16.15
390617001	Ohio	Hamilton	15.65	16.03
171630010	Illinois	Saint Clair	15.48	15.63
390350045	Ohio	Cuyahoga	15.42	15.91
130210007	Georgia	Bibb	15.33	15.61
540391005	West Virginia	Kanawha	15.28	15.34
390170016	Ohio	Butler	15.25	15.61
421330008	Pennsylvania	York	15.25	15.93
540110006	West Virginia	Cabell	15.25	15.5
420070014	Pennsylvania	Beaver	15.23	15.3
211110043	Kentucky	Jefferson	15.19	15.41
420710007	Pennsylvania	Lancaster	15.18	16.01
180970078	Indiana	Marion	15.18	15.35
170310052	Illinois	Cook	15.16	15.42
420031301	Pennsylvania	Allegheny	15.13	15.42
130630091	Georgia	Clayton	15.07	15.29
180372001	Indiana	Dubois	15.07	15.57
261630015	Michigan	Wayne	15.05	15.55
390610043	Ohio	Hamilton	15.05	15.32
390610040	Ohio	Hamilton	15.03	15.4
391130032	Ohio	Montgomery	15.01	15.37
391510017	Ohio	Stark	14.99	15.4
360610056	New York	New York	14.98	15.74
390350065	Ohio	Cuyahoga	14.96	15.4
540030003	West Virginia	Berkeley	14.95	15.2
540490006	West Virginia	Marion	14.96	15.18
390811001	Ohio	Jefferson	14.95	15.54
540090005	West Virginia	Brooke	14.95	15.22
211110044	Kentucky	Jefferson	14.93	15.09
170316005	Illinois	Cook	14.92	15.48
482011035	Texas	Harris	14.74	15.14
170313301	Illinois	Cook	14.73	15.06
390350027	Ohio	Cuyahoga	14.5	15.13
540291004	West Virginia	Hancock	14.34	15.15

*For details see section IV.C of the preamble.

Table 2-2. The Monitor Identification Number, State, County, and Average and Maximum Design Values (DV) in the 2012 Base Case for Daily $PM_{2.5}$*. Monitors Are in Order by Decreasing Average DV.

Monitor Identification Number	Receptor State	Receptor County	2012 Base Case Avg. DV	2012 Base Case Max. DV
420030064	Pennsylvania	Allegheny	58.8	62.3
261630033	Michigan	Wayne	42.1	42.6
390350038	Ohio	Cuyahoga	41.2	44
420030093	Pennsylvania	Allegheny	41.1	46.2
170311016	Illinois	Cook	41	44.1
261630016	Michigan	Wayne	40.6	43
180970043	Indiana	Marion	40.5	42
390170003	Ohio	Butler	40.3	42.3
180970066	Indiana	Marion	40.3	41.8
420210011	Pennsylvania	Cambria	40.3	40.7
180970081	Indiana	Marion	40.1	41.1
010730023	Alabama	Jefferson	40	40.7
171191007	Illinois	Madison	40	40.6
540090011	West Virginia	Brooke	39.9	40.8
390618001	Ohio	Hamilton	39.6	40.3
390350060	Ohio	Cuyahoga	39.4	42.8
171190023	Illinois	Madison	39.4	40.2
180970083	Indiana	Marion	39	39.3
550790043	Wisconsin	Milwaukee	38.8	39.7
180970078	Indiana	Marion	38.7	39.7
261630019	Michigan	Wayne	38.6	39.1
170310052	Illinois	Cook	38.5	39.7
261630015	Michigan	Wayne	38.5	39.1
390170017	Ohio	Butler	38.5	38.5
261470005	Michigan	St. Clair	38.4	39.4
170313301	Illinois	Cook	38.2	41
340172002	New Jersey	Hudson	38.2	38.2
180190006	Indiana	Clark	38.1	40.2
261610008	Michigan	Washtenaw	38.1	39.8
010732003	Alabama	Jefferson	38.1	38.9
170313103	Illinois	Cook	38.1	38.7
420031008	Pennsylvania	Allegheny	38	39.3
390610006	Ohio	Hamilton	38	38
261250001	Michigan	Oakland	37.9	38.4
390171004	Ohio	Butler	37.8	38.6
420710007	Pennsylvania	Lancaster	37.7	40.1
420070014	Pennsylvania	Beaver	37.7	39.1
550790010	Wisconsin	Milwaukee	37.7	39
390617001	Ohio	Hamilton	37.7	38.1
390610014	Ohio	Hamilton	37.5	38.5
390170016	Ohio	Butler	37.5	37.8
170316005	Illinois	Cook	37.4	39.8
180890022	Indiana	Lake	37.3	42.1
180970079	Indiana	Marion	37.2	38.3
171192009	Illinois	Madison	37.2	38.2
390610042	Ohio	Hamilton	37.2	38
360610056	New York	New York	37.1	38
420030116	Pennsylvania	Allegheny	37.1	37.1
261150005	Michigan	Monroe	37	38
210590005	Kentucky	Daviess	37	37
550790099	Wisconsin	Milwaukee	36.8	37.7
191630019	Iowa	Scott	36.8	36.8
340390004	New Jersey	Union	36.7	37.2
420031301	Pennsylvania	Allegheny	36.6	38.6
471251009	Tennessee	Montgomery	36.6	37.9
390490024	Ohio	Franklin	36.6	37.6

390811001	Ohio	Jefferson	36.5	39.9
390350065	Ohio	Cuyahoga	36.5	38.9
180372001	Indiana	Dubois	36.5	38
171193007	Illinois	Madison	36.5	37.3
295100087	Missouri	St. Louis City	36.4	36.9
550790026	Wisconsin	Milwaukee	36.3	40.1
180890026	Indiana	Lake	36.3	39.3
391130032	Ohio	Montgomery	36.3	38.5
245100040	Maryland	Baltimore (City)	36.3	38.3
170310076	Illinois	Cook	36.3	37.3
180970042	Indiana	Marion	36.3	37.2
261630036	Michigan	Wayne	36.3	36.9
360610128	New York	New York	36.2	38
390490025	Ohio	Franklin	36.1	36.4
390350045	Ohio	Cuyahoga	36	39
211110044	Kentucky	Jefferson	36	36.5
390610043	Ohio	Hamilton	36	36.4
295100007	Missouri	St. Louis City	36	36.3
421330008	Pennsylvania	York	35.9	38.8
181570008	Indiana	Tippecanoe	35.9	36.9
180830004	Indiana	Knox	35.9	36.5
420030008	Pennsylvania	Allegheny	35.9	36.3
360050080	New York	Bronx	35.9	36.2
390610040	Ohio	Hamilton	35.8	36.8
211110043	Kentucky	Jefferson	35.8	36.4
420430401	Pennsylvania	Dauphin	35.7	37.1
170310057	Illinois	Cook	35.7	37
090091123	Connecticut	New Haven	35.7	36.6
290990012	Missouri	Jefferson	35.7	36.5
340171003	New Jersey	Hudson	35.7	36.1
170312001	Illinois	Cook	35.6	38.2
391530017	Ohio	Summit	35.6	37.2
211110048	Kentucky	Jefferson	35.6	36.4
291831002	Missouri	Saint Charles	35.5	37.1
245100049	Maryland	Baltimore (City)	35.5	35.5
261630001	Michigan	Wayne	35.4	37.8
360610062	New York	New York	35.3	37
420410101	Pennsylvania	Cumberland	35.3	37
390810017	Ohio	Jefferson	35.3	36.8
171630010	Illinois	Saint Clair	35.3	35.9
295100085	Missouri	St. Louis City	35.3	35.7
181670023	Indiana	Vigo	35.1	36.5
550250047	Wisconsin	Dane	35.1	36.1
471650007	Tennessee	Sumner	35.1	36
171971002	Illinois	Will	35.1	35.8
210290006	Kentucky	Bullitt	35	36.3
170310022	Illinois	Cook	34.9	36.6
551330027	Wisconsin	Waukesha	34.9	35.6
550790059	Wisconsin	Milwaukee	34.8	36.3
245100035	Maryland	Baltimore (City)	34.7	35.5
390350027	Ohio	Cuyahoga	34.5	36.6
191390015	Iowa	Muscatine	34.5	36
211451004	Kentucky	McCracken	34.4	36.8
420030095	Pennsylvania	Allegheny	34.3	36.6
180431004	Indiana	Floyd	34.3	35.7
391130031	Ohio	Montgomery	34.3	35.6
391351001	Ohio	Preble	34.3	35.5
390950024	Ohio	Lucas	34.2	36.5
360610079	New York	New York	34.2	36.4
390990014	Ohio	Mahoning	34.2	35.8
170310050	Illinois	Cook	34.1	35.8
110010041	District Of Columbia	District Of Columbia	34	35.6
540090005	West Virginia	Brooke	33.9	36.1
391550007	Ohio	Trumbull	33.9	35.6

421255001	Pennsylvania	Washington	33.9	35.5
420033007	Pennsylvania	Allegheny	33.8	38.5
240031003	Maryland	Anne Arundel	33.8	36.7
180390003	Indiana	Elkhart	33.8	35.6
212270007	Kentucky	Warren	33.7	36.3
390350034	Ohio	Cuyahoga	33.7	35.7
170314007	Illinois	Cook	33.6	35.7
390950026	Ohio	Lucas	33.6	35.6
110010042	District Of Columbia	District Of Columbia	33	35.6

*For details see section IV.C of the preamble.

Table 2-3. The Monitor Identification Number, State, County, and Average and Maximum Design Values (DV) in the 2012 Base Case for Ozone*. Monitors Are in Order by Decreasing Average DV.

Monitor Identification Number	Receptor State	Receptor County	2012 Base Case Avg. DV	2012 Base Case Max. DV
482010055	Texas	Harris	95.7	97.9
482010062	Texas	Harris	90.5	93.7
482011039	Texas	Harris	90.5	93.9
482010066	Texas	Harris	89.9	93.5
480391004	Texas	Brazoria	88.8	91
482010051	Texas	Harris	88.4	93.1
220330003	Louisiana	East Baton Rouge	87.8	91.6
361030002	New York	Suffolk	86.3	87.2
421010024	Pennsylvania	Philadelphia	85.3	86
361030009	New York	Suffolk	85.1	85.8
484391002	Texas	Tarrant	85.1	86.7
090011123	Connecticut	Fairfield	84.8	86.4
361192004	New York	Westchester	84.7	86.9
481130087	Texas	Dallas	84.6	85.6
090013007	Connecticut	Fairfield	84.5	86.4
131210055	Georgia	Fulton	84.4	86.5
482010029	Texas	Harris	84.4	85.6
484392003	Texas	Tarrant	84	85.2
482011050	Texas	Harris	83.9	86.5
482011015	Texas	Harris	83.7	90.3
482010024	Texas	Harris	83.3	87.1
090010017	Connecticut	Fairfield	83.1	85
090093002	Connecticut	New Haven	82.9	85.4
481130069	Texas	Dallas	82.9	85.8
482011035	Texas	Harris	82	90.3
420170012	Pennsylvania	Bucks	81.8	85.6
130890002	Georgia	DeKalb	81.6	85.6

*For details see section IV.C of the preamble.

Table 2-4. State-by-State Annual Sulfate, Nitrate, and Total Sulfate Base Case (2012) Nitrate Contributions ($\mu g/m^3$) from the Source Apportionment Air Quality Modeling for Three Monitor Locations.

	Sulfate Contributions	Sulfate Contributions	Sulfate Contributions	Nitrate Contributions	Nitrate Contributions	Nitrate Contributions	Total Nitrate and Sulfate Contributions	Total Nitrate and Sulfate Contributions	Total Nitrate and Sulfate Contributions
Monitor Identification Number	420030064	010730023	390618001	420030064	010730023	390618001	420030064	010730023	390618001
Receptor state	Pennsylvania	Alabama	Ohio	Pennsylvania	Alabama	Ohio	Pennsylvania	Alabama	Ohio
Receptor county	Allegheny	Jefferson	Hamilton	Allegheny	Jefferson	Hamilton	Allegheny	Jefferson	Hamilton
2012 Average Design Value	18.9	17.15	16.93	18.9	17.15	16.93	18.9	17.15	16.93
2012 Max Design Value	19.31	17.33	17.27	19.31	17.33	17.27	19.31	17.33	17.27
AL	0.04683	3.34916	0.12069	0.00103	0.14064	0.00729	0.04786	3.4898	0.12798
AR	0.01496	0.03185	0.02805	0.00063	0.00239	0.00459	0.01559	0.03424	0.03264
CT	0.00567	0.00647	0.00199	0.00047	0.00002	0.00013	0.00614	0.00649	0.00212
DE	0.01494	0.01048	0.00598	0.00071	0.00002	0.00027	0.01565	0.0105	0.00625
DC	0.00378	0.00576	0.00132	0.000631	0	0.000135	0.004411	0.00576	0.001455
FL	0.01695	0.14907	0.02682	0.0001578	0.002796	0.0009447	0.0171078	0.151866	0.0277647
GA	0.0746	0.604	0.13309	0.00079	0.01591	0.00324	0.07539	0.61991	0.13633
IL	0.23684	0.17937	0.45752	0.0295	0.0027	0.10945	0.26634	0.18207	0.56697
IN	0.37109	0.27861	1.0546	0.03905	0.00516	0.22876	0.41014	0.28377	1.28336
IA	0.04963	0.04688	0.08549	0.00686	0.00108	0.02254	0.05649	0.04796	0.10803
KS	0.0117	0.0222	0.01542	0.00229	0.00111	0.00756	0.01399	0.02331	0.02298
KY	0.26582	0.27703	0.83593	0.01286	0.00655	0.15574	0.27868	0.28358	0.99167
LA	0.01646	0.11358	0.03452	0.000237	0.006266	0.00135	0.016697	0.119846	0.03587
ME	0.00515	0.00619	0.00199	0.000158	0	0.000135	0.005308	0.00619	0.002125
MD	0.11165	0.02694	0.03033	0.01333	0.00017	0.00202	0.12498	0.02711	0.03235
MA	0.0095	0.00762	0.00284	0.00047	0	0.00013	0.00997	0.00762	0.00297
MI	0.25694	0.05659	0.29653	0.06571	0.00077	0.06181	0.32265	0.05736	0.35834
MN	0.01941	0.01771	0.03074	0.00907	0.0008	0.02186	0.02848	0.01851	0.0526
MS	0.00832	0.06883	0.01287	0.000316	0.0067	0.001889	0.008636	0.07553	0.014759
MO	0.10199	0.13229	0.21346	0.00497	0.0028	0.02146	0.10696	0.13509	0.23492
NE	0.01673	0.02606	0.02391	0.00237	0.00067	0.0058	0.0191	0.02673	0.02971
NH	0.00454	0.00576	0.0015	0.00016	0	0.00013	0.0047	0.00576	0.00163
NJ	0.02134	0.01262	0.00742	0.00331	0.00007	0.00054	0.02465	0.01269	0.00796
NY	0.17904	0.02679	0.08853	0.01333	0.00017	0.00769	0.19237	0.02696	0.09622
NC	0.05464	0.08477	0.04331	0.00142	0.00243	0.00229	0.05606	0.0872	0.0456
ND	0.0144	0.01501	0.01718	0.00197	0.00024	0.00499	0.01637	0.01525	0.02217
OH	1.10677	0.24356	2.08337	0.15541	0.00205	0.41054	1.26218	0.24561	2.49391
OK	0.01462	0.02609	0.02227	0.00126	0.00106	0.00418	0.01588	0.02715	0.02645
PA	2.08412	0.14717	0.49364	0.27437	0.0006	0.04548	2.35849	0.14777	0.53912
RI	0.00395	0.00576	0.00136	0.000079	0	0	0.004029	0.00576	0.00136
SC	0.02808	0.11088	0.02959	0.000316	0.001976	0.000945	0.028396	0.112856	0.030535
SD	0.00611	0.00928	0.00519	0.00103	0.00019	0.00283	0.00714	0.00947	0.00802
TN	0.16653	0.32083	0.47539	0.00347	0.0153	0.02335	0.17	0.33613	0.49874
TX	0.02337	0.05818	0.0434	0.00118	0.004	0.00445	0.02455	0.06218	0.04785
VT	0.003925	0.005756	0.001496	0.00016	0	0.00013	0.004085	0.005756	0.001626
VA	0.11668	0.06094	0.06427	0.01002	0.00063	0.00378	0.1267	0.06157	0.06805
WV	0.93538	0.12382	0.3372	0.04631	0.00048	0.02308	0.98169	0.1243	0.36028
WI	0.05536	0.03085	0.08572	0.01381	0.00051	0.03293	0.06917	0.03136	0.11865

Table 2-5. State-by-State Emissions* (Tons per Year) of NO_x and SO_2 for 2012 and 2014 for the EGU Sector and "All Other" Sectors.

	NO_x	NO_x	NO_x	NO_x	SO_2	SO_2	SO_2	SO_2
Year	**2012**	**2012**	**2014**	**2014**	**2012**	**2012**	**2014**	**2014**
State	**EGU**	**All Other**	**EGU**	**All Other**	**EGU**	**All Other**	**EGU**	**All Other**
Alabama	121,809	242,362	118,420	223,318	335,734	126,563	322,130	124,923
Arkansas	43,222	156,869	44,792	144,831	85,068	42,192	88,187	41,527
Connecticut	2,770	72,030	2,821	64,263	5,493	21,900	5,512	21,911
Delaware	4,639	35,048	4,513	32,840	7,841	31,129	7,806	31,829
District of Columbia	2	9,801	1	8,567	0	2,296	0	2,291
Florida	195,673	667,841	180,801	614,798	228,360	239,138	192,903	245,755
Georgia	78,011	335,769	48,091	301,560	552,007	124,187	173,210	124,407
Illinois	77,920	465,037	80,228	423,448	724,657	141,739	200,475	140,120
Indiana	203,107	302,021	200,899	273,960	829,988	156,637	804,294	155,828
Iowa	66,316	185,405	68,146	168,546	169,039	81,915	163,966	80,481
Kansas	70,823	224,189	78,920	210,909	59,567	50,348	65,125	49,893
Kentucky	149,179	197,220	148,509	177,282	718,980	62,269	739,592	59,163
Louisiana	44,773	542,139	45,457	519,591	100,239	241,492	94,824	233,047
Maine	3,139	61,421	2,535	57,368	15,759	32,701	11,650	32,990
Maryland	17,376	164,356	19,990	151,990	49,078	93,594	42,635	93,474
Massachusetts	6,312	185,598	6,619	175,476	16,299	75,358	16,299	77,591
Michigan	96,874	382,081	97,455	347,514	287,807	127,325	275,637	127,237
Minnesota	51,285	301,410	51,859	278,419	53,596	42,402	61,447	41,557
Mississippi	37,517	185,284	37,142	169,490	46,432	34,734	48,149	33,928
Missouri	77,571	276,514	82,979	250,333	445,643	125,118	500,649	122,824
Nebraska	52,820	141,413	52,970	129,441	120,790	37,131	115,695	36,377
New Hampshire	2,514	41,552	2,515	37,368	7,290	10,893	6,608	10,869
New Jersey	15,987	204,424	16,268	187,739	37,746	43,581	37,669	44,917
New York	25,755	397,827	28,350	365,814	144,074	197,743	141,354	196,340
North Carolina	61,643	334,211	61,747	312,270	126,620	138,620	140,585	142,595
North Dakota	59,547	76,563	59,556	70,696	77,383	16,338	80,320	16,087
Ohio	159,627	393,318	164,945	353,916	946,667	129,826	841,194	128,212
Oklahoma	86,858	282,309	81,122	266,668	156,032	45,759	165,773	45,496
Pennsylvania	193,032	373,386	196,151	339,481	966,136	153,576	972,977	149,899
Rhode Island	221	20,718	281	19,303	0	9,069	0	9,323
South Carolina	47,762	191,141	47,512	176,993	149,515	85,331	156,096	87,033
South Dakota	15,493	51,658	15,514	46,854	13,453	12,695	13,459	12,654
Tennessee	68,425	270,741	68,779	243,104	596,987	112,196	600,066	111,581
Texas	159,738	1,183,581	166,177	1,092,176	327,873	312,809	373,950	304,712
Vermont	0	17,790	0	15,713	0	6,432	0	6,439
Virginia	36,036	306,352	32,115	282,887	145,452	118,511	135,741	119,017
West Virginia	102,725	104,690	100,103	97,605	588,392	57,254	496,307	56,910
Wisconsin	49,351	208,195	53,774	187,970	107,365	74,466	117,253	74,209

*see section IV.C of the preamble for more information about these emissions.

Table 2-6. Fraction Reduction* of EGU NO_x Emissions Relative to the 2012 Base Case EGU Emissions from IPM for Each State at Various Pollution Control Marginal Costs per Ton of Reduction in 2012.

Year	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$750	$1,000	$1,250	$1,500
State						
AL	0.0000	0.4307	0.4312	0.4312	0.4314	0.4319
AR	0.0000	0.4538	0.4545	0.4525	0.4495	0.4503
CT	0.0000	0.0012	0.0012	0.0006	0.0006	0.0006
DE	0.0000	-0.0530	-0.0497	-0.0105	-0.0104	-0.0104
DC	0.0000	-0.0049	-0.0049	-0.0059	-0.0060	-0.0060
FL	0.0000	0.3171	0.4468	0.4486	0.4529	0.4534
GA	0.0000	0.0283	0.0280	0.0275	0.0274	0.0303
IL	0.0000	0.2675	0.2662	0.2676	0.2675	0.2666
IN	0.0000	0.4263	0.4276	0.4307	0.4331	0.4402
IA	0.0000	0.1816	0.2248	0.2310	0.2346	0.2344
KS	0.0000	0.5347	0.5235	0.5261	0.5320	0.5354
KY	0.0000	0.5048	0.5061	0.5104	0.5137	0.5151
LA	0.0000	0.1944	0.1943	0.1967	0.1979	0.1981
ME	0.0000	0.0257	0.0345	0.0393	0.0393	0.0393
MD	0.0000	-0.0018	-0.0018	-0.0020	-0.0021	-0.0021
MA	0.0000	-0.0320	-0.0320	-0.0320	-0.0320	-0.0319
MI	0.0000	0.3100	0.3099	0.3097	0.3093	0.3095
MN	0.0000	0.3126	0.3117	0.3082	0.3052	0.3053
MS	0.0000	0.4935	0.4931	0.5026	0.5075	0.5075
MO	0.0000	0.0119	0.0469	0.0671	0.0930	0.1126
NE	0.0000	0.3498	0.3498	0.3498	0.3519	0.3579
NH	0.0000	0.0036	0.0036	0.0092	0.0092	0.0092
NJ	0.0000	0.1808	0.1808	0.1799	0.1793	0.1869
NY	0.0000	0.0022	0.0033	0.0040	0.0042	0.0048
NC	0.0000	0.0015	0.0015	0.0015	0.0015	0.0004
ND	0.0000	0.1756	0.1756	0.1835	0.1852	0.2036
OH	0.0000	0.3758	0.3763	0.3781	0.3830	0.3821
OK	0.0000	0.4054	0.4062	0.4062	0.4073	0.4080
PA	0.0000	0.4008	0.4055	0.4047	0.4066	0.4113
RI	0.0000	-0.0223	-0.0223	-0.0256	-0.0256	-0.0256
SC	0.0000	0.2412	0.2412	0.2423	0.2512	0.2509
SD	0.0000	0.1231	0.1231	0.1822	0.1855	0.1889
TN	0.0000	0.5843	0.5844	0.5844	0.5844	0.5844
TX	0.0000	0.1571	0.1575	0.1574	0.1574	0.1594
VT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	0.0000	0.0099	0.0099	0.0099	0.0099	0.0097
WV	0.0000	0.4536	0.4549	0.4631	0.4670	0.4679
WI	0.0000	0.1870	0.1977	0.1984	0.2049	0.2133

*Negative reduction fractions indicate states and marginal cost levels where there are modeled emissions increases over the 2012 base case emissions level.

Table 2-7. Fraction Reduction* of EGU NO_x Emissions Relative to the 2012 Base Case EGU Emissions from IPM for Each State at Various Pollution Control Marginal Costs per Ton of Reduction in 2014.

Year	2012	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500
State							
AL	0.0000	0.0277	0.4908	0.4904	0.4910	0.4906	0.4921
AR	0.0000	-0.0362	0.4251	0.4248	0.4242	0.4314	0.4317
CT	0.0000	-0.0064	-0.0085	-0.0085	-0.0077	-0.0068	-0.0058
DE	0.0000	-0.2357	-0.2850	-0.2848	-0.2448	-0.2443	-0.2440
DC	0.0000	0.0003	-0.0047	-0.0047	-0.0056	-0.0057	-0.0058
FL	0.0000	0.0730	0.3466	0.4600	0.4636	0.4649	0.4665
GA	0.0000	0.3827	0.4153	0.4205	0.4204	0.4201	0.4229
IL	0.0000	-0.0295	0.2776	0.2802	0.2816	0.2812	0.2822
IN	0.0000	0.0109	0.4373	0.4401	0.4399	0.4420	0.4399
IA	0.0000	-0.0276	0.1560	0.2055	0.2144	0.2188	0.2420
KS	0.0000	-0.1143	0.4669	0.4653	0.4716	0.4739	0.4934
KY	0.0000	0.0045	0.5145	0.5161	0.5182	0.5195	0.5202
LA	0.0000	-0.0155	0.1704	0.1699	0.1688	0.1686	0.1686
ME	0.0000	0.0744	0.0999	0.1131	0.1742	0.2177	0.2177
MD	0.0000	-0.0874	-0.0936	-0.0936	-0.0939	-0.0948	-0.0948
MA	0.0000	-0.0249	-0.0547	-0.0547	-0.0547	-0.0529	-0.0523
MI	0.0000	-0.0074	0.3048	0.3065	0.3096	0.3097	0.3116
MN	0.0000	-0.0279	0.2926	0.2878	0.2904	0.2905	0.2922
MS	0.0000	0.0099	0.5061	0.5061	0.5061	0.5061	0.5061
MO	0.0000	-0.0697	-0.0566	-0.0351	-0.0294	0.0663	0.2124
NE	0.0000	-0.0028	0.3486	0.3473	0.3484	0.4642	0.4644
NH	0.0000	-0.0001	0.0028	0.0028	0.0028	0.0028	0.0092
NJ	0.0000	-0.3979	-0.2108	-0.2107	-0.2108	-0.2055	-0.2053
NY	0.0000	-0.0768	-0.0484	0.0242	0.0272	0.0325	0.0665
NC	0.0000	-0.0017	-0.0005	0.0034	0.0029	0.0022	0.0028
ND	0.0000	-0.0002	0.1754	0.1754	0.1816	0.4658	0.4719
OH	0.0000	-0.0333	0.3510	0.3538	0.3570	0.3613	0.3884
OK	0.0000	0.0666	0.4242	0.4233	0.4228	0.4227	0.4235
PA	0.0000	-0.0318	0.3798	0.3809	0.3815	0.3825	0.3838
RI	0.0000	-0.2174	-0.1264	-0.1264	-0.1264	-0.1264	-0.1264
SC	0.0000	0.0052	0.2506	0.2571	0.2581	0.2586	0.2582
SD	0.0000	-0.0014	0.1218	0.1218	0.8745	0.8745	0.8747
TN	0.0000	-0.0051	0.5798	0.5798	0.5798	0.5798	0.5814
TX	0.0000	-0.0402	0.0896	0.0947	0.0959	0.1112	0.1115
VT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	0.0000	0.0879	0.1000	0.1000	0.0954	0.0928	0.1013
WV	0.0000	0.0255	0.4731	0.4751	0.4776	0.4788	0.5189
WI	0.0000	-0.0929	0.1119	0.1109	0.1222	0.1276	0.1375

*Negative reduction fractions indicate states and marginal cost levels where there are modeled emissions increases over the 2012 base case emissions level.

Table 2-8. Fraction Reduction* of EGU SO_2 Emissions Relative to the 2012 Base Case EGU Emissions from IPM for Each State at Various Pollution Control Marginal Costs per Ton of Reduction in 2012.

	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State															
AL	0.0000	0.0653	0.1810	0.2705	0.4081	0.4442	0.4426	0.4445	0.4959	0.4982	0.5111	0.5172	0.5361	0.5368	0.5381
AR	0.0000	-0.0002	0.0061	0.0047	0.0039	0.0069	0.0285	0.0303	0.0303	0.0292	0.0287	0.0285	0.0286	0.0279	0.0242
CT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0020	-0.0031	-0.0031	-0.0031	-0.0031
DE	0.0000	-0.1353	-0.1381	-0.1380	-0.1376	-0.1368	-0.1367	-0.1356	-0.1355	-0.1351	-0.1351	-0.1349	-0.1348	-0.1348	-0.1326
DC	0.0000	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0152	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058
FL	0.0000	0.1053	0.2497	0.2362	0.3706	0.4664	0.4655	0.4704	0.4692	0.5013	0.5114	0.5138	0.5255	0.5684	0.5720
GA	0.0000	0.0051	0.4979	0.4995	0.5020	0.4936	0.5062	0.5085	0.5357	0.5593	0.5597	0.5639	0.5736	0.5729	0.5763
IL	0.0000	0.3550	0.4831	0.5405	0.6233	0.6314	0.6311	0.6363	0.6392	0.6465	0.6561	0.6590	0.6616	0.6632	0.6687
IN	0.0000	0.3883	0.4988	0.5480	0.5571	0.5832	0.5887	0.6135	0.6158	0.6526	0.6594	0.6605	0.6651	0.6695	0.6721
IA	0.0000	0.1128	0.2107	0.2353	0.2446	0.2495	0.3211	0.3807	0.3802	0.3795	0.3837	0.3896	0.3907	0.3927	0.3896
KS	0.0000	-0.0239	-0.0383	0.0966	0.0106	0.1891	0.2456	0.2494	0.2904	0.2981	0.2991	0.3004	0.3018	0.3093	0.3308
KY	0.0000	0.5901	0.6073	0.6178	0.6323	0.6481	0.6611	0.6838	0.6995	0.7031	0.7186	0.7291	0.7393	0.7403	0.7659
LA	0.0000	0.0100	0.0452	0.0452	0.0452	0.0452	0.0493	0.0493	0.0493	0.0493	0.0493	0.0493	0.0649	0.0649	0.0960
ME	0.0000	0.0000	0.0481	0.0464	0.0464	0.0464	0.0464	0.3121	0.4153	0.4329	0.6025	0.7700	0.8842	0.8756	0.8756
MD	0.0000	-0.0003	-0.0003	-0.0003	0.1292	0.1566	0.1679	0.1672	0.1694	0.2210	0.2358	0.2339	0.2394	0.2412	0.3356
MA	0.0000	-0.0537	-0.0537	-0.0537	0.4235	0.4235	0.4235	0.4235	0.4235	0.4235	0.4235	0.4235	0.4243	0.4243	0.4243
MI	0.0000	0.0536	0.1086	0.1439	0.2599	0.2673	0.2743	0.2831	0.2793	0.2791	0.2816	0.2884	0.2853	0.2852	0.2935
MN	0.0000	-0.0037	0.0573	0.0991	0.1105	0.1093	0.1093	0.1093	0.1055	0.1063	0.1065	0.0977	0.1064	0.1150	0.1243
MS	0.0000	0.0000	0.0000	0.0000	0.0088	0.0091	0.0089	0.0090	0.0000	0.0021	0.0019	0.0021	0.0020	0.0187	0.0198
MO	0.0000	0.4427	0.4978	0.5028	0.5102	0.5124	0.5269	0.5554	0.5622	0.5640	0.5646	0.5649	0.5665	0.5569	0.5450
NE	0.0000	0.0074	0.0118	0.0251	0.0572	0.1153	0.3452	0.3761	0.3853	0.3895	0.3906	0.3979	0.4002	0.4002	0.4078
NH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NJ	0.0000	0.0000	0.3239	0.3265	0.3407	0.4956	0.4956	0.4956	0.4998	0.4896	0.4896	0.4919	0.4938	0.4938	0.4938
NY	0.0000	0.0000	0.0000	0.0044	0.0037	0.0067	0.0131	0.0139	0.1102	0.1716	0.1763	0.1847	0.2436	0.2455	0.3118
NC	0.0000	0.0855	0.0216	0.0615	0.0944	0.1200	0.1212	0.1556	0.1650	0.1657	0.2112	0.1992	0.2165	0.2238	0.2372
ND	0.0000	0.0211	0.0211	0.0221	0.0221	0.0221	0.4284	0.4284	0.4284	0.4425	0.4425	0.4425	0.4430	0.4430	0.4430
OH	0.0000	0.4033	0.5148	0.5413	0.5706	0.6185	0.6520	0.6820	0.6910	0.6936	0.7218	0.7377	0.7425	0.7462	0.7587
OK	0.0000	-0.0240	0.0048	0.1400	0.2771	0.2595	0.3293	0.3293	0.3293	0.3293	0.3293	0.3293	0.3293	0.3293	0.3293
PA	0.0000	0.1247	0.5729	0.6199	0.6364	0.6705	0.6839	0.7000	0.7050	0.7135	0.7498	0.7572	0.7609	0.7613	0.7681
RI	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SC	0.0000	0.0481	0.0188	0.0344	0.0636	0.0684	0.0785	0.0867	0.1415	0.1836	0.1871	0.2024	0.2053	0.2070	0.2343
SD	0.0000	0.0000	0.0499	0.0499	0.0499	0.1140	0.1140	0.1140	0.1140	0.1140	0.1140	0.1140	0.1140	0.1140	0.1140
TN	0.0000	0.5904	0.7810	0.7842	0.7867	0.7870	0.7870	0.7886	0.7886	0.7884	0.7887	0.7935	0.7957	0.8159	0.8175
TX	0.0000	0.0035	0.0266	0.0305	0.0309	0.0990	0.0991	0.1024	0.1027	0.1033	0.1037	0.1037	0.1037	0.1037	0.1052
VT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	0.0000	0.0002	0.0789	0.1596	0.1642	0.1642	0.1689	0.1808	0.2082	0.2394	0.2409	0.2564	0.2598	0.2708	0.2895
WV	0.0000	0.6455	0.6803	0.7094	0.7469	0.7565	0.7598	0.7758	0.7855	0.7874	0.7912	0.7953	0.7974	0.8025	0.8060
WI	0.0000	0.0553	0.0815	0.0847	0.0531	0.1414	0.1399	0.1892	0.1905	0.1973	0.1628	0.1487	0.1563	0.1561	0.1434

*Negative reduction fractions indicate states and marginal cost levels where there are modeled emissions increases over the 2012 base case emissions level.

Table 2-9. Fraction Reduction* of EGU SO_2 Emissions Relative to the 2012 Base Case EGU Emissions from IPM for Each State at Various Pollution Control Marginal Costs per Ton of Reduction in 2014.

	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State																
AL	0.0000	0.0405	0.0864	0.2341	0.3130	0.4738	0.4908	0.5012	0.5047	0.5055	0.5222	0.5640	0.6916	0.6984	0.7505	0.7897
AR	0.0000	-0.0366	-0.0369	-0.0035	-0.0039	-0.0038	-0.0038	-0.0038	-0.0042	-0.0040	-0.0045	0.0101	0.0198	0.0393	0.1643	0.8478
CT	0.0000	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	0.4518	0.4518	0.4518	0.4660	0.5343
DE	0.0000	-0.0304	-0.1573	-0.1601	-0.1624	-0.1624	-0.1626	-0.1632	-0.1632	-0.1632	-0.1083	-0.1103	-0.1103	-0.0871	-0.0083	-0.0083
DC	0.0000	0.0000	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058	-0.0152	-0.0058	-0.0058	-0.0058	-0.0058	-0.0058
FL	0.0000	0.1544	0.2282	0.2566	0.2578	0.3991	0.4917	0.4903	0.4921	0.5091	0.5125	0.5178	0.6331	0.6590	0.6790	0.6970
GA	0.0000	0.6862	0.7001	0.7537	0.7521	0.7581	0.7585	0.7615	0.7659	0.7885	0.8053	0.8166	0.8277	0.8342	0.8450	0.8788
IL	0.0000	0.7233	0.7452	0.7721	0.7733	0.7722	0.7723	0.7721	0.7721	0.7743	0.7725	0.7726	0.7741	0.7785	0.7859	0.8025
IN	0.0000	0.0310	0.4236	0.4787	0.5760	0.5858	0.6047	0.6078	0.6235	0.6495	0.6541	0.6573	0.6875	0.7089	0.7262	0.7715
IA	0.0000	0.0300	0.1693	0.2317	0.2887	0.3362	0.3728	0.3753	0.3809	0.3775	0.3817	0.3852	0.3884	0.3939	0.4003	0.5851
KS	0.0000	-0.0933	-0.0804	0.0627	0.1779	0.1752	0.1764	0.2075	0.2185	0.2282	0.2329	0.2352	0.2429	0.4477	0.4848	0.5918
KY	0.0000	-0.0287	0.6169	0.6240	0.6481	0.6543	0.6552	0.6620	0.6775	0.7281	0.7415	0.7523	0.7756	0.8236	0.8395	0.8616
LA	0.0000	0.0540	0.0540	0.0540	0.0533	0.0533	0.0533	0.0533	0.0531	0.0531	0.0531	0.0531	0.0531	0.0573	0.1798	0.6439
ME	0.0000	0.2403	0.2403	0.2403	0.4016	0.4584	0.4639	0.4639	0.4639	0.7230	0.9067	0.9067	0.9056	0.9056	0.9056	0.9056
MD	0.0000	0.1279	0.1227	0.1226	0.1225	0.1229	0.1229	0.1229	0.1228	0.1228	0.1223	0.1222	0.1220	0.1921	0.1963	0.2203
MA	0.0000	0.0000	-0.0537	-0.0537	-0.0477	0.4328	0.4328	0.4328	0.4328	0.4329	0.4329	0.4329	0.4551	0.4550	0.4654	0.6252
MI	0.0000	0.0421	0.1170	0.1207	0.1452	0.2498	0.2574	0.2682	0.2704	0.2741	0.2767	0.2805	0.2897	0.3859	0.4343	0.5980
MN	0.0000	-0.1484	-0.0546	-0.0124	0.0530	0.0543	0.0976	0.1094	0.1107	0.1096	0.1089	0.1069	0.1040	0.1051	0.1189	0.1435
MS	0.0000	-0.0369	0.0056	-0.0069	0.0080	0.0089	0.0067	0.0000	0.0000	0.0000	0.0000	0.0000	0.0187	0.0248	0.0821	0.6260
MO	0.0000	-0.1234	0.3505	0.4650	0.4858	0.4982	0.5223	0.5213	0.5209	0.5234	0.5254	0.5242	0.5315	0.5606	0.5900	0.7881
NE	0.0000	0.0422	0.0128	0.0641	0.2675	0.3567	0.3873	0.3948	0.3951	0.3990	0.4077	0.4112	0.4161	0.4278	0.6241	0.7301
NH	0.0000	0.0872	0.0872	0.0872	0.0872	0.0872	0.0872	0.0957	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	0.4128
NJ	0.0000	-0.0414	-0.0378	0.3002	0.3003	0.4586	0.4570	0.4546	0.4590	0.4589	0.4594	0.4649	0.5312	0.5312	0.5497	0.6333
NY	0.0000	0.0187	0.0266	0.0194	0.0258	0.0577	0.0696	0.0959	0.1804	0.1876	0.2154	0.2193	0.2442	0.3094	0.5221	0.5661
NC	0.0000	-0.1100	-0.1100	-0.1098	-0.0554	-0.0559	-0.0241	-0.0159	0.0906	0.1012	0.1120	0.1785	0.2271	0.2239	0.2857	0.5018
ND	0.0000	-0.0380	0.0210	0.0210	0.2506	0.4283	0.4283	0.4283	0.4283	0.4284	0.4424	0.4425	0.4425	0.5509	0.5515	0.5666
OH	0.0000	0.1114	0.3846	0.4157	0.4515	0.5599	0.5686	0.6197	0.6597	0.6894	0.7049	0.7251	0.7465	0.7506	0.7667	0.7857
OK	0.0000	-0.0624	-0.0624	0.1934	0.2895	0.2895	0.2895	0.2895	0.2891	0.2891	0.2891	0.2891	0.2891	0.3015	0.3005	0.8309
PA	0.0000	-0.0078	0.1468	0.5435	0.5869	0.6365	0.6516	0.7581	0.7674	0.7910	0.8142	0.8194	0.8398	0.8412	0.8502	0.8705
RI	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SC	0.0000	-0.0440	0.0764	0.0858	0.0899	0.0971	0.1058	0.1265	0.1437	0.1624	0.2144	0.4457	0.4621	0.4765	0.6190	0.7181
SD	0.0000	-0.0004	-0.0004	-0.0004	0.0494	0.0494	0.0494	0.1031	0.1442	0.1788	0.1789	0.1790	0.1790	0.1790	0.1790	0.8073
TN	0.0000	-0.0052	0.7419	0.7811	0.7865	0.7870	0.7870	0.7870	0.7867	0.7894	0.7938	0.8188	0.8173	0.8198	0.8323	0.8678
TX	0.0000	-0.1405	-0.1278	-0.1254	-0.1238	-0.1226	-0.0547	-0.0547	-0.0543	-0.0530	-0.0450	-0.0470	-0.0386	-0.0297	0.0569	0.5629
VT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	0.0000	0.0644	0.0845	0.0870	0.2447	0.2479	0.2549	0.2645	0.2664	0.2753	0.2977	0.3672	0.4878	0.5530	0.6300	0.6939
WV	0.0000	0.1565	0.6964	0.7115	0.7214	0.7248	0.7268	0.7275	0.7358	0.7287	0.7308	0.7578	0.7640	0.7759	0.7979	0.8341
WI	0.0000	-0.0925	-0.0355	-0.0030	-0.0073	0.0005	0.0927	0.1054	0.1215	0.1405	0.1474	0.1693	0.1784	0.1931	0.2503	0.4045

*Negative reduction fractions indicate states and marginal cost levels where there are modeled emissions increases over the 2012 base case emissions level.

Table 2-10. Fraction Reduction* of EGU NO_x Emissions Relative to the 2012 Base Case EGU Emissions from IPM for Each State at Various Pollution Control Marginal Costs per Ton of Reduction for Ozone Season in 2012.

Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State									
AL	0.0000	-0.0022	-0.0023	0.0011	0.0125	0.0125	0.0133	0.0166	0.0251
AR	0.0000	0.4540	0.4502	0.4458	0.4485	0.4438	0.4483	0.4477	0.4436
CT	0.0000	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056	0.0046	0.0035
DE	0.0000	-0.0888	-0.0888	-0.0767	-0.0567	-0.0566	-0.0567	-0.0567	-0.0565
DC	0.0000	-0.0054	-0.0049	-0.0057	-0.0058	-0.0058	-0.0059	-0.0049	-0.0063
FL	0.0000	0.2725	0.4114	0.4204	0.4214	0.4226	0.4228	0.4305	0.4347
GA	0.0000	0.0532	0.0526	0.0573	0.0580	0.0636	0.0636	0.0636	0.0671
IL	0.0000	-0.0025	-0.0074	-0.0092	-0.0111	-0.0122	-0.0120	-0.0143	-0.0101
IN	0.0000	0.0165	0.0450	0.0631	0.0708	0.0830	0.0857	0.0962	0.1006
IA	0.0000	0.1719	0.2266	0.2277	0.2364	0.2284	0.2234	0.2271	0.2494
KS	0.0000	0.5247	0.5150	0.5120	0.5350	0.5330	0.5384	0.5423	0.5436
KY	0.0000	0.0101	0.0209	0.0298	0.0302	0.0468	0.0511	0.0573	0.0779
LA	0.0000	0.2062	0.2108	0.2157	0.2148	0.2121	0.2107	0.2105	0.2104
ME	0.0000	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181
MD	0.0000	0.0002	0.0003	0.0025	0.0099	0.0170	0.0169	0.0180	0.0167
MA	0.0000	-0.0709	-0.0709	-0.0709	-0.0716	-0.0716	-0.0713	-0.0713	-0.0710
MI	0.0000	-0.0028	-0.0038	-0.0040	-0.0051	-0.0002	0.0319	0.0405	0.0425
MN	0.0000	0.3072	0.2996	0.2980	0.2977	0.3012	0.2996	0.2963	0.3075
MS	0.0000	0.4967	0.5122	0.5122	0.5121	0.5121	0.5120	0.5120	0.5114
MO	0.0000	0.0127	0.0592	0.0830	0.0790	0.1038	0.1017	0.1113	0.1964
NE	0.0000	0.3505	0.3505	0.3643	0.3726	0.3726	0.3726	0.3726	0.3725
NH	0.0000	0.0084	0.0216	0.0216	0.0396	0.0396	0.0396	0.0576	0.1247
NJ	0.0000	-0.0002	-0.0002	0.0197	0.0229	0.0530	0.0552	0.0603	0.0665
NY	0.0000	0.0026	0.0019	0.0016	0.0028	0.0041	-0.0014	-0.0008	0.0048
NC	0.0000	-0.0002	-0.0007	0.0009	0.0009	0.0009	0.0009	-0.0012	0.0051
ND	0.0000	0.1756	0.1977	0.2116	0.2116	0.2116	0.2310	0.2508	0.2584
OH	0.0000	0.0123	0.0149	0.0195	0.0160	0.0103	0.0037	0.0054	0.0096
OK	0.0000	0.3702	0.3720	0.3786	0.3818	0.3870	0.3894	0.3909	0.3950
PA	0.0000	0.0007	-0.0003	0.0063	0.0114	0.0189	0.0213	0.0280	0.0665
RI	0.0000	0.0000	-0.0077	-0.0077	-0.0077	-0.0077	-0.0077	-0.0077	-0.0086
SC	0.0000	0.0000	0.0079	0.0336	0.0336	0.0380	0.0556	0.0588	0.0555
SD	0.0000	0.1229	0.1229	0.1229	0.2705	0.2705	0.3242	0.3233	0.3263
TN	0.0000	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-0.0009
TX	0.0000	0.1509	0.1514	0.1522	0.1562	0.1660	0.1655	0.1655	0.1655
VT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	0.0000	0.0011	0.0012	0.0016	0.0027	0.0039	0.0078	0.0102	0.0484
WV	0.0000	0.0127	0.0255	0.0224	0.0752	0.0612	0.0798	0.0711	0.2403
WI	0.0000	0.2025	0.2071	0.2095	0.2167	0.2154	0.2157	0.2238	0.2283

*Negative reduction fractions indicate states and marginal cost levels where there are modeled emissions increases over the 2012 base case emissions level.

Table 2-11. Fraction Reduction* of EGU NO_x Emissions Relative to the 2012 Base Case EGU Emissions from IPM for Each State at Various Pollution Control Marginal Costs per Ton of Reduction for Ozone Season in 2014.

Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State										
AL	0.0000	0.0983	0.0947	0.0949	0.0960	0.1039	0.1038	0.1066	0.1163	0.1435
AR	0.0000	-0.0539	0.4200	0.4197	0.4328	0.4405	0.4545	0.4491	0.4419	0.4379
CT	0.0000	-0.0023	-0.0023	-0.0023	-0.0023	-0.0023	-0.0023	-0.0024	-0.0023	-0.0023
DE	0.0000	-0.2175	-0.3193	-0.3202	-0.3193	-0.3191	-0.3197	-0.3189	-0.3191	-0.3170
DC	0.0000	0.0000	-0.0054	-0.0049	-0.0057	-0.0058	-0.0058	-0.0059	-0.0049	-0.0063
FL	0.0000	0.0659	0.2916	0.4320	0.4379	0.4424	0.4476	0.4802	0.5740	0.6302
GA	0.0000	0.3764	0.4257	0.4315	0.4378	0.4378	0.4370	0.4432	0.4426	0.4490
IL	0.0000	0.0073	0.0042	-0.0008	-0.0028	-0.0021	-0.0004	0.0046	0.0037	0.0004
IN	0.0000	0.0373	0.0487	0.0633	0.0731	0.0818	0.0856	0.0958	0.1408	0.1547
IA	0.0000	-0.0485	0.1311	0.1893	0.1934	0.1923	0.2096	0.2299	0.2391	0.2857
KS	0.0000	-0.1289	0.4615	0.4608	0.4624	0.4639	0.4703	0.4788	0.5098	0.5146
KY	0.0000	0.0343	0.0339	0.0441	0.0560	0.0558	0.0639	0.0651	0.0721	0.0945
LA	0.0000	0.0106	0.1989	0.1988	0.1971	0.1966	0.1966	0.1966	0.3879	0.4050
ME	0.0000	0.0005	0.0233	0.0233	0.0233	0.0676	0.1214	0.1460	0.1442	0.1390
MD	0.0000	-0.0785	-0.0862	-0.0881	-0.0874	-0.0942	-0.0959	-0.0931	-0.0941	-0.0918
MA	0.0000	-0.0304	-0.0728	-0.0727	-0.0729	-0.0730	-0.0753	-0.0791	-0.0776	-0.0744
MI	0.0000	-0.0119	-0.0122	-0.0127	-0.0073	0.0355	0.0348	0.0352	0.0353	0.0520
MN	0.0000	-0.0226	0.2955	0.2878	0.2801	0.2903	0.2857	0.2848	0.2869	0.2990
MS	0.0000	-0.0042	0.5100	0.5100	0.5101	0.5101	0.5101	0.5101	0.5103	0.6114
MO	0.0000	-0.0648	-0.0558	-0.0252	-0.0139	-0.0007	0.0025	0.0347	0.2293	0.2847
NE	0.0000	-0.0086	0.3469	0.3440	0.3440	0.3443	0.4574	0.4562	0.4572	0.4572
NH	0.0000	0.0000	0.0066	0.0066	0.0216	0.0216	0.0216	0.0396	0.0396	0.0396
NJ	0.0000	-0.4754	-0.4622	-0.4564	-0.4538	-0.4323	-0.4261	-0.4254	-0.4255	-0.2044
NY	0.0000	-0.0898	-0.0724	-0.0594	0.0047	0.0055	0.0136	0.0559	0.0566	0.0682
NC	0.0000	0.0011	0.0036	0.0047	0.0014	0.0033	0.0083	0.0093	0.0100	0.0403
ND	0.0000	-0.0002	0.1754	0.1754	0.1974	0.2113	0.4798	0.4800	0.4811	0.5646
OH	0.0000	-0.0659	-0.0487	-0.0319	-0.0330	0.0001	0.0019	0.0104	0.0126	0.1018
OK	0.0000	0.1073	0.4372	0.4372	0.4397	0.4429	0.4712	0.4733	0.4773	0.5456
PA	0.0000	-0.0453	-0.0366	-0.0246	-0.0236	-0.0275	-0.0231	-0.0195	-0.0195	0.1976
RI	0.0000	-0.0816	0.0095	0.0095	0.0095	0.0095	0.0095	-0.0301	-0.0258	-0.0249
SC	0.0000	0.0070	0.0189	0.0362	0.0405	0.0479	0.0613	0.0662	0.0693	0.0749
SD	0.0000	-0.0027	0.1203	0.1203	0.1203	0.8715	0.8715	0.8701	0.8701	0.8701
TN	0.0000	-0.0333	-0.0330	-0.0312	-0.0090	-0.0076	-0.0090	-0.0090	-0.0097	-0.0073
TX	0.0000	-0.0089	0.1271	0.1359	0.1378	0.1443	0.1582	0.1597	0.1592	0.1623
VT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	0.0000	0.0735	0.0810	0.1107	0.1133	0.1134	0.1154	0.1113	0.1135	0.1332
WV	0.0000	-0.0140	-0.0103	0.0036	0.1093	0.1021	0.1559	0.1549	0.2075	0.2127
WI	0.0000	-0.1053	0.1104	0.1108	0.1186	0.1228	0.1297	0.1480	0.1511	0.1780

*Negative reduction fractions indicate states and marginal cost levels where there are modeled emissions increases over the 2012 base case emissions level.

Table 2-12. 2012 NO_x EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons). (These Values Have Been Adjusted to Match the Air Quality Modeling EGU Inventory.)

Year	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$750	$1,000	$1,250	$1,500
State						
AL	121,809	69,344	69,291	69,286	69,259	69,202
AR	43,222	23,607	23,579	23,662	23,792	23,758
CT	2,770	2,767	2,767	2,769	2,769	2,769
DE	4,639	4,884	4,869	4,687	4,687	4,687
DC	2	2	2	2	2	2
FL	195,673	133,620	108,255	107,889	107,047	106,950
GA	78,011	75,804	75,830	75,865	75,877	75,648
IL	77,920	57,077	57,174	57,069	57,077	57,144
IN	203,107	116,515	116,248	115,634	115,139	113,694
IA	66,316	54,275	51,410	50,997	50,758	50,771
KS	70,823	32,957	33,750	33,565	33,145	32,905
KY	149,179	73,879	73,673	73,034	72,548	72,340
LA	44,773	36,070	36,075	35,966	35,911	35,902
ME	3,139	3,058	3,030	3,015	3,015	3,015
MD	17,376	17,406	17,406	17,411	17,412	17,412
MA	6,312	6,514	6,514	6,514	6,514	6,513
MI	96,874	66,839	66,849	66,874	66,909	66,890
MN	51,285	35,252	35,301	35,479	35,633	35,629
MS	37,517	19,002	19,017	18,661	18,476	18,477
MO	77,571	76,645	73,936	72,367	70,354	68,838
NE	52,820	34,345	34,345	34,345	34,231	33,916
NH	2,514	2,505	2,505	2,491	2,491	2,491
NJ	15,987	13,096	13,096	13,111	13,120	12,998
NY	25,755	25,698	25,670	25,652	25,647	25,631
NC	61,643	61,551	61,551	61,553	61,553	61,618
ND	59,547	49,093	49,093	48,622	48,519	47,421
OH	159,627	99,647	99,552	99,264	98,487	98,635
OK	86,858	51,648	51,572	51,572	51,477	51,416
PA	193,032	115,657	114,764	114,920	114,550	113,642
RI	221	226	226	227	227	227
SC	47,762	36,243	36,243	36,190	35,766	35,780
SD	15,493	13,585	13,585	12,670	12,619	12,566
TN	68,425	28,443	28,437	28,439	28,439	28,439
TX	159,738	134,642	134,585	134,589	134,593	134,281
VT	0	0	0	0	0	0
VA	36,036	35,680	35,681	35,680	35,680	35,686
WV	102,725	56,133	55,997	55,152	54,751	54,664
WI	49,351	40,124	39,596	39,562	39,238	38,825

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost). As described in the text, the emissions values from IPM Tables 1-1 through 1-6 were adjusted to match the emissions inventory for EGUs used in the air quality modeling.

Table 2-13. 2014 NO_x EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons). (These Values Have Been Adjusted to Match the Air Quality Modeling EGU Inventory.)

Year	2012	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500
State							
AL	121,809	118,435	62,029	62,071	62,002	62,051	61,862
AR	43,222	44,787	24,847	24,862	24,889	24,578	24,563
CT	2,770	2,788	2,794	2,794	2,792	2,789	2,786
DE	4,639	5,732	5,960	5,960	5,774	5,772	5,771
DC	2	2	2	2	2	2	2
FL	195,673	181,390	127,846	105,657	104,964	104,702	104,388
GA	78,011	48,160	45,610	45,209	45,216	45,236	45,021
IL	77,920	80,222	56,289	56,085	55,979	56,007	55,929
IN	203,107	200,900	114,290	113,726	113,754	113,336	113,770
IA	66,316	68,145	55,970	52,688	52,100	51,809	50,264
KS	70,823	78,916	37,755	37,867	37,420	37,260	35,876
KY	149,179	148,509	72,428	72,189	71,873	71,673	71,581
LA	44,773	45,466	37,145	37,168	37,216	37,223	37,223
ME	3,139	2,905	2,825	2,784	2,592	2,455	2,455
MD	17,376	18,894	19,001	19,001	19,007	19,023	19,023
MA	6,312	6,470	6,658	6,658	6,658	6,646	6,642
MI	96,874	97,589	67,346	67,186	66,877	66,873	66,691
MN	51,285	52,715	36,279	36,523	36,393	36,387	36,301
MS	37,517	37,146	18,531	18,531	18,529	18,529	18,529
MO	77,571	82,977	81,959	80,297	79,851	72,425	61,095
NE	52,820	52,970	34,408	34,473	34,416	28,303	28,291
NH	2,514	2,514	2,507	2,507	2,507	2,507	2,491
NJ	15,987	22,348	19,356	19,354	19,356	19,272	19,268
NY	25,755	27,734	27,001	25,133	25,056	24,919	24,043
NC	61,643	61,747	61,672	61,433	61,464	61,508	61,469
ND	59,547	59,556	49,101	49,101	48,731	31,813	31,447
OH	159,627	164,945	103,594	103,146	102,637	101,950	97,622
OK	86,858	81,073	50,015	50,091	50,135	50,139	50,072
PA	193,032	199,167	119,727	119,500	119,390	119,203	118,954
RI	221	269	249	249	249	249	249
SC	47,762	47,513	35,793	35,481	35,436	35,409	35,431
SD	15,493	15,514	13,606	13,606	1,944	1,944	1,941
TN	68,425	68,771	28,752	28,751	28,755	28,749	28,644
TX	159,738	166,162	145,425	144,603	144,411	141,977	141,920
VT	0	0	0	0	0	0	0
VA	36,036	32,867	32,433	32,433	32,598	32,693	32,387
WV	102,725	100,103	54,127	53,923	53,661	53,544	49,424
WI	49,351	53,937	43,828	43,878	43,322	43,053	42,567

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost). As described in the text, the emissions values from IPM Tables 1-1 through 1-6 were adjusted to match the emissions inventory for EGUs used in the air quality modeling.

Table 2-14. 2012 SO_2 EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons). (These Values Have Been Adjusted to Match the Air Quality Modeling EGU Inventory.)

	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State															
AL	335,734	313,794	274,958	244,907	198,718	186,607	187,141	186,511	169,257	168,473	164,145	162,107	155,741	155,506	155,083
AR	85,068	85,082	84,549	84,665	84,737	84,484	82,639	82,493	82,493	82,585	82,627	82,646	82,639	82,692	83,008
CT	5,493	5,493	5,493	5,493	5,493	5,493	5,493	5,493	5,493	5,493	5,504	5,510	5,510	5,510	5,510
DE	7,841	8,901	8,924	8,923	8,919	8,913	8,913	8,904	8,903	8,900	8,900	8,899	8,898	8,898	8,880
DC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL	228,360	204,309	171,348	174,431	143,719	121,849	122,063	120,939	121,209	113,888	111,579	111,040	108,367	98,561	97,748
GA	552,007	549,215	277,169	276,279	274,876	279,553	272,591	271,312	256,311	243,291	243,031	240,710	235,399	235,736	233,912
IL	724,657	467,395	374,583	332,982	272,987	267,131	267,316	263,562	261,491	256,141	249,208	247,115	245,228	244,037	240,110
IN	829,988	507,712	416,022	375,114	367,607	345,979	341,384	320,814	318,852	288,304	282,665	281,772	277,966	274,344	272,189
IA	169,039	149,965	133,422	129,273	127,692	126,857	114,764	104,689	104,763	104,889	104,183	103,184	102,990	102,653	103,184
KS	59,567	60,991	61,847	53,815	58,933	48,304	44,936	44,709	42,266	41,809	41,750	41,674	41,591	41,142	39,865
KY	718,980	294,696	282,336	274,775	264,346	253,006	243,696	227,353	216,028	213,446	202,338	194,764	187,420	186,708	168,279
LA	100,239	99,232	95,710	95,710	95,710	95,710	95,300	95,300	95,300	95,300	95,300	95,300	93,732	93,732	90,617
ME	15,759	15,759	15,001	15,027	15,027	15,027	15,027	10,840	9,214	8,938	6,265	3,625	1,824	1,960	1,960
MD	49,078	49,091	49,091	49,091	42,739	41,391	40,838	40,870	40,765	38,232	37,507	37,599	37,331	37,239	32,607
MA	16,299	17,174	17,174	17,174	9,397	9,396	9,396	9,396	9,396	9,396	9,396	9,396	9,384	9,384	9,384
MI	287,807	272,374	256,562	246,399	212,994	210,868	208,872	206,316	207,412	207,490	206,765	204,811	205,709	205,720	203,322
MN	53,596	53,792	50,525	48,286	47,671	47,740	47,740	47,736	47,939	47,896	47,886	48,361	47,895	47,434	46,935
MS	46,432	46,432	46,432	46,432	46,024	46,009	46,017	46,014	46,432	46,334	46,346	46,333	46,338	45,563	45,511
MO	445,643	248,353	223,797	221,589	218,297	217,311	210,831	198,137	195,095	194,323	194,029	193,878	193,167	197,487	202,781
NE	120,790	119,894	119,367	117,763	113,884	106,859	79,097	75,357	74,253	73,744	73,610	72,734	72,444	72,444	71,530
NH	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290
NJ	37,746	37,746	25,519	25,422	24,886	19,041	19,041	19,041	18,880	19,267	19,267	19,177	19,107	19,107	19,107
NY	144,074	144,074	144,074	143,435	143,543	143,110	142,194	142,076	128,195	119,344	118,669	117,461	108,975	108,705	99,145
NC	126,620	115,795	123,881	118,836	114,665	111,421	111,272	106,917	105,733	105,633	99,877	101,399	99,206	98,285	96,585
ND	77,383	75,748	75,748	75,675	75,675	75,675	44,229	44,229	44,229	43,144	43,144	43,144	43,100	43,100	43,100
OH	946,667	564,832	459,343	434,210	406,454	361,164	329,410	301,075	292,564	290,057	263,388	248,314	243,741	240,219	228,385
OK	156,032	159,773	155,287	134,188	112,796	115,548	104,644	104,644	104,644	104,644	104,644	104,644	104,644	104,644	104,644
PA	966,136	845,651	412,620	367,275	351,281	318,368	305,434	289,866	284,976	276,755	241,713	234,613	231,030	230,591	224,002
RI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SC	149,515	142,324	146,705	144,365	140,009	139,283	137,771	136,558	128,361	122,071	121,536	119,248	118,826	118,561	114,483
SD	13,453	13,453	12,782	12,782	12,782	11,919	11,919	11,919	11,919	11,919	11,919	11,919	11,919	11,919	11,919
TN	596,987	244,524	130,744	128,847	127,322	127,179	127,179	126,187	126,186	126,329	126,150	123,282	121,992	109,882	108,971
TX	327,873	326,728	319,143	317,873	317,739	295,406	295,385	294,309	294,216	294,009	293,873	293,873	293,873	293,874	293,382
VT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VA	145,452	145,426	133,969	122,244	121,575	121,576	120,890	119,159	115,173	110,637	110,419	108,162	107,657	106,061	103,346
WV	588,392	208,559	188,135	170,963	148,949	143,292	141,357	131,943	126,186	125,069	122,866	120,442	119,232	116,186	114,165
WI	107,365	101,431	98,613	98,270	101,666	92,187	92,345	87,049	86,909	86,180	89,886	91,396	90,583	90,604	91,972

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest SO_2 cost). As described in the text, the emissions values from IPM Tables 1-1 through 1-6 were adjusted to match the emissions inventory for EGUs used in the air quality modeling.

Table 2-15. 2014 SO_2 EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons). (These Values Have Been Adjusted to Match the Air Quality Modeling EGU Inventory.)

	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State																
AL	335,734	322,139	306,721	257,134	230,657	176,661	170,969	167,470	166,298	166,031	160,408	146,375	103,546	101,252	83,772	70,606
AR	85,068	88,185	88,208	85,362	85,396	85,395	85,393	85,393	85,423	85,408	85,452	84,211	83,380	81,725	71,093	12,948
CT	5,493	5,510	5,510	5,510	5,510	5,510	5,510	5,510	5,510	5,510	5,510	3,011	3,011	3,011	2,933	2,558
DE	7,841	8,079	9,074	9,096	9,114	9,114	9,115	9,120	9,120	9,120	8,690	8,706	8,706	8,524	7,906	7,906
DC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL	228,360	193,097	176,253	169,752	169,492	137,218	116,066	116,401	115,975	112,097	111,326	110,123	83,780	77,882	73,301	69,193
GA	552,007	173,242	165,539	135,966	136,832	133,552	133,335	131,641	129,207	116,723	107,452	101,230	95,112	91,498	85,572	66,887
IL	724,657	200,482	184,623	165,123	164,286	165,088	165,030	165,131	165,126	163,546	164,855	164,762	163,665	160,539	155,170	143,137
IN	829,988	804,298	478,389	432,713	351,941	343,765	328,077	325,530	312,530	290,886	287,106	284,426	259,367	241,595	227,218	189,685
IA	169,039	163,966	140,426	129,873	120,245	112,214	106,014	105,592	104,644	105,229	104,510	103,923	103,377	102,461	101,378	70,136
KS	59,567	65,125	64,354	55,833	48,971	49,130	49,058	47,206	46,551	45,973	45,694	45,556	45,096	32,897	30,687	24,316
KY	718,980	739,592	275,463	270,357	252,997	248,541	247,920	243,032	231,845	195,510	185,866	178,057	161,364	126,829	115,417	99,510
LA	100,239	94,827	94,827	94,828	94,893	94,893	94,893	94,893	94,913	94,913	94,911	94,911	94,911	94,493	82,216	35,697
ME	15,759	11,972	11,972	11,972	9,431	8,535	8,448	8,448	8,448	4,366	1,470	1,470	1,488	1,488	1,488	1,488
MD	49,078	42,799	43,056	43,059	43,064	43,046	43,048	43,048	43,051	43,051	43,074	43,079	43,089	39,651	39,443	38,269
MA	16,299	16,299	17,174	17,174	17,076	9,246	9,246	9,246	9,246	9,244	9,244	9,244	8,882	8,883	8,713	6,109
MI	287,807	275,697	254,136	253,080	246,028	215,913	213,726	210,613	209,985	208,909	208,162	207,080	204,438	176,732	162,824	115,686
MN	53,596	61,547	56,522	54,259	50,756	50,686	48,364	47,732	47,660	47,723	47,760	47,868	48,019	47,961	47,221	45,903
MS	46,432	48,145	46,172	46,755	46,063	46,021	46,120	46,432	46,432	46,432	46,432	46,432	45,563	45,279	42,619	17,368
MO	445,643	500,649	289,438	238,429	229,132	223,609	212,894	213,315	213,507	212,383	211,506	212,023	208,787	195,815	182,709	94,413
NE	120,790	115,696	119,247	113,044	88,485	77,709	74,013	73,104	73,070	72,597	71,540	71,124	70,532	69,112	45,402	32,604
NH	7,290	6,654	6,654	6,654	6,654	6,654	6,654	6,592	7,290	7,290	7,290	7,290	7,290	7,290	7,278	4,281
NJ	37,746	39,310	39,173	26,416	26,410	20,435	20,497	20,585	20,420	20,426	20,407	20,196	17,696	17,695	16,998	13,841
NY	144,074	141,380	140,244	141,276	140,357	135,763	134,050	130,260	118,082	117,048	113,042	112,475	108,894	99,492	68,857	62,509
NC	126,620	140,548	140,548	140,524	133,633	133,704	129,675	128,630	115,144	113,803	112,444	104,013	97,865	98,273	90,446	63,078
ND	77,383	80,320	75,758	75,758	57,992	44,238	44,238	44,238	44,236	44,233	43,147	43,144	43,144	34,749	34,704	33,536
OH	946,667	841,195	582,608	553,116	519,213	416,605	408,415	360,015	322,160	293,998	279,386	260,271	240,023	236,062	220,822	202,873
OK	156,032	165,773	165,774	125,850	110,863	110,863	110,863	110,863	110,928	110,928	110,922	110,922	110,922	108,996	109,139	26,385
PA	966,136	973,679	824,311	441,044	399,118	351,165	336,579	233,697	224,767	201,885	179,527	174,470	154,729	153,389	144,718	125,071
RI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SC	149,515	156,092	138,086	136,694	136,080	134,996	133,690	130,598	128,030	125,232	117,466	82,876	80,426	78,268	56,970	42,154
SD	13,453	13,459	13,458	13,459	12,788	12,788	12,788	12,066	11,513	11,047	11,046	11,044	11,044	11,044	11,044	2,592
TN	596,987	600,066	154,092	130,670	127,443	127,170	127,170	127,170	127,314	125,696	123,101	108,199	109,096	107,589	100,131	78,915
TX	327,873	373,941	369,764	368,985	368,462	368,075	345,806	345,822	345,689	345,244	342,626	343,292	340,536	337,625	309,226	143,327
VT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VA	145,452	136,083	133,168	132,795	109,867	109,400	108,381	106,976	106,707	105,405	102,146	92,036	74,504	65,022	53,815	44,517
WV	588,392	496,307	178,643	169,763	163,899	161,910	160,746	160,334	155,448	159,653	158,379	142,503	138,889	131,869	118,927	97,614
WI	107,365	117,293	111,181	107,688	108,149	107,309	97,410	96,048	94,318	92,276	91,542	89,184	88,210	86,631	80,490	63,936

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest SO_2 cost). As described in the text, the emissions values from IPM Tables 1-1 through 1-6 were adjusted to match the emissions inventory for EGUs used in the air quality modeling.

Table 2-16. 2012 NO_x EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons) for Ozone Season. (These Values Have Been Adjusted to Match the Air Quality Modeling EGU Inventory.)

Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State									
AL	121,809	122,081	122,086	121,674	120,282	120,285	120,183	119,781	118,748
AR	43,222	23,600	23,765	23,952	23,839	24,038	23,844	23,874	24,047
CT	2,770	2,755	2,755	2,755	2,755	2,755	2,755	2,758	2,761
DE	4,639	5,051	5,051	4,994	4,901	4,901	4,901	4,901	4,901
DC	2	2	2	2	2	2	2	2	2
FL	195,673	142,344	115,173	113,417	113,216	112,990	112,936	111,445	110,612
GA	78,011	73,857	73,910	73,542	73,483	73,051	73,051	73,051	72,774
IL	77,920	78,117	78,496	78,637	78,787	78,872	78,858	79,031	78,709
IN	203,107	199,750	193,972	190,287	188,726	186,252	185,696	183,568	182,680
IA	66,316	54,916	51,292	51,213	50,638	51,170	51,498	51,255	49,774
KS	70,823	33,662	34,348	34,559	32,930	33,072	32,690	32,412	32,323
KY	149,179	147,671	146,055	144,730	144,674	142,196	141,560	140,638	137,556
LA	44,773	35,542	35,334	35,115	35,155	35,275	35,342	35,349	35,352
ME	3,139	3,082	3,082	3,082	3,082	3,082	3,082	3,082	3,082
MD	17,376	17,371	17,371	17,331	17,203	17,080	17,082	17,062	17,085
MA	6,312	6,760	6,760	6,760	6,764	6,764	6,762	6,762	6,761
MI	96,874	97,150	97,238	97,264	97,368	96,894	93,788	92,954	92,761
MN	51,285	35,532	35,919	36,000	36,016	35,838	35,922	36,092	35,516
MS	37,517	18,883	18,302	18,301	18,305	18,305	18,307	18,307	18,329
MO	77,571	76,586	72,982	71,129	71,444	69,519	69,682	68,934	62,338
NE	52,820	34,309	34,309	33,578	33,139	33,139	33,139	33,138	33,143
NH	2,514	2,493	2,460	2,460	2,415	2,415	2,415	2,369	2,201
NJ	15,987	15,990	15,990	15,671	15,620	15,139	15,104	15,023	14,923
NY	25,755	25,689	25,706	25,715	25,684	25,649	25,791	25,777	25,633
NC	61,643	61,655	61,685	61,587	61,587	61,587	61,587	61,715	61,332
ND	59,547	49,088	47,775	46,949	46,949	46,949	45,795	44,615	44,162
OH	159,627	157,665	157,245	156,517	157,071	157,982	159,042	158,765	158,095
OK	86,858	54,702	54,549	53,971	53,693	53,241	53,031	52,903	52,550
PA	193,032	192,888	193,083	191,813	190,839	189,390	188,930	187,631	180,202
RI	221	221	223	223	223	223	223	223	223
SC	47,762	47,762	47,387	46,159	46,159	45,946	45,105	44,952	45,109
SD	15,493	13,588	13,588	13,588	11,302	11,302	10,470	10,485	10,438
TN	68,425	68,403	68,391	68,391	68,391	68,391	68,391	68,391	68,483
TX	159,738	135,629	135,559	135,424	134,792	133,229	133,299	133,299	133,306
VT	0	0	0	0	0	0	0	0	0
VA	36,036	35,997	35,992	35,977	35,939	35,894	35,756	35,667	34,294
WV	102,725	101,423	100,108	100,428	94,998	96,438	94,526	95,420	78,043
WI	49,351	39,359	39,131	39,013	38,659	38,719	38,708	38,307	38,086

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost). As described in the text, the emissions values from IPM Tables 1-1 through 1-6 were adjusted to match the emissions inventory for EGUs used in the air quality modeling.

Table 2-17. 2014 NO_x EGU Emissions* for Each State at Various Pollution Control Marginal Costs per Ton of Reduction (Tons) for Ozone Season. (These Values Have Been Adjusted to Match the Air Quality Modeling EGU Inventory.)

Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State										
AL	121,809	109,840	110,276	110,245	110,117	109,151	109,168	108,828	107,641	104,329
AR	43,222	45,554	25,071	25,082	24,517	24,182	23,576	23,813	24,123	24,295
CT	2,770	2,777	2,777	2,777	2,777	2,777	2,777	2,777	2,777	2,777
DE	4,639	5,647	6,120	6,124	6,119	6,119	6,122	6,118	6,118	6,109
DC	2	2	2	2	2	2	2	2	2	2
FL	195,673	182,777	138,605	111,145	109,985	109,116	108,081	101,717	83,362	72,368
GA	78,011	48,648	44,800	44,347	43,858	43,858	43,918	43,435	43,487	42,981
IL	77,920	77,347	77,592	77,981	78,142	78,087	77,951	77,559	77,629	77,892
IN	203,107	195,528	193,220	190,242	188,265	186,483	185,728	183,655	174,515	171,682
IA	66,316	69,532	57,622	53,762	53,490	53,565	52,416	51,067	50,459	47,367
KS	70,823	79,949	38,141	38,191	38,072	37,968	37,518	36,915	34,718	34,375
KY	149,179	144,065	144,127	142,596	140,824	140,852	139,653	139,472	138,426	135,086
LA	44,773	44,299	35,867	35,871	35,948	35,970	35,970	35,970	27,405	26,639
ME	3,139	3,137	3,066	3,066	3,066	2,927	2,758	2,680	2,686	2,702
MD	17,376	18,740	18,873	18,907	18,894	19,013	19,043	18,993	19,011	18,971
MA	6,312	6,504	6,772	6,772	6,772	6,773	6,788	6,812	6,803	6,782
MI	96,874	98,025	98,058	98,104	97,581	93,440	93,507	93,463	93,456	91,834
MN	51,285	52,444	36,130	36,525	36,921	36,395	36,635	36,680	36,571	35,950
MS	37,517	37,676	18,385	18,385	18,379	18,378	18,378	18,379	18,372	14,579
MO	77,571	82,598	81,901	79,523	78,651	77,624	77,380	74,882	59,781	55,487
NE	52,820	53,276	34,499	34,650	34,650	34,633	28,658	28,722	28,672	28,670
NH	2,514	2,514	2,498	2,498	2,460	2,460	2,460	2,415	2,415	2,415
NJ	15,987	23,586	23,375	23,283	23,242	22,897	22,799	22,787	22,789	19,254
NY	25,755	28,068	27,619	27,285	25,634	25,614	25,406	24,317	24,299	23,999
NC	61,643	61,579	61,423	61,351	61,557	61,442	61,129	61,068	61,028	59,162
ND	59,547	59,556	49,101	49,101	47,790	46,964	30,974	30,966	30,901	25,925
OH	159,627	170,139	167,400	164,722	164,890	159,613	159,318	157,960	157,615	143,382
OK	86,858	77,535	48,883	48,883	48,669	48,391	45,928	45,751	45,403	39,469
PA	193,032	201,782	200,103	197,785	197,579	198,350	197,497	196,804	196,806	154,881
RI	221	239	219	219	219	219	219	228	227	227
SC	47,762	47,426	46,858	46,035	45,826	45,474	44,837	44,601	44,453	44,183
SD	15,493	15,534	13,629	13,629	13,629	1,990	1,990	2,013	2,013	2,013
TN	68,425	70,701	70,680	70,561	69,042	68,942	69,042	69,042	69,091	68,925
TX	159,738	161,165	139,432	138,035	137,734	136,684	134,462	134,223	134,304	133,810
VT	0	0	0	0	0	0	0	0	0	0
VA	36,036	33,387	33,117	32,048	31,953	31,951	31,877	32,025	31,945	31,237
WV	102,725	104,159	103,782	102,359	91,500	92,239	86,707	86,813	81,412	80,877
WI	49,351	54,545	43,903	43,882	43,500	43,289	42,949	42,046	41,893	40,565

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost). As described in the text, the emissions values from IPM Tables 1-1 through 1-6 were adjusted to match the emissions inventory for EGUs used in the air quality modeling.

Table 2-18. Total Estimated NO_x Emissions* (tons) in 2012 for the Annual Air Quality Modeling.

Year	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$750	$1,000	$1,250	$1,500
State						
AL	364,171	311,707	311,653	311,648	311,621	311,564
AR	200,092	180,477	180,449	180,531	180,662	180,627
CT	74,801	74,797	74,797	74,799	74,799	74,799
DE	39,687	39,932	39,917	39,735	39,735	39,735
DC	9,802	9,802	9,802	9,802	9,802	9,802
FL	863,515	801,461	776,096	775,731	774,888	774,791
GA	413,780	411,573	411,599	411,634	411,646	411,417
IL	542,957	522,115	522,211	522,106	522,115	522,182
IN	505,127	418,535	418,269	417,654	417,160	415,715
IA	251,721	239,680	236,816	236,403	236,163	236,177
KS	295,012	257,146	257,939	257,754	257,334	257,094
KY	346,399	271,099	270,893	270,254	269,768	269,560
LA	586,912	578,209	578,214	578,106	578,050	578,041
ME	64,559	64,479	64,451	64,436	64,436	64,436
MD	181,731	181,762	181,762	181,766	181,767	181,768
MA	191,911	192,112	192,112	192,112	192,112	192,112
MI	478,955	448,920	448,929	448,955	448,990	448,970
MN	352,694	336,661	336,710	336,889	337,043	337,039
MS	222,801	204,287	204,301	203,945	203,760	203,761
MO	354,085	353,160	350,451	348,881	346,868	345,353
NE	194,233	175,758	175,758	175,758	175,644	175,329
NH	44,067	44,058	44,058	44,044	44,044	44,044
NJ	220,410	217,520	217,520	217,534	217,544	217,422
NY	423,582	423,524	423,497	423,479	423,473	423,457
NC	395,854	395,762	395,762	395,764	395,764	395,829
ND	136,110	125,656	125,656	125,185	125,082	123,984
OH	552,945	492,965	492,870	492,582	491,805	491,953
OK	369,167	333,957	333,881	333,881	333,786	333,725
PA	566,418	489,042	488,149	488,305	487,935	487,028
RI	20,940	20,944	20,944	20,945	20,945	20,945
SC	238,903	227,383	227,383	227,331	226,907	226,920
SD	67,151	65,244	65,244	64,328	64,278	64,225
TN	339,166	299,185	299,178	299,181	299,181	299,181
TX	1,343,319	1,318,223	1,318,166	1,318,170	1,318,174	1,317,862
VT	17,790	17,790	17,790	17,790	17,790	17,790
VA	342,389	342,032	342,033	342,033	342,033	342,038
WV	207,415	160,823	160,687	159,842	159,441	159,354
WI	257,546	248,319	247,791	247,757	247,433	247,020

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

Table 2-19. Total Estimated NO_x Emissions* (Tons) in 2014 for the Annual Air Quality Modeling.

Year	2012	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500
State							
AL	364,171	341,753	285,347	285,389	285,321	285,369	285,180
AR	200,092	189,619	169,679	169,693	169,720	169,409	169,394
CT	74,801	67,051	67,057	67,057	67,055	67,052	67,049
DE	39,687	38,572	38,800	38,800	38,614	38,612	38,610
DC	9,802	8,569	8,569	8,569	8,569	8,569	8,569
FL	863,515	796,188	742,644	720,455	719,762	719,500	719,186
GA	413,780	349,720	347,170	346,769	346,776	346,795	346,581
IL	542,957	503,670	479,737	479,532	479,427	479,455	479,376
IN	505,127	474,860	388,250	387,686	387,714	387,296	387,729
IA	251,721	236,691	224,516	221,234	220,646	220,355	218,810
KS	295,012	289,824	248,663	248,775	248,329	248,169	246,785
KY	346,399	325,791	249,710	249,471	249,155	248,955	248,862
LA	586,912	565,057	556,736	556,760	556,807	556,814	556,814
ME	64,559	60,273	60,193	60,152	59,960	59,823	59,823
MD	181,731	170,884	170,991	170,991	170,997	171,013	171,013
MA	191,911	181,946	182,134	182,134	182,134	182,122	182,119
MI	478,955	445,103	414,860	414,701	414,391	414,387	414,205
MN	352,694	331,134	314,698	314,942	314,812	314,806	314,720
MS	222,801	206,636	188,022	188,022	188,019	188,019	188,019
MO	354,085	333,310	332,292	330,630	330,184	322,758	311,428
NE	194,233	182,411	163,848	163,914	163,857	157,744	157,732
NH	44,067	39,883	39,876	39,876	39,876	39,876	39,860
NJ	220,410	210,087	207,095	207,093	207,095	207,011	207,007
NY	423,582	393,548	392,815	390,947	390,870	390,734	389,857
NC	395,854	374,017	373,943	373,703	373,734	373,778	373,739
ND	136,110	130,252	119,797	119,797	119,427	102,508	102,143
OH	552,945	518,861	457,510	457,062	456,552	455,866	451,537
OK	369,167	347,742	316,683	316,759	316,803	316,807	316,740
PA	566,418	538,647	459,207	458,981	458,871	458,683	458,435
RI	20,940	19,573	19,553	19,553	19,553	19,553	19,553
SC	238,903	224,506	212,786	212,474	212,429	212,402	212,424
SD	67,151	62,368	60,460	60,460	48,799	48,798	48,796
TN	339,166	311,874	271,855	271,855	271,858	271,852	271,748
TX	1,343,319	1,258,339	1,237,602	1,236,779	1,236,588	1,234,154	1,234,097
VT	17,790	15,713	15,713	15,713	15,713	15,713	15,713
VA	342,389	315,754	315,320	315,320	315,485	315,580	315,274
WV	207,415	197,708	151,732	151,528	151,266	151,149	147,029
WI	257,546	241,907	231,798	231,848	231,291	231,023	230,536

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

Table 2-20. Total Estimated SO_2 Emissions* (Tons) in 2012 for the Annual Air Quality Modeling.

	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State															
AL	462,297	440,357	401,521	371,470	325,281	313,170	313,704	313,074	295,820	295,036	290,708	288,669	282,304	282,069	281,646
AR	127,259	127,273	126,741	126,857	126,928	126,676	124,831	124,685	124,685	124,777	124,819	124,838	124,831	124,884	125,200
CT	27,392	27,392	27,393	27,393	27,393	27,393	27,393	27,393	27,393	27,393	27,403	27,409	27,409	27,409	27,409
DE	38,970	40,030	40,052	40,052	40,048	40,042	40,042	40,033	40,032	40,029	40,029	40,027	40,027	40,027	40,009
DC	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296
FL	467,498	443,447	410,485	413,568	382,857	360,986	361,201	360,076	360,346	353,026	350,717	350,178	347,504	337,699	336,885
GA	676,193	673,402	401,355	400,466	399,062	403,739	396,777	395,499	380,498	367,477	367,218	364,897	359,586	359,923	358,098
IL	866,396	609,134	516,322	474,721	414,726	408,870	409,055	405,301	403,230	397,880	390,947	388,854	386,967	385,776	381,849
IN	986,626	664,350	572,660	531,752	524,244	502,617	498,021	477,451	475,489	444,942	439,302	438,409	434,604	430,982	428,826
IA	250,954	231,880	215,337	211,188	209,607	208,772	196,679	186,604	186,678	186,804	186,098	185,099	184,905	184,568	185,099
KS	109,915	111,339	112,195	104,163	109,281	98,652	95,284	95,057	92,614	92,157	92,098	92,022	91,939	91,490	90,213
KY	781,249	356,964	344,605	337,044	326,615	315,274	305,965	289,621	278,297	275,715	264,607	257,033	249,689	248,977	230,548
LA	341,731	340,725	337,202	337,202	337,202	337,202	336,793	336,793	336,793	336,793	336,793	336,793	335,224	335,224	332,110
ME	48,460	48,460	47,702	47,729	47,729	47,729	47,729	43,542	41,916	41,639	38,966	36,326	34,526	34,661	34,661
MD	142,672	142,685	142,685	142,685	136,333	134,985	134,432	134,464	134,359	131,825	131,100	131,193	130,924	130,833	126,200
MA	91,657	92,532	92,532	92,532	84,754	84,754	84,754	84,754	84,754	84,754	84,754	84,754	84,741	84,741	84,741
MI	415,132	399,699	383,887	373,725	340,320	338,193	336,198	333,641	334,737	334,815	334,090	332,136	333,034	333,046	330,647
MN	95,997	96,194	92,926	90,688	90,072	90,142	90,142	90,138	90,340	90,297	90,287	90,762	90,297	89,835	89,337
MS	81,166	81,166	81,166	81,166	80,758	80,744	80,751	80,748	81,166	81,068	81,080	81,067	81,072	80,297	80,245
MO	570,761	373,471	348,914	346,707	343,415	342,428	335,949	323,255	320,213	319,440	319,147	318,995	318,285	322,604	327,899
NE	157,921	157,025	156,498	154,894	151,015	143,990	116,227	112,488	111,384	110,875	110,741	109,865	109,575	109,575	108,661
NH	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183	18,183
NJ	81,327	81,327	69,100	69,003	68,467	62,622	62,622	62,622	62,462	62,848	62,848	62,758	62,688	62,688	62,688
NY	341,818	341,817	341,817	341,178	341,286	340,853	339,937	339,819	325,938	317,088	316,412	315,204	306,718	306,449	296,889
NC	265,240	254,415	262,501	257,456	253,285	250,041	249,892	245,537	244,353	244,253	238,497	240,019	237,826	236,905	235,205
ND	93,722	92,087	92,087	92,013	92,013	92,013	60,567	60,567	60,567	59,483	59,483	59,483	59,438	59,438	59,438
OH	1,076,493	694,658	589,169	564,036	536,280	490,990	459,236	430,901	422,389	419,883	393,214	378,140	373,567	370,044	358,211
OK	201,791	205,532	201,046	179,946	158,554	161,307	150,403	150,403	150,403	150,403	150,403	150,403	150,403	150,403	150,403
PA	1,119,712	999,227	566,196	520,852	504,858	471,944	459,010	443,442	438,553	430,332	395,289	388,190	384,606	384,168	377,579
RI	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069	9,069
SC	234,846	227,655	232,036	229,697	225,340	224,615	223,102	221,889	213,692	207,403	206,867	204,579	204,157	203,892	199,814
SD	26,147	26,147	25,476	25,476	25,476	24,614	24,614	24,614	24,614	24,614	24,614	24,614	24,614	24,614	24,614
TN	709,182	356,720	242,940	241,043	239,518	239,375	239,375	238,382	238,382	238,525	238,346	235,478	234,188	222,078	221,166
TX	640,682	639,538	631,952	630,682	630,549	608,215	608,194	607,118	607,026	606,818	606,683	606,683	606,683	606,683	606,191
VT	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432	6,432
VA	263,963	263,936	252,480	240,754	240,086	240,086	239,400	237,670	233,683	229,148	228,929	226,673	226,168	224,572	221,857
WV	645,646	265,813	245,389	228,217	206,203	200,546	198,612	189,198	183,440	182,323	180,120	177,696	176,487	173,440	171,419
WI	181,830	175,896	173,078	172,735	176,132	166,652	166,810	161,514	161,375	160,646	164,351	165,862	165,048	165,069	166,438

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest SO_2 cost).

Table 2-21. Total Estimated SO_2 emissions* (Tons) in 2014 for the Annual Air Quality Modeling.

	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State																
AL	462,297	447,062	431,644	382,057	355,580	301,584	295,893	292,393	291,221	290,954	285,332	271,299	228,469	226,176	208,695	195,529
AR	127,259	129,712	129,735	126,889	126,923	126,922	126,920	126,920	126,950	126,935	126,980	125,738	124,907	123,252	112,620	54,475
CT	27,392	27,421	27,421	27,421	27,421	27,421	27,421	27,421	27,421	27,421	27,421	24,922	24,922	24,922	24,844	24,469
DE	38,970	39,908	40,903	40,925	40,943	40,943	40,944	40,949	40,949	40,950	40,519	40,535	40,535	40,353	39,735	39,735
DC	2,296	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291	2,291
FL	467,498	438,853	422,008	415,508	415,247	382,973	361,821	362,156	361,731	357,852	357,081	355,878	329,536	323,637	319,057	314,948
GA	676,193	297,650	289,946	260,373	261,239	257,959	257,742	256,049	253,615	241,131	231,859	225,637	219,520	215,905	209,979	191,295
IL	866,396	340,602	324,743	305,243	304,406	305,208	305,150	305,251	305,247	303,667	304,975	304,882	303,786	300,659	295,290	283,257
IN	986,626	960,126	634,217	588,541	507,769	499,594	483,906	481,359	468,358	446,714	442,934	440,254	415,196	397,424	383,046	345,513
IA	250,954	244,448	220,907	210,355	200,726	192,695	186,495	186,073	185,126	185,710	184,991	184,405	183,858	182,942	181,860	150,617
KS	109,915	115,018	114,247	105,727	98,864	99,023	98,951	97,099	96,444	95,866	95,587	95,450	94,989	82,790	80,581	74,209
KY	781,249	798,755	334,626	329,520	312,160	307,704	307,083	302,195	291,008	254,673	245,029	237,220	220,527	185,992	174,580	158,674
LA	341,731	327,873	327,874	327,875	327,940	327,940	327,940	327,940	327,960	327,960	327,958	327,958	327,958	327,540	315,263	268,744
ME	48,460	44,962	44,962	44,962	42,421	41,525	41,438	41,438	41,438	37,356	34,460	34,460	34,477	34,477	34,477	34,477
MD	142,672	136,273	136,530	136,533	136,538	136,520	136,522	136,522	136,525	136,525	136,548	136,553	136,563	133,125	132,917	131,743
MA	91,657	93,891	94,765	94,765	94,667	86,837	86,837	86,837	86,837	86,835	86,835	86,835	86,473	86,474	86,304	83,700
MI	415,132	402,934	381,373	380,317	373,265	343,149	340,963	337,849	337,221	336,146	335,398	334,316	331,674	303,968	290,061	242,923
MN	95,997	103,105	98,079	95,817	92,314	92,244	89,922	89,290	89,217	89,281	89,317	89,425	89,577	89,519	88,778	87,461
MS	81,166	82,072	80,100	80,682	79,991	79,949	80,048	80,360	80,360	80,360	80,360	80,360	79,490	79,207	76,546	51,296
MO	570,761	623,473	412,262	361,253	351,957	346,433	335,719	336,139	336,332	335,207	334,330	334,847	331,612	318,639	305,533	217,237
NE	157,921	152,072	155,624	149,421	124,861	114,086	110,390	109,480	109,447	108,974	107,917	107,501	106,909	105,489	81,778	68,981
NH	18,183	17,523	17,523	17,523	17,523	17,523	17,523	17,461	18,159	18,159	18,159	18,159	18,159	18,159	18,147	15,150
NJ	81,327	84,227	84,090	71,333	71,326	65,352	65,414	65,502	65,336	65,343	65,324	65,113	62,612	62,611	61,915	58,758
NY	341,818	337,720	336,584	337,615	336,697	332,103	330,390	326,600	314,422	313,388	309,382	308,815	305,234	295,832	265,197	258,848
NC	265,240	283,143	283,143	283,120	276,229	276,299	272,270	271,225	257,739	256,398	255,040	246,608	240,460	240,868	233,042	205,673
ND	93,722	96,407	91,845	91,845	74,079	60,325	60,325	60,325	60,323	60,320	59,234	59,231	59,231	50,836	50,791	49,623
OH	1,076,493	969,406	710,819	681,328	647,425	544,816	536,626	488,226	450,372	422,209	407,598	388,483	368,234	364,273	349,034	331,085
OK	201,791	211,268	211,269	171,345	156,358	156,358	156,358	156,358	156,423	156,423	156,417	156,417	156,417	154,491	154,634	71,880
PA	1,119,712	1,123,578	974,210	590,942	549,017	501,064	486,478	383,596	374,666	351,783	329,426	324,369	304,628	303,288	294,616	274,970
RI	9,069	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323	9,323
SC	234,846	243,124	225,119	223,726	223,113	222,029	220,723	217,631	215,063	212,265	204,499	169,908	167,459	165,301	144,003	129,187
SD	26,147	26,113	26,112	26,112	25,442	25,442	25,441	24,720	24,167	23,701	23,700	23,698	23,698	23,698	23,698	15,246
TN	709,182	711,647	265,673	242,251	239,024	238,751	238,751	238,751	238,894	237,277	234,681	219,780	220,677	219,170	211,711	190,496
TX	640,682	678,653	674,475	673,696	673,174	672,787	650,518	650,534	650,401	649,956	647,338	648,004	645,248	642,336	613,937	448,038
VT	6,432	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439	6,439
VA	263,963	255,100	252,185	251,812	228,885	228,417	227,399	225,993	225,724	224,422	221,163	211,053	193,521	184,040	172,832	163,534
WV	645,646	553,218	235,554	226,673	220,809	218,820	217,656	217,244	212,358	216,564	215,289	199,413	195,799	188,779	175,837	154,524
WI	181,830	191,502	185,390	181,897	182,357	181,518	171,619	170,257	168,527	166,485	165,751	163,392	162,419	160,839	154,699	138,144

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest SO_2 cost).

Table 2-22. Total Estimated NO_x Emissions* (Tons) in 2012 for the Air Quality Modeling in Ozone Season.

Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State									
AL	364,171	364,443	364,448	364,036	362,644	362,647	362,546	362,144	361,110
AR	200,092	180,469	180,634	180,822	180,708	180,908	180,713	180,743	180,917
CT	74,801	74,785	74,785	74,785	74,785	74,785	74,785	74,788	74,791
DE	39,687	40,099	40,099	40,043	39,950	39,949	39,950	39,950	39,949
DC	9,802	9,802	9,802	9,802	9,802	9,802	9,802	9,802	9,802
FL	863,515	810,185	783,014	781,258	781,057	780,831	780,778	779,286	778,453
GA	413,780	409,626	409,679	409,311	409,252	408,820	408,820	408,820	408,543
IL	542,957	543,155	543,533	543,674	543,824	543,910	543,895	544,068	543,746
IN	505,127	501,771	495,992	492,307	490,746	488,272	487,717	485,589	484,701
IA	251,721	240,321	236,697	236,618	236,043	236,575	236,903	236,660	235,179
KS	295,012	257,851	258,537	258,748	257,119	257,261	256,879	256,601	256,512
KY	346,399	344,891	343,274	341,950	341,894	339,415	338,780	337,858	334,776
LA	586,912	577,681	577,473	577,254	577,294	577,414	577,481	577,488	577,491
ME	64,559	64,503	64,503	64,503	64,503	64,503	64,503	64,503	64,503
MD	181,731	181,727	181,726	181,687	181,559	181,436	181,438	181,418	181,441
MA	191,911	192,358	192,358	192,358	192,362	192,362	192,360	192,360	192,359
MI	478,955	479,231	479,319	479,345	479,449	478,975	475,869	475,035	474,841
MN	352,694	336,942	337,329	337,410	337,426	337,248	337,332	337,501	336,926
MS	222,801	204,167	203,586	203,585	203,589	203,589	203,591	203,591	203,613
MO	354,085	353,100	349,496	347,644	347,959	346,033	346,196	345,448	338,853
NE	194,233	175,722	175,722	174,991	174,552	174,552	174,552	174,551	174,555
NH	44,067	44,046	44,012	44,012	43,967	43,967	43,967	43,922	43,753
NJ	220,410	220,413	220,413	220,094	220,044	219,563	219,528	219,446	219,347
NY	423,582	423,516	423,532	423,542	423,510	423,476	423,618	423,603	423,459
NC	395,854	395,866	395,896	395,798	395,798	395,798	395,798	395,926	395,543
ND	136,110	125,651	124,338	123,511	123,511	123,511	122,358	121,177	120,725
OH	552,945	550,982	550,563	549,835	550,389	551,300	552,360	552,083	551,413
OK	369,167	337,010	336,858	336,280	336,002	335,550	335,340	335,212	334,859
PA	566,418	566,274	566,468	565,198	564,225	562,776	562,316	561,017	553,587
RI	20,940	20,940	20,941	20,941	20,941	20,941	20,941	20,941	20,941
SC	238,903	238,903	238,527	237,300	237,300	237,087	236,245	236,093	236,250
SD	67,151	65,247	65,247	65,247	62,961	62,961	62,128	62,143	62,096
TN	339,166	339,145	339,132	339,132	339,132	339,132	339,132	339,132	339,225
TX	1,343,319	1,319,210	1,319,140	1,319,005	1,318,373	1,316,810	1,316,880	1,316,880	1,316,887
VT	17,790	17,790	17,790	17,790	17,790	17,790	17,790	17,790	17,790
VA	342,389	342,350	342,344	342,330	342,291	342,247	342,108	342,020	340,646
WV	207,415	206,112	204,797	205,118	199,688	201,128	199,216	200,110	182,732
WI	257,546	247,554	247,326	247,208	246,854	246,914	246,903	246,502	246,281

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

Table 2-23. Total Estimated NO_x Emissions* (Tons) in 2014 for the Air Quality Modeling in Ozone Season.

Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State										
AL	364,171	333,159	333,594	333,564	333,436	332,469	332,487	332,146	330,959	327,648
AR	200,092	190,385	169,902	169,914	169,349	169,013	168,407	168,644	168,954	169,126
CT	74,801	67,040	67,040	67,040	67,040	67,040	67,040	67,040	67,040	67,040
DE	39,687	38,487	38,960	38,964	38,959	38,959	38,961	38,958	38,958	38,949
DC	9,802	8,569	8,569	8,569	8,569	8,569	8,569	8,569	8,569	8,569
FL	863,515	797,575	753,403	725,943	724,783	723,914	722,880	716,516	698,160	687,167
GA	413,780	350,207	346,359	345,906	345,418	345,418	345,478	344,995	345,046	344,541
IL	542,957	500,795	501,040	501,429	501,589	501,534	501,399	501,007	501,077	501,340
IN	505,127	469,488	467,180	464,202	462,225	460,443	459,688	457,615	448,475	445,642
IA	251,721	238,078	226,168	222,308	222,036	222,111	220,962	219,613	219,005	215,913
KS	295,012	290,858	249,050	249,100	248,981	248,877	248,427	247,824	245,626	245,284
KY	346,399	321,347	321,409	319,878	318,106	318,134	316,935	316,754	315,708	312,367
LA	586,912	563,890	555,458	555,463	555,539	555,561	555,561	555,561	546,997	546,230
ME	64,559	60,505	60,434	60,434	60,434	60,295	60,126	60,049	60,054	60,070
MD	181,731	170,730	170,863	170,897	170,884	171,003	171,033	170,983	171,001	170,961
MA	191,911	181,981	182,248	182,248	182,249	182,249	182,264	182,288	182,279	182,258
MI	478,955	445,539	445,572	445,618	445,095	440,954	441,021	440,977	440,970	439,348
MN	352,694	330,863	314,549	314,944	315,340	314,814	315,054	315,099	314,990	314,369
MS	222,801	207,166	187,875	187,875	187,869	187,869	187,869	187,869	187,863	184,069
MO	354,085	332,931	332,234	329,856	328,984	327,957	327,713	325,215	310,114	305,820
NE	194,233	182,717	163,940	164,091	164,091	164,074	158,099	158,163	158,113	158,111
NH	44,067	39,883	39,866	39,866	39,828	39,828	39,828	39,783	39,783	39,783
NJ	220,410	211,325	211,114	211,022	210,980	210,636	210,538	210,526	210,527	206,992
NY	423,582	393,882	393,433	393,099	391,449	391,429	391,220	390,131	390,113	389,814
NC	395,854	373,849	373,693	373,621	373,828	373,712	373,400	373,338	373,298	371,432
ND	136,110	130,252	119,797	119,797	118,486	117,659	101,670	101,661	101,596	96,620
OH	552,945	524,055	521,316	518,638	518,806	513,529	513,234	511,875	511,531	497,298
OK	369,167	344,203	315,551	315,551	315,337	315,059	312,597	312,419	312,071	306,137
PA	566,418	541,262	539,584	537,266	537,059	537,830	536,978	536,285	536,286	494,361
RI	20,940	19,543	19,522	19,522	19,522	19,522	19,522	19,531	19,530	19,530
SC	238,903	224,419	223,852	223,028	222,820	222,467	221,830	221,594	221,446	221,176
SD	67,151	62,388	60,484	60,484	60,484	48,844	48,844	48,867	48,867	48,867
TN	339,166	313,805	313,784	313,664	312,146	312,045	312,145	312,145	312,194	312,028
TX	1,343,319	1,253,342	1,231,609	1,230,211	1,229,910	1,228,861	1,226,638	1,226,400	1,226,481	1,225,987
VT	17,790	15,713	15,713	15,713	15,713	15,713	15,713	15,713	15,713	15,713
VA	342,389	316,274	316,004	314,935	314,840	314,838	314,764	314,912	314,832	314,124
WV	207,415	201,764	201,387	199,964	189,105	189,844	184,312	184,418	179,017	178,482
WI	257,546	242,515	231,873	231,852	231,470	231,259	230,919	230,016	229,863	228,534

* For some smaller states at some marginal costs of reductions, a higher marginal cost option may be chosen over a lower marginal cost option if it allows system-wide electrical demand to be met at a lower system-wide total cost (because the model is optimizing for overall system cost, not for lowest NO_x cost).

Table 2-24. Fraction* of Total NO_x Emissions at Various Marginal Costs per Ton in 2012 to the Total Emissions in the 2012 Base.

Year	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$750	$1,000	$1,250	$1,500
State						
AL	1.0000	0.8559	0.8558	0.8558	0.8557	0.8555
AR	1.0000	0.9020	0.9018	0.9022	0.9029	0.9027
CT	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
DE	1.0000	1.0062	1.0058	1.0012	1.0012	1.0012
DC	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
FL	1.0000	0.9281	0.8988	0.8983	0.8974	0.8973
GA	1.0000	0.9947	0.9947	0.9948	0.9948	0.9943
IL	1.0000	0.9616	0.9618	0.9616	0.9616	0.9617
IN	1.0000	0.8286	0.8280	0.8268	0.8259	0.8230
IA	1.0000	0.9522	0.9408	0.9391	0.9382	0.9382
KS	1.0000	0.8716	0.8743	0.8737	0.8723	0.8715
KY	1.0000	0.7826	0.7820	0.7802	0.7788	0.7782
LA	1.0000	0.9852	0.9852	0.9850	0.9849	0.9849
ME	1.0000	0.9988	0.9983	0.9981	0.9981	0.9981
MD	1.0000	1.0002	1.0002	1.0002	1.0002	1.0002
MA	1.0000	1.0011	1.0011	1.0011	1.0011	1.0010
MI	1.0000	0.9373	0.9373	0.9374	0.9374	0.9374
MN	1.0000	0.9545	0.9547	0.9552	0.9556	0.9556
MS	1.0000	0.9169	0.9170	0.9154	0.9145	0.9145
MO	1.0000	0.9974	0.9897	0.9853	0.9796	0.9753
NE	1.0000	0.9049	0.9049	0.9049	0.9043	0.9027
NH	1.0000	0.9998	0.9998	0.9995	0.9995	0.9995
NJ	1.0000	0.9869	0.9869	0.9870	0.9870	0.9864
NY	1.0000	0.9999	0.9998	0.9998	0.9997	0.9997
NC	1.0000	0.9998	0.9998	0.9998	0.9998	0.9999
ND	1.0000	0.9232	0.9232	0.9197	0.9190	0.9109
OH	1.0000	0.8915	0.8914	0.8908	0.8894	0.8897
OK	1.0000	0.9046	0.9044	0.9044	0.9042	0.9040
PA	1.0000	0.8634	0.8618	0.8621	0.8614	0.8598
RI	1.0000	1.0002	1.0002	1.0003	1.0003	1.0003
SC	1.0000	0.9518	0.9518	0.9516	0.9498	0.9498
SD	1.0000	0.9716	0.9716	0.9580	0.9572	0.9564
TN	1.0000	0.8821	0.8821	0.8821	0.8821	0.8821
TX	1.0000	0.9813	0.9813	0.9813	0.9813	0.9810
VT	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA	1.0000	0.9990	0.9990	0.9990	0.9990	0.9990
WV	1.0000	0.7754	0.7747	0.7706	0.7687	0.7683
WI	1.0000	0.9642	0.9621	0.9620	0.9607	0.9591

*For some states, emissions may increase slightly from one marginal cost to the next leading to increasing values. For cases where the fraction is greater than 1, total state emissions are estimated to be larger than that state's 2012 base case.

Table 2-25. Fraction* of Total NO_x Emissions at Various Marginal Costs per Ton in 2014 to the Total Emissions in the 2012 Base.

Year	2012	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500
State							
AL	1.0000	0.9384	0.7836	0.7837	0.7835	0.7836	0.7831
AR	1.0000	0.9477	0.8480	0.8481	0.8482	0.8467	0.8466
CT	1.0000	0.8964	0.8965	0.8965	0.8964	0.8964	0.8964
DE	1.0000	0.9719	0.9777	0.9776	0.9730	0.9729	0.9729
DC	1.0000	0.8741	0.8741	0.8741	0.8741	0.8741	0.8741
FL	1.0000	0.9220	0.8600	0.8343	0.8335	0.8332	0.8329
GA	1.0000	0.8452	0.8390	0.8381	0.8381	0.8381	0.8376
IL	1.0000	0.9276	0.8836	0.8832	0.8830	0.8830	0.8829
IN	1.0000	0.9401	0.7686	0.7675	0.7676	0.7667	0.7676
IA	1.0000	0.9403	0.8919	0.8789	0.8765	0.8754	0.8693
KS	1.0000	0.9824	0.8429	0.8433	0.8418	0.8412	0.8365
KY	1.0000	0.9405	0.7209	0.7202	0.7193	0.7187	0.7184
LA	1.0000	0.9628	0.9486	0.9486	0.9487	0.9487	0.9487
ME	1.0000	0.9336	0.9324	0.9317	0.9288	0.9266	0.9266
MD	1.0000	0.9403	0.9409	0.9409	0.9409	0.9410	0.9410
MA	1.0000	0.9481	0.9491	0.9491	0.9491	0.9490	0.9490
MI	1.0000	0.9293	0.8662	0.8658	0.8652	0.8652	0.8648
MN	1.0000	0.9389	0.8923	0.8930	0.8926	0.8926	0.8923
MS	1.0000	0.9274	0.8439	0.8439	0.8439	0.8439	0.8439
MO	1.0000	0.9413	0.9385	0.9338	0.9325	0.9115	0.8795
NE	1.0000	0.9391	0.8436	0.8439	0.8436	0.8121	0.8121
NH	1.0000	0.9051	0.9049	0.9049	0.9049	0.9049	0.9045
NJ	1.0000	0.9532	0.9396	0.9396	0.9396	0.9392	0.9392
NY	1.0000	0.9291	0.9274	0.9230	0.9228	0.9225	0.9204
NC	1.0000	0.9448	0.9446	0.9440	0.9441	0.9442	0.9441
ND	1.0000	0.9570	0.8802	0.8802	0.8774	0.7531	0.7504
OH	1.0000	0.9384	0.8274	0.8266	0.8257	0.8244	0.8166
OK	1.0000	0.9420	0.8578	0.8580	0.8582	0.8582	0.8580
PA	1.0000	0.9510	0.8107	0.8103	0.8101	0.8098	0.8094
RI	1.0000	0.9347	0.9338	0.9338	0.9338	0.9338	0.9338
SC	1.0000	0.9397	0.8907	0.8894	0.8892	0.8891	0.8892
SD	1.0000	0.9288	0.9004	0.9004	0.7267	0.7267	0.7267
TN	1.0000	0.9195	0.8015	0.8015	0.8015	0.8015	0.8012
TX	1.0000	0.9367	0.9213	0.9207	0.9205	0.9187	0.9187
VT	1.0000	0.8832	0.8832	0.8832	0.8832	0.8832	0.8832
VA	1.0000	0.9222	0.9209	0.9209	0.9214	0.9217	0.9208
WV	1.0000	0.9532	0.7315	0.7306	0.7293	0.7287	0.7089
WI	1.0000	0.9393	0.9000	0.9002	0.8981	0.8970	0.8951

*For some states, emissions may increase slightly from one marginal cost to the next leading to increasing values. For cases where the fraction is greater than 1, total state emissions are estimated to be larger than that state's 2012 base case

Table 2-26. Fraction* of Total SO_2 Emissions at Various Marginal Costs per Ton in 2012 to the Total Emissions in the 2012 Base.

	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State															
AL	1.0000	0.9525	0.8685	0.8035	0.7036	0.6774	0.6786	0.6772	0.6399	0.6382	0.6288	0.6244	0.6107	0.6101	0.6092
AR	1.0000	1.0001	0.9959	0.9968	0.9974	0.9954	0.9809	0.9798	0.9798	0.9805	0.9808	0.9810	0.9809	0.9813	0.9838
CT	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0004	1.0006	1.0006	1.0006	1.0006
DE	1.0000	1.0272	1.0278	1.0278	1.0277	1.0275	1.0275	1.0273	1.0273	1.0272	1.0272	1.0271	1.0271	1.0271	1.0267
DC	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
FL	1.0000	0.9486	0.8780	0.8846	0.8189	0.7722	0.7726	0.7702	0.7708	0.7551	0.7502	0.7490	0.7433	0.7224	0.7206
GA	1.0000	0.9959	0.5936	0.5922	0.5902	0.5971	0.5868	0.5849	0.5627	0.5434	0.5431	0.5396	0.5318	0.5323	0.5296
IL	1.0000	0.7031	0.5959	0.5479	0.4787	0.4719	0.4721	0.4678	0.4654	0.4592	0.4512	0.4488	0.4466	0.4453	0.4407
IN	1.0000	0.6734	0.5804	0.5390	0.5314	0.5094	0.5048	0.4839	0.4819	0.4510	0.4453	0.4444	0.4405	0.4368	0.4346
IA	1.0000	0.9240	0.8581	0.8415	0.8352	0.8319	0.7837	0.7436	0.7439	0.7444	0.7416	0.7376	0.7368	0.7355	0.7376
KS	1.0000	1.0130	1.0207	0.9477	0.9942	0.8975	0.8669	0.8648	0.8426	0.8384	0.8379	0.8372	0.8365	0.8324	0.8207
KY	1.0000	0.4569	0.4411	0.4314	0.4181	0.4036	0.3916	0.3707	0.3562	0.3529	0.3387	0.3290	0.3196	0.3187	0.2951
LA	1.0000	0.9971	0.9867	0.9867	0.9867	0.9867	0.9855	0.9855	0.9855	0.9855	0.9855	0.9855	0.9810	0.9810	0.9718
ME	1.0000	1.0000	0.9844	0.9849	0.9849	0.9849	0.9849	0.8985	0.8649	0.8592	0.8041	0.7496	0.7125	0.7153	0.7153
MD	1.0000	1.0001	1.0001	1.0001	0.9556	0.9461	0.9422	0.9425	0.9417	0.9240	0.9189	0.9195	0.9177	0.9170	0.8845
MA	1.0000	1.0095	1.0095	1.0095	0.9247	0.9247	0.9247	0.9247	0.9247	0.9247	0.9247	0.9247	0.9245	0.9245	0.9245
MI	1.0000	0.9628	0.9247	0.9003	0.8198	0.8147	0.8099	0.8037	0.8063	0.8065	0.8048	0.8001	0.8022	0.8023	0.7965
MN	1.0000	1.0020	0.9680	0.9447	0.9383	0.9390	0.9390	0.9390	0.9411	0.9406	0.9405	0.9455	0.9406	0.9358	0.9306
MS	1.0000	1.0000	1.0000	1.0000	0.9950	0.9948	0.9949	0.9948	1.0000	0.9988	0.9989	0.9988	0.9988	0.9893	0.9887
MO	1.0000	0.6543	0.6113	0.6074	0.6017	0.6000	0.5886	0.5664	0.5610	0.5597	0.5592	0.5589	0.5577	0.5652	0.5745
NE	1.0000	0.9943	0.9910	0.9808	0.9563	0.9118	0.7360	0.7123	0.7053	0.7021	0.7012	0.6957	0.6939	0.6939	0.6881
NH	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NJ	1.0000	1.0000	0.8497	0.8485	0.8419	0.7700	0.7700	0.7700	0.7680	0.7728	0.7728	0.7717	0.7708	0.7708	0.7708
NY	1.0000	1.0000	1.0000	0.9981	0.9984	0.9972	0.9945	0.9942	0.9535	0.9277	0.9257	0.9221	0.8973	0.8965	0.8686
NC	1.0000	0.9592	0.9897	0.9707	0.9549	0.9427	0.9421	0.9257	0.9213	0.9209	0.8992	0.9049	0.8966	0.8932	0.8868
ND	1.0000	0.9826	0.9826	0.9818	0.9818	0.9818	0.6462	0.6462	0.6462	0.6347	0.6347	0.6347	0.6342	0.6342	0.6342
OH	1.0000	0.6453	0.5473	0.5240	0.4982	0.4561	0.4266	0.4003	0.3924	0.3900	0.3653	0.3513	0.3470	0.3438	0.3328
OK	1.0000	1.0185	0.9963	0.8917	0.7857	0.7994	0.7453	0.7453	0.7453	0.7453	0.7453	0.7453	0.7453	0.7453	0.7453
PA	1.0000	0.8924	0.5057	0.4652	0.4509	0.4215	0.4099	0.3960	0.3917	0.3843	0.3530	0.3467	0.3435	0.3431	0.3372
RI	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
SC	1.0000	0.9694	0.9880	0.9781	0.9595	0.9564	0.9500	0.9448	0.9099	0.8831	0.8809	0.8711	0.8693	0.8682	0.8508
SD	1.0000	1.0000	0.9743	0.9743	0.9743	0.9413	0.9413	0.9413	0.9413	0.9413	0.9413	0.9413	0.9413	0.9413	0.9413
TN	1.0000	0.5030	0.3426	0.3399	0.3377	0.3375	0.3375	0.3361	0.3361	0.3363	0.3361	0.3320	0.3302	0.3131	0.3119
TX	1.0000	0.9982	0.9864	0.9844	0.9842	0.9493	0.9493	0.9476	0.9475	0.9471	0.9469	0.9469	0.9469	0.9469	0.9462
VT	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA	1.0000	0.9999	0.9565	0.9121	0.9095	0.9095	0.9069	0.9004	0.8853	0.8681	0.8673	0.8587	0.8568	0.8508	0.8405
WV	1.0000	0.4117	0.3801	0.3535	0.3194	0.3106	0.3076	0.2930	0.2841	0.2824	0.2790	0.2752	0.2733	0.2686	0.2655
WI	1.0000	0.9674	0.9519	0.9500	0.9687	0.9165	0.9174	0.8883	0.8875	0.8835	0.9039	0.9122	0.9077	0.9078	0.9153

*For some states, emissions may increase slightly from one marginal cost to the next leading to increasing values. For cases where the fraction is greater than 1, total state emissions are estimated to be larger than that state's 2012 base case

Table 2-27. Fraction* of Total SO_2 Emissions at Various Marginal Costs per Ton in 2014 to the Total Emissions in the 2012 Base.

	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State																
AL	1.0000	0.9670	0.9337	0.8264	0.7692	0.6524	0.6400	0.6325	0.6299	0.6294	0.6172	0.5868	0.4942	0.4892	0.4514	0.4230
AR	1.0000	1.0193	1.0195	0.9971	0.9974	0.9974	0.9973	0.9973	0.9976	0.9975	0.9978	0.9880	0.9815	0.9685	0.8850	0.4281
CT	1.0000	1.0010	1.0010	1.0010	1.0010	1.0010	1.0010	1.0010	1.0010	1.0010	1.0010	0.9098	0.9098	0.9098	0.9070	0.8933
DE	1.0000	1.0241	1.0496	1.0502	1.0506	1.0506	1.0507	1.0508	1.0508	1.0508	1.0398	1.0402	1.0402	1.0355	1.0196	1.0196
DC	1.0000	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980	0.9980
FL	1.0000	0.9387	0.9027	0.8888	0.8882	0.8192	0.7740	0.7747	0.7738	0.7655	0.7638	0.7612	0.7049	0.6923	0.6825	0.6737
GA	1.0000	0.4402	0.4288	0.3851	0.3863	0.3815	0.3812	0.3787	0.3751	0.3566	0.3429	0.3337	0.3246	0.3193	0.3105	0.2829
IL	1.0000	0.3931	0.3748	0.3523	0.3513	0.3523	0.3522	0.3523	0.3523	0.3505	0.3520	0.3519	0.3506	0.3470	0.3408	0.3269
IN	1.0000	0.9731	0.6428	0.5965	0.5147	0.5064	0.4905	0.4879	0.4747	0.4528	0.4489	0.4462	0.4208	0.4028	0.3882	0.3502
IA	1.0000	0.9741	0.8803	0.8382	0.7999	0.7679	0.7431	0.7415	0.7377	0.7400	0.7372	0.7348	0.7326	0.7290	0.7247	0.6002
KS	1.0000	1.0464	1.0394	0.9619	0.8995	0.9009	0.9002	0.8834	0.8774	0.8722	0.8696	0.8684	0.8642	0.7532	0.7331	0.6751
KY	1.0000	1.0224	0.4283	0.4218	0.3996	0.3939	0.3931	0.3868	0.3725	0.3260	0.3136	0.3036	0.2823	0.2381	0.2235	0.2031
LA	1.0000	0.9594	0.9594	0.9595	0.9596	0.9596	0.9596	0.9596	0.9597	0.9597	0.9597	0.9597	0.9597	0.9585	0.9225	0.7864
ME	1.0000	0.9278	0.9278	0.9278	0.8754	0.8569	0.8551	0.8551	0.8551	0.7709	0.7111	0.7111	0.7115	0.7115	0.7115	0.7115
MD	1.0000	0.9552	0.9569	0.9570	0.9570	0.9569	0.9569	0.9569	0.9569	0.9569	0.9571	0.9571	0.9572	0.9331	0.9316	0.9234
MA	1.0000	1.0244	1.0339	1.0339	1.0328	0.9474	0.9474	0.9474	0.9474	0.9474	0.9474	0.9474	0.9434	0.9435	0.9416	0.9132
MI	1.0000	0.9706	0.9187	0.9161	0.8991	0.8266	0.8213	0.8138	0.8123	0.8097	0.8079	0.8053	0.7990	0.7322	0.6987	0.5852
MN	1.0000	1.0740	1.0217	0.9981	0.9616	0.9609	0.9367	0.9301	0.9294	0.9300	0.9304	0.9315	0.9331	0.9325	0.9248	0.9111
MS	1.0000	1.0112	0.9869	0.9940	0.9855	0.9850	0.9862	0.9901	0.9901	0.9901	0.9901	0.9901	0.9794	0.9759	0.9431	0.6320
MO	1.0000	1.0924	0.7223	0.6329	0.6166	0.6070	0.5882	0.5889	0.5893	0.5873	0.5858	0.5867	0.5810	0.5583	0.5353	0.3806
NE	1.0000	0.9630	0.9855	0.9462	0.7907	0.7224	0.6990	0.6933	0.6930	0.6901	0.6834	0.6807	0.6770	0.6680	0.5178	0.4368
NH	1.0000	0.9637	0.9637	0.9637	0.9637	0.9637	0.9637	0.9603	0.9987	0.9987	0.9987	0.9987	0.9987	0.9987	0.9980	0.8332
NJ	1.0000	1.0356	1.0340	0.8771	0.8770	0.8036	0.8043	0.8054	0.8034	0.8035	0.8032	0.8006	0.7699	0.7699	0.7613	0.7225
NY	1.0000	0.9880	0.9847	0.9877	0.9850	0.9716	0.9666	0.9555	0.9199	0.9168	0.9051	0.9034	0.8930	0.8655	0.7758	0.7573
NC	1.0000	1.0675	1.0675	1.0674	1.0414	1.0417	1.0265	1.0226	0.9717	0.9667	0.9615	0.9298	0.9066	0.9081	0.8786	0.7754
ND	1.0000	1.0287	0.9800	0.9800	0.7904	0.6437	0.6437	0.6437	0.6436	0.6436	0.6320	0.6320	0.6320	0.5424	0.5419	0.5295
OH	1.0000	0.9005	0.6603	0.6329	0.6014	0.5061	0.4985	0.4535	0.4184	0.3922	0.3786	0.3609	0.3421	0.3384	0.3242	0.3076
OK	1.0000	1.0470	1.0470	0.8491	0.7749	0.7749	0.7749	0.7749	0.7752	0.7752	0.7751	0.7751	0.7751	0.7656	0.7663	0.3562
PA	1.0000	1.0035	0.8701	0.5278	0.4903	0.4475	0.4345	0.3426	0.3346	0.3142	0.2942	0.2897	0.2721	0.2709	0.2631	0.2456
RI	1.0000	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279	1.0279
SC	1.0000	1.0352	0.9586	0.9526	0.9500	0.9454	0.9399	0.9267	0.9158	0.9038	0.8708	0.7235	0.7131	0.7039	0.6132	0.5501
SD	1.0000	0.9987	0.9987	0.9987	0.9730	0.9730	0.9730	0.9454	0.9243	0.9064	0.9064	0.9063	0.9063	0.9063	0.9063	0.5831
TN	1.0000	1.0035	0.3746	0.3416	0.3370	0.3367	0.3367	0.3367	0.3369	0.3346	0.3309	0.3099	0.3112	0.3090	0.2985	0.2686
TX	1.0000	1.0593	1.0527	1.0515	1.0507	1.0501	1.0154	1.0154	1.0152	1.0145	1.0104	1.0114	1.0071	1.0026	0.9583	0.6993
VT	1.0000	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011	1.0011
VA	1.0000	0.9664	0.9554	0.9540	0.8671	0.8653	0.8615	0.8562	0.8551	0.8502	0.8379	0.7996	0.7331	0.6972	0.6548	0.6195
WV	1.0000	0.8568	0.3648	0.3511	0.3420	0.3389	0.3371	0.3365	0.3289	0.3354	0.3334	0.3089	0.3033	0.2924	0.2723	0.2393
WI	1.0000	1.0532	1.0196	1.0004	1.0029	0.9983	0.9438	0.9364	0.9268	0.9156	0.9116	0.8986	0.8932	0.8846	0.8508	0.7597

*For some states, emissions may increase slightly from one marginal cost to the next leading to increasing values. For cases where the fraction is greater than 1, total state emissions are estimated to be larger than that state's 2012 base case.

Table 2-28. Fraction* of Total Ozone Season NO_x Emissions at Various Marginal Costs per Ton in 2012 to the Total Ozone Season Emissions in the 2012 Base.

Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State									
AL	1.0000	1.0007	1.0008	0.9996	0.9958	0.9958	0.9955	0.9944	0.9916
AR	1.0000	0.9019	0.9028	0.9037	0.9031	0.9041	0.9032	0.9033	0.9042
CT	1.0000	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9999
DE	1.0000	1.0104	1.0104	1.0090	1.0066	1.0066	1.0066	1.0066	1.0066
DC	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
FL	1.0000	0.9382	0.9068	0.9047	0.9045	0.9042	0.9042	0.9025	0.9015
GA	1.0000	0.9900	0.9901	0.9892	0.9891	0.9880	0.9880	0.9880	0.9873
IL	1.0000	1.0004	1.0011	1.0013	1.0016	1.0018	1.0017	1.0020	1.0015
IN	1.0000	0.9934	0.9819	0.9746	0.9715	0.9666	0.9655	0.9613	0.9596
IA	1.0000	0.9547	0.9403	0.9400	0.9377	0.9398	0.9411	0.9402	0.9343
KS	1.0000	0.8740	0.8764	0.8771	0.8716	0.8720	0.8707	0.8698	0.8695
KY	1.0000	0.9956	0.9910	0.9872	0.9870	0.9798	0.9780	0.9753	0.9664
LA	1.0000	0.9843	0.9839	0.9835	0.9836	0.9838	0.9839	0.9839	0.9839
ME	1.0000	0.9991	0.9991	0.9991	0.9991	0.9991	0.9991	0.9991	0.9991
MD	1.0000	1.0000	1.0000	0.9998	0.9990	0.9984	0.9984	0.9983	0.9984
MA	1.0000	1.0023	1.0023	1.0023	1.0024	1.0024	1.0023	1.0023	1.0023
MI	1.0000	1.0006	1.0008	1.0008	1.0010	1.0000	0.9936	0.9918	0.9914
MN	1.0000	0.9553	0.9564	0.9567	0.9567	0.9562	0.9564	0.9569	0.9553
MS	1.0000	0.9164	0.9138	0.9138	0.9138	0.9138	0.9138	0.9138	0.9139
MO	1.0000	0.9972	0.9870	0.9818	0.9827	0.9773	0.9777	0.9756	0.9570
NE	1.0000	0.9047	0.9047	0.9009	0.8987	0.8987	0.8987	0.8987	0.8987
NH	1.0000	0.9995	0.9988	0.9988	0.9977	0.9977	0.9977	0.9967	0.9929
NJ	1.0000	1.0000	1.0000	0.9986	0.9983	0.9962	0.9960	0.9956	0.9952
NY	1.0000	0.9998	0.9999	0.9999	0.9998	0.9997	1.0001	1.0001	0.9997
NC	1.0000	1.0000	1.0001	0.9999	0.9999	0.9999	0.9999	1.0002	0.9992
ND	1.0000	0.9232	0.9135	0.9074	0.9074	0.9074	0.8990	0.8903	0.8870
OH	1.0000	0.9965	0.9957	0.9944	0.9954	0.9970	0.9989	0.9984	0.9972
OK	1.0000	0.9129	0.9125	0.9109	0.9102	0.9089	0.9084	0.9080	0.9071
PA	1.0000	0.9997	1.0001	0.9978	0.9961	0.9936	0.9928	0.9905	0.9773
RI	1.0000	1.0000	1.0001	1.0001	1.0001	1.0001	1.0001	1.0001	1.0001
SC	1.0000	1.0000	0.9984	0.9933	0.9933	0.9924	0.9889	0.9882	0.9889
SD	1.0000	0.9716	0.9716	0.9716	0.9376	0.9376	0.9252	0.9254	0.9247
TN	1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	1.0002
TX	1.0000	0.9821	0.9820	0.9819	0.9814	0.9803	0.9803	0.9803	0.9803
VT	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA	1.0000	0.9999	0.9999	0.9998	0.9997	0.9996	0.9992	0.9989	0.9949
WV	1.0000	0.9937	0.9874	0.9889	0.9627	0.9697	0.9605	0.9648	0.8810
WI	1.0000	0.9612	0.9603	0.9599	0.9585	0.9587	0.9587	0.9571	0.9563

*For some states, emissions may increase slightly from one marginal cost to the next leading to increasing values. For cases where the fraction is greater than 1, total state emissions are estimated to be larger than that state's 2012 base case.

Table 2-29. Fraction* of Total Ozone Season NO_x Emissions at Various Marginal Costs per Ton in 2014 to the Total Ozone Season Emissions in the 2012 Base.

Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State										
AL	1.0000	0.9148	0.9160	0.9160	0.9156	0.9129	0.9130	0.9121	0.9088	0.8997
AR	1.0000	0.9515	0.8491	0.8492	0.8464	0.8447	0.8416	0.8428	0.8444	0.8452
CT	1.0000	0.8962	0.8962	0.8962	0.8962	0.8962	0.8962	0.8962	0.8962	0.8962
DE	1.0000	0.9698	0.9817	0.9818	0.9817	0.9817	0.9817	0.9816	0.9816	0.9814
DC	1.0000	0.8741	0.8741	0.8741	0.8741	0.8741	0.8741	0.8741	0.8741	0.8741
FL	1.0000	0.9236	0.8725	0.8407	0.8393	0.8383	0.8371	0.8298	0.8085	0.7958
GA	1.0000	0.8464	0.8371	0.8360	0.8348	0.8348	0.8349	0.8338	0.8339	0.8327
IL	1.0000	0.9223	0.9228	0.9235	0.9238	0.9237	0.9235	0.9227	0.9229	0.9234
IN	1.0000	0.9294	0.9249	0.9190	0.9151	0.9115	0.9100	0.9059	0.8878	0.8822
IA	1.0000	0.9458	0.8985	0.8832	0.8821	0.8824	0.8778	0.8724	0.8700	0.8577
KS	1.0000	0.9859	0.8442	0.8444	0.8440	0.8436	0.8421	0.8400	0.8326	0.8314
KY	1.0000	0.9277	0.9279	0.9234	0.9183	0.9184	0.9149	0.9144	0.9114	0.9018
LA	1.0000	0.9608	0.9464	0.9464	0.9465	0.9466	0.9466	0.9466	0.9320	0.9307
ME	1.0000	0.9372	0.9361	0.9361	0.9361	0.9339	0.9313	0.9301	0.9302	0.9305
MD	1.0000	0.9395	0.9402	0.9404	0.9403	0.9410	0.9411	0.9409	0.9410	0.9407
MA	1.0000	0.9483	0.9497	0.9496	0.9497	0.9497	0.9497	0.9499	0.9498	0.9497
MI	1.0000	0.9302	0.9303	0.9304	0.9293	0.9207	0.9208	0.9207	0.9207	0.9173
MN	1.0000	0.9381	0.8918	0.8930	0.8941	0.8926	0.8933	0.8934	0.8931	0.8913
MS	1.0000	0.9298	0.8432	0.8432	0.8432	0.8432	0.8432	0.8432	0.8432	0.8262
MO	1.0000	0.9403	0.9383	0.9316	0.9291	0.9262	0.9255	0.9185	0.8758	0.8637
NE	1.0000	0.9407	0.8440	0.8448	0.8448	0.8447	0.8140	0.8143	0.8140	0.8140
NH	1.0000	0.9051	0.9047	0.9047	0.9038	0.9038	0.9038	0.9028	0.9028	0.9028
NJ	1.0000	0.9588	0.9578	0.9574	0.9572	0.9557	0.9552	0.9552	0.9552	0.9391
NY	1.0000	0.9299	0.9288	0.9280	0.9241	0.9241	0.9236	0.9210	0.9210	0.9203
NC	1.0000	0.9444	0.9440	0.9438	0.9444	0.9441	0.9433	0.9431	0.9430	0.9383
ND	1.0000	0.9570	0.8801	0.8801	0.8705	0.8644	0.7470	0.7469	0.7464	0.7099
OH	1.0000	0.9478	0.9428	0.9380	0.9383	0.9287	0.9282	0.9257	0.9251	0.8994
OK	1.0000	0.9324	0.8548	0.8548	0.8542	0.8534	0.8468	0.8463	0.8453	0.8293
PA	1.0000	0.9556	0.9526	0.9485	0.9482	0.9495	0.9480	0.9468	0.9468	0.8728
RI	1.0000	0.9333	0.9323	0.9323	0.9323	0.9323	0.9323	0.9327	0.9327	0.9327
SC	1.0000	0.9394	0.9370	0.9336	0.9327	0.9312	0.9285	0.9275	0.9269	0.9258
SD	1.0000	0.9291	0.9007	0.9007	0.9007	0.7274	0.7274	0.7277	0.7277	0.7277
TN	1.0000	0.9252	0.9252	0.9248	0.9203	0.9200	0.9203	0.9203	0.9205	0.9200
TX	1.0000	0.9330	0.9168	0.9158	0.9156	0.9148	0.9131	0.9130	0.9130	0.9127
VT	1.0000	0.8832	0.8832	0.8832	0.8832	0.8832	0.8832	0.8832	0.8832	0.8832
VA	1.0000	0.9237	0.9229	0.9198	0.9195	0.9195	0.9193	0.9198	0.9195	0.9174
WV	1.0000	0.9728	0.9709	0.9641	0.9117	0.9153	0.8886	0.8891	0.8631	0.8605
WI	1.0000	0.9416	0.9003	0.9002	0.8988	0.8979	0.8966	0.8931	0.8925	0.8874

*For some states, emissions may increase slightly from one marginal cost to the next leading to increasing values. For cases where the fraction is greater than 1, total state emissions are estimated to be larger than that state's 2012 base case.

Table 2-30. Fractional Reduction* of Total NO_x Emissions Removed at Various Marginal Costs per Ton in 2014 to the Total Emissions in the 2014 Base.

Year	2012**	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500
State							
AL	-0.0656	0.0000	0.1650	0.1649	0.1651	0.1650	0.1655
AR	-0.0552	0.0000	0.1052	0.1051	0.1049	0.1066	0.1067
CT	-0.1156	0.0000	-0.0001	-0.0001	-0.0001	0.0000	0.0000
DE	-0.0289	0.0000	-0.0059	-0.0059	-0.0011	-0.0010	-0.0010
DC	-0.1440	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FL	-0.0846	0.0000	0.0673	0.0951	0.0960	0.0963	0.0967
GA	-0.1832	0.0000	0.0073	0.0084	0.0084	0.0084	0.0090
IL	-0.0780	0.0000	0.0475	0.0479	0.0481	0.0481	0.0482
IN	-0.0637	0.0000	0.1824	0.1836	0.1835	0.1844	0.1835
IA	-0.0635	0.0000	0.0514	0.0653	0.0678	0.0690	0.0755
KS	-0.0179	0.0000	0.1420	0.1416	0.1432	0.1437	0.1485
KY	-0.0633	0.0000	0.2335	0.2343	0.2352	0.2358	0.2361
LA	-0.0387	0.0000	0.0147	0.0147	0.0146	0.0146	0.0146
ME	-0.0711	0.0000	0.0013	0.0020	0.0052	0.0075	0.0075
MD	-0.0635	0.0000	-0.0006	-0.0006	-0.0007	-0.0008	-0.0008
MA	-0.0548	0.0000	-0.0010	-0.0010	-0.0010	-0.0010	-0.0010
MI	-0.0761	0.0000	0.0679	0.0683	0.0690	0.0690	0.0694
MN	-0.0651	0.0000	0.0496	0.0489	0.0493	0.0493	0.0496
MS	-0.0782	0.0000	0.0901	0.0901	0.0901	0.0901	0.0901
MO	-0.0623	0.0000	0.0031	0.0080	0.0094	0.0317	0.0657
NE	-0.0648	0.0000	0.1018	0.1014	0.1017	0.1352	0.1353
NH	-0.1049	0.0000	0.0002	0.0002	0.0002	0.0002	0.0006
NJ	-0.0491	0.0000	0.0142	0.0143	0.0142	0.0146	0.0147
NY	-0.0763	0.0000	0.0019	0.0066	0.0068	0.0072	0.0094
NC	-0.0584	0.0000	0.0002	0.0008	0.0008	0.0006	0.0007
ND	-0.0450	0.0000	0.0803	0.0803	0.0831	0.2130	0.2158
OH	-0.0657	0.0000	0.1182	0.1191	0.1201	0.1214	0.1298
OK	-0.0616	0.0000	0.0893	0.0891	0.0890	0.0890	0.0892
PA	-0.0516	0.0000	0.1475	0.1479	0.1481	0.1485	0.1489
RI	-0.0698	0.0000	0.0010	0.0010	0.0010	0.0010	0.0010
SC	-0.0641	0.0000	0.0522	0.0536	0.0538	0.0539	0.0538
SD	-0.0767	0.0000	0.0306	0.0306	0.2176	0.2176	0.2176
TN	-0.0875	0.0000	0.1283	0.1283	0.1283	0.1283	0.1287
TX	-0.0675	0.0000	0.0165	0.0171	0.0173	0.0192	0.0193
VT	-0.1322	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	-0.0844	0.0000	0.0014	0.0014	0.0009	0.0006	0.0015
WV	-0.0491	0.0000	0.2325	0.2336	0.2349	0.2355	0.2563
WI	-0.0646	0.0000	0.0418	0.0416	0.0439	0.0450	0.0470

*For some states, emissions may increase slightly from one marginal cost to the next leading to decreasing values. For cases where the fraction is negative, total state emissions are estimated to be larger than that state's 2014 base case.

**In figures IV.D-1 through IV.D-4 in section IV.D of the preamble, reduction in concentration is assessed using the states' 2014 base case, rather than the 2012 base case.

Table 2-31. Fractional Reduction* of Total SO_2 Emissions Removed at Various Marginal Costs per Ton in 2014 to the Total Emissions in the 2014 Base.

	2012**	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
State																
AL	-0.0341	0.0000	0.0345	0.1454	0.2046	0.3254	0.3381	0.3460	0.3486	0.3492	0.3618	0.3932	0.4890	0.4941	0.5332	0.5626
AR	0.0189	0.0000	-0.0002	0.0218	0.0215	0.0215	0.0215	0.0215	0.0213	0.0214	0.0211	0.0306	0.0370	0.0498	0.1318	0.5800
CT	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0911	0.0911	0.0911	0.0940	0.1076
DE	0.0235	0.0000	-0.0249	-0.0255	-0.0259	-0.0259	-0.0260	-0.0261	-0.0261	-0.0261	-0.0153	-0.0157	-0.0157	-0.0111	0.0043	0.0043
DC	-0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FL	-0.0653	0.0000	0.0384	0.0532	0.0538	0.1273	0.1755	0.1748	0.1757	0.1846	0.1863	0.1891	0.2491	0.2625	0.2730	0.2823
GA	-1.2718	0.0000	0.0259	0.1252	0.1223	0.1333	0.1341	0.1398	0.1479	0.1899	0.2210	0.2419	0.2625	0.2746	0.2945	0.3573
IL	-1.5437	0.0000	0.0466	0.1038	0.1063	0.1039	0.1041	0.1038	0.1038	0.1084	0.1046	0.1049	0.1081	0.1173	0.1330	0.1684
IN	-0.0276	0.0000	0.3394	0.3870	0.4711	0.4797	0.4960	0.4987	0.5122	0.5347	0.5387	0.5415	0.5676	0.5861	0.6010	0.6401
IA	-0.0266	0.0000	0.0963	0.1395	0.1789	0.2117	0.2371	0.2388	0.2427	0.2403	0.2432	0.2456	0.2479	0.2516	0.2560	0.3838
KS	0.0444	0.0000	0.0067	0.0808	0.1404	0.1391	0.1397	0.1558	0.1615	0.1665	0.1689	0.1701	0.1741	0.2802	0.2994	0.3548
KY	0.0219	0.0000	0.5811	0.5875	0.6092	0.6148	0.6155	0.6217	0.6357	0.6812	0.6932	0.7030	0.7239	0.7671	0.7814	0.8013
LA	-0.0423	0.0000	0.0000	0.0000	-0.0002	-0.0002	-0.0002	-0.0002	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	0.0010	0.0385	0.1803
ME	-0.0778	0.0000	0.0000	0.0000	0.0565	0.0764	0.0784	0.0784	0.0784	0.1692	0.2336	0.2336	0.2332	0.2332	0.2332	0.2332
MD	-0.0470	0.0000	-0.0019	-0.0019	-0.0019	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0020	-0.0021	-0.0021	0.0231	0.0246	0.0332
MA	0.0238	0.0000	-0.0093	-0.0093	-0.0083	0.0751	0.0751	0.0751	0.0751	0.0751	0.0751	0.0751	0.0790	0.0790	0.0808	0.1085
MI	-0.0303	0.0000	0.0535	0.0561	0.0736	0.1484	0.1538	0.1615	0.1631	0.1658	0.1676	0.1703	0.1769	0.2456	0.2801	0.3971
MN	0.0689	0.0000	0.0487	0.0707	0.1047	0.1053	0.1279	0.1340	0.1347	0.1341	0.1337	0.1327	0.1312	0.1318	0.1390	0.1517
MS	0.0110	0.0000	0.0240	0.0169	0.0254	0.0259	0.0247	0.0209	0.0209	0.0209	0.0209	0.0209	0.0315	0.0349	0.0673	0.3750
MO	0.0845	0.0000	0.3388	0.4206	0.4355	0.4443	0.4615	0.4609	0.4606	0.4624	0.4638	0.4629	0.4681	0.4889	0.5099	0.6516
NE	-0.0385	0.0000	-0.0234	0.0174	0.1789	0.2498	0.2741	0.2801	0.2803	0.2834	0.2904	0.2931	0.2970	0.3063	0.4622	0.5464
NH	-0.0377	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0035	-0.0363	-0.0363	-0.0363	-0.0363	-0.0363	-0.0363	-0.0356	0.1354
NJ	0.0344	0.0000	0.0016	0.1531	0.1532	0.2241	0.2234	0.2223	0.2243	0.2242	0.2244	0.2269	0.2566	0.2566	0.2649	0.3024
NY	-0.0121	0.0000	0.0034	0.0003	0.0030	0.0166	0.0217	0.0329	0.0690	0.0720	0.0839	0.0856	0.0962	0.1240	0.2147	0.2335
NC	0.0632	0.0000	0.0000	0.0001	0.0244	0.0242	0.0384	0.0421	0.0897	0.0945	0.0993	0.1290	0.1507	0.1493	0.1769	0.2736
ND	0.0279	0.0000	0.0473	0.0473	0.2316	0.3743	0.3743	0.3743	0.3743	0.3743	0.3856	0.3856	0.3856	0.4727	0.4732	0.4853
OH	-0.1105	0.0000	0.2667	0.2972	0.3321	0.4380	0.4464	0.4964	0.5354	0.5645	0.5795	0.5993	0.6201	0.6242	0.6400	0.6585
OK	0.0449	0.0000	0.0000	0.1890	0.2599	0.2599	0.2599	0.2599	0.2596	0.2596	0.2596	0.2596	0.2596	0.2687	0.2681	0.6598
PA	0.0034	0.0000	0.1329	0.4741	0.5114	0.5540	0.5670	0.6586	0.6665	0.6869	0.7068	0.7113	0.7289	0.7301	0.7378	0.7553
RI	0.0272	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SC	0.0340	0.0000	0.0741	0.0798	0.0823	0.0868	0.0921	0.1049	0.1154	0.1269	0.1589	0.3011	0.3112	0.3201	0.4077	0.4686
SD	-0.0013	0.0000	0.0000	0.0000	0.0257	0.0257	0.0257	0.0533	0.0745	0.0924	0.0924	0.0925	0.0925	0.0925	0.0925	0.4162
TN	0.0035	0.0000	0.6267	0.6596	0.6641	0.6645	0.6645	0.6645	0.6643	0.6666	0.6702	0.6912	0.6899	0.6920	0.7025	0.7323
TX	0.0559	0.0000	0.0062	0.0073	0.0081	0.0086	0.0415	0.0414	0.0416	0.0423	0.0461	0.0452	0.0492	0.0535	0.0954	0.3398
VT	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	-0.0347	0.0000	0.0114	0.0129	0.1028	0.1046	0.1086	0.1141	0.1152	0.1203	0.1330	0.1727	0.2414	0.2786	0.3225	0.3589
WV	-0.1671	0.0000	0.5742	0.5903	0.6009	0.6045	0.6066	0.6073	0.6161	0.6085	0.6108	0.6395	0.6461	0.6588	0.6822	0.7207
WI	0.0505	0.0000	0.0319	0.0502	0.0478	0.0521	0.1038	0.1109	0.1200	0.1306	0.1345	0.1468	0.1519	0.1601	0.1922	0.2786

*For some states, emissions may increase slightly from one marginal cost to the next leading to decreasing values. For cases where the fraction is negative, total state emissions are estimated to be larger than that state's 2014 base case.

**In figures IV.D-1 through IV.D-4 in section IV.D of the preamble, reduction in concentration is assessed using the states' 2014 base case, rather than the 2012 base case.

Table 2-32. Fractional Reduction* of Total Ozone Season NO_x Emissions Removed at Various Marginal Costs per Ton in 2014 to the Total Ozone Season Emissions in the 2014 Base.

Year	2012**	2014	2014	2014	2014	2014	2014	2014	2014	2014
Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
State										
AL	-0.0931	0.0000	-0.0013	-0.0012	-0.0008	0.0021	0.0020	0.0030	0.0066	0.0165
AR	-0.0510	0.0000	0.1076	0.1075	0.1105	0.1123	0.1154	0.1142	0.1126	0.1117
CT	-0.1158	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
DE	-0.0312	0.0000	-0.0123	-0.0124	-0.0123	-0.0122	-0.0123	-0.0122	-0.0122	-0.0120
DC	-0.1440	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FL	-0.0827	0.0000	0.0554	0.0898	0.0913	0.0924	0.0937	0.1016	0.1246	0.1384
GA	-0.1815	0.0000	0.0110	0.0123	0.0137	0.0137	0.0135	0.0149	0.0147	0.0162
IL	-0.0842	0.0000	-0.0005	-0.0013	-0.0016	-0.0015	-0.0012	-0.0004	-0.0006	-0.0011
IN	-0.0759	0.0000	0.0049	0.0113	0.0155	0.0193	0.0209	0.0253	0.0448	0.0508
IA	-0.0573	0.0000	0.0500	0.0662	0.0674	0.0671	0.0719	0.0776	0.0801	0.0931
KS	-0.0143	0.0000	0.1437	0.1436	0.1440	0.1443	0.1459	0.1480	0.1555	0.1567
KY	-0.0780	0.0000	-0.0002	0.0046	0.0101	0.0100	0.0137	0.0143	0.0175	0.0279
LA	-0.0408	0.0000	0.0150	0.0149	0.0148	0.0148	0.0148	0.0148	0.0300	0.0313
ME	-0.0670	0.0000	0.0012	0.0012	0.0012	0.0035	0.0063	0.0075	0.0075	0.0072
MD	-0.0644	0.0000	-0.0008	-0.0010	-0.0009	-0.0016	-0.0018	-0.0015	-0.0016	-0.0013
MA	-0.0546	0.0000	-0.0015	-0.0015	-0.0015	-0.0015	-0.0016	-0.0017	-0.0016	-0.0015
MI	-0.0750	0.0000	-0.0001	-0.0002	0.0010	0.0103	0.0101	0.0102	0.0103	0.0139
MN	-0.0660	0.0000	0.0493	0.0481	0.0469	0.0485	0.0478	0.0476	0.0480	0.0499
MS	-0.0755	0.0000	0.0931	0.0931	0.0931	0.0932	0.0932	0.0931	0.0932	0.1115
MO	-0.0635	0.0000	0.0021	0.0092	0.0119	0.0149	0.0157	0.0232	0.0685	0.0814
NE	-0.0630	0.0000	0.1028	0.1019	0.1019	0.1020	0.1347	0.1344	0.1347	0.1347
NH	-0.1049	0.0000	0.0004	0.0004	0.0014	0.0014	0.0014	0.0025	0.0025	0.0025
NJ	-0.0430	0.0000	0.0010	0.0014	0.0016	0.0033	0.0037	0.0038	0.0038	0.0205
NY	-0.0754	0.0000	0.0011	0.0020	0.0062	0.0062	0.0068	0.0095	0.0096	0.0103
NC	-0.0589	0.0000	0.0004	0.0006	0.0001	0.0004	0.0012	0.0014	0.0015	0.0065
ND	-0.0450	0.0000	0.0803	0.0803	0.0903	0.0967	0.2194	0.2195	0.2200	0.2582
OH	-0.0551	0.0000	0.0052	0.0103	0.0100	0.0201	0.0206	0.0232	0.0239	0.0511
OK	-0.0725	0.0000	0.0832	0.0832	0.0839	0.0847	0.0918	0.0923	0.0934	0.1106
PA	-0.0465	0.0000	0.0031	0.0074	0.0078	0.0063	0.0079	0.0092	0.0092	0.0867
RI	-0.0715	0.0000	0.0010	0.0010	0.0010	0.0010	0.0010	0.0006	0.0006	0.0006
SC	-0.0645	0.0000	0.0025	0.0062	0.0071	0.0087	0.0115	0.0126	0.0132	0.0145
SD	-0.0763	0.0000	0.0305	0.0305	0.0305	0.2171	0.2171	0.2167	0.2167	0.2167
TN	-0.0808	0.0000	0.0001	0.0004	0.0053	0.0056	0.0053	0.0053	0.0051	0.0057
TX	-0.0718	0.0000	0.0173	0.0185	0.0187	0.0195	0.0213	0.0215	0.0214	0.0218
VT	-0.1322	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA	-0.0826	0.0000	0.0009	0.0042	0.0045	0.0045	0.0048	0.0043	0.0046	0.0068
WV	-0.0280	0.0000	0.0019	0.0089	0.0627	0.0591	0.0865	0.0860	0.1127	0.1154
WI	-0.0620	0.0000	0.0439	0.0440	0.0455	0.0464	0.0478	0.0515	0.0522	0.0576

*For some states, emissions may increase slightly from one marginal cost to the next leading to decreasing values. For cases where the fraction is negative, total state emissions are estimated to be larger than that state's 2014 base case.

**In figures IV.D-1 through IV.D-4 in section IV.D of the preamble, reduction in concentration is assessed using the states' 2014 base case, rather than the 2012 base case.

Table 2-33. Estimated State-by-State Annual Sulfate, Nitrate, and Total Sulfate and Nitrate Contributions (μg/m^3) to Each of Three Monitors in 2014 Using the Air Quality Assessment Tool (With SO_2 Marginal Cost at $1,200/Ton and NO_x Marginal Cost at $500/Ton).

	Sulfate Contributions	Sulfate Contributions	Sulfate Contributions	Nitrate Contributions	Nitrate Contributions	Nitrate Contributions	Total Nitrate and Sulfate Contributions	Total Nitrate and Sulfate Contributions	Total Nitrate and Sulfate Contributions
Monitor Identification Number	420030064	010730023	390618001	420030064	010730023	390618001	420030064	010730023	390618001
Receptor state	Pennsylvania	Alabama	Ohio	Pennsylvania	Alabama	Ohio	Pennsylvania	Alabama	Ohio
Receptor county	Allegheny	Jefferson	Hamilton	Allegheny	Jefferson	Hamilton	Allegheny	Jefferson	Hamilton
2012 Average Design Value	18.9	17.15	16.93	18.9	17.15	16.93	18.9	17.15	16.93
2012 Max Design Value	19.31	17.33	17.27	19.31	17.33	17.27	19.31	17.33	17.27
AL	0.04529	2.06712	0.11671	0.00097	0.11020	0.00684	0.04625	2.17731	0.12355
AR	0.01525	0.03246	0.02859	0.00060	0.00226	0.00435	0.01585	0.03473	0.03294
CT	0.00568	0.00648	0.00199	0.00042	0.00002	0.00012	0.00610	0.00649	0.00211
DE	0.01530	0.01073	0.00612	0.00069	0.00002	0.00026	0.01599	0.01075	0.00639
DC	0.00377	0.00575	0.00132	0.00055	0.00000	0.00012	0.00432	0.00575	0.00144
FL	0.01591	0.11386	0.02518	0.00015	0.00240	0.00087	0.01606	0.11627	0.02605
GA	0.03284	0.20710	0.05858	0.00067	0.01335	0.00274	0.03351	0.22045	0.06132
IL	0.08337	0.06314	0.16105	0.02607	0.00239	0.09671	0.10943	0.06552	0.25776
IN	0.16660	0.12508	0.47345	0.03001	0.00397	0.17583	0.19661	0.12904	0.64928
IA	0.04834	0.04566	0.08327	0.00645	0.00102	0.02119	0.05479	0.04668	0.10447
KS	0.01224	0.02323	0.01614	0.00225	0.00109	0.00743	0.01449	0.02432	0.02356
KY	0.08337	0.08689	0.26218	0.00927	0.00472	0.11227	0.09264	0.09161	0.37445
LA	0.01579	0.10897	0.03312	0.00023	0.00603	0.00130	0.01602	0.11501	0.03442
ME	0.00478	0.00574	0.00185	0.00015	0.00000	0.00013	0.00493	0.00574	0.00197
MD	0.10664	0.02573	0.02897	0.01253	0.00016	0.00190	0.11918	0.02589	0.03087
MA	0.00973	0.00781	0.00291	0.00045	0.00000	0.00012	0.01018	0.00781	0.00303
MI	0.20759	0.05493	0.23958	0.05692	0.00072	0.05354	0.26451	0.05564	0.29311
MN	0.02085	0.01902	0.03302	0.00852	0.00075	0.02052	0.02936	0.01977	0.05354
MS	0.00841	0.06960	0.01301	0.00029	0.00621	0.00175	0.00871	0.07581	0.01477
MO	0.11141	0.14451	0.12504	0.00468	0.00264	0.02014	0.11609	0.14714	0.14518
NE	0.01611	0.02509	0.02302	0.00223	0.00063	0.00545	0.01834	0.02572	0.02847
NH	0.00438	0.00555	0.00145	0.00014	0.00000	0.00012	0.00452	0.00555	0.00156
NJ	0.02210	0.01307	0.00768	0.00315	0.00007	0.00051	0.02526	0.01314	0.00820
NY	0.16205	0.02647	0.08747	0.01236	0.00016	0.00714	0.17441	0.02663	0.09461
NC	0.05833	0.09049	0.04623	0.00134	0.00230	0.00216	0.05967	0.09279	0.04840
ND	0.01481	0.01544	0.01767	0.00189	0.00023	0.00478	0.01670	0.01567	0.02245
OH	0.41906	0.09222	0.78884	0.12859	0.00170	0.33968	0.54765	0.09392	1.12852
OK	0.01531	0.02732	0.02332	0.00119	0.00100	0.00394	0.01649	0.02831	0.02725
PA	0.61316	0.14768	0.14523	0.22244	0.00057	0.03687	0.83560	0.14825	0.18210
RI	0.00406	0.00592	0.00140	0.00007	0.00000	0.00000	0.00413	0.00592	0.00140
SC	0.02907	0.11479	0.03063	0.00030	0.00186	0.00089	0.02937	0.11665	0.03152
SD	0.00610	0.00927	0.00518	0.00096	0.00018	0.00263	0.00706	0.00944	0.00781
TN	0.05511	0.10617	0.15732	0.00278	0.01226	0.01872	0.05789	0.11843	0.17603
TX	0.02476	0.06163	0.04597	0.00111	0.00375	0.00417	0.02586	0.06538	0.05014
VT	0.00393	0.00576	0.00150	0.00014	0.00000	0.00011	0.00407	0.00576	0.00161
VA	0.11276	0.05889	0.06211	0.00924	0.00058	0.00349	0.12200	0.05947	0.06560
WV	0.31190	0.10609	0.11244	0.03388	0.00046	0.01688	0.34578	0.10655	0.12932
WI	0.05830	0.03249	0.09028	0.01297	0.00048	0.03093	0.07128	0.03297	0.12121

Table 3-1. Total* Annual Average Reductions In Nitrate And Sulfate Concentration ($\mu g/m^3$) at Downwind Monitors from All States as a Function of EGU NO_x and SO_2 Emissions Reductions at Various Marginal Costs per Ton of Reduction in 2014 (Estimated Using AQAT).

				Year	2012	2014	2014	2014	2014	2014	2014	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
				SO_2 Marginal Cost per Ton	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
				NO_x Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Monitor Identification Number	Receptor State	Receptor County	2012 Avg. Design Value	2012 Max. Design Value																							
420030064	Pennsylvania	Allegheny	18.9	19.31	0.00	0.47	0.55	0.55	0.55	0.55	0.55	0.00	0.47	1.88	2.66	2.83	3.05	3.09	3.34	3.42	3.51	3.57	3.63	3.72	3.77	3.86	4.01
010730023	Alabama	Jefferson	17.15	17.32	0.00	0.60	0.63	0.63	0.63	0.63	0.63	0.00	0.60	1.25	1.67	1.90	2.33	2.39	2.43	2.45	2.49	2.55	2.67	3.02	3.06	3.21	3.35
390618001	Ohio	Hamilton	16.93	17.27	0.00	0.68	0.82	0.82	0.82	0.82	0.83	0.00	0.68	2.66	2.99	3.19	3.45	3.49	3.64	3.75	3.88	3.93	4.00	4.10	4.19	4.28	4.48
390610014	Ohio	Hamilton	16.69	16.93	0.00	0.69	0.83	0.84	0.84	0.84	0.84	0.00	0.69	2.70	3.04	3.25	3.51	3.55	3.70	3.81	3.94	4.00	4.07	4.16	4.26	4.35	4.56
261630033	Michigan	Wayne	16.57	17.19	0.00	0.49	0.62	0.62	0.62	0.62	0.63	0.00	0.49	1.38	1.57	1.70	1.95	1.99	2.08	2.12	2.18	2.21	2.24	2.30	2.47	2.58	2.89
171191007	Illinois	Madison	16.56	16.85	0.00	0.98	1.03	1.03	1.03	1.04	1.05	0.00	0.98	2.13	2.37	2.49	2.57	2.61	2.65	2.68	2.73	2.74	2.76	2.81	2.88	2.95	3.23
390610042	Ohio	Hamilton	16.33	16.71	0.00	0.67	0.82	0.82	0.82	0.82	0.82	0.00	0.67	2.73	3.06	3.26	3.52	3.57	3.71	3.82	3.95	4.01	4.08	4.18	4.28	4.37	4.57
390350038	Ohio	Cuyahoga	16.26	16.95	0.00	0.62	0.76	0.76	0.76	0.76	0.76	0.00	0.62	1.93	2.27	2.43	2.71	2.75	2.92	3.02	3.12	3.17	3.23	3.31	3.39	3.48	3.64
390350060	Ohio	Cuyahoga	16.02	16.54	0.00	0.61	0.75	0.75	0.75	0.75	0.76	0.00	0.61	1.92	2.25	2.41	2.69	2.73	2.90	3.00	3.10	3.15	3.21	3.29	3.37	3.46	3.61
131210039	Georgia	Fulton	16.01	16.04	0.00	1.40	1.41	1.41	1.41	1.41	1.41	0.00	1.40	2.13	2.38	2.46	2.56	2.58	2.63	2.67	2.75	2.81	2.90	2.99	3.03	3.11	3.26
010732003	Alabama	Jefferson	15.99	16.35	0.00	0.59	0.60	0.60	0.60	0.60	0.60	0.00	0.59	1.22	1.55	1.74	2.07	2.10	2.14	2.16	2.20	2.25	2.35	2.61	2.65	2.76	2.89
180190006	Indiana	Clark	15.96	16.16	0.00	0.63	0.77	0.78	0.78	0.78	0.78	0.00	0.63	2.97	3.30	3.54	3.71	3.76	3.86	3.94	4.08	4.13	4.20	4.32	4.44	4.54	4.77
180970081	Indiana	Marion	15.93	16.24	0.00	0.64	0.81	0.81	0.81	0.81	0.82	0.00	0.64	2.73	3.05	3.35	3.50	3.57	3.65	3.73	3.86	3.90	3.95	4.06	4.18	4.28	4.54
180970083	Indiana	Marion	15.77	16.15	0.00	0.65	0.81	0.81	0.81	0.81	0.82	0.00	0.65	2.74	3.05	3.36	3.50	3.57	3.65	3.74	3.86	3.90	3.95	4.07	4.19	4.28	4.54
390617001	Ohio	Hamilton	15.65	16.03	0.00	0.69	0.83	0.83	0.83	0.83	0.84	0.00	0.69	2.69	3.03	3.24	3.50	3.54	3.69	3.80	3.93	3.98	4.06	4.15	4.25	4.34	4.54
171630010	Illinois	Saint Clair	15.48	15.63	0.00	0.95	1.00	1.00	1.00	1.01	1.02	0.00	0.95	2.08	2.32	2.43	2.51	2.55	2.59	2.61	2.66	2.68	2.70	2.74	2.81	2.88	3.16
390350045	Ohio	Cuyahoga	15.42	15.91	0.00	0.62	0.76	0.76	0.76	0.77	0.77	0.00	0.62	1.96	2.31	2.46	2.75	2.79	2.96	3.07	3.17	3.22	3.29	3.37	3.45	3.54	3.71
130210007	Georgia	Bibb	15.33	15.61	0.00	1.07	1.07	1.07	1.07	1.07	1.07	0.00	1.07	1.71	1.95	2.03	2.15	2.18	2.23	2.27	2.34	2.39	2.48	2.58	2.61	2.70	2.83
540391005	West Virginia	Kanawha	15.28	15.34	0.00	0.61	0.65	0.65	0.65	0.65	0.65	0.00	0.61	2.51	2.92	3.09	3.28	3.32	3.47	3.55	3.64	3.69	3.77	3.87	3.95	4.05	4.24
390170016	Ohio	Butler	15.25	15.61	0.00	0.65	0.80	0.80	0.80	0.80	0.80	0.00	0.65	2.58	2.91	3.10	3.33	3.38	3.51	3.61	3.73	3.78	3.84	3.93	4.03	4.12	4.32
421330008	Pennsylvania	York	15.25	15.93	0.00	0.39	0.54	0.54	0.54	0.55	0.55	0.00	0.39	1.23	2.02	2.17	2.35	2.40	2.62	2.68	2.75	2.82	2.86	2.95	3.01	3.10	3.23
540110006	West Virginia	Cabell	15.25	15.5	0.00	0.61	0.66	0.66	0.66	0.66	0.66	0.00	0.61	2.56	2.92	3.09	3.27	3.31	3.44	3.52	3.61	3.66	3.74	3.83	3.92	4.01	4.20
420070014	Pennsylvania	Beaver	15.23	15.3	0.00	0.48	0.55	0.55	0.55	0.55	0.55	0.00	0.48	1.78	2.36	2.51	2.73	2.77	2.97	3.05	3.13	3.19	3.24	3.32	3.38	3.47	3.61
211110043	Kentucky	Jefferson	15.19	15.41	0.00	0.59	0.70	0.70	0.70	0.70	0.70	0.00	0.59	3.07	3.40	3.65	3.82	3.87	3.96	4.05	4.20	4.25	4.32	4.45	4.58	4.68	4.91
420710007	Pennsylvania	Lancaster	15.18	16.01	0.00	0.38	0.56	0.56	0.56	0.56	0.57	0.00	0.38	1.16	1.96	2.11	2.29	2.33	2.56	2.62	2.69	2.75	2.79	2.88	2.94	3.03	3.15
180970078	Indiana	Marion	15.18	15.35	0.00	0.64	0.81	0.81	0.81	0.81	0.82	0.00	0.64	2.74	3.05	3.36	3.50	3.57	3.65	3.74	3.86	3.90	3.95	4.06	4.18	4.28	4.54
170310052	Illinois	Cook	15.16	15.42	0.00	0.92	1.05	1.05	1.05	1.06	1.06	0.00	0.92	1.52	1.68	1.78	1.86	1.90	1.94	1.96	2.01	2.02	2.03	2.07	2.13	2.19	2.36
420031301	Pennsylvania	Allegheny	15.13	15.42	0.00	0.49	0.58	0.58	0.58	0.58	0.58	0.00	0.49	1.92	2.70	2.87	3.10	3.14	3.39	3.47	3.56	3.63	3.69	3.78	3.84	3.93	4.08
130630091	Georgia	Clayton	15.07	15.29	0.00	1.26	1.27	1.27	1.27	1.27	1.27	0.00	1.26	2.01	2.27	2.35	2.47	2.50	2.55	2.59	2.66	2.72	2.82	2.92	2.95	3.04	3.19
180372001	Indiana	Dubois	15.07	15.57	0.00	0.78	0.94	0.94	0.94	0.95	0.95	0.00	0.78	3.26	3.62	3.90	4.06	4.13	4.22	4.30	4.45	4.50	4.56	4.69	4.83	4.94	5.23
261630015	Michigan	Wayne	15.05	15.55	0.00	0.48	0.60	0.60	0.60	0.60	0.61	0.00	0.48	1.34	1.53	1.65	1.89	1.92	2.01	2.06	2.11	2.14	2.17	2.23	2.39	2.50	2.80
390610043	Ohio	Hamilton	15.05	15.32	0.00	0.65	0.80	0.80	0.80	0.80	0.80	0.00	0.65	2.54	2.86	3.05	3.29	3.33	3.47	3.57	3.69	3.74	3.80	3.89	3.99	4.07	4.27

390610040	Ohio	Hamilton	15.03	15.4	0.00	0.70	0.84	0.84	0.85	0.85	0.85	0.00	0.70	2.73	3.07	3.28	3.54	3.59	3.74	3.85	3.98	4.04	4.11	4.21	4.31	4.40	4.61
391130032	Ohio	Montgomery	15.01	15.37	0.00	0.62	0.75	0.75	0.75	0.76	0.76	0.00	0.62	2.29	2.58	2.76	2.97	3.01	3.13	3.22	3.32	3.37	3.43	3.51	3.60	3.68	3.86
391510017	Ohio	Stark	14.99	15.4	0.00	0.61	0.74	0.74	0.74	0.74	0.75	0.00	0.61	2.12	2.52	2.68	2.94	2.98	3.14	3.24	3.33	3.39	3.45	3.53	3.61	3.71	3.89
360610056	New York	New York	14.98	15.74	0.00	0.23	0.27	0.27	0.27	0.27	0.27	0.00	0.23	0.53	0.82	0.88	1.01	1.04	1.13	1.23	1.26	1.31	1.33	1.40	1.48	1.72	1.83
390350065	Ohio	Cuyahoga	14.96	15.4	0.00	0.61	0.75	0.75	0.75	0.75	0.76	0.00	0.61	1.93	2.27	2.42	2.70	2.74	2.91	3.02	3.11	3.16	3.23	3.31	3.38	3.48	3.63
540030003	West Virginia	Berkeley	14.95	15.2	0.00	0.44	0.51	0.51	0.51	0.51	0.51	0.00	0.44	1.49	2.01	2.16	2.31	2.35	2.51	2.57	2.64	2.69	2.74	2.82	2.89	2.98	3.10
540490006	West Virginia	Marion	14.96	15.18	0.00	0.68	0.73	0.73	0.73	0.73	0.74	0.00	0.68	2.78	3.32	3.49	3.68	3.72	3.90	3.99	4.05	4.11	4.21	4.30	4.38	4.50	4.69
390811001	Ohio	Jefferson	14.95	15.54	0.00	0.62	0.69	0.69	0.69	0.69	0.69	0.00	0.62	2.27	2.78	2.94	3.21	3.25	3.45	3.55	3.65	3.71	3.78	3.87	3.94	4.04	4.21
540090005	West Virginia	Brooke	14.95	15.22	0.00	0.60	0.67	0.67	0.67	0.67	0.67	0.00	0.60	2.22	2.71	2.88	3.13	3.17	3.37	3.47	3.56	3.62	3.70	3.78	3.85	3.95	4.11
211110044	Kentucky	Jefferson	14.93	15.09	0.00	0.60	0.73	0.73	0.73	0.73	0.73	0.00	0.60	3.00	3.32	3.55	3.71	3.76	3.85	3.94	4.08	4.14	4.20	4.32	4.45	4.55	4.77
170316005	Illinois	Cook	14.92	15.48	0.00	1.02	1.15	1.15	1.15	1.16	1.16	0.00	1.02	1.64	1.80	1.90	1.98	2.02	2.06	2.08	2.13	2.14	2.16	2.19	2.25	2.31	2.48
482011035	Texas	Harris	14.74	15.14	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.09	0.10	0.12	0.12	0.22	0.22	0.22	0.23	0.24	0.24	0.25	0.27	0.41	1.17
170313301	Illinois	Cook	14.73	15.06	0.00	1.02	1.12	1.12	1.12	1.12	1.12	0.00	1.02	1.66	1.83	1.93	2.01	2.05	2.09	2.12	2.16	2.17	2.19	2.23	2.29	2.34	2.52
390350027	Ohio	Cuyahoga	14.5	15.13	0.00	0.61	0.75	0.75	0.75	0.75	0.76	0.00	0.61	1.91	2.25	2.41	2.69	2.73	2.89	3.00	3.09	3.15	3.21	3.29	3.36	3.45	3.61
540291004	West Virginia	Hancock	14.34	15.15	0.00	0.58	0.65	0.65	0.65	0.65	0.65	0.00	0.58	2.16	2.67	2.83	3.07	3.11	3.31	3.40	3.49	3.55	3.62	3.70	3.77	3.87	4.03

*To calculate a total reduction when both NO_x and SO_2 have non-zero marginal costs, add the two values and then subtract the 2014 base case value. For example, for Allegheny, PA, (420030064) at \$500/ton SO_2 and \$1000/ton NO_x, add 3.09 and 0.55 for a total of 3.64, then subtract the base case value of 0.47. The resulting total reduction in concentration is 3.17 $\mu g/m^3$.

Table 3-2. Total* Annual Average Reductions In Nitrate And Sulfate Concentration ($\mu g/m^3$) at Downwind Monitors from <u>the State Containing the Receptor</u> as a Function of EGU NO_x and SO_2 Emissions Reductions at Various Marginal Costs per Ton of Reduction in 2014 (Estimated Using AQAT).

				Year	2012	2014	2014	2014	2014	2014	2014	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
				SO_2 Marginal Cost per Ton	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
				NO_x Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Monitor Identification Number	**Receptor State**	**Receptor County**	**2012 Avg. Design Value**	**2012 Max. Design Value**																							
420030064	Pennsylvania	Allegheny	18.9	19.31	0.00	0.01	0.04	0.04	0.04	0.04	0.05	0.00	0.01	0.28	1.00	1.08	1.16	1.19	1.38	1.40	1.44	1.48	1.49	1.53	1.53	1.55	1.59
010730023	Alabama	Jefferson	17.15	17.32	0.00	0.12	0.14	0.14	0.14	0.14	0.14	0.00	0.12	0.23	0.59	0.78	1.17	1.21	1.24	1.25	1.25	1.29	1.39	1.70	1.72	1.85	1.94
390618001	Ohio	Hamilton	16.93	17.27	0.00	0.23	0.28	0.28	0.28	0.28	0.28	0.00	0.23	0.73	0.79	0.86	1.05	1.07	1.16	1.24	1.29	1.32	1.36	1.40	1.40	1.43	1.47
390610014	Ohio	Hamilton	16.69	16.93	0.00	0.23	0.28	0.28	0.28	0.28	0.29	0.00	0.23	0.74	0.80	0.86	1.06	1.08	1.17	1.25	1.30	1.33	1.37	1.41	1.41	1.44	1.48
261630033	Michigan	Wayne	16.57	17.19	0.00	0.10	0.14	0.14	0.14	0.14	0.14	0.00	0.10	0.21	0.22	0.26	0.41	0.42	0.44	0.44	0.45	0.45	0.46	0.47	0.61	0.68	0.93
171191007	Illinois	Madison	16.56	16.85	0.00	0.92	0.94	0.94	0.94	0.94	0.94	0.00	0.92	0.95	0.98	0.98	0.98	0.98	0.98	0.98	0.99	0.98	0.98	0.99	0.99	1.00	1.02
390610042	Ohio	Hamilton	16.33	16.71	0.00	0.23	0.27	0.27	0.27	0.27	0.27	0.00	0.23	0.73	0.78	0.85	1.04	1.06	1.15	1.23	1.28	1.31	1.34	1.38	1.39	1.42	1.46
390350038	Ohio	Cuyahoga	16.26	16.95	0.00	0.25	0.32	0.32	0.32	0.32	0.32	0.00	0.25	0.77	0.83	0.90	1.11	1.12	1.22	1.30	1.36	1.38	1.42	1.46	1.47	1.50	1.54
390350060	Ohio	Cuyahoga	16.02	16.54	0.00	0.25	0.32	0.32	0.32	0.32	0.32	0.00	0.25	0.77	0.83	0.90	1.11	1.12	1.22	1.30	1.35	1.38	1.42	1.46	1.47	1.50	1.54
131210039	Georgia	Fulton	16.01	16.04	0.00	1.24	1.24	1.25	1.25	1.24	1.25	0.00	1.24	1.27	1.36	1.36	1.37	1.37	1.38	1.39	1.43	1.46	1.48	1.50	1.51	1.53	1.59
010732003	Alabama	Jefferson	15.99	16.35	0.00	0.09	0.10	0.10	0.10	0.10	0.10	0.00	0.09	0.17	0.45	0.59	0.89	0.92	0.94	0.94	0.95	0.98	1.05	1.29	1.30	1.40	1.47
180190006	Indiana	Clark	15.96	16.16	0.00	0.06	0.11	0.11	0.11	0.11	0.11	0.00	0.06	0.60	0.68	0.81	0.83	0.85	0.86	0.88	0.92	0.92	0.93	0.97	1.00	1.02	1.08
180970081	Indiana	Marion	15.93	16.24	0.00	0.11	0.21	0.21	0.21	0.21	0.21	0.00	0.11	1.08	1.22	1.46	1.48	1.53	1.53	1.57	1.64	1.65	1.66	1.73	1.78	1.83	1.94
180970083	Indiana	Marion	15.77	16.15	0.00	0.11	0.21	0.21	0.21	0.21	0.21	0.00	0.11	1.08	1.22	1.46	1.48	1.53	1.54	1.57	1.64	1.65	1.66	1.73	1.78	1.83	1.94
390617001	Ohio	Hamilton	15.65	16.03	0.00	0.23	0.28	0.28	0.28	0.28	0.28	0.00	0.23	0.74	0.79	0.86	1.06	1.08	1.17	1.24	1.30	1.33	1.36	1.40	1.41	1.44	1.48
171630010	Illinois	Saint Clair	15.48	15.63	0.00	0.89	0.91	0.91	0.91	0.91	0.91	0.00	0.89	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.96	0.95	0.95	0.96	0.96	0.97	0.99
390350045	Ohio	Cuyahoga	15.42	15.91	0.00	0.25	0.32	0.32	0.32	0.32	0.33	0.00	0.25	0.78	0.84	0.91	1.12	1.13	1.23	1.31	1.37	1.40	1.43	1.48	1.48	1.51	1.55
130210007	Georgia	Bibb	15.33	15.61	0.00	0.91	0.91	0.91	0.91	0.91	0.91	0.00	0.91	0.93	1.00	1.00	1.01	1.01	1.01	1.02	1.05	1.07	1.09	1.10	1.11	1.12	1.17
540391005	West Virginia	Kanawha	15.28	15.34	0.00	0.18	0.20	0.20	0.20	0.20	0.20	0.00	0.18	0.80	0.81	0.82	0.83	0.83	0.83	0.84	0.83	0.83	0.87	0.87	0.89	0.91	0.95
390170016	Ohio	Butler	15.25	15.61	0.00	0.20	0.25	0.25	0.25	0.25	0.25	0.00	0.20	0.62	0.67	0.72	0.89	0.90	0.98	1.05	1.09	1.11	1.15	1.18	1.19	1.21	1.24
421330008	Pennsylvania	York	15.25	15.93	0.00	0.03	0.16	0.16	0.16	0.16	0.16	0.00	0.03	0.32	1.04	1.11	1.20	1.23	1.43	1.44	1.49	1.53	1.54	1.57	1.58	1.59	1.63
540110006	West Virginia	Cabell	15.25	15.5	0.00	0.17	0.18	0.18	0.18	0.18	0.18	0.00	0.17	0.74	0.75	0.76	0.77	0.77	0.77	0.78	0.77	0.77	0.80	0.81	0.82	0.85	0.88
420070014	Pennsylvania	Beaver	15.23	15.3	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.00	0.00	0.20	0.70	0.75	0.81	0.83	0.96	0.98	1.01	1.03	1.04	1.07	1.07	1.08	1.11
211110043	Kentucky	Jefferson	15.19	15.41	0.00	-0.02	0.03	0.03	0.03	0.03	0.03	0.00	-0.02	0.94	0.95	0.98	0.99	1.00	1.01	1.03	1.10	1.12	1.14	1.17	1.25	1.27	1.30
420710007	Pennsylvania	Lancaster	15.18	16.01	0.00	0.04	0.19	0.19	0.19	0.19	0.19	0.00	0.04	0.33	1.07	1.15	1.24	1.27	1.47	1.49	1.53	1.57	1.58	1.62	1.62	1.64	1.68
180970078	Indiana	Marion	15.18	15.35	0.00	0.11	0.21	0.21	0.21	0.21	0.21	0.00	0.11	1.08	1.22	1.46	1.48	1.53	1.54	1.57	1.64	1.65	1.66	1.73	1.78	1.83	1.94
170310052	Illinois	Cook	15.16	15.42	0.00	0.78	0.81	0.81	0.81	0.81	0.81	0.00	0.78	0.80	0.82	0.83	0.82	0.82	0.82	0.82	0.83	0.82	0.82	0.83	0.83	0.84	0.85
420031301	Pennsylvania	Allegheny	15.13	15.42	0.00	0.01	0.05	0.05	0.05	0.05	0.05	0.00	0.01	0.28	0.98	1.06	1.15	1.17	1.36	1.38	1.42	1.46	1.47	1.51	1.51	1.53	1.56
130630091	Georgia	Clayton	15.07	15.29	0.00	1.09	1.09	1.09	1.09	1.09	1.09	0.00	1.09	1.11	1.19	1.19	1.20	1.20	1.21	1.21	1.25	1.27	1.29	1.31	1.32	1.34	1.39
180372001	Indiana	Dubois	15.07	15.57	0.00	0.09	0.17	0.17	0.17	0.17	0.17	0.00	0.09	0.81	0.91	1.09	1.11	1.14	1.15	1.18	1.23	1.23	1.24	1.30	1.33	1.37	1.45
261630015	Michigan	Wayne	15.05	15.55	0.00	0.10	0.14	0.14	0.14	0.14	0.14	0.00	0.10	0.21	0.21	0.25	0.40	0.41	0.42	0.42	0.43	0.43	0.44	0.45	0.59	0.66	0.89
390610043	Ohio	Hamilton	15.05	15.32	0.00	0.21	0.26	0.26	0.26	0.26	0.26	0.00	0.21	0.65	0.70	0.76	0.94	0.95	1.04	1.10	1.15	1.17	1.21	1.24	1.25	1.28	1.31
390610040	Ohio	Hamilton	15.03	15.4	0.00	0.24	0.28	0.28	0.28	0.28	0.29	0.00	0.24	0.74	0.80	0.87	1.07	1.09	1.18	1.26	1.31	1.34	1.38	1.42	1.43	1.46	1.49
391130032	Ohio	Montgomery	15.01	15.37	0.00	0.19	0.24	0.24	0.24	0.24	0.24	0.00	0.19	0.57	0.62	0.67	0.82	0.83	0.90	0.96	1.00	1.02	1.05	1.08	1.09	1.11	1.14
391510017	Ohio	Stark	14.99	15.4	0.00	0.21	0.27	0.27	0.28	0.28	0.28	0.00	0.21	0.65	0.70	0.76	0.93	0.95	1.03	1.09	1.14	1.17	1.20	1.23	1.24	1.27	1.30
360610056	New York	New York	14.98	15.74	0.00	0.06	0.06	0.06	0.06	0.06	0.06	0.00	0.06	0.06	0.06	0.06	0.10	0.11	0.13	0.21	0.22	0.25	0.25	0.28	0.34	0.55	0.59
390350065	Ohio	Cuyahoga	14.96	15.4	0.00	0.25	0.32	0.32	0.32	0.32	0.32	0.00	0.25	0.77	0.83	0.90	1.11	1.12	1.22	1.30	1.36	1.39	1.42	1.46	1.47	1.50	1.54

540030003	West Virginia	Berkeley	14.95	15.2	0.00	0.13	0.15	0.15	0.15	0.15	0.15	0.00	0.13	0.55	0.56	0.57	0.57	0.57	0.57	0.58	0.58	0.58	0.60	0.60	0.61	0.63	0.66
540490006	West Virginia	Marion	14.96	15.18	0.00	0.34	0.36	0.36	0.36	0.36	0.36	0.00	0.34	1.49	1.53	1.55	1.55	1.56	1.56	1.58	1.56	1.57	1.63	1.64	1.66	1.71	1.79
390811001	Ohio	Jefferson	14.95	15.54	0.00	0.20	0.22	0.22	0.22	0.22	0.22	0.00	0.20	0.65	0.70	0.76	0.94	0.95	1.03	1.10	1.15	1.17	1.21	1.24	1.25	1.28	1.31
540090005	West Virginia	Brooke	14.95	15.22	0.00	0.16	0.17	0.17	0.17	0.17	0.17	0.00	0.16	0.70	0.71	0.72	0.73	0.73	0.73	0.74	0.73	0.73	0.76	0.76	0.78	0.80	0.83
211110044	Kentucky	Jefferson	14.93	15.09	0.00	-0.02	0.05	0.05	0.05	0.05	0.05	0.00	-0.02	0.93	0.94	0.97	0.98	0.98	0.99	1.02	1.09	1.11	1.13	1.16	1.23	1.26	1.29
170316005	Illinois	Cook	14.92	15.48	0.00	0.88	0.92	0.92	0.92	0.92	0.92	0.00	0.88	0.91	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.95	0.95	0.97
482011035	Texas	Harris	14.74	15.14	0.00	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	0.00	-0.16	-0.14	-0.14	-0.14	-0.14	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	0.00	0.12	0.83
170313301	Illinois	Cook	14.73	15.06	0.00	0.89	0.92	0.92	0.92	0.92	0.92	0.00	0.89	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.96	0.97	0.99
390350027	Ohio	Cuyahoga	14.5	15.13	0.00	0.25	0.32	0.32	0.32	0.32	0.32	0.00	0.25	0.77	0.83	0.90	1.11	1.12	1.22	1.30	1.35	1.38	1.42	1.46	1.47	1.50	1.54
540291004	West Virginia	Hancock	14.34	15.15	0.00	0.16	0.17	0.17	0.17	0.17	0.17	0.00	0.16	0.68	0.70	0.71	0.71	0.71	0.71	0.72	0.72	0.72	0.74	0.75	0.76	0.78	0.82

*To calculate a total reduction when both NO_x and SO_2 have non-zero marginal costs, add the two values and then subtract the 2014 base case value. For example, for Allegheny, PA, (420030064) at \$500/ton SO_2 and \$1000/ton NO_x, add 1.19 and 0.04 for a total of 1.23, then subtract the base case value of 0.01. The resulting total reduction in concentration is 1.22 $\mu g/m^3$.

Table 3-3. Total* Annual Average Reductions In Nitrate And Sulfate Concentration ($\mu g/m^3$) at Downwind Monitors from <u>the States Upwind of the Receptor</u> as a Function of EGU NO_x and SO_2 Emissions Reductions at Various Marginal Costs per Ton of Reduction in 2014 (Estimated Using AQAT).

				Year	2012	2014	2014	2014	2014	2014	2014	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
				SO_2 Marginal Cost per Ton	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
				NO_x Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Monitor Identification Number	Receptor State	Receptor County	2012 Avg. Design Value	2012 Max. Design Value																							
420030064	Pennsylvania	Allegheny	18.9	19.31	0.00	0.46	0.50	0.50	0.51	0.51	0.51	0.00	0.46	1.59	1.66	1.75	1.88	1.90	1.96	2.02	2.07	2.09	2.14	2.19	2.24	2.31	2.42
010730023	Alabama	Jefferson	17.15	17.32	0.00	0.48	0.49	0.49	0.49	0.49	0.49	0.00	0.48	1.02	1.08	1.12	1.16	1.17	1.19	1.21	1.24	1.26	1.28	1.31	1.34	1.36	1.41
390618001	Ohio	Hamilton	16.93	17.27	0.00	0.44	0.54	0.54	0.54	0.54	0.54	0.00	0.44	1.92	2.20	2.33	2.39	2.42	2.48	2.51	2.58	2.61	2.64	2.70	2.79	2.85	3.01
390610014	Ohio	Hamilton	16.69	16.93	0.00	0.46	0.55	0.55	0.55	0.56	0.56	0.00	0.46	1.96	2.24	2.38	2.44	2.47	2.53	2.56	2.64	2.67	2.70	2.76	2.85	2.91	3.08
261630033	Michigan	Wayne	16.57	17.19	0.00	0.39	0.48	0.48	0.48	0.48	0.48	0.00	0.39	1.17	1.35	1.44	1.54	1.56	1.64	1.68	1.73	1.76	1.79	1.83	1.86	1.90	1.97
171191007	Illinois	Madison	16.56	16.85	0.00	0.06	0.09	0.10	0.10	0.10	0.12	0.00	0.06	1.18	1.39	1.50	1.59	1.63	1.67	1.70	1.74	1.76	1.78	1.82	1.89	1.95	2.21
390610042	Ohio	Hamilton	16.33	16.71	0.00	0.44	0.55	0.55	0.55	0.55	0.55	0.00	0.44	2.01	2.27	2.42	2.48	2.51	2.56	2.59	2.67	2.70	2.73	2.80	2.89	2.95	3.12
390350038	Ohio	Cuyahoga	16.26	16.95	0.00	0.37	0.44	0.44	0.44	0.44	0.44	0.00	0.37	1.16	1.44	1.53	1.60	1.63	1.70	1.73	1.76	1.79	1.81	1.85	1.92	1.98	2.10
390350060	Ohio	Cuyahoga	16.02	16.54	0.00	0.36	0.43	0.43	0.43	0.43	0.43	0.00	0.36	1.14	1.42	1.51	1.58	1.60	1.68	1.70	1.74	1.77	1.79	1.83	1.89	1.96	2.08
131210039	Georgia	Fulton	16.01	16.04	0.00	0.16	0.16	0.16	0.16	0.16	0.16	0.00	0.16	0.86	1.02	1.10	1.19	1.21	1.25	1.28	1.32	1.35	1.42	1.49	1.52	1.58	1.67
010732003	Alabama	Jefferson	15.99	16.35	0.00	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.50	1.04	1.11	1.15	1.18	1.19	1.20	1.22	1.26	1.28	1.30	1.32	1.34	1.37	1.42
180190006	Indiana	Clark	15.96	16.16	0.00	0.57	0.66	0.67	0.67	0.67	0.67	0.00	0.57	2.37	2.62	2.72	2.88	2.91	3.00	3.06	3.16	3.21	3.27	3.35	3.44	3.52	3.68
180970081	Indiana	Marion	15.93	16.24	0.00	0.53	0.60	0.60	0.60	0.60	0.61	0.00	0.53	1.65	1.83	1.90	2.02	2.04	2.11	2.16	2.22	2.25	2.29	2.33	2.40	2.45	2.60
180970083	Indiana	Marion	15.77	16.15	0.00	0.53	0.60	0.60	0.60	0.60	0.61	0.00	0.53	1.66	1.83	1.90	2.02	2.05	2.12	2.16	2.23	2.25	2.29	2.33	2.40	2.46	2.60
390617001	Ohio	Hamilton	15.65	16.03	0.00	0.45	0.55	0.55	0.55	0.55	0.55	0.00	0.45	1.96	2.24	2.38	2.44	2.47	2.52	2.56	2.63	2.66	2.69	2.75	2.84	2.90	3.07
171630010	Illinois	Saint Clair	15.48	15.63	0.00	0.06	0.09	0.09	0.09	0.10	0.11	0.00	0.06	1.16	1.36	1.47	1.56	1.60	1.63	1.66	1.71	1.73	1.74	1.79	1.85	1.91	2.17
390350045	Ohio	Cuyahoga	15.42	15.91	0.00	0.37	0.44	0.44	0.44	0.44	0.45	0.00	0.37	1.18	1.47	1.56	1.63	1.66	1.73	1.76	1.80	1.83	1.85	1.89	1.96	2.03	2.16
130210007	Georgia	Bibb	15.33	15.61	0.00	0.15	0.15	0.15	0.15	0.15	0.15	0.00	0.15	0.77	0.95	1.03	1.14	1.17	1.22	1.25	1.29	1.31	1.39	1.48	1.50	1.57	1.66
540391005	West Virginia	Kanawha	15.28	15.34	0.00	0.43	0.45	0.45	0.45	0.45	0.45	0.00	0.43	1.72	2.11	2.27	2.46	2.49	2.64	2.71	2.80	2.85	2.91	3.00	3.07	3.14	3.29
390170016	Ohio	Butler	15.25	15.61	0.00	0.45	0.55	0.55	0.55	0.55	0.55	0.00	0.45	1.96	2.24	2.38	2.44	2.47	2.53	2.56	2.64	2.66	2.70	2.76	2.85	2.91	3.08
421330008	Pennsylvania	York	15.25	15.93	0.00	0.36	0.39	0.39	0.39	0.39	0.39	0.00	0.36	0.92	0.98	1.06	1.15	1.16	1.20	1.24	1.27	1.29	1.32	1.37	1.44	1.51	1.60
540110006	West Virginia	Cabell	15.25	15.5	0.00	0.44	0.48	0.48	0.48	0.48	0.48	0.00	0.44	1.82	2.17	2.32	2.50	2.54	2.67	2.74	2.84	2.89	2.94	3.02	3.10	3.17	3.31

420070014	Pennsylvania	Beaver	15.23	15.3	0.00	0.48	0.52	0.52	0.52	0.52	0.53	0.00	0.48	1.59	1.67	1.76	1.92	1.94	2.00	2.07	2.13	2.15	2.20	2.25	2.31	2.39	2.50
211110043	Kentucky	Jefferson	15.19	15.41	0.00	0.61	0.67	0.67	0.67	0.67	0.67	0.00	0.61	2.14	2.45	2.67	2.82	2.87	2.96	3.02	3.10	3.13	3.18	3.27	3.34	3.41	3.61
420710007	Pennsylvania	Lancaster	15.18	16.01	0.00	0.34	0.38	0.38	0.38	0.38	0.38	0.00	0.34	0.82	0.89	0.96	1.05	1.06	1.09	1.13	1.16	1.18	1.21	1.26	1.32	1.39	1.48
180970078	Indiana	Marion	15.18	15.35	0.00	0.53	0.60	0.60	0.60	0.60	0.61	0.00	0.53	1.66	1.83	1.90	2.02	2.05	2.12	2.16	2.22	2.25	2.29	2.33	2.40	2.46	2.60
170310052	Illinois	Cook	15.16	15.42	0.00	0.14	0.24	0.24	0.24	0.24	0.25	0.00	0.14	0.72	0.86	0.95	1.03	1.07	1.11	1.14	1.18	1.20	1.21	1.25	1.30	1.35	1.51
420031301	Pennsylvania	Allegheny	15.13	15.42	0.00	0.48	0.53	0.53	0.53	0.53	0.53	0.00	0.48	1.64	1.72	1.81	1.95	1.97	2.03	2.10	2.14	2.17	2.22	2.27	2.33	2.40	2.52
130630091	Georgia	Clayton	15.07	15.29	0.00	0.17	0.18	0.18	0.18	0.18	0.18	0.00	0.17	0.90	1.07	1.16	1.27	1.30	1.34	1.38	1.42	1.45	1.52	1.61	1.64	1.71	1.80
180372001	Indiana	Dubois	15.07	15.57	0.00	0.69	0.77	0.77	0.77	0.78	0.78	0.00	0.69	2.45	2.71	2.81	2.95	2.99	3.07	3.12	3.22	3.26	3.32	3.40	3.49	3.57	3.78
261630015	Michigan	Wayne	15.05	15.55	0.00	0.38	0.47	0.47	0.47	0.47	0.47	0.00	0.38	1.13	1.31	1.40	1.49	1.52	1.59	1.63	1.68	1.70	1.73	1.77	1.80	1.84	1.91
390610043	Ohio	Hamilton	15.05	15.32	0.00	0.44	0.54	0.54	0.54	0.54	0.54	0.00	0.44	1.88	2.15	2.29	2.35	2.38	2.43	2.46	2.54	2.56	2.59	2.65	2.74	2.80	2.96
390610040	Ohio	Hamilton	15.03	15.4	0.00	0.46	0.56	0.56	0.56	0.56	0.56	0.00	0.46	1.99	2.27	2.41	2.47	2.50	2.56	2.60	2.67	2.70	2.73	2.79	2.88	2.94	3.12
391130032	Ohio	Montgomery	15.01	15.37	0.00	0.43	0.52	0.52	0.52	0.52	0.52	0.00	0.43	1.72	1.97	2.09	2.15	2.18	2.23	2.26	2.32	2.34	2.37	2.43	2.51	2.56	2.72
391510017	Ohio	Stark	14.99	15.4	0.00	0.40	0.46	0.46	0.46	0.46	0.46	0.00	0.40	1.47	1.82	1.92	2.00	2.03	2.11	2.14	2.19	2.22	2.25	2.30	2.37	2.44	2.60
360610056	New York	New York	14.98	15.74	0.00	0.18	0.21	0.21	0.21	0.21	0.21	0.00	0.18	0.47	0.76	0.82	0.92	0.93	1.00	1.02	1.04	1.06	1.08	1.12	1.14	1.17	1.24
390350065	Ohio	Cuyahoga	14.96	15.4	0.00	0.36	0.43	0.43	0.43	0.43	0.43	0.00	0.36	1.15	1.43	1.52	1.60	1.62	1.69	1.72	1.76	1.78	1.80	1.84	1.91	1.97	2.09
540030003	West Virginia	Berkeley	14.95	15.2	0.00	0.31	0.36	0.36	0.36	0.36	0.36	0.00	0.31	0.94	1.45	1.59	1.74	1.77	1.94	1.99	2.06	2.11	2.14	2.22	2.28	2.35	2.45
540490006	West Virginia	Marion	14.96	15.18	0.00	0.34	0.38	0.38	0.38	0.38	0.38	0.00	0.34	1.29	1.79	1.94	2.13	2.16	2.34	2.41	2.49	2.54	2.59	2.66	2.72	2.79	2.90
390811001	Ohio	Jefferson	14.95	15.54	0.00	0.42	0.47	0.47	0.47	0.47	0.47	0.00	0.42	1.62	2.08	2.19	2.27	2.30	2.42	2.45	2.50	2.53	2.58	2.63	2.69	2.77	2.90
540090005	West Virginia	Brooke	14.95	15.22	0.00	0.44	0.50	0.50	0.50	0.50	0.50	0.00	0.44	1.52	2.00	2.15	2.41	2.45	2.64	2.73	2.83	2.89	2.94	3.01	3.07	3.15	3.27
211110044	Kentucky	Jefferson	14.93	15.09	0.00	0.62	0.69	0.69	0.69	0.69	0.69	0.00	0.62	2.07	2.38	2.57	2.73	2.78	2.86	2.92	2.99	3.02	3.07	3.16	3.22	3.29	3.48
170316005	Illinois	Cook	14.92	15.48	0.00	0.14	0.23	0.23	0.24	0.24	0.24	0.00	0.14	0.73	0.86	0.96	1.04	1.08	1.12	1.15	1.19	1.20	1.22	1.25	1.31	1.35	1.51
482011035	Texas	Harris	14.74	15.14	0.00	0.17	0.17	0.17	0.17	0.17	0.17	0.00	0.17	0.23	0.24	0.26	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.29	0.34
170313301	Illinois	Cook	14.73	15.06	0.00	0.13	0.20	0.20	0.20	0.20	0.20	0.00	0.13	0.74	0.88	0.98	1.06	1.10	1.14	1.17	1.21	1.22	1.24	1.28	1.33	1.38	1.53
390350027	Ohio	Cuyahoga	14.5	15.13	0.00	0.36	0.43	0.43	0.43	0.43	0.43	0.00	0.36	1.14	1.42	1.51	1.58	1.60	1.67	1.70	1.74	1.76	1.79	1.83	1.89	1.95	2.07
540291004	West Virginia	Hancock	14.34	15.15	0.00	0.43	0.48	0.48	0.48	0.48	0.48	0.00	0.43	1.48	1.98	2.12	2.36	2.40	2.59	2.68	2.77	2.83	2.87	2.95	3.01	3.08	3.21

*To calculate a total reduction when both NO_x and SO_2 have non-zero marginal costs, add the two values and then subtract the 2014 base case value.

Table 3-4. Total* Average Daily Reductions in Nitrate and Sulfate Concentration ($\mu g/m^3$) at Downwind Monitors from All States as a Function of EGU NO_x and SO_2 Emissions Reductions at Various Marginal Costs per Ton of Reduction in 2014 (Estimated Using AQAT).

				Year	2012	2014	2014	2014	2014	2014	2014	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
				SO_2 Marginal Cost per Ton	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
				NO_x Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Monitor Identification Number	Receptor State	Receptor County	2012 Avg. Design Value	2012 Max. Design Value																							
420030064	Pennsylvania	Allegheny	58.8	62.3	0.00	1.02	1.21	1.21	1.21	1.21	1.22	0.00	1.02	4.18	5.82	6.20	6.74	6.84	7.39	7.58	7.79	7.93	8.07	8.26	8.38	8.55	8.86
261630033	Michigan	Wayne	42.1	42.6	0.00	1.65	2.03	2.03	2.03	2.03	2.04	0.00	1.65	5.77	6.51	7.00	7.76	7.88	8.19	8.39	8.64	8.75	8.89	9.11	9.60	9.94	10.84
390350038	Ohio	Cuyahoga	41.2	44	0.00	1.82	1.97	1.97	1.97	1.97	1.98	0.00	1.82	7.23	8.78	9.39	10.47	10.62	11.34	11.74	12.11	12.33	12.59	12.90	13.16	13.49	14.05
420030093	Pennsylvania	Allegheny	41.1	46.2	0.00	1.35	1.35	1.35	1.35	1.35	1.35	0.00	1.35	6.12	7.92	8.38	9.03	9.15	9.76	10.00	10.26	10.44	10.64	10.88	11.04	11.26	11.67
170311016	Illinois	Cook	41	44.1	0.00	2.89	3.33	3.34	3.34	3.34	3.35	0.00	2.89	5.42	6.12	6.49	6.80	6.90	7.10	7.22	7.38	7.44	7.51	7.66	7.85	8.01	8.49
261630016	Michigan	Wayne	40.6	43	0.00	1.46	2.04	2.04	2.04	2.05	2.06	0.00	1.46	3.93	4.61	4.99	5.66	5.76	6.06	6.22	6.40	6.49	6.59	6.76	7.16	7.45	8.17
180970043	Indiana	Marion	40.5	42	0.00	1.82	1.82	1.82	1.82	1.82	1.82	0.00	1.82	11.65	12.80	13.98	14.48	14.72	15.01	15.36	15.95	16.12	16.34	16.81	17.29	17.66	18.55
390170003	Ohio	Butler	40.3	42.3	0.00	2.16	2.16	2.16	2.16	2.16	2.16	0.00	2.16	13.48	14.66	15.63	16.49	16.68	17.17	17.63	18.29	18.53	18.86	19.33	19.80	20.20	21.05
180970066	Indiana	Marion	40.3	41.8	0.00	1.89	1.89	1.89	1.89	1.89	1.89	0.00	1.89	11.68	12.83	14.06	14.58	14.83	15.13	15.50	16.10	16.28	16.49	16.98	17.47	17.85	18.75
420210011	Pennsylvania	Cambria	40.3	40.7	0.00	1.18	1.18	1.18	1.18	1.18	1.18	0.00	1.18	6.56	11.41	12.25	13.39	13.64	15.10	15.43	15.89	16.24	16.47	16.87	17.08	17.38	18.00
180970081	Indiana	Marion	40.1	41.1	0.00	1.63	1.63	1.63	1.63	1.63	1.63	0.00	1.63	11.16	12.25	13.34	13.80	14.01	14.29	14.61	15.15	15.32	15.53	15.96	16.41	16.75	17.59
010730023	Alabama	Jefferson	40	40.7	0.00	1.26	1.30	1.30	1.30	1.30	1.30	0.00	1.26	3.59	4.75	5.32	6.31	6.43	6.60	6.69	6.81	6.95	7.25	8.01	8.12	8.47	8.84
171191007	Illinois	Madison	40	40.6	0.00	2.95	3.23	3.24	3.24	3.26	3.28	0.00	2.95	6.97	7.84	8.22	8.54	8.67	8.84	8.96	9.14	9.21	9.29	9.45	9.69	9.91	10.77
540090011	West Virginia	Brooke	39.9	40.8	0.00	1.41	1.93	1.93	1.93	1.94	1.96	0.00	1.41	4.30	5.38	5.74	6.35	6.44	6.88	7.09	7.29	7.41	7.56	7.73	7.87	8.04	8.37
390618001	Ohio	Hamilton	39.6	40.3	0.00	1.60	1.78	1.79	1.79	1.79	1.79	0.00	1.60	8.66	9.68	10.32	11.06	11.20	11.63	11.95	12.38	12.56	12.80	13.14	13.44	13.73	14.33
390350060	Ohio	Cuyahoga	39.4	42.8	0.00	1.60	2.06	2.07	2.07	2.07	2.09	0.00	1.60	5.29	6.31	6.76	7.69	7.80	8.36	8.70	8.99	9.16	9.35	9.60	9.79	10.07	10.49
171190023	Illinois	Madison	39.4	40.2	0.00	4.26	4.26	4.26	4.26	4.26	4.26	0.00	4.26	9.90	10.89	11.39	11.69	11.87	12.00	12.14	12.38	12.45	12.54	12.75	13.08	13.38	14.56
180970083	Indiana	Marion	39	39.3	0.00	1.86	1.86	1.86	1.86	1.86	1.86	0.00	1.86	12.07	13.25	14.49	15.01	15.25	15.56	15.92	16.53	16.71	16.93	17.43	17.93	18.31	19.23
550790043	Wisconsin	Milwaukee	38.8	39.7	0.00	3.12	3.42	3.43	3.44	3.44	3.46	0.00	3.12	6.28	7.04	7.50	7.86	8.09	8.30	8.46	8.68	8.76	8.86	9.06	9.29	9.54	10.28
180970078	Indiana	Marion	38.7	39.7	0.00	1.81	1.81	1.81	1.81	1.81	1.81	0.00	1.81	11.60	12.74	13.91	14.41	14.65	14.94	15.29	15.87	16.04	16.26	16.73	17.20	17.57	18.45
261630019	Michigan	Wayne	38.6	39.1	0.00	1.29	1.75	1.75	1.76	1.76	1.77	0.00	1.29	3.56	4.16	4.51	5.02	5.10	5.36	5.51	5.68	5.76	5.84	6.00	6.28	6.50	7.01
170310052	Illinois	Cook	38.5	39.7	0.00	3.21	3.65	3.66	3.67	3.68	3.69	0.00	3.21	5.34	5.89	6.20	6.44	6.53	6.67	6.76	6.90	6.95	7.00	7.13	7.28	7.43	7.87
261630015	Michigan	Wayne	38.5	39.1	0.00	1.58	1.72	1.72	1.72	1.72	1.72	0.00	1.58	6.54	7.38	7.94	8.79	8.92	9.27	9.49	9.78	9.91	10.09	10.36	10.86	11.22	12.17
390170017	Ohio	Butler	38.5	38.5	0.00	1.78	1.78	1.78	1.78	1.78	1.78	0.00	1.78	11.11	12.08	12.87	13.58	13.74	14.15	14.52	15.07	15.27	15.54	15.92	16.32	16.65	17.34
261470005	Michigan	St. Clair	38.4	39.4	0.00	1.18	1.42	1.42	1.42	1.42	1.43	0.00	1.18	4.23	5.00	5.35	5.91	5.99	6.31	6.49	6.68	6.79	6.91	7.08	7.36	7.61	8.12
170313301	Illinois	Cook	38.2	41	0.00	3.46	3.94	3.95	3.95	3.96	3.97	0.00	3.46	5.86	6.55	6.93	7.23	7.34	7.52	7.63	7.78	7.84	7.90	8.05	8.25	8.43	8.94
340172002	New Jersey	Hudson	38.2	38.2	0.00	0.73	0.92	0.92	0.92	0.93	0.93	0.00	0.73	1.37	2.23	2.36	2.72	2.76	2.96	3.16	3.21	3.30	3.38	3.58	3.72	4.18	4.45
180190006	Indiana	Clark	38.1	40.2	0.00	1.78	2.01	2.01	2.01	2.01	2.01	0.00	1.78	9.61	10.40	11.11	11.40	11.54	11.73	11.97	12.43	12.57	12.73	13.06	13.47	13.74	14.37
261610008	Michigan	Washtenaw	38.1	39.8	0.00	1.61	2.03	2.04	2.04	2.04	2.05	0.00	1.61	5.97	6.78	7.25	7.87	7.98	8.30	8.51	8.77	8.89	9.03	9.25	9.58	9.85	10.49
010732003	Alabama	Jefferson	38.1	38.9	0.00	0.94	0.96	0.96	0.96	0.96	0.96	0.00	0.94	2.87	3.63	4.02	4.66	4.75	4.86	4.93	5.03	5.13	5.33	5.82	5.91	6.15	6.41

170313103	Illinois	Cook	38.1	38.7	0.00	3.33	3.99	4.00	4.01	4.02	4.03	0.00	3.33	4.78	5.17	5.41	5.59	5.67	5.75	5.81	5.91	5.94	5.97	6.07	6.20	6.32	6.71
420031008	Pennsylvania	Allegheny	38	39.3	0.00	1.43	1.43	1.43	1.43	1.43	1.43	0.00	1.43	6.63	8.98	9.56	10.40	10.55	11.35	11.65	11.98	12.20	12.42	12.71	12.90	13.16	13.64
390610006	Ohio	Hamilton	38	38	0.00	1.84	1.84	1.84	1.84	1.84	1.84	0.00	1.84	11.25	12.37	13.20	13.97	14.15	14.58	14.95	15.51	15.72	16.01	16.43	16.82	17.17	17.92
261250001	Michigan	Oakland	37.9	38.4	0.00	1.62	1.88	1.88	1.88	1.88	1.89	0.00	1.62	6.37	7.33	7.86	8.62	8.75	9.14	9.38	9.66	9.80	9.97	10.21	10.60	10.90	11.65
390171004	Ohio	Butler	37.8	38.6	0.00	1.75	1.75	1.75	1.75	1.75	1.75	0.00	1.75	10.94	11.91	12.70	13.43	13.59	14.01	14.39	14.94	15.15	15.42	15.81	16.19	16.52	17.21
420710007	Pennsylvania	Lancaster	37.7	40.1	0.00	0.97	1.78	1.79	1.79	1.79	1.80	0.00	0.97	1.89	3.59	3.83	4.09	4.16	4.63	4.70	4.81	4.92	4.98	5.11	5.16	5.26	5.41
420070014	Pennsylvania	Beaver	37.7	39.1	0.00	1.33	1.47	1.47	1.47	1.47	1.48	0.00	1.33	5.22	6.74	7.18	7.86	7.97	8.53	8.77	9.02	9.18	9.36	9.58	9.74	9.94	10.33
550790010	Wisconsin	Milwaukee	37.7	39	0.00	2.67	3.61	3.63	3.65	3.68	3.72	0.00	2.67	3.83	4.11	4.34	4.49	4.65	4.69	4.75	4.83	4.86	4.90	4.97	5.12	5.31	5.86
390617001	Ohio	Hamilton	37.7	38.1	0.00	1.77	1.77	1.77	1.77	1.77	1.77	0.00	1.77	10.53	11.72	12.47	13.26	13.42	13.90	14.27	14.78	14.98	15.26	15.62	15.99	16.32	17.03
390610014	Ohio	Hamilton	37.5	38.5	0.00	1.64	1.64	1.64	1.64	1.64	1.64	0.00	1.64	9.94	11.08	11.81	12.65	12.80	13.28	13.64	14.14	14.35	14.64	15.03	15.38	15.71	16.38
390170016	Ohio	Butler	37.5	37.8	0.00	1.77	1.77	1.77	1.77	1.77	1.77	0.00	1.77	10.85	11.95	12.74	13.37	13.53	13.93	14.27	14.79	14.98	15.24	15.61	16.00	16.32	17.04
170316005	Illinois	Cook	37.4	39.8	0.00	3.26	3.80	3.81	3.81	3.82	3.84	0.00	3.26	5.13	5.63	5.91	6.13	6.21	6.33	6.41	6.53	6.57	6.62	6.73	6.88	7.02	7.43
180890022	Indiana	Lake	37.3	42.1	0.00	2.03	2.52	2.53	2.53	2.54	2.55	0.00	2.03	4.03	4.38	4.84	4.98	5.09	5.13	5.21	5.34	5.37	5.39	5.54	5.69	5.83	6.26
180970079	Indiana	Marion	37.2	38.3	0.00	1.93	1.93	1.93	1.93	1.93	1.93	0.00	1.93	11.47	12.59	13.71	14.27	14.50	14.82	15.18	15.77	15.95	16.17	16.63	17.11	17.47	18.33
171192009	Illinois	Madison	37.2	38.2	0.00	3.86	3.89	3.89	3.89	3.89	3.90	0.00	3.86	9.14	10.17	10.65	10.96	11.12	11.28	11.42	11.65	11.72	11.81	12.01	12.33	12.61	13.70
390610042	Ohio	Hamilton	37.2	38	0.00	1.62	1.62	1.62	1.62	1.62	1.62	0.00	1.62	9.61	10.51	11.20	11.98	12.12	12.56	12.93	13.42	13.61	13.87	14.21	14.53	14.82	15.43
360610056	New York	New York	37.1	38	0.00	0.94	1.17	1.18	1.18	1.18	1.19	0.00	0.94	1.65	2.27	2.42	2.70	2.76	2.98	3.24	3.30	3.41	3.48	3.65	3.84	4.42	4.67
420030116	Pennsylvania	Allegheny	37.1	37.1	0.00	1.28	1.28	1.28	1.28	1.28	1.28	0.00	1.28	6.00	7.94	8.42	9.08	9.21	9.85	10.09	10.35	10.53	10.73	10.97	11.13	11.36	11.83
261150005	Michigan	Monroe	37	38	0.00	1.68	1.82	1.83	1.83	1.83	1.83	0.00	1.68	7.66	8.73	9.35	10.15	10.30	10.72	11.00	11.36	11.52	11.73	12.05	12.41	12.72	13.45
210590005	Kentucky	Daviess	37	37	0.00	1.94	1.94	1.94	1.94	1.94	1.94	0.00	1.94	13.15	13.96	15.07	15.35	15.55	15.70	16.02	16.75	16.94	17.12	17.63	18.30	18.67	19.57
550790099	Wisconsin	Milwaukee	36.8	37.7	0.00	2.77	3.45	3.47	3.48	3.50	3.53	0.00	2.77	4.56	5.06	5.38	5.62	5.80	5.92	6.01	6.14	6.18	6.24	6.35	6.53	6.74	7.37
191630019	Iowa	Scott	36.8	36.8	0.00	2.88	2.88	2.88	2.88	2.88	2.88	0.00	2.88	8.79	10.20	10.86	11.47	11.72	12.09	12.32	12.64	12.78	12.95	13.22	13.56	13.88	15.05
340390004	New Jersey	Union	36.7	37.2	0.00	0.80	0.93	0.93	0.93	0.93	0.94	0.00	0.80	2.46	3.69	3.93	4.32	4.39	4.67	4.82	4.94	5.05	5.15	5.38	5.50	5.78	6.10
420031301	Pennsylvania	Allegheny	36.6	38.6	0.00	1.23	1.23	1.23	1.23	1.23	1.23	0.00	1.23	5.65	7.69	8.18	8.90	9.03	9.73	9.97	10.24	10.43	10.63	10.87	11.04	11.26	11.69
471251009	Tennessee	Montgomery	36.6	37.9	0.00	2.18	2.35	2.35	2.35	2.35	2.35	0.00	2.18	10.22	11.19	11.71	12.11	12.23	12.48	12.68	13.00	13.13	13.36	13.59	13.90	14.19	14.92
390490024	Ohio	Franklin	36.6	37.6	0.00	1.65	2.02	2.02	2.02	2.02	2.04	0.00	1.65	6.94	7.97	8.51	9.25	9.37	9.84	10.15	10.47	10.63	10.84	11.10	11.33	11.60	12.10
390811001	Ohio	Jefferson	36.5	39.9	0.00	1.50	1.54	1.54	1.54	1.54	1.54	0.00	1.50	6.08	7.18	7.62	8.36	8.46	8.95	9.23	9.47	9.62	9.84	10.07	10.25	10.49	10.93
390350065	Ohio	Cuyahoga	36.5	38.9	0.00	1.61	1.94	1.94	1.94	1.94	1.96	0.00	1.61	5.78	7.02	7.52	8.45	8.57	9.18	9.53	9.84	10.02	10.23	10.49	10.69	10.97	11.42
180372001	Indiana	Dubois	36.5	38	0.00	1.92	2.15	2.15	2.15	2.15	2.17	0.00	1.92	10.41	11.27	12.19	12.55	12.73	12.95	13.23	13.75	13.91	14.08	14.47	14.92	15.22	15.94
171193007	Illinois	Madison	36.5	37.3	0.00	4.11	4.11	4.11	4.11	4.11	4.11	0.00	4.11	9.93	11.00	11.52	11.84	12.02	12.18	12.32	12.58	12.65	12.75	12.97	13.31	13.62	14.80
295100087	Missouri	St. Louis City	36.4	36.9	0.00	3.87	3.88	3.88	3.88	3.88	3.88	0.00	3.87	9.33	10.33	10.82	11.14	11.30	11.45	11.59	11.83	11.90	11.99	12.20	12.51	12.80	13.93
550790026	Wisconsin	Milwaukee	36.3	40.1	0.00	2.37	2.98	3.00	3.01	3.03	3.06	0.00	2.37	3.82	4.25	4.52	4.72	4.88	4.98	5.06	5.17	5.21	5.26	5.35	5.50	5.68	6.22
180890026	Indiana	Lake	36.3	39.3	0.00	1.95	2.49	2.50	2.50	2.51	2.52	0.00	1.95	4.63	5.27	5.71	6.03	6.15	6.33	6.46	6.63	6.69	6.77	6.93	7.14	7.32	7.82
391130032	Ohio	Montgomery	36.3	38.5	0.00	1.92	1.92	1.92	1.92	1.92	1.92	0.00	1.92	11.35	12.50	13.30	14.13	14.30	14.79	15.19	15.74	15.96	16.27	16.66	17.06	17.42	18.16
245100040	Maryland	Baltimore (City)	36.3	38.3	0.00	0.97	1.15	1.15	1.15	1.15	1.16	0.00	0.97	1.43	1.83	1.94	2.03	2.05	2.17	2.22	2.26	2.30	2.36	2.43	2.57	2.64	2.78
170310076	Illinois	Cook	36.3	37.3	0.00	3.57	3.87	3.87	3.87	3.88	3.88	0.00	3.57	6.53	7.40	7.86	8.25	8.37	8.61	8.75	8.95	9.02	9.11	9.29	9.53	9.74	10.32
180970042	Indiana	Marion	36.3	37.2	0.00	1.93	1.93	1.93	1.93	1.93	1.93	0.00	1.93	11.92	13.06	14.25	14.78	15.02	15.31	15.68	16.29	16.47	16.69	17.18	17.68	18.06	18.96
261630036	Michigan	Wayne	36.3	36.9	0.00	1.61	2.00	2.01	2.01	2.01	2.02	0.00	1.61	5.50	6.18	6.61	7.21	7.31	7.59	7.78	8.02	8.12	8.25	8.45	8.79	9.07	9.74
360610128	New York	New York	36.2	38	0.00	0.97	1.09	1.10	1.10	1.10	1.10	0.00	0.97	3.12	4.46	4.75	5.24	5.33	5.71	5.97	6.11	6.26	6.38	6.62	6.86	7.39	7.78
390490025	Ohio	Franklin	36.1	36.4	0.00	1.62	1.94	1.95	1.95	1.95	1.96	0.00	1.62	6.65	7.67	8.20	8.92	9.04	9.50	9.79	10.11	10.27	10.46	10.72	10.95	11.22	11.73
390350045	Ohio	Cuyahoga	36	39	0.00	1.67	2.02	2.02	2.02	2.02	2.04	0.00	1.67	6.16	7.34	7.84	8.83	8.95	9.56	9.92	10.24	10.42	10.65	10.91	11.14	11.44	11.93
211110044	Kentucky	Jefferson	36	36.5	0.00	1.67	1.67	1.67	1.67	1.67	1.67	0.00	1.67	10.34	11.09	11.89	12.13	12.27	12.43	12.68	13.21	13.36	13.52	13.89	14.38	14.67	15.35
390610043	Ohio	Hamilton	36	36.4	0.00	1.84	1.84	1.84	1.84	1.84	1.84	0.00	1.84	11.20	12.21	13.03	13.68	13.85	14.22	14.58	15.11	15.30	15.56	15.94	16.34	16.67	17.42

295100007	Missouri	St. Louis City	36	36.3	0.00	3.82	3.82	3.82	3.82	3.82	3.82	0.00	3.82	10.40	11.72	12.28	12.66	12.90	13.07	13.22	13.46	13.54	13.64	13.86	14.24	14.61	16.26
421330008	Pennsylvania	York	35.9	38.8	0.00	1.17	1.85	1.85	1.85	1.85	1.86	0.00	1.17	3.85	6.74	7.21	7.71	7.84	8.65	8.82	9.05	9.26	9.40	9.66	9.78	9.99	10.32
181570008	Indiana	Tippecanoe	35.9	36.9	0.00	1.72	1.72	1.72	1.72	1.72	1.72	0.00	1.72	9.08	10.30	11.07	11.58	11.75	12.11	12.39	12.79	12.95	13.15	13.48	13.79	14.08	14.74
180830004	Indiana	Knox	35.9	36.5	0.00	1.66	1.86	1.86	1.87	1.87	1.88	0.00	1.66	8.65	9.40	10.26	10.72	10.89	11.13	11.41	11.88	12.02	12.17	12.54	12.93	13.21	13.87
420030008	Pennsylvania	Allegheny	35.9	36.3	0.00	0.97	0.97	0.97	0.97	0.97	0.97	0.00	0.97	4.40	6.23	6.61	7.19	7.29	7.90	8.09	8.29	8.45	8.61	8.80	8.92	9.10	9.43
360050080	New York	Bronx	35.9	36.2	0.00	0.75	0.91	0.92	0.92	0.92	0.92	0.00	0.75	1.99	2.90	3.11	3.48	3.55	3.82	4.10	4.20	4.33	4.42	4.64	4.85	5.45	5.76
390610040	Ohio	Hamilton	35.8	36.8	0.00	1.76	1.76	1.76	1.76	1.76	1.76	0.00	1.76	10.47	11.67	12.42	13.16	13.32	13.80	14.16	14.66	14.86	15.13	15.49	15.84	16.15	16.84
211110043	Kentucky	Jefferson	35.8	36.4	0.00	1.71	1.71	1.71	1.71	1.71	1.71	0.00	1.71	10.45	11.24	12.13	12.40	12.57	12.74	13.00	13.55	13.70	13.86	14.26	14.74	15.05	15.75
420430401	Pennsylvania	Dauphin	35.7	37.1	0.00	1.07	1.98	1.98	1.99	1.99	2.00	0.00	1.07	2.45	4.31	4.62	4.98	5.06	5.59	5.70	5.83	5.97	6.05	6.22	6.31	6.46	6.70
170310057	Illinois	Cook	35.7	37	0.00	3.44	4.07	4.09	4.09	4.10	4.12	0.00	3.44	5.27	5.82	6.10	6.33	6.42	6.56	6.64	6.76	6.80	6.85	6.96	7.11	7.25	7.69
090091123	Connecticut	New Haven	35.7	36.6	0.00	0.94	1.03	1.04	1.04	1.04	1.04	0.00	0.94	2.75	3.71	3.96	4.28	4.34	4.63	4.80	4.92	5.03	5.22	5.41	5.57	5.91	6.18
290990012	Missouri	Jefferson	35.7	36.5	0.00	3.70	3.70	3.70	3.70	3.70	3.70	0.00	3.70	10.13	11.37	11.93	12.32	12.55	12.72	12.88	13.13	13.21	13.31	13.54	13.91	14.26	15.78
340171003	New Jersey	Hudson	35.7	36.1	0.00	0.58	0.76	0.76	0.76	0.76	0.76	0.00	0.58	1.69	2.76	2.95	3.41	3.46	3.67	3.88	3.96	4.06	4.15	4.41	4.57	5.01	5.35
170312001	Illinois	Cook	35.6	38.2	0.00	2.40	2.86	2.87	2.87	2.87	2.88	0.00	2.40	5.61	6.39	6.94	7.30	7.43	7.64	7.80	8.01	8.08	8.16	8.37	8.61	8.81	9.36
391530017	Ohio	Summit	35.6	37.2	0.00	1.82	2.29	2.30	2.30	2.30	2.32	0.00	1.82	6.27	7.47	7.95	8.80	8.92	9.48	9.79	10.08	10.25	10.46	10.71	10.92	11.19	11.65
211110048	Kentucky	Jefferson	35.6	36.4	0.00	1.51	1.51	1.51	1.51	1.51	1.51	0.00	1.51	9.31	9.99	10.71	10.92	11.05	11.20	11.42	11.90	12.03	12.18	12.51	12.95	13.21	13.83
291831002	Missouri	Saint Charles	35.5	37.1	0.00	3.60	3.60	3.60	3.60	3.60	3.60	0.00	3.60	9.71	10.83	11.37	11.70	11.89	12.05	12.19	12.45	12.53	12.63	12.85	13.21	13.53	14.82
245100049	Maryland	Baltimore (City	35.5	35.5	0.00	0.97	1.18	1.18	1.18	1.18	1.19	0.00	0.97	1.43	1.83	1.94	2.03	2.06	2.18	2.22	2.26	2.30	2.36	2.43	2.57	2.64	2.78
261630001	Michigan	Wayne	35.4	37.8	0.00	1.55	1.71	1.71	1.71	1.71	1.71	0.00	1.55	6.48	7.44	7.99	8.82	8.94	9.37	9.64	9.95	10.09	10.28	10.54	10.92	11.23	11.94
360610062	New York	New York	35.3	37	0.00	0.96	1.20	1.21	1.22	1.22	1.23	0.00	0.96	1.91	2.79	2.95	3.34	3.39	3.57	3.75	3.82	3.91	3.99	4.20	4.35	4.74	5.03
420410101	Pennsylvania	Cumberland	35.3	37	0.00	0.94	1.55	1.55	1.55	1.55	1.56	0.00	0.94	2.27	3.83	4.09	4.38	4.45	4.89	4.98	5.09	5.20	5.28	5.42	5.49	5.61	5.78
390810017	Ohio	Jefferson	35.3	36.8	0.00	1.48	1.53	1.54	1.54	1.54	1.54	0.00	1.48	6.13	7.31	7.76	8.46	8.57	9.05	9.32	9.57	9.72	9.93	10.15	10.34	10.57	11.04
171630010	Illinois	Saint Clair	35.3	35.9	0.00	3.98	3.98	3.98	3.98	3.98	3.98	0.00	3.98	9.47	10.47	10.96	11.27	11.44	11.59	11.73	11.96	12.03	12.13	12.33	12.65	12.94	14.08
295100085	Missouri	St. Louis City	35.3	35.7	0.00	3.66	3.66	3.66	3.66	3.66	3.66	0.00	3.66	9.92	11.01	11.54	11.84	12.06	12.15	12.27	12.50	12.56	12.64	12.85	13.22	13.56	15.14
181670023	Indiana	Vigo	35.1	36.5	0.00	2.21	2.50	2.50	2.50	2.51	2.52	0.00	2.21	9.19	10.09	11.00	11.43	11.62	11.85	12.11	12.54	12.66	12.81	13.17	13.54	13.84	14.61
550250047	Wisconsin	Dane	35.1	36.1	0.00	2.02	2.29	2.31	2.31	2.32	2.34	0.00	2.02	4.14	4.74	5.01	5.27	5.47	5.63	5.73	5.87	5.93	6.00	6.12	6.29	6.49	7.17
471650007	Tennessee	Sumner	35.1	36	0.00	1.78	1.78	1.78	1.78	1.78	1.78	0.00	1.78	11.67	12.62	13.25	13.63	13.76	13.99	14.20	14.58	14.73	15.00	15.27	15.66	15.99	16.80
171971002	Illinois	Will	35.1	35.8	0.00	2.93	3.34	3.34	3.35	3.35	3.36	0.00	2.93	5.85	6.51	6.90	7.20	7.31	7.49	7.62	7.79	7.86	7.94	8.09	8.29	8.47	8.99
210290006	Kentucky	Bullitt	35	36.3	0.00	1.84	1.84	1.84	1.84	1.84	1.84	0.00	1.84	10.85	11.68	12.46	12.80	12.95	13.17	13.44	13.97	14.14	14.33	14.70	15.18	15.48	16.19
170310022	Illinois	Cook	34.9	36.6	0.00	1.82	2.51	2.52	2.53	2.54	2.55	0.00	1.82	4.54	5.03	5.62	5.80	5.93	6.01	6.12	6.31	6.35	6.38	6.58	6.77	6.92	7.37
551330027	Wisconsin	Waukesha	34.9	35.6	0.00	2.04	2.19	2.20	2.20	2.20	2.21	0.00	2.04	4.47	5.04	5.37	5.65	5.81	5.97	6.09	6.25	6.31	6.39	6.53	6.71	6.89	7.44
550790059	Wisconsin	Milwaukee	34.8	36.3	0.00	2.76	3.32	3.33	3.34	3.36	3.38	0.00	2.76	5.19	5.77	6.15	6.43	6.62	6.77	6.89	7.06	7.11	7.19	7.34	7.55	7.78	8.42
245100035	Maryland	Baltimore (City)	34.7	35.5	0.00	0.93	1.10	1.10	1.10	1.10	1.10	0.00	0.93	1.34	1.69	1.79	1.87	1.89	2.00	2.05	2.08	2.12	2.17	2.23	2.37	2.43	2.56
390350027	Ohio	Cuyahoga	34.5	36.6	0.00	1.50	2.00	2.00	2.00	2.01	2.03	0.00	1.50	4.67	5.65	6.08	6.92	7.03	7.56	7.88	8.16	8.31	8.48	8.71	8.87	9.12	9.48
191390015	Iowa	Muscatine	34.5	36	0.00	1.73	2.29	2.32	2.33	2.35	2.38	0.00	1.73	3.57	4.03	4.30	4.52	4.63	4.73	4.80	4.89	4.93	4.98	5.06	5.19	5.33	5.84
211451004	Kentucky	McCracken	34.4	36.8	0.00	1.72	1.72	1.72	1.72	1.72	1.72	0.00	1.72	9.48	10.15	10.87	11.08	11.22	11.32	11.52	11.94	12.05	12.19	12.49	12.89	13.16	13.91
420030095	Pennsylvania	Allegheny	34.3	36.6	0.00	1.18	1.37	1.37	1.37	1.37	1.37	0.00	1.18	4.77	6.54	6.97	7.56	7.67	8.27	8.47	8.71	8.86	9.02	9.23	9.37	9.56	9.90
180431004	Indiana	Floyd	34.3	35.7	0.00	1.69	1.69	1.69	1.69	1.69	1.69	0.00	1.69	10.78	11.59	12.43	12.71	12.87	13.04	13.30	13.83	13.98	14.17	14.54	15.03	15.33	16.06
391130031	Ohio	Montgomery	34.3	35.6	0.00	1.55	1.82	1.82	1.82	1.82	1.83	0.00	1.55	8.13	8.97	9.54	10.15	10.27	10.64	10.93	11.31	11.47	11.68	11.96	12.24	12.49	13.01
391351001	Ohio	Preble	34.3	35.5	0.00	1.76	1.76	1.76	1.76	1.76	1.76	0.00	1.76	10.60	11.61	12.40	13.11	13.28	13.67	14.02	14.54	14.73	14.99	15.36	15.79	16.13	16.91
390950024	Ohio	Lucas	34.2	36.5	0.00	1.54	2.17	2.18	2.18	2.19	2.20	0.00	1.54	4.70	5.40	5.79	6.39	6.48	6.81	7.01	7.23	7.33	7.46	7.65	7.90	8.13	8.60
360610079	New York	New York	34.2	36.4	0.00	0.78	0.90	0.91	0.91	0.91	0.91	0.00	0.78	2.23	3.29	3.54	3.97	4.06	4.37	4.71	4.83	4.99	5.10	5.36	5.63	6.36	6.75

390990014	Ohio	Mahoning	34.2	35.8	0.00	1.40	1.85	1.85	1.85	1.85	1.87	0.00	1.40	4.69	5.75	6.13	6.80	6.89	7.35	7.59	7.82	7.95	8.11	8.30	8.44	8.63	8.97
170310050	Illinois	Cook	34.1	35.8	0.00	2.75	3.03	3.03	3.04	3.04	3.05	0.00	2.75	6.15	6.97	7.50	7.89	8.03	8.26	8.43	8.65	8.73	8.82	9.03	9.27	9.49	10.06
110010041	District Of Columbia	District Of Columbia	34	35.6	0.00	1.22	1.43	1.43	1.43	1.43	1.44	0.00	1.22	3.66	4.99	5.38	5.76	5.84	6.26	6.40	6.55	6.68	6.84	7.07	7.26	7.49	7.80
540090005	West Virginia	Brooke	33.9	36.1	0.00	1.38	1.64	1.64	1.64	1.64	1.65	0.00	1.38	4.93	6.01	6.40	7.04	7.14	7.60	7.83	8.05	8.18	8.35	8.55	8.70	8.89	9.26
391550007	Ohio	Trumbull	33.9	35.6	0.00	1.37	1.82	1.82	1.82	1.83	1.85	0.00	1.37	4.71	5.86	6.23	6.86	6.95	7.42	7.64	7.85	7.98	8.14	8.33	8.47	8.65	9.00
421255001	Pennsylvania	Washington	33.9	35.5	0.00	1.74	1.75	1.75	1.75	1.75	1.75	0.00	1.74	7.09	8.57	9.06	9.79	9.91	10.47	10.74	10.99	11.16	11.41	11.65	11.85	12.12	12.62
420033007	Pennsylvania	Allegheny	33.8	38.5	0.00	1.35	1.35	1.35	1.35	1.35	1.35	0.00	1.35	6.17	8.34	8.86	9.61	9.75	10.48	10.75	11.03	11.23	11.45	11.71	11.88	12.12	12.58
240031003	Maryland	Anne Arundel	33.8	36.7	0.00	1.25	1.62	1.62	1.62	1.63	1.64	0.00	1.25	2.93	4.05	4.29	4.55	4.61	4.95	5.05	5.16	5.25	5.34	5.48	5.64	5.78	5.98
180390003	Indiana	Elkhart	33.8	35.6	0.00	1.68	2.13	2.14	2.14	2.14	2.15	0.00	1.68	6.01	6.72	7.26	7.56	7.69	7.88	8.05	8.30	8.39	8.50	8.71	8.93	9.12	9.63
212270007	Kentucky	Warren	33.7	36.3	0.00	2.17	2.17	2.17	2.17	2.17	2.17	0.00	2.17	11.32	12.19	12.91	13.25	13.40	13.58	13.80	14.23	14.36	14.58	14.89	15.32	15.64	16.44
390350034	Ohio	Cuyahoga	33.7	35.7	0.00	1.51	2.05	2.05	2.06	2.06	2.08	0.00	1.51	4.86	5.79	6.23	6.99	7.10	7.57	7.85	8.11	8.25	8.41	8.64	8.84	9.09	9.50
170314007	Illinois	Cook	33.6	35.7	0.00	3.82	4.19	4.19	4.20	4.21	4.22	0.00	3.82	7.33	8.09	8.56	8.88	9.02	9.20	9.35	9.56	9.63	9.72	9.91	10.13	10.34	10.94
390950026	Ohio	Lucas	33.6	35.6	0.00	1.73	1.98	1.98	1.98	1.98	1.99	0.00	1.73	7.42	8.48	9.06	9.81	9.95	10.40	10.70	11.05	11.21	11.42	11.70	12.00	12.31	12.93
110010042	District Of Columbia	District Of Columbia	33	35.6	0.00	1.05	1.25	1.25	1.25	1.25	1.26	0.00	1.05	2.90	3.87	4.18	4.44	4.50	4.81	4.92	5.04	5.14	5.26	5.45	5.59	5.77	5.99

*To calculate a total reduction when both NO_x and SO_2 have non-zero marginal costs, add the two values and then subtract the 2014 base case value. For example, for Allegheny, PA, (420030064) at $500/ton SO_2 and $1000/ton NO_x, add 6.84 and 1.21 for a total of 8.05, then subtract the base case value of 1.02. The resulting total reduction in concentration is 7.03 $\mu g/m^3$.

Table 3-5. Total* Average Daily Reductions in Nitrate and Sulfate Concentration (μg/m^3) at Downwind Monitors from <u>the State Containing the Receptor</u> as a Function of EGU NO_x and SO_2 Emissions Reductions at Various Marginal Costs per Ton of Reduction in 2014 (Estimated Using AQAT).

				Year	**2012**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2012**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**
				SO_2 Marginal Cost per Ton	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
				NO_x Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Monitor Identification Number	**Receptor State**	**Receptor County**	**2012 Avg. Design Value**	**2012 Max. Design Value**																							
420030064	Pennsylvania	Allegheny	58.8	62.3	0.00	0.02	0.10	0.10	0.10	0.10	0.10	0.00	0.02	0.59	2.06	2.22	2.40	2.46	2.85	2.88	2.97	3.06	3.08	3.15	3.16	3.19	3.27
261630033	Michigan	Wayne	42.1	42.6	0.00	0.24	0.33	0.33	0.33	0.33	0.33	0.00	0.24	0.50	0.51	0.60	0.96	0.98	1.02	1.03	1.04	1.05	1.06	1.10	1.43	1.59	2.16
390350038	Ohio	Cuyahoga	41.2	44	0.00	0.88	0.95	0.96	0.96	0.96	0.96	0.00	0.88	2.90	3.13	3.39	4.19	4.26	4.64	4.93	5.15	5.27	5.41	5.57	5.60	5.72	5.86
420030093	Pennsylvania	Allegheny	41.1	46.2	0.00	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.00	-0.02	0.58	2.12	2.29	2.49	2.54	2.96	2.99	3.09	3.18	3.20	3.28	3.28	3.32	3.39
170311016	Illinois	Cook	41	44.1	0.00	2.36	2.48	2.48	2.49	2.49	2.49	0.00	2.36	2.42	2.50	2.51	2.50	2.50	2.50	2.50	2.51	2.50	2.50	2.51	2.52	2.54	2.59
261630016	Michigan	Wayne	40.6	43	0.00	0.28	0.41	0.41	0.41	0.41	0.41	0.00	0.28	0.51	0.53	0.60	0.93	0.95	0.99	1.00	1.01	1.02	1.03	1.06	1.36	1.51	2.02
180970043	Indiana	Marion	40.5	42	0.00	0.29	0.29	0.29	0.29	0.29	0.29	0.00	0.29	3.87	4.37	5.26	5.35	5.52	5.55	5.69	5.93	5.97	6.00	6.27	6.47	6.63	7.04
390170003	Ohio	Butler	40.3	42.3	0.00	0.74	0.74	0.74	0.74	0.74	0.74	0.00	0.74	2.54	2.75	2.98	3.70	3.75	4.09	4.35	4.55	4.65	4.78	4.92	4.95	5.06	5.18
180970066	Indiana	Marion	40.3	41.8	0.00	0.31	0.31	0.31	0.31	0.31	0.31	0.00	0.31	4.06	4.59	5.52	5.61	5.79	5.82	5.97	6.22	6.27	6.30	6.59	6.79	6.96	7.39
420210011	Pennsylvania	Cambria	40.3	40.7	0.00	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.00	-0.05	1.74	6.32	6.82	7.40	7.57	8.80	8.91	9.18	9.45	9.51	9.75	9.76	9.87	10.10
180970081	Indiana	Marion	40.1	41.1	0.00	0.27	0.27	0.27	0.27	0.27	0.27	0.00	0.27	3.54	4.00	4.81	4.89	5.05	5.08	5.21	5.43	5.46	5.49	5.74	5.92	6.06	6.44
010730023	Alabama	Jefferson	40	40.7	0.00	0.26	0.29	0.29	0.29	0.29	0.29	0.00	0.26	0.50	1.28	1.70	2.55	2.64	2.70	2.72	2.72	2.81	3.03	3.71	3.74	4.02	4.23
171191007	Illinois	Madison	40	40.6	0.00	2.70	2.76	2.76	2.76	2.76	2.76	0.00	2.70	2.77	2.87	2.87	2.87	2.87	2.87	2.87	2.88	2.87	2.87	2.88	2.89	2.92	2.98
540090011	West Virginia	Brooke	39.9	40.8	0.00	0.28	0.38	0.38	0.38	0.38	0.39	0.00	0.28	1.15	1.18	1.20	1.20	1.20	1.21	1.22	1.21	1.21	1.25	1.26	1.28	1.32	1.38
390618001	Ohio	Hamilton	39.6	40.3	0.00	0.62	0.68	0.68	0.68	0.68	0.68	0.00	0.62	2.04	2.20	2.39	2.95	2.99	3.26	3.47	3.62	3.70	3.81	3.92	3.94	4.02	4.12
390350060	Ohio	Cuyahoga	39.4	42.8	0.00	0.88	1.12	1.12	1.12	1.12	1.14	0.00	0.88	2.71	2.92	3.15	3.88	3.94	4.28	4.54	4.74	4.85	4.98	5.12	5.15	5.26	5.38
171190023	Illinois	Madison	39.4	40.2	0.00	4.30	4.30	4.30	4.30	4.30	4.30	0.00	4.30	4.43	4.59	4.59	4.59	4.59	4.59	4.59	4.60	4.59	4.59	4.60	4.62	4.67	4.77
180970083	Indiana	Marion	39	39.3	0.00	0.30	0.30	0.30	0.30	0.30	0.30	0.00	0.30	4.05	4.58	5.51	5.60	5.78	5.81	5.96	6.21	6.26	6.29	6.57	6.78	6.94	7.38
550790043	Wisconsin	Milwaukee	38.8	39.7	0.00	0.02	0.10	0.10	0.10	0.11	0.11	0.00	0.02	0.09	0.12	0.12	0.13	0.23	0.24	0.26	0.28	0.29	0.32	0.33	0.34	0.41	0.58
180970078	Indiana	Marion	38.7	39.7	0.00	0.29	0.29	0.29	0.29	0.29	0.29	0.00	0.29	3.84	4.34	5.22	5.31	5.48	5.51	5.65	5.89	5.93	5.96	6.23	6.42	6.58	6.99
261630019	Michigan	Wayne	38.6	39.1	0.00	0.20	0.31	0.31	0.31	0.31	0.31	0.00	0.20	0.35	0.36	0.41	0.61	0.63	0.65	0.65	0.66	0.67	0.67	0.69	0.88	0.98	1.30
170310052	Illinois	Cook	38.5	39.7	0.00	2.73	2.89	2.89	2.89	2.89	2.89	0.00	2.73	2.81	2.90	2.90	2.90	2.90	2.90	2.90	2.91	2.90	2.90	2.91	2.92	2.95	3.00
261630015	Michigan	Wayne	38.5	39.1	0.00	0.18	0.21	0.21	0.21	0.21	0.21	0.00	0.18	0.43	0.44	0.52	0.87	0.90	0.94	0.94	0.96	0.96	0.98	1.01	1.33	1.49	2.04
390170017	Ohio	Butler	38.5	38.5	0.00	0.61	0.61	0.61	0.61	0.61	0.61	0.00	0.61	2.10	2.26	2.46	3.05	3.09	3.37	3.59	3.75	3.83	3.94	4.06	4.08	4.17	4.27
261470005	Michigan	St. Clair	38.4	39.4	0.00	0.13	0.18	0.18	0.18	0.18	0.18	0.00	0.13	0.26	0.27	0.31	0.49	0.50	0.52	0.52	0.53	0.53	0.54	0.55	0.72	0.80	1.08
170313301	Illinois	Cook	38.2	41	0.00	2.94	3.06	3.06	3.06	3.06	3.07	0.00	2.94	3.02	3.12	3.13	3.12	3.12	3.12	3.12	3.13	3.12	3.12	3.13	3.15	3.17	3.24
340172002	New Jersey	Hudson	38.2	38.2	0.00	-0.02	0.01	0.01	0.01	0.01	0.01	0.00	-0.02	-0.01	0.39	0.39	0.58	0.58	0.58	0.58	0.58	0.58	0.59	0.67	0.67	0.69	0.79
180190006	Indiana	Clark	38.1	40.2	0.00	0.19	0.28	0.28	0.28	0.28	0.28	0.00	0.19	2.09	2.36	2.83	2.88	2.97	2.99	3.06	3.19	3.21	3.23	3.37	3.48	3.56	3.78
261610008	Michigan	Washtenaw	38.1	39.8	0.00	0.17	0.26	0.26	0.26	0.26	0.26	0.00	0.17	0.30	0.31	0.35	0.53	0.55	0.56	0.57	0.58	0.58	0.59	0.60	0.77	0.85	1.14
010732003	Alabama	Jefferson	38.1	38.9	0.00	0.15	0.16	0.16	0.16	0.16	0.16	0.00	0.15	0.31	0.80	1.06	1.59	1.65	1.68	1.69	1.69	1.75	1.89	2.31	2.33	2.51	2.64

170313103	Illinois	Cook	38.1	38.7	0.00	2.86	3.08	3.08	3.08	3.08	3.08	0.00	2.86	2.93	3.02	3.03	3.02	3.02	3.02	3.02	3.03	3.02	3.02	3.03	3.04	3.07	3.13
420031008	Pennsylvania	Allegheny	38	39.3	0.00	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.00	-0.02	0.78	2.84	3.07	3.33	3.41	3.96	4.01	4.13	4.25	4.28	4.38	4.39	4.44	4.54
390610006	Ohio	Hamilton	38	38	0.00	0.62	0.62	0.62	0.62	0.62	0.62	0.00	0.62	2.13	2.30	2.50	3.09	3.14	3.42	3.64	3.81	3.89	4.00	4.12	4.15	4.23	4.34
261250001	Michigan	Oakland	37.9	38.4	0.00	0.17	0.24	0.24	0.24	0.24	0.24	0.00	0.17	0.34	0.35	0.41	0.65	0.66	0.69	0.69	0.70	0.71	0.72	0.74	0.96	1.07	1.45
390171004	Ohio	Butler	37.8	38.6	0.00	0.64	0.64	0.64	0.64	0.64	0.64	0.00	0.64	2.19	2.37	2.57	3.19	3.24	3.53	3.75	3.92	4.01	4.12	4.25	4.27	4.36	4.47
420710007	Pennsylvania	Lancaster	37.7	40.1	0.00	0.24	0.96	0.96	0.96	0.96	0.96	0.00	0.24	0.88	2.53	2.71	2.92	2.98	3.43	3.47	3.57	3.66	3.68	3.77	3.77	3.81	3.90
420070014	Pennsylvania	Beaver	37.7	39.1	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.50	1.78	1.92	2.09	2.13	2.48	2.51	2.58	2.66	2.68	2.74	2.75	2.78	2.84
550790010	Wisconsin	Milwaukee	37.7	39	0.00	0.18	0.36	0.36	0.37	0.37	0.38	0.00	0.18	0.24	0.27	0.27	0.28	0.37	0.38	0.40	0.42	0.42	0.45	0.46	0.47	0.53	0.68
390617001	Ohio	Hamilton	37.7	38.1	0.00	0.65	0.65	0.65	0.65	0.65	0.65	0.00	0.65	2.22	2.40	2.60	3.23	3.27	3.57	3.80	3.97	4.06	4.17	4.30	4.32	4.41	4.52
390610014	Ohio	Hamilton	37.5	38.5	0.00	0.66	0.66	0.66	0.66	0.66	0.66	0.00	0.66	2.24	2.42	2.63	3.26	3.31	3.61	3.84	4.01	4.10	4.22	4.34	4.37	4.46	4.57
390170016	Ohio	Butler	37.5	37.8	0.00	0.51	0.51	0.51	0.51	0.51	0.51	0.00	0.51	1.75	1.89	2.05	2.54	2.58	2.81	2.99	3.12	3.19	3.28	3.38	3.40	3.47	3.56
170316005	Illinois	Cook	37.4	39.8	0.00	2.76	2.92	2.93	2.93	2.93	2.93	0.00	2.76	2.83	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.95	2.97	3.03
180890022	Indiana	Lake	37.3	42.1	0.00	0.25	0.58	0.59	0.59	0.59	0.59	0.00	0.25	1.88	2.10	2.51	2.55	2.63	2.64	2.70	2.81	2.83	2.84	2.97	3.06	3.13	3.32
180970079	Indiana	Marion	37.2	38.3	0.00	0.26	0.26	0.26	0.26	0.26	0.26	0.00	0.26	3.52	3.98	4.78	4.86	5.02	5.05	5.18	5.39	5.43	5.46	5.71	5.88	6.03	6.40
171192009	Illinois	Madison	37.2	38.2	0.00	3.85	3.87	3.87	3.87	3.87	3.87	0.00	3.85	3.97	4.11	4.12	4.11	4.11	4.11	4.11	4.12	4.11	4.11	4.12	4.15	4.18	4.27
390610042	Ohio	Hamilton	37.2	38	0.00	0.70	0.70	0.70	0.70	0.70	0.70	0.00	0.70	2.41	2.60	2.82	3.50	3.55	3.87	4.12	4.30	4.40	4.53	4.66	4.69	4.79	4.90
360610056	New York	New York	37.1	38	0.00	0.23	0.23	0.24	0.24	0.24	0.25	0.00	0.23	0.25	0.23	0.25	0.32	0.35	0.42	0.62	0.64	0.70	0.71	0.77	0.93	1.45	1.56
420030116	Pennsylvania	Allegheny	37.1	37.1	0.00	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.00	-0.02	0.63	2.29	2.47	2.68	2.74	3.19	3.23	3.33	3.42	3.45	3.53	3.54	3.58	3.66
261150005	Michigan	Monroe	37	38	0.00	0.09	0.11	0.11	0.11	0.11	0.11	0.00	0.09	0.20	0.20	0.24	0.39	0.40	0.41	0.42	0.42	0.43	0.43	0.44	0.58	0.65	0.89
210590005	Kentucky	Daviess	37	37	0.00	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	0.00	-0.22	5.74	5.80	6.02	6.08	6.09	6.15	6.30	6.76	6.89	6.99	7.20	7.64	7.79	8.00
550790099	Wisconsin	Milwaukee	36.8	37.7	0.00	0.13	0.27	0.27	0.28	0.29	0.29	0.00	0.13	0.19	0.22	0.21	0.22	0.31	0.32	0.34	0.36	0.36	0.38	0.39	0.41	0.46	0.61
191630019	Iowa	Scott	36.8	36.8	0.00	0.06	0.06	0.06	0.06	0.06	0.06	0.00	0.06	0.27	0.37	0.45	0.52	0.58	0.58	0.59	0.59	0.59	0.60	0.60	0.61	0.62	0.90
340390004	New Jersey	Union	36.7	37.2	0.00	-0.03	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	-0.03	-0.02	0.32	0.32	0.48	0.48	0.48	0.49	0.49	0.49	0.49	0.56	0.56	0.58	0.66
420031301	Pennsylvania	Allegheny	36.6	38.6	0.00	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.00	-0.02	0.68	2.47	2.67	2.89	2.96	3.44	3.48	3.59	3.69	3.72	3.81	3.81	3.85	3.95
471251009	Tennessee	Montgomery	36.6	37.9	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.00	0.00	3.14	3.30	3.32	3.33	3.33	3.33	3.32	3.34	3.35	3.46	3.45	3.46	3.51	3.66
390490024	Ohio	Franklin	36.6	37.6	0.00	0.69	0.85	0.85	0.85	0.85	0.86	0.00	0.69	2.12	2.29	2.48	3.05	3.09	3.36	3.57	3.73	3.81	3.91	4.03	4.05	4.13	4.23
390811001	Ohio	Jefferson	36.5	39.9	0.00	0.58	0.60	0.60	0.60	0.60	0.60	0.00	0.58	1.95	2.11	2.29	2.83	2.88	3.13	3.33	3.48	3.56	3.66	3.77	3.79	3.87	3.97
390350065	Ohio	Cuyahoga	36.5	38.9	0.00	0.83	1.00	1.00	1.00	1.00	1.01	0.00	0.83	2.62	2.82	3.06	3.77	3.82	4.16	4.42	4.62	4.72	4.85	4.99	5.02	5.12	5.25
180372001	Indiana	Dubois	36.5	38	0.00	0.26	0.35	0.35	0.35	0.35	0.35	0.00	0.26	2.97	3.35	4.02	4.09	4.22	4.24	4.35	4.53	4.56	4.59	4.80	4.94	5.06	5.38
171193007	Illinois	Madison	36.5	37.3	0.00	4.14	4.14	4.14	4.14	4.14	4.14	0.00	4.14	4.26	4.42	4.42	4.42	4.42	4.42	4.42	4.43	4.42	4.42	4.43	4.45	4.49	4.59
295100087	Missouri	St. Louis City	36.4	36.9	0.00	-0.43	-0.43	-0.43	-0.43	-0.43	-0.43	0.00	-0.43	1.31	1.73	1.81	1.85	1.94	1.94	1.94	1.95	1.95	1.95	1.98	2.08	2.19	2.92
550790026	Wisconsin	Milwaukee	36.3	40.1	0.00	0.14	0.28	0.28	0.29	0.29	0.30	0.00	0.14	0.19	0.22	0.22	0.22	0.31	0.32	0.33	0.35	0.36	0.38	0.39	0.40	0.45	0.59
180890026	Indiana	Lake	36.3	39.3	0.00	0.22	0.56	0.56	0.56	0.56	0.56	0.00	0.22	1.40	1.56	1.86	1.89	1.94	1.95	2.00	2.08	2.09	2.10	2.19	2.26	2.31	2.44
391130032	Ohio	Montgomery	36.3	38.5	0.00	0.70	0.70	0.70	0.70	0.70	0.70	0.00	0.70	2.38	2.57	2.79	3.46	3.51	3.83	4.08	4.26	4.35	4.48	4.61	4.64	4.73	4.85
245100040	Maryland	Baltimore (City)	36.3	38.3	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.31	0.43	0.43	0.47
170310076	Illinois	Cook	36.3	37.3	0.00	3.02	3.10	3.10	3.10	3.10	3.10	0.00	3.02	3.11	3.21	3.22	3.21	3.21	3.21	3.21	3.22	3.22	3.22	3.22	3.24	3.27	3.34
180970042	Indiana	Marion	36.3	37.2	0.00	0.29	0.29	0.29	0.29	0.29	0.29	0.00	0.29	3.90	4.40	5.30	5.39	5.56	5.59	5.73	5.97	6.02	6.05	6.32	6.52	6.68	7.09
261630036	Michigan	Wayne	36.3	36.9	0.00	0.19	0.28	0.28	0.28	0.28	0.28	0.00	0.19	0.33	0.34	0.39	0.60	0.61	0.63	0.64	0.65	0.65	0.66	0.68	0.87	0.96	1.29
360610128	New York	New York	36.2	38	0.00	0.14	0.14	0.15	0.15	0.15	0.15	0.00	0.14	0.15	0.14	0.15	0.21	0.24	0.28	0.44	0.46	0.51	0.52	0.56	0.69	1.08	1.17
390490025	Ohio	Franklin	36.1	36.4	0.00	0.65	0.80	0.80	0.80	0.80	0.82	0.00	0.65	2.03	2.19	2.37	2.92	2.96	3.22	3.42	3.57	3.65	3.75	3.86	3.88	3.96	4.06
390350045	Ohio	Cuyahoga	36	39	0.00	0.88	1.06	1.06	1.06	1.06	1.07	0.00	0.88	2.79	3.00	3.25	4.01	4.07	4.42	4.70	4.91	5.02	5.16	5.31	5.34	5.45	5.58
211110044	Kentucky	Jefferson	36	36.5	0.00	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	0.00	-0.16	4.20	4.25	4.41	4.46	4.46	4.51	4.61	4.96	5.05	5.12	5.28	5.60	5.71	5.86

390610043	Ohio	Hamilton	36	36.4	0.00	0.55	0.55	0.55	0.55	0.55	0.55	0.00	0.55	1.87	2.02	2.19	2.72	2.76	3.00	3.20	3.34	3.42	3.51	3.62	3.64	3.72	3.81
295100007	Missouri	St. Louis City	36	36.3	0.00	-0.72	-0.72	-0.72	-0.72	-0.72	-0.72	0.00	-0.72	2.15	2.84	2.97	3.04	3.19	3.18	3.18	3.20	3.21	3.20	3.24	3.42	3.60	4.80
421330008	Pennsylvania	York	35.9	38.8	0.00	0.18	0.76	0.76	0.76	0.76	0.76	0.00	0.18	1.25	3.99	4.29	4.63	4.74	5.47	5.54	5.70	5.86	5.90	6.04	6.05	6.11	6.25
181570008	Indiana	Tippecanoe	35.9	36.9	0.00	0.16	0.16	0.16	0.16	0.16	0.16	0.00	0.16	2.11	2.39	2.87	2.92	3.01	3.03	3.11	3.24	3.26	3.28	3.43	3.53	3.62	3.84
180830004	Indiana	Knox	35.9	36.5	0.00	0.24	0.32	0.32	0.32	0.32	0.32	0.00	0.24	2.74	3.10	3.72	3.78	3.90	3.92	4.02	4.19	4.22	4.24	4.43	4.57	4.68	4.97
420030008	Pennsylvania	Allegheny	35.9	36.3	0.00	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.00	-0.02	0.63	2.29	2.47	2.67	2.74	3.18	3.22	3.32	3.42	3.44	3.52	3.53	3.57	3.65
360050080	New York	Bronx	35.9	36.2	0.00	0.15	0.15	0.16	0.16	0.16	0.16	0.00	0.15	0.17	0.15	0.17	0.24	0.27	0.33	0.52	0.54	0.61	0.61	0.67	0.82	1.31	1.42
390610040	Ohio	Hamilton	35.8	36.8	0.00	0.63	0.63	0.63	0.63	0.63	0.63	0.00	0.63	2.16	2.33	2.53	3.14	3.19	3.47	3.69	3.86	3.95	4.06	4.18	4.20	4.29	4.40
211110043	Kentucky	Jefferson	35.8	36.4	0.00	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	0.00	-0.15	3.94	3.99	4.14	4.18	4.18	4.23	4.33	4.65	4.73	4.80	4.95	5.25	5.35	5.49
420430401	Pennsylvania	Dauphin	35.7	37.1	0.00	0.26	1.07	1.07	1.07	1.07	1.07	0.00	0.26	0.95	2.72	2.91	3.13	3.20	3.67	3.71	3.82	3.92	3.94	4.03	4.04	4.08	4.17
170310057	Illinois	Cook	35.7	37	0.00	2.90	3.10	3.10	3.10	3.10	3.10	0.00	2.90	2.97	3.07	3.07	3.07	3.07	3.07	3.07	3.08	3.07	3.07	3.08	3.09	3.12	3.18
090091123	Connecticut	New Haven	35.7	36.6	0.00	0.11	0.11	0.11	0.11	0.11	0.11	0.00	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.20	0.20	0.20	0.21	0.22
290990012	Missouri	Jefferson	35.7	36.5	0.00	-0.63	-0.63	-0.63	-0.63	-0.63	-0.63	0.00	-0.63	1.89	2.50	2.62	2.68	2.81	2.80	2.80	2.82	2.83	2.82	2.86	3.01	3.17	4.23
340171003	New Jersey	Hudson	35.7	36.1	0.00	-0.07	-0.06	-0.06	-0.06	-0.06	-0.06	0.00	-0.07	-0.07	0.49	0.49	0.75	0.74	0.74	0.75	0.75	0.75	0.76	0.86	0.86	0.89	1.03
170312001	Illinois	Cook	35.6	38.2	0.00	1.75	1.82	1.82	1.82	1.82	1.82	0.00	1.75	1.80	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.87	1.89	1.92
391530017	Ohio	Summit	35.6	37.2	0.00	0.79	1.04	1.04	1.04	1.04	1.06	0.00	0.79	2.39	2.57	2.78	3.41	3.46	3.76	3.99	4.17	4.26	4.37	4.50	4.52	4.62	4.73
211110048	Kentucky	Jefferson	35.6	36.4	0.00	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	0.00	-0.15	3.77	3.81	3.96	4.00	4.00	4.05	4.14	4.45	4.53	4.59	4.74	5.03	5.12	5.26
291831002	Missouri	Saint Charles	35.5	37.1	0.00	-0.51	-0.51	-0.51	-0.51	-0.51	-0.51	0.00	-0.51	1.54	2.03	2.12	2.18	2.28	2.28	2.28	2.29	2.29	2.29	2.32	2.45	2.57	3.43
245100049	Maryland	Baltimore (City	35.5	35.5	0.00	0.33	0.32	0.32	0.32	0.32	0.32	0.00	0.33	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.43	0.43	0.47
261630001	Michigan	Wayne	35.4	37.8	0.00	0.14	0.18	0.18	0.18	0.18	0.18	0.00	0.14	0.31	0.32	0.38	0.62	0.63	0.66	0.66	0.67	0.68	0.69	0.71	0.93	1.04	1.41
360610062	New York	New York	35.3	37	0.00	0.21	0.22	0.23	0.23	0.23	0.24	0.00	0.21	0.23	0.22	0.22	0.27	0.29	0.32	0.44	0.45	0.49	0.49	0.53	0.62	0.91	0.98
420410101	Pennsylvania	Cumberland	35.3	37	0.00	0.18	0.73	0.73	0.73	0.73	0.74	0.00	0.18	0.75	2.22	2.38	2.57	2.62	3.02	3.05	3.14	3.23	3.24	3.32	3.33	3.36	3.43
390810017	Ohio	Jefferson	35.3	36.8	0.00	0.55	0.57	0.57	0.57	0.57	0.57	0.00	0.55	1.83	1.98	2.15	2.66	2.70	2.94	3.12	3.26	3.34	3.43	3.53	3.55	3.63	3.72
171630010	Illinois	Saint Clair	35.3	35.9	0.00	3.97	3.97	3.97	3.97	3.97	3.97	0.00	3.97	4.09	4.24	4.24	4.24	4.24	4.24	4.24	4.25	4.24	4.24	4.25	4.27	4.31	4.40
295100085	Missouri	St. Louis City	35.3	35.7	0.00	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	0.00	-0.68	2.06	2.72	2.84	2.91	3.05	3.05	3.04	3.06	3.07	3.06	3.11	3.27	3.44	4.59
181670023	Indiana	Vigo	35.1	36.5	0.00	0.27	0.39	0.39	0.39	0.40	0.39	0.00	0.27	3.04	3.43	4.11	4.18	4.32	4.34	4.45	4.63	4.67	4.69	4.90	5.05	5.17	5.49
550250047	Wisconsin	Dane	35.1	36.1	0.00	-0.01	0.05	0.05	0.05	0.05	0.06	0.00	-0.01	0.06	0.10	0.09	0.10	0.21	0.23	0.25	0.27	0.28	0.31	0.32	0.33	0.40	0.59
471650007	Tennessee	Sumner	35.1	36	0.00	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.00	-0.02	4.04	4.25	4.28	4.28	4.28	4.28	4.28	4.29	4.32	4.45	4.45	4.46	4.53	4.72
171971002	Illinois	Will	35.1	35.8	0.00	2.42	2.55	2.55	2.55	2.55	2.55	0.00	2.42	2.49	2.57	2.57	2.57	2.57	2.57	2.57	2.58	2.57	2.57	2.58	2.59	2.61	2.66
210290006	Kentucky	Bullitt	35	36.3	0.00	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	0.00	-0.16	4.07	4.12	4.27	4.32	4.32	4.37	4.47	4.80	4.89	4.96	5.11	5.42	5.53	5.67
170310022	Illinois	Cook	34.9	36.6	0.00	1.22	1.34	1.34	1.34	1.34	1.34	0.00	1.22	1.26	1.29	1.30	1.29	1.29	1.29	1.29	1.30	1.30	1.30	1.30	1.30	1.31	1.34
551330027	Wisconsin	Waukesha	34.9	35.6	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.04	0.06	0.06	0.07	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.25	0.37
550790059	Wisconsin	Milwaukee	34.8	36.3	0.00	0.08	0.18	0.18	0.19	0.19	0.19	0.00	0.08	0.13	0.16	0.16	0.17	0.25	0.27	0.28	0.30	0.31	0.33	0.34	0.35	0.41	0.55
245100035	Maryland	Baltimore (City)	34.7	35.5	0.00	0.32	0.31	0.31	0.31	0.31	0.31	0.00	0.32	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.41	0.42	0.46
390350027	Ohio	Cuyahoga	34.5	36.6	0.00	0.84	1.09	1.09	1.10	1.10	1.12	0.00	0.84	2.53	2.72	2.95	3.62	3.67	3.99	4.24	4.42	4.52	4.64	4.77	4.80	4.90	5.02
191390015	Iowa	Muscatine	34.5	36	0.00	0.16	0.26	0.28	0.29	0.29	0.30	0.00	0.16	0.31	0.37	0.43	0.48	0.52	0.52	0.53	0.53	0.53	0.54	0.54	0.54	0.55	0.75
211451004	Kentucky	McCracken	34.4	36.8	0.00	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	0.00	-0.11	2.85	2.89	3.00	3.02	3.03	3.06	3.13	3.36	3.43	3.47	3.58	3.80	3.88	3.98
420030095	Pennsylvania	Allegheny	34.3	36.6	0.00	0.01	0.10	0.10	0.10	0.10	0.10	0.00	0.01	0.62	2.19	2.36	2.56	2.62	3.04	3.07	3.17	3.26	3.28	3.36	3.37	3.40	3.48
180431004	Indiana	Floyd	34.3	35.7	0.00	0.19	0.19	0.19	0.19	0.19	0.19	0.00	0.19	2.59	2.92	3.52	3.58	3.69	3.71	3.81	3.97	3.99	4.01	4.20	4.33	4.43	4.71

391130031	Ohio	Montgomery	34.3	35.6	0.00	0.57	0.67	0.67	0.67	0.67	0.68	0.00	0.57	1.81	1.96	2.12	2.61	2.65	2.88	3.07	3.20	3.27	3.36	3.46	3.48	3.55	3.64
391351001	Ohio	Preble	34.3	35.5	0.00	0.55	0.55	0.55	0.55	0.55	0.55	0.00	0.55	1.88	2.03	2.20	2.73	2.77	3.02	3.21	3.36	3.43	3.53	3.64	3.66	3.74	3.83
390950024	Ohio	Lucas	34.2	36.5	0.00	0.50	0.70	0.70	0.70	0.70	0.72	0.00	0.50	1.43	1.53	1.66	2.03	2.05	2.23	2.37	2.47	2.52	2.59	2.66	2.68	2.73	2.79
360610079	New York	New York	34.2	36.4	0.00	0.12	0.12	0.12	0.12	0.12	0.12	0.00	0.12	0.14	0.12	0.14	0.23	0.26	0.34	0.58	0.60	0.68	0.69	0.76	0.95	1.55	1.68
390990014	Ohio	Mahoning	34.2	35.8	0.00	0.63	0.86	0.86	0.86	0.86	0.88	0.00	0.63	1.86	2.00	2.16	2.65	2.68	2.91	3.09	3.23	3.30	3.39	3.48	3.50	3.57	3.66
170310050	Illinois	Cook	34.1	35.8	0.00	2.17	2.23	2.23	2.23	2.23	2.23	0.00	2.17	2.23	2.30	2.31	2.30	2.30	2.30	2.30	2.31	2.30	2.31	2.31	2.32	2.34	2.39
110010041	District Of Columbia	District Of Columbia	34	35.6	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
540090005	West Virginia	Brooke	33.9	36.1	0.00	0.38	0.44	0.44	0.44	0.44	0.44	0.00	0.38	1.67	1.71	1.73	1.74	1.74	1.74	1.76	1.75	1.75	1.82	1.83	1.86	1.91	2.00
391550007	Ohio	Trumbull	33.9	35.6	0.00	0.59	0.83	0.83	0.83	0.83	0.85	0.00	0.59	1.69	1.82	1.96	2.40	2.43	2.64	2.80	2.92	2.98	3.06	3.15	3.17	3.23	3.31
421255001	Pennsylvania	Washington	33.9	35.5	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	-0.01	0.44	1.61	1.74	1.89	1.93	2.25	2.28	2.35	2.41	2.43	2.49	2.49	2.52	2.58
420033007	Pennsylvania	Allegheny	33.8	38.5	0.00	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.00	-0.02	0.72	2.63	2.84	3.08	3.15	3.66	3.71	3.82	3.93	3.96	4.05	4.06	4.10	4.20
240031003	Maryland	Anne Arundel	33.8	36.7	0.00	0.35	0.35	0.35	0.35	0.35	0.35	0.00	0.35	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.43	0.43	0.46
180390003	Indiana	Elkhart	33.8	35.6	0.00	0.23	0.54	0.54	0.54	0.54	0.54	0.00	0.23	1.73	1.94	2.31	2.35	2.42	2.43	2.49	2.59	2.61	2.62	2.74	2.82	2.89	3.06
212270007	Kentucky	Warren	33.7	36.3	0.00	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	0.00	-0.11	2.73	2.76	2.87	2.90	2.90	2.93	3.00	3.22	3.28	3.33	3.43	3.64	3.71	3.81
390350034	Ohio	Cuyahoga	33.7	35.7	0.00	0.75	1.04	1.05	1.05	1.05	1.07	0.00	0.75	2.16	2.32	2.50	3.06	3.10	3.37	3.57	3.73	3.81	3.91	4.02	4.04	4.12	4.22
170314007	Illinois	Cook	33.6	35.7	0.00	3.28	3.42	3.42	3.43	3.43	3.43	0.00	3.28	3.37	3.48	3.49	3.48	3.48	3.48	3.48	3.49	3.48	3.49	3.49	3.51	3.54	3.61
390950026	Ohio	Lucas	33.6	35.6	0.00	0.59	0.66	0.66	0.66	0.66	0.66	0.00	0.59	1.91	2.06	2.24	2.76	2.80	3.05	3.24	3.39	3.46	3.56	3.67	3.69	3.76	3.86
110010042	District Of Columbia	District Of Columbia	33	35.6	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

*To calculate a total reduction when both NO_x and SO_2 have non-zero marginal costs, add the two values and then subtract the 2014 base case value..

Table 3-6. Total* Average Daily Reductions in Nitrate and Sulfate Concentration ($\mu g/m^3$) at Downwind Monitors from the States Upwind of the Receptor as a Function of EGU NO_x and SO_2 Emissions Reductions at Various Marginal Costs per Ton of Reduction in 2014 (Estimated Using AQAT).

				Year	2012	2014	2014	2014	2014	2014	2014	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
				SO_2 Marginal Cost per Ton	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
				NO_x Marginal Cost per Ton	$0	$0	$500	$750	$1,000	$1,250	$1,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Monitor Identification Number	**Receptor State**	**Receptor County**	**2012 Avg. Design Value**	**2012 Max. Design Value**																							
420030064	Pennsylvania	Allegheny	58.8	62.3	0.00	1.00	1.11	1.11	1.11	1.11	1.11	0.00	1.00	3.59	3.77	3.98	4.34	4.39	4.54	4.69	4.82	4.87	5.00	5.11	5.22	5.36	5.59
261630033	Michigan	Wayne	42.1	42.6	0.00	1.40	1.69	1.70	1.70	1.70	1.71	0.00	1.40	5.27	6.00	6.40	6.80	6.89	7.17	7.36	7.60	7.70	7.83	8.01	8.17	8.35	8.68
390350038	Ohio	Cuyahoga	41.2	44	0.00	0.94	1.01	1.01	1.02	1.02	1.02	0.00	0.94	4.33	5.66	5.99	6.28	6.36	6.71	6.81	6.96	7.06	7.17	7.33	7.55	7.77	8.19
420030093	Pennsylvania	Allegheny	41.1	46.2	0.00	1.36	1.36	1.36	1.36	1.36	1.36	0.00	1.36	5.53	5.79	6.09	6.54	6.60	6.81	7.01	7.18	7.26	7.45	7.60	7.76	7.95	8.28
170311016	Illinois	Cook	41	44.1	0.00	0.53	0.85	0.85	0.85	0.86	0.87	0.00	0.53	2.99	3.62	3.99	4.30	4.40	4.59	4.71	4.87	4.94	5.01	5.15	5.32	5.47	5.90
261630016	Michigan	Wayne	40.6	43	0.00	1.18	1.63	1.63	1.63	1.63	1.64	0.00	1.18	3.41	4.08	4.39	4.73	4.81	5.07	5.22	5.39	5.48	5.56	5.71	5.80	5.94	6.15
180970043	Indiana	Marion	40.5	42	0.00	1.53	1.53	1.53	1.53	1.53	1.53	0.00	1.53	7.78	8.43	8.72	9.14	9.20	9.47	9.67	10.02	10.16	10.34	10.54	10.82	11.03	11.51
390170003	Ohio	Butler	40.3	42.3	0.00	1.42	1.42	1.42	1.42	1.42	1.42	0.00	1.42	10.94	11.91	12.64	12.79	12.93	13.08	13.27	13.74	13.88	14.08	14.40	14.85	15.15	15.86
180970066	Indiana	Marion	40.3	41.8	0.00	1.59	1.59	1.59	1.59	1.59	1.59	0.00	1.59	7.62	8.24	8.54	8.97	9.04	9.31	9.52	9.88	10.01	10.19	10.40	10.68	10.89	11.36
420210011	Pennsylvania	Cambria	40.3	40.7	0.00	1.22	1.22	1.22	1.22	1.22	1.22	0.00	1.22	4.82	5.09	5.43	5.99	6.07	6.30	6.52	6.71	6.79	6.96	7.13	7.32	7.51	7.90
180970081	Indiana	Marion	40.1	41.1	0.00	1.36	1.36	1.36	1.36	1.36	1.36	0.00	1.36	7.62	8.25	8.53	8.90	8.96	9.21	9.40	9.72	9.85	10.04	10.22	10.49	10.69	11.15
010730023	Alabama	Jefferson	40	40.7	0.00	1.00	1.01	1.01	1.01	1.01	1.01	0.00	1.00	3.09	3.47	3.62	3.76	3.79	3.90	3.97	4.09	4.14	4.22	4.30	4.37	4.45	4.61
171191007	Illinois	Madison	40	40.6	0.00	0.25	0.48	0.48	0.48	0.50	0.52	0.00	0.25	4.20	4.97	5.34	5.67	5.80	5.97	6.09	6.26	6.33	6.42	6.57	6.80	6.99	7.79
540090011	West Virginia	Brooke	39.9	40.8	0.00	1.13	1.55	1.55	1.55	1.55	1.57	0.00	1.13	3.14	4.20	4.54	5.15	5.23	5.68	5.87	6.08	6.20	6.30	6.47	6.58	6.72	6.99
390618001	Ohio	Hamilton	39.6	40.3	0.00	0.98	1.11	1.11	1.11	1.11	1.11	0.00	0.98	6.62	7.48	7.93	8.12	8.21	8.37	8.48	8.76	8.86	9.00	9.23	9.51	9.71	10.21
390350060	Ohio	Cuyahoga	39.4	42.8	0.00	0.71	0.94	0.95	0.95	0.95	0.95	0.00	0.71	2.59	3.39	3.60	3.81	3.86	4.08	4.15	4.25	4.31	4.37	4.47	4.64	4.81	5.10
171190023	Illinois	Madison	39.4	40.2	0.00	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	0.00	-0.04	5.47	6.30	6.80	7.11	7.28	7.41	7.55	7.78	7.86	7.95	8.15	8.45	8.71	9.80
180970083	Indiana	Marion	39	39.3	0.00	1.55	1.55	1.55	1.55	1.55	1.55	0.00	1.55	8.02	8.67	8.98	9.40	9.47	9.74	9.96	10.32	10.46	10.65	10.85	11.15	11.36	11.85
550790043	Wisconsin	Milwaukee	38.8	39.7	0.00	3.10	3.32	3.33	3.33	3.34	3.35	0.00	3.10	6.20	6.92	7.38	7.74	7.86	8.05	8.20	8.40	8.47	8.55	8.73	8.94	9.13	9.69
180970078	Indiana	Marion	38.7	39.7	0.00	1.52	1.52	1.52	1.52	1.52	1.52	0.00	1.52	7.76	8.40	8.69	9.10	9.17	9.43	9.64	9.98	10.12	10.30	10.50	10.78	10.99	11.47
261630019	Michigan	Wayne	38.6	39.1	0.00	1.09	1.44	1.45	1.45	1.45	1.46	0.00	1.09	3.21	3.80	4.10	4.41	4.48	4.71	4.85	5.01	5.09	5.17	5.31	5.40	5.52	5.71
170310052	Illinois	Cook	38.5	39.7	0.00	0.47	0.76	0.77	0.77	0.78	0.80	0.00	0.47	2.53	2.99	3.30	3.54	3.63	3.77	3.87	3.99	4.05	4.10	4.22	4.36	4.48	4.87
261630015	Michigan	Wayne	38.5	39.1	0.00	1.40	1.51	1.51	1.51	1.51	1.51	0.00	1.40	6.11	6.94	7.42	7.92	8.02	8.33	8.55	8.82	8.94	9.11	9.35	9.53	9.73	10.13
390170017	Ohio	Butler	38.5	38.5	0.00	1.17	1.17	1.17	1.17	1.17	1.17	0.00	1.17	9.01	9.81	10.42	10.54	10.65	10.78	10.94	11.32	11.44	11.60	11.87	12.24	12.48	13.07
261470005	Michigan	St. Clair	38.4	39.4	0.00	1.05	1.23	1.24	1.24	1.24	1.24	0.00	1.05	3.97	4.73	5.05	5.42	5.50	5.79	5.97	6.16	6.26	6.37	6.52	6.64	6.81	7.04
170313301	Illinois	Cook	38.2	41	0.00	0.53	0.88	0.88	0.89	0.89	0.90	0.00	0.53	2.84	3.43	3.81	4.11	4.22	4.40	4.51	4.65	4.71	4.78	4.92	5.10	5.26	5.71
340172002	New Jersey	Hudson	38.2	38.2	0.00	0.74	0.91	0.92	0.92	0.92	0.93	0.00	0.74	1.38	1.83	1.96	2.13	2.18	2.38	2.58	2.63	2.72	2.79	2.91	3.06	3.49	3.66
180190006	Indiana	Clark	38.1	40.2	0.00	1.59	1.73	1.73	1.73	1.73	1.74	0.00	1.59	7.51	8.04	8.28	8.52	8.57	8.75	8.90	9.24	9.36	9.51	9.69	9.99	10.17	10.59
261610008	Michigan	Washtenaw	38.1	39.8	0.00	1.44	1.78	1.78	1.78	1.78	1.79	0.00	1.44	5.67	6.48	6.90	7.34	7.43	7.74	7.94	8.19	8.31	8.45	8.65	8.81	9.00	9.35
010732003	Alabama	Jefferson	38.1	38.9	0.00	0.79	0.79	0.79	0.79	0.79	0.79	0.00	0.79	2.56	2.83	2.97	3.07	3.10	3.18	3.24	3.34	3.38	3.44	3.51	3.58	3.64	3.78
170313103	Illinois	Cook	38.1	38.7	0.00	0.48	0.91	0.92	0.92	0.93	0.95	0.00	0.48	1.84	2.15	2.38	2.57	2.64	2.73	2.79	2.88	2.92	2.95	3.04	3.16	3.25	3.59
420031008	Pennsylvania	Allegheny	38	39.3	0.00	1.45	1.45	1.45	1.45	1.45	1.45	0.00	1.45	5.84	6.14	6.49	7.07	7.14	7.40	7.64	7.85	7.95	8.14	8.33	8.51	8.72	9.10
390610006	Ohio	Hamilton	38	38	0.00	1.22	1.22	1.22	1.22	1.22	1.22	0.00	1.22	9.12	10.07	10.70	10.88	11.00	11.15	11.31	11.70	11.83	12.01	12.31	12.68	12.94	13.58
261250001	Michigan	Oakland	37.9	38.4	0.00	1.45	1.64	1.64	1.64	1.64	1.65	0.00	1.45	6.03	6.98	7.45	7.97	8.08	8.45	8.68	8.96	9.09	9.25	9.47	9.64	9.82	10.20
390171004	Ohio	Butler	37.8	38.6	0.00	1.11	1.11	1.11	1.11	1.11	1.11	0.00	1.11	8.75	9.54	10.13	10.25	10.36	10.48	10.64	11.02	11.14	11.30	11.56	11.92	12.16	12.74
420710007	Pennsylvania	Lancaster	37.7	40.1	0.00	0.74	0.83	0.83	0.83	0.83	0.84	0.00	0.74	1.01	1.06	1.11	1.17	1.18	1.20	1.24	1.25	1.26	1.30	1.34	1.38	1.44	1.51
420070014	Pennsylvania	Beaver	37.7	39.1	0.00	1.33	1.42	1.42	1.42	1.42	1.42	0.00	1.33	4.71	4.96	5.26	5.77	5.83	6.06	6.27	6.44	6.52	6.68	6.84	6.99	7.17	7.49
550790010	Wisconsin	Milwaukee	37.7	39	0.00	2.49	3.25	3.27	3.28	3.31	3.33	0.00	2.49	3.59	3.84	4.07	4.21	4.28	4.31	4.35	4.42	4.43	4.45	4.51	4.65	4.78	5.17
390617001	Ohio	Hamilton	37.7	38.1	0.00	1.12	1.12	1.12	1.12	1.12	1.12	0.00	1.12	8.32	9.32	9.87	10.03	10.14	10.33	10.47	10.81	10.92	11.08	11.32	11.67	11.90	12.51
390610014	Ohio	Hamilton	37.5	38.5	0.00	0.99	0.99	0.99	0.99	0.99	0.99	0.00	0.99	7.70	8.66	9.18	9.39	9.49	9.67	9.80	10.13	10.25	10.42	10.69	11.01	11.25	11.81

390170016	Ohio	Butler	37.5	37.8	0.00	1.26	1.26	1.26	1.26	1.26	1.26	0.00	1.26	9.10	10.07	10.69	10.83	10.96	11.12	11.28	11.67	11.79	11.96	12.23	12.60	12.85	13.48
170316005	Illinois	Cook	37.4	39.8	0.00	0.50	0.87	0.88	0.89	0.90	0.91	0.00	0.50	2.30	2.70	2.98	3.20	3.28	3.40	3.49	3.60	3.64	3.69	3.80	3.93	4.04	4.39
180890022	Indiana	Lake	37.3	42.1	0.00	1.78	1.94	1.95	1.95	1.95	1.97	0.00	1.78	2.15	2.28	2.33	2.43	2.47	2.49	2.51	2.53	2.53	2.55	2.57	2.63	2.70	2.95
180970079	Indiana	Marion	37.2	38.3	0.00	1.66	1.66	1.66	1.66	1.66	1.66	0.00	1.66	7.95	8.61	8.93	9.40	9.48	9.77	10.00	10.38	10.52	10.71	10.93	11.22	11.44	11.93
171192009	Illinois	Madison	37.2	38.2	0.00	0.01	0.02	0.02	0.02	0.02	0.03	0.00	0.01	5.17	6.06	6.53	6.85	7.01	7.17	7.31	7.52	7.61	7.70	7.89	8.18	8.43	9.43
390610042	Ohio	Hamilton	37.2	38	0.00	0.92	0.92	0.92	0.92	0.92	0.92	0.00	0.92	7.20	7.91	8.37	8.48	8.57	8.69	8.81	9.11	9.21	9.34	9.55	9.84	10.03	10.52
360610056	New York	New York	37.1	38	0.00	0.71	0.94	0.94	0.94	0.94	0.94	0.00	0.71	1.41	2.04	2.18	2.38	2.41	2.56	2.62	2.67	2.71	2.77	2.87	2.91	2.97	3.11
420030116	Pennsylvania	Allegheny	37.1	37.1	0.00	1.30	1.30	1.30	1.30	1.30	1.30	0.00	1.30	5.37	5.65	5.95	6.40	6.46	6.66	6.86	7.02	7.10	7.28	7.44	7.60	7.79	8.16
261150005	Michigan	Monroe	37	38	0.00	1.59	1.71	1.71	1.71	1.72	1.72	0.00	1.59	7.47	8.53	9.12	9.77	9.90	10.31	10.58	10.93	11.09	11.30	11.60	11.83	12.07	12.56
210590005	Kentucky	Daviess	37	37	0.00	2.17	2.17	2.17	2.17	2.17	2.17	0.00	2.17	7.42	8.15	9.04	9.27	9.46	9.54	9.72	9.99	10.05	10.14	10.42	10.65	10.88	11.58
550790099	Wisconsin	Milwaukee	36.8	37.7	0.00	2.64	3.17	3.19	3.20	3.21	3.24	0.00	2.64	4.37	4.84	5.16	5.40	5.49	5.59	5.67	5.78	5.82	5.86	5.96	6.13	6.28	6.76
191630019	Iowa	Scott	36.8	36.8	0.00	2.82	2.82	2.82	2.82	2.82	2.82	0.00	2.82	8.52	9.83	10.41	10.94	11.14	11.51	11.73	12.05	12.19	12.35	12.61	12.95	13.26	14.14
340390004	New Jersey	Union	36.7	37.2	0.00	0.83	0.94	0.94	0.94	0.95	0.95	0.00	0.83	2.49	3.37	3.61	3.84	3.90	4.19	4.34	4.46	4.56	4.66	4.82	4.94	5.20	5.43
420031301	Pennsylvania	Allegheny	36.6	38.6	0.00	1.25	1.25	1.25	1.25	1.25	1.25	0.00	1.25	4.97	5.22	5.51	6.01	6.07	6.29	6.49	6.66	6.74	6.91	7.07	7.22	7.41	7.74
471251009	Tennessee	Montgomery	36.6	37.9	0.00	2.17	2.31	2.31	2.31	2.31	2.32	0.00	2.17	7.08	7.89	8.38	8.79	8.90	9.16	9.36	9.66	9.78	9.90	10.14	10.44	10.67	11.26
390490024	Ohio	Franklin	36.6	37.6	0.00	0.96	1.17	1.17	1.17	1.17	1.17	0.00	0.96	4.81	5.69	6.03	6.20	6.28	6.48	6.58	6.74	6.82	6.92	7.07	7.28	7.47	7.87
390811001	Ohio	Jefferson	36.5	39.9	0.00	0.92	0.94	0.94	0.94	0.94	0.94	0.00	0.92	4.13	5.07	5.33	5.52	5.59	5.82	5.89	5.99	6.06	6.18	6.30	6.46	6.62	6.96
390350065	Ohio	Cuyahoga	36.5	38.9	0.00	0.78	0.94	0.94	0.94	0.94	0.95	0.00	0.78	3.16	4.20	4.46	4.68	4.75	5.02	5.11	5.22	5.31	5.38	5.50	5.67	5.85	6.17
180372001	Indiana	Dubois	36.5	38	0.00	1.67	1.79	1.79	1.80	1.80	1.81	0.00	1.67	7.44	7.92	8.17	8.46	8.51	8.70	8.87	9.22	9.34	9.49	9.67	9.97	10.16	10.56
171193007	Illinois	Madison	36.5	37.3	0.00	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	0.00	-0.03	5.67	6.58	7.10	7.43	7.60	7.76	7.91	8.15	8.23	8.33	8.54	8.86	9.13	10.21
295100087	Missouri	St. Louis City	36.4	36.9	0.00	4.30	4.31	4.31	4.31	4.31	4.31	0.00	4.30	8.02	8.60	9.01	9.28	9.36	9.51	9.66	9.88	9.95	10.05	10.22	10.43	10.61	11.01
550790026	Wisconsin	Milwaukee	36.3	40.1	0.00	2.23	2.70	2.72	2.72	2.74	2.76	0.00	2.23	3.62	4.03	4.30	4.50	4.57	4.66	4.73	4.82	4.85	4.88	4.96	5.10	5.23	5.63
180890026	Indiana	Lake	36.3	39.3	0.00	1.74	1.94	1.94	1.94	1.95	1.96	0.00	1.74	3.24	3.71	3.85	4.15	4.21	4.38	4.46	4.55	4.60	4.67	4.74	4.89	5.01	5.38
391130032	Ohio	Montgomery	36.3	38.5	0.00	1.23	1.23	1.23	1.23	1.23	1.23	0.00	1.23	8.97	9.93	10.50	10.67	10.78	10.96	11.12	11.48	11.61	11.79	12.05	12.43	12.68	13.31
245100040	Maryland	Baltimore (City)	36.3	38.3	0.00	0.65	0.83	0.83	0.83	0.83	0.84	0.00	0.65	1.12	1.51	1.62	1.71	1.74	1.86	1.90	1.94	1.99	2.04	2.11	2.14	2.21	2.31
170310076	Illinois	Cook	36.3	37.3	0.00	0.55	0.77	0.77	0.77	0.78	0.78	0.00	0.55	3.42	4.18	4.64	5.03	5.16	5.40	5.54	5.72	5.81	5.89	6.07	6.29	6.47	6.98
180970042	Indiana	Marion	36.3	37.2	0.00	1.64	1.64	1.64	1.64	1.64	1.64	0.00	1.64	8.02	8.65	8.96	9.39	9.45	9.72	9.94	10.32	10.46	10.64	10.85	11.16	11.38	11.87
261630036	Michigan	Wayne	36.3	36.9	0.00	1.43	1.73	1.73	1.73	1.73	1.74	0.00	1.43	5.17	5.84	6.22	6.61	6.70	6.96	7.14	7.37	7.47	7.59	7.77	7.92	8.10	8.45
360610128	New York	New York	36.2	38	0.00	0.83	0.95	0.95	0.95	0.95	0.95	0.00	0.83	2.97	4.32	4.60	5.03	5.10	5.42	5.52	5.66	5.75	5.86	6.06	6.17	6.31	6.61
390490025	Ohio	Franklin	36.1	36.4	0.00	0.97	1.14	1.14	1.14	1.15	1.15	0.00	0.97	4.62	5.48	5.83	6.00	6.08	6.28	6.37	6.54	6.62	6.71	6.86	7.07	7.26	7.67
390350045	Ohio	Cuyahoga	36	39	0.00	0.79	0.96	0.96	0.96	0.96	0.96	0.00	0.79	3.38	4.33	4.58	4.82	4.88	5.13	5.22	5.33	5.40	5.49	5.61	5.80	5.99	6.34
211110044	Kentucky	Jefferson	36	36.5	0.00	1.84	1.84	1.84	1.84	1.84	1.84	0.00	1.84	6.14	6.84	7.47	7.67	7.81	7.93	8.06	8.26	8.31	8.41	8.62	8.78	8.97	9.50
390610043	Ohio	Hamilton	36	36.4	0.00	1.30	1.30	1.30	1.30	1.30	1.30	0.00	1.30	9.33	10.19	10.84	10.97	11.09	11.22	11.38	11.77	11.88	12.05	12.32	12.70	12.96	13.62
295100007	Missouri	St. Louis City	36	36.3	0.00	4.53	4.53	4.53	4.53	4.53	4.53	0.00	4.53	8.25	8.88	9.31	9.62	9.71	9.88	10.04	10.26	10.33	10.44	10.62	10.82	11.01	11.46
421330008	Pennsylvania	York	35.9	38.8	0.00	1.00	1.09	1.09	1.09	1.09	1.10	0.00	1.00	2.60	2.75	2.92	3.08	3.11	3.18	3.28	3.35	3.40	3.50	3.62	3.73	3.88	4.07
181570008	Indiana	Tippecanoe	35.9	36.9	0.00	1.56	1.56	1.56	1.56	1.56	1.56	0.00	1.56	6.96	7.91	8.20	8.66	8.73	9.08	9.28	9.56	9.69	9.88	10.06	10.26	10.46	10.90
180830004	Indiana	Knox	35.9	36.5	0.00	1.43	1.54	1.54	1.54	1.55	1.56	0.00	1.43	5.90	6.30	6.54	6.94	6.99	7.21	7.39	7.70	7.81	7.93	8.10	8.36	8.53	8.91
420030008	Pennsylvania	Allegheny	35.9	36.3	0.00	0.98	0.98	0.98	0.98	0.98	0.98	0.00	0.98	3.77	3.94	4.15	4.51	4.56	4.71	4.87	4.97	5.03	5.17	5.28	5.39	5.53	5.78
360050080	New York	Bronx	35.9	36.2	0.00	0.60	0.76	0.76	0.76	0.76	0.76	0.00	0.60	1.82	2.75	2.95	3.24	3.28	3.49	3.57	3.66	3.72	3.80	3.97	4.03	4.13	4.35
390610040	Ohio	Hamilton	35.8	36.8	0.00	1.13	1.13	1.13	1.13	1.13	1.13	0.00	1.13	8.32	9.34	9.89	10.03	10.14	10.33	10.47	10.80	10.92	11.07	11.32	11.63	11.86	12.44
211110043	Kentucky	Jefferson	35.8	36.4	0.00	1.86	1.86	1.86	1.86	1.86	1.86	0.00	1.86	6.51	7.26	7.99	8.22	8.38	8.51	8.68	8.90	8.97	9.06	9.31	9.49	9.69	10.25
420430401	Pennsylvania	Dauphin	35.7	37.1	0.00	0.80	0.91	0.91	0.92	0.92	0.93	0.00	0.80	1.50	1.60	1.71	1.85	1.87	1.92	1.99	2.02	2.05	2.11	2.19	2.27	2.38	2.52
170310057	Illinois	Cook	35.7	37	0.00	0.54	0.98	0.99	0.99	1.00	1.02	0.00	0.54	2.29	2.75	3.03	3.26	3.35	3.49	3.57	3.68	3.73	3.77	3.88	4.02	4.14	4.52
090091123	Connecticut	New Haven	35.7	36.6	0.00	0.83	0.92	0.92	0.92	0.92	0.93	0.00	0.83	2.63	3.59	3.84	4.16	4.23	4.51	4.69	4.81	4.92	5.02	5.20	5.36	5.71	5.96
290990012	Missouri	Jefferson	35.7	36.5	0.00	4.33	4.33	4.33	4.33	4.33	4.33	0.00	4.33	8.23	8.86	9.32	9.64	9.74	9.92	10.08	10.31	10.38	10.49	10.68	10.89	11.09	11.55
340171003	New Jersey	Hudson	35.7	36.1	0.00	0.65	0.81	0.82	0.82	0.82	0.82	0.00	0.65	1.75	2.28	2.47	2.66	2.72	2.93	3.13	3.22	3.31	3.40	3.54	3.71	4.12	4.32
170312001	Illinois	Cook	35.6	38.2	0.00	0.66	1.04	1.05	1.05	1.05	1.06	0.00	0.66	3.82	4.53	5.08	5.44	5.58	5.79	5.94	6.14	6.22	6.30	6.51	6.74	6.92	7.43
391530017	Ohio	Summit	35.6	37.2	0.00	1.03	1.26	1.26	1.26	1.26	1.26	0.00	1.03	3.88	4.90	5.17	5.39	5.46	5.72	5.80	5.92	5.99	6.09	6.21	6.39	6.57	6.92
211110048	Kentucky	Jefferson	35.6	36.4	0.00	1.66	1.66	1.66	1.66	1.66	1.66	0.00	1.66	5.54	6.18	6.74	6.92	7.05	7.15	7.28	7.45	7.50	7.59	7.78	7.92	8.09	8.57
291831002	Missouri	Saint Charles	35.5	37.1	0.00	4.12	4.12	4.12	4.12	4.12	4.12	0.00	4.12	8.17	8.80	9.25	9.52	9.61	9.77	9.92	10.16	10.23	10.34	10.53	10.76	10.96	11.39
245100049	Maryland	Baltimore (City	35.5	35.5	0.00	0.65	0.85	0.85	0.85	0.85	0.86	0.00	0.65	1.11	1.52	1.62	1.71	1.74	1.86	1.91	1.95	1.99	2.04	2.11	2.14	2.21	2.31
261630001	Michigan	Wayne	35.4	37.8	0.00	1.41	1.52	1.52	1.52	1.53	1.53	0.00	1.41	6.16	7.12	7.61	8.20	8.31	8.71	8.97	9.27	9.41	9.60	9.83	10.00	10.19	10.53
360610062	New York	New York	35.3	37	0.00	0.75	0.98	0.99	0.99	0.99	0.99	0.00	0.75	1.68	2.58	2.73	3.07	3.10	3.24	3.31	3.37	3.42	3.50	3.68	3.73	3.82	4.06
420410101	Pennsylvania	Cumberland	35.3	37	0.00	0.76	0.81	0.82	0.82	0.82	0.82	0.00	0.76	1.52	1.60	1.71	1.81	1.83	1.87	1.92	1.95	1.97	2.03	2.10	2.17	2.25	2.34

390810017	Ohio	Jefferson	35.3	36.8	0.00	0.93	0.96	0.96	0.96	0.96	0.97	0.00	0.93	4.30	5.33	5.61	5.80	5.87	6.12	6.20	6.30	6.38	6.49	6.62	6.78	6.94	7.33
171630010	Illinois	Saint Clair	35.3	35.9	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	5.38	6.24	6.71	7.04	7.20	7.35	7.49	7.71	7.79	7.89	8.08	8.38	8.63	9.68
295100085	Missouri	St. Louis City	35.3	35.7	0.00	4.34	4.34	4.34	4.34	4.34	4.34	0.00	4.34	7.87	8.29	8.70	8.92	9.01	9.10	9.23	9.44	9.49	9.58	9.74	9.95	10.12	10.55
181670023	Indiana	Vigo	35.1	36.5	0.00	1.94	2.10	2.10	2.10	2.11	2.12	0.00	1.94	6.15	6.66	6.88	7.24	7.30	7.51	7.66	7.90	8.00	8.12	8.27	8.49	8.66	9.12
550250047	Wisconsin	Dane	35.1	36.1	0.00	2.03	2.24	2.26	2.26	2.27	2.28	0.00	2.03	4.08	4.64	4.92	5.17	5.26	5.40	5.48	5.60	5.65	5.70	5.80	5.95	6.08	6.58
471650007	Tennessee	Sumner	35.1	36	0.00	1.80	1.80	1.80	1.80	1.80	1.80	0.00	1.80	7.63	8.37	8.97	9.35	9.48	9.70	9.92	10.29	10.41	10.55	10.83	11.20	11.46	12.09
171971002	Illinois	Will	35.1	35.8	0.00	0.51	0.79	0.80	0.80	0.81	0.81	0.00	0.51	3.36	3.95	4.32	4.63	4.74	4.92	5.05	5.22	5.29	5.37	5.52	5.70	5.86	6.32
210290006	Kentucky	Bullitt	35	36.3	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	6.78	7.56	8.19	8.48	8.63	8.80	8.97	9.18	9.25	9.37	9.59	9.75	9.96	10.51
170310022	Illinois	Cook	34.9	36.6	0.00	0.60	1.18	1.19	1.19	1.20	1.21	0.00	0.60	3.28	3.74	4.33	4.50	4.64	4.71	4.83	5.01	5.05	5.09	5.28	5.46	5.61	6.03
551330027	Wisconsin	Waukesha	34.9	35.6	0.00	2.04	2.15	2.16	2.16	2.16	2.16	0.00	2.04	4.43	4.98	5.31	5.58	5.67	5.83	5.94	6.08	6.14	6.20	6.33	6.49	6.64	7.07
550790059	Wisconsin	Milwaukee	34.8	36.3	0.00	2.68	3.14	3.15	3.16	3.17	3.19	0.00	2.68	5.06	5.61	5.99	6.27	6.36	6.50	6.61	6.76	6.81	6.87	7.00	7.20	7.37	7.87
245100035	Maryland	Baltimore (City)	34.7	35.5	0.00	0.61	0.78	0.78	0.78	0.78	0.79	0.00	0.61	1.03	1.39	1.48	1.56	1.59	1.70	1.74	1.78	1.81	1.86	1.93	1.95	2.01	2.10
390350027	Ohio	Cuyahoga	34.5	36.6	0.00	0.65	0.90	0.91	0.91	0.91	0.91	0.00	0.65	2.13	2.93	3.13	3.31	3.36	3.58	3.65	3.74	3.80	3.84	3.94	4.07	4.22	4.46
191390015	Iowa	Muscatine	34.5	36	0.00	1.57	2.03	2.04	2.04	2.06	2.08	0.00	1.57	3.26	3.66	3.87	4.04	4.10	4.21	4.27	4.36	4.40	4.45	4.53	4.65	4.77	5.09
211451004	Kentucky	McCracken	34.4	36.8	0.00	1.84	1.84	1.84	1.84	1.84	1.84	0.00	1.84	6.63	7.26	7.87	8.05	8.20	8.26	8.39	8.57	8.62	8.71	8.91	9.09	9.28	9.94
420030095	Pennsylvania	Allegheny	34.3	36.6	0.00	1.17	1.27	1.27	1.27	1.27	1.27	0.00	1.17	4.15	4.35	4.61	5.00	5.05	5.23	5.40	5.54	5.60	5.74	5.87	6.00	6.15	6.42
180431004	Indiana	Floyd	34.3	35.7	0.00	1.50	1.50	1.50	1.50	1.50	1.50	0.00	1.50	8.19	8.66	8.91	9.13	9.17	9.33	9.49	9.87	9.99	10.15	10.35	10.70	10.90	11.35
391130031	Ohio	Montgomery	34.3	35.6	0.00	0.98	1.15	1.15	1.15	1.15	1.16	0.00	0.98	6.32	7.01	7.42	7.54	7.62	7.75	7.86	8.11	8.20	8.32	8.50	8.76	8.94	9.37
391351001	Ohio	Preble	34.3	35.5	0.00	1.21	1.21	1.21	1.21	1.21	1.21	0.00	1.21	8.72	9.58	10.20	10.38	10.51	10.65	10.81	11.18	11.30	11.46	11.73	12.13	12.39	13.08
390950024	Ohio	Lucas	34.2	36.5	0.00	1.04	1.48	1.48	1.48	1.48	1.49	0.00	1.04	3.27	3.86	4.13	4.37	4.43	4.58	4.65	4.76	4.81	4.87	4.99	5.22	5.40	5.81
360610079	New York	New York	34.2	36.4	0.00	0.66	0.78	0.78	0.78	0.78	0.79	0.00	0.66	2.09	3.16	3.40	3.74	3.79	4.03	4.13	4.23	4.31	4.40	4.60	4.68	4.81	5.07
390990014	Ohio	Mahoning	34.2	35.8	0.00	0.76	0.99	0.99	0.99	0.99	0.99	0.00	0.76	2.83	3.75	3.97	4.15	4.21	4.44	4.49	4.59	4.65	4.72	4.82	4.94	5.05	5.31
170310050	Illinois	Cook	34.1	35.8	0.00	0.59	0.80	0.80	0.80	0.81	0.82	0.00	0.59	3.93	4.67	5.19	5.59	5.72	5.96	6.12	6.34	6.43	6.52	6.72	6.95	7.14	7.67
110010041	District Of Columbia	District Of Columbia	34	35.6	0.00	1.19	1.40	1.40	1.40	1.40	1.41	0.00	1.19	3.63	4.96	5.35	5.73	5.81	6.23	6.37	6.52	6.65	6.81	7.04	7.23	7.46	7.77
540090005	West Virginia	Brooke	33.9	36.1	0.00	1.00	1.20	1.20	1.20	1.20	1.21	0.00	1.00	3.26	4.30	4.67	5.30	5.40	5.85	6.07	6.30	6.43	6.53	6.72	6.84	6.98	7.26
391550007	Ohio	Trumbull	33.9	35.6	0.00	0.78	0.99	0.99	0.99	0.99	1.00	0.00	0.78	3.02	4.05	4.27	4.46	4.52	4.78	4.84	4.93	5.00	5.08	5.18	5.30	5.42	5.69
421255001	Pennsylvania	Washington	33.9	35.5	0.00	1.75	1.76	1.76	1.76	1.76	1.76	0.00	1.75	6.65	6.96	7.32	7.90	7.97	8.22	8.47	8.65	8.74	8.98	9.16	9.36	9.60	10.04
420033007	Pennsylvania	Allegheny	33.8	38.5	0.00	1.37	1.37	1.37	1.37	1.37	1.37	0.00	1.37	5.44	5.71	6.02	6.53	6.60	6.82	7.04	7.21	7.30	7.49	7.65	7.82	8.02	8.38
240031003	Maryland	Anne Arundel	33.8	36.7	0.00	0.90	1.27	1.28	1.28	1.28	1.29	0.00	0.90	2.59	3.70	3.95	4.21	4.27	4.60	4.70	4.81	4.91	5.00	5.14	5.21	5.35	5.52
180390003	Indiana	Elkhart	33.8	35.6	0.00	1.45	1.59	1.59	1.60	1.60	1.61	0.00	1.45	4.28	4.78	4.94	5.21	5.27	5.45	5.56	5.71	5.78	5.88	5.98	6.11	6.24	6.57
212270007	Kentucky	Warren	33.7	36.3	0.00	2.28	2.28	2.28	2.28	2.28	2.28	0.00	2.28	8.58	9.43	10.04	10.36	10.49	10.65	10.80	11.00	11.08	11.26	11.46	11.67	11.92	12.63
390350034	Ohio	Cuyahoga	33.7	35.7	0.00	0.76	1.00	1.01	1.01	1.01	1.01	0.00	0.76	2.70	3.48	3.73	3.93	3.99	4.20	4.27	4.38	4.45	4.50	4.62	4.80	4.96	5.28
170314007	Illinois	Cook	33.6	35.7	0.00	0.54	0.76	0.77	0.77	0.78	0.79	0.00	0.54	3.96	4.61	5.07	5.40	5.53	5.72	5.87	6.07	6.15	6.24	6.42	6.62	6.80	7.33
390950026	Ohio	Lucas	33.6	35.6	0.00	1.14	1.32	1.32	1.33	1.33	1.33	0.00	1.14	5.51	6.42	6.82	7.05	7.14	7.34	7.45	7.66	7.75	7.86	8.04	8.32	8.55	9.08
110010042	District Of Columbia	District Of Columbia	33	35.6	0.00	1.02	1.22	1.22	1.22	1.22	1.23	0.00	1.02	2.87	3.84	4.16	4.41	4.47	4.79	4.89	5.01	5.11	5.24	5.42	5.57	5.75	5.96

*To calculate a total reduction when both NO_x and SO_2 have non-zero marginal costs, add the two values and then subtract the 2014 base case value. For example, for Allegheny, PA, (420030064) at \$500/ton SO_2 and \$1000/ton NO_x, add 4.39 and 1.11 for a total of 8.05, then subtract the base case value of 1.00. The resulting total reduction in concentration is 4.50 $\mu g/m^3$.

Table 3-7. Reduction in Ozone Concentration (ppb) at Downwind Monitors from All States as a Function of Ozone Season EGU NOx Emission Reductions at Various Marginal Costs per Ton of Reduction in 2012 Estimated Using AQAT.

				Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
				NO_x Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
Monitor Identification Number	**Receptor State**	**Receptor County**	**2012 Average Design Value**	**2012 Maximum Design Value**									
482010055	Texas	Harris	95.7	97.9	0.00	1.29	1.31	1.33	1.36	1.42	1.42	1.43	1.45
482010062	Texas	Harris	90.5	93.7	0.00	1.35	1.40	1.42	1.46	1.51	1.51	1.52	1.54
482011039	Texas	Harris	90.5	93.9	0.00	1.28	1.30	1.31	1.35	1.39	1.39	1.40	1.42
482010066	Texas	Harris	89.9	93.5	0.00	1.14	1.16	1.17	1.21	1.25	1.24	1.25	1.26
480391004	Texas	Brazoria	88.8	91	0.00	1.36	1.37	1.38	1.41	1.46	1.46	1.46	1.47
482010051	Texas	Harris	88.4	93.1	0.00	1.19	1.21	1.23	1.26	1.31	1.31	1.32	1.34
220330003	Louisiana	East Baton Rouge	87.8	91.6	0.00	1.28	1.31	1.33	1.33	1.32	1.32	1.32	1.32
361030002	New York	Suffolk	86.3	87.2	0.00	0.03	0.06	0.12	0.21	0.27	0.29	0.32	0.68
421010024	Pennsylvania	Philadelphia	85.3	86	0.00	0.02	0.04	0.15	0.29	0.40	0.45	0.53	1.24
361030009	New York	Suffolk	85.1	85.8	0.00	0.01	0.03	0.08	0.15	0.20	0.22	0.25	0.53
484391002	Texas	Tarrant	85.1	86.7	0.00	1.44	1.47	1.48	1.51	1.58	1.58	1.58	1.58
090011123	Connecticut	Fairfield	84.8	86.4	0.00	0.03	0.04	0.08	0.13	0.18	0.19	0.21	0.44
361192004	New York	Westchester	84.7	86.9	0.00	0.03	0.06	0.11	0.16	0.21	0.22	0.25	0.48
481130087	Texas	Dallas	84.6	85.6	0.00	1.38	1.38	1.39	1.41	1.47	1.47	1.47	1.47
090013007	Connecticut	Fairfield	84.5	86.4	0.00	0.03	0.04	0.08	0.13	0.17	0.19	0.20	0.46
131210055	Georgia	Fulton	84.4	86.5	0.00	0.69	0.72	0.78	0.81	0.87	0.87	0.88	0.93
482010029	Texas	Harris	84.4	85.6	0.00	1.13	1.21	1.22	1.25	1.30	1.30	1.30	1.31
484392003	Texas	Tarrant	84	85.2	0.00	1.33	1.33	1.34	1.38	1.44	1.43	1.44	1.44
482011050	Texas	Harris	83.9	86.5	0.00	1.18	1.19	1.20	1.23	1.27	1.27	1.27	1.28
482011015	Texas	Harris	83.7	90.3									
482010024	Texas	Harris	83.3	87.1	0.00	1.07	1.11	1.12	1.15	1.19	1.19	1.19	1.20
090010017	Connecticut	Fairfield	83.1	85	0.00	0.04	0.07	0.13	0.21	0.26	0.28	0.31	0.64
090093002	Connecticut	New Haven	82.9	85.4	0.00	0.03	0.06	0.10	0.16	0.20	0.22	0.24	0.50
481130069	Texas	Dallas	82.9	85.8	0.00	1.38	1.38	1.39	1.42	1.48	1.48	1.48	1.48
482011035	Texas	Harris	82	90.3									
420170012	Pennsylvania	Bucks	81.8	85.6	0.00	0.02	0.04	0.14	0.25	0.35	0.39	0.46	1.00
130890002	Georgia	DeKalb	81.6	85.6	0.00	0.67	0.70	0.75	0.78	0.83	0.83	0.84	0.89

Table 3-8. Reduction in Ozone Concentration (ppb) at Downwind Monitors from the State Containing the Receptor as a Function of Ozone Season EGU NOx Emission Reductions at Various Marginal Costs per Ton of Reduction in 2012 Estimated Using AQAT.

				Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
				NO_x Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
Monitor Identification Number	Receptor State	Receptor County	2012 Average Design Value	2012 Maximum Design Value									
482010055	Texas	Harris	95.7	97.9	0.00	0.75	0.76	0.76	0.78	0.83	0.83	0.83	0.83
482010062	Texas	Harris	90.5	93.7	0.00	0.68	0.68	0.69	0.71	0.75	0.75	0.75	0.75
482011039	Texas	Harris	90.5	93.9	0.00	0.67	0.68	0.68	0.70	0.74	0.74	0.74	0.74
482010066	Texas	Harris	89.9	93.5	0.00	0.59	0.59	0.60	0.61	0.65	0.65	0.65	0.65
480391004	Texas	Brazoria	88.8	91	0.00	0.75	0.75	0.75	0.77	0.82	0.82	0.82	0.82
482010051	Texas	Harris	88.4	93.1	0.00	0.70	0.70	0.70	0.72	0.77	0.76	0.76	0.76
220330003	Louisiana	East Baton Rouge	87.8	91.6	0.00	0.85	0.87	0.89	0.89	0.88	0.87	0.87	0.87
361030002	New York	Suffolk	86.3	87.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
421010024	Pennsylvania	Philadelphia	85.3	86	0.00	0.01	0.00	0.07	0.13	0.21	0.24	0.31	0.74
361030009	New York	Suffolk	85.1	85.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
484391002	Texas	Tarrant	85.1	86.7	0.00	0.94	0.94	0.94	0.97	1.03	1.03	1.03	1.03
090011123	Connecticut	Fairfield	84.8	86.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
361192004	New York	Westchester	84.7	86.9	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
481130087	Texas	Dallas	84.6	85.6	0.00	0.86	0.86	0.86	0.89	0.94	0.94	0.94	0.94
090013007	Connecticut	Fairfield	84.5	86.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131210055	Georgia	Fulton	84.4	86.5	0.00	0.54	0.53	0.58	0.59	0.64	0.64	0.64	0.68
482010029	Texas	Harris	84.4	85.6	0.00	0.72	0.72	0.73	0.75	0.79	0.79	0.79	0.79
484392003	Texas	Tarrant	84	85.2	0.00	0.90	0.90	0.91	0.93	0.99	0.99	0.99	0.99
482011050	Texas	Harris	83.9	86.5	0.00	0.69	0.70	0.70	0.72	0.76	0.76	0.76	0.76
482011015	Texas	Harris	83.7	90.3									
482010024	Texas	Harris	83.3	87.1	0.00	0.64	0.64	0.64	0.66	0.70	0.70	0.70	0.70
090010017	Connecticut	Fairfield	83.1	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
090093002	Connecticut	New Haven	82.9	85.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
481130069	Texas	Dallas	82.9	85.8	0.00	0.86	0.86	0.87	0.89	0.95	0.94	0.94	0.94
482011035	Texas	Harris	82	90.3									
420170012	Pennsylvania	Bucks	81.8	85.6	0.00	0.01	0.00	0.05	0.09	0.15	0.17	0.23	0.54
130890002	Georgia	DeKalb	81.6	85.6	0.00	0.52	0.51	0.56	0.57	0.62	0.62	0.62	0.66

Table 3-9. Reduction in Ozone Concentration (ppb) at Downwind Monitors from the States Upwind of the Receptor as a Function of Ozone Season EGU NOx Emission Reductions at Various Marginal Costs per Ton of Reduction in 2012 Estimated Using AQAT.

				Year	2012	2012	2012	2012	2012	2012	2012	2012	2012
				NO_x Marginal Cost per Ton	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
Monitor Identification Number	**Receptor State**	**Receptor County**	**2012 Average Design Value**	**2012 Maximum Design Value**									
482010055	Texas	Harris	95.7	97.9	0.00	0.53	0.55	0.57	0.58	0.59	0.59	0.60	0.62
482010062	Texas	Harris	90.5	93.7	0.00	0.67	0.72	0.74	0.75	0.76	0.76	0.77	0.79
482011039	Texas	Harris	90.5	93.9	0.00	0.60	0.62	0.63	0.65	0.65	0.65	0.66	0.68
482010066	Texas	Harris	89.9	93.5	0.00	0.55	0.57	0.58	0.59	0.59	0.59	0.60	0.61
480391004	Texas	Brazoria	88.8	91	0.00	0.61	0.62	0.63	0.64	0.64	0.64	0.64	0.65
482010051	Texas	Harris	88.4	93.1	0.00	0.49	0.51	0.52	0.54	0.55	0.55	0.55	0.57
220330003	Louisiana	East Baton Rouge	87.8	91.6	0.00	0.43	0.44	0.44	0.44	0.44	0.45	0.45	0.45
361030002	New York	Suffolk	86.3	87.2	0.00	0.03	0.06	0.12	0.21	0.26	0.29	0.32	0.67
421010024	Pennsylvania	Philadelphia	85.3	86	0.00	0.01	0.05	0.08	0.17	0.19	0.22	0.22	0.49
361030009	New York	Suffolk	85.1	85.8	0.00	0.01	0.03	0.08	0.15	0.19	0.22	0.25	0.53
484391002	Texas	Tarrant	85.1	86.7	0.00	0.50	0.53	0.54	0.55	0.55	0.55	0.55	0.56
090011123	Connecticut	Fairfield	84.8	86.4	0.00	0.03	0.04	0.08	0.13	0.17	0.19	0.20	0.44
361192004	New York	Westchester	84.7	86.9	0.00	0.03	0.06	0.10	0.16	0.21	0.23	0.25	0.48
481130087	Texas	Dallas	84.6	85.6	0.00	0.52	0.52	0.53	0.53	0.53	0.53	0.53	0.53
090013007	Connecticut	Fairfield	84.5	86.4	0.00	0.03	0.04	0.08	0.13	0.17	0.19	0.20	0.46
131210055	Georgia	Fulton	84.4	86.5	0.00	0.15	0.19	0.20	0.22	0.22	0.23	0.24	0.25
482010029	Texas	Harris	84.4	85.6	0.00	0.41	0.48	0.50	0.50	0.51	0.51	0.51	0.52
484392003	Texas	Tarrant	84	85.2	0.00	0.43	0.43	0.44	0.44	0.45	0.45	0.45	0.45
482011050	Texas	Harris	83.9	86.5	0.00	0.49	0.50	0.50	0.51	0.51	0.51	0.51	0.52
482011015	Texas	Harris	83.7	90.3									
482010024	Texas	Harris	83.3	87.1	0.00	0.43	0.47	0.48	0.49	0.49	0.49	0.49	0.50
090010017	Connecticut	Fairfield	83.1	85	0.00	0.04	0.07	0.13	0.21	0.26	0.28	0.31	0.64
090093002	Connecticut	New Haven	82.9	85.4	0.00	0.03	0.05	0.10	0.16	0.20	0.21	0.24	0.50
481130069	Texas	Dallas	82.9	85.8	0.00	0.52	0.52	0.52	0.53	0.53	0.54	0.54	0.54
482011035	Texas	Harris	82	90.3									
420170012	Pennsylvania	Bucks	81.8	85.6	0.00	0.01	0.05	0.09	0.16	0.20	0.22	0.23	0.47
130890002	Georgia	DeKalb	81.6	85.6	0.00	0.15	0.19	0.19	0.21	0.21	0.21	0.22	0.23

Table 3-10. Reduction in Ozone Concentration (ppb) at Downwind Monitors from <u>All States</u> as a Function of Ozone Season EGU NOx Emission Reductions at Various Marginal Costs per Ton of Reduction in 2014 Estimated Using AQAT.

				Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
				NO_x Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
Monitor Identification Number	**Receptor State**	**Receptor County**	**2012 Average Design Value**	**2012 Maximum Design Value**										
482010055	Texas	Harris	95.7	97.9	0.00	4.78	5.99	6.04	6.07	6.11	6.18	6.20	6.34	6.50
482010062	Texas	Harris	90.5	93.7	0.00	4.57	5.84	5.91	5.94	5.98	6.04	6.06	6.24	6.42
482011039	Texas	Harris	90.5	93.9	0.00	4.40	5.61	5.65	5.67	5.71	5.77	5.79	5.97	6.12
482010066	Texas	Harris	89.9	93.5	0.00	4.17	5.25	5.28	5.30	5.34	5.39	5.41	5.57	5.72
480391004	Texas	Brazoria	88.8	91	0.00	4.43	5.72	5.76	5.78	5.83	5.90	5.91	6.04	6.16
482010051	Texas	Harris	88.4	93.1	0.00	4.42	5.53	5.58	5.60	5.64	5.71	5.72	5.86	6.00
220330003	Louisiana	East Baton Rouge	87.8	91.6	0.00	2.93	4.15	4.15	4.15	4.16	4.16	4.16	4.96	5.09
361030002	New York	Suffolk	86.3	87.2	0.00	3.72	3.79	3.90	4.11	4.15	4.25	4.31	4.40	5.46
421010024	Pennsylvania	Philadelphia	85.3	86	0.00	3.58	3.66	3.86	4.04	4.02	4.15	4.20	4.30	6.96
361030009	New York	Suffolk	85.1	85.8	0.00	3.63	3.69	3.78	3.93	3.97	4.04	4.10	4.16	5.16
484391002	Texas	Tarrant	85.1	86.7	0.00	4.40	5.72	5.80	5.82	5.87	5.98	5.99	6.05	6.15
090011123	Connecticut	Fairfield	84.8	86.4	0.00	4.04	4.10	4.18	4.35	4.38	4.45	4.51	4.56	5.27
361192004	New York	Westchester	84.7	86.9	0.00	3.89	3.96	4.05	4.24	4.28	4.35	4.43	4.49	5.27
481130087	Texas	Dallas	84.6	85.6	0.00	4.05	5.32	5.37	5.39	5.43	5.53	5.54	5.58	5.65
090013007	Connecticut	Fairfield	84.5	86.4	0.00	4.04	4.11	4.20	4.38	4.40	4.47	4.54	4.59	5.37
131210055	Georgia	Fulton	84.4	86.5	0.00	9.37	10.01	10.11	10.19	10.21	10.20	10.28	10.31	10.46
482010029	Texas	Harris	84.4	85.6	0.00	3.90	4.93	5.05	5.06	5.10	5.17	5.20	5.36	5.45
484392003	Texas	Tarrant	84	85.2	0.00	4.32	5.55	5.60	5.62	5.66	5.76	5.77	5.81	5.90
482011050	Texas	Harris	83.9	86.5	0.00	4.06	5.17	5.21	5.23	5.27	5.33	5.34	5.50	5.59
482011015	Texas	Harris	83.7	90.3										
482010024	Texas	Harris	83.3	87.1	0.00	3.75	4.75	4.81	4.82	4.86	4.92	4.93	5.11	5.21
090010017	Connecticut	Fairfield	83.1	85	0.00	3.65	3.73	3.83	4.03	4.07	4.16	4.23	4.31	5.28
090093002	Connecticut	New Haven	82.9	85.4	0.00	4.18	4.25	4.34	4.53	4.56	4.63	4.71	4.77	5.54
481130069	Texas	Dallas	82.9	85.8	0.00	4.00	5.29	5.34	5.36	5.40	5.51	5.52	5.54	5.60
482011035	Texas	Harris	82	90.3										
420170012	Pennsylvania	Bucks	81.8	85.6	0.00	3.38	3.45	3.61	3.77	3.78	3.89	3.94	4.02	6.12
130890002	Georgia	DeKalb	81.6	85.6	0.00	9.06	9.68	9.77	9.85	9.86	9.86	9.93	9.96	10.10

Table 3-11. Reduction in Ozone Concentration (ppb) at Downwind Monitors from the State Containing the Receptor as a Function of Ozone Season EGU NOx Emission Reductions at Various Marginal Costs per Ton of Reduction in 2014 Estimated Using AQAT.

				Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
				NO_x Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
Monitor Identification Number	**Receptor State**	**Receptor County**	**2012 Average Design Value**	**2012 Maximum Design Value**										
482010055	Texas	Harris	95.7	97.9	0.00	2.82	3.50	3.54	3.55	3.58	3.65	3.66	3.66	3.67
482010062	Texas	Harris	90.5	93.7	0.00	2.55	3.16	3.20	3.21	3.24	3.30	3.31	3.31	3.32
482011039	Texas	Harris	90.5	93.9	0.00	2.52	3.12	3.16	3.17	3.20	3.26	3.27	3.27	3.28
482010066	Texas	Harris	89.9	93.5	0.00	2.21	2.75	2.78	2.79	2.82	2.87	2.88	2.88	2.89
480391004	Texas	Brazoria	88.8	91	0.00	2.79	3.46	3.51	3.51	3.55	3.62	3.62	3.62	3.64
482010051	Texas	Harris	88.4	93.1	0.00	2.60	3.23	3.27	3.28	3.31	3.37	3.38	3.38	3.39
220330003	Louisiana	East Baton Rouge	87.8	91.6	0.00	2.13	2.91	2.91	2.90	2.90	2.90	2.90	3.69	3.76
361030002	New York	Suffolk	86.3	87.2	0.00	1.24	1.26	1.27	1.34	1.34	1.35	1.40	1.40	1.41
421010024	Pennsylvania	Philadelphia	85.3	86	0.00	1.45	1.55	1.69	1.70	1.65	1.70	1.74	1.74	4.17
361030009	New York	Suffolk	85.1	85.8	0.00	1.09	1.10	1.12	1.18	1.18	1.18	1.22	1.22	1.24
484391002	Texas	Tarrant	85.1	86.7	0.00	3.49	4.34	4.39	4.40	4.44	4.53	4.54	4.54	4.56
090011123	Connecticut	Fairfield	84.8	86.4	0.00	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
361192004	New York	Westchester	84.7	86.9	0.00	1.78	1.80	1.82	1.92	1.92	1.93	2.00	2.00	2.02
481130087	Texas	Dallas	84.6	85.6	0.00	3.20	3.97	4.02	4.03	4.06	4.14	4.15	4.15	4.17
090013007	Connecticut	Fairfield	84.5	86.4	0.00	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
131210055	Georgia	Fulton	84.4	86.5	0.00	8.24	8.74	8.80	8.86	8.86	8.85	8.91	8.91	8.97
482010029	Texas	Harris	84.4	85.6	0.00	2.69	3.34	3.38	3.39	3.42	3.49	3.49	3.49	3.51
484392003	Texas	Tarrant	84	85.2	0.00	3.36	4.17	4.22	4.23	4.27	4.36	4.37	4.36	4.38
482011050	Texas	Harris	83.9	86.5	0.00	2.59	3.22	3.26	3.26	3.29	3.36	3.36	3.36	3.38
482011015	Texas	Harris	83.7	90.3										
482010024	Texas	Harris	83.3	87.1	0.00	2.38	2.96	3.00	3.01	3.03	3.09	3.10	3.10	3.11
090010017	Connecticut	Fairfield	83.1	85	0.00	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
090093002	Connecticut	New Haven	82.9	85.4	0.00	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
481130069	Texas	Dallas	82.9	85.8	0.00	3.21	3.99	4.04	4.05	4.08	4.16	4.17	4.17	4.19
482011035	Texas	Harris	82	90.3										
420170012	Pennsylvania	Bucks	81.8	85.6	0.00	1.06	1.13	1.23	1.23	1.20	1.24	1.27	1.27	3.03
130890002	Georgia	DeKalb	81.6	85.6	0.00	7.96	8.45	8.50	8.56	8.56	8.56	8.62	8.61	8.67

Table 3-12. Reduction in Ozone Concentration (ppb) at Downwind Monitors from the States Upwind of the Receptor as a Function of Ozone Season EGU NOx Emission Reductions at Various Marginal Costs per Ton of Reduction in 2014 Estimated Using AQAT.

				Year	2012	2014	2014	2014	2014	2014	2014	2014	2014	2014
				NO_x Marginal Cost per Ton	$0	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500	$5,000
Monitor Identification Number	Receptor State	Receptor County	2012 Average Design Value	2012 Maximum Design Value										
482010055	Texas	Harris	95.7	97.9	0.00	1.97	2.49	2.50	2.52	2.53	2.53	2.54	2.69	2.82
482010062	Texas	Harris	90.5	93.7	0.00	2.02	2.68	2.71	2.73	2.74	2.74	2.76	2.94	3.10
482011039	Texas	Harris	90.5	93.9	0.00	1.89	2.48	2.49	2.50	2.51	2.51	2.52	2.70	2.84
482010066	Texas	Harris	89.9	93.5	0.00	1.95	2.50	2.50	2.51	2.52	2.52	2.53	2.70	2.83
480391004	Texas	Brazoria	88.8	91	0.00	1.64	2.26	2.26	2.27	2.28	2.28	2.29	2.42	2.52
482010051	Texas	Harris	88.4	93.1	0.00	1.82	2.30	2.31	2.33	2.34	2.34	2.34	2.48	2.61
220330003	Louisiana	East Baton Rouge	87.8	91.6	0.00	0.80	1.24	1.25	1.25	1.26	1.26	1.26	1.27	1.33
361030002	New York	Suffolk	86.3	87.2	0.00	2.47	2.53	2.63	2.77	2.80	2.89	2.92	3.00	4.04
421010024	Pennsylvania	Philadelphia	85.3	86	0.00	2.12	2.11	2.17	2.34	2.36	2.45	2.46	2.56	2.80
361030009	New York	Suffolk	85.1	85.8	0.00	2.54	2.58	2.67	2.76	2.79	2.86	2.88	2.94	3.92
484391002	Texas	Tarrant	85.1	86.7	0.00	0.91	1.39	1.41	1.42	1.43	1.44	1.45	1.52	1.59
090011123	Connecticut	Fairfield	84.8	86.4	0.00	3.45	3.52	3.60	3.77	3.79	3.86	3.93	3.97	4.68
361192004	New York	Westchester	84.7	86.9	0.00	2.11	2.16	2.23	2.32	2.35	2.42	2.43	2.49	3.25
481130087	Texas	Dallas	84.6	85.6	0.00	0.85	1.36	1.36	1.36	1.37	1.39	1.39	1.43	1.48
090013007	Connecticut	Fairfield	84.5	86.4	0.00	3.49	3.56	3.65	3.83	3.85	3.92	3.99	4.04	4.82
131210055	Georgia	Fulton	84.4	86.5	0.00	1.13	1.27	1.32	1.33	1.35	1.35	1.37	1.41	1.49
482010029	Texas	Harris	84.4	85.6	0.00	1.21	1.59	1.67	1.67	1.68	1.68	1.70	1.86	1.95
484392003	Texas	Tarrant	84	85.2	0.00	0.96	1.38	1.38	1.38	1.39	1.40	1.41	1.45	1.52
482011050	Texas	Harris	83.9	86.5	0.00	1.47	1.96	1.96	1.97	1.97	1.98	1.98	2.14	2.21
482011015	Texas	Harris	83.7	90.3										
482010024	Texas	Harris	83.3	87.1	0.00	1.37	1.78	1.81	1.82	1.83	1.83	1.84	2.01	2.11
090010017	Connecticut	Fairfield	83.1	85	0.00	3.44	3.52	3.62	3.82	3.85	3.95	4.01	4.10	5.06
090093002	Connecticut	New Haven	82.9	85.4	0.00	3.54	3.62	3.71	3.89	3.92	4.00	4.07	4.13	4.90
481130069	Texas	Dallas	82.9	85.8	0.00	0.79	1.31	1.31	1.31	1.32	1.34	1.34	1.37	1.42
482011035	Texas	Harris	82	90.3										
420170012	Pennsylvania	Bucks	81.8	85.6	0.00	2.32	2.33	2.38	2.54	2.57	2.65	2.67	2.75	3.10
130890002	Georgia	DeKalb	81.6	85.6	0.00	1.10	1.23	1.27	1.29	1.30	1.30	1.31	1.35	1.43

Table 3-13. Estimated Number of Nonattainment and/or Maintenance Monitor Sites in 2014 for Annual PM2.5 (as a Function of SO_2 Marginal Cost per Ton Levels).

	2014	2014
Marginal Cost per Ton	**Number of Remaining Nonattainment Monitor Sites**	**Number of Remaining Nonattainment and Maintenance Monitor Sites**
>$0	12	19
>$100	3	6
>$200	2	3
>$300	2	3
>$400	1	2
>$500	1	2
>$600	1	1
>$800	1	1
>$1,000	1	1
>$1,200	1	1
>$1,400	1	1
>$1,600	1	1
>$1,800	0	1
>$2,000	0	1
>$2,400	0	1

Table 3-14. Estimated Number of Nonattainment and/or Maintenance Monitor Sites in 2014 for Daily PM2.5 (as a Function of SO_2 Marginal Cost per Ton Levels).

	2014	2014
Marginal Cost per Ton	**Number of Remaining Nonattainment Monitor Sites**	**Number of Remaining Nonattainment and Maintenance Monitor Sites**
>$0	39	64
>$100	5	16
>$200	2	12
>$300	2	8
>$400	1	6
>$500	1	6
>$600	1	6
>$800	1	6
>$1,000	1	6
>$1,200	1	6
>$1,400	1	6
>$1,600	1	5
>$1,800	1	4
>$2,000	1	3
>$2,400	1	1

Table 3-15. Estimated Number of Nonattainment and/or Maintenance Monitor Sites in 2014 for Ozone Season (as a Function of Ozone Season NO_x Marginal Cost per Ton Levels).

	2012	2012	2014	2014
Marginal Cost per Ton	Number of Remaining Nonattainment Monitor Sites	Number of Remaining Nonattainment and Maintenance Monitor Sites	Number of Remaining Nonattainment Monitor Sites	Number of Remaining Nonattainment and Maintenance Monitor Sites
>$0	11	25*	4	7
>$500	10	19	1	7
>$1,000	10	19	1	7
>$1,500	10	19	1	7
>$2,000	9	19	1	7
>$2,500	8	19	1	7
>$3,000	8	19	1	7
>$3,500	8	19	1	6
>$5,000	8	16	1	6

* The value 25 in the 2012 nonattainment and maintenance column includes the 24 receptors in Table 3-3 with non-zero marginal cost per ton values as well as monitor number 090010017 from Fairfield, CT which has a 2012 maximum design value of 85.0 (and a marginal cost per ton value of $0/ton).

Table 3-16. Average Air Quality Improvement ($\mu g/m^3$) as a Function of SO_2 Marginal Cost per Ton of Reductions (From EGUs) in 2014 Estimated Using the AQAT for Daily $PM_{2.5}$ Referenced Either to the 2012 or 2014 Base Case Values ($0/Ton).

SO_2 Marginal Cost per Ton		$0	$100	$200	$300	$400	$500	$600	$800	$1,000	$1,200	$1,400	$1,600	$1,800	$2,000	$2,400
	Reference Year															
All Daily Sites	**2012 Base**	1.3	5.0	5.7	6.0	6.3	6.4	6.6	6.7	6.9	7.0	7.1	7.3	7.5	7.7	8.1
	2014 Base	0.0	3.7	4.4	4.7	5.0	5.1	5.3	5.4	5.6	5.7	5.8	6.0	6.2	6.4	6.8
6 Sites*	**2012 Base**	1.1	3.1	3.5	3.7	4.0	4.1	4.2	4.3	4.5	4.5	4.6	4.7	4.8	4.9	5.2
	2014 Base	0.0	2.0	2.4	2.6	2.9	3.0	3.1	3.3	3.4	3.4	3.5	3.6	3.7	3.9	4.1
	2012 Base	1.1	2.9	3.2	3.4	3.7	3.8	3.9	4.0	4.1	4.1	4.2	4.3	4.4	4.5	4.8
3 Sites**	**2014 Base**	0.0	1.8	2.1	2.3	2.6	2.6	2.8	2.9	3.0	3.0	3.1	3.2	3.3	3.4	3.7

*Monitor identification numbers 420030064, 420030093, 170311016, 261630016, 180890022, 245100040, located in Allegheny, PA (2 monitors); Cook, IL; Wayne, MI; Lake, IN; Baltimore (City), MD.

**Monitor identification numbers 420030064, 180890022, 170311016 located in Allegheny, PA; Lake County, IN; and Cook, IL;.

Table 3-17. Using AQAT, the Estimated Annual $PM_{2.5}$ Average and Maximum Design Values (DV) in 2014 for Two Cases: When Emission Reductions at \$500/Ton NOx and \$2,000/Ton SO_2 Marginal Costs per Ton Emissions are Applied to States Upwind and When the Proposed Remedy is Applied.

			2012 Base	2012 Base	\$500/Ton NO_x and \$2,000/Ton SO_2	\$500/Ton NO_x and \$2,000/Ton SO_2	Proposed Remedy	Proposed Remedy
Monitor Identification Number	Receptor State	Receptor County	Avg. DV	Max. DV	Avg. DV	Max. DV	Avg. DV	Max. DV
420030064	Pennsylvania	Allegheny	18.9	19.31	14.96	15.37	14.86	15.27
010730023	Alabama	Jefferson	17.15	17.32	13.92	14.09	14.29	14.46
390618001	Ohio	Hamilton	16.93	17.27	12.50	12.84	12.43	12.77
390610014	Ohio	Hamilton	16.69	16.93	12.19	12.43	12.10	12.34
261630033	Michigan	Wayne	16.57	17.19	13.86	14.48	13.79	14.41
171191007	Illinois	Madison	16.56	16.85	13.57	13.86	13.48	13.77
390610042	Ohio	Hamilton	16.33	16.71	11.81	12.19	11.74	12.12
390350038	Ohio	Cuyahoga	16.26	16.95	12.64	13.33	12.51	13.20
390350060	Ohio	Cuyahoga	16.02	16.54	12.42	12.94	12.31	12.83
131210039	Georgia	Fulton	16.01	16.04	12.89	12.92	12.95	12.98
010732003	Alabama	Jefferson	15.99	16.35	13.21	13.57	13.39	13.75
180190006	Indiana	Clark	15.96	16.16	11.28	11.48	11.30	11.50
180970081	Indiana	Marion	15.93	16.24	11.48	11.79	11.46	11.77
180970083	Indiana	Marion	15.77	16.15	11.32	11.70	11.29	11.67
390617001	Ohio	Hamilton	15.65	16.03	11.17	11.55	11.08	11.46
171630010	Illinois	Saint Clair	15.48	15.63	12.56	12.71	12.47	12.62
390350045	Ohio	Cuyahoga	15.42	15.91	11.74	12.23	11.63	12.12
130210007	Georgia	Bibb	15.33	15.61	12.63	12.91	12.74	13.02
540391005	West Virginia	Kanawha	15.28	15.34	11.19	11.25	11.14	11.20
390170016	Ohio	Butler	15.25	15.61	10.99	11.35	10.91	11.27
421330008	Pennsylvania	York	15.25	15.93	12.00	12.68	11.85	12.53
540110006	West Virginia	Cabell	15.25	15.5	11.19	11.44	11.14	11.39
420070014	Pennsylvania	Beaver	15.23	15.3	11.69	11.76	11.58	11.65
211110043	Kentucky	Jefferson	15.19	15.41	10.40	10.62	10.43	10.65
420710007	Pennsylvania	Lancaster	15.18	16.01	11.97	12.80	11.83	12.66
180970078	Indiana	Marion	15.18	15.35	10.73	10.90	10.71	10.88
170310052	Illinois	Cook	15.16	15.42	12.84	13.10	12.71	12.97
420031301	Pennsylvania	Allegheny	15.13	15.42	11.11	11.40	11.01	11.30
130630091	Georgia	Clayton	15.07	15.29	12.02	12.24	12.11	12.33
180372001	Indiana	Dubois	15.07	15.57	9.97	10.47	10.05	10.55
261630015	Michigan	Wayne	15.05	15.55	12.43	12.93	12.36	12.86
390610043	Ohio	Hamilton	15.05	15.32	10.83	11.10	10.75	11.02

390610040	Ohio	Hamilton	15.03	15.4	10.48	10.85	10.39	10.76
391130032	Ohio	Montgomery	15.01	15.37	11.20	11.56	11.12	11.48
391510017	Ohio	Stark	14.99	15.4	11.15	11.56	11.10	11.51
360610056	New York	New York	14.98	15.74	13.23	13.99	12.96	13.72
390350065	Ohio	Cuyahoga	14.96	15.4	11.35	11.79	11.23	11.67
540030003	West Virginia	Berkeley	14.95	15.2	11.91	12.16	11.72	11.97
540490006	West Virginia	Marion	14.96	15.18	10.41	10.63	10.33	10.55
390811001	Ohio	Jefferson	14.95	15.54	10.83	11.42	10.70	11.29
540090005	West Virginia	Brooke	14.95	15.22	10.93	11.20	10.81	11.08
211110044	Kentucky	Jefferson	14.93	15.09	10.25	10.41	10.28	10.44
170316005	Illinois	Cook	14.92	15.48	12.49	13.05	12.35	12.91
482011035	Texas	Harris	14.74	15.14	14.33	14.73	14.55	14.95
170313301	Illinois	Cook	14.73	15.06	12.29	12.62	12.15	12.48
390350027	Ohio	Cuyahoga	14.5	15.13	10.91	11.54	10.80	11.43
540291004	West Virginia	Hancock	14.34	15.15	10.41	11.22	10.27	11.08

Table 3-18. Using AQAT, the Estimated Daily $PM_{2.5}$ Average and Maximum Design Values (DV) in 2014 for Two Cases: When Emission Reductions at $500/Ton NOx and $2,000/Ton SO_2 Marginal Costs per Ton Emissions are Applied to States Upwind and When the Proposed Remedy is Applied.

			2012 Base	2012 Base	$500/Ton NO_x and $2000/Ton SO_2	$500/Ton NO_x and $2000/Ton SO_2	Proposed Remedy	Proposed Remedy
Monitor Identification Number	Receptor State	Receptor County	Avg. DV	Max. DV	Avg. DV	Max. DV	Avg. DV	Max. DV
420030064	Pennsylvania	Allegheny	58.8	62.3	50.06	53.56	49.72	53.22
261630033	Michigan	Wayne	42.1	42.6	31.78	32.28	31.79	32.29
390350038	Ohio	Cuyahoga	41.2	44	27.56	30.36	27.43	30.23
420030093	Pennsylvania	Allegheny	41.1	46.2	29.84	34.94	29.64	34.74
170311016	Illinois	Cook	41	44.1	32.54	35.64	32.36	35.46
261630016	Michigan	Wayne	40.6	43	32.58	34.98	32.35	34.75
180970043	Indiana	Marion	40.5	42	22.84	24.34	22.92	24.42
390170003	Ohio	Butler	40.3	42.3	20.10	22.10	20.15	22.15
180970066	Indiana	Marion	40.3	41.8	22.45	23.95	22.61	24.11
420210011	Pennsylvania	Cambria	40.3	40.7	22.92	23.32	22.87	23.27
180970081	Indiana	Marion	40.1	41.1	23.35	24.35	23.40	24.40
010730023	Alabama	Jefferson	40	40.7	31.48	32.18	32.67	33.37
171191007	Illinois	Madison	40	40.6	29.80	30.40	29.85	30.45
540090011	West Virginia	Brooke	39.9	40.8	31.34	32.24	30.97	31.87
390618001	Ohio	Hamilton	39.6	40.3	25.69	26.39	25.86	26.56
390350060	Ohio	Cuyahoga	39.4	42.8	28.87	32.27	28.61	32.01
171190023	Illinois	Madison	39.4	40.2	26.02	26.82	26.12	26.92
180970083	Indiana	Marion	39	39.3	20.69	20.99	20.84	21.14
550790043	Wisconsin	Milwaukee	38.8	39.7	28.96	29.86	28.85	29.75
180970078	Indiana	Marion	38.7	39.7	21.13	22.13	21.20	22.20
261630019	Michigan	Wayne	38.6	39.1	31.64	32.14	31.34	31.84
170310052	Illinois	Cook	38.5	39.7	30.63	31.83	30.42	31.62
261630015	Michigan	Wayne	38.5	39.1	27.14	27.74	27.31	27.91
390170017	Ohio	Butler	38.5	38.5	21.85	21.85	21.89	21.89
261470005	Michigan	St. Clair	38.4	39.4	30.55	31.55	30.43	31.43
170313301	Illinois	Cook	38.2	41	29.30	32.10	29.19	31.99
340172002	New Jersey	Hudson	38.2	38.2	33.84	33.84	32.98	32.98
180190006	Indiana	Clark	38.1	40.2	24.14	26.24	24.17	26.27
261610008	Michigan	Washtenaw	38.1	39.8	27.83	29.53	27.76	29.46
010732003	Alabama	Jefferson	38.1	38.9	31.94	32.74	32.69	33.49

170313103	Illinois	Cook	38.1	38.7	31.12	31.72	30.75	31.35
420031008	Pennsylvania	Allegheny	38	39.3	24.84	26.14	24.68	25.98
390610006	Ohio	Hamilton	38	38	20.83	20.83	20.99	20.99
261250001	Michigan	Oakland	37.9	38.4	26.75	27.25	26.71	27.21
390171004	Ohio	Butler	37.8	38.6	21.28	22.08	21.34	22.14
420710007	Pennsylvania	Lancaster	37.7	40.1	31.64	34.04	31.13	33.53
420070014	Pennsylvania	Beaver	37.7	39.1	27.62	29.02	27.20	28.60
550790010	Wisconsin	Milwaukee	37.7	39	31.45	32.75	31.30	32.60
390617001	Ohio	Hamilton	37.7	38.1	21.38	21.78	21.40	21.80
390610014	Ohio	Hamilton	37.5	38.5	21.79	22.79	22.04	23.04
390170016	Ohio	Butler	37.5	37.8	21.18	21.48	21.16	21.46
170316005	Illinois	Cook	37.4	39.8	29.84	32.24	29.67	32.07
180890022	Indiana	Lake	37.3	42.1	30.98	35.78	30.54	35.34
180970079	Indiana	Marion	37.2	38.3	19.73	20.83	19.85	20.95
171192009	Illinois	Madison	37.2	38.2	24.56	25.56	24.60	25.60
390610042	Ohio	Hamilton	37.2	38	22.38	23.18	22.36	23.16
360610056	New York	New York	37.1	38	32.45	33.35	31.67	32.57
420030116	Pennsylvania	Allegheny	37.1	37.1	25.74	25.74	25.76	25.76
261150005	Michigan	Monroe	37	38	24.13	25.13	24.26	25.26
210590005	Kentucky	Daviess	37	37	18.33	18.33	18.25	18.25
550790099	Wisconsin	Milwaukee	36.8	37.7	29.38	30.28	29.24	30.14
191630019	Iowa	Scott	36.8	36.8	22.92	22.92	23.06	23.06
340390004	New Jersey	Union	36.7	37.2	30.80	31.30	30.58	31.08
420031301	Pennsylvania	Allegheny	36.6	38.6	25.34	27.34	25.21	27.21
471251009	Tennessee	Montgomery	36.6	37.9	22.24	23.54	22.20	23.50
390490024	Ohio	Franklin	36.6	37.6	24.63	25.63	24.62	25.62
390811001	Ohio	Jefferson	36.5	39.9	25.97	29.37	25.87	29.27
390350065	Ohio	Cuyahoga	36.5	38.9	25.20	27.60	25.07	27.47
180372001	Indiana	Dubois	36.5	38	21.05	22.55	21.04	22.54
171193007	Illinois	Madison	36.5	37.3	22.88	23.68	23.02	23.82
295100087	Missouri	St. Louis City	36.4	36.9	23.59	24.09	23.65	24.15
550790026	Wisconsin	Milwaukee	36.3	40.1	30.00	33.80	29.85	33.65
180890026	Indiana	Lake	36.3	39.3	28.44	31.44	28.30	31.30
391130032	Ohio	Montgomery	36.3	38.5	18.88	21.08	18.91	21.11
245100040	Maryland	Baltimore (City	36.3	38.3	33.48	35.48	32.88	34.88
170310076	Illinois	Cook	36.3	37.3	26.26	27.26	26.18	27.18
180970042	Indiana	Marion	36.3	37.2	18.24	19.14	18.39	19.29
261630036	Michigan	Wayne	36.3	36.9	26.84	27.44	26.80	27.40

360610128	New York	New York	36.2	38	28.68	30.48	28.36	30.16
390490025	Ohio	Franklin	36.1	36.4	24.55	24.85	24.49	24.79
390350045	Ohio	Cuyahoga	36	39	24.22	27.22	24.16	27.16
211110044	Kentucky	Jefferson	36	36.5	21.33	21.83	21.42	21.92
390610043	Ohio	Hamilton	36	36.4	19.33	19.73	19.33	19.73
295100007	Missouri	St. Louis City	36	36.3	21.39	21.69	21.66	21.96
421330008	Pennsylvania	York	35.9	38.8	25.24	28.14	25.14	28.04
181570008	Indiana	Tippecanoe	35.9	36.9	21.82	22.82	21.74	22.74
180830004	Indiana	Knox	35.9	36.5	22.49	23.09	22.43	23.03
420030008	Pennsylvania	Allegheny	35.9	36.3	26.80	27.20	26.63	27.03
360050080	New York	Bronx	35.9	36.2	30.30	30.60	29.75	30.05
390610040	Ohio	Hamilton	35.8	36.8	19.65	20.65	19.65	20.65
211110043	Kentucky	Jefferson	35.8	36.4	20.75	21.35	20.80	21.40
420430401	Pennsylvania	Dauphin	35.7	37.1	28.33	29.73	27.95	29.35
170310057	Illinois	Cook	35.7	37	27.81	29.11	27.65	28.95
090091123	Connecticut	New Haven	35.7	36.6	29.70	30.60	29.35	30.25
290990012	Missouri	Jefferson	35.7	36.5	21.44	22.24	21.69	22.49
340171003	New Jersey	Hudson	35.7	36.1	30.51	30.91	30.03	30.43
170312001	Illinois	Cook	35.6	38.2	26.33	28.93	26.22	28.82
391530017	Ohio	Summit	35.6	37.2	23.94	25.54	23.77	25.37
211110048	Kentucky	Jefferson	35.6	36.4	22.39	23.19	22.45	23.25
291831002	Missouri	Saint Charles	35.5	37.1	21.97	23.57	22.07	23.67
245100049	Maryland	Baltimore (City)	35.5	35.5	32.66	32.66	32.13	32.13
261630001	Michigan	Wayne	35.4	37.8	24.02	26.42	23.84	26.24
360610062	New York	New York	35.3	37	30.32	32.02	29.84	31.54
420410101	Pennsylvania	Cumberland	35.3	37	29.08	30.78	28.57	30.27
390810017	Ohio	Jefferson	35.3	36.8	24.67	26.17	24.67	26.17
171630010	Illinois	Saint Clair	35.3	35.9	22.35	22.95	22.41	23.01
295100085	Missouri	St. Louis City	35.3	35.7	21.74	22.14	21.74	22.14
181670023	Indiana	Vigo	35.1	36.5	20.98	22.38	21.02	22.42
550250047	Wisconsin	Dane	35.1	36.1	28.34	29.34	28.13	29.13
471650007	Tennessee	Sumner	35.1	36	19.11	20.01	19.12	20.02
171971002	Illinois	Will	35.1	35.8	26.22	26.92	26.24	26.94
210290006	Kentucky	Bullitt	35	36.3	19.52	20.82	19.53	20.83
170310022	Illinois	Cook	34.9	36.6	27.28	28.98	27.07	28.77
551330027	Wisconsin	Waukesha	34.9	35.6	27.86	28.56	27.72	28.42
550790059	Wisconsin	Milwaukee	34.8	36.3	26.46	27.96	26.45	27.95

245100035	Maryland	Baltimore (City)	34.7	35.5	32.10	32.90	31.53	32.33
390350027	Ohio	Cuyahoga	34.5	36.6	24.88	26.98	24.65	26.75
191390015	Iowa	Muscatine	34.5	36	28.61	30.11	28.67	30.17
211451004	Kentucky	McCracken	34.4	36.8	21.24	23.64	20.93	23.33
420030095	Pennsylvania	Allegheny	34.3	36.6	24.56	26.86	24.15	26.45
180431004	Indiana	Floyd	34.3	35.7	18.97	20.37	19.08	20.48
391130031	Ohio	Montgomery	34.3	35.6	21.54	22.84	21.49	22.79
391351001	Ohio	Preble	34.3	35.5	18.17	19.37	18.21	19.41
390950024	Ohio	Lucas	34.2	36.5	25.44	27.74	25.36	27.66
360610079	New York	New York	34.2	36.4	27.71	29.91	27.04	29.24
390990014	Ohio	Mahoning	34.2	35.8	25.13	26.73	24.92	26.52
170310050	Illinois	Cook	34.1	35.8	24.33	26.03	24.19	25.89
110010041	District Of Columbia	District Of Columbia	34	35.6	26.30	27.90	26.01	27.61
540090005	West Virginia	Brooke	33.9	36.1	24.75	26.95	24.41	26.61
391550007	Ohio	Trumbull	33.9	35.6	24.80	26.50	24.61	26.31
421255001	Pennsylvania	Washington	33.9	35.5	21.77	23.37	21.57	23.17
420033007	Pennsylvania	Allegheny	33.8	38.5	21.68	26.38	21.54	26.24
240031003	Maryland	Anne Arundel	33.8	36.7	27.65	30.55	27.36	30.26
180390003	Indiana	Elkhart	33.8	35.6	24.22	26.02	24.16	25.96
212270007	Kentucky	Warren	33.7	36.3	18.06	20.66	18.13	20.73
390350034	Ohio	Cuyahoga	33.7	35.7	24.07	26.07	23.74	25.74
170314007	Illinois	Cook	33.6	35.7	22.90	25.00	22.91	25.01
390950026	Ohio	Lucas	33.6	35.6	21.03	23.03	21.04	23.04
110010042	District Of Columbia	District Of Columbia	33	35.6	27.03	29.63	26.63	29.23

Table 3-19. Using AQAT, the Estimated Ozone Season Average and Maximum Design Values (DV) in 2012 for Two Cases: When Emission Reductions at $500/Ton Marginal Cost per Ton NOx Emissions are Applied to States Upwind and When the Proposed Remedy is Applied.

			2012 Base	2012 Base	$500/Ton	$500/Ton	Proposed Remedy	Proposed Remedy
Monitor Identification Number	Receptor State	Receptor County	Avg. DV	Max. DV	Avg. DV	Max. DV	Avg. DV	Max. DV
482010055	Texas	Harris	95.7	97.9	94.41	96.61	94.17	96.37
482010062	Texas	Harris	90.5	93.7	89.15	92.35	88.93	92.13
482011039	Texas	Harris	90.5	93.9	89.22	92.62	88.98	92.38
482010066	Texas	Harris	89.9	93.5	88.76	92.36	88.57	92.17
480391004	Texas	Brazoria	88.8	91	87.44	89.64	87.25	89.45
482010051	Texas	Harris	88.4	93.1	87.21	91.91	86.98	91.68
220330003	Louisiana	East Baton Rouge	87.8	91.6	86.52	90.32	86.37	90.17
361030002	New York	Suffolk	86.3	87.2	86.27	87.17	86.13	87.03
421010024	Pennsylvania	Philadelphia	85.3	86	85.28	85.98	85.23	85.93
361030009	New York	Suffolk	85.1	85.8	85.09	85.79	84.93	85.63
484391002	Texas	Tarrant	85.1	86.7	83.66	85.26	83.54	85.14
090011123	Connecticut	Fairfield	84.8	86.4	84.77	86.37	84.61	86.21
361192004	New York	Westchester	84.7	86.9	84.67	86.87	84.51	86.71
481130087	Texas	Dallas	84.6	85.6	83.22	84.22	83.05	84.05
090013007	Connecticut	Fairfield	84.5	86.4	84.47	86.37	84.35	86.25
131210055	Georgia	Fulton	84.4	86.5	83.71	85.81	83.40	85.50
482010029	Texas	Harris	84.4	85.6	83.27	84.47	83.19	84.39
484392003	Texas	Tarrant	84	85.2	82.67	83.87	82.54	83.74
482011050	Texas	Harris	83.9	86.5	82.72	85.32	82.48	85.08
482011015	Texas	Harris	83.7	90.3				
482010024	Texas	Harris	83.3	87.1	82.23	86.03	82.13	85.93
090010017	Connecticut	Fairfield	83.1	85	83.06	84.96	82.92	84.82
090093002	Connecticut	New Haven	82.9	85.4	82.87	85.37	82.75	85.25
481130069	Texas	Dallas	82.9	85.8	81.52	84.42	81.38	84.28
482011035	Texas	Harris	82	90.3				
420170012	Pennsylvania	Bucks	81.8	85.6	81.78	85.58	81.66	85.46
130890002	Georgia	DeKalb	81.6	85.6	80.93	84.93	80.64	84.64

Table 3-20. Using AQAT, the Estimated Ozone Season Average and Maximum Design Values (DV) in 2014 for Two Cases: When Emission Reductions at $500/Ton Marginal Cost per Ton NOx Emissions are Applied to States Upwind and When the Proposed Remedy is Applied.

			2012 Base	2012 Base	$500/Ton	$500/Ton	Proposed Remedy	Proposed Remedy
Monitor Identification Number	Receptor State	Receptor County	Avg. DV	Max. DV	Avg. DV	Max. DV	Avg. DV	Max. DV
482010055	Texas	Harris	95.7	97.9	89.71	91.91	89.44	91.64
482010062	Texas	Harris	90.5	93.7	84.66	87.86	84.41	87.61
482011039	Texas	Harris	90.5	93.9	84.89	88.29	84.63	88.03
482010066	Texas	Harris	89.9	93.5	84.65	88.25	84.46	88.06
480391004	Texas	Brazoria	88.8	91	83.08	85.28	82.86	85.06
482010051	Texas	Harris	88.4	93.1	82.87	87.57	82.62	87.32
220330003	Louisiana	East Baton Rouge	87.8	91.6	83.65	87.45	83.51	87.31
361030002	New York	Suffolk	86.3	87.2	82.51	83.41	82.12	83.02
421010024	Pennsylvania	Philadelphia	85.3	86	81.64	82.34	81.22	81.92
361030009	New York	Suffolk	85.1	85.8	81.41	82.11	81.08	81.78
484391002	Texas	Tarrant	85.1	86.7	79.38	80.98	79.20	80.80
090011123	Connecticut	Fairfield	84.8	86.4	80.70	82.30	80.38	81.98
361192004	New York	Westchester	84.7	86.9	80.74	82.94	80.42	82.62
481130087	Texas	Dallas	84.6	85.6	79.28	80.28	79.05	80.05
090013007	Connecticut	Fairfield	84.5	86.4	80.39	82.29	80.11	82.01
131210055	Georgia	Fulton	84.4	86.5	74.39	76.49	74.04	76.14
482010029	Texas	Harris	84.4	85.6	79.47	80.67	79.35	80.55
484392003	Texas	Tarrant	84	85.2	78.45	79.65	78.28	79.48
482011050	Texas	Harris	83.9	86.5	78.73	81.33	78.47	81.07
482011015	Texas	Harris	83.7	90.3				
482010024	Texas	Harris	83.3	87.1	78.55	82.35	78.44	82.24
090010017	Connecticut	Fairfield	83.1	85	79.37	81.27	79.00	80.90
090093002	Connecticut	New Haven	82.9	85.4	78.65	81.15	78.37	80.87
481130069	Texas	Dallas	82.9	85.8	77.61	80.51	77.43	80.33
482011035	Texas	Harris	82	90.3				
420170012	Pennsylvania	Bucks	81.8	85.6	78.35	82.15	77.93	81.73
130890002	Georgia	DeKalb	81.6	85.6	71.92	75.92	71.59	75.59

Table 4-1. Air Quality Estimates (μg/m^3) from the CAMx Modeling of the 2012 Base, 2014 Base, and 2014 Proposed Remedy Daily Standard $PM_{2.5}$ Design Values (DV) as well as Daily Standard $PM_{2.5}$ DV Estimates (μg/m^3) from the Air Quality Assessment Tool (AQAT) for the 2014 Base and 2014 Remedy for Selected Sites.

			CAMx	AQAT	AQAT	CAMx	CAMx	AQAT - CAMx	AQAT - CAMx
			Base	Base	Control	Base	Control	Base	Control
Monitor Identification Number	Receptor State	Receptor County	2012 DV	2014 DV	2014 DV	2014 DV	2014 DV		
420030064	Pennsylvania	Allegheny	58.8	57.8	49.7	57.2	55.8	0.6	-6.1
420030093	Pennsylvania	Allegheny	41.1	39.8	29.6	39.7	31.4	0.1	-1.8
170311016	Illinois	Cook	41.0	38.1	32.4	39.4	37.7	-1.3	-5.3
261630016	Michigan	Wayne	40.6	39.1	32.4	39.7	38.2	-0.6	-5.8
180890022	Indiana	Lake	37.3	35.3	30.5	36.4	35.3	-1.1	-4.8
245100040	Maryland	Baltimore (City)	36.3	35.3	32.9	36.1	35.0	-0.8	-2.1

Table 4-2. Air Quality Estimates (μg/m^3) from the CAMx Modeling of the 2012 Base, 2014 Base, and 2014 Proposed Remedy Daily Standard $PM_{2.5}$ Design Values (DV) as well as Daily Standard $PM_{2.5}$ DV Estimates (μg/m^3) from the Air Quality Assessment Tool (AQAT) for the 2014 Base and 2014 Remedy for All Sites.

			CAMx	CAMx	AQAT	AQAT	CAMx	CAMx	AQAT - CAMx	AQAT - CAMx
			Base	Base	Base	Control	Base	Control	Base	Control
Monitor Identification Number	Receptor State	Receptor County	2012 DV	2012 Max DV	2014 DV	2014 DV	2014 DV	2014 DV		
420030064	Pennsylvania	Allegheny	58.8	62.3	57.8	49.7	57.2	55.8	0.6	-6.1
261630033	Michigan	Wayne	42.1	42.6	40.5	31.8	41.1	39.1	-0.6	-7.3
390350038	Ohio	Cuyahoga	41.2	44	39.4	27.4	40.0	35.7	-0.6	-8.3
420030093	Pennsylvania	Allegheny	41.1	46.2	39.8	29.6	39.7	31.4	0.1	-1.8
170311016	Illinois	Cook	41	44.1	38.1	32.4	39.4	37.7	-1.3	-5.3
261630016	Michigan	Wayne	40.6	43	39.1	32.4	39.7	38.2	-0.6	-5.8
180970043	Indiana	Marion	40.5	42	38.7	22.9	38.8	33.2	-0.1	-10.3
390170003	Ohio	Butler	40.3	42.3	38.1	20.1	38.3	29.1	-0.2	-9.0
180970066	Indiana	Marion	40.3	41.8	38.4	22.6	38.7	31.9	-0.3	-9.3
420210011	Pennsylvania	Cambria	40.3	40.7	39.1	22.9	39.4	25.6	-0.3	-2.7
180970081	Indiana	Marion	40.1	41.1	38.5	23.4	38.7	30.9	-0.2	-7.5
010730023	Alabama	Jefferson	40	40.7	38.7	32.7	38.8	35.6	-0.1	-2.9
171191007	Illinois	Madison	40	40.6	37.0	29.9	38.0	34.3	-1.0	-4.4
540090011	West Virginia	Brooke	39.9	40.8	38.5	31.0	39.2	36.4	-0.7	-5.4
390618001	Ohio	Hamilton	39.6	40.3	38.0	25.9	38.2	31.0	-0.2	-5.1
390350060	Ohio	Cuyahoga	39.4	42.8	37.8	28.6	38.7	36.3	-0.9	-7.7
171190023	Illinois	Madison	39.4	40.2	35.1	26.1	36.6	32.2	-1.5	-6.1
180970083	Indiana	Marion	39	39.3	37.1	20.8	37.3	29.0	-0.2	-8.2
550790043	Wisconsin	Milwaukee	38.8	39.7	35.7	28.8	37.3	36.3	-1.6	-7.5
180970078	Indiana	Marion	38.7	39.7	36.9	21.2	37.1	32.4	-0.2	-11.2
261630019	Michigan	Wayne	38.6	39.1	37.3	31.3	37.7	37.0	-0.4	-5.7
170310052	Illinois	Cook	38.5	39.7	35.3	30.4	37.3	36.6	-2.0	-6.2
261630015	Michigan	Wayne	38.5	39.1	36.9	27.3	37.1	34.0	-0.2	-6.7
390170017	Ohio	Butler	38.5	38.5	36.7	21.9	36.8	28.4	-0.1	-6.5
261470005	Michigan	St. Clair	38.4	39.4	37.2	30.4	37.6	34.7	-0.4	-4.3
170313301	Illinois	Cook	38.2	41	34.7	29.2	36.8	34.9	-2.1	-5.7
340172002	New Jersey	Hudson	38.2	38.2	37.5	33.0	37.5	36.6	0.0	-3.6
180190006	Indiana	Clark	38.1	40.2	36.3	24.2	36.1	28.6	0.2	-4.4
261610008	Michigan	Washtenaw	38.1	39.8	36.5	27.8	37.0	35.6	-0.5	-7.8
010732003	Alabama	Jefferson	38.1	38.9	37.2	32.7	37.2	34.4	0.0	-1.7
170313103	Illinois	Cook	38.1	38.7	34.8	30.7	37.3	35.9	-2.5	-5.2
420031008	Pennsylvania	Allegheny	38	39.3	36.6	24.7	36.7	27.2	-0.1	-2.5
390610006	Ohio	Hamilton	38	38	36.2	21.0	36.5	27.2	-0.3	-6.2
261250001	Michigan	Oakland	37.9	38.4	36.3	26.7	36.9	35.1	-0.6	-8.4
390171004	Ohio	Butler	37.8	38.6	36.0	21.3	36.1	27.4	-0.1	-6.1
420710007	Pennsylvania	Lancaster	37.7	40.1	36.7	31.1	37.5	36.0	-0.8	-4.9
420070014	Pennsylvania	Beaver	37.7	39.1	36.4	27.2	36.6	30.0	-0.2	-2.8
550790010	Wisconsin	Milwaukee	37.7	39	35.0	31.3	37.0	36.3	-2.0	-5.0
390617001	Ohio	Hamilton	37.7	38.1	35.9	21.4	36.2	30.1	-0.3	-8.7
390610014	Ohio	Hamilton	37.5	38.5	35.9	22.0	36.1	25.4	-0.2	-3.4

390170016	Ohio	Butler	37.5	37.8	35.7	21.2	35.7	27.9	0.0	-6.7
170316005	Illinois	Cook	37.4	39.8	34.1	29.7	36.5	35.6	-2.4	-5.9
180890022	Indiana	Lake	37.3	42.1	35.3	30.5	36.4	35.3	-1.1	-4.8
180970079	Indiana	Marion	37.2	38.3	35.3	19.8	35.5	28.6	-0.2	-8.8
171192009	Illinois	Madison	37.2	38.2	33.3	24.6	35.4	28.6	-2.1	-4.0
390610042	Ohio	Hamilton	37.2	38	35.6	22.4	35.9	29.3	-0.3	-6.9
360610056	New York	New York	37.1	38	36.2	31.7	36.5	35.3	-0.3	-3.6
420030116	Pennsylvania	Allegheny	37.1	37.1	35.8	25.8	35.5	28.6	0.3	-2.8
261150005	Michigan	Monroe	37	38	35.3	24.3	35.6	31.2	-0.3	-6.9
210590005	Kentucky	Daviess	37	37	35.1	18.2	34.9	21.7	0.2	-3.5
550790099	Wisconsin	Milwaukee	36.8	37.7	34.0	29.2	35.5	33.3	-1.5	-4.1
191630019	Iowa	Scott	36.8	36.8	33.9	23.1	34.0	31.9	-0.1	-8.8
340390004	New Jersey	Union	36.7	37.2	35.9	30.6	35.6	33.9	0.3	-3.3
420031301	Pennsylvania	Allegheny	36.6	38.6	35.4	25.2	35.5	30.1	-0.1	-4.9
471251009	Tennessee	Montgomery	36.6	37.9	34.4	22.2	35.2	26.8	-0.8	-4.6
390490024	Ohio	Franklin	36.6	37.6	35.0	24.6	35.2	32.3	-0.2	-7.7
390811001	Ohio	Jefferson	36.5	39.9	35.0	25.9	35.3	30.0	-0.3	-4.1
390350065	Ohio	Cuyahoga	36.5	38.9	34.9	25.1	35.4	30.2	-0.5	-5.1
180372001	Indiana	Dubois	36.5	38	34.6	21.0	35.3	27.9	-0.7	-6.9
171193007	Illinois	Madison	36.5	37.3	32.4	23.0	34.6	27.2	-2.2	-4.2
295100087	Missouri	St. Louis City	36.4	36.9	32.5	23.6	33.7	30.8	-1.2	-7.2
550790026	Wisconsin	Milwaukee	36.3	40.1	33.9	29.9	35.3	34.4	-1.4	-4.5
180890026	Indiana	Lake	36.3	39.3	34.3	28.3	34.9	32.7	-0.6	-4.4
391130032	Ohio	Montgomery	36.3	38.5	34.4	18.9	34.9	31.1	-0.5	-12.2
245100040	Maryland	Baltimore (City)	36.3	38.3	35.3	32.9	36.1	35.0	-0.8	-2.1
170310076	Illinois	Cook	36.3	37.3	32.7	26.2	34.8	32.3	-2.1	-6.1
180970042	Indiana	Marion	36.3	37.2	34.4	18.4	34.5	28.6	-0.1	-10.2
261630036	Michigan	Wayne	36.3	36.9	34.7	26.8	35.5	34.4	-0.8	-7.6
360610128	New York	New York	36.2	38	35.2	28.4	35.4	33.0	-0.2	-4.6
390490025	Ohio	Franklin	36.1	36.4	34.5	24.5	34.8	30.6	-0.3	-6.1
390350045	Ohio	Cuyahoga	36	39	34.3	24.2	35.0	29.4	-0.7	-5.2
211110044	Kentucky	Jefferson	36	36.5	34.3	21.4	34.3	27.6	0.0	-6.2
390610043	Ohio	Hamilton	36	36.4	34.2	19.3	34.7	27.9	-0.5	-8.6
295100007	Missouri	St. Louis City	36	36.3	32.2	21.7	33.3	29.1	-1.1	-7.4
421330008	Pennsylvania	York	35.9	38.8	34.7	25.1	35.5	32.8	-0.8	-7.7
181570008	Indiana	Tippecanoe	35.9	36.9	34.2	21.7	34.4	29.5	-0.2	-7.8
180830004	Indiana	Knox	35.9	36.5	34.2	22.4	34.8	28.8	-0.6	-6.4
420030008	Pennsylvania	Allegheny	35.9	36.3	34.9	26.6	34.7	28.5	0.2	-1.9
360050080	New York	Bronx	35.9	36.2	35.1	29.8	35.2	33.5	-0.1	-3.7
390610040	Ohio	Hamilton	35.8	36.8	34.0	19.7	34.3	24.9	-0.3	-5.2
211110043	Kentucky	Jefferson	35.8	36.4	34.1	20.8	34.3	27.2	-0.2	-6.4
420430401	Pennsylvania	Dauphin	35.7	37.1	34.6	27.9	35.3	33.6	-0.7	-5.7
170310057	Illinois	Cook	35.7	37	32.3	27.6	34.4	31.2	-2.1	-3.6
090091123	Connecticut	New Haven	35.7	36.6	34.8	29.3	34.9	32.3	-0.1	-3.0
290990012	Missouri	Jefferson	35.7	36.5	32.0	21.7	32.6	29.7	-0.6	-8.0
340171003	New Jersey	Hudson	35.7	36.1	35.1	30.0	34.9	32.9	0.2	-2.9
170312001	Illinois	Cook	35.6	38.2	33.2	26.2	34.4	31.6	-1.2	-5.4
391530017	Ohio	Summit	35.6	37.2	33.8	23.8	34.6	31.4	-0.8	-7.6
211110048	Kentucky	Jefferson	35.6	36.4	34.1	22.5	34.0	26.3	0.1	-3.8
291831002	Missouri	Saint Charles	35.5	37.1	31.9	22.1	33.6	28.6	-1.7	-6.5

245100049	Maryland	Baltimore (City)	35.5	35.5	34.5	32.1	35.3	34.3	-0.8	-2.2
261630001	Michigan	Wayne	35.4	37.8	33.8	23.8	34.2	32.8	-0.4	-9.0
360610062	New York	New York	35.3	37	34.3	29.8	34.6	33.2	-0.3	-3.4
420410101	Pennsylvania	Cumberland	35.3	37	34.4	28.6	35.0	33.0	-0.6	-4.4
390810017	Ohio	Jefferson	35.3	36.8	33.8	24.7	34.0	29.1	-0.2	-4.4
171630010	Illinois	Saint Clair	35.3	35.9	31.3	22.4	32.8	29.4	-1.5	-7.0
295100085	Missouri	St. Louis City	35.3	35.7	31.6	21.7	32.9	29.8	-1.3	-8.1
181670023	Indiana	Vigo	35.1	36.5	32.9	21.0	33.7	30.8	-0.8	-9.8
550250047	Wisconsin	Dane	35.1	36.1	33.1	28.1	34.2	31.7	-1.1	-3.6
471650007	Tennessee	Sumner	35.1	36	33.3	19.1	33.1	20.5	0.2	-1.4
171971002	Illinois	Will	35.1	35.8	32.2	26.2	33.6	29.6	-1.4	-3.4
210290006	Kentucky	Bullitt	35	36.3	33.2	19.5	33.1	24.0	0.1	-4.5
170310022	Illinois	Cook	34.9	36.6	33.1	27.1	34.3	33.2	-1.2	-6.1
551330027	Wisconsin	Waukesha	34.9	35.6	32.9	27.7	33.3	31.6	-0.4	-3.9
550790059	Wisconsin	Milwaukee	34.8	36.3	32.0	26.4	33.5	31.6	-1.5	-5.2
245100035	Maryland	Baltimore (City)	34.7	35.5	33.8	31.5	34.5	33.4	-0.7	-1.9
390350027	Ohio	Cuyahoga	34.5	36.6	33.0	24.6	34.0	32.1	-1.0	-7.5
191390015	Iowa	Muscatine	34.5	36	32.8	28.7	33.8	32.1	-1.0	-3.4
211451004	Kentucky	McCracken	34.4	36.8	32.7	20.9	32.5	23.1	0.2	-2.2
420030095	Pennsylvania	Allegheny	34.3	36.6	33.1	24.2	33.0	26.5	0.1	-2.3
180431004	Indiana	Floyd	34.3	35.7	32.6	19.1	32.7	23.8	-0.1	-4.7
391130031	Ohio	Montgomery	34.3	35.6	32.8	21.5	33.1	29.8	-0.3	-8.3
391351001	Ohio	Preble	34.3	35.5	32.5	18.2	33.2	26.5	-0.7	-8.3
390950024	Ohio	Lucas	34.2	36.5	32.7	25.4	33.5	32.0	-0.8	-6.6
360610079	New York	New York	34.2	36.4	33.4	27.0	33.4	31.4	0.0	-4.4
390990014	Ohio	Mahoning	34.2	35.8	32.8	24.9	33.1	30.3	-0.3	-5.4
170310050	Illinois	Cook	34.1	35.8	31.3	24.2	32.3	30.3	-1.0	-6.1
110010041	District Of Columbia	District Of Columbia	34	35.6	32.8	26.0	33.6	31.2	-0.8	-5.2
540090005	West Virginia	Brooke	33.9	36.1	32.5	24.4	33.0	28.9	-0.5	-4.5
391550007	Ohio	Trumbull	33.9	35.6	32.5	24.6	33.0	30.2	-0.5	-5.6
421255001	Pennsylvania	Washington	33.9	35.5	32.2	21.6	32.7	26.0	-0.5	-4.4
420033007	Pennsylvania	Allegheny	33.8	38.5	32.4	21.5	32.6	25.6	-0.2	-4.1
240031003	Maryland	Anne Arundel	33.8	36.7	32.5	27.4	34.4	32.9	-1.9	-5.5
180390003	Indiana	Elkhart	33.8	35.6	32.1	24.2	32.7	29.0	-0.6	-4.8
212270007	Kentucky	Warren	33.7	36.3	31.5	18.1	31.6	21.6	-0.1	-3.5
390350034	Ohio	Cuyahoga	33.7	35.7	32.2	23.7	33.2	29.9	-1.0	-6.2
170314007	Illinois	Cook	33.6	35.7	29.8	22.9	32.2	30.4	-2.4	-7.5
390950026	Ohio	Lucas	33.6	35.6	31.9	21.0	32.6	30.2	-0.7	-9.2
110010042	District Of Columbia	District Of Columbia	33	35.6	32.0	26.6	32.7	30.5	-0.7	-3.9

Table 4-3. Air Quality Estimates (μg/m³) from the CAMx Modeling of the 2012 Base, 2014 Base, and 2014 Proposed Remedy Daily Standard $PM_{2.5}$ Maximum Design Values (Max DV) as well as Daily Standard $PM_{2.5}$ Max DV Estimates (μg/m³) from the Air Quality Assessment Tool (AQAT) for the 2014 Base and 2014 Remedy for All Sites.

			CAMx	CAMx	AQAT	AQAT	CAMx	CAMx	AQAT - CAMx	AQAT - CAMx
			Base	Base	Base	Control	Base	Control	Base	Control
Monitor Identification Number	Receptor State	Receptor County	2012 DV	2012 Max DV	2014 Max DV	2014 Max DV	2014 Max DV	2014 Max DV		
420030064	Pennsylvania	Allegheny	58.8	62.3	61.3	53.2	60.4	58.9	0.9	-5.7
261630033	Michigan	Wayne	42.1	42.6	41.0	32.3	41.7	39.4	-0.7	-7.1
390350038	Ohio	Cuyahoga	41.2	44	42.2	30.2	42.6	38.2	-0.4	-8.0
420030093	Pennsylvania	Allegheny	41.1	46.2	44.9	34.7	44.5	35.2	0.4	-0.5
170311016	Illinois	Cook	41	44.1	41.2	35.5	42.5	41.2	-1.3	-5.7
261630016	Michigan	Wayne	40.6	43	41.5	34.8	42.1	40.8	-0.6	-6.0
180970043	Indiana	Marion	40.5	42	40.2	24.4	40.3	34.4	-0.1	-10.0
390170003	Ohio	Butler	40.3	42.3	40.1	22.1	40.3	31.4	-0.2	-9.3
180970066	Indiana	Marion	40.3	41.8	39.9	24.1	40.0	33.1	-0.1	-9.0
420210011	Pennsylvania	Cambria	40.3	40.7	39.5	23.3	39.8	26.0	-0.3	-2.7
180970081	Indiana	Marion	40.1	41.1	39.5	24.4	39.7	31.0	-0.2	-6.6
010730023	Alabama	Jefferson	40	40.7	39.4	33.4	39.6	36.8	-0.2	-3.4
171191007	Illinois	Madison	40	40.6	37.6	30.5	38.7	37.0	-1.1	-6.5
540090011	West Virginia	Brooke	39.9	40.8	39.4	31.9	40.1	37.1	-0.7	-5.2
390618001	Ohio	Hamilton	39.6	40.3	38.7	26.6	39.0	32.3	-0.3	-5.7
390350060	Ohio	Cuyahoga	39.4	42.8	41.2	32.0	41.8	38.0	-0.6	-6.0
171190023	Illinois	Madison	39.4	40.2	35.9	26.9	37.4	33.5	-1.5	-6.6
180970083	Indiana	Marion	39	39.3	37.4	21.1	37.7	29.4	-0.3	-8.3
550790043	Wisconsin	Milwaukee	38.8	39.7	36.6	29.7	38.4	37.7	-1.8	-8.0
180970078	Indiana	Marion	38.7	39.7	37.9	22.2	38.0	33.7	-0.1	-11.5
261630019	Michigan	Wayne	38.6	39.1	37.8	31.8	38.3	37.5	-0.5	-5.7
170310052	Illinois	Cook	38.5	39.7	36.5	31.6	38.2	37.4	-1.7	-5.8
261630015	Michigan	Wayne	38.5	39.1	37.5	27.9	37.6	34.7	-0.1	-6.8
390170017	Ohio	Butler	38.5	38.5	36.7	21.9	36.8	28.4	-0.1	-6.5
261470005	Michigan	St. Clair	38.4	39.4	38.2	31.4	38.7	35.4	-0.5	-4.0
170313301	Illinois	Cook	38.2	41	37.5	32.0	39.7	37.3	-2.2	-5.3
340172002	New Jersey	Hudson	38.2	38.2	37.5	33.0	37.5	36.6	0.0	-3.6
180190006	Indiana	Clark	38.1	40.2	38.4	26.3	37.9	29.5	0.5	-3.2
261610008	Michigan	Washtenaw	38.1	39.8	38.2	29.5	38.7	36.2	-0.5	-6.7
010732003	Alabama	Jefferson	38.1	38.9	38.0	33.5	37.9	35.0	0.1	-1.5
170313103	Illinois	Cook	38.1	38.7	35.4	31.3	37.9	36.5	-2.5	-5.2
420031008	Pennsylvania	Allegheny	38	39.3	37.9	26.0	37.8	27.9	0.1	-1.9
390610006	Ohio	Hamilton	38	38	36.2	21.0	36.5	27.2	-0.3	-6.2
261250001	Michigan	Oakland	37.9	38.4	36.8	27.2	37.2	36.2	-0.4	-9.0
390171004	Ohio	Butler	37.8	38.6	36.8	22.1	37.0	28.3	-0.2	-6.2
420710007	Pennsylvania	Lancaster	37.7	40.1	39.1	33.5	39.7	38.2	-0.6	-4.7
420070014	Pennsylvania	Beaver	37.7	39.1	37.8	28.6	38.0	30.8	-0.2	-2.2
550790010	Wisconsin	Milwaukee	37.7	39	36.3	32.6	38.3	37.5	-2.0	-4.9
390617001	Ohio	Hamilton	37.7	38.1	36.3	21.8	36.6	31.9	-0.3	-10.1

390610014	Ohio	Hamilton	37.5	38.5	36.9	23.0	37.1	27.1	-0.2	-4.1
390170016	Ohio	Butler	37.5	37.8	36.0	21.5	36.2	28.3	-0.2	-6.8
170316005	Illinois	Cook	37.4	39.8	36.5	32.1	39.1	38.2	-2.6	-6.1
180890022	Indiana	Lake	37.3	42.1	40.1	35.3	41.1	39.8	-1.0	-4.5
180970079	Indiana	Marion	37.2	38.3	36.4	20.9	36.6	28.9	-0.2	-8.0
171192009	Illinois	Madison	37.2	38.2	34.3	25.6	36.1	29.3	-1.8	-3.7
390610042	Ohio	Hamilton	37.2	38	36.4	23.2	36.7	30.0	-0.3	-6.8
360610056	New York	New York	37.1	38	37.1	32.6	37.3	36.0	-0.2	-3.4
420030116	Pennsylvania	Allegheny	37.1	37.1	35.8	25.8	35.5	28.6	0.3	-2.8
261150005	Michigan	Monroe	37	38	36.3	25.3	36.3	31.6	0.0	-6.3
210590005	Kentucky	Daviess	37	37	35.1	18.2	34.9	21.7	0.2	-3.5
550790099	Wisconsin	Milwaukee	36.8	37.7	34.9	30.1	37.0	35.9	-2.1	-5.8
191630019	Iowa	Scott	36.8	36.8	33.9	23.1	34.0	31.9	-0.1	-8.8
340390004	New Jersey	Union	36.7	37.2	36.4	31.1	36.2	34.8	0.2	-3.7
420031301	Pennsylvania	Allegheny	36.6	38.6	37.4	27.2	37.4	31.0	0.0	-3.8
471251009	Tennessee	Montgomery	36.6	37.9	35.7	23.5	36.4	27.7	-0.7	-4.2
390490024	Ohio	Franklin	36.6	37.6	36.0	25.6	36.5	33.9	-0.5	-8.3
390811001	Ohio	Jefferson	36.5	39.9	38.4	29.3	38.8	33.3	-0.4	-4.0
390350065	Ohio	Cuyahoga	36.5	38.9	37.3	27.5	38.1	33.9	-0.8	-6.4
180372001	Indiana	Dubois	36.5	38	36.1	22.5	36.8	30.6	-0.7	-8.1
171193007	Illinois	Madison	36.5	37.3	33.2	23.8	35.2	28.2	-2.0	-4.4
295100087	Missouri	St. Louis City	36.4	36.9	33.0	24.1	34.1	31.3	-1.1	-7.2
550790026	Wisconsin	Milwaukee	36.3	40.1	37.7	33.7	39.2	38.3	-1.5	-4.6
180890026	Indiana	Lake	36.3	39.3	37.3	31.3	38.0	35.8	-0.7	-4.5
391130032	Ohio	Montgomery	36.3	38.5	36.6	21.1	36.9	33.3	-0.3	-12.2
245100040	Maryland	Baltimore (City	36.3	38.3	37.3	34.9	38.0	36.8	-0.7	-1.9
170310076	Illinois	Cook	36.3	37.3	33.7	27.2	35.5	32.7	-1.8	-5.5
180970042	Indiana	Marion	36.3	37.2	35.3	19.3	35.4	30.4	-0.1	-11.1
261630036	Michigan	Wayne	36.3	36.9	35.3	27.4	36.2	35.5	-0.9	-8.1
360610128	New York	New York	36.2	38	37.0	30.2	37.0	33.1	0.0	-2.9
390490025	Ohio	Franklin	36.1	36.4	34.8	24.8	35.2	32.6	-0.4	-7.8
390350045	Ohio	Cuyahoga	36	39	37.3	27.2	38.2	33.2	-0.9	-6.0
211110044	Kentucky	Jefferson	36	36.5	34.8	21.9	34.7	28.5	0.1	-6.6
390610043	Ohio	Hamilton	36	36.4	34.6	19.7	35.0	28.4	-0.4	-8.7
295100007	Missouri	St. Louis City	36	36.3	32.5	22.0	33.6	30.2	-1.1	-8.2
421330008	Pennsylvania	York	35.9	38.8	37.6	28.0	38.4	35.4	-0.8	-7.4
181570008	Indiana	Tippecanoe	35.9	36.9	35.2	22.7	35.3	29.9	-0.1	-7.2
180830004	Indiana	Knox	35.9	36.5	34.8	23.0	35.1	30.5	-0.3	-7.5
420030008	Pennsylvania	Allegheny	35.9	36.3	35.3	27.0	35.1	28.8	0.2	-1.8
360050080	New York	Bronx	35.9	36.2	35.4	30.1	35.4	33.9	0.0	-3.8
390610040	Ohio	Hamilton	35.8	36.8	35.0	20.7	35.3	25.2	-0.3	-4.5
211110043	Kentucky	Jefferson	35.8	36.4	34.7	21.4	34.8	29.4	-0.1	-8.0
420430401	Pennsylvania	Dauphin	35.7	37.1	36.0	29.3	36.8	35.1	-0.8	-5.8
170310057	Illinois	Cook	35.7	37	33.6	28.9	35.6	32.3	-2.0	-3.4
090091123	Connecticut	New Haven	35.7	36.6	35.7	30.2	35.8	32.7	-0.1	-2.5
290990012	Missouri	Jefferson	35.7	36.5	32.8	22.5	33.6	30.2	-0.8	-7.7
340171003	New Jersey	Hudson	35.7	36.1	35.5	30.4	35.3	33.9	0.2	-3.5
170312001	Illinois	Cook	35.6	38.2	35.8	28.8	37.1	34.5	-1.3	-5.7
391530017	Ohio	Summit	35.6	37.2	35.4	25.4	36.4	34.2	-1.0	-8.8
211110048	Kentucky	Jefferson	35.6	36.4	34.9	23.3	34.8	27.0	0.1	-3.7

291831002	Missouri	Saint Charles	35.5	37.1	33.5	23.7	35.3	29.9	-1.8	-6.2
245100049	Maryland	Baltimore (City)	35.5	35.5	34.5	32.1	35.3	34.3	-0.8	-2.2
261630001	Michigan	Wayne	35.4	37.8	36.2	26.2	36.3	34.9	-0.1	-8.7
360610062	New York	New York	35.3	37	36.0	31.5	36.3	33.6	-0.3	-2.1
420410101	Pennsylvania	Cumberland	35.3	37	36.1	30.3	36.7	34.6	-0.6	-4.3
390810017	Ohio	Jefferson	35.3	36.8	35.3	26.2	35.5	30.5	-0.2	-4.3
171630010	Illinois	Saint Clair	35.3	35.9	31.9	23.0	33.4	30.1	-1.5	-7.1
295100085	Missouri	St. Louis City	35.3	35.7	32.0	22.1	33.3	30.4	-1.3	-8.3
181670023	Indiana	Vigo	35.1	36.5	34.3	22.4	35.0	32.1	-0.7	-9.7
550250047	Wisconsin	Dane	35.1	36.1	34.1	29.1	35.3	32.9	-1.2	-3.8
471650007	Tennessee	Sumner	35.1	36	34.2	20.0	34.0	22.5	0.2	-2.5
171971002	Illinois	Will	35.1	35.8	32.9	26.9	34.4	31.1	-1.5	-4.2
210290006	Kentucky	Bullitt	35	36.3	34.5	20.8	34.2	24.6	0.3	-3.8
170310022	Illinois	Cook	34.9	36.6	34.8	28.8	36.0	35.0	-1.2	-6.2
551330027	Wisconsin	Waukesha	34.9	35.6	33.6	28.4	33.9	31.8	-0.3	-3.4
550790059	Wisconsin	Milwaukee	34.8	36.3	33.5	27.9	35.1	33.4	-1.6	-5.5
245100035	Maryland	Baltimore (City)	34.7	35.5	34.6	32.3	35.3	34.2	-0.7	-1.9
390350027	Ohio	Cuyahoga	34.5	36.6	35.1	26.7	36.2	35.0	-1.1	-8.3
191390015	Iowa	Muscatine	34.5	36	34.3	30.2	35.4	33.2	-1.1	-3.0
211451004	Kentucky	McCracken	34.4	36.8	35.1	23.3	34.8	23.6	0.3	-0.3
420030095	Pennsylvania	Allegheny	34.3	36.6	35.4	26.5	35.2	29.1	0.2	-2.6
180431004	Indiana	Floyd	34.3	35.7	34.0	20.5	34.1	25.3	-0.1	-4.8
391130031	Ohio	Montgomery	34.3	35.6	34.1	22.8	34.2	30.9	-0.1	-8.1
391351001	Ohio	Preble	34.3	35.5	33.7	19.4	34.4	26.6	-0.7	-7.2
390950024	Ohio	Lucas	34.2	36.5	35.0	27.7	35.7	34.4	-0.7	-6.7
360610079	New York	New York	34.2	36.4	35.6	29.2	35.4	33.3	0.2	-4.1
390990014	Ohio	Mahoning	34.2	35.8	34.4	26.5	34.6	31.9	-0.2	-5.4
170310050	Illinois	Cook	34.1	35.8	33.0	25.9	33.9	32.2	-0.9	-6.3
110010041	District Of Columbia	District Of Columbia	34	35.6	34.4	27.6	35.3	32.9	-0.9	-5.3
540090005	West Virginia	Brooke	33.9	36.1	34.7	26.6	35.2	30.6	-0.5	-4.0
391550007	Ohio	Trumbull	33.9	35.6	34.2	26.3	34.5	32.1	-0.3	-5.8
421255001	Pennsylvania	Washington	33.9	35.5	33.8	23.2	34.1	27.0	-0.3	-3.8
420033007	Pennsylvania	Allegheny	33.8	38.5	37.1	26.2	36.9	28.4	0.2	-2.2
240031003	Maryland	Anne Arundel	33.8	36.7	35.4	30.3	37.5	36.1	-2.1	-5.8
180390003	Indiana	Elkhart	33.8	35.6	33.9	26.0	34.4	30.5	-0.5	-4.5
212270007	Kentucky	Warren	33.7	36.3	34.1	20.7	34.0	24.2	0.1	-3.5
390350034	Ohio	Cuyahoga	33.7	35.7	34.2	25.7	35.4	33.3	-1.2	-7.6
170314007	Illinois	Cook	33.6	35.7	31.9	25.0	34.0	32.9	-2.1	-7.9
390950026	Ohio	Lucas	33.6	35.6	33.9	23.0	34.5	32.3	-0.6	-9.3
110010042	District Of Columbia	District Of Columbia	33	35.6	34.6	29.2	35.5	33.2	-0.9	-4.0

Appendix A: IPM Runs Used in Transport Rule Significant Contribution Analysis

Table A-1 lists IPM runs used in the significant contribution analysis. As discussed in section B in this TSD, each pollutant was analyzed separately with no policy assumed for the other two pollutants (e.g., the SO_2 runs do not include assumptions for NO_X controls beyond the NO_X policies in the Base Case). Additionally, in each of these runs we imposed the marginal costs starting in 2012 and continuing through 2014. The IPM runs can be found in the docket for this rulemaking (Docket ID No. EPA-HQ-OAR-2009-0491).

Table A-1. IPM Runs Used in Transport Rule Significant Contribution Analysis

Run Name	Run Description
Transport Rule Base Case	
TR_Base_Case	Base Case model run, which includes the national Title IV SO_2 cap-and-trade program; NO_X SIP Call regional ozone season cap-and-trade program; and settlements and state rules through February 3, 2009. This run represents conditions without the proposed Transport Rule and without the rule it would replace (CAIR).
*Additional runs used for analysis of significant contribution**	
TR_SO2_100	Imposes a marginal cost of $100 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_200	Imposes a marginal cost of $200 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_300	Imposes a marginal cost of $300 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_400	Imposes a marginal cost of $400 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_500	Imposes a marginal cost of $500 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_600	Imposes a marginal cost of $600 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_800	Imposes a marginal cost of $800 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.

Run Name	Run Description
TR_SO2_1000	Imposes a marginal cost of $1,000 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_1200	Imposes a marginal cost of $1,200 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_1400	Imposes a marginal cost of $1,400 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_1600	Imposes a marginal cost of $1,600 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_1800	Imposes a marginal cost of $1,800 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_SO2_2000	Imposes a marginal cost of $2,000 per ton of SO_2 reduced on each of 37 states and the District of Columbia.
TR_SO2_2400	Imposes a marginal cost of $2,400 per ton of SO_2 reduced on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_OS_500	Imposes a marginal cost of $500 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_OS_1000	Imposes a marginal cost of $1,000 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_OS_1500	Imposes a marginal cost of $1,500 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_OS_2000	Imposes a marginal cost of $2,000 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_OS_2500	Imposes a marginal cost of $2,500 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.

Run Name	Run Description
TR_NOX_OS_3000	Imposes a marginal cost of $3,000 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_OS_3500	Imposes a marginal cost of $3,500 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_OS_5000	Imposes a marginal cost of $5,000 per ton of NO_X reduced in the ozone season on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_500	Imposes a marginal cost of $500 per ton of NO_X reduced annually on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_750	Imposes a marginal cost of $750 per ton of NO_X reduced annually on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_1000	Imposes a marginal cost of $1,000 per ton of NO_X reduced annually on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_1250	Imposes a marginal cost of $1,250 per ton of NO_X reduced annually on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_1500	Imposes a marginal cost of $1,500 per ton of NO_X reduced annually on each of 37 states and the District of Columbia starting in 2012.
TR_NOX_2500	Imposes a marginal cost of $2,500 per ton of NO_X reduced annually on each of 37 states and the District of Columbia starting in 2012.

*In addition to base case assumptions, these runs include additional control options for units between 25 and 100 MW capacity. See IPM Documentation for more details.