Technical Support Document
for the Final
Clean Air Interstate Rule

Air Quality Modeling

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I. Introduction

This document was prepared to describe the air quality modeling performed by EPA in support of the Clean Air Interstate Rule (CAIR)[1]. Included is information on (1) the air quality models and the development of model inputs, (2) the performance of the models as compared to measured data, (3) the procedures for projecting current air quality to future year base and control scenarios, (4) the evaluation of interstate contribution to ozone and PM2.5 in downwind nonattainment areas, and (5) an assessment of the expected air quality improvements from the regional SO2 and NOx emissions reductions in CAIR.

II. Overview of Emission Inventories Used for Air Quality Modeling

Emission inventories were developed for the 48 contiguous States, the District of Columbia, and portions of Canada and Mexico in part to support the air quality modeling analyses for CAIR. Inventories were prepared for a 2001 Base Year, for 2010 and 2015 future baseline scenarios, and for 2010 and 2015 regional control scenarios. The inventories include emissions of sulfur dioxide (SO2), nitrogen oxides (NOx), volatile organic compounds (VOC), carbon monoxide (CO), ammonia (NH3), directly emitted PM2.5[2] component species (i.e., elemental carbon, organic carbon, nitrate, sulfate, and crustal material) and coarse particles[3]. Each inventory includes anthropogenic emissions for the major sectors of the inventory: electric generating units (EGUs), industrial point sources (non-EGUs), nonroad engines, highway vehicles, stationary area sources, fugitive dust, agricultural sources (i.e., fertilizer and animal husbandry), fires (i.e., wild fires, open burning, and prescribed burning), and biogenic processes. Emissions for EGU and non-EGU point sources are specified for each plant by boiler and by source classification code (SCC) which defines the emissions process. The inventory for these sources include stack parameters used for calculating plume rise. Emissions from other anthropogenic sectors are calculated on a county and SCC basis. Emissions from biogenic sources are calculated for each grid cell in the air quality modeling domain using grid-specific land use and meteorological data.

The 2001 inventory is a combination of several different data sources. EGU emissions are based on 2001 Continuous Emissions Monitoring (CEM). On-road and nonroad mobile sources were created for 2001 from the MOBILE6.2 and Draft NONROAD 2004 models. Non-EGU and stationary area source emissions were either (1) projected from 1999 to 2001, (2) computed for 2001, or (3) based on 2002 emission values using the latest approaches that were

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[1]All model input files used for the CAIR air quality modeling can be obtained in electronic form from our public ftp site. Please contact Warren Peters at peters.warren@epa.gov to obtain instructions for accessing this site.

[2]Particles with a diameter of 2.5 microns or less.

[3]Particles with a diameter between 2.5 and 10 microns.

not available for 2001 inventories. Finally, biogenic emission estimates for 2001 were calculated using the BEIS3.12 model.

The 2010 and 2015 Base Case emissions reflect the net effects of economic growth and emissions reductions expected to result from existing and promulgated control programs. Year-specific data for 2010 and 2015 from the MOBILE6.2 and NONROAD models were used to provide estimates of future year emissions for the highway vehicles and nonroad engines, respectively. Outputs for 2010 and 2015 from the Integrated Planning Model (IPM) we used for future year base and control case emissions from the EGU sector.

The future control case scenarios that were simulated with air quality modeling are:

- CAIR controls in 2010
- CAIR controls in 2015
- CAIR+BART[4] in 2015
- BART-only in 2015

In each of the above control cases, only emissions from EGUs were controlled. Emissions from sources in all other sectors remained at the level of the corresponding 2010 or 2015 Base Case.

Emissions data for 2001 and the future base and control scenarios were processed using the Sparse Matrix Operator Kernel (SMOKE) emissions model to prepare hourly, chemically speciated emissions in each model grid cell and layer as inputs for the air quality modeling. Emissions of VOC were speciated into the Carbon Bond IV classes for both the episodic ozone and annual PM2.5 air quality modeling.

Details on the development of the 2001 and 2010 and 2015 Base and control scenario emissions, emissions processing to create model-ready inputs, and summaries of the emissions data for each scenario can be found in the CAIR Emissions Inventory Technical Support Document (EI TSD) (EPA. 2005a). Details on the EGU control scenarios can be found in the "Modeling of Control Costs, Emissions, and Control Retrofits for Cost Effectiveness and Feasibility Analyses" Technical Support Document (EPA, 2005b).

[4]BART is Best Available Retrofit Technology. The CAIR+BART and BART-only runs were performed to support the "Better-than-BART" analysis performed as part of the analysis for CAIR. The results of this analysis can be found in the "Supplemental Air Quality Modeling Technical Support Document (TSD) for the Clean Air Interstate Rule (CAIR) Better-than-BART Demonstration."

III. Episodic Ozone Modeling: Model Configuration, Inputs, and Performance Evaluation

Air quality modeling for ozone was conducted using the Comprehensive Air Quality Model with Extensions (CAMx), version 3.10. CAMx is a non-proprietary computer model that simulates the formation and fate of photochemical oxidants including ozone for an input set of meteorological conditions and emissions. CAMx also contains a source apportionment tool which is designed to attribute ozone concentrations predicted at a given set of receptors to emissions from individual source areas, as specified by the user. More information on the CAMx model can be found in the model's user guide (Environ, 2002).

A. CAMx Modeling Domain and Grid Configuration

The CAMx model applications were performed for a domain covering most of the Eastern U.S., as shown in Figure III-1 (figure is provided at the end of this section). The domain has nested horizontal grids of 36 km (Outer Grid) and 12 km (Inner Grid). The configuration of the Outer Grid and Inner grid are provided in Table III-1.

Table III-1. Configuration of ozone modeling domain.

	Eastern US Domain	
	Coarse Grid	**Fine Grid**
Map Projection	latitude/longitude	latitude/longitude
Grid Resolution	1/2˚ longitude, 1/3˚ latitude (~ 36 km)	1/6˚ longitude, 1/9˚ latitude (~ 12 km)
East/West extent	-99 W to -67 W	-92 W to -69.5 W
North/South extent	26 N to 47 N	32 N to 44 N
Dimensions	64 x 63 x 9	137 x 110 x 9
Vertical extent	9 Layers: surface to 4 km	
Layer structure (m)	0-50, 50-100, 100-300, 300-600, 600-1000, 1000-1500, 1500-2000, 2000-2500, 2500-4000	

B. Ozone Episodes Modeled

There are several considerations involved in selecting episodes for an ozone modeling analysis (EPA, 1999a). In general, the goal is to model several differing sets of meteorological conditions leading to ambient ozone levels similar to an area's design value[5]. Warm temperatures, light winds, cloud-free skies, and stable boundary layers are some of the typical characteristics of ozone episodes in the Eastern U.S. On a synoptic scale, these conditions usually result from a combination of high pressure aloft (e.g., at the 500 millibar pressure level) and at the surface. On the local scale, the conditions that lead to exceedances of the ozone National Ambient Air Quality Standards (NAAQS) can vary from location to location based on factors such as wind direction, sea/lake breezes, etc.

The ozone episode dates modeled for the CAIR are listed in Table III-2. The first three days of each period are considered ramp-up days and the results from these days were not used in the analyses. In all, 30 episode days were modeled for each emissions scenario. The synoptic meteorological patterns during these episodes and the ambient 8-hour ozone concentrations are described in Appendix A. A series of inert tracer model runs were performed to reveal the overall transport patterns during each episode. The results of this analysis are presented in Appendix B.

Table III-2. Dates of ozone episodes modeled including initialization (ramp-up) days.

	Ozone Episodes
Episode 1	June 12-24, 1995
Episode 2	July 5-15, 1995
Episode 3	August 7-21, 1995

In order to determine whether the 1995 modeling days correspond to commonly occurring ozone-conducive meteorology, EPA applied a multi-variate statistical approach to characterize daily meteorological patterns and investigate their relationship to 8-hour ozone concentrations in the Eastern U.S. (Lehman, *et al.*, 2003). The approach relies on procedures presented in the report "A Characterization of the Spatiotemporal Variability of Non-urban Ozone Concentrations over the Eastern United States" (Eder, *et al.*,1994). The analysis by Lehman was conducted for 16 locations in the East that have both surface and upper air meteorological observations. Collectively, the locations included in this analysis provide coverage for the Northeast, Southeast, Gulf Coast, Midwest, and Great Plains. For most of these locations, there were five to six distinct sets of meteorological conditions, called regimes, which were defined based on seven to ten years of data. An analysis of the 8-hour daily maximum ozone concentrations for each of the meteorological regimes was performed to determine the distribution of ozone concentrations and the frequency of occurrence of each regime. These two

[5]The 8-hour ozone design value for a monitoring site is the 3-year average of the 4th highest 8-hour daily maximum ozone concentration in each of the three years at that site.

terms (i.e., distribution of concentration and frequency of regime) were analyzed to identify which regimes are most closely associated with high ozone concentrations in each location. For the three 1995 episodes, between 60 and 70 percent of the episode days modeled were found to be associated with the most frequently occurring, high ozone potential, meteorological regimes. In general, these results provide support that the episodes modeled are representative of meteorological conditions present when elevated ozone is observed throughout the modeling domain.

To respond to comments on the proposed rule, we performed several analyses to examine whether ambient ozone concentrations during the 1995 episodes selected for modeling were in the range of the most recent (i.e., 2001-2003) 8-hour ozone design values available at the time of the analysis. These analyses indicate that, in general, ozone levels during the 1995 episodes approximate recent ambient concentrations over the eastern U.S. Ambient concentrations of 8-hour ozone during the episodes do not appear to be biased high or low, compared to current design values. For example, of the 524 monitoring sites in the East that collected data both during the 1995 episodes and during the 2001-2003 design value period, 267 sites (51%) had fourth-highest values during the 1995 episodes that were higher than the current baseline design values while 257 sites (49%) had fourth-high values that were less than the current ozone levels. Also, during the 1995 episodes there was at least one day with measured ozone within $\pm$ 5 ppb of the corresponding 2001-2003 design value at over 90 percent of monitoring sites with design values at or above 75 ppb. The data used for these analyses are provided in Appendix C.

C. Meteorological and Other Model Inputs

In order to solve for the change in pollutant concentrations over time and space, the CAMx model requires certain meteorological inputs that, in part, govern the formation, transport, and destruction of pollutant material. In particular, the model requires seven meteorological input files: wind (u- and v-vector wind components), temperature, water vapor mixing ratio, atmospheric air pressure, cloud cover, rainfall, and vertical diffusion coefficient. Values of wind, pressure, and vertical diffusivity are calculated for the outer and inner grids whereas the other meteorological inputs are calculated at 36 km resolution for the entire domain and then interpolated from 36 km to 12 km for the inner grid..

The gridded meteorological data for the three historical 1995 episodes were developed using the Regional Atmospheric Modeling System (RAMS), version 3b. RAMS (Pielke *et al.*, 1992) is a numerical meteorological model that solves the full set of physical and thermodynamic equations which govern atmospheric motions. The output data from RAMS, which is run in a polar stereographic projection and a sigma-p coordinate system, were mapped to the CAMx grid. Two separate meteorological CAMx inputs, cloud fractions and rainfall rates, were developed based on observed data.

RAMS was run in a nested-grid mode with three levels of resolution: 108 km, 36 km, and 12 km with 28-34[6] vertical layers. The top of the surface layer was 16.7 m in the 36 and 12km grids. These two finer grids were at least as large as their CAMx counterparts. In order to keep the model results in line with reality, the simulated fields were nudged to an European Center for Medium-Range Weather Forecasting (ECMWF) analysis field every six hours. This assimilation data set was bolstered by every four-hourly special soundings regularly collected as part of the North American Research Strategy on Tropospheric Ozone (NARSTO) field study in the northeast U.S.

A model performance evaluation (Lagouvardos et al., 2000) was completed for a portion of the 1995 meteorological modeling (July 12-15). Observed data not used in the assimilation procedure were compared against modeled data at the surface and aloft. In general, the model accurately reproduced the synoptic meteorological conditions of the episode days. Furthermore, the meteorological fields were compared before and after being processed into CAMx inputs. It was concluded that this preprocessing did not distort the meteorological fields. In addition, a peer-reviewed, quantitative evaluation was performed for the RAMS model predictions over the period June through August 1995 (Hogrefe, 2001). The results show that the RAMS biases and errors are generally in line with the better performing meteorological model simulations found by other groups outside EPA, as compiled by Environ (Environ, 2001). Specifically, the RAMS predictions of surface water vapor mixing ratio are within the performance goals for this parameter and the root mean square error for the RAMS-predicted hourly wind speed is 1.8 m/s which is within the goal of 2.0 m/s. The model temperatures had an overall bias of 1.4 degrees C and error of 2.3 C which are somewhat outside the target goals of $\pm$ 0.5 and 2.0 degrees C, but still within the range of performance in other non-EPA meteorological model applications.

In addition to the meteorological data, the photochemical grid model requires several other types of data. In general, most of these miscellaneous model files have been taken from existing regional modeling applications. Clean conditions were used to initialize the model and were also used as lateral and top boundary conditions as in previous regional modeling applications. The model also requires information regarding land use type and surface albedo for all layer 1 grid cells in the domain. Existing regional data were used for these non-day-specific files. Photolysis rates were developed using the JCALC preprocessor. Turbidity values were set equal to a constant thought to be representative of regional conditions. A minimum of 1.0 m^2/sec was applied for vertical diffusivity (Kv).

D. CAMx Model Applications for CAIR

For CAIR, CAMx was run for five emissions scenarios: 2001 Base Year, 2010 Base Case, 2015 Base Case, 2010 CAIR control, and 2015 CAIR control. In addition, State-specific "zero-out" and source apportionment runs were made with CAMx to quantify the contribution of emissions in "upwind" States to 8-hour ozone nonattainment in other "downwind" States, as

[6] The inner nests were modeled with 34 layers while the outer 108 km domain was modeled with 28 layers.

described below.   The 2010 Base Case emissions inventory was used as the baseline for these State-by-State runs.

E. CAMx Model Performance Evaluation

EPA conducted a performance evaluation of CAMx for the 1995 episodes as part of the modeling analysis for the Nonroad Rule. The details of that ozone performance evaluation are provided in Appendix D. In summary, model performance statistics were calculated for observed/predicted pairs of hourly and 8-hour concentrations.   Statistics were generated for each episode and for all three episodes combined for the following geographic groupings: domainwide, each of four quadrants of the domain (i.e., Midwest, Northeast, Southeast, and Southwest), and each of 51 "local areas" within the domain. The “acceptability” of model performance was judged by comparing our results to those from past regional ozone model applications.   Overall, the performance for this application is similar to or improved over that of applications for earlier studies. In addition, model performance for this analysis compares favorably against performance goals for urban scale modeling that are recommended in EPA's draft 8-hour ozone attainment modeling guidance (EPA, 2005c).

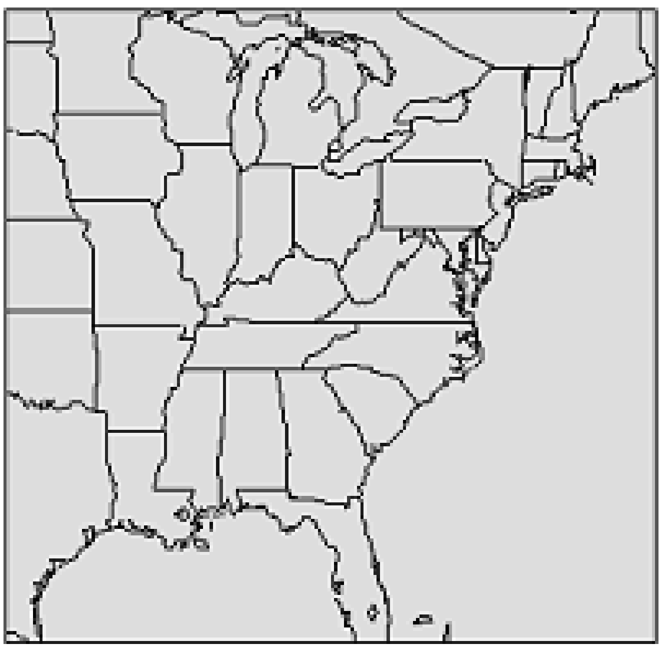

Figure III-1. Map of the CAMx modeling domain used for CAIR.

IV. PM2.5, Visibility, and Deposition Modeling: Model Configuration, Inputs, and Evaluation

Air quality modeling for PM2.5, visibility, and deposition was conducted using the Community Multiscale Air Quality Model (CMAQ). The CMAQ modeling system is a comprehensive three-dimensional grid-based Eulerian air quality model designed to estimate particulate concentrations and deposition over large spatial scales (Dennis *et al.*, 1996; Byun and Ching, 1999; Byun and Schere, 2004). The CMAQ model is a publically available, peer-reviewed, state-of-the-science model consisting of a number of science attributes that are critical for simulating the oxidant precursors and non-linear organic and inorganic chemical relationships associated with the formation of sulfate, nitrate, and organic aerosols. CMAQ also simulates the transport and removal of directly emitted particles which are speciated as elemental carbon, crustal material, nitrate, sulfate, and organic aerosols.

Version 4.3 of CMAQ (Byun and Schere, 2004) was used for CAIR. This version reflects updates to earlier versions in a number of areas to improve the underlying science and address comments from the peer review. The improvements in version 4.3 compared to earlier versions include (1) use of a state-of-the-science inorganic nitrate partitioning module (ISORROPIA) and updated gaseous, heterogeneous chemistry in the calculation of nitrate formation, (2) a state-of-the-science secondary organic aerosol (SOA) module that includes a more comprehensive gas-particle partioning algorithm from both anthropogenic and biogenic SOA, (3) an in-cloud sulfate chemistry module that accounts for the nonlinear sensitivity of sulfate formation to varying pH, and (4) an updated CB-IV gas-phase chemistry mechanism and aqueous chemistry mechanism that provide a comprehensive simulation of aerosol precursor oxidants. Key science aspects of CMAQ as applied for CAIR include:

- Gas-Phase Chemical Solver: Euler Backward Iterative (EBI) scheme
- PM Module:
  Three-mode approach: One coarse mode, two fine modes with variable standard deviations
  Inorganic PM module: ISORROPIA
  Organic PM module: SOA module based on Odum (1997) and Griffin (1999)
- Advection Scheme (vertical and horizontal): Piecewise Parabolic Method (PPM) scheme
- Vertical Diffusion: K-theory eddy diffusivity scheme; minimum diffusivity is 1 m^2/sec
- Dry Deposition: M3DRY module, modified RADM scheme with Pleim-Xiu land surface model
- Aqueous Chemistry: RADM Bulk scheme
- Cloud Scheme: RADM Cloud scheme
- Vertical Coordinate: Terrain-following Sigma coordinate

A. CMAQ Modeling Domain and Configuration

As shown in Figure IV-1, the CMAQ modeling domain encompasses all of the lower 48 States and portions of Canada and Mexico (Figure IV-1 is provided at the end of Section IV). The domain extends from 126 degrees to 66 degrees west longitude and from 24 degrees north latitude to 52 degrees north latitude. The horizontal grid cells are approximately 36 km by 36 km. The modeling domain contains 14 vertical layers with the top of the modeling domain at about 16,200 meters, or 100 mb. The vertical layer structure for CMAQ used for the CAIR applications is shown in Table IV-1 (this table can be found below, in the section IV.C.).

B. Time Period Modeled For PM2.5/Visibility/Depostion

The CMAQ model was applied for the year 2001 in order to provide annual PM2.5 concentration s, visibility, and deposition estimates for each of the CAIR emissions scenarios. The overall model run time for completing an annual simulation was reduced by dividing the year into four quarters which were run in parallel on different computer processors. That is, the annual simulation was performed as four separate quarterly model runs. As an example, the model run for the first quarter included the months of January, February, and March. Each quarterly run included a 10-day ramp-up (i.e., "spin-up") period designed to minimize the influence of the initial concentration fields (i.e., initial conditions) used at the start of the model run. The development of initial condition concentrations is described in Section IV.D, below. The ramp-up periods used for the CAIR CMAQ applications are as follows:

- first quarter ramp-up period is December 22 - 31, 2000
- second quarter ramp-up period is March 22 - 31, 2001
- third quarter ramp-up period is June 21 - 30, 2001
- fourth quarter ramp-up period is September 21 - 30, 2001

Model predictions from these periods were discarded and not used in analyses of the modeling results.

C. Meteorological Inputs to CMAQ

Meteorological data, such as temperature, wind, stability parameters, and atmospheric moisture contents influence the formation, transport, and removal of air pollution. The CMAQ model requires a specific suite of meteorological input files in order to simulate these physical and chemical processes. For the CAIR CMAQ modeling, meteorological input files were derived from a simulation of the Pennsylvania State University / National Center for Atmospheric Research Mesoscale Model (Grell *et al.*, 1994) for the entire year of 2001. This model, commonly referred to as MM5, is a limited-area, nonhydrostatic, terrain-following system that solves for the full set of physical and thermodynamic equations which govern atmospheric motions. For this analysis, version 3.6.1 of MM5 was used. The horizontal domain consisted of a single 36 x 36 km grid with 165 by 129 cells, selected to maximize the coverage of the Eta model analysis region and completely cover the CMAQ modeling domain with some buffer to avoid boundary effects. The MM5 was run on the same map projection as CMAQ. The 2001 meteorological modeling utilized 34 vertical layers with a surface layer of approximately 38 meters. The MM5 and CMAQ vertical structures are shown in Table IV-1.

Table IV-1. Vertical layer structure for MM5 and CMAQ (heights are the top of layer).

CMAQ Layers (14)	MM5 Layers (34)	Sigma	Approximate Height (m)	Approximate Pressure (mb)
0	0	1.000	0	1000
1	1	0.995	38	995
2	2	0.990	77	991
	3	0.985	115	987
3	4	0.980	154	982
	5	0.970	232	973
4	6	0.960	310	964
	7	0.950	389	955
5	8	0.940	469	946
	9	0.930	550	937
	10	0.920	631	928
6	11	0.910	712	919
	12	0.900	794	910
	13	0.880	961	892
7	14	0.860	1130	874
	15	0.840	1303	856
	16	0.820	1478	838
8	17	0.800	1657	820
	18	0.770	1930	793
9	19	0.740	2212	766
	20	0.700	2600	730
10	21	0.650	3108	685
	22	0.600	3644	640
11	23	0.550	4212	595
	24	0.500	4816	550
	25	0.450	5461	505
12	26	0.400	6153	460
	27	0.350	6903	415
	28	0.300	7720	370
	29	0.250	8621	325
13	30	0.200	9625	280
	31	0.150	10764	235
	32	0.100	12085	190
	33	0.050	13670	145
14	34	0.000	15674	100

A complete description of the configuration and evaluation of the 2001 meteorological modeling is contained in McNally (2003), however some of the key model physics options are as follows:

- Cumulus Parameterization: Kain-Fritsch
- Planetary Boundary Layer Scheme: Pleim-Chang
- Explicit Moisture Scheme: Reisner 2
- Radiation Scheme: RRTM longwave scheme
- Land Surface Model: Pleim-Xiu
- Four-Dimensional Data Assimilation (FDDA): analysis nudging only

The annual MM5 simulation was divided into four separate periods: 12/16/00 to 4/05/01, 3/16/01 to 7/05/01, 6/14/01 to 10/02/01, and 9/17/01 to 2/04/02. Within each of these periods the model was run for 5 ½ days blocks with a restart occurring at 1200 UTC every fifth day. To assure continuity in the surface moisture, the model initial conditions were updated with the soil conditions from the end of the previous 5 ½ day period using the EPA "INTERPX" processor.

In terms of the 2001 MM5 model performance evaluation, we used an approach which included a combination of qualitative and quantitative analyses to assess the adequacy of the MM5 simulated fields. The qualitative aspects involved comparisons of the model estimated sea level pressure and radar reflectivity fields against observed values of the same parameters from historical weather chart archives. The statistical portion of the evaluation examined the model bias and error for temperature, water vapor mixing ratio, and the index of agreement for the wind fields. These statistical values were calculated on a regional basis. The results of the evaluation indicate that the 2001 model data had a bias in surface temperature of -0.6 degrees Celsius and the error averaged 2.1 degrees C. The humidity fields had a bias of -0.2 g/kg and an error of 1.0 g/kg. The wind speed index of agreement averaged 0.86. The model was found to overestimate precipitation, on average by about 1.6 cm. The precipitation bias was strongest in the summer. Qualitatively, the model fields closely matched the observed synoptic patterns, which is expected given the use of FDDA. In general, the bias and error values associated with the 2001 data are in the range of model performance found from other non-EPA regional meteorological model applications (Environ, 2001).

The MM5 outputs were processed to create model-ready inputs for CMAQ using the Meteorology-Chemistry Interface Processor (MCIP) as described in EPA (1999). MCIP version 2.2gv was used to convert the MM5 output to CMAQ meteorological input. This version contained two differences from the main MCIP version 2.2 in that: 1) it allowed for treatment of the graupel associated with the Reisner 2 microphysics scheme and 2) it included a patch to compensate for a minor error in MM5 associated with vegetation fractions.

D. Initial and Boundary Condition Inputs to CMAQ

In this section we describe the approach used to provide the boundary conditions (BCs) and the concentrations used to initialize the model runs for the CAIR CMAQ modeling. Non-episodic national modeling, such as the CAIR annual PM2.5 CMAQ modeling, requires the prescription of BCs to account for the influx of pollutants and precursors from the upwind source areas outside the modeling domain. The pollutant influxes from the upwind boundaries, which are often dynamic in nature, can affect pollutant concentrations within the modeling domain. For example, a number of recent studies show that long-range, intercontinental transport of pollutants is important for simulating seasonal/annual ozone and PM (Jacob, *et al.*, 1999; Jaffe *et al.*, 2003; Fiore, *et al.*, 2003). A scientifically sound approach to estimate incoming pollutant concentrations associated with intercontinental transport is to use a global chemistry model to provide dynamic BCs for the regional model simulations.

For the CAIR annual PM2.5 modeling, we used the predictions from a global three-dimensional chemistry model, the GEOS-CHEM model (Yantosca, 2004), to provide the BCs and initial concentrations. The global GEOS-CHEM model simulates atmospheric chemical and physical processes driven by assimilated meteorological observations from the NASA's Goddard Earth Observing System (GEOS). This model was run for 2001 with a grid resolution of 2 degree x 2.5 degree (latitude-longitude) and 20 vertical layers. The predictions were used to provide one-way dynamic BCs at 3-hour intervals and initial concentration field for the CMAQ simulations. We used an interface utility tool developed at the University of Houston (Byun and Moon, 2004; Moon and Byun, 2004) to link the GOES-CHEM with CMAQ. The scale, chemical, and dynamic linking between the two models are needed since the horizontal and vertical coordinates, chemical species representations, and model output time are different. A detailed description of how the GEOS-CHEM model outputs were used to develop inputs to CMAQ including the data preparation, spatial and temporal conversion procedures, and species mapping tables are given in Moon and Byun (2004).

E. CMAQ Model Applications

For CAIR, CMAQ was run for seven emissions scenarios: 2001 Base Year, 2010 Base Case, 2015 Base Case, 2010 CAIR control, 2015 CAIR control, 2015 BART control, and 2015 CAIR+BART control. In addition, State-specific "zero-out" runs were made with CMAQ using the 2010 Base emissions scenario to quantify the contribution of emissions in "upwind" States to annual PM2.5 nonattainment in other "downwind" States, as described in Section V, below.

As described in the EI TSD, two versions of the 2001 inventory were created each with different emissions for wild fires and prescribed burning. One version of the 2001 inventory incorporated year-specific 2001 emissions for wild fires and prescribed burning. This version was used in an annual CMAQ run to evaluate model predictions against 2001 ambient measurements. A second version of the 2001 inventory was created using seven year average emissions (i.e., 1996-2002) for wild fires and prescribed burning. The CMAQ model run with this second 2001 inventory (i.e., the inventory with average fires) was used as the baseline for projecting PM2.5 concentrations and visibility for the future case scenarios. Note that the 1996-2001 average fire emissions were also used in all of the future base and control case CMAQ runs. Please see the EI TSD for more details on the development of the 2001 and future year emissions used for air quality modeling.

F. CMAQ Model Performance Evaluation

A performance evaluation of CMAQ was conducted by comparing model predictions from the 2001 annual simulation to the corresponding ambient measurements. This evaluation was performed for PM2.5 component species and precursor gases (for which measurements were available), visibility, and deposition of ammonium, nitrate, and sulfate. The PM2.5 components covered in this evaluation include sulfate, nitrate, elemental carbon, organic carbon, and crustal material. The precursor gases included in this analysis are sulfur dioxide, ozone, nitric acid, and nitrogen oxide. Ambient measurements for 2001 were obtained from the following networks:
Clean **A**ir **S**tatus and **T**rends **Net**work (CASTNet),
Speciation **T**rend **N**etwork (STN),
Interagency **M**onitoring of **PRO**tected **V**isual **E**nvironments (IMPROVE),
Aerometric **I**nformation **R**etrieval **S**ystem (AIRS),
National **A**cid **D**eposition **P**rogram (NADP), and
South**E**astern **A**erosol **R**esearch and **CH**aracterization (SEARCH).

The pollutant species included in the evaluation for each network are listed in Table VI-2.

Table VI-2. Monitoring networks and pollutants species included in the CMAQ performance evaluation.

Ambient Monitoring Networks	Particulate Species							Gaseous Precursor Species				Wet Deposition Species		
	$PM_{2.5}$ Mass	SO_4	NO_3	TNO_3	EC	NH_4	OC	O_3	SO_2	HNO_3	NO	SO_4	NO_3	NH_4
IMPROVE	X	X	X		X	X	X							
CASTNet		X		X		X			X					
STN	X	X	X		X	X	X							
NADP			X									X	X	X
AIRS								X						
SEARCH		X	X	X	X	X	X	X	X	X	X			

Note that $TNO_3 = (NO_3 + HNO_3)$

The evaluation includes several types of analyses to compare predictions with observations.
- model performance statistics
- scatter plots
- time series plots
- spatial maps

For PM2.5 component species, visiblity, and deposition, model performance statistics were calculated using observed/predicted data pairs which correspond to the sampling frequency of each network (i.e., daily average or weekly average). Performance statistics were calculated for each season individually and for the entire year, as a whole. For these time periods, separate statistics were calculated for the eastern and western portions of the modeling domain. For PM2.5 species that are measured by more than one network, we calculated separate sets of statistics for each network. Model performance statistics were also calculated for SO2 (using weekly measurements from CASTNET) and ozone (using 1-hour and 8-hour daily maximum concentrations from AIRS) since these two pollutants are important as precursor gases in the formation of several PM2.5 component species[7] and there exists abundant ambient measurements for SO2 and ozone for use in calculating performance statistics.

Given that a purpose of CAIR is to reduce interstate transport of PM2.5, the focus of the evaluation was on model predictions of PM2.5 component species. The "acceptability" of model performance was judged by comparing our results to the results found in recent regional PM2.5 model applications for other, non-EPA studies[8]. In addition, we compared our performance results against benchmark performance goals (Boylan, 2004) suggested as part of comments on the proposed rule PM2.5 modeling. The results indicate that the performance for CMAQ is within the range or better than these other applications and also meets the suggested benchmark performance goals. Details on the CMAQ model evaluation can be found in the report: Updated CMAQ Model Performance Evaluation for 2001 Annual Simulation (EPA, 2005d).

[7]Both SO2 and ozone are precursors for sulfate particles and ozone has a major role in the formation of nitrate and secondary organic aerosols.

[8] These other modeling studies represent a wide range of modeling analyses which cover various models, model configurations, domains, years and/or episodes, chemical mechanisms, and aerosol modules.

Figure IV-1. Map of the CMAQ modeling domain used for CAIR.

V. Procedures for Projecting 8-Hour Ozone and PM2.5 for Future Year Scenarios

A. Introduction

In this section we describe the procedures for estimating 8-hour ozone and PM2.5 concentrations for the 2010 and 2015 Base Cases and CAIR regional strategy. The projected future case concentrations for these scenarios are used to quantify the expected air quality impacts (e.g., reduction in nonattainment) and monetized benefits of this rule. In addition, those counties that are currently measuring nonattainment and are also projected to be nonattainment for the 2010 Base are used as nonattainment receptors in the analysis to determine which upwind States make a significant contribution to nonattainment in other downwind States.

In general, the procedures for projecting both PM2.5 and 8-hour ozone are based on using model predictions in a relative sense. In this manner, the 2001 Base Year and the future case model predictions are coupled with ambient data to forecast future concentrations. This approach is consistent with the EPA draft guidance documents for modeling 8-hour ozone (EPA, 2005c) and PM2.5/Regional (EPA, 2001).[9]

B. Ambient Data Used for Projections

For the 2010 and 2015 Base and CAIR control scenarios we have projected 8-hour ozone and PM2.5 concentrations for the location of monitoring sites in the Eastern U.S. The starting point for these projections is the average of the 1999-2001, 2000-2002, and 2001-2003 design values at each monitoring site. The average of the three design values is not a straight five-year average. Rather, it is a weighted average over the period 1999-2003. That is, by averaging 1999-2001, 2000-2002, and 2001-2003, the value from 2001 is weighted three times, whereas, values for 2000 and 2002 are each weighted twice, and 1999 and 2003 are each weighted once. This approach has the desired benefits of (1) weighting the ozone and PM2.5 values towards the middle year of the five-year period, which is the 2001 Base Year for our emissions projections, and (2) smoothing out the effects of year-to-year variability in emissions and meteorology that occurs over the full five-year period. This approach provides a robust estimate of current air quality for use as a basis for future year projections. In the remainder of this document we refer to the weighted average values as the average 1999-2003 concentrations.

In the analysis to project future 8-hour ozone concentrations, we included 1999-2003 8-hour ozone measurements from monitoring sites in 525 counties in the Eastern U.S. For projecting PM2.5, we included measurements from Federal Reference Method (FRM) monitoring sites in

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[9] Note that, in response to comments on modeling procedures in the proposed CAIR, EPA has made modifications to several aspects of the projection methodology for ozone and PM2.5. These modifications were incorporated into the procedures used to project future concentrations for the final rule analysis. The draft ozone and PM2.5/Regional Haze modeling guidance documents are being revised to reflect these changes.

433 counties in the East. The 1999-2003 weighted-average concentrations in these counties are provided in Appendix E for ozone and Appendix F for PM2.5. For those counties with multiple monitoring sites, future case concentrations were calculated for each site in the county. The highest concentration from among the sites in a given county was selected as the representative value for that county. Note that only the high sites in each county are provided in the appendices.

C. Projection of Future 8-Hour Ozone Concentrations

1. Ozone Projection Procedures

The CAMx 8-hour ozone predictions for the 2001 Base Year run were coupled with predictions for each of the four future year scenarios (i.e., 2010 and 2015 baselines and the CAIR control cases projected for these two future years) to project 8-hour ozone for the future base and control case scenarios. As mentioned above, the approach for projecting 8-hour ozone concentrations involves using the model in a relative sense to estimate the change in ozone between 2001 and each future scenario. For example, to calculate the projected ozone for the 2010 Base scenario, the average 1999-2003 ambient 8-hour ozone concentrations were multiplied by the relative change in model predicted ozone between the 2001 and 2010 Base. The steps we followed for projecting future 8-hour ozone concentrations for each future case scenario are described below. This procedure was performed to project future case concentrations at each monitoring site. Note that prior to processing the model predictions, the location of each monitoring site was mapped onto the CAMx modeling grid network (i.e., match the location of each monitor to a grid cell).

Step 1: Using hourly model predictions, calculate the daily maximum 8-hour average concentrations in the vicinity of each ozone monitor for each episode day modeled. The multi-day mean (excluding ramp-up days) of the 8-hour daily maximum predictions is calculated using only those predictions greater than or equal to 70 ppb, as recommended in EPA's draft 8-hour ozone modeling guidance. This calculation is performed using model predictions for the 2001 Base Year and each future-year scenario. A relative reduction factor (RRF) is then determined for each monitoring site. The RRF for a site is the ratio of the mean prediction in the future-year scenario (e.g., 2010) to the mean prediction in the 2001 Base Year scenario.

Step 2: Multiple the RRF for each site by the average 1999-2003 concentration for that site, to yield an estimate of the future concentration at that particular monitoring location.

Step 3: For counties with only one monitoring site, the value at that site is selected as the value for that county. As indicated above, for counties with more than one monitor, the highest value in the county is selected as the value for that county.

2. Projected 8-Hour Ozone Concentrations and Future Nonattainment

The procedures described above were used to project 8-hour ozone concentrations for the 2010 Base and 2015 Base Case and CAIR control scenarios. The projected concentrations for each county analyzed are provided in Appendix E. Counties with 8-hour ozone concentrations of 85.0 ppb or more are projected to be nonattainment in the future case scenarios. An analysis of the impacts of CAIR on 8-hour ozone nonattainment in 2010 and 2015 is provided below in Section VIII.

The 2010 and 2015 Base Case 8-hour ozone nonattainment counties are listed in Table V-1 and Table V-2, respectively. As noted above, those counties that are currently nonattainment based on the most recent measured data (i.e., 2001-2003 design values) and are also projected to be nonattainment in the 2010 Base Case comprise the set of future nonattainment receptors which were used in the analysis of significant contribution, as described below in Section VI. We refer to these counties as "monitored plus modeled" nonattainment. For 8-hour ozone, the 40 counties projected to be nonattainment for the 2010 Base are also measured nonattainment, based on 2001-2003 design values. Thus, these 40 counties are used as the "downwind" receptors in the analysis of significant contribution.

Table V-1. Projected 8-hour ozone concentrations (ppb) for nonattainment counties in the 2010 Base Case.

State	County	2010 Base
Connecticut	Fairfield Co	92.6
Connecticut	Middlesex Co	90.9
Connecticut	New Haven Co	91.6
Delaware	New Castle Co	85.0
District of Columbia		85.2
Georgia	Fulton Co	86.5
Maryland	Anne Arundel Co	88.8
Maryland	Cecil Co	89.7
Maryland	Harford Co	93.0
Maryland	Kent Co	86.2
Michigan	Macomb Co	85.5
New Jersey	Bergen Co	86.9
New Jersey	Camden Co	91.9
New Jersey	Gloucester Co	91.8
New Jersey	Hunterdon Co	89.0
New Jersey	Mercer Co	95.6
New Jersey	Middlesex Co	92.4
New Jersey	Monmouth Co	86.6
New Jersey	Morris Co	86.5
New Jersey	Ocean Co	100.5
New York	Erie Co	87.3
New York	Richmond Co	87.3
New York	Suffolk Co	91.1
New York	Westchester Co	85.3
Ohio	Geauga Co	87.1
Pennsylvania	Bucks Co	94.7

State	County	2010 Base
Pennsylvania	Chester Co	85.7
Pennsylvania	Montgomery Co	88.0
Pennsylvania	Philadelphia Co	90.3
Rhode Island	Kent Co	86.4
Texas	Denton Co	87.4
Texas	Galveston Co	85.1
Texas	Harris Co	97.9
Texas	Jefferson Co	85.6
Texas	Tarrant Co	87.8
Virginia	Arlington Co	86.2
Virginia	Fairfax Co	85.7
Wisconsin	Kenosha Co	91.3
Wisconsin	Ozaukee Co	86.2
Wisconsin	Sheboygan Co	88.3

Table V-2. Projected 8-hour ozone concentrations (ppb) for nonattainment counties in the 2015 Base Case.

State	County	2015 Base
Connecticut	Fairfield Co	91.4
Connecticut	Middlesex Co	89.1
Connecticut	New Haven Co	89.8
Maryland	Anne Arundel Co	86.0
Maryland	Cecil Co	86.9
Maryland	Harford Co	90.6
Michigan	Macomb Co	85.1
New Jersey	Bergen Co	85.7
New Jersey	Camden Co	89.5
New Jersey	Gloucester Co	89.6
New Jersey	Hunterdon Co	86.5
New Jersey	Mercer Co	93.5
New Jersey	Middlesex Co	89.8
New Jersey	Ocean Co	98.0
New York	Erie Co	85.2
New York	Suffolk Co	89.9
Pennsylvania	Bucks Co	93.0
Pennsylvania	Montgomery Co	86.5
Pennsylvania	Philadelphia Co	88.9
Texas	Harris Co	97.3
Texas	Jefferson Co	85.0
Wisconsin	Kenosha Co	89.4

D. Projection of Future PM2.5 Concentrations

1. PM2.5 Projection Procedures

As with ozone, the approach for estimating PM2.5 concentrations for the future case scenarios involves using model predictions in a relative manner. However, for PM2.5 we project concentrations for each of the PM2.5 components species which are then combined to estimate total PM2.5. This approach, which is consistent with the procedures in the draft PM2.5/Regional Haze air quality modeling guidance, is named the Speciated Modeled Attainment Test (SMAT). Details on SMAT can be found in the report "Procedures for Estimating Future $PM_{2.5}$ Values for the CAIR Final Rule by Application of the (Revised) Speciated Modeled Attainment Test (SMAT)" (EPA, 2004).

Below are the steps we followed for projecting future PM2.5 concentrations for each future case scenario. These steps were performed to estimate future case concentrations at each FRM monitoring site. Note that before processing the model predictions, the location of each monitoring site was mapped onto the CMAQ modeling grid network.

Step 1: Calculate quarterly mean ambient concentrations for each of the six major components of PM2.5 (i.e., sulfate, nitrate, ammonium, elemental carbon, organic carbon, and crustal material) using the component species concentrations estimated for each FRM site.

> Step 1a: Since roughly 80 percent of the FRM sites do not have co-located speciation monitors, species data from the IMPROVE and EPA's speciation network were spatially interpolated to each FRM site. In this analysis we used species data for the calendar year 2002.
>
> Step 1b: A number of adjustments and additions were made to the measured species data to provide for consistency with the chemical components retained on the FRM Teflon filter. These include (a) a reduction in nitrates, (b) estimated ammonium associated with nitrates and sulfates based on the degree of neutralization of sulfate, (c) estimated particle-bound water using an empirical relationship derived from the AIM model (see the SMAT report for details on this model), and (d) a 0.5 $\mu g/m^3$ PM2.5 blank mass correction.
>
> Step 1c: Once the adjustments/additions were made to the measured species, organic carbon was estimated by a mass balance approach in which organic carbon is calculated as the difference between total PM2.5 and the sum of the non-organic carbon constituents (i.e., sulfate, nitrate, ammonium, water, elemental carbon, crustal material, and blank mass). This mass balance approach for carbon was adopted in view of the uncertainties associated with measurements of organic carbon.
>
> Step 1d: The species concentrations calculated above were used to estimate the species fractions at each FRM site.
>
> Step 1e: The average 1999-2003 FRM quarterly mean concentration at each site was multiplied by the estimated fractional composition of PM2.5 species, by quarter (e.g., 20 percent sulfate multiplied by 15.0 µg/m3 of PM2.5 equals 3 $\mu g/m^3$ sulfate).

Step 2: Calculate quarterly average Relative Reduction Factors (RRFs) for sulfate, nitrate, elemental carbon, organic carbon, and crustal material. The species-specific RRFs for the location of each FRM are the ratio of future case to 2001 Base Year quarterly average model-predicted species concentrations. The species-specific quarterly RRF are then multiplied by the corresponding 1999-2003 quarterly species concentration from Step 1. The result is the future case quarterly average concentration for each of these species.

Step 3: Calculate quarterly average concentrations for ammonium and particle-bound water. The future case concentrations for ammonium are calculated using the future case sulfate and nitrate concentrations determined from Step 2 along with the degree of neutralization of sulfate (held constant from the base year). Concentrations of particle-bound water are calculated using the empirical relationship derived from the AIM model using the future case concentrations of sulfate, nitrate, and ammonium as inputs.

Step 4: Calculate the mean of the four quarterly average future case concentrations to estimate future annual average concentration for each component specie. The annual average concentrations of the components are added together to obtain the future annual average concentration for PM2.5. In calculating the projected PM2.5 concentrations, any amount of the concentration less than 0.01 $\mu g/m^3$ (i.e., more than two places to the right of the decimal) is discarded (i.e., truncated).

Step 5: For counties with only one monitoring site, the projected value at that site is the future case value for that county. As indicated above, for counties with more than one monitor, the highest value in the county is selected as the concentration for that county. However, the site-specific 2010 Base concentrations were retained for use in the PM2.5 significant contribution analysis, as described in Section VII.

2. Projected PM2.5 Concentrations and Future Nonattainment

The procedures described above were used to estimate annual average PM2.5 concentrations for the 2010 Base and 2015 Base Case and CAIR control scenarios. The projected concentrations for each county were analyzed and are provided in Appendix F. Counties with PM2.5 concentrations of 15.1 $\mu g/m^3$ (as rounded up from 15.05 $\mu g/m^3$) or more are projected to be nonattainment for the future case scenarios. An analysis of the impacts of CAIR on PM2.5 nonattainment in 2010 and 2015 is provided below in Section VIII. The 2010 and 2015 Base Case PM2.5 nonattainment counties are listed in Table V-3 and Table V-4, respectively. As noted above, those counties that are currently nonattainment based on the most recent measured data (i.e., 2001-2003 design values) and are also projected to be nonattainment in the 2010 Base Case are used in the analysis of significant contribution. Of the 79 counties projected to be nonattainment for the 2010 Base, 62 also measured nonattainment in 2001-2003. The modeled plus monitored nonattainment counties are identified in Table V-3. Note that some counties contain multiple FRM sites that are projected to be modeled plus monitored nonattainment. Within the 62 counties there are a total of 113 FRM sites that are modeled plus monitored nonattainment. These 113 sites are the "downwind" nonattainment receptors used the significant contribution analysis in Section VI.

Table V-3. Projected PM2.5 concentrations (µg/m^3) for nonattainment counties in the 2010 Base Case.

State	County	2010 Base	"Modeled + Monitored" Nonattainment in 2010 Base
Alabama	DeKalb Co	15.23	No
Alabama	Jefferson Co	18.57	Yes
Alabama	Montgomery Co	15.12	No
Alabama	Morgan Co	15.29	No
Alabama	Russell Co	16.17	Yes
Alabama	Talladega Co	15.34	No
Delaware	New Castle Co	16.56	Yes
District of Columbia		15.84	Yes
Georgia	Bibb Co	16.27	Yes
Georgia	Clarke Co	16.39	Yes
Georgia	Clayton Co	17.39	Yes
Georgia	Cobb Co	16.57	Yes
Georgia	DeKalb Co	16.75	Yes
Georgia	Floyd Co	16.87	Yes
Georgia	Fulton Co	18.02	Yes
Georgia	Hall Co	15.60	No
Georgia	Muscogee Co	15.65	No
Georgia	Richmond Co	15.68	No
Georgia	Walker Co	15.43	Yes
Georgia	Washington Co	15.31	No
Georgia	Wilkinson Co	16.27	No
Illinois	Cook Co	17.52	Yes
Illinois	Madison Co	16.66	Yes
Illinois	St. Clair Co	16.24	Yes
Indiana	Clark Co	16.51	Yes
Indiana	Dubois Co	15.73	Yes
Indiana	Lake Co	17.26	Yes
Indiana	Marion Co	16.83	Yes
Indiana	Vanderburgh Co	15.54	Yes
Kentucky	Boyd Co	15.23	No
Kentucky	Bullitt Co	15.10	No
Kentucky	Fayette Co	15.95	Yes
Kentucky	Jefferson Co	16.71	Yes
Kentucky	Kenton Co	15.30	No
Maryland	Anne Arundel Co	15.26	Yes
Maryland	Baltimore City	16.96	Yes
Michigan	Wayne Co	19.41	Yes
Missouri	St. Louis City	15.10	No
New Jersey	Union Co	15.05	Yes
New York	New York Co	16.19	Yes

State	County	2010 Base	"Modeled + Monitored" Nonattainment in 2010 Base
North Carolina	Catawba Co	15.48	Yes
North Carolina	Davidson Co	15.76	Yes
North Carolina	Mecklenburg Co	15.22	No
Ohio	Butler Co	16.45	Yes
Ohio	Cuyahoga Co	18.84	Yes
Ohio	Franklin Co	16.98	Yes
Ohio	Hamilton Co	18.23	Yes
Ohio	Jefferson Co	17.94	Yes
Ohio	Lawrence Co	16.10	Yes
Ohio	Mahoning Co	15.39	Yes
Ohio	Montgomery Co	15.41	Yes
Ohio	Scioto Co	18.13	Yes
Ohio	Stark Co	17.14	Yes
Ohio	Summit Co	16.47	Yes
Ohio	Trumbull Co	15.28	No
Pennsylvania	Allegheny Co	20.55	Yes
Pennsylvania	Beaver Co	15.78	Yes
Pennsylvania	Berks Co	15.89	Yes
Pennsylvania	Cambria Co	15.14	Yes
Pennsylvania	Dauphin Co	15.17	Yes
Pennsylvania	Delaware Co	15.61	Yes
Pennsylvania	Lancaster Co	16.55	Yes
Pennsylvania	Philadelphia Co	16.65	Yes
Pennsylvania	Washington Co	15.23	Yes
Pennsylvania	Westmoreland Co	15.16	Yes
Pennsylvania	York Co	16.49	Yes
Tennessee	Davidson Co	15.36	No
Tennessee	Hamilton Co	16.89	Yes
Tennessee	Knox Co	17.44	Yes
Tennessee	Sullivan Co	15.32	No
West Virginia	Berkeley Co	15.69	Yes
West Virginia	Brooke Co	16.63	Yes
West Virginia	Cabell Co	17.03	Yes
West Virginia	Hancock Co	17.06	Yes
West Virginia	Kanawha Co	17.56	Yes
West Virginia	Marion Co	15.32	Yes
West Virginia	Marshall Co	15.81	Yes
West Virginia	Ohio Co	15.14	Yes
West Virginia	Wood Co	16.66	Yes

Table V-4. Projected PM2.5 concentrations (μg/m^3) for nonattainment counties in the 2015 Base Case.

State	County	2015 Base
Alabama	DeKalb Co	15.24
Alabama	Jefferson Co	18.85
Alabama	Montgomery Co	15.24
Alabama	Morgan Co	15.26
Alabama	Russell Co	16.10
Alabama	Talladega Co	15.22
Delaware	New Castle Co	16.47
District of Columbia		15.57
Georgia	Bibb Co	16.41
Georgia	Chatham Co	15.06
Georgia	Clarke Co	16.15
Georgia	Clayton Co	17.46
Georgia	Cobb Co	16.51
Georgia	DeKalb Co	16.82
Georgia	Floyd Co	17.33
Georgia	Fulton Co	18.00
Georgia	Hall Co	15.36
Georgia	Muscogee Co	15.58
Georgia	Richmond Co	15.76
Georgia	Walker Co	15.37
Georgia	Washington Co	15.34
Georgia	Wilkinson Co	16.54
Illinois	Cook Co	17.71
Illinois	Madison Co	16.90
Illinois	St. Clair Co	16.49
Illinois	Will Co	15.12
Indiana	Clark Co	16.37
Indiana	Dubois Co	15.66
Indiana	Lake Co	17.27
Indiana	Marion Co	16.77
Indiana	Vanderburgh Co	15.56
Kentucky	Boyd Co	15.06
Kentucky	Fayette Co	15.62
Kentucky	Jefferson Co	16.61
Kentucky	Kenton Co	15.09
Maryland	Baltimore City	17.04
Maryland	Baltimore Co	15.08
Michigan	Wayne Co	19.28
Mississippi	Jones Co	15.18

State	County	2015 Base
Missouri	St. Louis City	15.34
New York	New York Co	15.76
North Carolina	Catawba Co	15.19
North Carolina	Davidson Co	15.34
Ohio	Butler Co	16.32
Ohio	Cuyahoga Co	18.60
Ohio	Franklin Co	16.64
Ohio	Hamilton Co	18.03
Ohio	Jefferson Co	17.83
Ohio	Lawrence Co	15.92
Ohio	Mahoning Co	15.13
Ohio	Montgomery Co	15.16
Ohio	Scioto Co	17.92
Ohio	Stark Co	16.86
Ohio	Summit Co	16.14
Ohio	Trumbull Co	15.05
Pennsylvania	Allegheny Co	20.33
Pennsylvania	Beaver Co	15.54
Pennsylvania	Berks Co	15.66
Pennsylvania	Delaware Co	15.52
Pennsylvania	Lancaster Co	16.28
Pennsylvania	Philadelphia Co	16.53
Pennsylvania	York Co	16.22
Tennessee	Davidson Co	15.36
Tennessee	Hamilton Co	16.82
Tennessee	Knox Co	17.34
Tennessee	Shelby Co	15.17
Tennessee	Sullivan Co	15.37
West Virginia	Berkeley Co	15.32
West Virginia	Brooke Co	16.51
West Virginia	Cabell Co	16.86
West Virginia	Hancock Co	16.97
West Virginia	Kanawha Co	17.17
West Virginia	Marshall Co	15.52
West Virginia	Wood Co	16.69

VI. Modeling to Assess Interstate Ozone Contributions

This section documents the procedures used by EPA to quantify the impact of ozone precursor emissions in specific upwind States on 8-hour ozone in projected downwind nonattainment counties. These procedures are the first of the two-step process for determining significant contribution, in which the second step involves a control cost assessment to determine the amount of upwind emissions that should be reduced. In this section we use the phrase "significant contribution" to refer to the ozone air quality step of the significance determination.

Included in this section are descriptions of: 1) the analytic approach for modeling the contribution of upwind States to ozone in downwind nonattainment counties, 2) the methodology for analyzing the modeling results, 3) the decision rules used to determine whether individual States make a significant contribution (before considering cost), and d) the results of the interstate ozone significant contribution analysis. As discussed in section III, the air quality modeling analyses for ozone were conducted for an Eastern U.S. domain with CAMx, version 3.10.

The interstate ozone contribution analysis focuses on the 40 counties that contain monitors that are both predicted to be nonattainment in the 2010 Base Case and are also measuring nonattainment based on 2001-2003 design values. As noted above in Section V, we refer to these counties as being modeled plus monitored nonattainment. These counties are identified in Table V-1. It should be noted that the approach used to identify the nonattainment receptors for this analysis differed from that used in the NOx SIP Call where we aggregated on a State-by-State basis all grid cells which were both (a) associated with counties that violated the 8-hour NAAQS (based on 1994-1996 data) and (b) had future base case predictions of 85 ppb or more. For the CAIR analysis of interstate ozone contributions, we have treated each individual modeled plus monitored nonattainment county as a downwind nonattainment receptor.

A. Zero Out and Source Apportionment Techniques

The modeling approach used by EPA to quantify the impact of emissions in specific upwind States on projected downwind nonattainment areas for 8-hour ozone includes two different techniques, zero-out and source apportionment. The outputs of the two types of modeling were used to calculate certain measures of contribution, called "metrics". The metrics were evaluated in terms of three key contribution factors to determine which States make a significant contribution to downwind ozone nonattainment. The significant contribution analysis completed for CAIR uses the same modeling techniques, the same metrics, and the same three contribution factors as those used by EPA for the State-by-State determination in the NOx SIP Call.

The zero-out and source apportionment modeling techniques provide different technical approaches to quantifying the downwind impact of emissions in upwind States. The zero-out modeling provides an estimate of downwind impacts by calculating the difference between the model estimates from a base case run to the estimates from a simulation in which the base case man-made emissions of NOx and VOC are removed from a specific State.

EPA also used the source apportionment technique as part of the modeling analysis to evaluate the downwind contributions of emissions in upwind States. The source apportionment technique in CAMx was developed to provide a means of estimating the contributions of many individual source areas/categories to ozone formation in *one single model run*. This is achieved by using multiple tracer species to track the fate of ozone precursor emission (VOC and NOx) and the ozone formation caused by these emissions within a CAMx simulation. The methodology is designed so that all ozone and precursor concentrations are attributed to the selected source areas/categories at all times. Thus, for all receptor locations and times, the ozone concentrations predicted by the CAMx are attributed to the source areas/categories selected for analysis. EPA used the Anthropogenic Precursor Culpability Assessment (APCA) option for the CAIR source apportionment modeling. The key feature of APCA is that it allocates ozone production to manmade precursor emissions, either through reactions among various manmade sources and/or through reactions between manmade emissions and biogenic emissions. Additional information on the source apportionment technique can be found in the CAMx User's Guide (Environ, 2002). In general, EPA found that the source apportionment modeling tends to show greater magnitude and frequency of contributions than the zero-out modeling for individual linkages. However, because there is no technical evidence showing that one technique is clearly superior to the other for evaluating contributions to ozone from various emission sources; both approaches were given equal consideration in the significance analysis.

The EPA performed State-by-State zero-out modeling and source apportionment modeling for 31 States in the Eastern U.S. These States are as follows: Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin. In the application of both modeling techniques, emissions from the District of Columbia were combined with those from Maryland.

B. Ozone Contribution Factors and Metrics

EPA selected several metrics to quantify the projected downwind contributions from emissions in upwind States. The metrics were designed to provide information on three fundamental factors for evaluating whether emissions in an upwind State make large and/or frequent contributions to downwind nonattainment. These factors are: a) the magnitude of the contribution, b) the frequency of the contribution, and c) the relative amount of the contribution.

The magnitude of contribution factor refers to the actual amount of ozone contributed by emissions in the upwind State to nonattainment in the downwind area. The frequency of the contribution refers to how often contributions above certain thresholds occur. The relative amount of the contribution is used to compare the total ozone contributed by the upwind State to the total amount of nonattainment ozone in the downwind area. These factors are the basis for eight separate metrics that can be used to assess a particular impact. These metrics are described below for the zero-out modeling and for the source apportionment modeling. Table VI-1 lists the four metrics for each factor.

Table VI-1. Ozone Contribution Factors and Metrics.

Factor:	Zero-out Metrics	Source Apportionment Metrics
Magnitude of Contribution	1) Maximum contribution	5) Maximum contribution; and 6) Highest daily average contribution (ppb and percent)
Frequency of Contribution	2) Number and percent of exceedances with contributions in various concentration ranges	7) Number and percent of exceedances with contributions in various concentration ranges
Relative Amount of Contribution	3) Total contribution relative to the total exceedance ozone in the downwind area 4) Population-weighted total contribution relative to the total population-weighted exceedance ozone in the downwind area	8) Total average contribution to exceedance ozone in the downwind area

The values for each metric were calculated using only those periods during which model-predicted 8-hour average ozone concentration were 85.0 ppb or more in at least one of the model grid cells that are associated with the receptor county. That is, we only analyzed interstate ozone contributions for the nonattainment receptor counties when the model predicted an exceedance in the 2010 Base Case. Grid cells were linked to a specific nonattainment county if any part of the grid cell covered any portion of the projected 2010 nonattainment county. In cases where a grid cell covered two or more nonattainment counties, the grid was tied to the nonattainment county that contained the largest portion of the area of the grid cell. The exception to that rule involves cells that encompass a border of two adjacent States and more than two counties. In that case, grids are assigned to the county in the State with the largest area of the grid cell.

As in the NOx SIP Call, the ozone contribution metrics are calculated and evaluated for each upwind State to each downwind nonattainment receptor. These source-receptor pairs are referred to as “linkages”.

1. Zero-out Metrics

A central component of several of the metrics is the number of predicted exceedances in the 2010 Base Case for each nonattainment receptor. The number of exceedances in a particular nonattainment receptor was determined by the total number of daily predicted peak 8-hour concentrations of 85 ppb or more across all the episode days in the grid cell(s) assigned to the receptor. For example, the Fairfield County, CT receptor area consists of 11 grid cells. There are 30 days in the modeling simulations. Thus, the maximum possible number of exceedances for this area is 330. The actual number of exceedances for this area was 10 grid-days.

The Maximum Contribution Metric (metric 1) for a particular upwind State to an individual downwind nonattainment receptor was determined by first calculating the concentration differences between the 2010 Base Case and the zero-out simulation for that upwind State. This calculation was performed for all 2010 Base Case exceedances predicted within the grid cells associated with the nonattainment county. The largest difference (i.e., contribution) for the linkage across all of the exceedances at the downwind receptor is the maximum contribution.

The Frequency of Contribution Metric (metric 2) for a particular linkage was determined by first sorting the contributions by concentration range (e.g., >= 2 ppb, >= 5 ppb, etc.). The number of impacts in each range was used to assess the frequency of contribution. Frequency of Contribution was also expressed in terms of the percent of the 2010 Base exceedances that receive contributions in each range. For example, Ohio contributes 2 ppb or more to 9 of the 10 exceedances in Fairfield County, CT. Thus, Ohio contributes >= 2 ppb to 90% of the exceedances predicted in this county.

Determining the Total Ozone Contribution Relative to the Base Case Exceedance Metric (metric 3) for a particular linkage involves first calculating the total ozone of 85 ppb or more in the 2010 Base Case and in the upwind State's zero-out run. This calculation was performed by summing the amount of ozone above the NAAQS for each predicted exceedance at the downwind receptor area. Second, the amount of ozone above the NAAQS from the zero-out run was subtracted from the amount of ozone above the NAAQS in the 2010 Base run. The difference in contribution (between the base and zero-out run) was then divided by the total ozone above the NAAQS in the base run to form this metric. For example in Fairfield County CT, the sum of the ozone above 85 ppb for the 2010 Base run in the 10 exceedances equals 217.3 ppb. When the emissions from Ohio are zeroed, the total ozone above the NAAQS equals 181.7 ppb. The difference between the base and zero-out amounts is 35.6 ppb. Thus, the total relative contribution from emissions in Ohio is 16 percent (35.6 divided by 217.3).

The Population-Weighted Relative Contribution Metric (metric 4) is similar to the total ozone contribution metric described in the preceding paragraph, except that during the calculation the amount of ozone above the NAAQS in both the base case and the zero-out simulation was weighted by (i.e., multiplied by) the 2000 population in the receptor grid cell. Note that this metric is used solely to provide an additional perspective. It is not considered as an independent metric and it did not provide the basis for any decisions.

2. Source Apportionment Metrics

Despite the fundamental differences between the zero out and source apportionment techniques, the definitions of the source apportionment metrics are generally similar to the zero out metrics. One exception is that all 8-hour periods with averages above or equal to 85 ppb are considered in the source apportionment metrics, as opposed to just the peak 8-hour average per day. Similar analyses completed as part of the NOx SIP call concluded that the differences resulting from considering only daily maximum 8-hour averages (zero out) versus considering all 8-hour periods (source apportionment) was very small and did not influence the significance determinations. Therefore, the number of "exceedance periods" are the total number of 8-hourly predicted concentrations greater than or equal to 85 ppb within the downwind area on a cell-by-cell basis. Again using the Fairfield County, CT receptor area as an example, the maximum possible number of exceedances for this area is 5,610 (11 cells * 30 days * 17 eight-hour averages per day). The actual number of exceedance periods for this area was 65.

For a given upwind State to downwind nonattainment receptor linkage, the Maximum Contribution Metric (metric 5) is the highest contribution from among the contributions to all exceedances at the downwind receptor.

The Highest Daily Average Contribution Metric (metric 6) was determined for each day with predicted exceedances at the downwind receptor. The metric is calculated by first summing the contributions for that linkage over all exceedances on a particular day, then dividing by the number of exceedances on that day to produce a daily average contribution to nonattainment. The daily average contribution values across all days with exceedances were examined to identify the highest value which is then selected for use in the determination of significance. We also express this metric as a percent by dividing the highest daily average contribution by the corresponding ozone exceedance concentration on the same day. As an example of how this metric was calculated, consider the following two modeling days in Fairfield County, CT.

<u>7/13/95:</u> There were 4 exceedance periods. The total contribution from Ohio was 11 ppb. Therefore, the daily average contribution from Ohio to Fairfield County, CT was 2.8 ppb on that day. The average exceedance ozone on that day was 87 ppb, so the percentage contribution from Ohio on that day was 3.1 percent.

<u>7/14/95:</u> There were 62 exceedance periods. The total contribution from Ohio was 471 ppb for those cell-hours. Therefore the daily average contribution from Ohio to Fairfield County, CT was 7.6 ppb on that day. The average exceedance ozone on that day was 103 ppb, so the percentage contribution from Ohio on that day was 7.5 percent. This day had the highest daily average contribution from Ohio to Fairfield County, CT (7.6 ppb) of any of the 30 modeling days, so the ppb and percent contributions on this day were used as the values for this metric.

The Frequency of Contribution Metric (metric 7) for the source apportionment technique is determined similar to the way this metric is calculated for the zero-out modeling. Looking at the impact of Ohio man-made NOx and VOC emissions on Fairfield County, CT as an example, all of the 65 exceedance hours (1.e., 100 percent) were received a contribution of at least 2 ppb.

The Total Average Contribution Metric is determined for each of the three episodes individually as well as for all 30 days (i.e., all three episodes) combined. There are three parts to the calculation of this metric. In step 1, the ozone values for each of the exceedance periods in a particular downwind area are summed over the episode(s). In step 2, the total ozone from the previous step that is due to anthropogenic sources is calculated based on the source apportionment results. In step 3, the contributions from a given source region to this downwind area are summed over the exceedance periods. The total contribution calculated in step 3 is then divided by the total ozone resulting from manmade sources in step 2 to determine the fraction of ozone that is due to emissions from the upwind source area. This fraction was multiplied by 100 to express the result as a percentage. For example, for the 65 exceedances in Fairfield County, CT there is a total of 6,527 ppb of ozone. Of the total base ozone, the source apportionment results indicate that 5,362 ppb is due to anthropogenic sources. The sources in Ohio contribute a total of 479 ppb which is 8.9 percent of the base case total (i.e., 479 divided by 5,362).

The source apportionment total contribution metric is also used to estimate the percent of 8-hour nonattainment that is due to transport from other States versus in-State emissions. The results are provided in Table VI-2 for each 2010 Base nonattainment county along with the projected 8-hour ozone concentration in the county. The results in this table indicate that ozone transport constitutes a sizable portion of projected nonattainment in most eastern areas in 2010 (even after implementation of the NOx SIP call and other controls in the 2010 Base). In many cases, over 50 percent of the ozone nonattainment problem is due to emissions in other States. All of the future nonattainment areas are projected to have at least a 20 percent overall contribution from transported ozone or ozone precursors.

Table VI-2. Percent contribution to 8-hour ozone nonattainment due to transport from upwind States.

2010 Base Nonattainment Counties	2010 Base 8-Hour Ozone (ppb)	Percent of 8-Hour Ozone due to Transport
Fairfield CT	92	80 %
Middlesex CT	90	93 %
New Haven CT	91	95 %
Washington DC	85	38 %
Newcastle DE	85	37 %
Fulton GA	86	24 %
Anne Arundel MD	88	45 %
Cecil MD	89	35 %
Harford MD	93	31 %
Kent MD	86	47 %
Macomb MI	85	43 %
Bergen NJ	86	38 %
Camden NJ	91	57 %
Gloucester NJ	91	62 %
Hunterdon NJ	89	26 %
Mercer NJ	95	36 %
Middlesex NJ	92	62 %
Monmouth NJ	86	65 %
Morris NJ	86	63 %
Ocean NJ	100	82 %
Erie NY	87	37 %
Richmond NY	87	55 %
Suffolk NY	91	52 %
Westchester NY	85	56 %
Geauga OH	87	47 %

2010 Base Nonattainment Counties	2010 Base 8-Hour Ozone (ppb)	Percent of 8-Hour Ozone due to Transport
Bucks PA	94	35 %
Chester PA	85	39 %
Montgomery PA	88	47 %
Philadelphia PA	90	55 %
Kent RI	86	88 %
Denton TX[10]	87	N/A
Galveston TX	85	37 %
Harris TX	97	36 %
Jefferson TX	85	50 %
Tarrant TX[10]	87	N/A
Arlington VA	86	39 %
Fairfax VA	85	33 %
Kenosha WI	91	37 %
Ozaukee WI	86	81 %
Sheboygan WI	88	74 %

C. Basis for Identifying which Ozone Linkages are Significant

EPA compiled the 8-hour metrics by downwind nonattainment receptor county (referred to below as "downwind area") in order to evaluate the contributions to downwind nonattainment in 2010. The contribution metrics were reviewed to determine how large of a contribution a particular upwind State makes to nonattainment in each downwind area in terms of the magnitude of the contribution, the frequency of the contributions, and the relative amount of the total contribution. Determining whether a particular linkage indicated a significant amount of transport from an upwind source State to a downwind county is a four step process.

The first step in evaluating the contribution factors was to screen out linkages for which the contributions were clearly small. This initial screening was based on: 1) a maximum contribution of less than 2 ppb from either of the two modeling techniques and/or, 2) a percent of total nonattainment of less than 1 percent. Any upwind State that contributed to a particular downwind area in amounts that were less than the screening criteria was considered not to make a significant contribution to that downwind area. As an example, Virginia had a maximum contribution of 3 ppb on Fulton County, GA in the source apportionment modeling and a 2 ppb contribution in the zero out modeling, and the percent of total nonattainment metric for Virginia/Fulton was 1 percent. This linkage was carried on for further analysis.

[10] We could not calculate contribution metrics for Denton and Tarrant counties since there were no predicted 8-hour daily maximum concentrations $\geq$ 85 ppb in grid cells associated with either of these counties in the 2010 Base Case CAMx modeling.

Those linkages that had contributions which exceeded the screening criteria were evaluated further in steps 2 through 4. In step 2 we evaluated the contributions in each linkage based on the zero-out modeling and in step 3 we evaluated the contributions in each linkage based on the source apportionment modeling. In step 4 we considered the results of both step 2 and step 3 to determine which of the linkages are significant. For both techniques, EPA determined whether the linkage is significant by evaluating the magnitude, frequency, and relative amount of the contributions. Each upwind State that made relatively large and/or frequent contributions to nonattainment in the downwind area, based on these factors, is considered as contributing significantly to nonattainment in the downwind area. The EPA believes that each of the factors provides an independent legitimate measure of contribution. However, there had to be at least two different factors that indicate large and/or frequent contributions in order for the linkage to be found significant. In this regard, the finding of a significant contribution for an individual linkage was not based on any single factor.

As indicated above, in step 4 we considered the results of evaluating the contributions zero-out contributions from step 1 and source apportionment contributions from step 2. For many of the individual linkages the analyses of zero-out and source apportionment contributions yield a consistent result (i.e., either large and/or frequent contributions or small and infrequent contributions). Indeed, for each affected State, EPA's proposed determination that the State contributes significantly downwind is based on at least one linkage for which each of the factors indicates large and/or frequent contributions. For some of the linkages, however, not all of the factors are consistent. For upwind-downwind linkages in which some of the factors indicate high and/or frequent contributions while other factors do not, EPA considered the overall number and magnitude of those factors that indicate large and/or infrequent contributions compared to those factors that do not. As part of the process of evaluating these types of linkages, we required that two of the three factors had to indicate large and frequent contributions for one of the modeling techniques and large and/or frequent contributions for at least one factor in the other modeling technique in order to find that the linkage was significant. Thus, based on an assessment of all the factors in such cases, EPA determined that the upwind State contributes significantly to nonattainment in the downwind area if, on balance, the factors indicate large and frequent contributions from the upwind State to the downwind area. Table VI-3, below, provides examples of the four step process to illustrate how the metrics were evaluated to determine whether individual linkages are significant. Contribution tables containing the values of the metrics for each linkage are provided in Appendix G.

Table VI-3a. Evaluation of the Contribution to Downwind Nonattainment in Middlesex Co., CT.

Receptor	Steps	Evaluation of Contributions
Middlesex Co. Connecticut	Step 1: Evaluation of Contributions Against Screening Criteria	- 22 upwind States had contributions that did not exceed either or both of the screening criteria. These linkages were not evaluated further. As an example, the contribution from MI did exceed the screening criteria for the Source Apportionment modeling but did not exceed the criteria for the zero-out modeling, so this linkage was deemed not significant. Of the 22 linkages that failed the screening criteria (i.e., were not significant), 15 were not significant in both modeling techniques. - 8 upwind States (MA, VA, MD, OH, NJ, PA, WV, and NY) had contributions that exceeded both screening criteria and were carried forward for evaluation in Steps 2 - 4.
	Step 2: Evaluation of Contributions from Zero-Out Modeling	- Of the 8 States that exceeded the screening criteria, 6 (VA, MA, OH, NJ, PA, and NY) made contributions that were significant considering the metrics for all three factors. - Contributions from VA, MA, OH, NJ, PA, and NY: + Magnitude: values ranged from 3.4 ppb (VA) up to 18.6 ppb (NY) + Frequency: values ranged from VA which contributed 2 ppb or more to 18% of the exeedances up to both NJ and NY which contributed 2 ppb or more to all of the exceedances - Contributions from MD and WV were determined to be not significant since there was only one occurrence of a contribution greater than 2 ppb and the amount of the contribution was less than 3 ppb.
	Step 3: Evaluation of Contributions from Source Apportionment Modeling	- The findings from the source apportionment modeling were similar to that of the zero-out modeling in that 6 of the 8 States that exceeded the screening criteria (VA, MD, OH, NJ, PA, and NY) made contributions that were significant considering the metrics from all three factors: - Contributions from VA, MD, OH, NJ, PA, and NY: + Magnitude: values ranged from 7 ppb (MD and VA) to 31 ppb (NY) + Frequency: values ranged from VA which contributed 2 ppb or more to 58% of the exeedances up to both NJ and NY which contributed 2 ppb or more to all of the exceedances - Contributions from MA and WV were large in terms of two of the three factors: + Magnitude: the maximum contribution was 3 ppb from WV and 8 ppb from MA + Frequency: MA contributed 2.0 ppb or more to 3% of the exceedances
	Step 4: Final Determination of Significance	- Of the 8 States that passed the screening criteria, 6 (VA, MA, OH, NJ, PA, and NY) had large and frequent contributions to Middlesex Co for at least two of the three contribution factors based on each modeling technique. Thus, we determined that each of these 6 States makes a significant contribution to nonattainment in this county. We determined that the contributions from the other 2 States that passed the screening criteria (MD and WV) were not significant because the contributions based on the zero-out technique were not high and/or frequent.

Table VI-3b. Evaluation of the Contribution to Downwind Nonattainment in Bergen Co., NJ.

Receptor	Steps	Evaluation of Contributions
Bergen Co. New Jersey	Step 1: Evaluation of Contributions Against Screening Criteria	- 24 upwind States had contributions that did not exceed either or both of the screening criteria. These linkages were not evaluated further. As an example, the contribution from DE did exceed the screening criteria for the Source Apportionment modeling but did not exceed the criteria for the Zero-Out modeling, so this linkage was deemed not significant. Of the 24 linkages that passed the screening criteria (i.e., were not significant), 17 were not significant in both modeling techniques. - 6 upwind States (PA, VA, MD, OH, WV, and MI) had contributions that exceeded both screening criteria and were carried forward for evaluation in Steps 2 - 4.
	Step 2: Evaluation of Contributions from Zero-Out Modeling	- Of the 6 States that exceeded the screening criteria, 4 (PA, VA, MD, and OH) made contributions that were significant considering the metrics for all three factors. - Contributions from PA, VA, MD, and OH: + Magnitude: values ranged from 4.7 ppb (OH) up to 23.8 ppb (PA) + Frequency: values ranged from OH which contributed 2 ppb or more to 46% of the exeedances up to PA which contributed 2 ppb or more to all of the exceedances + Relative Amount: values ranges from 19% (VA) up to 97% (PA) - Contributions from WV and MI were large in terms of two of the three factors: + Frequency: MI contributed 2.0 ppb or more to 15% and WV contributed 2.0 ppb or more to 31% of the exceedances + Relative Amount: total contribution from MI is 4%; the total contribution from WV is 13% of the total nonattainment
	Step 3: Evaluation of Contributions from Source Apportionment Modeling	- In the source apportionment modeling 4 of the 6 States that exceeded the screening criteria (MD, OH, PA and VA) made contributions that were significant considering the metrics from all three factors: - Contributions from (MD, OH, PA and VA): + Magnitude: maximum contributions ranged from 7 ppb (MD) to 31 ppb (PA) + Frequency: values ranged from MD which contributed 2 ppb or more to 76% of the exeedances up to PA which contributed 2 ppb or more to all of the exceedances + Relative Amount: values ranged from 5% (MD and VA) up to 31% (PA) - Contributions from MI and WV were large in terms of two of the three factors: + Magnitude: maximum contribution was 6 ppb from MI and 3 ppb from WV + Frequency: MI contributed 2.0 ppb or more to 15% of the exceedances; WV contributed 2 ppb or more to 9%of the exceedances
	Step 4: Final Determination of Significance	- 4 of the States (MD, OH, PA and VA) had large and frequent contributions to Bergen Co. for at least two of the three contribution factors based on each modeling technique. Therefore, we determined that each of these States makes a significant contribution to nonattainment in this county. In addition, the contributions from MI and WV were large and frequent for two factors based on the Source Apportionment modeling and large based on one factor in the Zero-Out modeling. Therefore, we determined that MI and WV make a significant contribution to Bergen Co.

D. Results of Interstate Ozone Contribution Analysis

Using the procedures described above, EPA determined which States contribute significantly to nonattainment in the 40 2010 modeled plus monitored downwind receptor counties. Of the 31 States included in the assessment of interstate ozone contributions, 25 States and the District of Columbia were found to have emissions which make a significant contribution to downwind 8-hour ozone nonattainment. The linkages which EPA found to be significant for 8-hour ozone are listed in Tables VI-4[11] (by upwind State) and VI-5 (by downwind nonattainment county). Each upwind State contributed to nonattainment in counties in at least two downwind States (except for Louisiana and Arkansas which contributed to nonattainment only in Texas counties). Of the 31 States included in the assessment of interstate ozone transport, the following six States are found to not make a significant contribution to downwind nonattainment: Georgia, Maine, Minnesota, New Hampshire, Rhode Island, and Vermont.

[11] As noted above, we combined Maryland and the District of Columbia as a single entity in our ozone contribution modeling. This is a logical approach because of the small size of the District of Columbia and, hence, its emissions and its close proximity to Maryland. Under our analysis, Maryland and the District of Columbia are linked as significant contributors to the same downwind nonattainment counties. We also considered these entities separately, and in view of the close proximity of these two areas we believe that Maryland is linked as a significant contributor to nonattainment in the District of Columbia and that the District of Columbia is linked as a significant contributor to nonattainment in Maryland.

Table VI-4. Upwind State-to-downwind nonattainment county significant "linkages" for 8-hour ozone.

Upwind States	Total Linkages	Downwind Counties			
AL	3	Fulton GA	Harris TX	Jefferson TX	
AR	3	Galveston TX	Harris TX	Jefferson TX	
CT	2	Kent RI	Suffolk NY		
DE	13	Bucks PA	Camden NJ	Chester PA	Gloucester NJ
		Hunterdon NJ	Mercer NJ	Middlesex NJ	Monmouth NJ
		Montgomery PA	Morris NJ	Ocean NJ	Philadelphia PA
		Suffolk NY			
FL	1	Fulton GA			
IA	3	Kenosha WI	Macomb MI	Sheboygan WI	
IL	5	Geauga OH	Kenosha WI	Macomb MI	Ozaukee WI
		Sheboygan WI			
IN	5	Geauga OH	Kenosha WI	Macomb MI	Ozaukee WI
		Sheboygan WI			
KY	3	Fulton GA	Geauga OH	Macomb MI	
LA	3	Galveston TX	Harris TX	Jefferson TX	
MA	2	Kent RI	Middlesex NJ		
MD/DC	23	Arlington VA	Bergen NJ	Bucks PA	Camden NJ
		Chester PA	District of Columbia	Erie NY	Fairfax VA
		Fairfield CT	Gloucester NJ	Hunterton NJ	Mercer NJ
		Middlesex NJ	Monmouth NJ	Montgomery PA	Morris NJ
		New Castle DE	New Haven CT	Ocean NJ	Philadelphia PA
		Richmond NY	Suffolk NY	Westchester NY	
MI	19	Anne Arundel MD	Bergen NJ	Bucks PA	Camden NJ
		Cecil MD	Chester PA	Erie NY	Geauga OH
		Gloucester NJ	Kent MD	Mercer NJ	Middlesex NJ
		Monmouth NJ	Morris NJ	New Castle DE	Ocean NJ
		Philadelphia PA	Richmond NY	Suffolk NY	
MO	4	Geauga OH	Kenosha WI	Ozaukee WI	Sheboygan WI
MS	2	Harris TX	Jefferson TX		
NC	8	Anne Arundel MD	Fulton GA	Harford MD	Kent MD
		Newcastle DE	Suffolk NY	Bucks PA	Chester PA
NJ	10	Erie NY	Fairfield CT	Kent RI	Middlesex CT
		Montgomery PA	New Haven CT	Philadelphia PA	Richmond NY
		Suffolk NY	Westchester NY		
NY	9	Fairfield CT	Kent RI	Mercer NJ	Middlesex CT
		Middlesex NJ	Monmouth NJ	Morris NJ	New Haven CT
		Ocean NJ			

OH	28	Anne Arundel MD	Arlington VA	Bergen NJ	Bucks PA
		Camden NJ	Cecil MD	Chester PA	District of Columbia
		Fairfax VA	Fairfield CT	Gloucester NJ	Harford MD
		Hunterton NJ	Kent MD	Kent RI	Macomb MI
		Mercer NJ	Middlesex CT	Middlesex NJ	Monmouth NJ
		Montgomery PA	Morris NJ	New Castle DE	New Haven CT
		Ocean NJ	Philadelphia PA	Suffolk NY	Westchester NY
PA	25	Anne Arundel MD	Arlington VA	Bergen NJ	Camden NJ
		Cecil MD	District of Columbia	Erie NY	Fairfax VA
		Fairfield CT	Gloucester NJ	Harford MD	Hunterton NJ
		Kent MD	Kent RI	Mercer NJ	Middlesex CT
		Middlesex NJ	Monmouth NJ	Morris NJ	New Castle DE
		New Haven CT	Ocean NJ	Richmond NY	Suffolk NY
		Westchester NY			
SC	1	Fulton GA			
TN	1	Fulton GA			
VA	26	Anne Arundel MD	Bergen NJ	Bucks PA	Camden NJ
		Cecil MD	Chester PA	District of Columbia	Erie NY
		Fairfield CT	Gloucester NJ	Harford MD	Hunterton NJ
		Kent MD	Kent RI	Mercer NJ	Middlesex CT
		Middlesex NJ	Monmouth NJ	Morris NJ	New Castle DE
		New Haven CT	Ocean NJ	Philadelphia PA	Richmond NY
		Suffolk NY	Westchester NY		
WI	2	Erie NY	Macomb MI		
WV	25	Anne Arundel MD	Bergen NJ	Bucks PA	Camden NJ
		Cecil MD	Chester PA	Fairfax VA	Fairfield CT
		Fulton GA	Gloucester NJ	Harford MD	Hunterton NJ
		Kent MD	Mercer NJ	Middlesex NJ	Monmouth NJ
		Montgomery PA	Morris NJ	New Castle DE	New Haven CT
		Ocean NJ	Philadelphia PA	Richmond NY	Suffolk NY
		Westchester NY			

Table VI-5. Upwind States that make a significant contribution to 8-hour ozone in each downwind nonattainment county.

Downwind State/ County		Upwind States									
CT	Middlesex	MA	NJ	NY	OH	PA	VA				
CT	New Haven	MD/DC	NJ	NY	OH	PA	VA	WV			
CT	Fairfield	MD/DC	NJ	NY	OH	PA	VA	WV			
District of Columbia		MD/DC	OH	PA	VA						
DE	New Castle	MD/DC	MI	NC	OH	PA	VA	WV			
GA	Fulton	AL	FL	KY	NC	SC	TN	WV			
MD	Harford	NC	OH	PA	VA	WV					
MD	Kent	MI	NC	OH	PA	VA	WV				
MD	Cecil	MI	OH	PA	VA	WV					
MD	Anne Arundel	MI	NC	OH	PA	VA	WV				
MI	Macomb	IA	IL	IN	KY	OH	WI				
NJ	Ocean	DE	MD/DC	MI	NY	OH	PA	VA	WV		
NJ	Bergen	MD/DC	MI	OH	PA	VA	WV				
NJ	Gloucester	DE	MD/DC	MI	OH	PA	VA	WV			
NJ	Morris	DE	MD/DC	MI	NY	OH	PA	VA	WV		
NJ	Middlesex	DE	MD/DC	MI	NY	OH	PA	VA	WV		
NJ	Hunterton	DE	MD/DC	OH	PA	VA	WV				
NJ	Camden	DE	MD/DC	MI	OH	PA	VA	WV			
NJ	Mercer	DE	MD/DC	MI	NY	OH	PA	VA	WV		
NJ	Monmouth	DE	MD/DC	MI	NY	OH	PA	VA	WV		
NY	Erie	MD/DC	MI	NJ	PA	VA	WI				
NY	Westchester	MD/DC	NJ	OH	PA	VA	WV				
NY	Richmond	MD/DC	MI	NJ	PA	VA	WV				
NY	Suffolk	CT	DE	MD/DC	MI	NC	NJ	OH	PA	VA	WV
OH	Geauga	IL	IN	KY	MI	MO					
PA	Montgomery	DE	MD/DC	NJ	OH	WV					
PA	Philadelphia	DE	MD/DC	MI	NJ	OH	VA	WV			
PA	Chester	DE	MD/DC	MI	NJ	OH	VA	WV			
PA	Bucks	DE	MD/DC	MI	NJ	OH	VA	WV			
RI	Kent	CT	MA	NJ	NY	OH	PA	VA			
TX	Harris	AL	AR	LA	MS						
TX	Jefferson	AL	AR	LA	MS						
TX	Galveston	AR	LA								
VA	Arlington	MD/DC	OH	PA							
VA	Fairfax	MD/DC	OH	PA	WV						
WI	Ozaukee	IL	IN	MO							
WI	Kenosha	IA	IL	IN	MO						
WI	Sheboygan	IA	IL	IN	MO						

As a refinement to the preceding procedures for evaluating the contributions for each linkage, EPA prepared the following criteria for the three contribution factors to distinguish between the values which comprise a significant contribution versus those that do not:
<u>Magnitude Metrics</u>: considered large enough to be significant if the contribution is >= 3 ppb.
<u>Frequency Metrics</u>: considered frequent enough to be significant if there is a 3 ppb or more contribution to at least 3 percent of the exceedances and, for linkages in which the maximum contribution was in the range of >= 2 to < 3 ppb, there has to be contributions in this range to at least two exceedances in the downwind area.
<u>Relative Amount Metrics</u>: considered large enough to be significant if the total contribution relative to the total amount of nonattainment is >= 3 percent.

Applying these criteria to the contribution metrics for each linkage in the evaluation steps 2 through 4 yields the same result in terms of which linkages are significant, as provided in Tables VI-4 and VI-5.

VII. Modeling to Assess Interstate PM2.5 Contributions

This section documents the procedures used by EPA to quantify the impact of SO2 ad Nox emissions in specific States on projected PM2.5 nonattainment in other States. The analytic approach for modeling the contribution of upwind States to PM2.5 in downwind nonattainment areas and the methodology for analyzing the modeling results are described in Section VII.A. These procedures are the first of the two-step process for determining significant contribution, in which the second step involves a control cost assessment to determine the amount of upwind emissions that should be reduced. The findings as to whether individual States meet the air quality component of the significant contribution test is provided in Section VII.B. In this section we use the phase "significant contribution" to refer to the PM2.5 air quality step of the significance determination.

The interstate PM2.5 contribution analysis focuses on the 113 receptors in 62 counties that are both predicted to be nonattainment in the 2010 Base Case and are also measuring nonattainment based on 2001-2003 design values. As noted above in Section V, we refer to these counties as being modeled plus monitored nonattainment.

A. Analytical Techniques for Modeling Interstate Contributions to Annual Average PM2.5 Nonattainment

1. State-by-State Zero-Out Modeling

State-by-State zero-out modeling was used as the modeling technique to quantify the contribution from SO2 and NOx emissions in individual States to future PM2.5 nonattainment in other States. As part of the zero-out modeling technique we removed the 2010 Base Case anthropogenic emissions of SO2 and NOx from 37 States in the East on a State-by-State basis in different CMAQ model runs. The States we analyzed using zero-out modeling are: Alabama, Arkansas, Connecticut, Delaware, 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. Emissions from the District of Columbia were combined with those from Maryland.

The model predictions from the zero-out runs were used to calculate the contribution from each State to PM2.5 at nonattainment receptors in other States through the following procedures:

Step 1: The SMAT technique is applied for each zero-out run to calculate PM2.5 concentrations at each FRM site (see Section IV.B. for a general description of this technique).

Step 2: For each of the 113 receptors, the difference between the 2010 Base PM2.5 concentration and the PM2.5 concentration for the zero-out run is calculated at that same receptor. This difference is defined as the contribution from the zero-out State to the nonattainment receptor.

2. Interstate PM2.5 Contribution Metric

As described in the CAIR preamble, EPA has selected the maximum contribution as the metric to use in determining significant contribution to annual average PM2.5 nonattainment. The maximum contribution for a given State is the highest contribution made by that State to any downwind nonattianment receptor. The procedures for calculating the maximum contribution metric are as follows:

Step 1: Examine the contribution from each upwind State to PM2.5 at each of the 113 2010 Base "modeled plus monitored" nonattainment site in other States.

Step 2: Select the largest contribution from among the set of downwind contributions determined in Step 1. This is the maximum downwind contribution.

The maximum contribution from each State to annual average PM2.5 nonattainment in a downwind State is provided in Table VII-1. The contribution from each State to each nonattainment receptor county is provided in Appendix H. For those counties with more than one 2010 Base nonattainment site, the largest contribution across all nonattainment sites in the county is the value shown for that county in Appendix H.

Table VII-1. Maximum downwind PM2.5 contribution ($\mu g/m^3$) for each of the 37 upwind States.

Upwind State	Maximum Downwind Contribution	Upwind State	Maximum Downwind Contribution
Alabama	0.98	Nebraska	0.07
Arkansas	0.19	New Hampshire	<0.05
Connecticut	<0.05	New Jersey	0.13
Delaware	0.14	New York	0.34
Florida	0.45	North Carolina	0.31
Georgia	1.27	North Dakota	0.11
Illinois	1.02	Ohio	1.67
Indiana	0.91	Oklahoma	0.12
Iowa	0.28	Pennsylvania	0.89
Kansas	0.11	Rhode Island	<0.05
Kentucky	0.90	South Carolina	0.40
Louisiana	0.25	South Dakota	<0.05
Maine	<0.05	Tennessee	0.65
Maryland/DC	0.69	Texas	0.29
Massachusetts	0.07	Vermont	<0.05
Michigan	0.62	Virginia	0.44
Minnesota	0.21	West Virginia	0.84
Mississippi	0.23	Wisconsin	0.56
Missouri	1.07		

B. Evaluation of Upwind State Contributions to Downwind PM2.5 Nonattainment

The EPA used a criterion of 0.2 µg/m^3 for determining whether SO2 and NOx emissions in a State make a significant contribution to PM2.5 nonattainment in another State. The rationale for choosing this criterion is described in the CAIR preamble. To determine whether the 0.2 µg/m^3 significance criteria is met, the amount of the contributions specified in Table VIII-1 are each truncated to a tenth of microgram. If the resulting (truncated) value is greater than or equal to 0.2 µg/m^3 then the contribution is significant. Examining the maxium contributions in Table VII-1 indicates that, of the 37 States analyzed, 28 States and the District of Columbia contribution 0.2 µg/m^3 or more to nonattainment in other States and therefore are found to make a significant contribution to PM2.5 nonattainment. The upwind State-to-downwind nonattainment county significant linkages are listed in Table VII-2[12]. These downwind counties contain at least one nonattainment receptor site that receives a contribution of 0.2 µg/m^3 or more from the upwind State. In Table VII-3 we present these linkages by downwind nonattainment county.

[12] As noted above, we combined Maryland and the District of Columbia as a single entity in our PM2.5 contribution modeling. This is a logical approach because of the small size of the District of Columbia and, hence, its emissions and its close proximity to Maryland. Under our analysis, Maryland and the District of Columbia are linked as significant contributors to the same downwind nonattainment counties. We also considered these entities separately, and in view of the close proximity of these two areas we believe that Maryland is linked as a significant contributor to nonattainment in the District of Columbia and that the District of Columbia is linked as a significant contributor to nonattainment in Maryland.

Table VII-2. Upwind States-to-downwind nonattainment county significant "linkages" for PM2.5.

Upwind States	Total Linkages	Downwind Counties			
AL	21	Bibb GA	Cabell WV	Catawba NC	Clark IN
		Clarke GA	Clayton GA	Cobb GA	Davidson NC
		DeKalb GA	Dubois IN	Fayette KY	Floyd GA
		Fulton GA	Hamilton OH	Hamilton TN	Jefferson KY
		Knox TN	Lawrence OH	Scioto OH	Vanderburgh IN
		Walker GA			
FL	7	Bibb GA	Clarke GA	Clayton GA	Cobb GA
		DeKalb GA	Jefferson AL	Russell AL	
GA	17	Butler OH	Cabell WV	Catawba NC	Clark IN
		Davidson NC	Fayette KY	Hamilton OH	Hamilton TN
		Jefferson AL	Jefferson KY	Kanawha WV	Knox TN
		Lawrence OH	Montgomery OH	Russell AL	Scioto OH
		Vanderburgh IN			
IL	23	Allegheny PA	Butler OH	Cabell WV	Clark IN
		Cuyahoga OH	Dubois IN	Fayette KY	Franklin OH
		Hamilton OH	Hamilton TN	Jefferson AL	Jefferson KY
		Kanawha WV	Lake IN	Lawrence OH	Mahoning OH
		Marion IN	Montgomery OH	Scioto OH	Stark OH
		Summit OH	Vanderburgh IN	Wayne MI	
IN	46	Allegheny PA	Beaver PA	Berkeley WV	Bibb GA
		Brooke WV	Butler OH	Cabell WV	Cambria PA
		Catawba NC	Clarke GA	Clayton GA	Cobb GA
		Cook IL	Cuyahoga OH	Davidson NC	DeKalb GA
		Fayette KY	Floyd GA	Franklin OH	Fulton GA
		Hamilton OH	Hamilton TN	Hancock WV	Jefferson AL
		Jefferson KY	Jefferson OH	Kanawha WV	Knox TN
		Lancaster PA	Lawrence OH	Madison IL	Mahoning OH
		Marion WV	Marshall WV	Montgomery OH	Ohio WV
		Russell AL	St. Clair IL	Scioto OH	Stark OH
		Summit OH	Walker GA	Wayne MI	Washington PA
		Westmoreland PA	Wood WV		
IA	5	Cook IL	Lake IN	Madison IL	Marion IN
		St. Clair IL			

KY	35	Allegheny PA	Butler OH	Cabell WV	Catawba NC
		Clark IN	Clarke GA	Cobb GA	Cuyahoga OH
		Davidson NC	Dubois IN	Floyd GA	Franklin OH
		Hamilton OH	Hamilton TN	Jefferson AL	Jefferson OH
		Kanawha WV	Knox TN	Lawrence OH	Madison IL
		Mahoning OH	Marion IN	Marion WV	Marshall WV
		Montgomery OH	Ohio WV	St. Clair IL	Scioto OH
		Stark OH	Summit OH	Vanderburgh IN	Walker GA
		Washington PA	Westmoreland PA	Wood WV	
LA	2	Jefferson AL	Russell AL		
MD/DC	13	Berkeley WV	Berks PA	Cambria PA	Dauphin PA
		Delaware PA	District of Columbia	Lancaster PA	New Castle DE
		New York NY	Philadelphia PA	Union NJ	Westmoreland PA
		York PA			
MI	36	Allegheny PA	Beaver PA	Berks PA	Brooke WV
		Butler OH	Cabell WV	Cambria PA	Clark IN
		Cook IL	Cuyahoga OH	Dauphin PA	Delaware PA
		Fayette KY	Franklin OH	Hamilton OH	Hancock WV
		Jefferson OH	Lake IN	Lancaster PA	Lawrence OH
		Mahoning OH	Marion IN	Marion WV	Marshall WV
		Montgomery OH	New Castle DE	Ohio WV	Philadelphia PA
		Scioto OH	Stark OH	Summit OH	Union NJ
		Washington PA	Westmoreland PA	Wood WV	York PA
MN	2	Cook IL	Lake IN		
MO	9	Clark IN	Cook IL	Dubois IN	Jefferson KY
		Lake IN	Madison IL	Marion IN	St. Clair IL
		Vanderburgh IN			
MS	1	Jefferson AL			
NY	5	Berks PA	Lancaster PA	New Castle DE	New Haven CT
		Union NJ			
NC	7	Anne Arundel MD	Baltimore City	Bibb GA	Clarke GA
		District of Columbia	Kanawha WV	Knox TN	
OH	51	Anne Arundel MD	Allegheny PA	Baltimore City	Beaver PA
		Berkeley WV	Berks PA	Bibb GA	Brooke WV
		Cabell WV	Cambria PA	Catawba NC	Clark IN
		Clarke GA	Clayton GA	Cobb GA	Cook IL
		Dauphin PA	Davidson NC	DeKalb GA	Delaware PA
		District of Columbia	Dubois IN	Fayette KY	Floyd GA
		Fulton GA	Hamilton TN	Hancock WV	Jefferson AL
		Jefferson KY	Kanawha WV	Knox TN	Lake IN
		Lancaster PA	Madison IL	Marion IN	Marion WV
		Marshall WV	New Castle DE	New York NY	Ohio WV
		Philadelphia PA	Russell AL	St. Clair IL	Union NJ

		Vanderburgh IN	Walker GA	Washington PA	Wayne MI
		Westmoreland PA	Wood WV	York PA	
PA	25	Anne Arundel MD	Baltimore City	Berkeley WV	Brooke WV
		Cabell WV	Catawba NC	Clarke GA	Cuyahoga OH
		Davidson NC	District of Columbia	Hancock WV	Jefferson OH
		Kanawha WV	Lawrence OH	Mahoning OH	Marion WV
		Marshall WV	New Castle DE	New York NY	Ohio WV
		Stark OH	Summit OH	Union NJ	Wayne MI
		Wood WV			
SC	9	Bibb GA	Catawba NC	Clarke GA	Clayton GA
		Cobb GA	Davidson NC	DeKalb GA	Fulton GA
		Russell AL			
TN	23	Bibb GA	Butler OH	Cabell WV	Catawba NC
		Clark IN	Clarke GA	Clayton GA	Cobb GA
		Davidson NC	DeKalb GA	Dubois IN	Fayette KY
		Floyd GA	Fulton GA	Hamilton OH	Jefferson AL
		Jefferson KY	Kanawha WV	Lawrence OH	Russell AL
		Scioto OH	Vanderburgh TN	Walker GA	
TX	2	Madison IL	St Clair IL		
VA	13	Anne Arundel MD	Baltimore City	Berkeley WV	Berks PA
		Catawba NC	Dauphin PA	Davidson NC	Delaware PA
		District of Columbia	Lancaster PA	New Castle DE	Philadelphia PA
		York PA			
WV	33	Anne Arundel MD	Allegheny PA	Baltimore City	Beaver PA
		Berks PA	Butler OH	Cambria PA	Catawba NC
		Clarke GA	Cuyahoga OH	Dauphin PA	Davidson NC
		Delaware PA	District of Columbia	Fayette KY	Franklin OH
		Hamilton OH	Jefferson OH	Knox TN	Lancaster PA
		Lawrence OH	Mahoning OH	Montgomery OH	New Castle DE
		New York NY	Philadelphia PA	Scioto OH	Stark OH
		Summit OH	Union NJ	Washington PA	Westmoreland PA
		York PA			
WI	4	Cook IL	Lake IN	Marion IN	Wayne MI

Table VII-3. Upwind States that make a significant contribution to PM2.5 in each downwind nonattainment county.

Downwind State /County		Upwind States									
AL	Jefferson	FL	GA	IL	IN	KY	LA	MS	OH	TN	
AL	Russell	FL	GA	IN	LA	OH	SC	TN			
DE	New Castle	MD/DC	MI	NY	OH	PA	VA	WV			
District of Columbia		NC	OH	PA	VA	WV					
GA	Bibb	AL	FL	IN	NC	OH	SC	TN			
GA	Clarke	AL	FL	IN	KY	NC	OH	PA	SC	TN	WV
GA	Clayton	AL	FL	IN	OH	SC	TN				
GA	Cobb	AL	FL	IN	KY	OH	SC	TN			
GA	DeKalb	AL	FL	IN	OH	SC	TN				
GA	Floyd	AL	IN	KY	OH	TN					
GA	Fulton	AL	IN	OH	SC	TN					
GA	Walker	AL	IN	KY	OH	TN					
IL	Cook	IN	IA	MI	MN	MO	OH	WI			
IL	Madison	IN	IA	KY	MO	OH	TX				
IL	St. Clair	IN	IA	KY	MO	OH	TX				
IN	Clark	AL	GA	IL	KY	MI	MO	OH	TN		
IN	Dubois	AL	IL	KY	MO	OH	TN				
IN	Lake	IL	IA	MI	MN	MO	OH	WI			
IN	Marion	IL	IA	KY	MI	MO	OH	WI			
IN	Vanderburgh	AL	GA	IL	KY	MO	OH	TN			
KY	Fayette	AL	GA	IL	IN	MI	OH	TN	WV		
KY	Jefferson	AL	GA	IL	IN	MO	OH	TN			
MD	Anne Arundel	NC	OH	PA	VA	WV					
MD	Baltimore City	NC	OH	PA	VA	WV					
MI	Wayne	IL	IN	OH	PA	WI					
NJ	Union	MD/DC	MI	NY	OH	PA	WV				
NY	New York	MD/DC	OH	PA	WV						
NC	Catawba	AL	GA	IN	KY	OH	PA	SC	TN	VA	WV
NC	Davidson	AL	GA	IN	KY	OH	PA	SC	TN	VA	WV
OH	Butler	GA	IL	IN	KY	MI	TN	WV			
OH	Cuyahoga	IL	IN	KY	MI	PA	WV				
OH	Franklin	IL	IN	KY	MI	WV					
OH	Hamilton	AL	GA	IL	IN	KY	MI	TN	WV		
OH	Jefferson	IN	KY	MI	PA	WV					
OH	Lawrence	AL	GA	IL	IN	KY	MI	PA	TN	WV	
OH	Mahoning	IL	IN	KY	MI	PA	WV				
OH	Montgomery	GA	IL	IN	KY	MI	WV				
OH	Scioto	AL	GA	IL	IN	KY	MI	TN	WV		
OH	Stark	IL	IN	KY	MI	PA	WV				
OH	Summit	IL	IN	KY	MI	PA	WV				

Downwind State /County		Upwind States									
PA	**Allegheny**	IL	IN	KY	MI	OH	WV				
PA	**Beaver**	IN	MI	OH	WV						
PA	**Berks**	MD/DC	MI	NY	OH	VA	WV				
PA	**Cambria**	IN	MD/DC	MI	OH	WV					
PA	**Dauphin**	MD/DC	MI	OH	VA	WV					
PA	**Delaware**	MD/DC	MI	OH	VA	WV					
PA	**Lancaster**	IN	MD/DC	MI	NY	OH	VA	WV			
PA	**Philadelphia**	MD/DC	MI	OH	VA	WV					
PA	**Washington**	IN	KY	MI	OH	WV					
PA	**Westmoreland**	IN	KY	MD/DC	MI	OH	WV				
PA	**York**	MD/DC	MI	OH	VA	WV					
TN	**Hamilton**	AL	GA	IL	IN	KY	OH				
TN	**Knox**	AL	GA	IN	KY	NC	OH	WV			
WV	**Berkeley**	IN	MD/DC	OH	PA	VA					
WV	**Brooke**	IN	MI	OH	PA						
WV	**Cabell**	AL	GA	IL	IN	KY	MI	OH	PA	TN	
WV	**Hancock**	IN	MI	OH	PA						
WV	**Kanawha**	GA	IL	IN	KY	NC	OH	PA	TN		
WV	**Marion**	IN	KY	MI	OH	PA					
WV	**Marshall**	IN	KY	MI	OH	PA					
WV	**Ohio**	IN	KY	MI	OH	PA					
WV	**Wood**	IN	KY	MI	OH	PA					

VIII. Expected Impacts of CAIR on Air Quality, Visibility, and Deposition

A. Introduction

In this section we describe the results of air quality modeling performed to determine the projected impacts on PM2.5, 8-hour ozone, visibility, and deposition of the SO2 and NOx emissions reductions expected to result from CAIR[13]. In this assessment, we focus on the air quality related improvements in two analysis years, 2010 and 2015. These improvements are quantified by comparing modeling results for the CAIR scenario to the modeling results for the corresponding 2010 and 2015 Base Case scenarios. The impacts of CAIR on PM2.5 and 8-hour ozone are described below in terms of the reductions from CAIR in the concentrations of these two pollutants and the extent of nonattainment in 2010 and 2015. For visibility, we present the expected change in visibility in Class I areas on the 20 percent best and 20 percent worst days. For deposition, we examine the percent reduction in nitrogen and sulfur deposition across the Eastern U.S. expected to occur with CAIR.

B. Overview of Emissions Reductions from CAIR

The CAIR 2010 and 2015 emissions reductions from the power generation sector include a two Phase cap and trade program covering the control region modeled (i.e., the 23 States plus the District of Columbia included in CAIR and Arkansas, Delaware, and New Jersey).[14] Phase 1 of the regional strategy (the 2010 reductions) is forecast to reduce total EGU SO2 emissions[15] in the control region modeled by 40 percent in 2010. Phase 2 (the 2015 reductions) is forecast to provide a 48 percent reduction in EGU SO2 emissions compared to the Base Case in 2015. The net effect of CAIR on total SO2 emissions in the control region modeled considering all sources of emissions, is a 28 percent reduction in 2010 and a 32 percent reduction in 2015.

For NOx, Phase 1 of the strategy is forecast to reduce total EGU emissions by 44 percent in 2009. Total NOx emissions across the control region (i.e., includes all sources) are 11 percent lower in the 2010 CAIR scenario compared to the emissions in the 2010 Base Case. In Phase 2, EGU NOx emissions are projected to decline by 54 percent in 2015 in this region. Total NOx emissions from all anthropogenic sources are projected to be reduced by 14 percent in 2015.

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[13]The modeling used to estimate the impacts of CAIR on PM2.5 assumed annual SO2 and NOx controls for Arkansas, Delaware, and New Jersey in addition to the 23-States plus the District of Columbia. However, the EPA plans to propose to include these three States in the CAIR region through a separate regulatory process. Thus, the results of our modeling represents the total impacts expected for CAIR assuming Arkansas, Delaware, and New Jersey will become part of the annual SO2 and NOx trading program.

[14] In addition to the SO2 and NOx reductions in these States, we also modeled summer-season only EGU NOx controls for Connecticut and Massachusetts, which significantly contribute to ozone, but not to PM2.5 nonattainment in downwind areas.

[15] For the purposes of this discussion, we have calculated the percent reduction in total EGU emissions which includes units greater than and less than 25 MW.

The percent change in emissions by State for SO2 and NOx in 2010 and 2015 for the regional control strategy modeled are provided in the NFR EITSD.

C. Impacts of CAIR on Air Quality Concentrations and Nonattainment

We quantified the expected impacts of CAIR on PM2.5 and 8-hour ozone by comparing the projected concentrations for the 2010 and 2015 Base Cases to the concentrations projected for the CAIR scenario in both of these future years. Concentrations of PM2.5 and 8-hour ozone for CAIR in 2010 and 2015 were calculated using the methods described in Section VI. The 2010 and 2015 CAIR PM2.5 concentrations for the 432 counties included in this analysis are provided in Appendix F. The 8-hour ozone concentrations in 2010 and 2015 with CAIR are provided in Appendix E. The focus of our analysis of the impacts of CAIR on air quality is on nonattainment counties. The number of PM2.5 and 8-hour ozone nonattainment counties in the East for the base year and 2010 and 2015 Base and CAIR scenarios is provided in Table VIII-1. Maps showing the location of these counties are provided in Figures VIII-1 through VIII-3 at the end of this section.

Table VIII-1. Summary of the number of PM2.5 and 8-hour ozone nonattainment counties in the East.

	PM2.5	Ozone	PM2.5-only	Ozone-only	PM2.5 + Ozone
1999-2003 Average	101	270	46	215	55
2010 Base Case	79	40	74	35	5
2010 CAIR	28	37	27	36	1
2015 Base Case	74	22	73	21	1
2015 CAIR	18	16	18	16	0

1. Impacts of CAIR on PM2.5 Concentrations and Nonattainment

In our analysis of PM2.5 we have quantified the impacts of CAIR on those counties projected to be nonattainment in the 2010 and 2015 Base Case scenarios. The results for these counties are provided for 2010 and 2015 in Table VIII-2 and Table VIII-3, respectively. Note that in both tables, counties shown in ***bold/italics*** are projected to come into attainment with CAIR. Maps showing the location of the 2010 and 2015 Base nonattainment counties and those counties projected to come into attainment with CAIR are provided in Figure VIII-4, at the end of this section.

Table VIII-2. Projected PM2.5 concentrations (μg/m^3) for the 2010 base case and CAIR, and the impact of CAIR in 2010.

State	County	2010 Base Case	2010 CAIR	Impact of CAIR
Alabama	***DeKalb Co***	**15.23**	**13.97**	**-1.26**
Alabama	Jefferson Co	18.57	17.46	-1.11
Alabama	***Montgomery Co***	**15.12**	**14.10**	**-1.02**
Alabama	***Morgan Co***	**15.29**	**14.11**	**-1.18**
Alabama	Russell Co	16.17	15.15	-1.02
Alabama	***Talladega Co***	**15.34**	**14.00**	**-1.34**
Delaware	***New Castle Co***	**16.56**	**14.84**	**-1.72**
District of Columbia		**15.84**	**13.68**	**-2.16**
Georgia	Bibb Co	16.27	15.17	-1.10
Georgia	***Clarke Co***	**16.39**	**14.96**	**-1.43**
Georgia	Clayton Co	17.39	16.29	-1.10
Georgia	Cobb Co	16.57	15.35	-1.22
Georgia	DeKalb Co	16.75	15.70	-1.05
Georgia	Floyd Co	16.87	15.87	-1.00
Georgia	Fulton Co	18.02	16.98	-1.04
Georgia	***Hall Co***	**15.60**	**14.28**	**-1.32**
Georgia	***Muscogee Co***	**15.65**	**14.57**	**-1.08**
Georgia	***Richmond Co***	**15.68**	**14.64**	**-1.04**
Georgia	***Walker Co***	**15.43**	**14.22**	**-1.21**
Georgia	***Washington Co***	**15.31**	**14.22**	**-1.09**
Georgia	Wilkinson Co	16.27	15.22	-1.05
Illinois	Cook Co	17.52	16.88	-0.64
Illinois	Madison Co	16.66	15.96	-0.70
Illinois	St. Clair Co	16.24	15.54	-0.70
Indiana	Clark Co	16.51	15.15	-1.36
Indiana	***Dubois Co***	**15.73**	**14.37**	**-1.36**
Indiana	Lake Co	17.26	16.48	-0.78
Indiana	Marion Co	16.83	15.54	-1.29
Indiana	***Vanderburgh Co***	**15.54**	**14.26**	**-1.28**
Kentucky	***Boyd Co***	**15.23**	**13.38**	**-1.85**
Kentucky	***Bullitt Co***	**15.10**	**13.67**	**-1.43**
Kentucky	***Fayette Co***	**15.95**	**14.17**	**-1.78**
Kentucky	Jefferson Co	16.71	15.44	-1.27
Kentucky	***Kenton Co***	**15.30**	**13.72**	**-1.58**
Maryland	***Anne Arundel Co***	**15.26**	**12.98**	**-2.28**
Maryland	***Baltimore city***	**16.96**	**14.88**	**-2.08**
Michigan	Wayne Co	19.41	18.23	-1.18
Missouri	***St. Louis city***	**15.10**	**14.40**	**-0.70**
New Jersey	***Union Co***	**15.05**	**13.60**	**-1.45**
New York	***New York Co***	**16.19**	**14.95**	**-1.24**
North Carolina	***Catawba Co***	**15.48**	**14.07**	**-1.41**

State	County	2010 Base Case	2010 CAIR	Impact of CAIR
North Carolina	***Davidson Co***	**15.76**	**14.36**	**-1.40**
North Carolina	***Mecklenburg Co***	**15.22**	**13.92**	**-1.30**
Ohio	***Butler Co***	**16.45**	**15.03**	**-1.42**
Ohio	Cuyahoga Co	18.84	17.11	-1.73
Ohio	Franklin Co	16.98	15.13	-1.85
Ohio	Hamilton Co	18.23	16.61	-1.62
Ohio	Jefferson Co	17.94	15.64	-2.30
Ohio	***Lawrence Co***	**16.10**	**14.11**	**-1.99**
Ohio	***Mahoning Co***	**15.39**	**13.40**	**-1.99**
Ohio	***Montgomery Co***	**15.41**	**13.83**	**-1.58**
Ohio	Scioto Co	18.13	15.98	-2.15
Ohio	Stark Co	17.14	15.08	-2.06
Ohio	***Summit Co***	**16.47**	**14.69**	**-1.78**
Ohio	***Trumbull Co***	**15.28**	**13.50**	**-1.78**
Pennsylvania	Allegheny Co	20.55	18.01	-2.54
Pennsylvania	***Beaver Co***	**15.78**	**13.61**	**-2.17**
Pennsylvania	***Berks Co***	**15.89**	**13.56**	**-2.33**
Pennsylvania	***Cambria Co***	**15.14**	**12.72**	**-2.42**
Pennsylvania	***Dauphin Co***	**15.17**	**12.88**	**-2.29**
Pennsylvania	***Delaware Co***	**15.61**	**13.94**	**-1.67**
Pennsylvania	***Lancaster Co***	**16.55**	**14.09**	**-2.46**
Pennsylvania	***Philadelphia Co***	**16.65**	**14.98**	**-1.67**
Pennsylvania	***Washington Co***	**15.23**	**12.99**	**-2.24**
Pennsylvania	***Westmoreland Co***	**15.16**	**12.60**	**-2.56**
Pennsylvania	***York Co***	**16.49**	**14.20**	**-2.29**
Tennessee	***Davidson Co***	**15.36**	**14.26**	**-1.10**
Tennessee	Hamilton Co	16.89	15.57	-1.32
Tennessee	Knox Co	17.44	16.16	-1.28
Tennessee	***Sullivan Co***	**15.32**	**14.01**	**-1.31**
West Virginia	***Berkeley Co***	**15.69**	**13.43**	**-2.26**
West Virginia	***Brooke Co***	**16.63**	**14.42**	**-2.21**
West Virginia	Cabell Co	17.03	15.08	-1.95
West Virginia	***Hancock Co***	**17.06**	**14.89**	**-2.17**
West Virginia	Kanawha Co	17.56	15.27	-2.29
West Virginia	***Marion Co***	**15.32**	**12.90**	**-2.42**
West Virginia	***Marshall Co***	**15.81**	**13.46**	**-2.35**
West Virginia	***Ohio Co***	**15.14**	**12.81**	**-2.33**
West Virginia	***Wood Co***	**16.66**	**14.14**	**-2.52**

Table VIII-3. Projected PM2.5 concentrations (μg/m^3) for the 2015 base case and CAIR, and the impact of CAIR controls in 2015.

State	County	2015 Base Case	2015 CAIR	Impact of CAIR
Alabama	***DeKalb Co***	**15.24**	**13.46**	**-1.78**
Alabama	Jefferson Co	18.85	17.36	-1.49
Alabama	***Montgomery Co***	**15.24**	**13.87**	**-1.37**
Alabama	***Morgan Co***	**15.26**	**13.85**	**-1.41**
Alabama	***Russell Co***	**16.10**	**14.66**	**-1.44**
Alabama	***Talladega Co***	**15.22**	**13.35**	**-1.87**
Delaware	***New Castle Co***	**16.47**	**14.41**	**-2.06**
District of Columbia		**15.57**	**13.11**	**-2.46**
Georgia	***Bibb Co***	**16.41**	**14.83**	**-1.58**
Georgia	***Chatham Co***	**15.06**	**13.86**	**-1.20**
Georgia	***Clarke Co***	**16.15**	**14.10**	**-2.05**
Georgia	Clayton Co	17.46	15.85	-1.61
Georgia	***Cobb Co***	**16.51**	**14.67**	**-1.84**
Georgia	DeKalb Co	16.82	15.29	-1.53
Georgia	Floyd Co	17.33	15.79	-1.54
Georgia	Fulton Co	18.00	16.47	-1.53
Georgia	***Hall Co***	**15.36**	**13.48**	**-1.88**
Georgia	***Muscogee Co***	**15.58**	**14.06**	**-1.52**
Georgia	***Richmond Co***	**15.76**	**14.23**	**-1.53**
Georgia	***Walker Co***	**15.37**	**13.65**	**-1.72**
Georgia	***Washington Co***	**15.34**	**13.67**	**-1.67**
Georgia	***Wilkinson Co***	**16.54**	**15.01**	**-1.53**
Illinois	Cook Co	17.71	16.95	-0.76
Illinois	Madison Co	16.90	16.07	-0.83
Illinois	St. Clair Co	16.49	15.64	-0.85
Illinois	***Will Co***	**15.12**	**14.27**	**-0.85**
Indiana	***Clark Co***	**16.37**	**14.79**	**-1.58**
Indiana	***Dubois Co***	**15.66**	**14.16**	**-1.50**
Indiana	Lake Co	17.27	16.36	-0.91
Indiana	Marion Co	16.77	15.38	-1.39
Indiana	***Vanderburgh Co***	**15.56**	**14.17**	**-1.39**
Kentucky	***Boyd Co***	**15.06**	**12.95**	**-2.11**
Kentucky	***Fayette Co***	**15.62**	**13.54**	**-2.08**
Kentucky	Jefferson Co	16.61	15.13	-1.48
Kentucky	***Kenton Co***	**15.09**	**13.26**	**-1.83**
Maryland	***Baltimore city***	**17.04**	**14.50**	**-2.54**
Maryland	***Baltimore Co***	**15.08**	**12.75**	**-2.33**
Michigan	Wayne Co	19.28	17.95	-1.33
Mississippi	***Jones Co***	**15.18**	**14.06**	**-1.12**
Missouri	***St. Louis city***	**15.34**	**14.50**	**-0.84**
New York	***New York Co***	**15.76**	**14.33**	**-1.43**
North Carolina	***Catawba Co***	**15.19**	**13.45**	**-1.74**

State	County	2015 Base Case	2015 CAIR	Impact of CAIR
North Carolina	***Davidson Co***	**15.34**	**13.61**	**-1.73**
Ohio	***Butler Co***	**16.32**	**14.67**	**-1.65**
Ohio	Cuyahoga Co	18.60	16.67	-1.93
Ohio	***Franklin Co***	**16.64**	**14.57**	**-2.07**
Ohio	Hamilton Co	18.03	16.10	-1.93
Ohio	Jefferson Co	17.83	15.26	-2.57
Ohio	***Lawrence Co***	**15.92**	**13.71**	**-2.21**
Ohio	***Mahoning Co***	**15.13**	**12.94**	**-2.19**
Ohio	***Montgomery Co***	**15.16**	**13.33**	**-1.83**
Ohio	Scioto Co	17.92	15.55	-2.37
Ohio	***Stark Co***	**16.86**	**14.58**	**-2.28**
Ohio	***Summit Co***	**16.14**	**14.18**	**-1.96**
Ohio	***Trumbull Co***	**15.05**	**13.08**	**-1.97**
Pennsylvania	Allegheny Co	20.33	17.47	-2.86
Pennsylvania	***Beaver Co***	**15.54**	**13.09**	**-2.45**
Pennsylvania	***Berks Co***	**15.66**	**12.99**	**-2.67**
Pennsylvania	***Delaware Co***	**15.52**	**13.52**	**-2.00**
Pennsylvania	***Lancaster Co***	**16.28**	**13.33**	**-2.95**
Pennsylvania	***Philadelphia Co***	**16.53**	**14.53**	**-2.00**
Pennsylvania	***York Co***	**16.22**	**13.46**	**-2.76**
Tennessee	***Davidson Co***	**15.36**	**14.02**	**-1.34**
Tennessee	***Hamilton Co***	**16.82**	**14.94**	**-1.88**
Tennessee	Knox Co	17.34	15.61	-1.73
Tennessee	***Shelby Co***	**15.17**	**14.19**	**-0.98**
Tennessee	***Sullivan Co***	**15.37**	**13.77**	**-1.60**
West Virginia	***Berkeley Co***	**15.32**	**12.73**	**-2.59**
West Virginia	***Brooke Co***	**16.51**	**14.05**	**-2.46**
West Virginia	***Cabell Co***	**16.86**	**14.64**	**-2.22**
West Virginia	***Hancock Co***	**16.97**	**14.54**	**-2.43**
West Virginia	***Kanawha Co***	**17.17**	**14.66**	**-2.51**
West Virginia	***Marshall Co***	**15.52**	**12.87**	**-2.65**
West Virginia	***Wood Co***	**16.69**	**13.88**	**-2.81**

As described in Section VI.B.1, we project that 79 counties in the East will be nonattainment for PM2.5 in the 2010 Base Case. We estimate that, on average, CAIR will reduce PM2.5 in these 79 counties by 1.6 $\mu g/m^3$. In over 90 percent of the nonattainment counties (i.e., 74 out of 79 counties), we project that PM2.5 will be reduced by at least 1.0 $\mu g/m^3$. In over 25 percent of the 79 nonattainment counties (i.e., 23 of the 79 counties) we project a decline of more than 2.0 $\mu g/m^3$. Of the 79 counties that are nonattainment in the 2010 Base, we project that 51 counties will come into attainment as a result of the SO2 and NOx emissions reductions expected from CAIR. Even those 28 counties that remain nonattainment in 2010 after implementation of CAIR will be closer to attainment as a result of these emissions reductions. Specifically, the average reduction of PM2.5 in the 28 residual nonattainment counties is projected to be 1.3 µg/m^3. Also, after implementation of CAIR, we project that 18 of the 28 residual nonattainment counties in 2010 will be within 1.0 µg/m^3 of the NAAQS and 12 counties will be within 0.5 µg/m^3 of attainment.

In 2015 we are projecting that PM2.5 in the 74 Base Case nonattainment counties will be reduced by 1.8 µg/m^3, on average, as a result of CAIR. In over 90 percent of the nonattainment counties (i.e., 67 of the 74 counties) concentrations of PM2.5 are predicted to be reduced by at least 1.0 µg/m^3. In over 35 percent of the counties (i.e., 27 of the 74 counties), we project the regional strategy will reduce PM2.5 by more than 2.0 µg/m^3. As a result of the reductions in PM2.5, 56 nonattainment counties are projected to come into attainment in 2015. The remaining 18 nonattainment counties are projected to be closer to attainment with CAIR. Our modeling results indicate that PM2.5 will be reduced in the range of 0.7 µg/m3 to 2.9 µg/m^3 in these 18 counties. The average reduction across these 18 residual nonattainment counties is 1.5 µg/m^3.

To illustrate the broad benefits expected from CAIR on PM2.5 in the East, we prepared maps showing the regionwide reductions in PM2.5 with CAIR in both 2010 and 2015. The data for these maps were created using the basic SMAT procedures described in Section V.C., above. However, PM2.5 concentrations were projected for each CMAQ grid cell rather than just for individual counties. Details on the approach for projecting the gridded PM2.5 concentrations is provided in the CAIR Regulatory Impact Assessment, Chapter 4 (EPA, 2005e). The regionwide reductions from CAIR in 2010 and 2015 are shown in Figure VIII-5, below. In 2010, reductions in PM2.5 of more that 0.5 µg/m^3 are predicted over much of the East in a broad area extending from Texas to Illinois eastward. From northern Georgia and Alabama across the Tennessee Valley and Ohio Valley, the mid-Atlantic States and portions of the Northeast, we expect reductions in PM2.5 of more than 1.0 µg/m^3. In 2010, the largest reductions of 1.5 µg/m^3 to more that 2.5 µg/m^3 are predicted for the Ohio Valley across Virginia and Pennsylvania to Delaware and parts of New Jersey. Greater impactss are expected by 2015 with reductions in PM2.5 of 1.5 µg/m^3 or more from Georgia and Alabama northeastward to New York State and Kansas. The largest reductions in 2015 are projected to occur in portions of Ohio, West Virginia, Pennsylvania, and western Maryland.

2. Impacts on 8-Hour Ozone Concentrations and Nonattainment

In our analysis of the impacts of CAIR on 8-hour ozone, we have quantified the impacts of CAIR on those counties projected to be nonattainment in the 2010 and 2015 Base Case scenarios. The results for these counties are provided for 2010 and 2015 in Table VIII-4 and Table VIII-5, respectively. Note that in both tables, counties shown in ***bold/italics*** are projected to come into attainment with CAIR. Maps showing the location of the 2010 and 2015 Base 8-hour ozone nonattainment counties and those counties projected to come into attainment with CAIR are provided in Figure VIII-6, at the end of this section.

Table VIII-4. Projected 8-hour concentrations (ppb) for the 2010 base case and CAIR, and the impact of CAIR in 2010.

State	County	2010 Base Case	2010 CAIR	Impact of CAIR
Connecticut	Fairfield Co	92.6	92.2	-0.4
Connecticut	Middlesex Co	90.9	90.6	-0.3
Connecticut	New Haven Co	91.6	91.3	-0.3
District of Columbia	District of Columbia	85.2	85.0	-0.2
Delaware	***New Castle Co***	**85.0**	**84.7**	**-0.3**
Georgia	Fulton Co	86.5	85.1	-1.4
Maryland	Anne Arundel Co	88.8	88.6	-0.2
Maryland	Cecil Co	89.7	89.5	-0.2
Maryland	Harford Co	93.0	92.8	-0.2
Maryland	Kent Co	86.2	85.8	-0.4
Michigan	Macomb Co	85.5	85.4	-0.1
New Jersey	Bergen Co	86.9	86.0	-0.9
New Jersey	Camden Co	91.9	91.6	-0.3
New Jersey	Gloucester Co	91.8	91.3	-0.5
New Jersey	Hunterdon Co	89.0	88.6	-0.4
New Jersey	Mercer Co	95.6	95.2	-0.4
New Jersey	Middlesex Co	92.4	92.1	-0.3
New Jersey	Monmouth Co	86.6	86.4	-0.2
New Jersey	Morris Co	86.5	85.5	-1.0
New Jersey	Ocean Co	100.5	100.3	-0.2
New York	Erie Co	87.3	86.9	-0.4
New York	Richmond Co	87.3	87.1	-0.2
New York	Suffolk Co	91.1	90.8	-0.3
New York	***Westchester Co***	**85.3**	**84.7**	**-0.6**
Ohio	Geauga Co	87.1	86.6	-0.5
Pennsylvania	Bucks Co	94.7	94.3	-0.4
Pennsylvania	Chester Co	85.7	85.4	-0.3
Pennsylvania	Montgomery Co	88.0	87.6	-0.4
Pennsylvania	Philadelphia Co	90.3	89.9	-0.4
Rhode Island	Kent Co	86.4	86.2	-0.2
Texas	Denton Co	87.4	86.8	-0.6
Texas	***Galveston Co***	**85.1**	**84.6**	**-0.5**
Texas	Harris Co	97.9	97.4	-0.5
Texas	Jefferson Co	85.6	85.0	-0.6
Texas	Tarrant Co	87.8	87.2	-0.6

State	County	2010 Base Case	2010 CAIR	Impact of CAIR
Virginia	Arlington Co	86.2	86.0	-0.2
Virginia	Fairfax Co	85.7	85.4	-0.3
Wisconsin	Kenosha Co	91.3	91.0	-0.3
Wisconsin	Ozaukee Co	86.2	85.8	-0.4
Wisconsin	Sheboygan Co	88.3	87.7	-0.6

Table VIII-5. Projected 8-hour concentrations (ppb) for the 2015 base case and CAIR, and the impact of CAIR in 2015.

State	County	2015 Base Case	2015 CAIR	Impact of CAIR
Connecticut	Fairfield Co	91.4	90.6	-0.8
Connecticut	Middlesex Co	89.1	88.4	-0.7
Connecticut	New Haven Co	89.8	89.1	-0.7
Maryland	***Anne Arundel Co***	**86.0**	**84.9**	**-1.1**
Maryland	Cecil Co	86.9	85.4	-1.5
Maryland	Harford Co	90.6	89.6	-1.0
Michigan	***Macomb Co***	**85.1**	**84.2**	**-0.9**
New Jersey	***Bergen Co***	**85.7**	**84.5**	**-1.2**
New Jersey	Camden Co	89.5	88.3	-1.2
New Jersey	Gloucester Co	89.6	88.2	-1.4
New Jersey	Hunterdon Co	86.5	85.4	-1.1
New Jersey	Mercer Co	93.5	92.4	-1.1
New Jersey	Middlesex Co	89.8	88.8	-1.0
New Jersey	Ocean Co	98.0	96.9	-1.1
New York	***Erie Co***	**85.2**	**84.2**	**-1.0**
New York	Suffolk Co	89.9	89.0	-0.9
Pennsylvania	Bucks Co	93.0	91.8	-1.2
Pennsylvania	***Montgomery Co***	**86.5**	**84.9**	**-1.6**
Pennsylvania	Philadelphia Co	88.9	87.5	-1.4
Texas	Harris Co	97.3	96.4	-0.9
Texas	***Jefferson Co***	**85.0**	**84.1**	**-0.9**
Wisconsin	Kenosha Co	89.4	88.8	-0.6

As described in Section VI.B.1, we project that 40 counties in the East would be nonattainment for 8-hour ozone under the assumptions in the 2010 Base Case. Our modeling of CAIR in 2010 indicates that 3 of these counties will come into attainment of the 8-hour ozone NAAQS and that ozone in 16 of the 40 nonattainment counties will be reduced by 1 ppb or more. In addition, our modeling predicts that 8-hour ozone exceedances (i.e., 8-hour ozone of 85 ppb or higher) within nonattainment areas are expected to decline by 5 percent in 2010 with CAIR. Of the 37 counties that are projected to remain nonattainment in 2010 after CAIR, nearly half (i.e., 16 of the 37 counties) are within 2 ppb of attainment.

In 2015, we project that 6 of the 22 counties which are nonattainment for 8-hour ozone in the Base Case will come into attainment with CAIR. Ozone concentrations in over 70 percent (i.e., 16 of 22 counties) of the 2015 Base Case nonattainment counties are projected to be reduced by 1 ppb or more as a result of CAIR. Exceedances of the 8-hour ozone NAAQS are predicted to decline in nonattainment areas by 14 percent with CAIR controls in place in 2015. Thus, the NOx emissions reductions which will result from CAIR will help to bring 8-hour ozone nonattainment areas in the East closer to attainment by 2010 and beyond.

To illustrate the spatial extent of the impact of CAIR on 8-hour ozone across the East we prepared maps showing the ozone reductions or the 525 counties included in this analysis[16]. Maps showing the projected impacts in 2010 and 2015 on 8-hour ozone in each county are provided in Figure VIII-7 at the end of this section. Note that the data used to create these maps are provided in Appendix E. The maps show that 8-hour ozone reductions from CAIR are extend across nearly all areas of the East. In 2010, 78 percent of the counties are expected to experience ozone reductions of up to 1 ppb while 14 percent will see reductions of 1 to 2 ppb, with more than 2 ppb reduction in 6 percent of the counties. In 2015, 8-hour ozone reductions of more than 2 ppb are expected in 47 percent of the counties with reductions more that 2 ppb in 18 percent of the counties.

[16]We are using county-level maps to illustrate the spatial extend of the impact of CAIR on 8-hour ozone as opposed to maps of gridded values as we used for PM2.5 because the methodologies for spatial interpolation for 8-hour concentrations is still under development.

3. Figures for Section VIII.C. - Impacts of CAIR on Air Quality Concentrations and Nonattainment

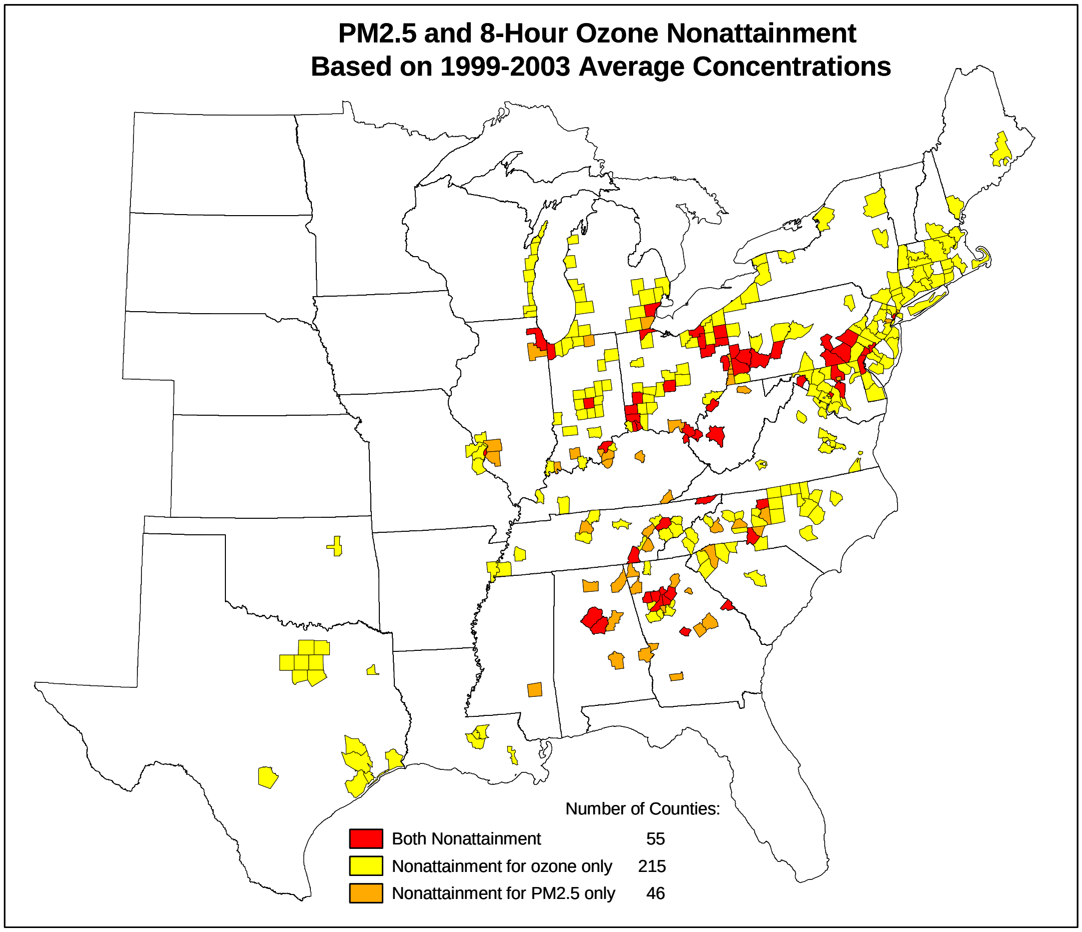
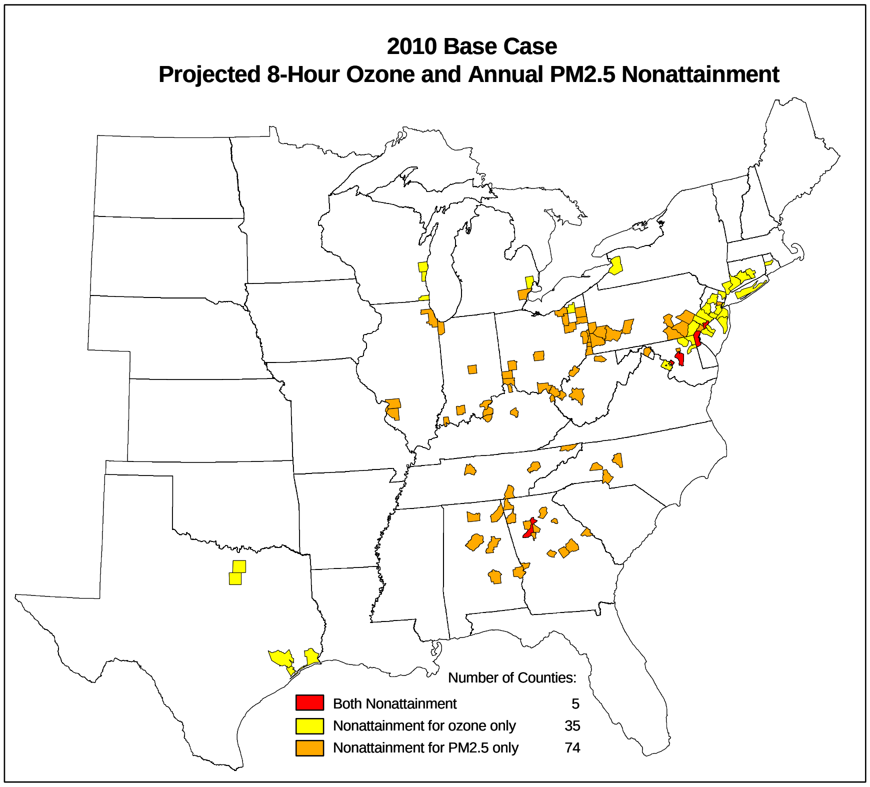


Figure VIII-1. PM2.5 and/or 8-hour ozone nonattainment counties in the East based on average 1999-2003 ambient concentrations.



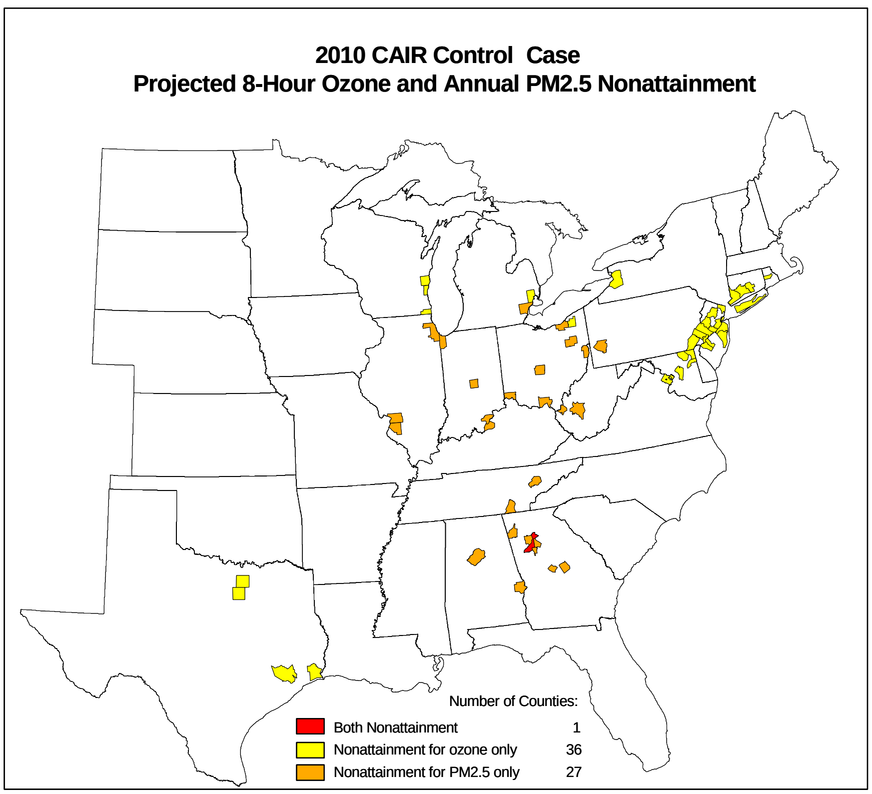


Figure VIII-2. PM2.5 and 8-hour ozone nonattainment counties in the East for the 2010 Base Case (top) and 2010 CAIR control case (bottom).

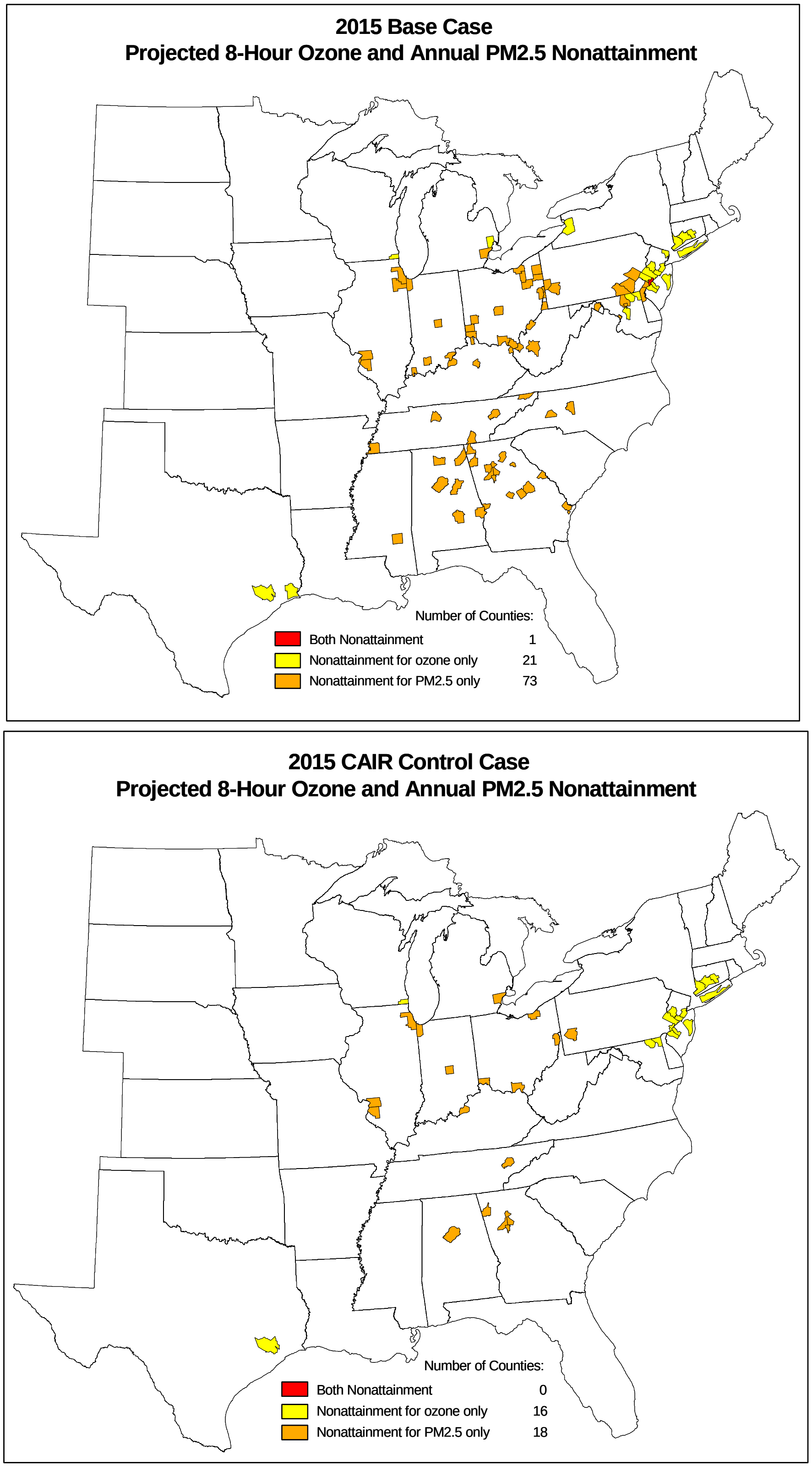
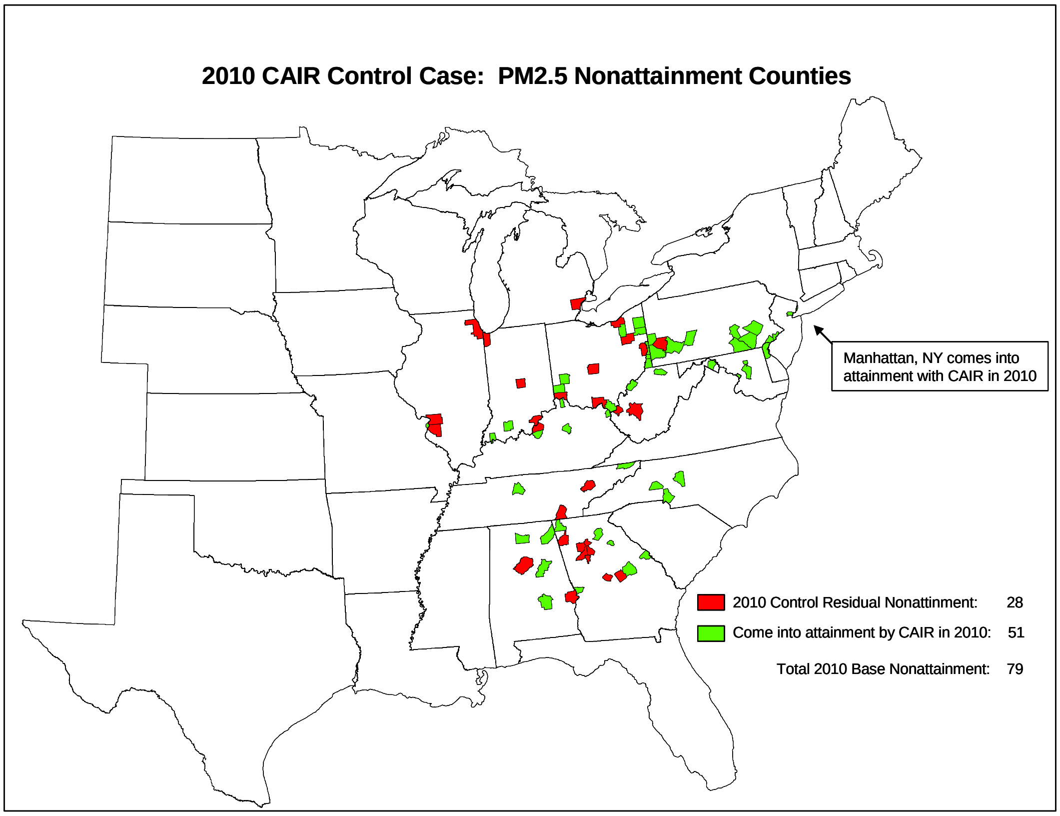


Figure VIII-3. PM2.5 and 8-hour ozone nonattainment counties in the East for the 2015 Base Case (top) and 2015 CAIR control case (bottom).



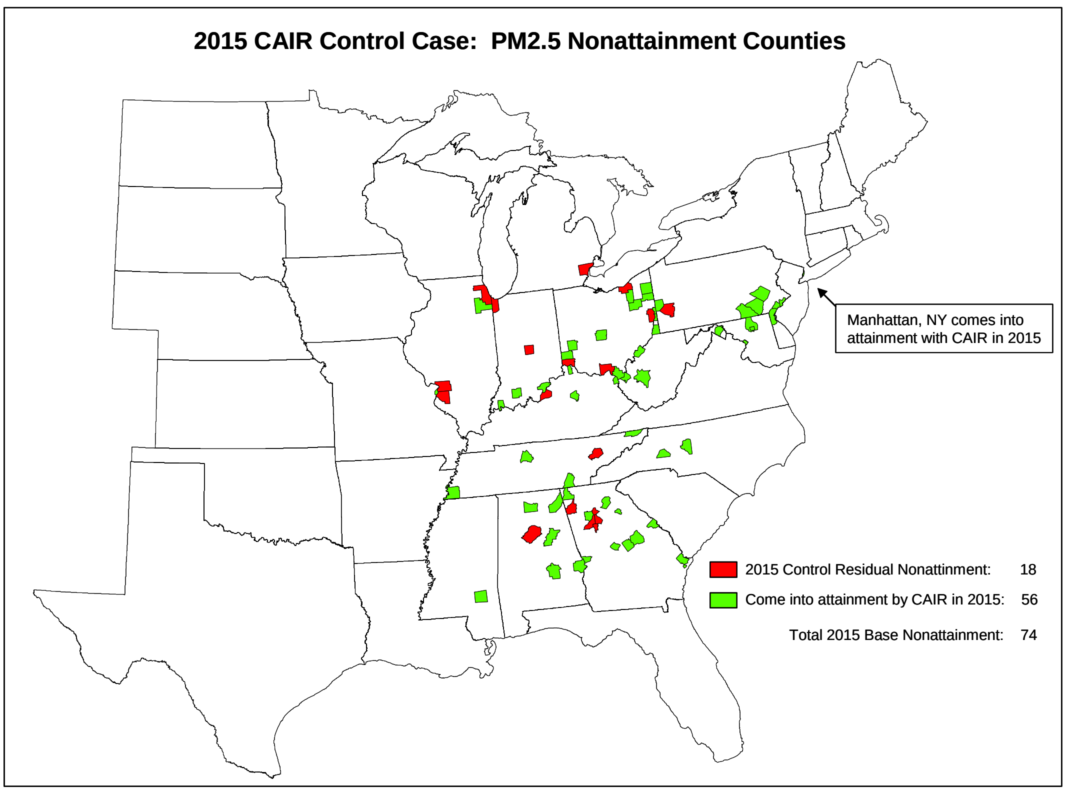


Figure VIII-4. 2010 and 2015 Base Case 8-hour nonattainment counties that are expected to come into attainment with CAIR in 2010 (top) and 2015 (bottom).

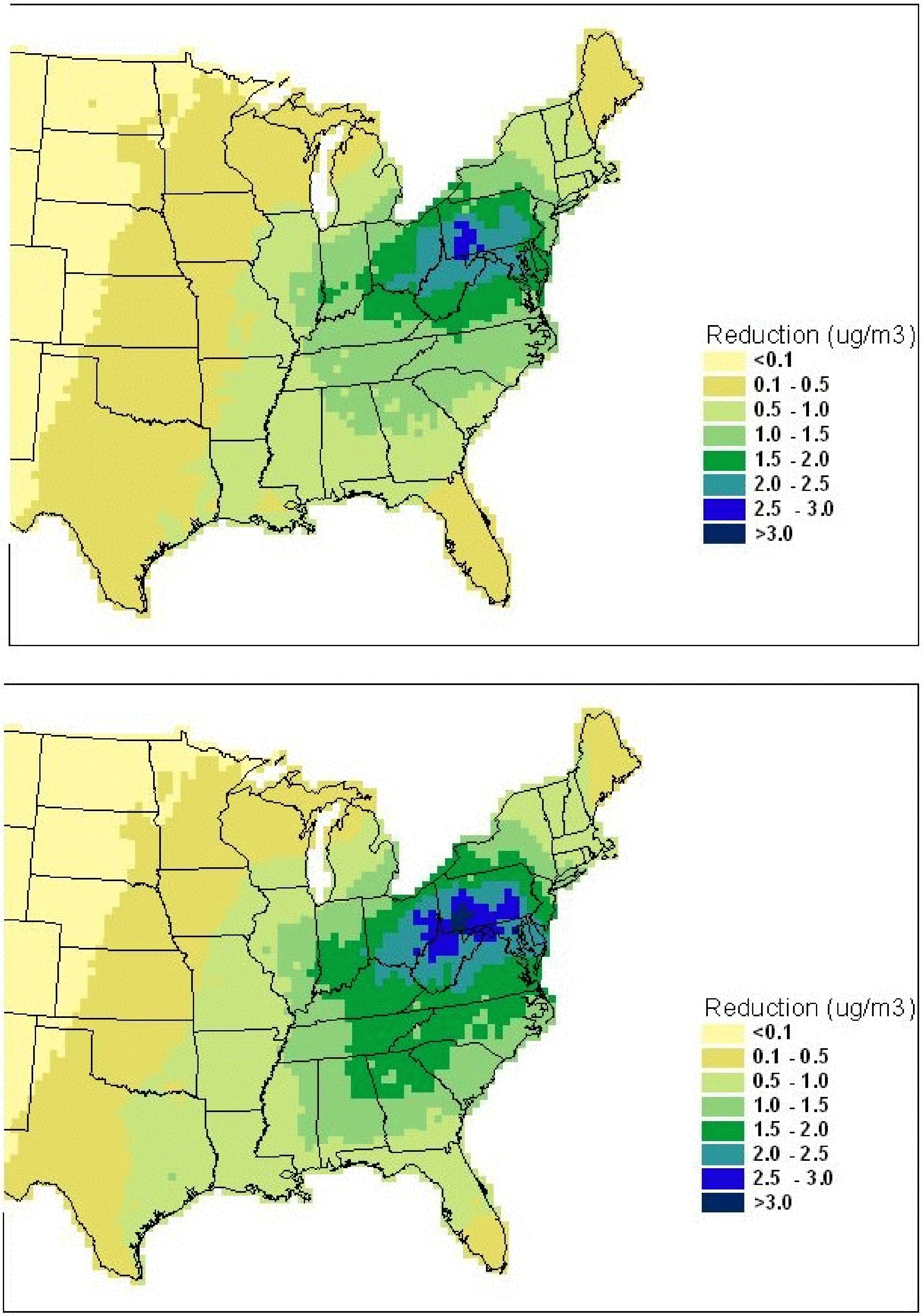
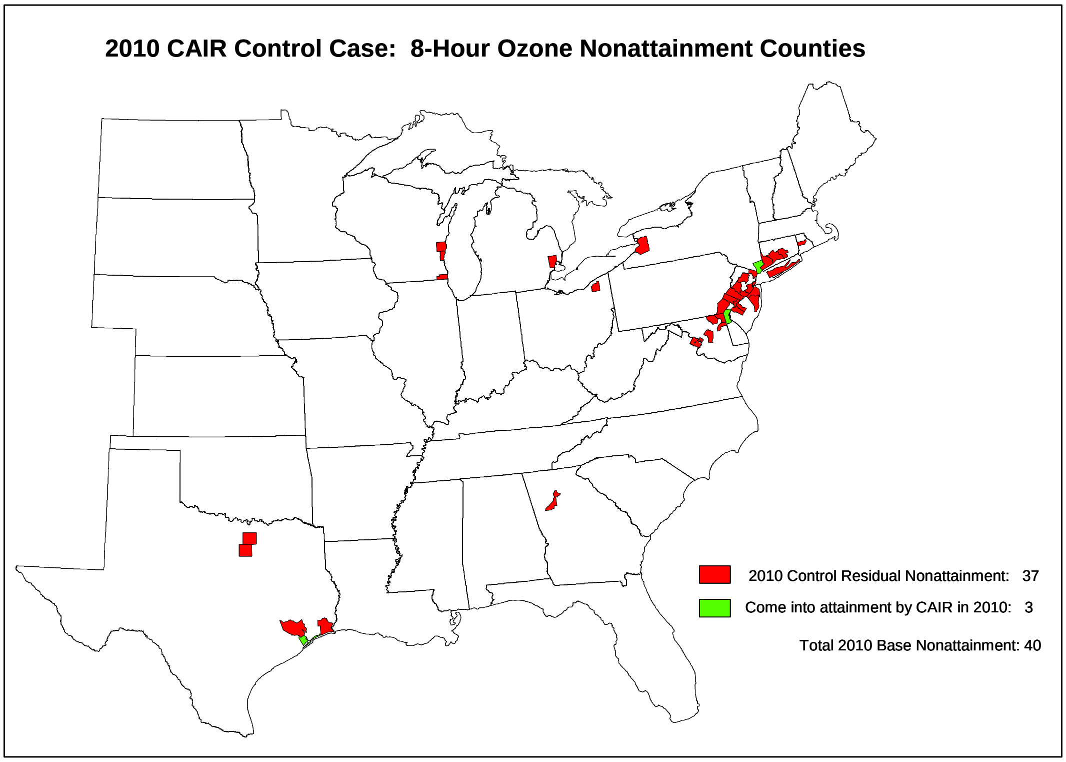


Figure VIII-5. Regionwide reduction in annual average PM2.5 expected from CAIR in 2010 (top) and 2015 (bottom).



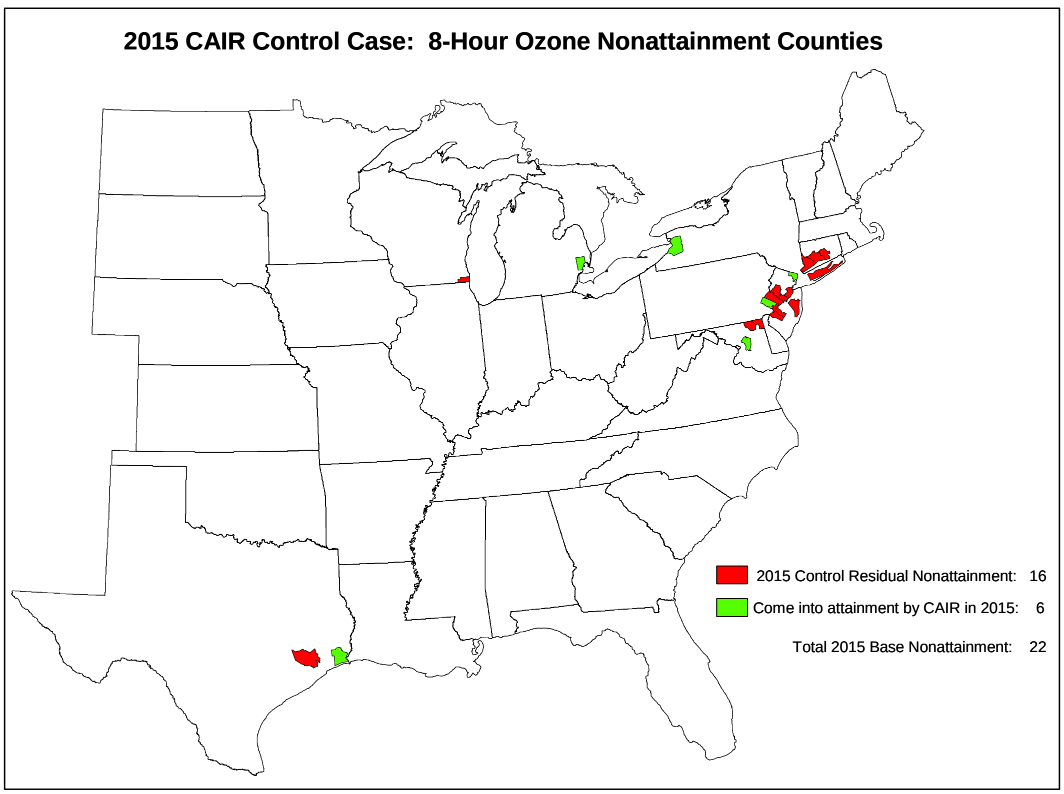


Figure VIII-6. 2010 and 2015 Base Case 8-hour nonattainment counties that are expected to come into attainment with CAIR in 2010 (top) and 2015 (bottom).

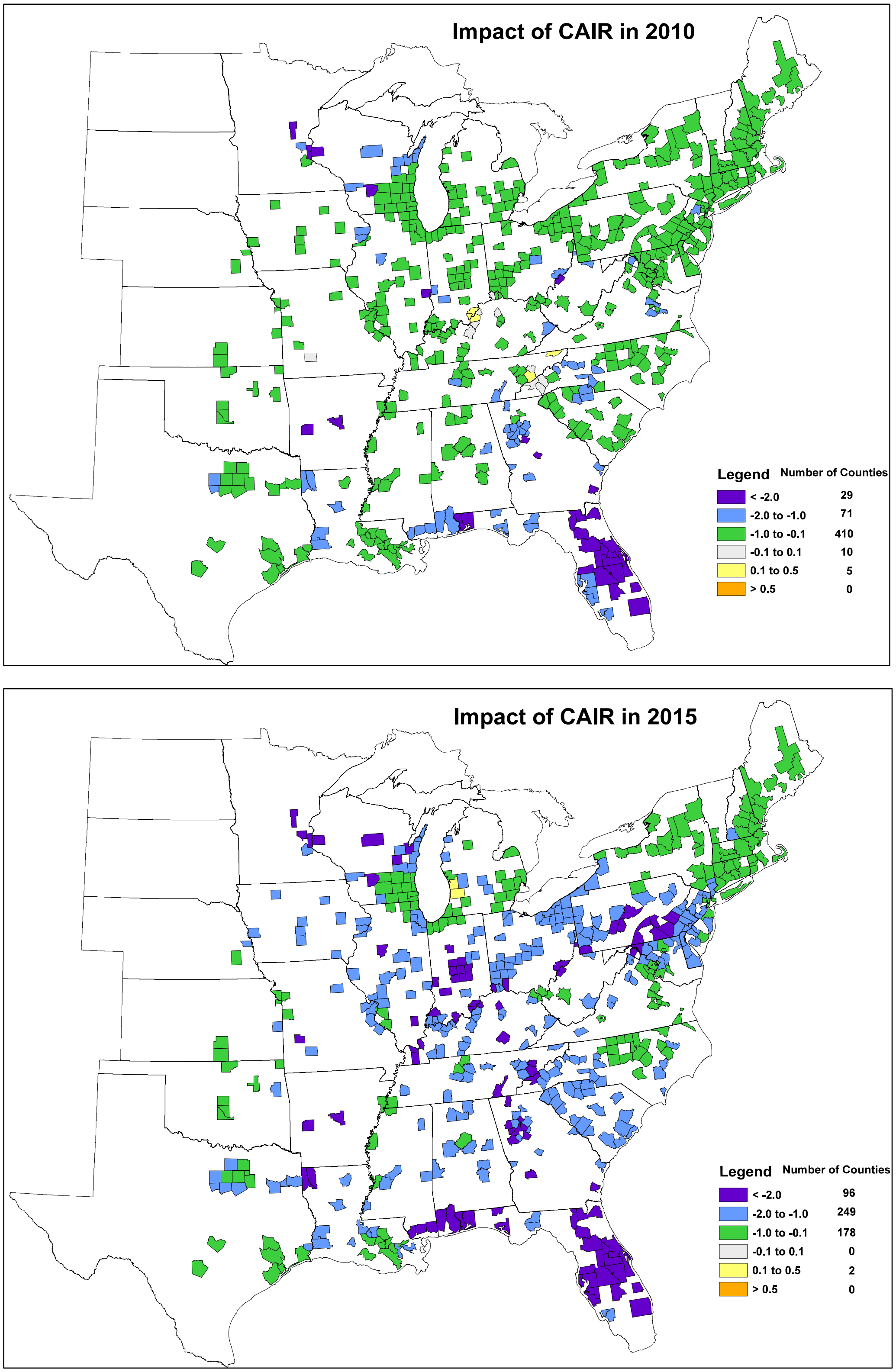


Figure VIII-7. Regionwide reduction in 8-hour ozone concentrations expected from CAIR in 2010 (top) and 2015 (bottom).

D. Estimated Impacts on Visibility in Class 1 Areas

The impacts of the CAIR regional SO2 and NOx emissions reductions were examined in terms of the projected improvements in visibility on the 20 percent best and worst days from 2001 at Class I areas. We quantified visibility impacts at the 116 Class I areas which have complete IMPROVE ambient data for 2001 or are represented by IMPROVE monitors with complete data[17]. There are currently 110 IMPROVE monitoring sites (representing all 156 Class I areas) collecting ambient PM2.5 data at Class I areas, but only 81 of these sites have complete data for 2001.

Visibility for the future year base and CAIR control scenario were calculated using a methodology which applies modeling results in a relative sense similar to the Speciated Modeled Attainment Test (SMAT). The draft PM2.5 and Regional Haze modeling guidance recommends the calculation of future year changes in visibility in a similar manner to the calculation of changes in PM2.5. We generally followed the procedures in the guidance.

In calculating visibility impairment, the extinction coefficient and deciview values are made up of individual component species (sulfate, nitrate, organics, etc). The predicted change in visibility (on the 20 percent best and worst days) is calculated as the percent change in the extinction coefficient for each of the PM2.5 species (on a daily average basis). The individual daily species extinction coefficients are summed to get a daily total extinction value. The daily extinction coefficients are converted to deciviews and then averaged across all 20 percent best and all 20 percent worst days separately. In this way, we calculate an average change in deciviews from the base case to a future case at each IMPROVE site. Additionally, subtracting the CAIR scenario deciview values from the corresponding future base case deciview values gives an estimate of the visibility benefits in Class I areas expected to occur with CAIR. Additional details on the visibility calculation methodology can be found in the report "Supplemental Air Quality Modeling Technical Support Document (TSD) for the Clean Air Interstate Rule (CAIR) Better-than-BART Demonstration"(EPA, 2005e).

As described in Section V.C., we have updated the SMAT procedures to use PM2.5 component species that emulate the FRM measurements as part of the methodology for projecting future PM2.5 concentrations. For visibility calculations, we are continuing to use the IMPROVE program species definitions and visibility formulas which are recommended in the draft modeling guidance. Each IMPROVE site has measurements of PM2.5 species and therefore we do not need to estimate the species fractions in the same way that we did for FRM sites (i.e., using interpolation techniques and other assumptions concerning volatilization of species). Therefore, the methodology for calculating PM2.5 species fractions for the visibility calculations (at IMPROVE sites) differs from the calculations in the revised SMAT methodology.

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[17] There are 81 IMPROVE sites with complete data for 2001. Many of these sites collect data that is "representative" of other nearby unmonitored Class I areas. There are a total of 116 Class I areas that are represented by the 81 sites. The matching of sites to monitors is taken from "Guidance for Tracking Progress Under the Regional Haze Rule".

Appendix I contains an example calculation of the predicted improvement in visibility on the 20 percent worst days at an IMPROVE site. We used data for the period 1998-2002 as the baseline for calculating visibility impairment[18]. The current visibility degradation as well as the future visibility degradation in Class I areas on the 20 percent best visibility days and the 20 percent worst visibility days for the 2010 and 2015 base and CAIR are also provided in Appendix I[19]. The calculated visibility in deciviews (dv) is based on the model predicted changes in PM species between the 2001 Base Year and the 2010 and 2015 Base and CAIR CMAQ model runs.

As an example of the information in Appendix I, the following is a discussion of the expected improvement in visibility on the 20 percent worst visibility days at the Great Smoky Mountains National Park (GRSM). Between the current base year and the 2010 Base Case, visibility is expected to improve by 0.4 dv. The improvement between the current base year and 2010 with CAIR is 2.3 dv. In 2010, visibility is projected to improve by 1.9 dv solely due to CAIR, compared to the base case. The improvement in visibility by 2015 is larger than in 2010. The visibility improvement from the current base year to the 2015 Base 0.8 dv. The improvement from the base year to 2015 with CAIR is 3.4 dv. The improvement solely due to CAIR in 2015 is projected to be 2.6 dv. The modeling predicts somewhat smaller improvements in visibility on the 20 percent best days forecast for both 2010 and 2015. Note that there are no cases in which visibility deteriorated due to the regional strategy.

[18]The baseline visibility is calculated as the average deciviews in the 1998-2002 period. This was the most recent period of available complete IMPROVE data. The future year deciview values were normalized to the 1998-2002 5 year average values by adjusting the future deciview values by the difference between the 2001 visibility and the 1998-2002 visibility at each site.

[19]There were also several model runs for 2015 which compared the CAIR controls to BART controls. The results of these runs and a “better than BART” analysis is contained in the better than BART TSD.

E. Estimated Impacts on Nitrogen and Sulfur Deposition

The impacts of CAIR on nitrogen and sulfur deposition were calculated for 2010 and 2015 using the CMAQ deposition predictions. As described in the CAIR RIA, Chapter 5 (EPA, 2005e), nitrogen and sulfur deposition can contribute to a number of harmful environmental effects in sensitive forests and to fish and other aquatic life in sensitive lakes, streams, and coastal ecosystems. Total sulfur deposition is comprised of the sulfur mass in SO2 and sulfate deposition. For this analysis, nitrogen deposition was determined by calculating the sum of wet and dry deposition for nitrogen mass contained in the nitrogen-containing species predicted by CMAQ. These species include nitrate, nitric acid, nitric oxide, nitrogen dioxide, and ammonium. The calculation of total deposition was performed for each model grid cell over the annual model simulations to yield an estimate of annual total nitrogen deposition in each grid. A similar procedure was followed for calculating annual total sulfur deposition using CMAQ-predicted deposition of sulfate and SO2.

We used the annual deposition estimates for the 2010 and 2015 Base Cases along with deposition from the corresponding CAIR scenario to determine the percent change in nitrogen and sulfur deposition expected from CAIR, compared to what would be expected in these future years without CAIR. Maps showing the percent change in nitrogen deposition in 2010 and 2015 (future base case versus CAIR) are provided in Figure VIII-8. The results indicate that CAIR is expected to result in lower nitrogen deposition by 5 percent or more over much of the area east of the Mississippi River including estuaries along the eastern Gulf Coast and in the mid-Atlantic region. The largest expected decline in nitrogen deposition in 2010, compared to the 2010 Base, are in the range of 10 to 15 percent. This range of improvement is most notable along portions of the Appalachian Mountains from southwest Virginia to Pennsylvania. In 2015, the reductions in nitrogen deposition compared to base case estimates are larger than in 2010, especially in and near the Appalachian Mountains and the Adirondacks.

The percent reductions in sulfur deposition across the East with CAIR versus the 2010 and 2015 Base Cases are shown in Figure VIII-9. As indicted by this figure, CAIR is expected to result in lower sulfur deposition by 15 percent or more across most portions of the East to the east of the Mississippi River. The expected improvement in sulfur deposition is in the range of 20 to 25 percent in the southern portion of the Appalachians in 2010. In 2015, the sulfure deposition is reduced further, by up to 30 to 40 percent. Along the Appalachians from West Virginia and western Virginia northeastward to southern New York State, CAIR is expected to reduce sulfur deposition by 30 to 40 percent in 2010, and by over 50 percent in portions of this area in 2015. Across the forests of upstate New York and northern New England, sulfur deposition is projected to decline by 30 to 40 percent in 2015 with CAIR, compared to the forecast base case conditions.

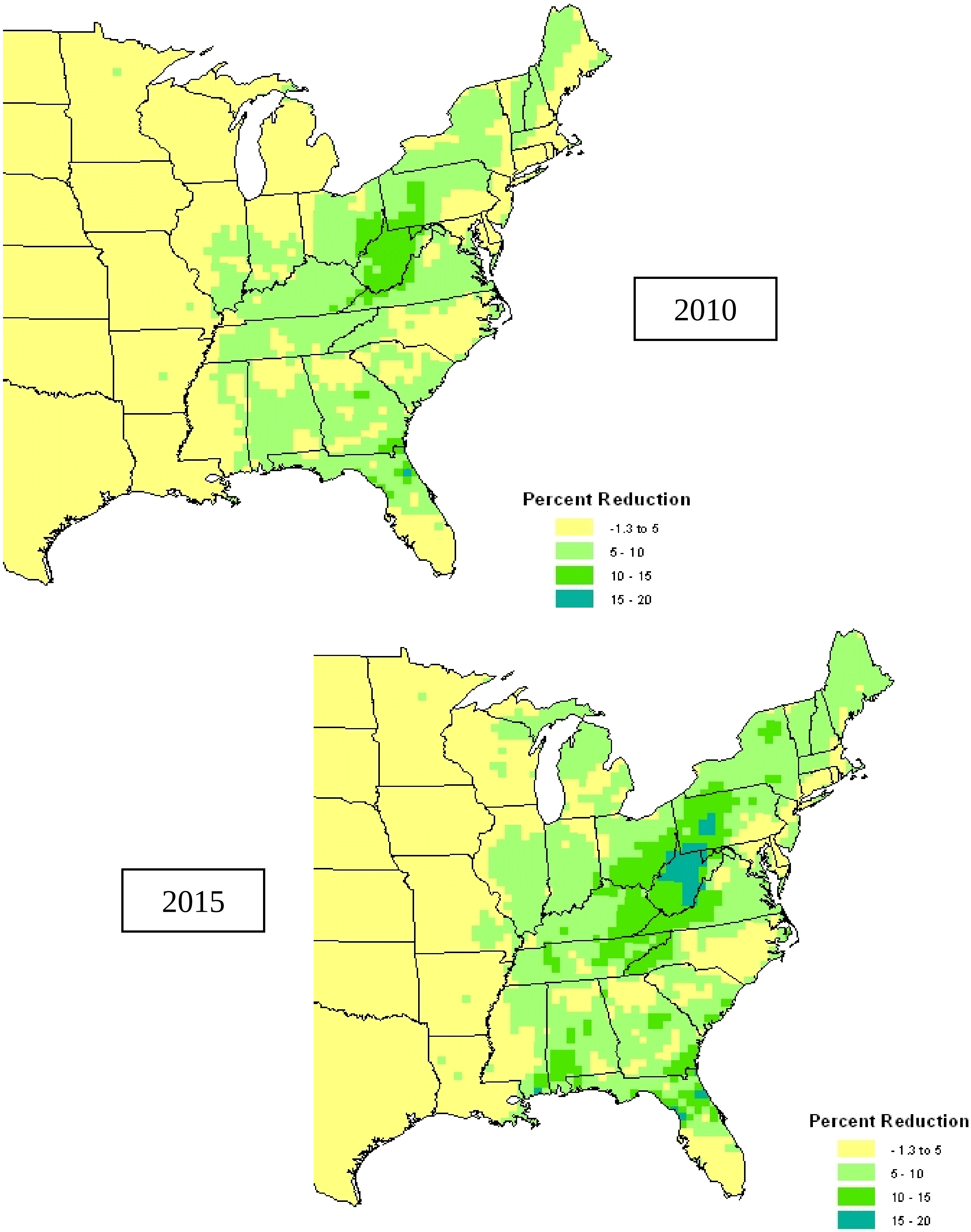

Figure VIII-8. Percent reduction in total nitrogen deposition expected from CAIR in 2010 (top) and 2015 (bottom).

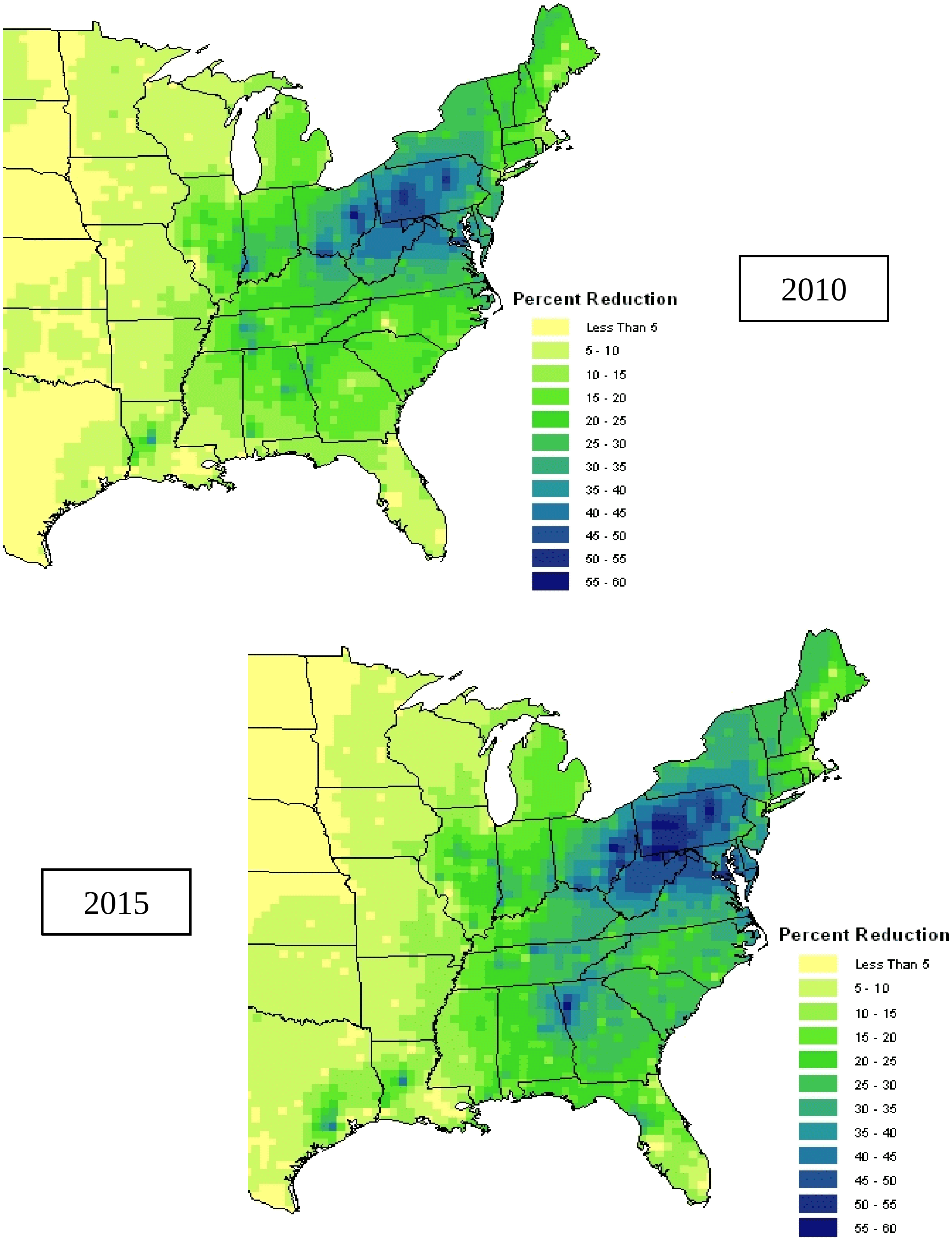

Figure VIII-9. Percent reduction in total sulfur deposition expected from CAIR in 2010 (top) and 2015 (bottom).

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Technical Support Document
for the Final
Clean Air Interstate Rule

Air Quality Modeling Analyses

Appendix A

Analysis of 1995 Ozone Episodes

Meteorological Conditions and 8-Hour Ozone Concentrations During the 1995 Episodes Modeled for CAIR

Warm temperatures, light winds, cloud-free skies, and stable boundary layers are some of the typical characteristics of ozone episodes. On a synoptic scale, these conditions usually result from a combination of high pressure aloft (500 millibars) and at the surface. At a smaller scale, the conditions that lead to local ozone exceedances can vary from location to location (based on factors such as wind direction, sea/lake breezes, etc.) The meteorological and resultant ozone patterns for the three 1995 modeling episodes are discussed in more detail below. Maps showing the observed daily maximum 8-hour ozone concentrations for each day in the three episodes are provided below[1].

June 12-24, 1995

The initial stages of this episode were fairly typical from the standpoint of regional meteorology. A 500-millibar ridge propagated into the eastern U.S. from the west. The ridge was associated with a surface high that migrated south from Canada. A cold front passed completely through the region by Wednesday, June 13 allowing the modeling to start with a clean set of initial conditions. Maximum temperatures during the June 15 - 16 period were generally in the 80s and little precipitation was measured. By June 17, a strong, 1028 millibar, surface high pressure system was anchored over the region. High 8-hour ozone values (e.g., >= 85 ppb) were most widespread from the 17th through the 19th, especially over the Lake Michigan region, the Ohio Valley, the mid-Atlantic States, and the southern portions of the Northeast Corridor.

As the aloft pattern amplified, a cut off low pressure system developed over the southeastern U.S. On the 19th and 20th, cooler temperatures and occasional rain prevailed in the Southeast. This resulted in an atypical temperature pattern which featured maximums of 90-100 degrees F over the northern tier of States and 75-85 degrees F in the south. Additionally, the strong cyclonic circulation around this low resulted in aloft flow from east to west over the mid-Atlantic and Ohio Valley States. Ozone continued to build throughout this period in the Northeast, peaking on the 19th and 20th when 8-hour ozone daily maximum values of 100 to 125 ppb were common from Washington, D.C. to Boston.

The last four days of the episode were relatively clean in the Northeast due to the combination of a "backdoor" cold front and the northward migration of the cut off low. Meanwhile ozone conducive conditions returned to the Texas Gulf Coast and Lake Michigan areas. The highest value over the June 1995 episode (153 ppb) was recorded near Galveston TX on the 22nd. The episode came to an end on the 25th as a long-wave trough replaced the 500-millibar ridge over the eastern U.S. resulting in more clouds, precipitation, and diffusive mixing.

Table 1 shows a State-by-State listing of daily "exceedance" counts during the June 1995 CAIR episode, where exceedances are defined as daily maximum 8-hour ozone concentrations greater than or equal to 85 ppb. There were 900 exceedances of the ozone NAAQS during this period. The peak day of the episode in terms of exceedance count was June 18. Indiana had the most exceedance monitor-days (104).

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[1]The 8-hour ozone maps were created and provided by the New York State Department of Environmental Conservation.

Table 1. Summary of exceedance-monitor days, by State/day, for the June 1995 episode.

June	AL	AR	CT	DC	DE	FL	GA	IL	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	NE	NH	NJ	NY	NC	OH	OK	PA	RI	SC	TN	TX	VT	VA	WV	WI	TOT
6/15/95	0	0	0	0	0	0	0	3	14	0	0	1	5	0	0	0	0	0	0	3	0	0	0	0	0	2	0	0	0	0	0	4	0	0	0	2	34
6/16/95	0	0	0	0	0	0	0	9	7	0	0	0	0	0	1	0	7	0	0	5	0	0	0	0	0	0	1	0	0	0	0	12	0	0	0	23	65
6/17/95	0	0	3	1	1	0	0	16	19	0	0	4	0	0	6	2	10	0	0	6	0	0	9	6	0	22	0	14	1	0	1	2	0	1	0	11	135
6/18/95	0	1	6	3	4	0	0	10	22	0	0	12	0	3	12	3	8	0	0	7	0	0	12	18	0	27	0	28	2	0	0	0	1	5	1	0	185
6/19/95	0	2	4	3	3	0	0	6	11	0	0	3	0	1	12	2	2	0	1	8	0	0	12	9	0	21	0	30	2	0	1	7	0	7	2	1	150
6/20/95	0	0	1	0	3	0	0	0	3	1	0	1	5	0	8	0	1	2	0	8	0	0	7	2	0	7	1	7	0	0	0	10	0	0	0	0	67
6/21/95	0	0	0	0	0	1	0	7	5	1	0	0	3	0	1	0	1	2	1	6	0	0	0	0	0	2	2	1	0	0	0	14	0	0	0	0	47
6/22/95	2	0	0	0	0	0	0	6	9	0	0	0	1	0	0	0	2	1	0	8	0	0	0	1	0	7	2	0	0	0	0	14	0	0	0	8	61
6/23/95	3	2	0	0	0	0	5	17	8	0	0	0	7	0	0	0	9	0	0	8	0	0	0	0	0	3	0	0	0	0	0	8	0	0	0	19	89
6/24/95	0	0	0	0	0	0	5	19	6	1	0	1	0	0	0	0	2	0	0	6	0	1	0	0	0	0	0	0	0	0	2	7	0	0	0	17	67

<ins>July 5-15, 1995</ins>

The mid-July episode, which covered most of the Ozone Transport Assessment Group (OTAG) July 1995 episode, is much easier to characterize from a meteorological perspective. A strong 500-mb ridge progressed from west to east across the eastern U.S. over the period. This feature was centered over Colorado on the 8th, over Kansas on the 11th, over Illinois on the 13th, and over Pennsylvania on the 15th. The ridge finally flattened out on the 16th allowing a surface cold front to clean out the northern portions of the domain and less stable conditions to prevail over the southern portions.

Excessively hot temperatures accompanied the core of this strong ridge. Temperatures in the 90s and 100s were common throughout the episode. Rainfall was confined primarily to the coastal regions in the south and southeast. Wind speeds were moderate and the mean transport direction was southwest to northeast, especially over the northern half of the domain.

From the 8th through the 10th, the airmass over the eastern U.S. was gradually becoming hazy. Ozone hot spots occurred in urban areas like Houston, Dallas, and Atlanta. By the 11th, the area of regional haze (roughly defined as the area where peak 8-hour ozone was greater than 80-85 ppb) had expanded to encompass most of the domain. On top of that "background," local contributions from urban emissions yielded ozone values > 100 ppb in places like Memphis, Atlanta, St. Louis, Evansville, and Nashville on the 11th and 12th.

July 13 and 14 marked the highest regional ozone levels of the summer as almost all major metropolitan areas in the northern two-thirds of the domain measured 8-hour ozone values greater than 85 ppb on this day. For the 14th and 15th, most of the ozone problem shifted east and south due to both transport and the location of the aloft core of warm air. The Northeast Corridor, Charlotte, Greensboro, Birmingham, and Atlanta all had exceedances of the standard on this day. The episode ended abruptly on the 16th (Sunday) for most of the domain, although elevated ozone lingered over the southern regions into the early part of the next week.

Table 2 shows a State-by-State listing of daily exceedance counts during the July 1995 CAIR episode. There were 809 exceedances of the ozone NAAQS during this eight-day period. The peak day of the episode, in terms of exceedance monitors was July 13. Ohio had the most exceedances (91).

Table 2. Summary of exceedance-monitor days, by State/day, for the July 1995 episode.

July	AL	AR	CT	DC	DE	FL	GA	IL	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	NE	NH	NJ	NY	NC	OH	OK	PA	RI	SC	TN	TX	VT	VA	WV	WI	TOT
7/8/95	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	1	6	0	0	0	0	12
7/9/95	0	0	0	0	0	0	3	1	8	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	9	0	0	0	0	28
7/10/95	1	0	0	0	0	0	6	2	1	0	0	3	3	0	0	0	0	0	0	5	0	0	0	0	1	5	0	0	0	0	3	3	0	0	0	0	33
7/11/95	3	2	0	0	0	0	6	5	10	0	0	7	2	0	1	0	1	0	0	5	0	0	1	0	4	8	0	0	0	2	4	3	0	0	1	3	68
7/12/95	5	2	0	3	2	1	0	15	18	0	0	13	4	0	13	0	7	0	0	6	0	0	7	0	4	12	0	7	0	0	5	8	0	8	1	20	161
7/13/95	3	2	4	3	3	0	0	18	15	0	0	5	1	5	12	5	9	0	0	8	0	2	8	13	3	26	0	26	0	0	9	4	0	5	4	13	206
7/14/95	2	0	6	2	4	0	4	6	15	0	0	11	0	3	10	3	10	0	0	3	0	0	12	9	8	25	0	17	2	3	11	1	0	6	2	6	181
7/15/95	4	0	3	3	4	0	5	2	5	0	0	2	0	0	11	0	0	0	0	2	0	0	12	4	8	12	0	19	0	2	7	1	0	12	2	0	120

August 7-21, 1995

A one-day ozone event occurred over New England on August 10, and a separate one-day event occurred in the Lake Michigan region on the 12th. By the 14th, high pressure aloft and at the surface dominated the eastern half of the U.S. Temperatures ranged from 90 to 100 degrees F over most of the domain throughout this period. Ozone was highest over the mid-Atlantic States during this period. Hurricane Felix brushed the East Coast from the 16th – 18th, but appeared to have little effect on ozone or ozone transport away from the immediate eastern seaboard.

A weak cold front, draped across the Great Lakes over most of the episode, moved slowly southward over the eastern half of the Appalachians during the August 18-21 period. This front initiated precipitation that helped keep ozone concentrations low in the upper Midwest. The 18th featured high ozone across the South in cities such as: Atlanta, Charlotte, Birmingham, Augusta, as well as St. Louis. On the 19th and 20th, as the front slid further south, ozone air quality improved over this region as well. As the 21st marked the fourth day on which the same airmass has resided over the Northeast, it had become fairly polluted by that point.

Table 3 shows a State-by-State listing of daily exceedance counts (i.e., daily maximum values greater than 85 ppb) during the August 1995 episode. There were 437 exceedances of the ozone NAAQS during this period. The peak day of the episode, in terms of exceedance monitors was August 21st, although high ozone days were interspersed fairly regularly over the 12 day episode. Pennsylvania had the most exceedances (37), but several 10 other States had at least 20 monitor-days with 8-hour peaks greater than 85 ppb.

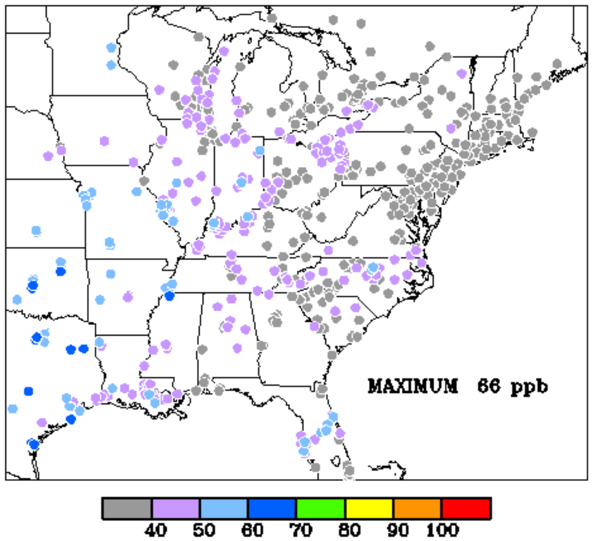
Table 3. Summary of exceedance-monitor days, by State/day, for the August 1995 episode.

August	AL	AR	CT	DC	DE	FL	GA	IL	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	NE	NH	NJ	NY	NC	OH	OK	PA	RI	SC	TN	TX	VT	VA	WV	WI	TOT
8/10/95	2	0	2	0	0	0	2	0	0	0	0	0	0	3	0	3	0	0	0	1	0	1	0	0	0	2	0	0	2	0	2	0	0	0	0	0	20
8/11/95	2	0	0	0	0	0	0	2	0	0	0	1	0	3	0	0	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	2	14
8/12/95	2	0	0	0	1	0	3	7	5	0	0	0	2	0	0	0	3	0	0	2	0	0	2	0	2	0	0	0	0	0	1	0	0	0	1	3	34
8/13/95	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	2	0	0	3	0	0	0	1	0	17
8/14/95	4	0	1	1	0	0	4	0	1	0	0	1	0	0	7	0	4	0	0	1	0	0	2	3	5	3	0	1	0	2	2	0	0	5	0	0	47
8/15/95	4	0	0	0	0	0	3	0	1	0	0	4	0	0	1	0	2	0	0	2	0	0	0	0	0	2	0	7	0	1	3	0	0	2	1	0	33
8/16/95	3	0	0	1	0	2	3	0	1	0	0	6	0	0	2	0	0	0	0	0	0	0	0	1	4	5	0	2	0	6	5	0	0	3	1	0	45
8/17/95	5	0	0	0	0	2	5	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	3	0	5	10	2	0	1	1	0	51
8/18/95	5	0	0	0	0	0	7	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	10	0	0	0	0	5	6	0	0	2	1	0	41
8/19/95	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	1	0	0	0	0	0	6	2	3	0	0	0	8	0	0	0	0	25
8/20/95	0	0	0	2	1	0	0	0	0	0	0	0	1	0	3	0	3	0	0	0	0	0	0	1	0	5	0	9	0	0	0	8	0	5	0	0	38
8/21/95	0	0	4	2	3	0	0	0	0	0	0	0	2	0	10	3	0	0	0	0	0	0	12	5	4	2	0	10	2	0	0	6	0	7	0	0	72

8-Hour Daily Maximum Ozone Maps

June 1995 Episode: June 12 - 24, 1995

MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 12, 1995



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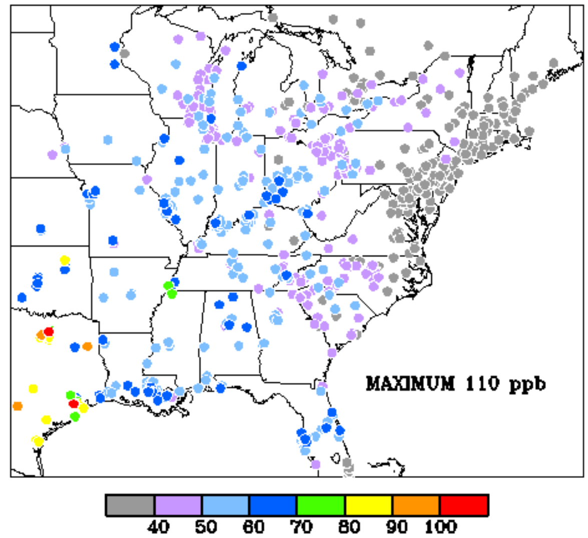
OVER THE EASTERN UNITED STATES AND ONTARIO
June 13, 1995



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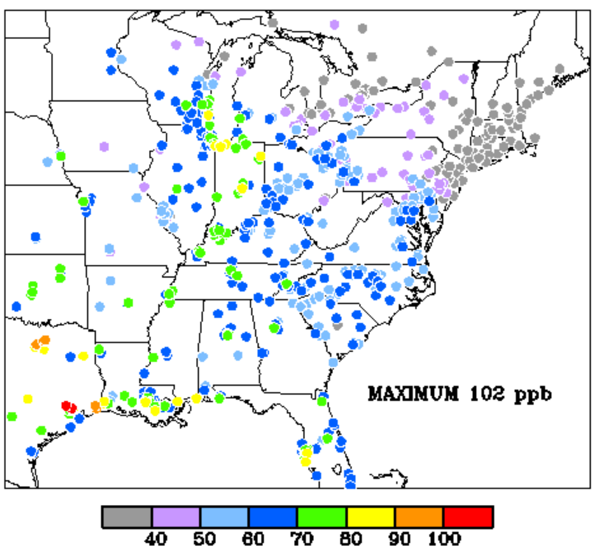
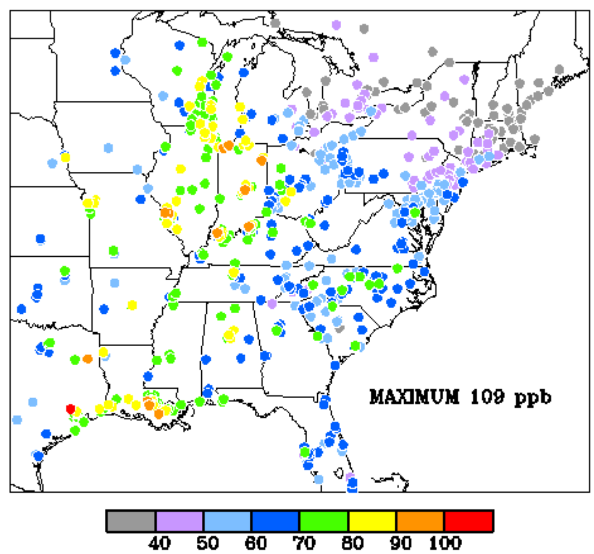
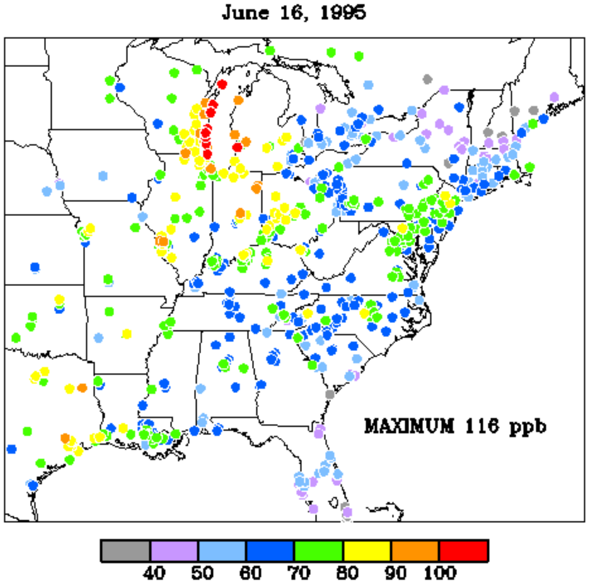
OVER THE EASTERN UNITED STATES AND ONTARIO
June 14, 1995



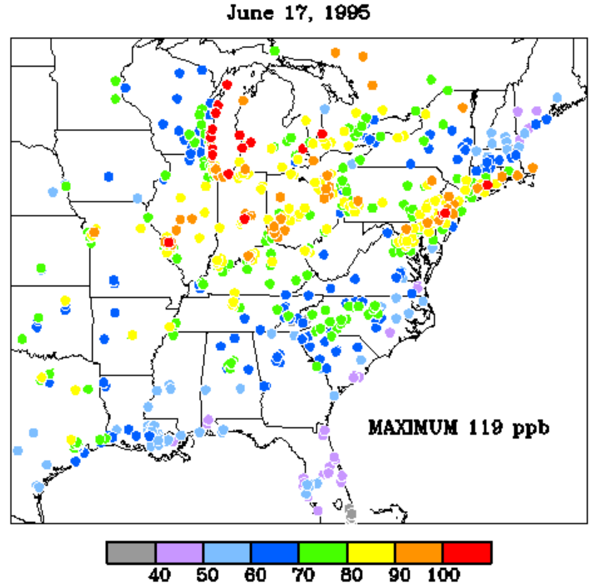
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 15, 1995

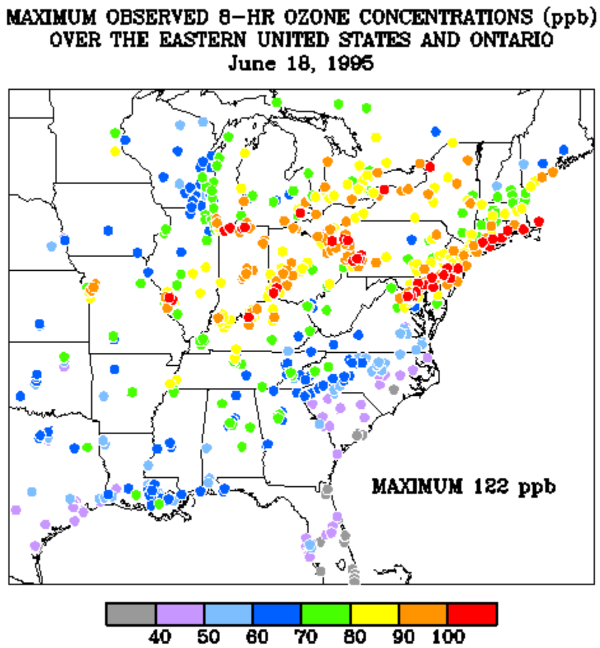


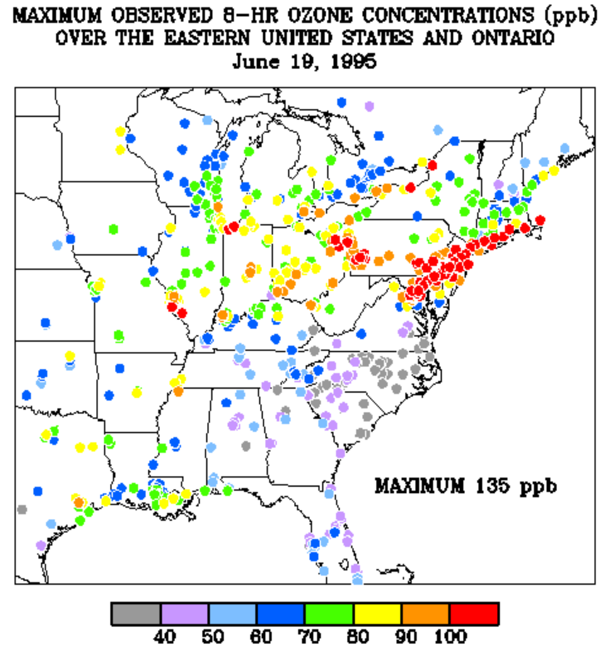
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 16, 1995

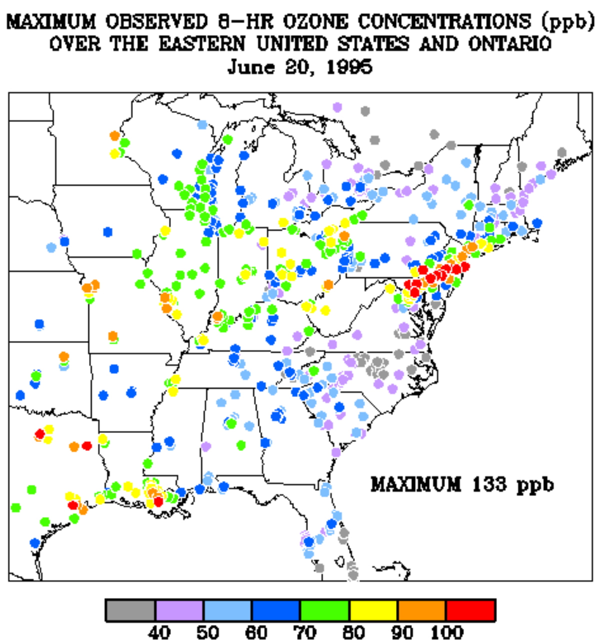


MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 17, 1995




MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 18, 1995
MAXIMUM 122 ppb
40 50 60 70 80 90 100


MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 19, 1995
MAXIMUM 135 ppb
40 50 60 70 80 90 100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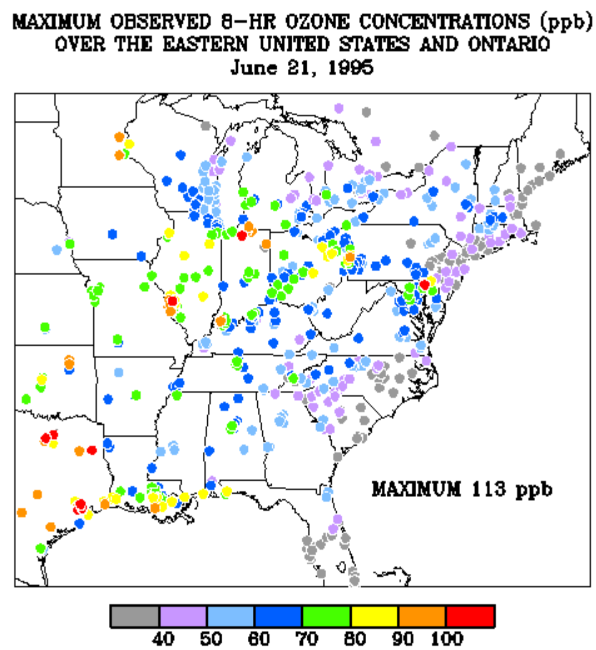
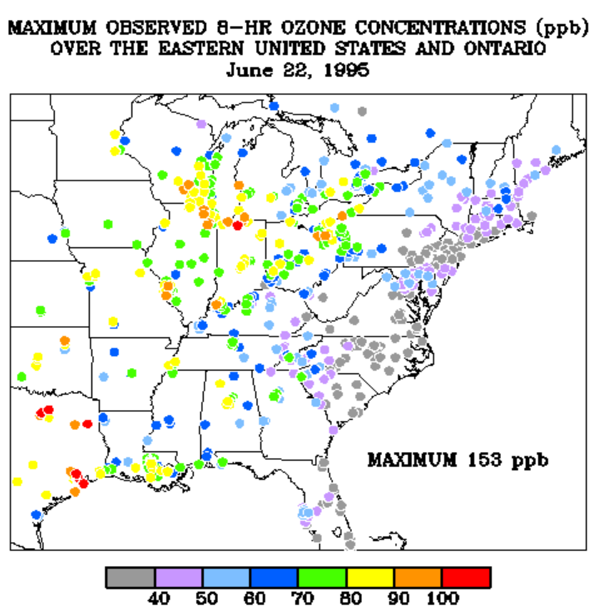
OVER THE EASTERN UNITED STATES AND ONTARIO
June 20, 1995
MAXIMUM 133 ppb
40 50 60 70 80 90 100


MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 21, 1995
MAXIMUM 113 ppb
40 50 60 70 80 90 100


MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 22, 1995
MAXIMUM 153 ppb
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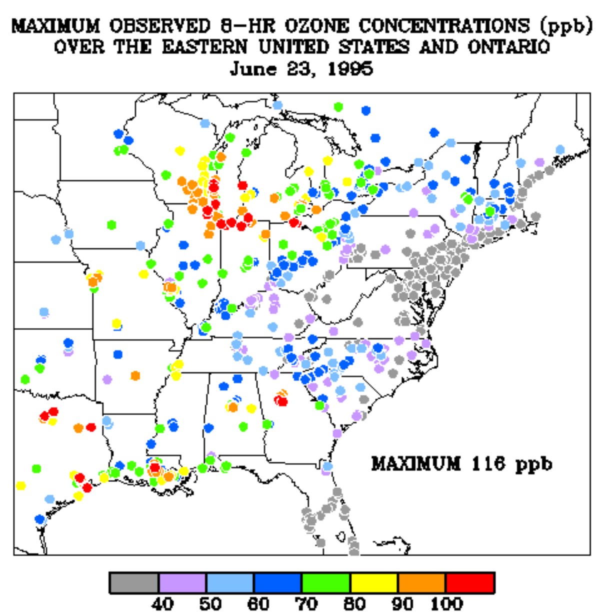
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 23, 1995
MAXIMUM 116 ppb
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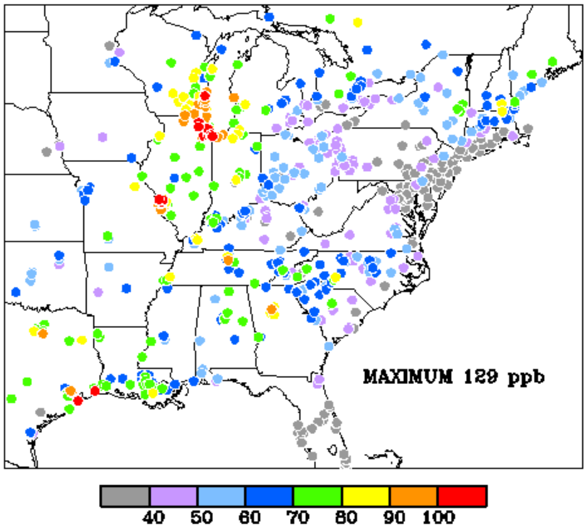
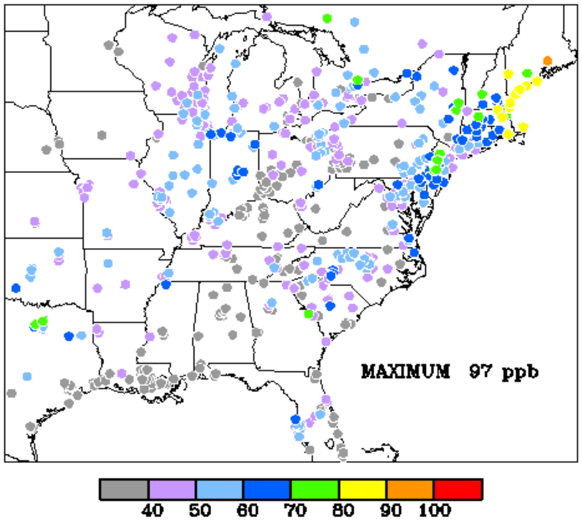
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
June 24, 1995



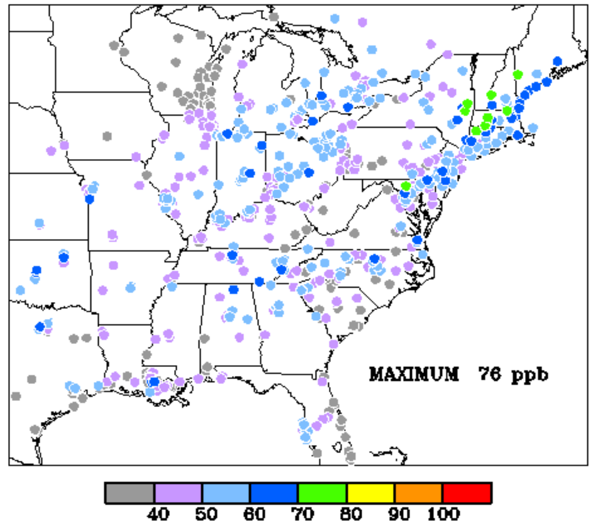
8-Hour Daily Maximum Ozone Maps

July 1995 Episode: July 5 - 15, 1995

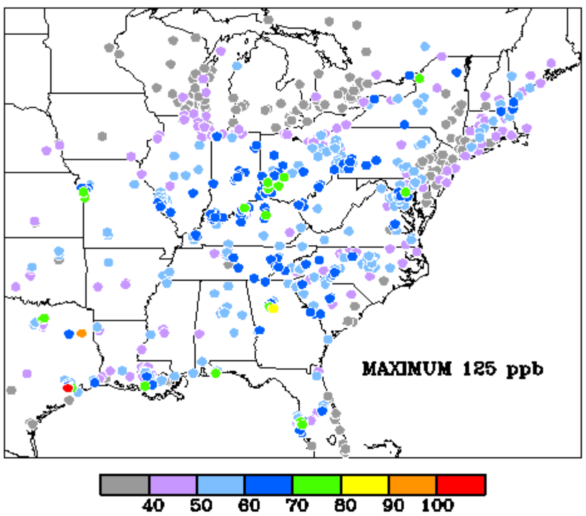
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 05, 1995



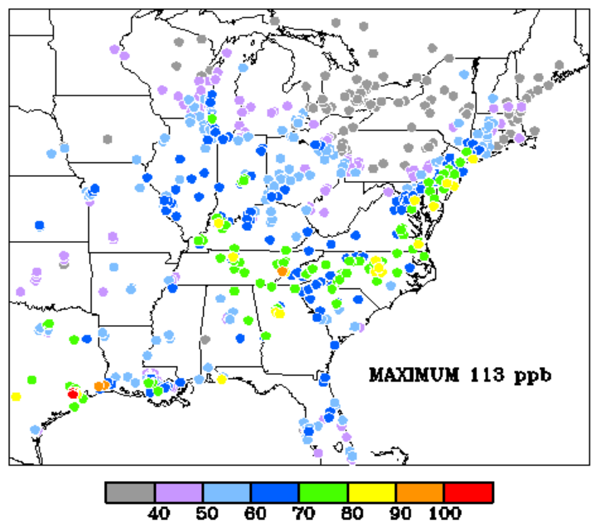
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 06, 1995



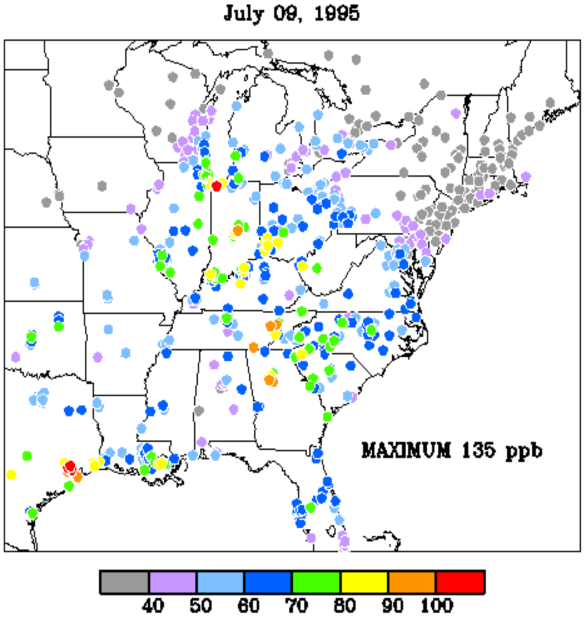
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 07, 1995



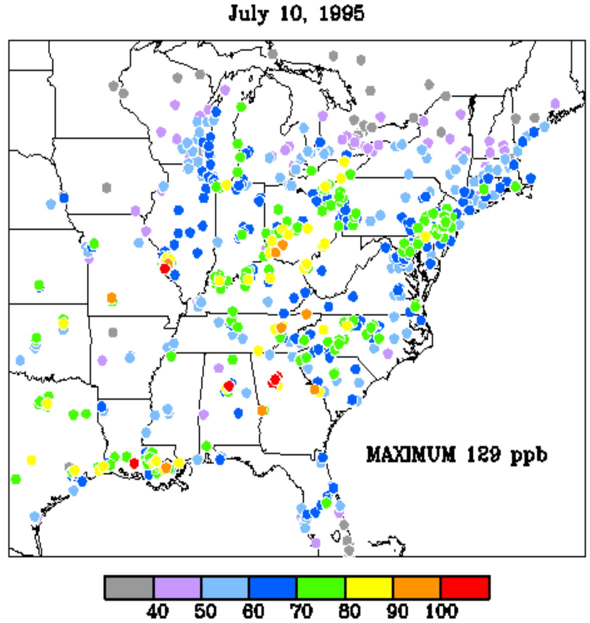
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 08, 1995



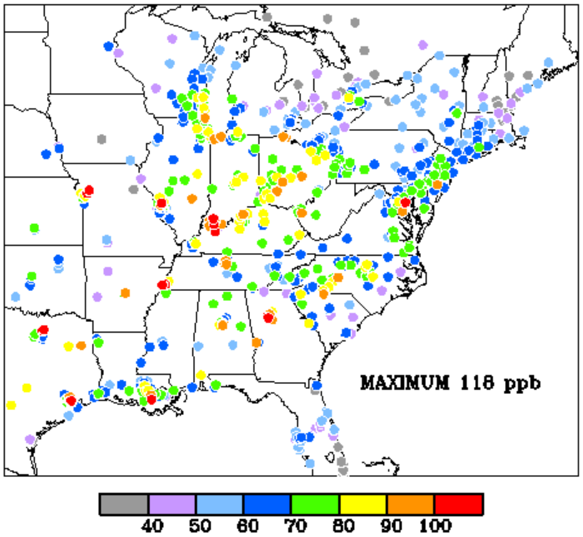
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 09, 1995



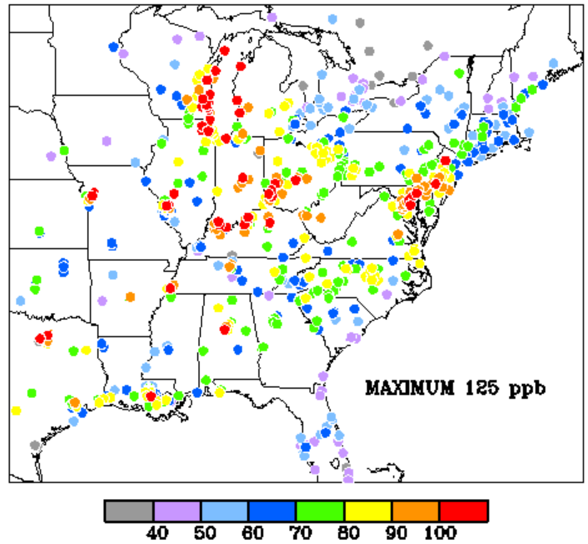
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 10, 1995



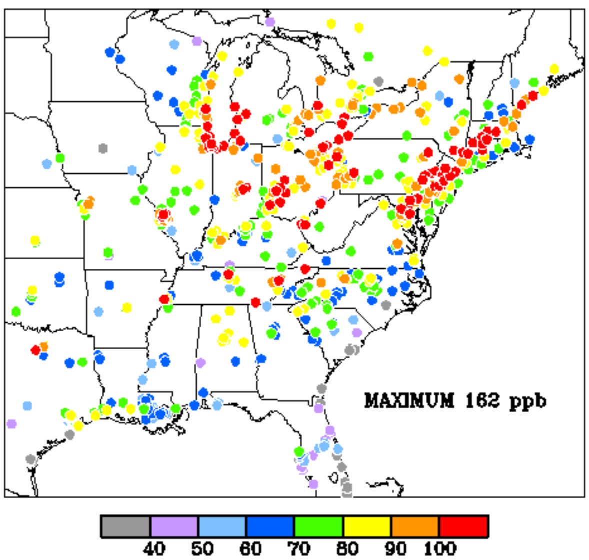
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 11, 1995



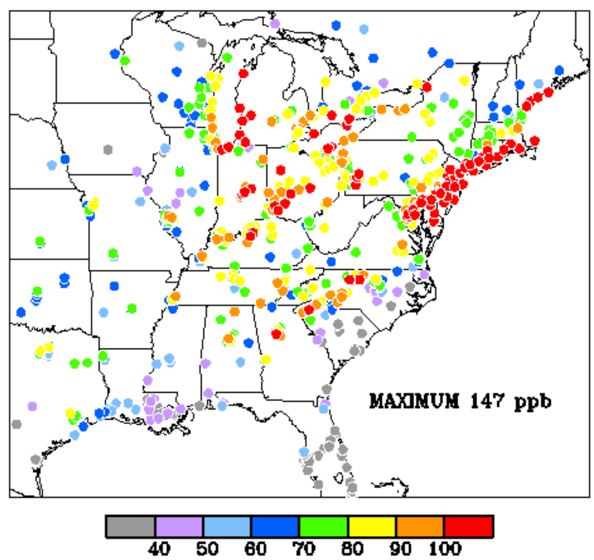
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 12, 1995



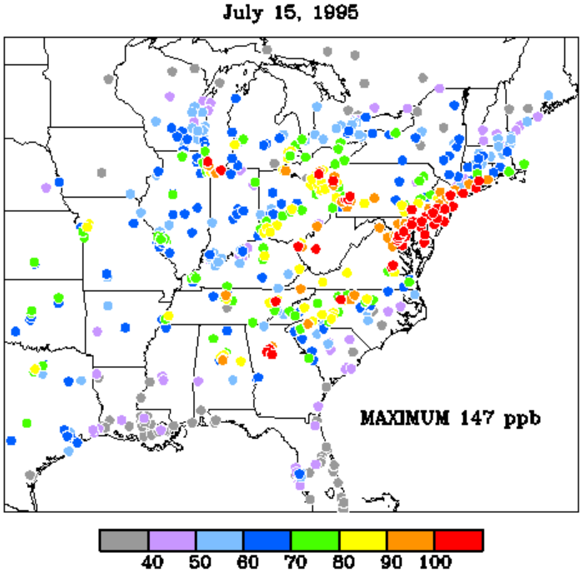
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 13, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 14, 1995



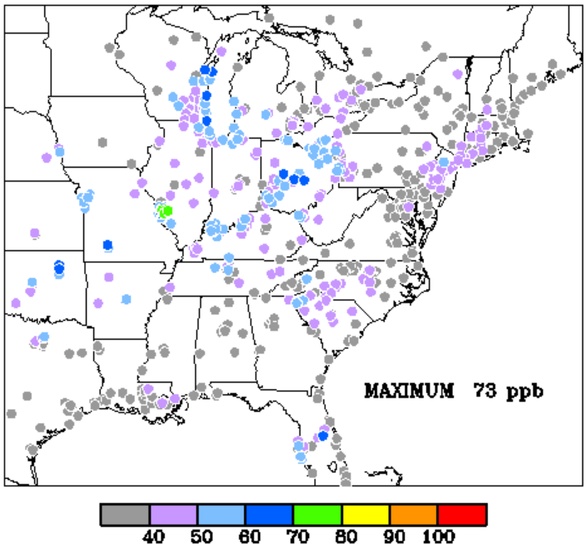
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
July 15, 1995



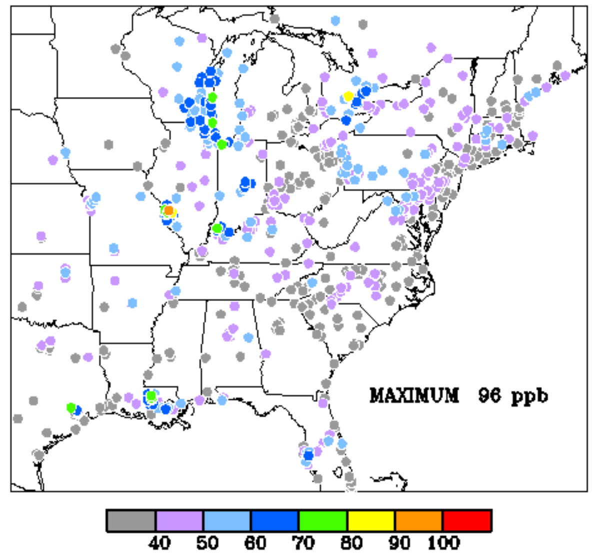
8-Hour Daily Maximum Ozone Maps

August 1995 Episode: August 7 - 15, 1995

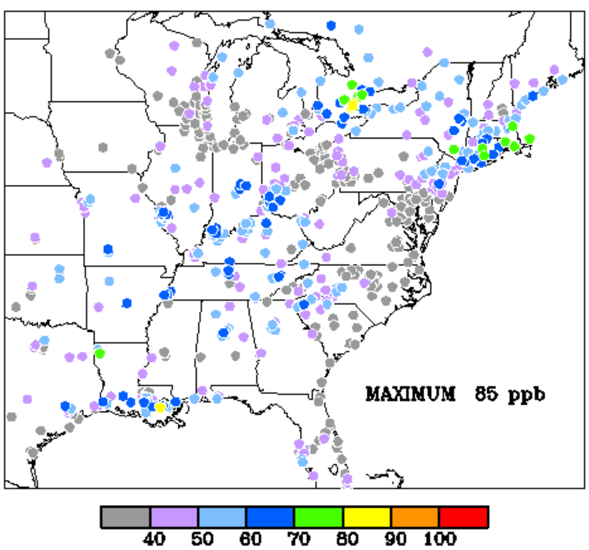
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 07, 1995



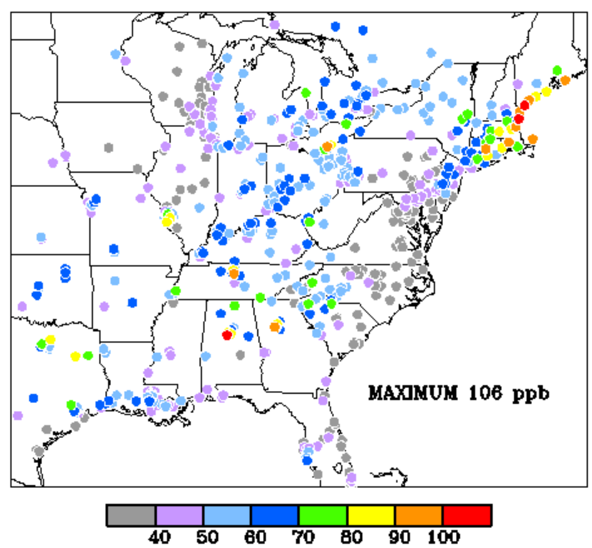
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 08, 1995



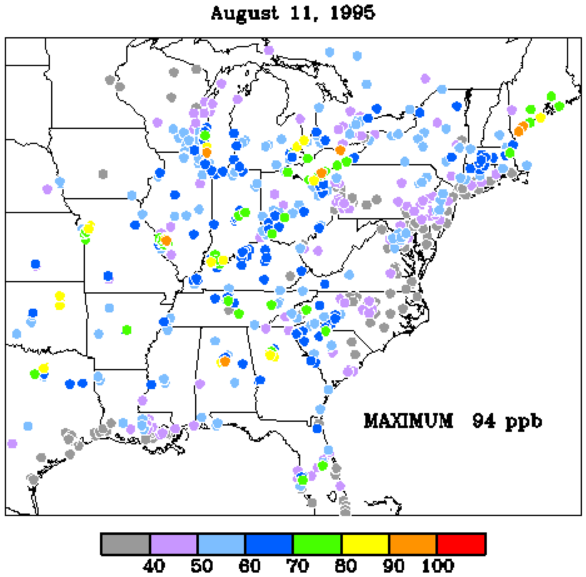
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 09, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 10, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 11, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
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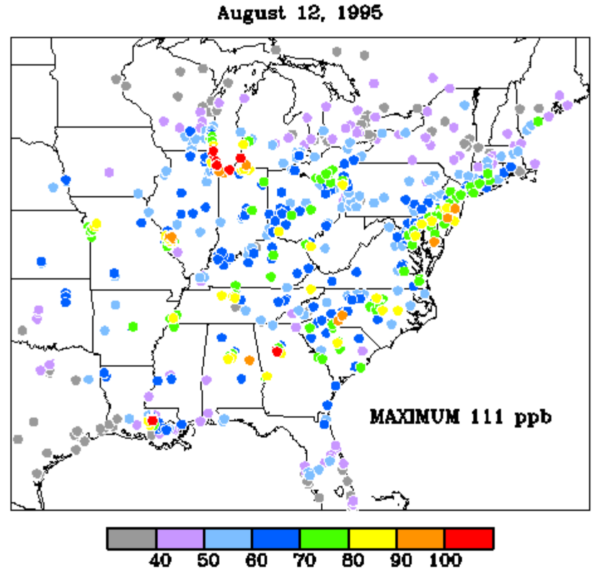
August 12, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
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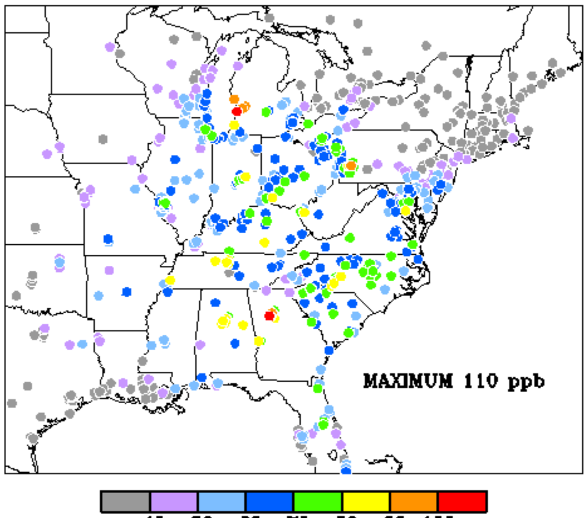
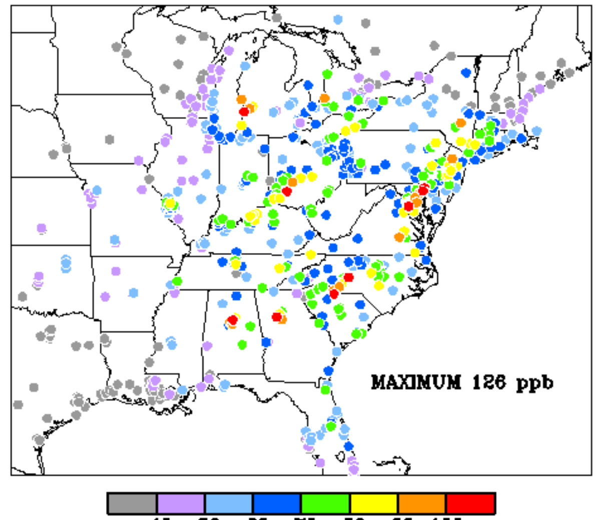
August 13, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 14, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
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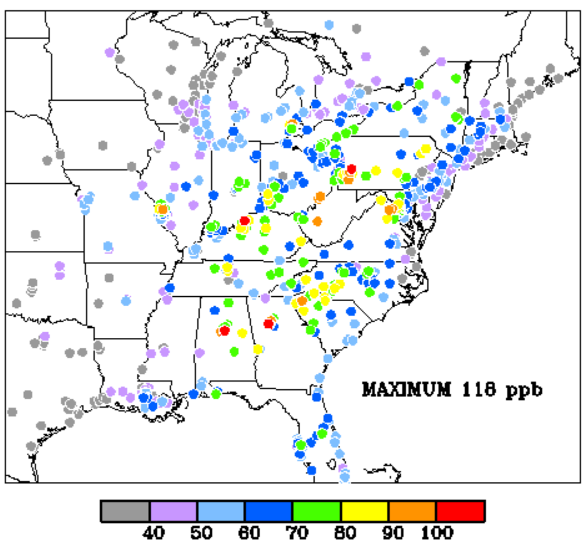
August 15, 1995



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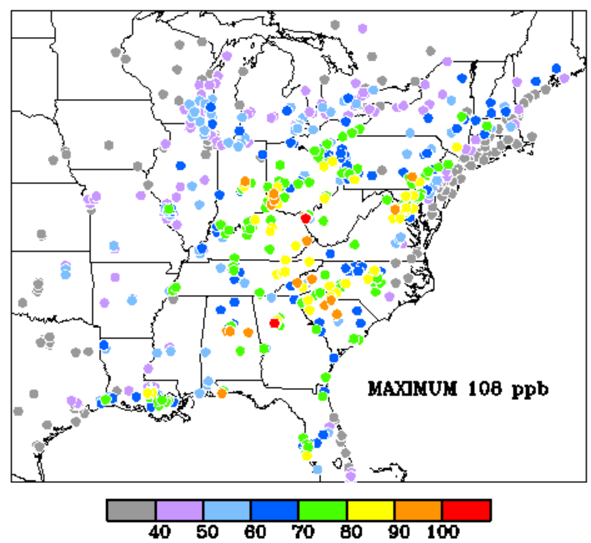
OVER THE EASTERN UNITED STATES AND ONTARIO
August 16, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
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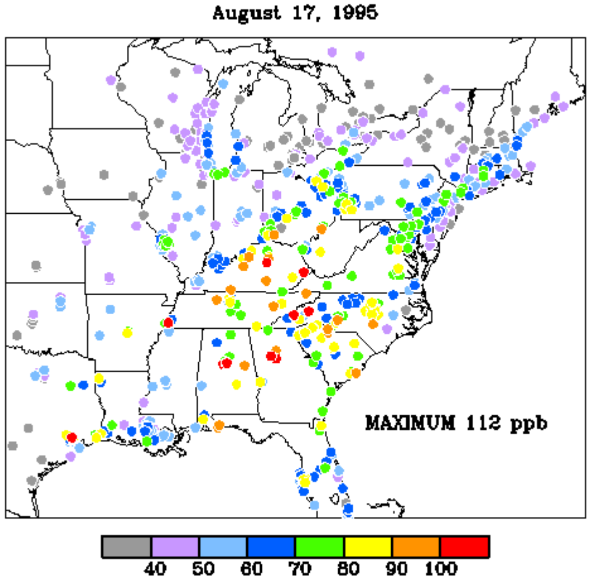
August 17, 1995



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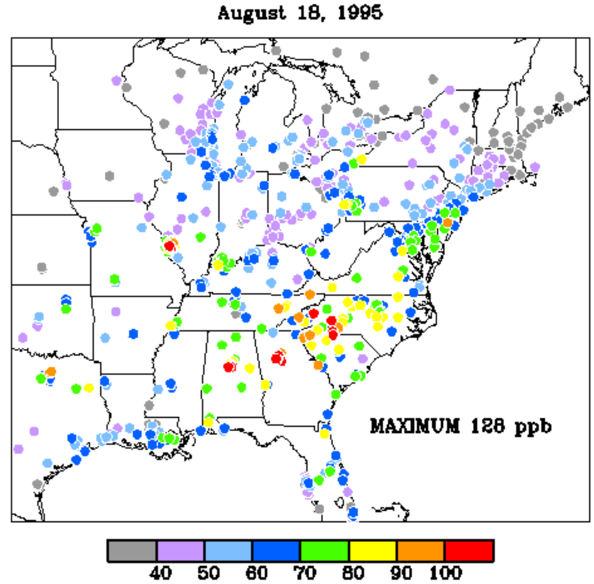
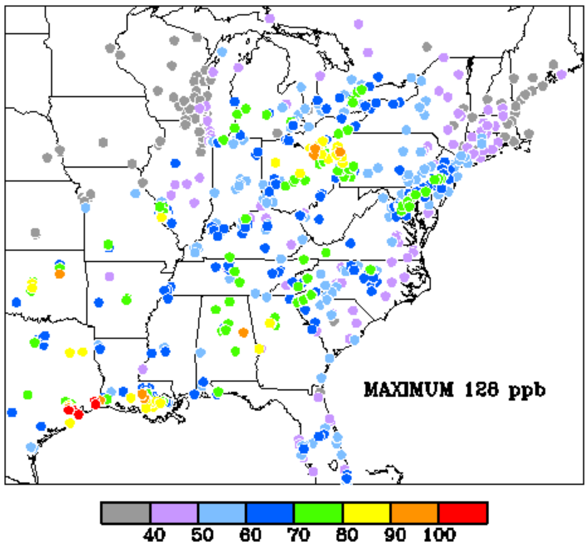
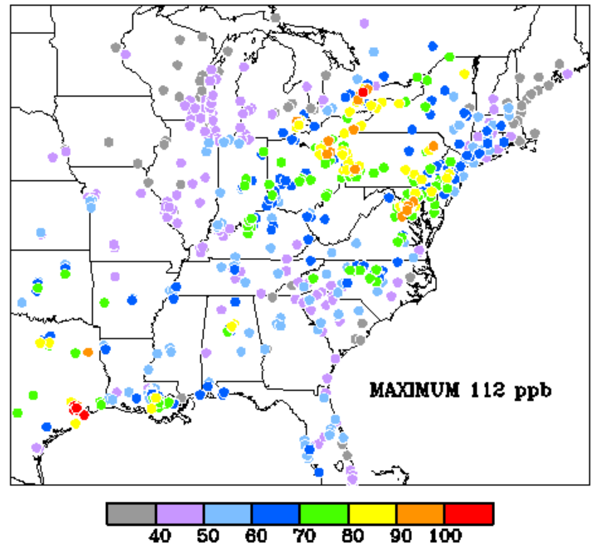
OVER THE EASTERN UNITED STATES AND ONTARIO
August 18, 1995



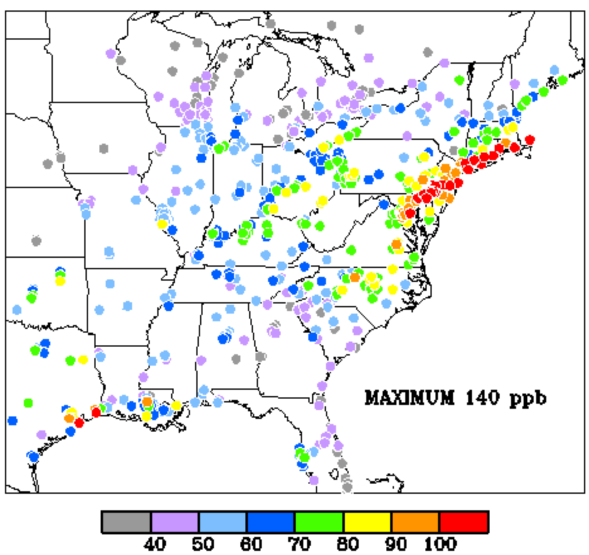
MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 19, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 20, 1995



MAXIMUM OBSERVED 8-HR OZONE CONCENTRATIONS (ppb)
OVER THE EASTERN UNITED STATES AND ONTARIO
August 21, 1995



Technical Support Document
for the Final
Clean Air Interstate Rule

Air Quality Modeling Analyses

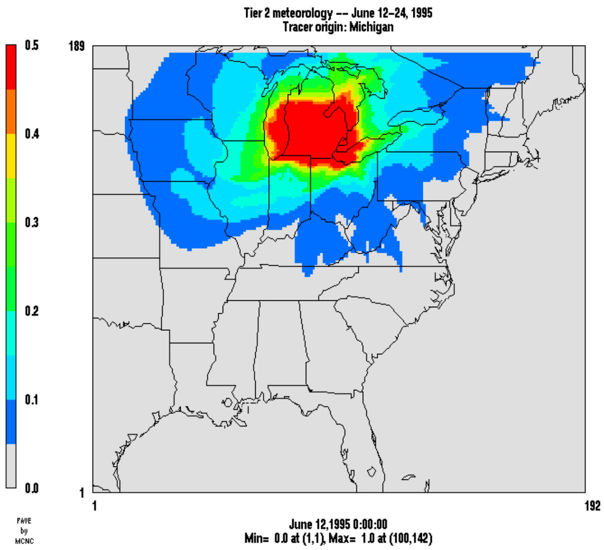
Appendix B

1995 Episode Transport Patterns

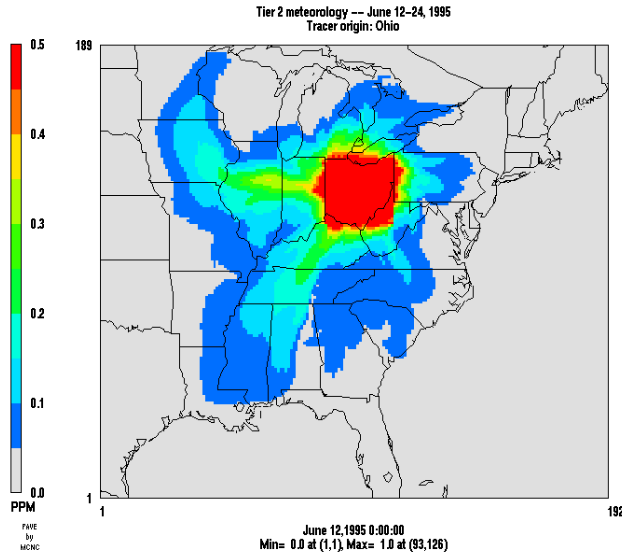
June 1995 Episode
Depiction of Transport Patterns
Based on Selected Inert Tracer Model Simulations

Maximum impact of tracer material is used to denote the general transport pattern over the time period of the episode.

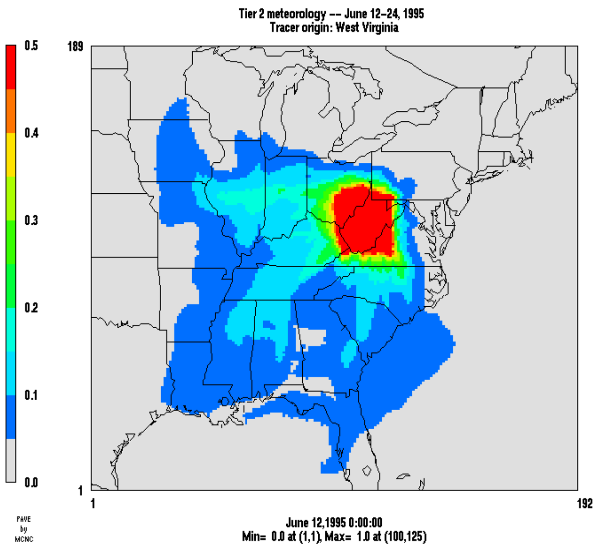
Maximum imprint of tracer material



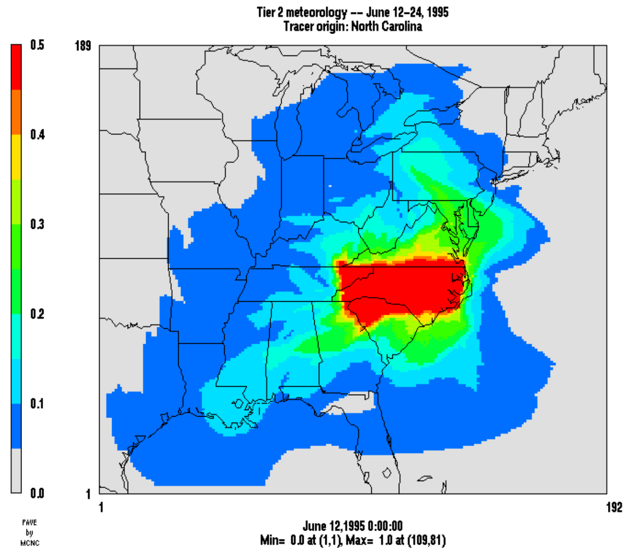
Maximum imprint of tracer concentration



Maximum imprint of tracer material



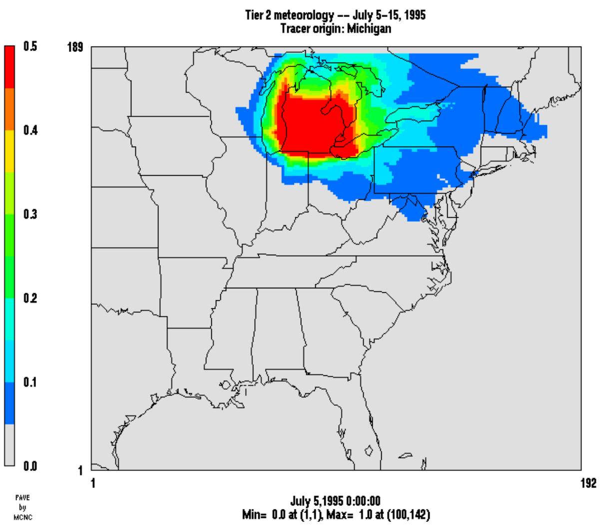
Maximum imprint of tracer material



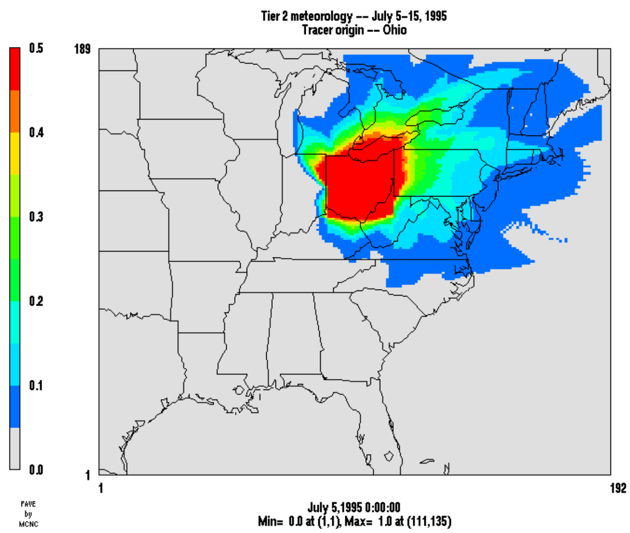
July 1995 Episode
Depiction of Transport Patterns
Based on Selected Inert Tracer Model Simulations

Maximum impact of tracer material is used to denote the general transport pattern over the time period of the episode.

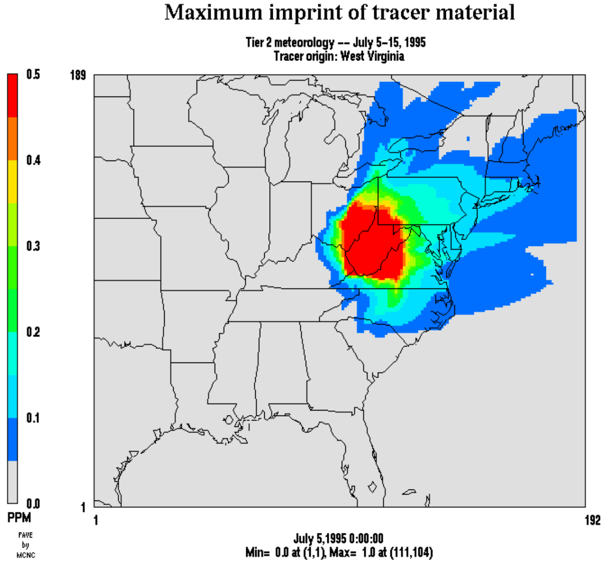
Maximum imprint of tracer material



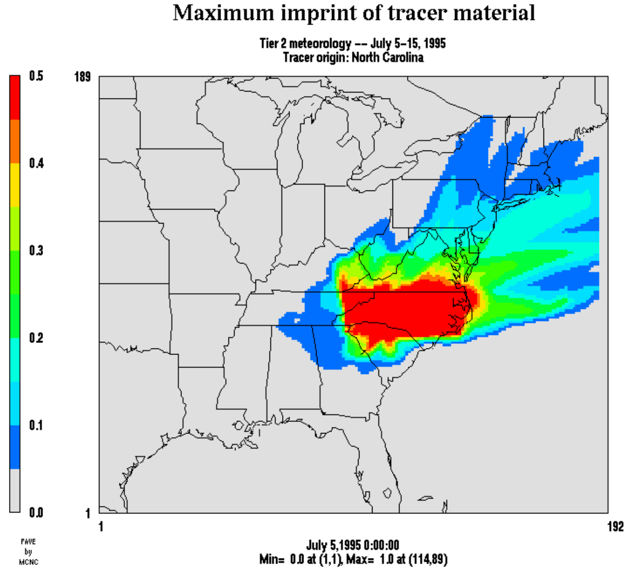
Maximum imprint of tracer material



Maximum imprint of tracer material



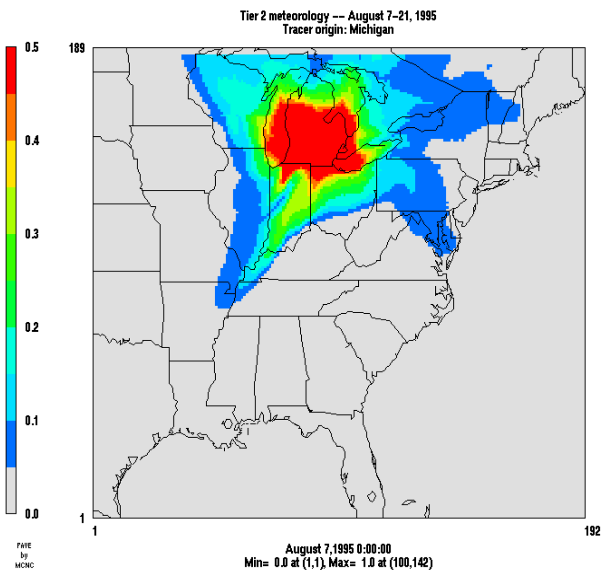
Maximum imprint of tracer material



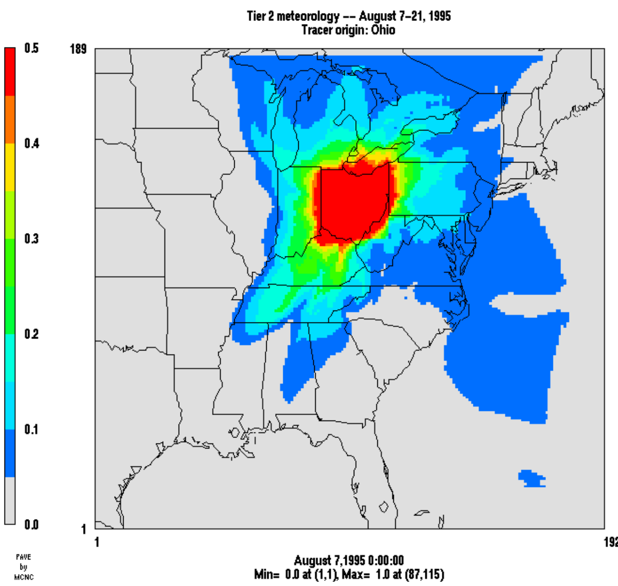
August 1995 Episode
Depiction of Transport Patterns
Based on Selected Inert Tracer Model Simulations

Maximum impact of tracer material is used to denote the general transport pattern over the time period of the episode.

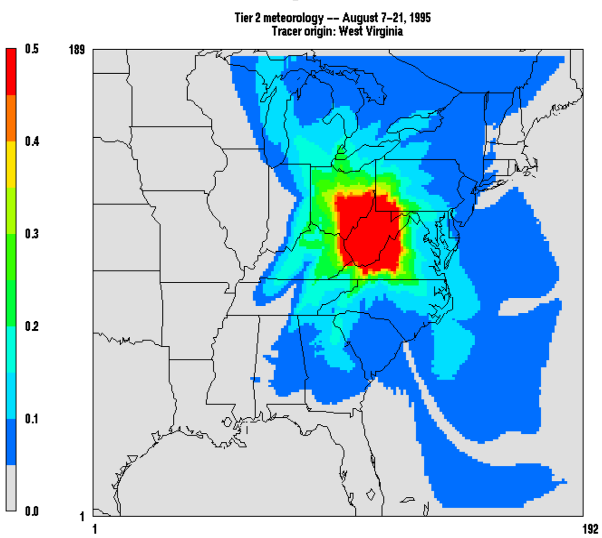
Maximum imprint of tracer material



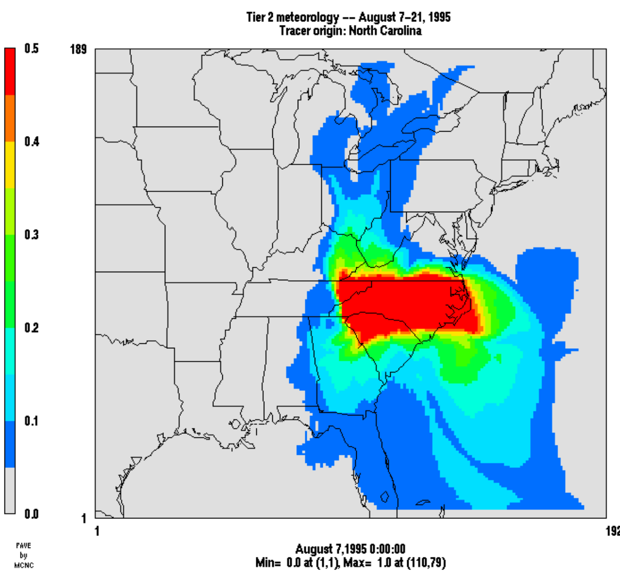
Maximum imprint of tracer material



Maximum imprint of tracer material



Maximum imprint of tracer material



Technical Support Document
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Clean Air Interstate Rule

Appendix C

Ozone During 1995 Episode
Compared to Current Design Values

Number of Days in 1995 Episodes with 8-hour maximum ozone within +/- "X" ppb of the 2001-2003 design value at that site						
State	**County**	**AIRS Site Code**	**2001-2003 Design Value (ppb)**	**# Days within +/- 2 ppb**	**# Days within +/- 5 ppb**	**# Days within +/- 10 ppb**
Alabama	Clay	10270001	82.0	3	4	11
Alabama	Jefferson	10731003	81.7	3	7	15
Alabama	Jefferson	10731005	84.7	2	7	13
Alabama	Jefferson	10732006	86.7	3	9	15
Alabama	Jefferson	10735002	82.0	4	10	15
Alabama	Jefferson	10736002	81.3	5	10	14
Alabama	Lawrence	10790002	78.7	2	8	12
Alabama	Madison	10890014	82.7	0	4	9
Alabama	Mobile	10970003	78.5	0	2	3
Alabama	Shelby	11170004	91.7	2	3	8
Alabama	Sumter	11190002	74.0	1	3	5
Arkansas	Crittenden	50350005	92.7	0	2	4
Arkansas	Montgomery	50970001	68.0	3	4	12
Arkansas	Pulaski	51190007	80.0	0	5	15
Arkansas	Pulaski	51191002	84.7	2	6	7
Connecticut	Fairfield	90010017	97.0	1	2	3
Connecticut	Fairfield	90011123	97.0	0	0	0
Connecticut	Fairfield	90013007	98.7	1	1	2
Connecticut	Hartford	90031003	89.3	0	1	3
Connecticut	Middlesex	90070007	98.0	0	1	2
Connecticut	New Haven	90093002	99.0	0	0	2
Connecticut	New London	90110008	90.7	0	1	2
Connecticut	Tolland	90131001	93.0	0	0	0
Delaware	Kent	100010002	91.3	0	1	3
Delaware	New Castle	100031003	91.5	1	2	4
Delaware	New Castle	100031007	95.3	1	4	5
Delaware	New Castle	100031010	94.7	2	2	3

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Delaware	Sussex	100051002	93.3	1	1	2
D.C.	Washington	110010025	91.3	1	2	6
D.C.	Washington	110010041	90.3	1	4	6
D.C.	Washington	110010043	94.3	1	6	8
Florida	Brevard	120094001	73.3	0	0	2
Florida	Duval	120310077	70.3	1	3	7
Florida	Escambia	120330004	77.3	2	6	11
Florida	Escambia	120330018	83.7	1	3	5
Florida	Hillsborough	120570081	79.7	1	3	5
Florida	Hillsborough	120571035	75.7	0	0	4
Florida	Hillsborough	120571065	80.3	2	2	3
Florida	Orange	120950008	77.0	3	7	8
Florida	Orange	120952002	78.3	1	1	3
Florida	Osceola	120972002	73.7	0	1	4
Florida	Palm Beach	120992004	69.7	1	2	4
Florida	Pasco	121012001	77.7	0	1	3
Florida	Pinellas	121030004	77.3	0	1	3
Florida	Pinellas	121030018	74.3	0	0	1
Florida	Pinellas	121035002	76.0	0	0	1
Florida	Polk	121056005	75.7	0	1	2
Florida	Polk	121056006	78.0	1	1	3
Florida	St Lucie	121111002	69.3	0	1	2
Florida	Sarasota	121151005	81.7	0	0	1
Florida	Seminole	121171002	77.7	0	0	2
Florida	Volusia	121272001	70.3	0	2	3
Florida	Volusia	121275002	72.0	1	3	5
Georgia	Chatham	130510021	71.0	1	3	8
Georgia	De Kalb	130890002	94.3	3	6	11
Georgia	De Kalb	130893001	95.3	1	4	8

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Georgia	Fulton	131210055	99.0	1	2	6
Georgia	Glynn	131270006	72.7	1	2	3
Georgia	Gwinnett	131350002	89.3	1	4	6
Georgia	Muscogee	132150008	76.5	0	4	12
Georgia	Muscogee	132151003	82.0	2	2	5
Georgia	Richmond	132450091	85.7	0	1	6
Georgia	Rockdale	132470001	96.3	2	4	7
Illinois	Adams	170010006	76.0	3	7	10
Illinois	Champaign	170190004	77.3	3	8	14
Illinois	Cook	170310001	78.3	3	6	10
Illinois	Cook	170310032	87.7	1	3	7
Illinois	Cook	170310050	71.7	1	6	9
Illinois	Cook	170310064	75.0	4	6	11
Illinois	Cook	170310072	78.0	1	3	5
Illinois	Cook	170311003	78.0	4	8	10
Illinois	Cook	170311601	73.0	3	6	9
Illinois	Cook	170314002	70.3	2	7	12
Illinois	Cook	170314006	76.0	4	8	12
Illinois	Cook	170317002	84.0	1	5	11
Illinois	Cook	170318003	72.5	3	5	8
Illinois	Du Page	170436001	70.7	2	3	11
Illinois	Effingham	170491001	77.7	2	4	11
Illinois	Jersey	170831001	89.0	3	5	8
Illinois	Kane	170890005	77.7	1	6	12
Illinois	Lake	170971002	80.7	1	1	8
Illinois	Lake	170971007	83.3	3	6	8
Illinois	Lake	170973001	76.5	4	4	8
Illinois	McHenry	171110001	83.3	0	3	9
Illinois	Macon	171150013	76.7	6	9	11

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Illinois	Macoupin	171170002	79.3	4	8	11
Illinois	Madison	171190008	84.7	1	6	12
Illinois	Madison	171191009	80.3	3	5	14
Illinois	Madison	171192007	81.3	4	6	14
Illinois	Madison	171193007	80.3	2	5	15
Illinois	Peoria	171430024	72.7	6	8	13
Illinois	Peoria	171431001	79.0	3	4	11
Illinois	Randolph	171570001	78.7	3	7	11
Illinois	St Clair	171630010	83.3	4	8	13
Illinois	Sangamon	171670010	76.0	4	10	12
Illinois	Will	171971008	76.0	2	4	11
Illinois	Will	171971011	79.3	3	5	10
Illinois	Winnebago	172010009	76.0	1	3	7
Illinois	Winnebago	172012001	74.0	2	5	6
Indiana	Allen	180030002	87.7	0	6	13
Indiana	Allen	180030004	83.3	2	2	5
Indiana	Clark	180190003	89.3	4	7	9
Indiana	Floyd	180431004	83.7	1	5	15
Indiana	Hamilton	180571001	93.3	5	7	8
Indiana	Hancock	180590003	91.7	0	2	4
Indiana	Lake	180890022	84.0	2	3	5
Indiana	Lake	180892008	90.7	5	6	10
Indiana	La Porte	180910005	90.0	1	4	8
Indiana	Madison	180950010	91.0	1	3	7
Indiana	Marion	180970042	82.7	2	6	9
Indiana	Marion	180970050	90.0	3	6	12
Indiana	Marion	180970057	85.3	1	7	11
Indiana	Marion	180970073	87.3	2	6	13
Indiana	Porter	181270020	84.7	0	2	7

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Indiana	Porter	181270024	89.0	1	3	10
Indiana	St Joseph	181410010	82.7	2	5	8
Indiana	St Joseph	181411007	89.0	2	5	8
Indiana	St Joseph	181411008	86.3	4	7	10
Indiana	Vanderburgh	181630012	83.3	0	3	14
Indiana	Vanderburgh	181630013	77.7	3	7	12
Indiana	Vigo	181670018	78.0	3	6	15
Indiana	Warrick	181730002	84.5	1	6	12
Indiana	Warrick	181730008	80.0	4	8	13
Indiana	Warrick	181730009	80.7	3	8	16
Iowa	Polk	191530058	58.7	2	2	4
Iowa	Scott	191632011	76.7	2	7	9
Kansas	Sedgwick	201730001	72.0	5	10	15
Kansas	Sedgwick	201730010	81.0	0	0	2
Kentucky	Bell	210130002	83.3	0	2	2
Kentucky	Boone	210150003	85.3	1	2	5
Kentucky	Boyd	210190015	86.0	2	5	11
Kentucky	Bullitt	210290006	83.7	2	3	9
Kentucky	Daviess	210590005	77.3	3	5	11
Kentucky	Fayette	210670001	71.0	2	8	19
Kentucky	Fayette	210670012	78.3	3	8	16
Kentucky	Graves	210830003	81.0	0	0	1
Kentucky	Greenup	210890007	84.0	1	3	7
Kentucky	Hancock	210910012	82.7	1	4	9
Kentucky	Henderson	211010013	77.0	3	4	13
Kentucky	Henderson	211010014	79.5	0	6	12
Kentucky	Jefferson	211110027	84.3	1	4	8
Kentucky	Jefferson	211110051	84.3	2	3	10
Kentucky	Jefferson	211111021	81.3	3	5	7

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Kentucky	Jessamine	211130001	78.0	4	6	13
Kentucky	Kenton	211170007	86.3	2	7	10
Kentucky	Livingston	211390003	85.0	2	2	7
Kentucky	Livingston	211390004	83.0	2	6	8
Kentucky	McCracken	211451024	81.7	1	1	4
Kentucky	McLean	211490001	84.0	1	4	8
Kentucky	Oldham	211850004	88.0	4	7	11
Kentucky	Pike	211950002	76.3	2	4	17
Kentucky	Pulaski	211990003	81.3	3	6	9
Kentucky	Scott	212090001	70.3	1	7	16
Kentucky	Simpson	212130004	84.0	2	3	9
Louisiana	Ascension	220050004	81.7	1	4	8
Louisiana	Beauregard	220110002	75.0	2	6	11
Louisiana	Bossier	220150008	84.7	0	0	1
Louisiana	Caddo	220170001	79.7	1	4	8
Louisiana	Calcasieu	220190002	77.7	3	8	12
Louisiana	Calcasieu	220190008	76.0	0	0	0
Louisiana	Calcasieu	220190009	81.7	1	3	6
Louisiana	East Baton Rou	220330003	87.3	2	4	10
Louisiana	East Baton Rou	220330009	83.3	4	5	8
Louisiana	East Baton Rou	220330013	80.3	2	3	6
Louisiana	East Baton Rou	220331001	86.7	0	1	4
Louisiana	Grant	220430001	77.7	2	5	9
Louisiana	Iberville	220470007	82.3	2	4	7
Louisiana	Iberville	220470009	80.7	2	6	13
Louisiana	Jefferson	220511001	85.3	2	6	12
Louisiana	Lafayette	220550005	80.7	3	7	12
Louisiana	Livingston	220630002	83.3	1	1	3
Louisiana	Orleans	220710012	72.0	3	5	12

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Louisiana	Pointe Coupee	220770001	73.0	3	7	9
Louisiana	St Bernard	220870002	79.3	0	2	6
Louisiana	St Charles	220890003	81.7	1	4	7
Louisiana	St James	220930002	77.3	3	7	11
Louisiana	St John The Ba	220950002	81.7	3	8	13
Louisiana	St Mary	221010003	78.0	2	5	15
Louisiana	West Baton Rou	221210001	85.7	1	3	3
Maine	Cumberland	230052003	84.7	0	1	2
Maine	Hancock	230090102	92.0	0	0	0
Maine	Kennebec	230112005	77.7	0	3	3
Maine	Knox	230130004	83.3	0	1	5
Maine	Oxford	230173001	61.0	3	3	6
Maine	Penobscot	230194008	83.0	0	1	3
Maine	York	230312002	89.0	1	2	2
Maine	York	230313002	84.3	0	3	3
Maryland	Anne Arundel	240030014	101.0	0	2	4
Maryland	Anne Arundel	240030019	99.3	2	5	7
Maryland	Baltimore	240051007	91.3	2	4	6
Maryland	Baltimore	240053001	93.0	2	4	5
Maryland	Carroll	240130001	91.3	3	7	10
Maryland	Cecil	240150003	102.7	0	0	2
Maryland	Charles	240170010	94.7	0	1	5
Maryland	Harford	240251001	103.7	0	4	6
Maryland	Harford	240259001	98.7	3	5	7
Maryland	Kent	240290002	99.0	1	1	4
Maryland	Montgomery	240313001	88.7	2	5	6
Maryland	Prince Georges	240330002	95.0	3	5	8
Maryland	Prince Georges	240338001	93.0	0	4	8
Massachusetts	Barnstable	250010002	94.7	1	1	2

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Massachusetts	Berkshire	250034002	87.0	0	1	1
Massachusetts	Bristol	250051002	92.7	0	1	1
Massachusetts	Essex	250090005	66.5	1	1	5
Massachusetts	Essex	250092006	89.7	0	2	4
Massachusetts	Essex	250094004	86.0	0	0	1
Massachusetts	Hampden	250130003	80.0	1	2	6
Massachusetts	Hampden	250130008	90.3	0	1	1
Massachusetts	Hampshire	250150103	77.3	2	2	7
Massachusetts	Hampshire	250154002	87.3	0	0	1
Massachusetts	Worcester	250270015	85.3	2	3	4
Michigan	Allegan	260050003	92.0	0	2	7
Michigan	Benzie	260190003	87.7	1	2	5
Michigan	Berrien	260210014	88.3	1	2	6
Michigan	Cass	260270003	90.0	1	6	12
Michigan	Clinton	260370001	83.3	0	2	4
Michigan	Genesee	260490021	85.0	0	4	6
Michigan	Genesee	260492001	86.7	0	2	4
Michigan	Huron	260630007	84.0	2	4	5
Michigan	Ingham	260650012	83.3	2	7	10
Michigan	Kent	260810020	80.7	1	4	7
Michigan	Lenawee	260910007	85.0	2	4	7
Michigan	Macomb	260990009	91.0	4	5	5
Michigan	Macomb	260991003	89.7	2	4	8
Michigan	Muskegon	261210039	92.0	2	4	7
Michigan	Oakland	261250001	87.0	0	3	8
Michigan	Ottawa	261390005	86.0	0	4	7
Michigan	St Clair	261470005	87.7	0	1	3
Michigan	Wayne	261630001	80.0	2	4	6
Michigan	Wayne	261630016	84.7	0	1	2

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Michigan	Wayne	261630019	88.0	1	3	5
Minnesota	Anoka	270031001	70.5	2	4	9
Minnesota	Anoka	270031002	72.5	3	5	7
Minnesota	Dakota	270376018	68.0	0	3	6
Mississippi	Adams	280010004	79.7	0	1	3
Mississippi	De Soto	280330002	84.3	1	4	11
Mississippi	Hancock	280450001	83.7	4	6	11
Mississippi	Hinds	280490010	76.3	1	1	4
Mississippi	Jackson	280590006	83.0	1	1	3
Mississippi	Madison	280890002	76.3	1	1	7
Mississippi	Warren	281490004	76.7	3	5	6
Missouri	Clay	290470003	80.0	2	7	13
Missouri	Clay	290470005	84.3	4	9	12
Missouri	Clay	290470025	80.0	1	6	12
Missouri	Greene	290770026	74.7	1	3	5
Missouri	Greene	290770036	73.3	8	14	16
Missouri	Jefferson	290990012	87.3	4	5	11
Missouri	Monroe	291370001	79.3	2	6	11
Missouri	Platte	291650023	81.7	1	5	11
Missouri	St Charles	291831002	90.3	3	6	10
Missouri	St Charles	291831004	90.7	8	10	13
Missouri	St Louis	291890006	88.0	1	5	7
Missouri	St Louis	291893001	83.3	1	5	10
Missouri	St Louis	291895001	86.3	7	13	18
Missouri	St Louis City	295100007	82.0	2	3	7
Missouri	St Louis City	295100072	73.3	1	2	8
Nebraska	Douglas	310550028	62.7	2	6	14
Nebraska	Douglas	310550032	67.5	0	0	0
Nebraska	Douglas	310550035	54.0	2	8	12

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Nebraska	Lancaster	311090016	54.0	4	14	21
New Hampshire	Cheshire	330050007	73.7	1	3	5
New Hampshire	Hillsborough	330111010	85.0	0	1	3
New Hampshire	Merrimack	330130007	73.0	1	1	4
New Hampshire	Rockingham	330150012	82.7	1	1	2
New Jersey	Atlantic	340010005	91.0	1	2	6
New Jersey	Camden	340070003	99.7	1	2	3
New Jersey	Camden	340071001	102.3	0	4	6
New Jersey	Cumberland	340110007	96.7	1	1	2
New Jersey	Gloucester	340150002	101.3	0	0	4
New Jersey	Hudson	340170006	89.0	1	2	4
New Jersey	Hunterdon	340190001	97.7	0	1	5
New Jersey	Mercer	340210005	103.0	0	3	6
New Jersey	Middlesex	340230011	100.7	1	1	5
New Jersey	Monmouth	340250005	96.0	1	1	1
New Jersey	Morris	340273001	97.7	2	5	6
New Jersey	Ocean	340290006	111.0	0	1	3
New York	Albany	360010012	83.0	1	2	5
New York	Bronx	360050083	82.7	0	3	5
New York	Chautauqua	360130011	87.0	1	3	5
New York	Chemung	360150003	81.0	1	1	3
New York	Dutchess	360270007	91.3	0	2	2
New York	Erie	360290002	96.0	1	2	2
New York	Essex	360310002	88.5	0	2	4
New York	Essex	360310003	82.7	1	2	5
New York	Hamilton	360410005	79.0	0	2	4
New York	Herkimer	360430005	74.0	1	2	2
New York	Jefferson	360450002	91.7	1	1	2
New York	Madison	360530006	80.0	1	3	4

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
New York	Monroe	360551004	86.5	0	2	5
New York	Niagara	360631006	91.0	0	2	3
New York	Oneida	360650004	79.0	2	3	4
New York	Onondaga	360671015	83.0	1	1	5
New York	Orange	360715001	86.0	0	2	5
New York	Putnam	360790005	91.3	0	0	3
New York	Richmond	360850067	96.0	2	5	6
New York	Saratoga	360910004	85.5	0	0	2
New York	Schenectady	360930003	77.3	1	5	9
New York	Suffolk	361030002	91.3	0	1	2
New York	Suffolk	361030004	86.7	1	2	3
New York	Ulster	361111005	81.7	1	1	3
New York	Wayne	361173001	84.0	0	2	4
New York	Westchester	361192004	92.0	1	2	5
North Carolina	Buncombe	370210030	82.0	0	1	4
North Carolina	Caldwell	370270003	85.7	0	1	7
North Carolina	Camden	370290099	80.0	0	1	2
North Carolina	Caswell	370330001	89.7	0	0	1
North Carolina	Chatham	370370004	82.0	5	8	14
North Carolina	Cumberland	370510008	87.0	1	2	4
North Carolina	Duplin	370610002	80.7	0	0	0
North Carolina	Durham	370630013	89.0	1	1	6
North Carolina	Forsyth	370670022	93.7	0	1	3
North Carolina	Forsyth	370670027	82.7	1	2	5
North Carolina	Forsyth	370671008	91.3	0	1	5
North Carolina	Franklin	370690001	89.0	0	0	1
North Carolina	Granville	370770001	92.0	0	2	10
North Carolina	Guilford	370810011	90.7	1	1	3
North Carolina	Haywood	370870035	85.0	1	2	5

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
North Carolina	Haywood	370870036	86.3	0	0	4
North Carolina	Johnston	371010002	85.7	3	6	9
North Carolina	Lincoln	371090004	92.3	1	4	7
North Carolina	Martin	371170001	80.3	0	0	1
North Carolina	Mecklenburg	371191005	88.3	0	3	6
North Carolina	Mecklenburg	371191009	100.3	1	2	3
North Carolina	Northampton	371310002	83.3	0	2	4
North Carolina	Pitt	371470099	83.0	2	2	4
North Carolina	Rockingham	371570099	88.7	0	0	2
North Carolina	Rowan	371590021	98.7	1	1	2
North Carolina	Rowan	371590022	99.7	0	0	1
North Carolina	Swain	371730002	73.7	0	1	3
North Carolina	Wake	371830014	92.7	0	0	1
North Carolina	Wake	371830015	92.7	0	1	4
North Carolina	Wake	371830016	87.0	2	4	7
North Carolina	Wake	371830017	86.0	3	7	11
North Carolina	Yancey	371990003	86.3	2	2	10
Ohio	Allen	390030002	87.7	1	8	11
Ohio	Ashtabula	390071001	94.0	2	3	5
Ohio	Butler	390170004	89.0	1	5	8
Ohio	Butler	390171004	89.0	3	5	9
Ohio	Clark	390230001	88.3	3	6	8
Ohio	Clark	390230003	86.3	0	4	9
Ohio	Clinton	390271002	95.7	4	6	9
Ohio	Cuyahoga	390350034	78.3	3	7	10
Ohio	Cuyahoga	390350064	81.0	5	8	12
Ohio	Cuyahoga	390355002	86.3	2	2	9
Ohio	Franklin	390490081	84.3	2	4	11
Ohio	Hamilton	390610006	89.3	3	4	8

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Ohio	Hamilton	390610010	84.3	1	4	9
Ohio	Knox	390830002	89.3	1	3	6
Ohio	Lake	390850003	92.7	4	11	12
Ohio	Lake	390853002	85.0	1	6	11
Ohio	Lawrence	390870006	85.0	3	5	10
Ohio	Lawrence	390870011	82.3	1	4	10
Ohio	Licking	390890005	89.0	2	5	10
Ohio	Lucas	390950034	88.7	3	6	9
Ohio	Lucas	390950081	88.3	0	3	7
Ohio	Madison	390970007	89.0	0	6	12
Ohio	Medina	391030003	87.7	3	11	12
Ohio	Miami	391090005	86.3	3	3	6
Ohio	Montgomery	391130019	86.7	2	5	6
Ohio	Portage	391331001	92.0	3	3	7
Ohio	Preble	391351001	80.3	2	4	12
Ohio	Stark	391510016	88.7	2	5	11
Ohio	Stark	391510019	88.0	2	7	10
Ohio	Stark	391511009	89.0	3	4	8
Ohio	Stark	391514005	88.7	3	6	9
Ohio	Summit	391530020	94.3	3	5	9
Ohio	Trumbull	391550008	88.0	1	2	8
Ohio	Trumbull	391550009	88.0	1	1	8
Ohio	Washington	391670004	87.0	1	4	7
Oklahoma	Cleveland	400270049	77.3	2	5	12
Oklahoma	Oklahoma	401090033	79.3	1	4	12
Oklahoma	Oklahoma	401091037	80.7	2	6	11
Oklahoma	Tulsa	401430137	85.0	2	5	7
Oklahoma	Tulsa	401430174	80.0	2	3	5
Pennsylvania	Allegheny	420030008	88.7	2	5	7

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Pennsylvania	Allegheny	420030067	90.3	0	3	7
Pennsylvania	Allegheny	420030088	88.0	1	3	6
Pennsylvania	Allegheny	420031005	93.0	1	2	4
Pennsylvania	Beaver	420070002	91.0	2	3	6
Pennsylvania	Beaver	420070005	90.0	1	4	4
Pennsylvania	Beaver	420070014	86.3	1	4	10
Pennsylvania	Berks	420110001	85.7	1	5	9
Pennsylvania	Berks	420110009	92.7	1	1	5
Pennsylvania	Blair	420130801	84.3	1	2	8
Pennsylvania	Bucks	420170012	103.0	1	4	5
Pennsylvania	Cambria	420210011	87.7	0	3	5
Pennsylvania	Dauphin	420430401	86.3	2	3	8
Pennsylvania	Dauphin	420431100	91.0	2	3	7
Pennsylvania	Delaware	420450002	93.7	2	2	5
Pennsylvania	Erie	420490003	89.0	1	1	5
Pennsylvania	Lackawanna	420690101	85.3	1	5	7
Pennsylvania	Lackawanna	420692006	83.7	2	3	8
Pennsylvania	Lancaster	420710007	94.0	1	3	10
Pennsylvania	Lawrence	420730015	78.7	3	5	10
Pennsylvania	Lehigh	420770004	93.3	0	1	4
Pennsylvania	Luzerne	420791100	83.0	0	3	5
Pennsylvania	Luzerne	420791101	84.7	4	6	9
Pennsylvania	Lycoming	420810403	71.0	2	6	8
Pennsylvania	Mercer	420850100	91.3	3	4	6
Pennsylvania	Montgomery	420910013	96.3	2	4	6
Pennsylvania	Perry	420990301	84.7	1	3	6
Pennsylvania	Philadelphia	421010004	73.3	1	2	4
Pennsylvania	Philadelphia	421010014	91.3	0	2	2
Pennsylvania	Philadelphia	421010024	97.5	1	3	5

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Pennsylvania	Philadelphia	421010136	86.3	1	1	4
Pennsylvania	Washington	421250005	87.3	1	6	12
Pennsylvania	Washington	421250200	86.7	2	3	8
Pennsylvania	Washington	421255001	87.7	3	5	6
Pennsylvania	Westmoreland	421290006	81.7	3	4	8
Pennsylvania	York	421330008	90.3	1	4	5
Rhode Island	Kent	440030002	95.3	0	1	3
Rhode Island	Providence	440071010	90.3	1	2	5
South Carolina	Abbeville	450010001	84.0	1	4	5
South Carolina	Aiken	450030003	84.7	0	1	2
South Carolina	Anderson	450070003	88.0	1	4	9
South Carolina	Barnwell	450110001	81.3	0	0	0
South Carolina	Berkeley	450150002	71.0	2	4	7
South Carolina	Charleston	450190042	74.0	1	3	5
South Carolina	Charleston	450190046	72.0	2	4	4
South Carolina	Cherokee	450210002	86.0	2	4	10
South Carolina	Chester	450230002	84.3	1	2	8
South Carolina	Darlington	450310003	84.7	1	1	1
South Carolina	Edgefield	450370001	80.7	0	3	6
South Carolina	Oconee	450730001	84.0	0	0	0
South Carolina	Pickens	450770002	85.3	1	3	8
South Carolina	Richland	450790007	85.7	0	2	5
South Carolina	Richland	450791002	93.0	1	1	1
South Carolina	Spartanburg	450830009	90.0	0	1	4
South Carolina	Union	450870001	80.7	0	1	3
South Carolina	Williamsburg	450890001	72.3	1	2	3
South Carolina	York	450910006	83.3	1	3	5
Tennessee	Anderson	470010101	89.7	0	3	9
Tennessee	Blount	470090101	94.0	0	4	6

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Tennessee	Blount	470090102	77.5	2	2	5
Tennessee	Davidson	470370011	72.0	1	4	12
Tennessee	Davidson	470370026	81.3	2	10	16
Tennessee	Hamilton	470650028	90.7	1	3	4
Tennessee	Hamilton	470651011	90.7	0	2	4
Tennessee	Haywood	470750002	89.0	0	0	4
Tennessee	Knox	470930021	91.0	1	4	7
Tennessee	Knox	470931020	94.7	0	2	6
Tennessee	Rutherford	471490101	83.3	0	0	0
Tennessee	Sevier	471550101	94.7	0	4	6
Tennessee	Sevier	471550102	96.0	1	1	2
Tennessee	Shelby	471570021	88.0	0	2	6
Tennessee	Shelby	471571004	90.7	1	3	11
Tennessee	Sullivan	471632002	87.7	0	6	10
Tennessee	Sullivan	471632003	89.3	3	6	9
Tennessee	Sumner	471650007	89.0	2	6	16
Tennessee	Sumner	471650101	86.3	0	0	0
Tennessee	Wilson	471890103	84.7	1	2	6
Texas	Brazoria	480391003	88.0	1	3	7
Texas	Collin	480850005	93.3	0	2	5
Texas	Dallas	481130069	91.0	0	2	5
Texas	Dallas	481130087	83.0	1	5	7
Texas	Galveston	481671002	84.7	2	2	4
Texas	Gregg	481830001	88.3	3	6	10
Texas	Harris	482010024	105.0	0	4	6
Texas	Harris	482010029	102.0	0	1	3
Texas	Harris	482010046	91.0	2	6	11
Texas	Harris	482010047	84.0	2	6	11
Texas	Harris	482010051	101.7	0	1	3

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Texas	Harris	482010062	91.0	3	3	6
Texas	Harris	482010066	95.3	1	4	8
Texas	Harris	482011035	95.3	0	1	4
Texas	Jefferson	482450009	79.3	2	8	17
Texas	Jefferson	482450011	82.3	2	5	12
Texas	Orange	483611001	78.3	3	8	15
Texas	Tarrant	484391002	96.3	3	4	4
Texas	Tarrant	484392003	98.3	0	1	6
Texas	Travis	484530014	84.3	2	4	10
Vermont	Bennington	500030004	79.7	1	2	5
Virginia	Arlington	510130020	95.7	6	7	8
Virginia	Caroline	510330001	84.0	0	1	6
Virginia	Charles City	510360002	89.3	1	2	3
Virginia	Chesterfield	510410004	86.0	0	2	5
Virginia	Fairfax	510590005	88.3	0	3	8
Virginia	Fairfax	510590018	96.3	1	3	8
Virginia	Fairfax	510595001	88.0	5	7	9
Virginia	Fauquier	510610002	81.0	1	4	8
Virginia	Frederick	510690010	84.3	1	5	9
Virginia	Henrico	510870014	90.0	0	2	5
Virginia	Madison	511130003	86.3	4	5	10
Virginia	Prince William	511530009	85.7	1	1	10
Virginia	Roanoke	511611004	86.0	1	1	2
Virginia	Stafford	511790001	86.3	3	7	10
Virginia	Wythe	511970002	80.7	0	2	6
Virginia	Alexandria Cit	515100009	90.0	3	4	5
Virginia	Hampton City	516500004	88.7	1	1	3
Virginia	Suffolk City	518000004	87.3	1	3	3
Virginia	Suffolk City	518000005	82.7	0	2	5

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
West Virginia	Cabell	540110006	88.0	2	6	11
West Virginia	Hancock	540291004	84.3	1	5	10
West Virginia	Ohio	540690007	84.7	1	2	6
West Virginia	Wood	541071002	87.7	1	6	12
Wisconsin	Brown	550090026	81.7	0	1	4
Wisconsin	Columbia	550210015	77.7	4	6	8
Wisconsin	Dane	550250041	77.3	2	2	6
Wisconsin	Dodge	550270007	81.0	3	6	9
Wisconsin	Door	550290004	92.7	0	1	2
Wisconsin	Fond Du Lac	550390006	79.0	4	7	12
Wisconsin	Jefferson	550550002	84.5	1	4	5
Wisconsin	Kenosha	550590002	94.0	3	5	8
Wisconsin	Kenosha	550590019	98.7	0	4	10
Wisconsin	Kewaunee	550610002	90.0	0	1	4
Wisconsin	Manitowoc	550710004	82.0	1	1	4
Wisconsin	Manitowoc	550710007	90.0	0	1	3
Wisconsin	Marathon	550730012	73.7	1	4	10
Wisconsin	Milwaukee	550790041	85.5	0	0	6
Wisconsin	Milwaukee	550790044	71.3	0	6	8
Wisconsin	Milwaukee	550790085	90.7	1	1	3
Wisconsin	Milwaukee	550791025	90.3	1	5	6
Wisconsin	Outagamie	550870009	77.3	2	5	8
Wisconsin	Ozaukee	550890008	90.0	0	0	4
Wisconsin	Ozaukee	550890009	95.3	1	3	3
Wisconsin	Racine	551010017	91.7	3	5	8
Wisconsin	Rock	551050024	84.3	0	1	7
Wisconsin	St Croix	551091002	72.7	0	6	9
Wisconsin	Sauk	551110007	74.3	1	4	9
Wisconsin	Vernon	551230008	71.7	1	4	10

State	County	AIRS Site Code	2001-2003 Design Value (ppb)	# Days within +/- 2 ppb	# Days within +/- 5 ppb	# Days within +/- 10 ppb
Wisconsin	Walworth	551270005	83.3	0	2	4
Wisconsin	Washington	551310009	82.7	1	2	10
Wisconsin	Waukesha	551330017	82.7	1	3	6
Wisconsin	Winnebago	551390011	80.0	2	6	10

Daily Maximum 8-Hour Ozone (ppb) Measured at Monitoring Sites in the East During the June 1995 Episode												
State	County	AIRS Site Code	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24
Alabama	Clay	10270001	69.5	71.7	70.1	75.7	51.1	53.1	60.2	70.3	83.8	75.5
Alabama	Jefferson	10731003	83.0	74.1	71.6	73.6	47.5	61.8	78.7	89.0	72.8	67.2
Alabama	Jefferson	10731005	79.6	65.0	64.5	69.7	48.5	56.6	75.8	85.7	89.0	70.7
Alabama	Jefferson	10732006	77.2	69.2	69.5	72.0	43.2	74.5	68.1	79.7	89.2	71.1
Alabama	Jefferson	10735002	81.3	64.8	72.1	65.8	47.7	60.3	67.2	72.1	65.0	79.1
Alabama	Jefferson	10736002	80.6	68.8	73.8	69.0	40.7	60.5	69.1	73.2	70.5	69.1
Alabama	Lawrence	10790002	74.7	67.7	66.3	76.5	69.0	52.7	62.8	81.5	66.6	58.8
Alabama	Madison	10890014	75.1	65.8	70.1	66.1	57.1	59.2	67.2	69.0	64.6	72.6
Alabama	Mobile	10970003	66.1	57.7	45.3	52.8	60.7	57.6	61.1	65.8	75.0	59.8
Alabama	Shelby	11170004	81.2	71.7	72.2	72.8	46.2	NA	NA	82.7	93.2	71.2
Alabama	Sumter	11190002	67.6	56.8	53.3	59.7	60.0	43.3	65.8	62.1	69.3	54.2
Arkansas	Crittenden	50350005	63.6	76.5	82.2	85.7	89.7	74.6	66.6	82.5	77.0	71.6
Arkansas	Montgomery	50970001	62.2	60.8	61.2	56.7	68.2	67.3	64.5	58.5	49.8	50.8
Arkansas	Pulaski	51190007	75.5	76.0	73.3	72.0	85.2	64.8	70.3	69.6	87.5	60.0
Arkansas	Pulaski	51191002	82.6	83.1	83.2	72.3	80.7	64.5	71.1	73.6	94.7	63.5
Connecticut	Fairfield	90010017	47.8	68.1	80.0	95.6	102.2	94.8	41.7	42.0	43.1	33.8
Connecticut	Fairfield	90011123	34.7	56.0	76.5	78.3	57.5	NA	40.3	42.6	47.0	47.8
Connecticut	Fairfield	90013007	52.3	62.8	93.0	109.8	117.6	84.5	39.2	39.1	36.6	36.6
Connecticut	Hartford	90031003	43.6	59.7	65.8	92.6	84.1	74.3	54.8	44.8	54.8	45.6
Connecticut	Middlesex	90070007	40.3	58.5	74.7	90.6	78.1	65.3	42.2	46.3	41.6	34.3
Connecticut	New Haven	90093002	52.0	67.8	105.5	114.5	135.5	77.0	45.0	42.2	38.5	34.0
Connecticut	New London	90110008	40.1	56.6	88.5	101.3	119.3	75.0	41.3	38.7	34.5	30.6
Connecticut	Tolland	90131001	35.8	56.5	61.2	75.7	67.8	49.8	55.0	47.1	51.5	48.2
Delaware	Kent	100010002	57.3	69.0	72.8	88.3	83.2	62.5	66.0	52.7	36.8	36.0
Delaware	New Castle	100031003	53.1	63.3	81.6	98.6	122.0	105.0	36.2	32.8	22.2	28.2
Delaware	New Castle	100031007	52.1	67.8	82.5	99.2	109.6	95.6	NA	44.1	28.0	35.7
Delaware	New Castle	100031010	52.8	66.3	86.0	94.5	122.3	118.7	44.0	31.5	23.8	30.2
Delaware	Sussex	100051002	56.1	67.7	59.7	77.6	61.3	40.1	56.2	47.0	37.3	28.2
D.C.	Washington	110010025	NA	61.6	78.1	106.3	103.7	83.7	59.8	39.8	17.6	19.8
D.C.	Washington	110010041	NA	69.3	82.5	102.2	96.5	71.8	67.6	37.2	23.3	23.7

State	County	AIRS Site Code	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24
D.C.	Washington	110010043	NA	72.0	89.2	111.6	89.6	80.7	71.6	50.0	28.1	27.7
Florida	Brevard	120094001	63.3	57.7	50.0	40.2	45.0	40.0	39.5	36.2	34.6	27.5
Florida	Duval	120310077	66.8	46.5	50.0	40.2	47.6	52.2	54.6	32.7	52.8	43.8
Florida	Escambia	120330004	77.8	67.3	56.3	67.2	60.1	64.6	88.1	80.0	79.3	56.5
Florida	Escambia	120330018	75.3	69.7	53.8	65.2	73.3	34.5	71.8	57.6	71.2	45.5
Florida	Hillsborough	120570081	66.8	52.7	55.8	55.0	57.8	58.6	27.8	48.5	36.6	12.3
Florida	Hillsborough	120571035	69.8	55.1	53.5	49.5	62.2	59.8	24.0	56.5	32.3	7.1
Florida	Hillsborough	120571065	70.0	47.2	55.1	57.3	57.8	66.2	22.8	50.6	34.3	14.0
Florida	Orange	120950008	64.7	56.8	50.1	46.5	62.7	53.6	36.3	40.1	31.6	13.1
Florida	Orange	120952002	56.2	50.0	41.8	39.3	47.7	56.8	34.8	37.8	27.7	8.5
Florida	Osceola	120972002	59.1	51.5	47.6	43.8	47.8	45.7	31.6	38.1	33.5	14.3
Florida	Palm Beach	120992004	68.0	38.7	39.1	29.5	50.3	32.0	27.5	15.1	16.5	22.0
Florida	Pasco	121012001	69.3	57.7	47.8	50.6	45.0	48.3	27.2	50.8	33.8	15.2
Florida	Pinellas	121030004	74.0	60.3	47.8	50.6	45.2	50.1	22.6	53.7	28.1	11.6
Florida	Pinellas	121030018	49.0	41.6	45.5	45.0	40.8	48.6	24.7	52.6	26.8	12.5
Florida	Pinellas	121035002	59.3	43.7	40.5	45.6	41.8	49.7	18.0	51.1	27.8	9.6
Florida	Polk	121056005	64.1	49.1	51.8	38.6	51.1	48.1	23.1	34.7	30.8	10.6
Florida	Polk	121056006	64.8	48.3	51.1	40.2	54.1	51.6	25.3	47.0	32.7	15.2
Florida	St Lucie	121111002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Florida	Sarasota	121151005	61.3	48.5	49.8	49.7	60.0	57.5	21.6	39.5	30.7	22.0
Florida	Seminole	121171002	63.6	54.8	47.8	43.0	41.8	61.5	42.0	41.4	28.0	13.2
Florida	Volusia	121272001	66.6	56.6	47.6	40.1	46.1	57.3	40.1	36.5	30.3	16.7
Florida	Volusia	121275002	70.6	56.5	47.8	41.3	47.5	55.5	41.7	38.5	31.0	16.5
Georgia	Chatham	130510021	69.3	NA	55.3	42.1	48.3	48.6	37.6	43.5	46.3	52.5
Georgia	De Kalb	130890002	72.7	70.2	69.5	73.7	31.5	67.5	57.3	71.2	106.1	87.5
Georgia	De Kalb	130893001	68.5	68.8	69.8	72.5	34.0	64.6	56.8	71.0	100.5	96.8
Georgia	Fulton	131210055	NA	65.2	68.3	73.8	43.0	68.6	51.0	73.5	88.5	86.1
Georgia	Glynn	131270006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Georgia	Gwinnett	131350002	63.1	66.0	63.2	67.5	38.5	59.2	51.0	58.7	100.8	90.0
Georgia	Muscogee	132150008	65.8	62.2	66.2	70.1	42.3	65.0	57.8	54.0	71.6	71.1
Georgia	Muscogee	132151003	63.5	62.0	65.0	70.1	42.7	60.2	54.1	52.6	63.8	69.2

State	County	AIRS Site Code	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24
Georgia	Richmond	132450091	73.2	72.5	74.0	57.2	54.7	58.1	59.6	59.1	76.2	64.6
Georgia	Rockdale	132470001	68.6	66.8	65.0	67.8	53.2	61.7	52.8	60.1	109.1	87.7
Illinois	Adams	170010006	59.3	60.7	74.7	68.3	68.0	71.2	74.3	76.2	71.7	78.8
Illinois	Champaign	170190004	78.5	73.1	89.5	87.0	78.8	79.7	77.7	79.7	79.5	72.1
Illinois	Cook	170310001	68.8	70.3	80.3	73.8	79.8	57.2	72.3	77.0	89.1	102.3
Illinois	Cook	170310032	65.2	73.2	80.3	90.0	86.0	54.8	51.3	73.8	84.2	101.0
Illinois	Cook	170310050	74.8	75.5	81.8	77.7	84.8	59.2	64.5	74.7	99.7	126.6
Illinois	Cook	170310064	69.0	76.8	87.0	80.5	83.1	56.0	55.6	75.0	89.3	103.3
Illinois	Cook	170310072	76.2	92.6	93.6	99.2	90.1	63.0	59.5	75.7	90.7	93.1
Illinois	Cook	170311003	80.0	75.2	81.0	72.3	82.1	63.5	63.1	79.7	100.7	107.8
Illinois	Cook	170311601	70.3	73.7	77.8	66.8	74.1	65.8	70.3	93.6	94.2	101.2
Illinois	Cook	170314002	74.5	79.2	87.8	77.8	81.8	60.3	67.1	72.7	90.3	100.5
Illinois	Cook	170314006	81.6	78.5	78.1	76.3	79.5	64.3	58.0	88.3	99.1	101.3
Illinois	Cook	170317002	75.6	79.3	90.8	91.0	83.7	59.2	57.5	72.8	79.8	75.3
Illinois	Cook	170318003	62.5	58.3	71.3	68.0	74.7	49.1	59.7	61.5	85.7	113.7
Illinois	Du Page	170436001	57.3	65.3	66.7	64.7	69.0	62.5	60.7	82.7	87.2	100.1
Illinois	Effingham	170491001	76.8	62.8	88.6	88.2	87.6	80.3	86.8	78.2	72.2	72.8
Illinois	Jersey	170831001	85.6	87.6	88.3	81.7	76.1	77.8	85.0	77.7	44.2	NA
Illinois	Kane	170890005	81.4	87.0	74.5	75.0	74.6	78.8	62.5	100.5	102.5	110.5
Illinois	Lake	170971002	73.0	88.1	94.1	66.5	67.1	55.8	52.1	69.8	75.6	86.2
Illinois	Lake	170971007	84.0	103.0	107.3	67.0	NA	NA	54.0	76.6	83.6	80.2
Illinois	Lake	170973001	75.8	84.6	69.7	63.2	68.2	57.0	50.0	77.8	97.5	91.6
Illinois	McHenry	171110001	90.5	89.3	74.7	74.1	76.6	79.5	62.7	96.5	104.6	103.8
Illinois	Macon	171150013	79.5	75.6	96.6	89.0	79.5	76.7	76.3	74.7	65.7	79.5
Illinois	Macoupin	171170002	82.0	81.7	97.2	80.8	72.2	76.6	80.5	70.3	75.5	77.6
Illinois	Madison	171190008	72.6	72.3	99.7	96.2	82.3	79.2	90.2	81.8	77.8	83.1
Illinois	Madison	171191009	NA	66.6	80.5	87.1	89.0	72.7	78.3	75.5	67.3	74.0
Illinois	Madison	171192007	86.6	79.3	94.7	101.1	90.6	82.0	88.0	80.8	81.5	86.8
Illinois	Madison	171193007	73.1	68.2	90.3	88.0	76.2	75.2	87.0	74.8	69.7	79.3
Illinois	Peoria	171430024	74.5	78.7	79.1	62.1	72.1	73.3	76.8	75.6	59.8	74.6
Illinois	Peoria	171431001	84.3	89.3	86.7	67.3	69.6	80.1	86.5	80.8	69.5	80.1

State	County	AIRS Site Code	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24
Illinois	Randolph	171570001	81.5	81.3	80.3	80.1	108.1	83.6	72.2	78.2	70.3	74.1
Illinois	St Clair	171630010	73.6	71.0	84.7	81.0	84.1	78.1	80.2	80.1	58.6	84.3
Illinois	Sangamon	171670010	78.2	76.8	94.0	80.1	78.1	76.0	72.2	71.1	61.2	66.1
Illinois	Will	171971008	71.2	73.1	77.8	67.8	69.8	70.2	77.2	97.1	96.7	98.0
Illinois	Will	171971011	75.3	74.0	82.0	71.0	74.0	72.1	90.1	80.7	95.7	79.0
Illinois	Winnebago	172010009	69.8	87.8	67.2	67.7	65.2	78.6	62.5	84.8	98.3	91.6
Illinois	Winnebago	172012001	72.1	86.5	61.0	45.5	NA	NA	NA	87.8	96.3	88.5
Indiana	Allen	180030002	83.6	96.8	85.3	98.2	83.0	82.0	99.0	85.6	92.2	71.6
Indiana	Allen	180030004	91.7	99.6	90.1	100.1	75.3	NA	NA	81.6	83.0	67.2
Indiana	Clark	180190003	87.7	86.5	88.1	90.3	75.5	69.7	73.0	68.8	47.7	68.7
Indiana	Floyd	180431004	99.7	90.2	94.1	89.2	72.3	80.0	79.6	75.2	50.5	67.2
Indiana	Hamilton	180571001	85.1	94.7	95.1	92.7	92.2	80.6	76.0	81.3	79.6	76.6
Indiana	Hancock	180590003	85.6	81.2	97.3	87.8	76.8	73.8	69.8	74.7	67.7	69.1
Indiana	Lake	180890022	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indiana	Lake	180892008	89.2	80.7	92.2	89.6	90.7	61.5	63.7	74.8	113.5	129.3
Indiana	La Porte	180910005	96.3	90.6	102.3	117.7	109.2	80.2	79.1	93.6	114.8	93.0
Indiana	Madison	180950010	80.7	84.6	95.3	91.2	83.5	73.8	76.6	73.2	66.0	71.7
Indiana	Marion	180970042	78.7	67.0	83.7	93.0	85.8	77.3	69.5	83.0	NA	NA
Indiana	Marion	180970050	91.3	90.1	101.2	99.7	94.1	83.1	72.5	85.0	76.0	80.8
Indiana	Marion	180970057	81.1	69.7	88.2	98.7	79.6	72.6	60.6	87.6	75.5	81.8
Indiana	Marion	180970073	81.5	80.7	90.7	96.6	87.8	78.8	59.0	83.1	72.1	78.6
Indiana	Porter	181270020	94.2	75.7	90.1	71.6	NA	69.1	56.1	74.0	104.2	90.6
Indiana	Porter	181270024	92.3	79.7	95.8	106.7	108.1	73.0	72.1	88.8	109.3	98.2
Indiana	St Joseph	181410010	79.8	83.7	82.0	91.5	88.7	87.6	101.8	102.4	106.3	88.3
Indiana	St Joseph	181411007	82.6	81.8	86.6	102.3	82.7	77.1	99.5	91.2	101.3	88.6
Indiana	St Joseph	181411008	74.3	79.2	83.7	102.8	81.6	73.6	84.7	84.6	95.1	84.5
Indiana	Vanderburgh	181630012	93.6	78.2	86.6	92.2	91.6	94.0	91.1	92.1	62.2	71.5
Indiana	Vanderburgh	181630013	90.2	77.2	89.5	89.1	97.0	96.6	91.5	86.8	58.6	70.2
Indiana	Vigo	181670018	79.6	69.8	83.3	83.7	75.2	75.5	64.6	72.5	76.0	72.0
Indiana	Warrick	181730002	88.7	76.8	74.6	88.5	77.8	69.0	75.3	78.7	64.5	70.8
Indiana	Warrick	181730008	85.0	73.3	88.6	90.7	86.0	77.8	79.7	80.8	67.5	73.0

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Indiana	Warrick	181730009	78.3	66.8	85.7	86.7	78.1	80.6	75.0	82.2	65.7	64.2
Iowa	Polk	191530058	59.8	60.2	65.3	65.6	71.0	70.7	69.1	73.5	71.5	44.8
Iowa	Scott	191632011	73.7	77.0	74.7	79.6	81.0	87.7	88.3	81.2	79.5	87.7
Kansas	Sedgwick	201730001	70.0	70.0	71.2	70.0	65.0	70.0	74.2	77.5	52.5	55.0
Kansas	Sedgwick	201730010	58.1	58.1	59.3	58.7	51.8	56.8	54.2	71.8	50.0	54.3
Kentucky	Bell	210130002	52.7	59.7	67.3	55.1	61.3	42.6	55.1	49.7	45.6	52.3
Kentucky	Boone	210150003	73.5	76.5	73.2	83.1	47.7	52.1	70.6	37.1	43.1	44.5
Kentucky	Boyd	210190015	67.7	80.6	88.3	76.3	87.5	83.2	59.8	51.1	38.2	58.2
Kentucky	Bullitt	210290006	73.3	73.2	77.0	88.8	51.8	66.8	59.0	58.7	40.1	41.1
Kentucky	Daviess	210590005	80.0	69.3	72.8	88.7	65.1	69.6	68.7	71.2	64.8	61.2
Kentucky	Fayette	210670001	65.7	75.0	74.8	79.8	73.2	63.2	59.7	51.7	42.0	45.8
Kentucky	Fayette	210670012	73.0	82.3	85.1	91.2	81.6	70.6	64.2	54.8	46.8	50.8
Kentucky	Graves	210830003	63.6	55.3	65.6	75.3	48.1	62.3	50.6	57.3	65.2	54.1
Kentucky	Greenup	210890007	63.1	75.3	85.2	73.8	91.8	76.3	64.7	60.8	27.5	54.3
Kentucky	Hancock	210910012	75.7	63.1	77.1	90.3	66.2	72.2	64.2	63.8	71.2	59.0
Kentucky	Henderson	211010013	66.3	53.5	78.2	87.0	66.7	79.1	NA	NA	63.1	69.5
Kentucky	Henderson	211010014	88.1	75.1	83.8	89.6	76.2	74.5	72.2	67.5	64.0	74.0
Kentucky	Jefferson	211110027	68.5	73.8	81.3	87.3	80.6	48.2	45.8	41.8	33.2	33.8
Kentucky	Jefferson	211110051	67.7	76.5	72.2	104.3	63.4	74.6	65.5	76.5	47.4	53.1
Kentucky	Jefferson	211111021	78.1	78.6	91.3	91.3	73.5	56.5	67.4	66.7	44.3	63.7
Kentucky	Jessamine	211130001	70.2	76.0	77.0	83.7	69.0	62.5	57.3	55.0	48.8	39.0
Kentucky	Kenton	211170007	57.0	72.7	78.0	102.7	100.2	52.6	69.7	63.7	48.8	51.2
Kentucky	Livingston	211390003	78.8	68.3	73.3	79.6	66.0	83.6	60.7	58.1	66.1	83.3
Kentucky	Livingston	211390004	80.1	70.0	76.1	78.8	62.3	85.5	59.6	67.2	71.8	89.2
Kentucky	McCracken	211451024	68.2	62.3	70.6	79.7	60.0	73.2	57.8	59.1	60.7	70.7
Kentucky	McLean	211490001	72.7	66.1	80.2	87.7	61.8	75.3	56.0	64.1	65.2	69.8
Kentucky	Oldham	211850004	75.8	80.7	81.7	92.1	79.6	74.5	68.3	65.8	46.8	57.0
Kentucky	Pike	211950002	69.2	68.2	80.7	75.6	25.5	78.6	62.6	35.1	48.6	59.3
Kentucky	Pulaski	211990003	65.5	66.6	79.5	79.7	68.6	66.1	65.3	57.5	51.7	46.2
Kentucky	Scott	212090001	67.6	74.8	78.3	84.5	79.3	80.8	69.2	46.5	42.2	44.7
Kentucky	Simpson	212130004	73.7	67.8	82.1	84.6	59.8	67.0	70.3	67.3	53.8	69.7

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Louisiana	Ascension	220050004	77.7	70.7	53.7	58.3	68.5	84.7	71.2	72.3	91.1	78.3
Louisiana	Beauregard	220110002	74.0	68.3	54.5	50.7	68.7	77.1	75.7	69.8	68.5	69.7
Louisiana	Bossier	220150008	56.5	68.0	61.7	55.1	71.7	79.3	63.1	60.0	60.0	73.5
Louisiana	Caddo	220170001	84.3	76.7	66.6	55.8	79.8	88.0	69.3	62.5	60.8	77.6
Louisiana	Calcasieu	220190002	82.1	78.2	66.2	59.0	68.7	74.8	85.8	74.5	80.8	75.0
Louisiana	Calcasieu	220190008	65.5	62.5	51.8	49.2	54.0	57.5	61.2	54.6	51.1	50.8
Louisiana	Calcasieu	220190009	88.2	78.5	64.6	62.1	65.4	68.3	83.2	67.0	72.0	73.0
Louisiana	East Baton Rou	220330003	87.5	72.5	56.6	65.0	73.6	89.5	80.0	84.0	114.6	72.6
Louisiana	East Baton Rou	220330009	77.2	68.1	51.0	61.1	67.7	82.5	71.3	82.0	99.8	70.7
Louisiana	East Baton Rou	220330013	72.3	70.5	54.5	61.1	66.8	77.7	66.8	79.0	73.6	67.0
Louisiana	East Baton Rou	220331001	75.7	69.6	52.8	59.7	65.3	81.8	71.1	79.3	94.2	71.2
Louisiana	Grant	220430001	82.0	81.1	66.8	64.6	73.8	89.1	69.7	55.7	77.2	68.7
Louisiana	Iberville	220470007	92.6	68.3	53.5	61.6	71.7	78.5	77.6	71.2	74.2	67.5
Louisiana	Iberville	220470009	94.2	80.2	61.6	64.3	78.2	86.0	88.6	75.0	94.5	71.5
Louisiana	Jefferson	220511001	80.1	75.3	59.8	67.1	82.5	78.6	82.8	83.7	88.7	73.6
Louisiana	Lafayette	220550005	87.1	77.5	66.7	72.0	70.1	84.6	76.0	81.8	80.2	76.0
Louisiana	Livingston	220630002	72.2	70.2	51.2	57.6	68.3	81.5	61.1	61.6	70.6	68.0
Louisiana	Orleans	220710012	72.8	62.1	42.5	54.2	67.5	54.3	63.1	63.1	79.5	61.3
Louisiana	Pointe Coupee	220770001	72.1	68.6	51.0	57.7	62.6	80.7	71.8	71.8	70.8	66.6
Louisiana	St Bernard	220870002	75.7	65.5	48.3	60.0	77.1	71.1	67.6	67.2	70.0	63.8
Louisiana	St Charles	220890003	84.0	66.6	54.1	NA	NA	NA	NA	NA	NA	66.7
Louisiana	St James	220930002	83.3	71.3	58.7	64.7	73.7	97.6	77.5	74.2	82.6	71.3
Louisiana	St John The Ba	220950002	NA	NA	55.2	64.5	78.2	84.5	77.7	82.7	71.8	72.8
Louisiana	St Mary	221010003	NA	NA	54.2	70.3	79.8	81.0	96.5	85.2	79.5	73.0
Louisiana	West Baton Rou	221210001	73.1	66.6	47.6	58.0	67.3	74.2	71.6	81.7	87.3	68.7
Maine	Cumberland	230052003	24.2	59.7	50.8	87.2	65.7	46.3	34.8	43.7	36.8	59.3
Maine	Hancock	230090102	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Maine	Kennebec	230112005	23.8	39.0	46.5	63.8	53.1	42.1	34.3	50.5	49.3	72.8
Maine	Knox	230130004	30.8	64.1	63.0	99.7	90.6	44.0	33.2	46.0	34.1	56.2
Maine	Oxford	230173001	19.2	39.1	49.5	59.6	54.2	40.1	37.7	49.7	60.7	54.2
Maine	Penobscot	230194008	29.6	37.8	50.6	68.2	60.1	38.6	30.8	51.7	54.2	76.5

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Maine	York	230312002	28.4	62.2	55.2	87.1	74.0	50.1	38.1	47.3	37.2	60.6
Maine	York	230313002	25.2	50.8	50.2	80.2	65.7	48.2	34.2	46.0	35.7	68.5
Maryland	Anne Arundel	240030014	71.8	74.0	85.2	90.5	105.1	69.1	62.5	49.3	31.0	29.1
Maryland	Anne Arundel	240030019	62.5	78.1	88.0	105.7	134.7	107.8	70.3	50.3	21.5	33.5
Maryland	Baltimore	240051007	57.7	76.3	89.8	104.3	105.7	104.3	68.3	48.8	27.6	27.3
Maryland	Baltimore	240053001	57.0	59.0	73.8	98.0	108.7	81.5	67.1	50.3	26.8	22.6
Maryland	Carroll	240130001	52.3	89.4	94.8	89.3	97.0	104.5	77.7	60.5	31.2	22.3
Maryland	Cecil	240150003	54.1	76.0	91.2	111.6	124.0	133.6	82.3	42.6	34.1	52.8
Maryland	Charles	240170010	59.1	67.3	71.7	64.5	67.2	47.1	69.5	37.7	33.0	27.8
Maryland	Harford	240251001	56.3	71.6	76.5	101.0	99.0	87.1	80.2	51.5	26.5	36.6
Maryland	Harford	240259001	53.2	64.8	83.6	96.8	105.2	99.6	113.5	43.7	28.8	41.7
Maryland	Kent	240290002	55.2	71.8	83.6	106.0	99.1	76.6	71.5	56.0	32.2	36.6
Maryland	Montgomery	240313001	53.3	76.6	85.2	92.0	113.1	88.2	75.0	46.0	22.3	25.3
Maryland	Prince Georges	240330002	55.5	68.5	78.6	92.5	111.1	86.1	64.1	51.1	30.0	28.5
Maryland	Prince Georges	240338001	58.6	71.2	83.1	95.1	95.6	64.3	66.0	42.7	29.5	26.8
Massachusetts	Barnstable	250010002	37.0	74.5	96.5	105.8	125.7	62.2	36.8	35.6	32.0	35.3
Massachusetts	Berkshire	250034002	31.8	49.5	60.0	82.1	72.7	55.7	47.8	44.3	51.8	47.5
Massachusetts	Bristol	250051002	35.7	73.3	97.6	107.3	125.1	58.1	42.5	42.8	35.0	41.8
Massachusetts	Essex	250090005	20.3	31.2	39.0	53.5	48.4	35.7	22.6	31.1	29.3	61.1
Massachusetts	Essex	250092006	27.3	60.8	69.7	83.3	78.7	47.7	30.8	38.0	33.6	51.2
Massachusetts	Essex	250094004	28.0	52.5	56.8	77.1	69.3	50.1	34.0	41.6	34.5	62.8
Massachusetts	Hampden	250130003	30.3	53.2	60.2	80.3	70.6	68.0	59.0	45.2	62.1	55.6
Massachusetts	Hampden	250130008	41.8	57.0	68.5	87.1	78.7	57.6	66.8	54.8	74.2	64.8
Massachusetts	Hampshire	250150103	36.5	45.0	60.2	78.0	68.7	51.6	60.0	49.1	57.1	59.0
Massachusetts	Hampshire	250154002	38.1	50.8	64.6	78.2	70.0	50.3	63.2	50.2	66.3	65.5
Massachusetts	Worcester	250270015	38.3	53.8	66.3	83.7	76.3	53.5	66.2	61.6	64.1	68.2
Michigan	Allegan	260050003	83.1	103.3	118.1	95.6	80.1	68.5	73.5	82.2	86.8	76.2
Michigan	Benzie	260190003	67.1	99.2	95.1	86.7	74.3	66.8	53.0	68.5	80.5	76.2
Michigan	Berrien	260210014	68.0	85.6	90.1	77.0	74.1	67.0	67.2	81.5	97.6	71.3
Michigan	Cass	260270003	84.6	88.8	92.1	96.1	85.8	80.1	99.7	92.1	101.3	84.5
Michigan	Clinton	260370001	59.3	73.1	76.2	66.2	65.8	53.7	64.2	71.1	79.8	63.0

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Michigan	Genesee	260490021	53.3	82.8	76.8	69.7	71.0	49.6	50.7	60.0	79.8	70.6
Michigan	Genesee	260492001	48.8	82.2	76.6	72.1	73.2	45.5	46.8	55.0	73.7	63.6
Michigan	Huron	260630007	37.1	68.2	83.8	76.5	83.3	56.7	44.5	61.6	81.2	68.7
Michigan	Ingham	260650012	65.3	85.7	88.0	79.7	82.7	68.5	77.8	83.1	98.8	75.2
Michigan	Kent	260810020	67.0	91.6	101.5	77.1	76.2	53.1	65.6	74.3	63.5	87.2
Michigan	Lenawee	260910007	64.3	82.7	85.7	91.2	81.7	90.3	75.7	60.5	97.0	49.2
Michigan	Macomb	260990009	51.1	72.6	106.7	92.7	78.6	47.2	64.0	71.7	89.1	53.3
Michigan	Macomb	260991003	54.2	69.6	78.8	89.7	85.8	57.2	59.5	78.5	94.7	46.0
Michigan	Muskegon	261210039	84.7	95.7	119.0	85.6	61.3	64.1	78.2	100.8	102.1	95.0
Michigan	Oakland	261250001	47.7	53.2	76.8	84.2	79.2	59.1	54.8	65.2	83.7	46.3
Michigan	Ottawa	261390005	62.0	75.3	81.5	63.6	61.0	55.5	74.5	79.0	83.2	72.6
Michigan	St Clair	261470005	35.6	47.2	100.0	94.7	76.3	49.1	49.1	48.5	77.0	44.8
Michigan	Wayne	261630001	NA	NA	68.1	78.6	62.7	52.2	56.1	63.8	72.6	44.2
Michigan	Wayne	261630016	28.1	43.0	48.1	45.2	49.1	NA	NA	NA	70.6	35.0
Michigan	Wayne	261630019	34.1	58.0	64.6	71.5	46.2	62.7	67.2	66.1	98.0	52.6
Minnesota	Anoka	270031001	69.3	78.5	75.7	78.5	83.7	92.2	97.2	90.1	69.8	36.2
Minnesota	Anoka	270031002	70.7	80.2	74.2	84.0	82.7	89.6	98.4	84.8	72.2	56.7
Minnesota	Dakota	270376018	NA	NA	NA	NA	NA	NA	79.7	76.0	72.5	64.2
Mississippi	Adams	280010004	65.8	66.3	53.5	58.2	66.2	76.6	64.1	59.7	69.8	71.8
Mississippi	De Soto	280330002	72.0	75.3	73.5	77.8	96.2	82.0	76.0	79.6	84.2	69.1
Mississippi	Hancock	280450001	79.2	74.6	56.1	63.6	81.7	66.2	85.7	78.1	82.6	69.7
Mississippi	Hinds	280490010	77.5	67.7	55.3	64.7	64.1	57.7	57.1	65.1	67.2	56.1
Mississippi	Jackson	280590006	75.2	69.1	51.1	63.5	72.4	61.0	82.0	73.0	72.1	63.2
Mississippi	Madison	280890002	76.0	67.2	54.1	65.3	67.7	67.8	55.5	67.1	66.8	61.1
Mississippi	Warren	281490004	75.0	75.5	60.7	62.5	76.2	62.6	57.7	62.0	72.2	72.6
Missouri	Clay	290470003	81.1	86.2	88.2	94.2	85.0	98.6	76.5	89.1	85.3	65.7
Missouri	Clay	290470005	81.6	85.7	91.2	97.5	87.8	97.5	79.4	83.7	91.1	67.0
Missouri	Clay	290470025	76.1	79.0	84.6	90.8	77.5	86.3	72.3	71.7	87.2	60.2
Missouri	Greene	290770026	59.0	58.6	61.2	64.3	73.2	72.5	61.2	61.8	65.6	56.1
Missouri	Greene	290770036	71.6	72.7	70.0	78.1	75.7	92.8	74.5	85.0	88.8	73.2
Missouri	Jefferson	290990012	89.2	83.0	89.1	95.5	103.8	92.6	94.6	94.0	75.2	93.8

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Missouri	Monroe	291370001	70.1	73.0	82.2	74.5	79.6	80.0	75.6	87.3	86.5	83.1
Missouri	Platte	291650023	84.1	74.1	70.8	77.8	73.0	99.1	75.5	84.3	90.0	57.5
Missouri	St Charles	291831002	NA	95.2	104.7	106.3	94.3	89.0	112.0	91.8	97.1	114.5
Missouri	St Charles	291831004	94.2	94.7	92.5	98.5	90.2	91.5	91.0	89.8	91.8	125.3
Missouri	St Louis	291890006	75.2	73.5	75.7	74.5	83.6	83.5	93.2	83.2	75.7	91.2
Missouri	St Louis	291893001	68.1	63.5	73.6	80.5	86.7	77.7	91.3	89.1	66.0	87.8
Missouri	St Louis	291895001	88.1	86.8	90.8	87.1	85.6	81.7	92.3	85.1	81.6	101.3
Missouri	St Louis City	295100007	64.3	62.3	68.6	82.5	94.6	79.3	75.0	75.1	62.1	74.5
Missouri	St Louis City	295100072	54.5	53.6	64.2	65.8	67.5	59.6	57.7	57.8	45.8	67.1
Nebraska	Douglas	310550028	84.7	59.6	72.2	67.5	63.3	67.7	77.7	76.5	54.8	43.2
Nebraska	Douglas	310550032	51.3	36.0	38.8	32.8	32.8	31.6	29.2	25.8	13.6	8.3
Nebraska	Douglas	310550035	62.6	45.7	52.3	49.5	46.7	49.2	49.3	51.3	32.8	29.1
Nebraska	Lancaster	311090016	58.7	51.0	58.1	58.3	54.0	54.1	60.8	63.6	51.6	40.2
New Hampshire	Cheshire	330050007	26.6	42.2	56.7	74.7	64.5	45.6	55.7	48.0	58.6	69.7
New Hampshire	Hillsborough	330111010	29.7	48.2	58.2	79.6	67.7	51.6	47.3	63.7	62.8	88.2
New Hampshire	Merrimack	330130007	28.3	36.5	53.2	72.0	58.2	39.5	38.2	54.6	62.0	66.6
New Hampshire	Rockingham	330150012	14.8	25.2	21.8	36.8	45.2	31.6	22.2	49.3	38.6	65.0
New Jersey	Atlantic	340010005	61.5	70.8	68.2	100.1	93.7	79.0	40.1	48.1	32.0	28.6
New Jersey	Camden	340070003	49.7	65.3	87.8	98.5	110.3	104.7	34.7	31.2	20.6	21.7
New Jersey	Camden	340071001	62.0	71.1	89.7	107.0	107.1	96.0	47.2	50.0	28.7	30.6
New Jersey	Cumberland	340110007	53.8	67.5	74.3	95.5	87.1	69.2	43.4	43.3	27.6	25.6
New Jersey	Gloucester	340150002	54.3	69.6	91.7	108.3	118.1	115.1	NA	40.2	26.8	29.0
New Jersey	Hudson	340170006	48.1	76.5	85.7	90.7	104.1	80.0	23.3	22.6	9.5	25.1
New Jersey	Hunterdon	340190001	46.8	79.5	86.5	87.7	104.5	77.0	35.1	29.8	22.6	37.1
New Jersey	Mercer	340210005	50.3	78.8	96.7	90.3	122.6	93.8	34.3	31.2	24.0	34.7
New Jersey	Middlesex	340230011	42.7	81.5	91.5	88.7	113.3	90.3	33.8	29.0	19.1	32.2
New Jersey	Monmouth	340250005	61.1	61.6	75.6	94.7	130.3	111.2	45.8	34.5	30.2	25.0
New Jersey	Morris	340273001	43.8	83.8	93.1	94.3	110.0	71.3	41.2	28.6	38.2	51.1
New Jersey	Ocean	340290006	49.1	76.6	99.1	108.7	124.7	117.7	41.5	38.7	32.1	29.2
New York	Albany	360010012	37.1	48.6	67.7	92.2	79.7	70.6	61.8	49.1	76.2	74.8
New York	Bronx	360050083	39.5	54.8	80.0	87.6	110.8	93.7	37.6	34.3	29.2	35.6

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New York	Chautauqua	360130011	56.1	58.3	69.6	90.7	76.7	80.3	68.0	89.6	62.5	31.8
New York	Chemung	360150003	43.8	61.6	68.2	81.8	70.2	55.6	70.0	57.0	49.1	29.5
New York	Dutchess	360270007	42.6	62.7	68.5	78.3	71.2	52.8	50.0	48.3	53.3	52.2
New York	Erie	360290002	48.1	65.8	69.0	95.1	82.6	54.0	56.0	76.2	68.7	41.3
New York	Essex	360310002	47.6	50.6	98.1	93.2	75.5	58.6	48.8	67.7	65.3	60.7
New York	Essex	360310003	42.6	44.3	92.2	92.2	73.6	50.3	42.3	59.1	58.5	55.6
New York	Hamilton	360410005	40.1	43.8	70.2	98.2	76.2	52.7	54.0	59.3	62.1	52.8
New York	Herkimer	360430005	41.2	44.5	72.0	85.4	69.8	52.0	49.8	55.6	55.1	50.0
New York	Jefferson	360450002	39.8	46.0	90.6	105.6	108.2	46.0	47.2	58.5	55.8	60.7
New York	Madison	360530006	44.7	56.1	63.1	89.2	77.1	51.7	57.3	53.0	51.2	55.3
New York	Monroe	360551004	36.3	47.5	82.3	95.1	90.0	44.3	49.5	69.8	60.2	45.6
New York	Niagara	360631006	42.3	56.7	77.0	101.8	95.0	54.7	51.7	71.1	61.6	47.2
New York	Oneida	360650004	39.1	44.8	70.6	89.6	78.0	50.2	63.8	57.8	64.0	62.7
New York	Onondaga	360671015	38.3	56.0	76.6	95.2	90.2	54.1	60.2	52.2	49.8	56.5
New York	Orange	360715001	39.2	62.8	73.8	77.2	73.3	65.3	47.4	42.6	52.6	56.2
New York	Putnam	360790005	42.6	61.7	81.7	82.8	80.2	62.0	41.8	42.8	49.6	52.5
New York	Richmond	360850067	53.2	78.1	90.1	93.8	111.1	94.8	31.3	29.2	19.7	29.0
New York	Saratoga	360910004	33.5	45.1	61.6	77.2	72.0	56.2	57.5	52.3	64.0	74.8
New York	Schenectady	360930003	36.3	45.2	62.8	83.7	73.2	52.2	66.7	49.5	71.2	79.3
New York	Suffolk	361030002	48.6	54.7	72.8	95.0	NA	75.8	31.6	31.6	31.3	25.0
New York	Suffolk	361030004	47.0	67.3	85.6	102.8	108.5	82.0	37.8	36.1	33.3	23.3
New York	Ulster	361111005	42.2	NA	NA	NA	NA	NA	NA	NA	NA	56.2
New York	Wayne	361173001	37.3	51.0	81.7	100.7	101.5	47.1	48.8	66.1	60.0	58.3
New York	Westchester	361192004	42.7	64.8	85.0	82.0	94.7	73.1	37.0	38.3	30.2	36.1
North Carolina	Buncombe	370210030	46.3	54.7	39.8	63.8	33.2	42.5	49.3	48.2	30.5	35.1
North Carolina	Caldwell	370270003	59.6	66.6	74.2	75.7	48.1	53.6	67.8	48.1	56.3	64.0
North Carolina	Camden	370290099	63.1	54.1	52.0	48.8	31.8	38.7	45.0	32.7	44.2	47.0
North Carolina	Caswell	370330001	61.1	66.6	65.0	55.7	30.2	39.3	54.0	27.8	47.6	51.1
North Carolina	Chatham	370370004	75.7	81.8	71.0	52.6	33.2	30.2	40.3	34.1	44.7	50.5
North Carolina	Cumberland	370510008	64.6	68.1	61.2	43.0	32.7	45.7	25.0	23.3	43.1	47.1
North Carolina	Duplin	370610002	63.8	65.3	50.2	33.5	25.7	45.5	27.1	27.2	35.2	39.0

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North Carolina	Durham	370630013	68.8	73.6	71.0	57.7	32.1	32.5	42.7	28.7	54.1	57.8
North Carolina	Forsyth	370670022	75.0	61.5	79.3	70.0	47.1	48.5	57.8	46.1	53.2	66.3
North Carolina	Forsyth	370670027	53.1	62.5	68.0	68.1	38.1	46.1	62.2	39.5	39.7	65.2
North Carolina	Forsyth	370671008	69.6	65.6	77.1	64.8	40.5	45.3	55.6	35.7	46.7	59.1
North Carolina	Franklin	370690001	67.6	68.6	60.3	52.0	26.2	35.7	36.2	24.8	46.0	56.3
North Carolina	Granville	370770001	70.6	74.0	74.3	59.5	31.8	40.2	47.1	31.1	63.1	64.5
North Carolina	Guilford	370810011	72.3	69.1	79.2	64.3	31.7	39.5	51.6	30.5	57.1	50.2
North Carolina	Haywood	370870035	61.6	65.7	64.8	69.8	64.6	52.8	55.3	57.2	49.8	61.6
North Carolina	Haywood	370870036	61.0	62.1	61.5	64.8	58.2	42.0	51.2	51.5	42.8	46.2
North Carolina	Johnston	371010002	70.0	78.0	64.1	46.7	25.8	39.5	33.7	31.2	45.0	63.1
North Carolina	Lincoln	371090004	63.1	72.6	78.0	68.2	42.2	52.0	57.6	46.1	58.8	66.6
North Carolina	Martin	371170001	68.7	61.6	53.8	43.8	27.8	38.2	38.3	28.3	41.1	47.8
North Carolina	Mecklenburg	371191005	60.2	63.6	72.8	57.1	31.7	46.7	46.2	36.0	52.2	67.1
North Carolina	Mecklenburg	371191009	68.1	65.8	74.6	61.2	44.7	49.1	44.5	38.6	67.1	83.1
North Carolina	Northampton	371310002	72.1	68.2	57.3	57.5	31.5	37.6	39.7	27.7	45.6	65.0
North Carolina	Pitt	371470099	65.1	63.8	54.6	45.0	29.7	44.3	33.0	29.5	40.8	55.1
North Carolina	Rockingham	371570099	59.2	55.1	64.7	53.5	30.0	39.8	47.6	29.5	33.2	42.3
North Carolina	Rowan	371590021	67.6	67.5	73.5	61.0	42.6	46.1	48.5	37.2	67.3	63.6
North Carolina	Rowan	371590022	NA	68.8	75.1	68.3	48.3	45.2	46.5	NA	NA	NA
North Carolina	Swain	371730002	49.5	48.7	40.6	52.8	46.1	38.6	40.1	49.1	44.1	55.5
North Carolina	Wake	371830014	66.8	68.3	61.1	46.5	16.5	30.8	32.1	25.2	46.1	55.3
North Carolina	Wake	371830015	71.8	77.3	71.1	53.5	19.1	39.1	37.8	30.2	56.0	70.7
North Carolina	Wake	371830016	69.6	72.8	67.1	48.3	29.8	36.3	36.5	31.0	42.2	58.5
North Carolina	Wake	371830017	65.7	71.8	62.3	47.2	26.8	36.1	39.0	NA	NA	61.3
North Carolina	Yancey	371990003	65.8	77.7	79.7	76.5	69.7	66.2	67.5	67.7	66.0	67.5
Ohio	Allen	390030002	78.0	84.8	93.0	90.2	83.2	88.0	72.3	85.0	74.6	55.8
Ohio	Ashtabula	390071001	57.6	73.6	78.3	96.0	91.0	88.8	71.0	92.1	69.1	45.2
Ohio	Butler	390170004	66.1	84.2	92.1	89.5	86.7	48.7	66.1	74.8	61.2	54.2
Ohio	Butler	390171004	57.2	81.1	100.5	91.8	90.2	62.0	74.3	83.3	65.5	62.2
Ohio	Clark	390230001	62.1	83.3	86.6	92.2	86.3	74.0	NA	NA	58.0	38.8
Ohio	Clark	390230003	74.5	81.8	92.3	97.1	89.3	81.6	64.6	83.2	70.7	57.2

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Ohio	Clinton	390271002	85.1	79.5	92.2	96.8	96.3	71.5	75.8	80.1	60.3	59.6
Ohio	Cuyahoga	390350034	43.8	29.6	43.3	47.6	59.8	67.1	58.6	62.2	76.5	42.2
Ohio	Cuyahoga	390350064	53.1	55.6	88.0	95.6	81.8	64.6	62.6	71.6	77.5	46.0
Ohio	Cuyahoga	390355002	47.6	59.5	86.3	84.7	74.0	78.8	69.1	78.3	72.3	47.1
Ohio	Franklin	390490081	67.0	83.3	81.3	88.7	90.1	67.6	74.3	72.1	68.3	52.0
Ohio	Hamilton	390610006	52.8	76.0	96.7	101.5	88.0	37.5	68.3	64.0	47.3	49.7
Ohio	Hamilton	390610010	67.7	71.5	77.8	84.2	78.6	33.3	74.6	65.5	33.5	54.2
Ohio	Knox	390830002	62.8	75.7	82.3	83.6	76.5	77.5	70.5	66.2	66.6	45.5
Ohio	Lake	390850003	59.5	70.8	96.6	95.0	87.7	90.1	68.8	85.3	79.7	52.6
Ohio	Lake	390853002	59.3	68.5	87.1	87.2	75.8	88.3	68.1	88.5	72.1	45.2
Ohio	Lawrence	390870006	74.0	83.7	89.3	78.8	91.0	83.6	65.7	62.2	35.1	61.1
Ohio	Lawrence	390870011	63.7	69.8	74.7	69.5	77.0	75.0	56.8	54.8	32.8	42.0
Ohio	Licking	390890005	60.7	79.3	77.8	74.6	82.6	61.1	86.0	83.6	69.2	51.6
Ohio	Lucas	390950034	49.8	61.6	82.6	91.0	88.3	79.1	59.5	79.8	101.1	56.5
Ohio	Lucas	390950081	58.2	68.6	85.0	94.0	77.0	79.0	67.0	83.5	104.1	58.6
Ohio	Madison	390970007	85.5	83.8	85.6	93.7	95.6	82.2	73.5	77.6	68.1	58.5
Ohio	Medina	391030003	51.6	66.8	88.7	83.0	71.8	77.8	85.6	91.7	85.7	56.8
Ohio	Miami	391090005	75.7	81.2	79.2	85.1	80.7	72.5	60.0	70.8	64.5	51.3
Ohio	Montgomery	391130019	62.6	69.6	83.2	86.0	82.5	70.3	56.7	73.7	51.7	52.0
Ohio	Portage	391331001	54.8	66.0	91.1	103.1	107.8	85.1	72.5	90.8	76.7	54.7
Ohio	Preble	391351001	70.8	66.5	87.1	88.6	84.3	70.5	66.5	75.6	60.0	61.0
Ohio	Stark	391510016	46.6	64.8	94.0	95.8	92.5	80.1	81.1	78.0	70.2	46.8
Ohio	Stark	391510019	56.7	76.0	96.0	92.5	92.1	74.7	81.2	77.5	76.1	53.2
Ohio	Stark	391511009	49.7	64.6	87.2	94.1	88.7	67.6	75.6	70.3	64.7	46.6
Ohio	Stark	391514005	59.0	68.3	90.6	99.6	105.8	76.3	80.0	83.0	67.8	50.7
Ohio	Summit	391530020	49.0	75.0	99.2	92.6	92.1	77.8	69.5	92.3	66.0	47.6
Ohio	Trumbull	391550008	65.0	70.6	71.0	101.5	97.0	80.7	70.2	78.0	59.7	47.5
Ohio	Trumbull	391550009	64.2	67.5	73.1	96.7	86.1	93.1	63.8	78.1	61.5	41.2
Ohio	Washington	391670004	65.2	76.7	84.7	90.7	98.3	99.3	NA	62.8	38.1	57.8
Oklahoma	Cleveland	400270049	70.0	77.7	68.3	64.0	57.8	70.0	78.6	82.1	58.6	56.2
Oklahoma	Oklahoma	401090033	66.3	74.6	69.5	64.1	61.3	72.1	85.1	83.7	69.8	59.7

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Oklahoma	Oklahoma	401091037	68.7	78.2	73.7	68.3	67.8	62.0	73.5	88.1	68.3	56.8
Oklahoma	Tulsa	401430137	74.2	89.8	84.1	72.2	81.0	91.0	95.3	95.0	65.0	61.3
Oklahoma	Tulsa	401430174	57.6	62.7	61.5	50.0	59.2	59.2	69.6	59.2	48.6	44.7
Pennsylvania	Allegheny	420030008	61.2	72.3	87.3	109.5	125.6	44.0	64.2	69.8	32.7	44.8
Pennsylvania	Allegheny	420030067	57.8	63.7	84.1	105.5	102.0	60.3	66.0	64.6	35.5	49.8
Pennsylvania	Allegheny	420030088	60.1	72.3	80.3	102.0	118.8	49.1	63.7	57.8	28.7	40.1
Pennsylvania	Allegheny	420031005	66.1	80.3	91.2	101.1	113.1	74.2	62.8	71.5	40.2	43.1
Pennsylvania	Beaver	420070002	61.7	60.1	NA	95.8	91.6	62.8	84.8	NA	49.3	46.1
Pennsylvania	Beaver	420070005	64.6	70.6	74.1	93.3	89.8	51.7	93.0	78.2	43.5	49.8
Pennsylvania	Beaver	420070014	59.0	66.2	75.2	83.5	95.7	50.1	82.6	77.1	47.2	51.2
Pennsylvania	Berks	420110001	45.7	77.1	82.1	80.8	97.2	66.6	36.8	27.2	34.7	40.3
Pennsylvania	Berks	420110009	41.8	79.5	86.5	87.0	114.2	73.2	40.5	30.7	28.7	42.1
Pennsylvania	Blair	420130801	62.0	78.6	89.7	85.5	94.8	69.3	68.7	61.1	41.7	34.2
Pennsylvania	Bucks	420170012	50.6	73.0	102.3	100.7	122.7	108.6	41.1	37.5	25.5	32.3
Pennsylvania	Cambria	420210011	61.1	66.3	77.5	91.3	92.7	64.2	63.8	59.6	37.6	42.8
Pennsylvania	Dauphin	420430401	49.5	76.1	76.8	82.5	102.5	67.2	57.7	27.3	18.8	19.1
Pennsylvania	Dauphin	420431100	50.3	79.0	80.0	88.6	106.2	67.2	63.6	31.2	23.5	20.6
Pennsylvania	Delaware	420450002	51.6	67.7	86.1	99.0	111.3	100.7	34.6	34.3	18.2	26.8
Pennsylvania	Erie	420490003	52.7	58.5	57.7	87.5	71.8	76.0	55.1	80.2	58.6	35.5
Pennsylvania	Lackawanna	420690101	46.0	74.1	82.6	81.5	79.6	54.6	54.0	40.6	48.5	44.7
Pennsylvania	Lackawanna	420692006	45.1	76.2	91.1	91.0	88.8	63.2	57.1	43.7	49.7	45.5
Pennsylvania	Lancaster	420710007	54.2	76.8	85.7	93.1	109.2	101.8	63.6	37.7	31.7	35.8
Pennsylvania	Lawrence	420730015	55.3	61.1	79.2	94.7	100.0	65.3	72.7	77.8	52.1	42.3
Pennsylvania	Lehigh	420770004	46.2	78.5	84.3	83.8	96.7	64.3	28.3	24.0	32.5	29.6
Pennsylvania	Luzerne	420791100	40.3	66.3	79.5	75.8	78.6	52.6	55.7	44.1	44.5	30.8
Pennsylvania	Luzerne	420791101	45.7	72.8	88.7	85.5	90.1	65.7	56.3	47.2	43.7	36.3
Pennsylvania	Lycoming	420810403	43.7	55.8	72.7	69.6	73.1	50.5	NA	NA	33.7	31.1
Pennsylvania	Mercer	420850100	58.5	63.1	72.0	102.5	97.1	75.6	70.2	78.2	54.2	42.3
Pennsylvania	Montgomery	420910013	52.8	68.8	85.5	87.8	114.5	96.1	36.7	28.8	28.3	26.7
Pennsylvania	Perry	420990301	53.2	69.3	73.1	71.7	93.6	50.1	66.3	35.1	24.7	20.2
Pennsylvania	Philadelphia	421010004	43.7	55.7	78.7	86.2	98.7	85.0	31.6	27.5	18.7	20.0

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Pennsylvania	Philadelphia	421010014	52.5	72.5	88.7	88.3	NA	NA	37.5	35.0	27.5	25.0
Pennsylvania	Philadelphia	421010024	57.5	73.7	101.2	102.5	127.5	111.2	41.2	40.0	26.2	33.7
Pennsylvania	Philadelphia	421010136	48.7	62.5	85.0	92.5	106.2	105.0	23.7	NA	NA	NA
Pennsylvania	Washington	421250005	55.6	61.8	86.1	92.2	96.5	NA	NA	57.2	37.3	49.3
Pennsylvania	Washington	421250200	59.1	56.2	77.5	90.8	92.2	59.0	67.3	58.8	35.1	NA
Pennsylvania	Washington	421255001	53.6	62.6	67.3	88.6	NA	NA	77.6	63.0	39.8	45.5
Pennsylvania	Westmoreland	421290006	53.6	71.6	83.8	99.7	107.3	54.6	58.1	62.5	32.8	45.6
Pennsylvania	York	421330008	49.0	78.1	79.3	86.3	91.7	82.5	68.8	35.1	27.2	20.7
Rhode Island	Kent	440030002	34.0	62.2	91.8	104.1	120.1	55.6	43.2	42.0	52.0	37.2
Rhode Island	Providence	440071010	35.3	61.2	76.2	99.5	89.3	63.6	44.8	43.1	46.6	39.8
South Carolina	Abbeville	450010001	56.0	55.7	62.5	50.3	NA	NA	44.7	47.8	49.5	61.1
South Carolina	Aiken	450030003	57.3	53.3	60.2	43.5	44.1	41.5	45.6	43.4	47.7	52.5
South Carolina	Anderson	450070003	67.1	66.1	66.1	63.0	37.2	59.8	46.3	59.2	60.6	59.2
South Carolina	Barnwell	450110001	60.1	58.7	66.6	46.1	45.7	42.8	50.0	39.3	NA	NA
South Carolina	Berkeley	450150002	71.1	48.2	49.1	34.1	33.0	52.6	33.6	25.8	40.3	40.7
South Carolina	Charleston	450190042	68.3	51.7	50.5	35.5	32.2	48.1	35.1	28.6	44.6	43.3
South Carolina	Charleston	450190046	59.6	44.8	43.2	32.2	28.0	41.3	29.0	25.8	39.6	35.3
South Carolina	Cherokee	450210002	50.6	68.3	77.1	68.5	38.2	59.7	52.1	54.2	63.5	62.2
South Carolina	Chester	450230002	77.1	67.2	71.5	54.6	42.6	51.5	47.3	43.6	57.3	61.7
South Carolina	Darlington	450310003	69.2	65.5	67.0	47.1	36.1	55.0	36.0	33.7	60.0	50.3
South Carolina	Edgefield	450370001	61.2	63.8	67.3	46.5	48.6	55.1	57.0	43.6	69.5	67.8
South Carolina	Oconee	450730001	53.8	69.3	53.1	62.3	56.3	63.8	45.0	47.2	60.5	61.6
South Carolina	Pickens	450770002	64.6	73.7	65.8	67.8	43.7	66.3	NA	NA	65.6	66.0
South Carolina	Richland	450790007	NA	63.6	68.3	45.6	37.8	58.1	40.7	35.6	58.6	74.0
South Carolina	Richland	450791002	55.5	62.7	65.8	45.7	41.0	60.8	39.1	38.0	60.2	74.7
South Carolina	Spartanburg	450830009	55.2	68.6	71.5	66.2	33.8	61.2	49.5	63.1	67.2	62.0
South Carolina	Union	450870001	NA	55.7	69.7	50.2	42.7	49.8	43.3	47.1	50.2	60.6
South Carolina	Williamsburg	450890001	69.0	58.3	53.6	41.3	38.1	53.2	39.6	33.0	36.1	40.1
South Carolina	York	450910006	65.7	65.0	69.0	55.6	40.0	45.7	41.8	40.3	53.1	57.5
Tennessee	Anderson	470010101	66.1	74.1	72.8	NA	NA	62.0	52.8	52.8	57.1	66.2
Tennessee	Blount	470090101	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

State	County	AIRS Site Code	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24
Tennessee	Blount	470090102	60.1	55.6	67.1	66.1	54.5	37.0	28.5	48.0	34.0	64.8
Tennessee	Davidson	470370011	75.6	65.6	83.7	80.6	47.5	64.3	73.1	74.3	38.1	67.5
Tennessee	Davidson	470370026	69.3	66.2	82.5	77.5	46.8	61.8	75.0	73.7	50.6	91.8
Tennessee	Hamilton	470650028	67.6	66.3	66.8	74.1	50.1	68.5	55.7	68.0	60.2	76.2
Tennessee	Hamilton	470651011	58.8	63.1	60.8	67.3	46.3	67.5	58.5	59.8	49.1	65.3
Tennessee	Haywood	470750002	73.2	81.2	81.8	77.6	81.5	77.7	66.3	77.5	82.5	NA
Tennessee	Knox	470930021	55.8	68.0	64.0	64.0	51.5	52.7	48.5	44.3	64.5	69.5
Tennessee	Knox	470931020	55.8	65.0	64.5	62.6	45.0	50.5	42.6	46.8	57.8	69.0
Tennessee	Rutherford	471490101	56.8	63.1	NA	NA	NA	NA	NA	NA	NA	62.1
Tennessee	Sevier	471550101	70.8	70.7	NA	75.7	67.0	57.3	63.8	69.8	63.7	72.7
Tennessee	Sevier	471550102	59.0	67.2	69.5	71.0	68.1	54.6	62.1	71.7	58.8	61.7
Tennessee	Shelby	471570021	73.2	74.7	73.3	75.6	83.6	75.5	68.2	75.0	81.4	75.3
Tennessee	Shelby	471571004	78.5	79.0	79.7	83.3	89.1	82.5	68.3	82.0	81.5	85.1
Tennessee	Sullivan	471632002	53.3	61.7	64.1	62.2	37.5	39.0	57.1	49.1	64.5	63.8
Tennessee	Sullivan	471632003	55.5	64.1	68.8	70.7	38.0	39.3	60.7	51.5	63.7	58.3
Tennessee	Sumner	471650007	82.8	65.2	87.0	84.3	59.6	68.3	80.0	79.0	54.3	83.2
Tennessee	Sumner	471650101	68.3	56.3	67.7	69.6	51.3	49.8	65.1	54.0	40.2	59.7
Tennessee	Wilson	471890103	64.2	63.3	74.2	74.1	49.8	54.7	65.8	67.6	49.8	71.3
Texas	Brazoria	480391003	68.5	80.3	63.6	42.8	73.1	79.2	64.6	91.5	81.7	72.0
Texas	Collin	480850005	75.1	88.2	77.7	63.3	73.6	90.1	NA	NA	NA	74.0
Texas	Dallas	481130069	54.8	67.2	66.6	51.1	57.0	75.7	87.5	82.1	78.0	79.8
Texas	Dallas	481130087	62.0	73.2	68.3	50.2	64.7	85.1	87.3	85.8	82.0	96.7
Texas	Galveston	481671002	70.1	84.6	64.8	46.8	73.3	92.3	NA	153.0	116.5	120.6
Texas	Gregg	481830001	93.7	93.3	78.1	72.7	85.1	110.0	101.2	102.3	103.2	87.6
Texas	Harris	482010024	89.3	90.7	77.8	43.1	80.0	83.5	107.3	116.1	109.8	100.5
Texas	Harris	482010029	109.1	98.2	90.3	60.6	88.3	85.3	89.6	93.1	83.2	68.1
Texas	Harris	482010046	80.3	89.8	75.8	41.3	87.1	73.6	94.6	98.5	94.3	92.3
Texas	Harris	482010047	77.6	89.2	75.1	43.5	92.1	82.1	NA	87.0	79.7	78.8
Texas	Harris	482010051	72.7	90.1	74.1	44.1	80.8	112.8	103.7	84.0	79.3	80.8
Texas	Harris	482010062	74.8	82.7	64.5	43.6	71.1	97.1	101.0	91.8	74.6	75.5
Texas	Harris	482010066	71.0	102.2	92.0	47.3	90.8	86.7	84.1	83.3	72.1	70.1

State	County	AIRS Site Code	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24
Texas	Harris	482011035	66.3	85.3	66.8	41.8	NA	NA	106.7	102.6	91.8	75.7
Texas	Jefferson	482450009	88.8	86.7	75.0	54.0	70.8	74.3	87.3	82.1	79.5	74.3
Texas	Jefferson	482450011	75.3	77.3	64.2	50.5	86.2	82.2	99.8	88.5	89.7	106.3
Texas	Orange	483611001	79.3	87.7	71.8	56.0	67.8	72.6	82.5	79.3	75.0	72.5
Texas	Tarrant	484391002	66.5	81.1	76.0	62.2	75.5	96.5	94.8	98.3	96.1	85.3
Texas	Tarrant	484392003	69.2	89.1	84.6	67.1	89.8	110.6	113.1	106.5	106.0	77.8
Texas	Travis	484530014	58.3	72.6	59.7	52.8	69.6	80.2	97.6	89.6	71.5	77.3
Vermont	Bennington	500030004	36.5	49.0	70.0	85.8	76.2	50.0	60.3	56.6	57.7	60.3
Virginia	Arlington	510130020	56.8	67.5	75.6	97.5	95.4	82.3	64.8	43.0	22.3	31.5
Virginia	Caroline	510330001	64.3	66.5	72.6	62.1	69.6	36.0	63.2	35.1	33.8	41.2
Virginia	Charles City	510360002	66.0	71.8	57.1	56.1	36.7	39.8	56.2	35.6	35.8	51.5
Virginia	Chesterfield	510410004	62.3	71.8	62.3	59.8	50.8	33.2	56.1	33.1	34.8	50.6
Virginia	Fairfax	510590005	55.2	78.2	84.5	99.1	93.3	68.5	65.3	48.8	18.5	40.8
Virginia	Fairfax	510590018	58.6	70.2	82.0	89.6	91.1	71.8	63.5	45.0	26.3	4.3
Virginia	Fairfax	510595001	62.3	67.6	86.5	122.1	107.5	63.5	59.1	49.5	24.8	39.2
Virginia	Fauquier	510610002	57.1	78.8	74.6	77.8	68.1	47.7	57.5	40.3	28.3	43.3
Virginia	Frederick	510690010	55.1	65.2	63.1	76.3	90.7	81.0	57.0	56.7	11.8	40.0
Virginia	Henrico	510870014	67.5	71.5	61.5	54.3	45.2	37.0	63.0	37.6	33.0	51.2
Virginia	Madison	511130003	61.8	72.8	68.0	77.5	89.2	79.1	64.0	52.8	39.6	48.2
Virginia	Prince William	511530009	56.2	76.2	75.8	100.3	97.0	71.2	64.0	52.0	28.7	46.7
Virginia	Roanoke	511611004	63.2	61.8	69.6	66.6	65.0	44.2	63.7	30.1	25.0	43.0
Virginia	Stafford	511790001	67.0	73.3	75.8	81.3	81.7	60.7	62.5	39.5	36.6	49.2
Virginia	Wythe	511970002	52.2	64.1	64.8	69.2	48.3	46.3	58.7	37.3	45.3	50.5
Virginia	Alexandria Cit	515100009	50.2	NA	NA	NA	NA	63.4	62.6	43.6	25.0	25.6
Virginia	Hampton City	516500004	53.0	55.5	49.3	51.7	31.2	40.0	60.7	36.5	31.7	30.8
Virginia	Suffolk City	518000004	52.7	53.3	50.7	55.0	32.5	42.1	58.3	35.2	33.0	38.6
Virginia	Suffolk City	518000005	62.8	66.0	61.8	60.2	31.7	41.0	49.5	34.5	45.0	56.1
West Virginia	Cabell	540110006	76.1	76.1	81.7	69.0	84.2	83.0	54.7	49.1	37.7	57.3
West Virginia	Hancock	540291004	56.3	51.6	79.0	93.1	78.1	66.0	71.2	73.5	48.0	43.1
West Virginia	Ohio	540690007	56.3	57.3	64.6	77.0	89.1	61.0	64.3	66.3	45.6	44.2
West Virginia	Wood	541071002	62.8	69.2	73.8	79.6	87.3	83.0	NA	65.4	37.1	53.5

State	County	AIRS Site Code	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24
Wisconsin	Brown	550090026	71.2	99.8	70.8	62.0	61.7	66.6	47.2	69.8	76.6	76.1
Wisconsin	Columbia	550210015	81.8	88.0	79.1	68.7	79.2	76.7	66.8	96.6	99.2	88.2
Wisconsin	Dane	550250041	70.2	78.1	68.5	65.3	65.1	78.8	62.2	93.5	95.8	87.6
Wisconsin	Dodge	550270007	72.1	83.5	69.7	65.2	63.7	63.5	52.7	79.8	83.2	80.2
Wisconsin	Door	550290004	68.8	116.3	115.5	73.8	62.2	71.1	50.1	60.3	75.6	70.7
Wisconsin	Fond Du Lac	550390006	77.5	87.2	73.7	76.2	71.5	73.1	55.3	81.8	82.6	77.6
Wisconsin	Jefferson	550550002	75.7	87.5	71.1	64.2	70.8	70.1	65.0	88.2	94.8	88.6
Wisconsin	Kenosha	550590002	74.6	92.7	99.5	72.0	76.1	61.6	51.0	76.3	90.3	88.5
Wisconsin	Kenosha	550590019	89.2	110.8	118.6	78.1	93.7	71.0	56.7	85.6	102.2	91.5
Wisconsin	Kewaunee	550610002	70.2	102.7	109.3	71.5	67.0	69.2	52.1	72.5	96.2	81.7
Wisconsin	Manitowoc	550710004	67.0	100.1	65.7	62.3	66.1	59.8	48.0	75.7	74.7	67.3
Wisconsin	Manitowoc	550710007	74.7	106.8	115.1	71.6	56.1	62.6	49.6	76.8	80.7	78.2
Wisconsin	Marathon	550730012	75.2	78.2	61.3	66.0	64.8	70.8	70.6	68.3	81.3	80.7
Wisconsin	Milwaukee	550790041	74.5	101.5	99.5	70.5	72.3	65.2	49.7	72.1	94.3	94.5
Wisconsin	Milwaukee	550790044	61.0	88.1	68.7	68.6	68.6	69.1	49.5	75.6	92.1	93.1
Wisconsin	Milwaukee	550790085	81.8	109.0	107.3	75.2	77.1	69.1	52.8	75.3	103.0	100.0
Wisconsin	Milwaukee	550791025	77.8	102.0	93.1	73.2	76.1	68.0	51.3	76.1	93.8	93.2
Wisconsin	Outagamie	550870009	82.1	90.8	77.8	66.5	65.6	76.4	56.3	74.5	85.2	84.5
Wisconsin	Ozaukee	550890008	81.2	111.1	104.7	71.1	67.7	67.0	55.2	80.3	101.2	103.5
Wisconsin	Ozaukee	550890009	80.3	109.0	116.6	73.7	75.5	66.0	53.6	76.8	99.8	94.5
Wisconsin	Racine	551010017	72.2	93.5	102.7	66.5	69.8	54.1	42.2	66.1	80.8	84.8
Wisconsin	Rock	551050024	76.1	91.2	70.0	67.1	66.2	74.3	64.8	87.6	94.1	98.7
Wisconsin	St Croix	551091002	57.1	67.7	63.2	69.1	69.2	78.8	84.0	66.6	68.2	49.6
Wisconsin	Sauk	551110007	69.2	75.5	70.5	59.5	63.0	76.7	64.8	87.2	99.1	86.8
Wisconsin	Vernon	551230008	56.8	67.7	63.5	62.5	62.5	68.3	69.2	71.0	79.7	64.6
Wisconsin	Walworth	551270005	89.0	85.8	64.5	63.1	72.2	75.4	58.0	86.5	96.8	94.1
Wisconsin	Washington	551310009	80.0	94.1	75.5	73.2	76.5	73.3	56.1	89.2	89.8	90.7
Wisconsin	Waukesha	551330017	79.6	85.5	65.7	60.0	NA	NA	55.0	84.6	88.8	92.7
Wisconsin	Winnebago	551390011	82.7	88.2	77.6	65.0	68.7	74.5	55.6	81.0	86.0	86.2

8-Hour Daily Maximum Ozone (ppb) Measured at Monitoring Sites in the East During the July 1995 episode										
State	County	AIRS Site Code	July 8	July 9	July 10	July 11	July 12	July 13	July 14	July 15
Alabama	Clay	10270001	72.7	64.1	60.1	80.7	72.3	84.3	66.3	90.0
Alabama	Jefferson	10731003	46.5	44.1	83.1	71.6	93.3	87.8	91.7	81.6
Alabama	Jefferson	10731005	45.6	40.1	66.1	88.8	102.2	85.6	80.1	69.6
Alabama	Jefferson	10732006	50.8	38.3	78.0	91.3	87.8	83.1	84.5	92.6
Alabama	Jefferson	10735002	55.2	51.3	70.3	67.5	79.2	83.0	77.6	80.5
Alabama	Jefferson	10736002	51.0	48.2	103.2	68.1	85.6	82.0	79.5	88.3
Alabama	Lawrence	10790002	51.7	43.0	49.5	77.2	82.6	85.0	76.2	72.5
Alabama	Madison	10890014	80.6	62.2	73.5	72.3	73.8	84.7	93.3	67.1
Alabama	Mobile	10970003	NA	NA	NA	NA	NA	NA	NA	NA
Alabama	Shelby	11170004	56.1	35.1	78.3	98.8	89.5	81.5	82.5	97.7
Alabama	Sumter	11190002	39.5	38.3	42.5	60.8	74.7	50.2	50.6	46.1
Arkansas	Crittenden	50350005	59.5	55.2	56.2	118.7	89.8	123.8	67.0	63.3
Arkansas	Montgomery	50970001	49.3	50.0	45.6	42.7	44.6	54.5	58.0	47.8
Arkansas	Pulaski	51190007	57.3	55.8	60.3	75.8	77.5	72.0	70.7	57.0
Arkansas	Pulaski	51191002	56.8	57.3	53.3	99.5	100.6	86.7	79.8	69.1
Connecticut	Fairfield	90010017	68.1	31.8	59.1	61.5	64.8	81.3	122.1	NA
Connecticut	Fairfield	90011123	63.2	25.3	61.0	59.0	79.5	122.2	62.6	50.1
Connecticut	Fairfield	90013007	66.7	37.2	56.7	69.7	63.7	76.6	130.7	100.2
Connecticut	Hartford	90031003	56.5	26.8	63.8	64.3	71.3	113.7	95.1	64.2
Connecticut	Middlesex	90070007	54.1	26.1	74.1	69.1	67.2	110.8	121.5	71.5
Connecticut	New Haven	90093002	56.2	43.8	64.7	74.5	67.1	83.7	141.0	117.6
Connecticut	New London	90110008	35.5	41.3	60.1	63.2	55.2	64.8	113.5	97.0
Connecticut	Tolland	90131001	49.5	23.5	63.3	60.8	68.0	114.2	74.5	60.1
Delaware	Kent	100010002	75.3	47.7	60.6	68.2	76.6	78.1	117.5	111.2
Delaware	New Castle	100031003	67.5	31.8	65.6	68.6	89.0	90.6	115.5	122.7
Delaware	New Castle	100031007	63.8	40.6	51.1	73.5	91.0	93.0	118.2	135.2
Delaware	New Castle	100031010	63.8	30.8	67.0	64.1	78.8	95.5	NA	NA
Delaware	Sussex	100051002	82.6	58.1	62.3	76.0	78.8	79.3	101.3	104.7

State	County	AIRS Site Code	July 8	July 9	July 10	July 11	July 12	July 13	July 14	July 15
D.C.	Washington	110010025	58.8	52.5	61.3	68.1	91.8	93.6	84.7	99.0
D.C.	Washington	110010041	61.8	54.7	64.5	64.8	88.6	85.6	103.5	114.0
D.C.	Washington	110010043	70.1	61.8	63.5	81.1	98.3	93.2	108.3	123.7
Florida	Brevard	120094001	52.3	67.3	51.0	57.3	58.3	51.0	20.8	16.8
Florida	Duval	120310077	63.2	70.7	61.2	65.5	42.8	36.5	49.2	39.2
Florida	Escambia	120330004	59.5	42.3	59.6	73.8	71.3	59.1	48.1	33.7
Florida	Escambia	120330018	83.0	59.8	61.2	64.8	86.2	60.3	51.3	NA
Florida	Hillsborough	120570081	62.7	64.5	60.1	58.1	NA	54.5	32.0	56.3
Florida	Hillsborough	120571035	57.7	67.2	61.8	64.0	44.7	52.3	30.0	51.6
Florida	Hillsborough	120571065	56.7	66.8	58.8	62.8	47.6	53.8	31.8	65.1
Florida	Orange	120950008	66.0	68.2	75.0	45.8	62.0	53.1	30.8	34.6
Florida	Orange	120952002	61.2	59.6	62.3	48.0	51.5	51.2	20.0	26.3
Florida	Osceola	120972002	49.2	62.3	66.1	42.0	54.1	52.3	27.7	42.2
Florida	Palm Beach	120992004	52.3	43.1	24.0	18.5	41.7	32.5	22.1	21.0
Florida	Pasco	121012001	53.3	66.7	59.0	55.6	52.8	75.3	57.7	44.2
Florida	Pinellas	121030004	48.5	65.2	59.1	55.5	43.7	54.8	26.5	49.8
Florida	Pinellas	121030018	36.3	51.2	47.3	49.2	46.0	22.0	13.7	23.1
Florida	Pinellas	121035002	49.0	63.3	57.0	52.7	35.5	65.1	36.7	42.0
Florida	Polk	121056005	48.6	63.1	53.2	63.2	44.0	47.6	26.0	31.8
Florida	Polk	121056006	54.0	72.5	61.6	49.8	48.8	50.5	29.0	30.0
Florida	St Lucie	121111002	45.6	58.0	31.1	40.2	50.8	39.2	17.5	16.5
Florida	Sarasota	121151005	53.7	61.2	60.3	54.2	57.6	49.3	30.7	43.3
Florida	Seminole	121171002	62.6	62.0	61.8	58.5	52.5	46.8	27.5	24.3
Florida	Volusia	121272001	51.1	67.2	61.1	55.3	56.7	44.5	21.3	18.7
Florida	Volusia	121275002	54.3	67.6	59.1	54.8	58.1	45.7	21.7	22.2
Georgia	Chatham	130510021	64.8	76.6	NA	NA	NA	NA	NA	NA
Georgia	De Kalb	130890002	84.5	95.7	107.0	115.1	75.2	73.6	104.0	120.3
Georgia	De Kalb	130893001	71.1	83.8	129.1	97.8	73.5	69.6	88.1	111.7
Georgia	Fulton	131210055	78.6	89.7	123.5	110.1	73.1	69.8	97.2	124.7
Georgia	Glynn	131270006	NA	NA	NA	NA	NA	37.5	34.5	42.3

State	County	AIRS Site Code	July 8	July 9	July 10	July 11	July 12	July 13	July 14	July 15
Georgia	Gwinnett	131350002	66.5	73.8	109.0	81.3	68.3	67.5	78.7	92.6
Georgia	Muscogee	132150008	66.1	67.8	99.1	91.3	71.0	63.2	80.7	67.2
Georgia	Muscogee	132151003	74.5	65.2	74.0	69.3	71.1	63.8	82.0	68.0
Georgia	Richmond	132450091	70.0	78.8	99.4	88.2	73.8	68.7	49.7	76.5
Georgia	Rockdale	132470001	88.3	92.1	84.0	94.6	75.5	66.1	98.2	133.2
Illinois	Adams	170010006	69.3	47.2	48.5	50.2	65.5	79.2	49.0	59.3
Illinois	Champaign	170190004	62.0	75.1	65.0	89.5	71.6	84.6	67.3	64.1
Illinois	Cook	170310001	59.0	73.6	59.6	50.8	60.8	113.2	77.7	73.1
Illinois	Cook	170310032	54.7	72.2	59.7	82.1	69.6	112.8	82.0	69.6
Illinois	Cook	170310050	43.2	86.3	66.7	70.8	77.8	116.7	90.2	84.8
Illinois	Cook	170310064	53.7	79.2	60.7	74.8	77.0	117.3	85.7	78.0
Illinois	Cook	170310072	63.3	73.2	65.1	83.7	85.5	96.7	NA	95.3
Illinois	Cook	170311003	53.5	78.7	56.6	69.8	89.6	101.5	80.0	73.0
Illinois	Cook	170311601	54.6	66.8	54.1	73.6	83.8	NA	50.2	55.7
Illinois	Cook	170314002	44.7	71.0	61.5	49.1	77.3	85.0	73.1	67.1
Illinois	Cook	170314006	60.2	77.6	64.6	75.0	106.2	110.1	83.1	77.2
Illinois	Cook	170317002	61.1	75.3	57.3	78.7	86.2	104.3	80.2	104.2
Illinois	Cook	170318003	35.7	72.0	54.7	47.3	56.6	71.5	85.7	66.0
Illinois	Du Page	170436001	58.1	63.0	NA	NA	79.8	71.1	63.6	55.8
Illinois	Effingham	170491001	64.7	67.5	68.8	93.7	66.1	71.2	71.0	62.1
Illinois	Jersey	170831001	59.8	60.1	61.2	90.2	79.6	80.0	56.6	55.0
Illinois	Kane	170890005	60.3	68.5	56.8	86.2	102.0	84.8	74.3	69.7
Illinois	Lake	170971002	62.0	62.2	58.2	79.3	87.3	86.1	75.3	66.3
Illinois	Lake	170971007	67.0	72.1	64.6	84.3	90.8	100.0	85.3	NA
Illinois	Lake	170973001	51.8	60.1	53.5	74.5	99.3	77.0	66.6	60.3
Illinois	McHenry	171110001	59.6	66.1	61.5	78.0	104.0	86.2	78.8	69.1
Illinois	Macon	171150013	62.7	64.3	62.3	78.3	68.1	76.2	59.1	62.0
Illinois	Macoupin	171170002	62.7	59.0	67.6	79.3	104.1	74.2	NA	54.8
Illinois	Madison	171190008	53.2	64.2	72.6	89.1	101.0	102.2	87.1	61.6
Illinois	Madison	171191009	56.8	58.5	79.7	52.7	67.6	95.1	84.3	74.0

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Illinois	Madison	171192007	64.7	67.3	90.2	71.8	91.1	99.7	98.5	76.8
Illinois	Madison	171193007	54.1	59.1	68.3	83.0	88.1	95.1	76.3	53.6
Illinois	Peoria	171430024	57.3	56.5	66.3	58.7	78.5	57.6	74.6	73.0
Illinois	Peoria	171431001	62.6	59.1	70.2	67.6	87.7	82.1	62.6	65.6
Illinois	Randolph	171570001	63.1	71.5	68.7	66.1	55.0	58.0	64.5	65.8
Illinois	St Clair	171630010	48.7	60.6	97.2	60.2	64.5	92.1	76.6	70.8
Illinois	Sangamon	171670010	56.6	67.8	65.0	76.3	80.3	74.7	50.1	62.6
Illinois	Will	171971008	61.0	67.8	62.3	67.1	85.8	92.8	68.1	63.7
Illinois	Will	171971011	54.0	73.1	65.1	62.7	79.5	NA	NA	NA
Illinois	Winnebago	172010009	NA	NA	NA	NA	NA	NA	75.8	72.1
Illinois	Winnebago	172012001	60.0	51.7	60.1	70.2	77.5	81.3	74.2	69.5
Indiana	Allen	180030002	61.1	59.5	63.7	78.8	96.1	97.5	91.1	79.6
Indiana	Allen	180030004	62.3	57.0	67.6	69.5	NA	NA	72.0	NA
Indiana	Clark	180190003	64.5	87.0	74.5	91.6	108.0	83.7	90.7	NA
Indiana	Floyd	180431004	63.2	76.7	75.1	89.6	92.7	77.6	82.2	51.3
Indiana	Hamilton	180571001	58.1	80.6	64.3	76.5	111.0	94.6	97.5	65.8
Indiana	Hancock	180590003	57.2	74.7	NA	80.0	89.4	103.1	104.6	57.2
Indiana	Lake	180890022	59.0	89.1	78.8	94.2	84.1	105.6	104.6	85.8
Indiana	Lake	180892008	51.5	88.7	78.7	79.6	81.6	110.7	99.6	85.7
Indiana	La Porte	180910005	66.6	87.5	81.7	97.2	103.2	102.0	131.1	120.3
Indiana	Madison	180950010	62.5	76.6	69.3	83.8	95.7	103.0	106.8	70.1
Indiana	Marion	180970042	62.2	76.5	63.3	80.5	92.0	87.2	95.5	61.1
Indiana	Marion	180970050	71.7	91.7	69.1	83.0	95.2	94.0	106.3	69.6
Indiana	Marion	180970057	71.2	84.6	69.6	81.5	91.2	88.6	104.4	59.2
Indiana	Marion	180970073	79.7	89.7	72.5	85.3	91.0	94.0	104.1	57.3
Indiana	Porter	181270020	52.1	87.7	67.1	72.5	82.1			90.6
Indiana	Porter	181270024	69.1	103.5	70.0	NA	83.1	97.8	97.3	92.8
Indiana	St Joseph	181410010	58.7	57.3	69.6	65.0	NA	NA	80.6	66.7
Indiana	St Joseph	181411007	49.1	59.7	67.5	77.8	88.1	NA	NA	NA
Indiana	St Joseph	181411008	49.5	63.1	70.0	67.7	90.1	94.7	NA	NA

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Indiana	Vanderburgh	181630012	80.1	73.5	77.2	88.3	91.5	75.1	79.5	57.6
Indiana	Vanderburgh	181630013	80.0	81.0	77.3	92.7	99.2	90.8	78.0	61.5
Indiana	Vigo	181670018	69.8	74.7	60.5	78.1	87.5	64.5	85.0	56.8
Indiana	Warrick	181730002	77.1	71.2	85.3	104.7	NA	81.2	86.7	58.7
Indiana	Warrick	181730008	69.2	71.7	79.1	98.1	106.1	77.1	82.7	56.1
Indiana	Warrick	181730009	70.6	75.7	75.6	108.1	107.7	90.1	81.7	53.3
Iowa	Polk	191530058	28.2	26.7	25.3	36.3	42.5	39.8	33.5	30.5
Iowa	Scott	191632011	57.5	46.6	59.8	61.8	60.6	82.2	60.0	66.8
Kansas	Sedgwick	201730001	61.2	51.2	76.2	75.0	76.2	83.7	80.0	76.2
Kansas	Sedgwick	201730010	51.8	44.3	66.2	56.2	65.0	72.5	66.2	61.8
Kentucky	Bell	210130002	72.5	70.7	61.5	62.1	64.2	79.5	72.0	58.0
Kentucky	Boone	210150003	53.1	62.6	71.6	75.6	84.0	72.1	77.2	62.7
Kentucky	Boyd	210190015	54.3	69.8	85.3	79.8	91.0	103.6	68.7	102.1
Kentucky	Bullitt	210290006	61.3	68.2	90.7	77.2	86.1	72.7	105.8	44.6
Kentucky	Daviess	210590005	77.0	NA	65.6	NA	NA	96.3	85.6	59.7
Kentucky	Fayette	210670001	47.8	63.5	63.3	77.6	104.2	79.7	77.0	70.2
Kentucky	Fayette	210670012	55.2	63.1	89.5	88.2	92.6	80.1	86.6	83.0
Kentucky	Graves	210830003	65.1	49.3	51.0	68.5	49.0	55.2	51.8	61.3
Kentucky	Greenup	210890007	50.1	64.7	62.7	71.5	80.3	81.0	65.3	77.5
Kentucky	Hancock	210910012	63.5	74.2	71.3	95.0	101.8	86.8	95.5	58.3
Kentucky	Henderson	211010013	NA	70.0	76.6	98.8	91.0	75.0	97.7	48.5
Kentucky	Henderson	211010014	81.7	70.5	73.2	93.0	97.5	65.7	92.8	53.1
Kentucky	Jefferson	211110027	47.2	48.5	62.5	74.5	79.2	60.7	102.2	40.2
Kentucky	Jefferson	211110051	67.1	64.0	77.2	82.6	103.1	69.1	89.7	50.1
Kentucky	Jefferson	211111021	57.1	81.8	68.8	68.8	103.6	80.0	87.1	65.3
Kentucky	Jessamine	211130001	54.1	57.3	70.8	61.4	80.2	62.8	73.1	77.3
Kentucky	Kenton	211170007	67.6	81.0	83.1	82.5	98.5	82.5	84.1	85.6
Kentucky	Livingston	211390003	71.5	61.1	53.3	75.8	60.3	69.6	92.2	75.8
Kentucky	Livingston	211390004	72.0	55.1	58.2	83.0	61.7	69.3	84.6	78.8
Kentucky	McCracken	211451024	72.3	51.5	50.8	69.2	55.2	67.8	69.7	72.0

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Kentucky	McLean	211490001	76.8	62.6	78.0	103.6	93.8	84.0	80.1	56.8
Kentucky	Oldham	211850004	53.1	61.7	67.8	88.1	88.2	76.2	83.3	42.4
Kentucky	Pike	211950002	63.3	60.1	68.3	85.2	82.6	86.2	74.5	83.7
Kentucky	Pulaski	211990003	68.6	66.7	57.1	80.1	77.0	73.1	63.2	68.6
Kentucky	Scott	212090001	56.5	63.5	79.1	81.3	99.8	88.7	87.0	76.5
Kentucky	Simpson	212130004	74.8	66.3	77.6	76.8	NA	49.5	71.2	73.7
Louisiana	Ascension	220050004	57.1	67.7	83.2	88.1	70.5	59.1	26.1	31.7
Louisiana	Beauregard	220110002	51.6	52.6	71.6	58.1	56.8	70.0	51.8	34.6
Louisiana	Bossier	220150008	58.3	54.0	60.0	74.6	63.7	65.8	58.7	39.3
Louisiana	Caddo	220170001	60.8	54.2	66.5	66.8	64.3	64.0	74.5	44.7
Louisiana	Calcasieu	220190002	62.5	63.2	78.1	65.2	84.8	84.1	55.8	39.5
Louisiana	Calcasieu	220190008	37.2	37.1	46.8	32.3	39.6	51.5	39.6	22.8
Louisiana	Calcasieu	220190009	69.3	58.2	67.0	63.4	67.2	79.5	53.8	38.6
Louisiana	East Baton Rou	220330003	61.5	62.5	79.0	80.6	88.0	64.3	37.7	40.5
Louisiana	East Baton Rou	220330009	58.2	62.0	80.0	81.6	83.3	64.6	32.7	36.8
Louisiana	East Baton Rou	220330013	49.6	62.0	80.6	58.7	58.0	62.0	42.1	40.8
Louisiana	East Baton Rou	220331001	50.7	60.8	77.3	70.6	74.1	65.2	43.7	42.8
Louisiana	Grant	220430001	58.2	57.5	72.1	62.6	69.8	77.0	59.3	NA
Louisiana	Iberville	220470007	58.6	54.5	75.6	65.2	89.3	61.1	39.8	31.8
Louisiana	Iberville	220470009	77.5	57.6	78.0	71.7	90.0	79.1	42.3	33.8
Louisiana	Jefferson	220511001	63.6	85.8	94.5	75.1	81.6	67.3	45.7	41.0
Louisiana	Lafayette	220550005	60.6	67.6	106.8	79.3	74.7	88.5	53.4	38.7
Louisiana	Livingston	220630002	49.0	78.0	89.0	69.6	63.5	59.7	37.3	35.3
Louisiana	Orleans	220710012	50.0	73.0	72.7	59.6	62.5	55.6	32.1	26.7
Louisiana	Pointe Coupee	220770001	47.7	56.8	70.6	60.3	57.8	60.6	40.8	38.5
Louisiana	St Bernard	220870002	44.2	58.1	55.6	49.1	45.0	38.3	27.1	21.0
Louisiana	St Charles	220890003	66.6	84.2	82.0	69.1	76.0	68.6	NA	35.7
Louisiana	St James	220930002	63.7	61.1	76.3	93.1	88.5	65.0	38.3	28.7
Louisiana	St John The Ba	220950002	58.6	79.5	79.5	75.2	68.1	63.7	38.6	28.1
Louisiana	St Mary	221010003	68.6	71.6	70.3	72.1	72.5	61.2	41.2	29.2

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Louisiana	West Baton Rou	221210001	52.5	54.2	72.2	67.3	81.2	62.1	31.7	34.5
Maine	Cumberland	230052003	31.2	30.3	60.7	44.7	67.2	96.5	102.2	42.8
Maine	Hancock	230090102	NA	NA	NA	NA	NA	NA	NA	NA
Maine	Kennebec	230112005	26.3	20.6	38.1	33.1	50.1	80.1	59.0	35.5
Maine	Knox	230130004	32.8	33.2	54.1	53.0	70.0	88.6	114.5	42.8
Maine	Oxford	230173001	40.3	24.6	35.1	39.1	45.5	53.0	62.7	35.6
Maine	Penobscot	230194008	36.0	33.0	43.6	52.1	60.3	88.8	62.3	56.0
Maine	York	230312002	37.2	30.3	64.7	39.5	75.6	103.2	103.1	50.7
Maine	York	230313002	40.6	23.5	53.5	39.5	67.5	88.6	79.8	50.8
Maryland	Anne Arundel	240030014	81.3	26.5	NA	NA	112.6	107.5	123.3	109.0
Maryland	Anne Arundel	240030019	70.7	55.7	79.2	77.7	103.8	103.2	110.5	147.6
Maryland	Baltimore	240051007	57.3	36.2	66.7	59.1	95.3	110.2	91.0	100.1
Maryland	Baltimore	240053001	64.5	46.8	67.6	66.2	106.3	85.5	96.3	126.0
Maryland	Carroll	240130001	57.6	43.6	74.6	61.5	85.0	87.0	90.7	95.2
Maryland	Cecil	240150003	71.3	44.3	82.3	79.7	94.2	NA	NA	NA
Maryland	Charles	240170010	78.2	64.1	60.3	92.6	87.3	86.7	84.3	101.5
Maryland	Harford	240251001	65.3	40.0	74.2	79.2	113.0	93.8	123.6	132.0
Maryland	Harford	240259001	62.3	42.8	72.6	70.1	99.5	101.8	117.1	122.7
Maryland	Kent	240290002	72.5	44.6	67.2	75.0	91.2	87.5	117.1	107.8
Maryland	Montgomery	240313001	62.2	52.6	73.3	68.7	92.6	106.5		
Maryland	Prince Georges	240330002	66.5	55.1	69.7	68.3	99.6	95.5	100.5	123.6
Maryland	Prince Georges	240338001	64.0	56.8	60.5	69.6	97.7	85.3	108.0	105.1
Massachusetts	Barnstable	250010002	40.1	44.8	65.7	54.3	60.2	67.0	122.3	74.7
Massachusetts	Berkshire	250034002	NA	NA	NA	NA	NA	NA	NA	NA
Massachusetts	Bristol	250051002	43.3	34.0	71.3	53.7	70.0	65.5	107.2	73.0
Massachusetts	Essex	250090005	29.1	18.1	40.7	34.7	58.3	77.2	58.7	43.3
Massachusetts	Essex	250092006	37.1	28.1	62.3	50.8	63.1	100.7	91.7	63.5
Massachusetts	Essex	250094004	38.0	24.0	NA	NA	NA	NA	NA	52.0
Massachusetts	Hampden	250130003	56.0	25.1	55.8	62.5	71.7	109.3	76.2	60.8
Massachusetts	Hampden	250130008	56.2	25.2	51.5	63.1	77.2	101.6	78.8	63.1

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Massachusetts	Hampshire	250150103	51.1	25.1	47.1	45.8	61.2	75.5	71.8	53.2
Massachusetts	Hampshire	250154002	52.0	25.7	57.2	60.8	68.5	101.0	76.7	62.3
Massachusetts	Worcester	250270015	47.7	25.1	60.5	56.1	60.6	106.3	83.5	59.8
Michigan	Allegan	260050003	46.3	78.1	80.6	63.2	101.3	162.7	133.3	82.0
Michigan	Benzie	260190003	53.0	57.0	80.6	55.0	102.1	83.3	101.6	65.5
Michigan	Berrien	260210014	42.2	69.7	72.7	70.7	74.8	101.0	107.3	65.7
Michigan	Cass	260270003	49.7	71.6	66.8	85.6	93.3	101.1	NA	63.5
Michigan	Clinton	260370001	46.5	48.1	44.8	46.2	76.0	71.8	80.7	62.1
Michigan	Genesee	260490021	46.6	60.3	47.1	46.1	89.0	80.3	81.5	67.0
Michigan	Genesee	260492001	NA	NA	NA	38.7	83.6	81.0	79.5	55.7
Michigan	Huron	260630007	35.0	51.2	60.1	38.3	NA	NA	NA	NA
Michigan	Ingham	260650012	50.6	65.6	51.5	54.1	90.5	80.2	94.5	66.0
Michigan	Kent	260810020	42.5	60.1	61.8	46.1	94.6	133.1	107.7	76.7
Michigan	Lenawee	260910007	57.0	51.3	51.0	58.3	84.6	NA	NA	NA
Michigan	Macomb	260990009	51.7	48.5	54.8	51.0	57.8	92.7	95.3	78.8
Michigan	Macomb	260991003	51.7	45.6	47.5	53.0	69.3	85.7	88.6	84.1
Michigan	Muskegon	261210039	44.6	58.8	72.5	71.3	102.8	153.5	119.8	67.8
Michigan	Oakland	261250001	52.6	37.8	49.2	56.4	71.5	79.2	93.3	84.1
Michigan	Ottawa	261390005	41.6	61.1	64.8	62.0	83.2	NA	NA	NA
Michigan	St Clair	261470005	30.5	48.0	55.3	44.7	53.7	100.2	84.3	70.0
Michigan	Wayne	261630001	39.2	31.2	36.8	51.0	55.8	77.2	81.7	83.6
Michigan	Wayne	261630016	42.2	29.6	43.5	50.3	53.6	68.0	82.5	NA
Michigan	Wayne	261630019	57.3	41.6	55.2	61.3	67.2	91.2	99.2	75.6
Minnesota	Anoka	270031001	43.2	31.6	38.6	66.8	67.8	62.8	65.2	30.0
Minnesota	Anoka	270031002	NA	NA	NA	NA	78.7	76.0	77.2	34.2
Minnesota	Dakota	270376018	50.1	46.0	52.7	52.7	58.6	55.1	63.7	44.6
Mississippi	Adams	280010004	51.2	57.1	54.6	65.2	56.1	56.6	42.7	27.0
Mississippi	De Soto	280330002	61.1	62.2	76.0	80.1	76.3	75.5	68.3	65.8
Mississippi	Hancock	280450001	63.3	65.3	82.7	77.1	78.0	76.7	49.2	38.0
Mississippi	Hinds	280490010	54.1	56.0	52.7	61.3	63.0	66.1	51.8	50.7

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Mississippi	Jackson	280590006	57.3	56.5	54.1	68.2	70.1	64.6	40.1	27.0
Mississippi	Madison	280890002	58.0	61.5	58.3	60.5	56.5	63.1	51.7	50.5
Mississippi	Warren	281490004	53.8	64.3	58.7	67.8	59.3	59.1	52.5	39.3
Missouri	Clay	290470003	63.6	44.0	71.0	111.8	119.5	92.8	82.0	86.1
Missouri	Clay	290470005	62.2	44.7	68.6	105.0	125.2	99.1	85.0	87.6
Missouri	Clay	290470025	52.8	40.5	56.8	88.0	94.3	88.1	66.6	67.5
Missouri	Greene	290770026	46.6	53.8	71.6	46.1	63.5	47.0	54.0	52.3
Missouri	Greene	290770036	49.2	54.5	95.3	57.5	64.6	75.2	75.1	69.8
Missouri	Jefferson	290990012	63.0	74.0	102.2	61.8	62.1	73.2	62.2	67.6
Missouri	Monroe	291370001	60.5	52.7	57.3	NA	NA	NA	59.0	61.2
Missouri	Platte	291650023	51.3	38.8	55.2	83.3	78.5	76.2	66.8	69.5
Missouri	St Charles	291831002	65.7	73.5	89.7	112.8	105.4	121.6	97.2	72.0
Missouri	St Charles	291831004	67.3	66.1	69.1	74.1	89.8	96.5	78.2	71.1
Missouri	St Louis	291890006	52.6	65.5	74.7	47.5	54.2	86.6	65.6	62.1
Missouri	St Louis	291893001	57.7	65.6	76.2	57.7	55.6	85.3	70.5	62.8
Missouri	St Louis	291895001	61.7	65.8	88.5	92.5	88.2	113.5	89.5	77.3
Missouri	St Louis City	295100007	49.6	60.7	87.5	47.3	37.0	61.1	59.1	63.8
Missouri	St Louis City	295100072	NA	53.7	73.6	48.2	52.2	75.6	60.8	57.1
Nebraska	Douglas	310550028	60.1	39.3	68.0	68.6	75.0	71.8	68.1	61.0
Nebraska	Douglas	310550032	NA	NA	NA	NA	NA	NA	NA	NA
Nebraska	Douglas	310550035	25.6	20.1	32.3	40.3	NA	NA	NA	NA
Nebraska	Lancaster	311090016	52.7	40.5	51.1	63.2	49.2	53.3	56.8	45.3
New Hampshire	Cheshire	330050007	49.1	22.3	47.7	52.5	50.0	69.0	67.5	46.3
New Hampshire	Hillsborough	330111010	40.1	23.0	55.0	44.6	67.0	96.6	76.2	58.2
New Hampshire	Merrimack	330130007	39.1	18.1	41.1	25.3	44.8	65.1	64.8	44.3
New Hampshire	Rockingham	330150012	46.0	24.0	60.2	40.3	73.6	99.3	80.8	53.5
New Jersey	Atlantic	340010005	84.2	45.8	66.0	70.1	91.2	76.7	101.6	109.8
New Jersey	Camden	340070003	67.8	22.7	66.5	66.7	81.5	77.0	110.1	128.1
New Jersey	Camden	340071001	88.0	38.7	72.2	99.1	95.2	89.1	124.1	128.0
New Jersey	Cumberland	340110007	75.0	39.7	66.6	66.7	82.5	76.8	115.2	115.5

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New Jersey	Gloucester	340150002	77.1	29.6	73.2	77.6	107.0	91.2	126.2	125.8
New Jersey	Hudson	340170006	72.3	27.0	63.3	62.5	64.5	104.6	114.2	102.2
New Jersey	Hunterdon	340190001	65.7	30.2	74.8	72.6	86.2	106.2	101.8	85.6
New Jersey	Mercer	340210005	72.0	26.8	80.8	70.0	88.5	107.0	106.5	99.3
New Jersey	Middlesex	340230011	69.6	28.3	73.8	72.1	78.2	109.2	107.1	99.6
New Jersey	Monmouth	340250005	70.2	26.5	60.6	61.7	62.0	71.2	136.8	112.2
New Jersey	Morris	340273001	67.8	32.3	74.0	75.1	101.5	113.6	110.7	91.0
New Jersey	Ocean	340290006	79.0	27.3	77.6	75.8	86.3	87.1	147.7	124.8
New York	Albany	360010012	36.6	34.1	51.8	71.6	62.1	81.3	71.6	60.2
New York	Bronx	360050083	65.0	24.6	50.1	42.8	63.6	86.2	115.6	91.2
New York	Chautauqua	360130011	NA	NA	NA	NA	NA	NA	NA	NA
New York	Chemung	360150003	25.3	38.1	54.0	56.8	68.6	75.6	74.1	69.6
New York	Dutchess	360270007	59.8	24.5	54.6	63.7	69.7	94.8	76.1	63.2
New York	Erie	360290002	21.8	56.6	NA	58.1	55.0	98.7	NA	NA
New York	Essex	360310002	56.2	35.1	44.8	51.0	68.2	90.6	81.7	65.0
New York	Essex	360310003	45.3	33.3	42.0	39.5	60.6	86.3	82.6	58.2
New York	Hamilton	360410005	32.1	34.5	41.0	45.8	51.1	70.4	75.5	NA
New York	Herkimer	360430005	23.6	32.3	38.7	53.6	52.2	52.0	58.7	NA
New York	Jefferson	360450002	26.1	36.8	44.3	55.1	42.7	98.2	102.3	NA
New York	Madison	360530006	30.2	40.0	51.2	52.0	61.5	81.3	82.2	NA
New York	Monroe	360551004	22.2	43.6	53.8	NA	40.6	97.0	93.6	65.3
New York	Niagara	360631006	22.3	57.3	44.2	NA	NA	NA	95.6	66.1
New York	Oneida	360650004	24.0	33.3	44.1	54.0	52.7	82.2	77.0	52.6
New York	Onondaga	360671015	23.2	36.8	54.8	59.6	67.1	92.6	84.8	62.1
New York	Orange	360715001	57.8	24.6	59.3	64.2	77.2	102.7	78.8	67.8
New York	Putnam	360790005	63.7	27.7	62.3	59.8	75.3	107.3	74.8	63.6
New York	Richmond	360850067	76.7	27.1	68.7	60.1	58.5	97.6	110.7	99.2
New York	Saratoga	360910004	35.5	30.5	45.8	52.1	59.6	77.0	70.2	63.1
New York	Schenectady	360930003	34.6	33.2	49.1	61.2	55.3	74.1	75.6	56.1
New York	Suffolk	361030002	82.3	37.2	62.8	69.8	67.5	78.1	115.2	116.1

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New York	Suffolk	361030004	58.0	40.1	59.0	61.2	54.7	77.6	116.3	110.8
New York	Ulster	361111005	46.3	35.6	52.0	55.8	53.5	80.7	75.8	69.2
New York	Wayne	361173001	21.8	37.1	59.5	60.8	44.3	96.8	93.5	66.0
New York	Westchester	361192004	74.1	33.2	61.5	62.2	74.8	100.6	104.7	NA
North Carolina	Buncombe	370210030	72.7	76.7	75.8	61.8	63.1	78.2	71.7	70.0
North Carolina	Caldwell	370270003	74.0	68.0	83.1	72.3	79.3	92.0	78.0	78.6
North Carolina	Camden	370290099	74.6	63.6	69.0	67.7	83.5	61.2	48.1	59.1
North Carolina	Caswell	370330001	69.1	57.6	69.6	69.7	69.8	76.6	100.7	96.1
North Carolina	Chatham	370370004	79.0	58.1	76.2	75.1	81.3	80.2	49.8	61.0
North Carolina	Cumberland	370510008	74.0	67.3	58.3	65.3	75.0	67.5	47.3	52.7
North Carolina	Duplin	370610002	57.7	62.3	45.6	46.1	48.6	37.1	28.6	31.0
North Carolina	Durham	370630013	80.3	65.2	78.6	88.3	82.3	81.1	73.3	72.6
North Carolina	Forsyth	370670022	76.3	78.1	90.5	74.7	87.0	100.5	112.1	106.8
North Carolina	Forsyth	370670027	68.8	61.6	72.5	63.1	76.2	82.2	80.5	74.5
North Carolina	Forsyth	370671008	75.8	71.1	77.7	64.1	81.5	84.1	99.6	87.8
North Carolina	Franklin	370690001	73.3	54.3	63.7	66.0	77.8	66.0	62.0	71.8
North Carolina	Granville	370770001	84.5	67.7	74.8	89.5	85.0	82.2	84.7	83.1
North Carolina	Guilford	370810011	73.3	62.0	69.1	73.8	73.7	75.2	103.5	92.1
North Carolina	Haywood	370870035	59.7	54.3	51.3	62.0	58.0	61.0	77.5	79.7
North Carolina	Haywood	370870036	64.8	55.5	52.2	63.8	63.8	60.5	75.8	76.4
North Carolina	Johnston	371010002	87.1	68.8	72.2	85.3	82.0	73.8	51.1	36.5
North Carolina	Lincoln	371090004	64.5	74.0	73.0	77.7	87.6	90.0	92.0	88.1
North Carolina	Martin	371170001	65.8	55.8	55.5	49.7	71.7	69.1	31.0	43.5
North Carolina	Mecklenburg	371191005	77.1	77.5	78.0	84.0	76.1	70.2	96.3	74.5
North Carolina	Mecklenburg	371191009	78.2	78.6	80.5	83.0	76.8	67.7	98.7	88.5
North Carolina	Northampton	371310002	74.3	64.1	60.3	64.5	70.5	63.5	64.7	64.2
North Carolina	Pitt	371470099	76.6	65.1	54.5	62.7	58.8	61.1	50.2	50.3
North Carolina	Rockingham	371570099	66.7	50.6	73.3	64.7	66.5	68.7	82.5	79.2
North Carolina	Rowan	371590021	80.1	59.7	72.0	97.0	78.5	64.6	83.6	79.2
North Carolina	Rowan	371590022	75.1	68.7	80.6	75.8	80.5	64.2	92.8	86.7

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North Carolina	Swain	371730002	61.5	53.6	56.0	51.6	51.7	63.2	64.7	54.3
North Carolina	Wake	371830014	84.6	60.7	67.5	65.6	73.2	70.1	73.1	65.7
North Carolina	Wake	371830015	87.8	72.7	69.7	78.5	82.7	79.2	65.8	63.2
North Carolina	Wake	371830016	84.0	70.6	70.0	77.7	86.6	76.3	50.1	53.3
North Carolina	Wake	371830017	85.2	65.2	71.3	79.0	81.6	70.1	51.1	51.0
North Carolina	Yancey	371990003	74.6	64.5	65.0	71.5	78.1	77.2	79.5	85.8
Ohio	Allen	390030002	56.0	61.1	73.3	79.8	83.0	92.3	102.5	68.7
Ohio	Ashtabula	390071001	35.8	44.0	82.5	51.1	69.8	119.6	NA	79.0
Ohio	Butler	390170004	56.1	84.5	77.1	79.2	121.6	78.1	79.8	71.6
Ohio	Butler	390171004	59.0	89.8	81.0	77.0	113.5	89.1	94.4	78.7
Ohio	Clark	390230001	51.0	42.3	83.5	82.7	77.7	112.7	87.1	NA
Ohio	Clark	390230003	57.3	65.8	80.1	80.7	92.7	113.5	99.6	69.8
Ohio	Clinton	390271002	67.0	86.3	94.0	97.3	99.7	110.2	105.2	82.8
Ohio	Cuyahoga	390350034	46.3	49.7	75.3	58.8	66.2	90.8	76.1	82.3
Ohio	Cuyahoga	390350064	61.1	53.4	68.0	69.8	81.0	95.8	79.2	90.7
Ohio	Cuyahoga	390355002	47.8	54.8	76.3	62.1	74.6	93.0	94.6	101.2
Ohio	Franklin	390490081	50.1	58.0	73.0	76.3	92.0	75.5	NA	84.0
Ohio	Hamilton	390610006	58.8	90.7	75.0	87.5	106.0	101.3	102.3	86.3
Ohio	Hamilton	390610010	51.3	52.1	48.1	42.0	89.1	74.3	86.5	80.3
Ohio	Knox	390830002	50.2	58.6	70.8	77.7	79.6	94.2	89.2	68.8
Ohio	Lake	390850003	44.6	55.6	90.7	61.6	63.5	111.2	104.8	92.6
Ohio	Lake	390853002	34.6	52.1	79.3	51.6	57.3	103.3	101.5	87.8
Ohio	Lawrence	390870006	53.7	68.0	72.1	59.1	80.4	90.7	66.8	86.2
Ohio	Lawrence	390870011	48.0	70.7	86.5	78.6	74.7	90.0	74.2	83.7
Ohio	Licking	390890005	55.3	67.3	89.3	97.8	93.0	92.6	115.5	78.3
Ohio	Lucas	390950034	59.2	55.0	59.5	92.8	65.6	89.7	90.1	92.6
Ohio	Lucas	390950081	58.6	53.8	52.7	100.3	72.1	81.2	79.1	83.6
Ohio	Madison	390970007	57.8	72.7	84.5	93.2	82.7	108.6	110.2	75.3
Ohio	Medina	391030003	58.8	61.7	70.0	83.1	82.8	99.3	85.3	83.5
Ohio	Miami	391090005	54.0	57.2	70.2	73.3	100.5	84.7	87.6	59.0

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Ohio	Montgomery	391130019	53.5	63.2	75.5	72.1	103.8	92.5	89.5	68.5
Ohio	Portage	391331001	57.1	58.3	69.2	73.7	84.0	85.0	72.7	86.6
Ohio	Preble	391351001	57.6	69.5	73.0	81.1	80.3	71.8	95.8	60.6
Ohio	Stark	391510016	52.1	64.3	70.8	80.1	84.1	87.5	87.0	84.3
Ohio	Stark	391510019	59.7	66.0	74.2	87.3	85.6	83.8	85.3	78.5
Ohio	Stark	391511009	55.1	63.8	71.3	80.7	80.5	83.2	86.8	87.5
Ohio	Stark	391514005	56.7	65.7	75.1	85.3	81.7	103.6	87.7	88.5
Ohio	Summit	391530020	59.5	26.3	63.0	80.0	88.7	86.1	82.2	84.3
Ohio	Trumbull	391550008	38.1	55.6	76.3	69.8	81.3	102.2	93.6	101.8
Ohio	Trumbull	391550009	30.0	48.0	71.6	57.2	62.0	100.5	93.1	93.1
Ohio	Washington	391670004	50.2	60.1	86.0	57.8	79.7	NA	94.1	NA
Oklahoma	Cleveland	400270049	44.1	63.6	59.0	60.3	68.8	71.6	66.6	67.7
Oklahoma	Oklahoma	401090033	49.7	71.8	72.7	66.0	69.1	77.6	70.1	72.3
Oklahoma	Oklahoma	401091037	50.2	63.8	76.5	76.7	79.6	81.7	71.6	76.8
Oklahoma	Tulsa	401430137	47.1	62.3	80.0	66.6	62.5	NA	NA	NA
Oklahoma	Tulsa	401430174	38.3	78.6	56.0	56.3	68.6	63.7	64.1	64.7
Pennsylvania	Allegheny	420030008	41.0	62.0	64.4	70.6	73.8	98.1	92.8	111.7
Pennsylvania	Allegheny	420030067	50.8	67.8	68.8	67.5	66.5	93.2	82.2	96.0
Pennsylvania	Allegheny	420030088	48.5	63.1	76.1	76.8	89.5	92.8	104.8	117.8
Pennsylvania	Allegheny	420031005	43.2	59.8	79.1	80.0	76.0	112.7	114.0	125.8
Pennsylvania	Beaver	420070002	53.0	59.1	58.6	76.1	75.7	89.0	81.0	85.5
Pennsylvania	Beaver	420070005	47.5	57.1	60.8	71.5	72.6	85.2	NA	NA
Pennsylvania	Beaver	420070014	42.0	58.6	68.3	71.7	71.2	80.5	77.1	77.2
Pennsylvania	Berks	420110001	47.5	33.3	71.8	66.5	72.1	103.2	84.1	80.1
Pennsylvania	Berks	420110009	47.2	31.5	74.8	59.3	73.0	107.0	84.5	86.3
Pennsylvania	Blair	420130801	34.5	51.0	58.7	68.1	77.0	77.1	87.1	95.6
Pennsylvania	Bucks	420170012	73.7	25.0	80.2	72.1	90.8	107.5	117.2	123.0
Pennsylvania	Cambria	420210011	34.7	46.2	58.5	72.1	73.0	NA	90.0	90.8
Pennsylvania	Dauphin	420430401	41.7	39.5	64.2	63.1	78.8	85.2	79.3	86.0
Pennsylvania	Dauphin	420431100	44.8	41.3	68.5	64.5	82.6	90.8	83.2	77.8

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Pennsylvania	Delaware	420450002	70.3	32.6	72.2	76.7	92.2	91.7	108.1	108.0
Pennsylvania	Erie	420490003	30.7	49.7	76.2	49.0	55.8	113.8	97.6	75.1
Pennsylvania	Lackawanna	420690101	39.0	33.1	57.0	55.7	74.7	101.6	76.6	NA
Pennsylvania	Lackawanna	420692006	39.3	32.6	60.2	57.6	75.8	104.0	82.2	72.0
Pennsylvania	Lancaster	420710007	58.0	43.5	76.7	70.0	96.3	100.5	99.6	103.5
Pennsylvania	Lawrence	420730015	28.1	52.1	65.2	62.7	70.0	70.8	75.7	79.2
Pennsylvania	Lehigh	420770004	51.2	31.1	71.0	62.8	78.6	103.7	84.3	68.1
Pennsylvania	Luzerne	420791100	38.5	28.7	64.3	48.1	64.1	90.0	72.0	
Pennsylvania	Luzerne	420791101	40.3	35.0	69.1	61.3	73.4	96.8	85.3	78.8
Pennsylvania	Lycoming	420810403	31.5	38.0	51.2	54.0	55.7	78.0	74.6	68.5
Pennsylvania	Mercer	420850100	30.1	50.6	75.2	63.5	75.3	89.5	90.2	89.0
Pennsylvania	Montgomery	420910013	64.0	29.5	68.0	68.1	82.5	92.5	96.0	98.3
Pennsylvania	Perry	420990301	37.3	42.3	62.7	56.7	69.1	77.6	70.7	68.6
Pennsylvania	Philadelphia	421010004	58.7	22.5	58.7	58.5	72.5	81.2	91.4	97.5
Pennsylvania	Philadelphia	421010014	67.5	25.0	71.2	63.7	80.0	103.3	NA	NA
Pennsylvania	Philadelphia	421010024	73.7	30.0	77.5	77.5	98.3	107.5	117.5	117.5
Pennsylvania	Philadelphia	421010136	NA	NA	NA	68.5	80.0	81.2	98.7	NA
Pennsylvania	Washington	421250005	53.7	68.1	74.0	74.6	89.8	84.1	103.0	91.5
Pennsylvania	Washington	421250200	49.3	59.0	65.1	62.3	73.8	86.5	78.2	NA
Pennsylvania	Washington	421255001	47.1	59.0	65.2	65.6	49.1	85.1	85.7	76.8
Pennsylvania	Westmoreland	421290006	41.8	61.5	62.3	69.1	89.8	76.1	83.3	93.5
Pennsylvania	York	421330008	49.5	41.5	65.7	60.5	77.1	86.1	77.0	85.3
Rhode Island	Kent	440030002	37.8	29.5	68.1	55.0	63.3	74.5	139.2	68.1
Rhode Island	Providence	440071010	35.0	28.6	65.8	49.6	59.7	82.2	119.7	62.6
South Carolina	Abbeville	450010001	61.6	65.0	60.1	75.2	65.6	67.8	79.2	66.3
South Carolina	Aiken	450030003	56.5	61.3	82.3	63.6	64.5	67.2	33.6	63.2
South Carolina	Anderson	450070003	69.0	82.1	80.3	84.0	81.2	83.6	102.1	74.5
South Carolina	Barnwell	450110001	55.7	58.8	55.7	NA	NA	NA	NA	NA
South Carolina	Berkeley	450150002	57.2	56.7	66.2	NA	44.1	30.5	30.3	42.3
South Carolina	Charleston	450190042	55.8	NA	NA	63.1	41.1	32.5	31.1	41.8

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South Carolina	Charleston	450190046	46.3	48.7	52.0	44.1	39.8	30.6	31.1	41.5
South Carolina	Cherokee	450210002	63.1	70.2	69.6	70.1	78.8	76.2	84.1	85.2
South Carolina	Chester	450230002	77.5	64.3	62.7	91.6	78.8	73.6	69.0	60.8
South Carolina	Darlington	450310003	60.8	67.0	63.5	59.7	61.1	59.2	37.1	47.8
South Carolina	Edgefield	450370001	65.2	78.1	67.3	64.7	73.5	74.2	46.2	65.1
South Carolina	Oconee	450730001	55.0	69.0	59.5	NA	NA	NA	NA	NA
South Carolina	Pickens	450770002	61.5	75.6	71.1	61.1	79.1	83.8	92.2	69.7
South Carolina	Richland	450790007	72.3	74.3	80.1	58.8	67.8	73.2	35.5	51.8
South Carolina	Richland	450791002	69.0	67.5	72.2	62.0	65.8	69.6	37.6	44.6
South Carolina	Spartanburg	450830009	70.0	78.2	67.3	66.5	78.2	78.2	98.7	95.0
South Carolina	Union	450870001	NA	NA	NA	NA	NA	NA	NA	55.2
South Carolina	Williamsburg	450890001	NA	NA	NA	49.1	50.8	41.8	30.0	36.7
South Carolina	York	450910006	68.0	62.6	60.8	86.0	76.5	72.3	68.2	60.1
Tennessee	Anderson	470010101	72.0	99.2	84.0	60.8	81.8	96.7	92.3	85.6
Tennessee	Blount	470090101	91.7	80.1	74.4	80.7	76.2	81.1	91.7	73.8
Tennessee	Blount	470090102	83.0	61.0	64.7	66.2	57.7	69.8	56.6	60.5
Tennessee	Davidson	470370011	63.7	42.5	63.7	92.5	94.3	82.5	41.4	78.1
Tennessee	Davidson	470370026	77.5	66.8	66.2	100.6	77.5	85.6	88.1	85.0
Tennessee	Hamilton	470650028	73.6	93.3	84.5	69.6	65.7	104.6	94.1	71.8
Tennessee	Hamilton	470651011	66.8	81.7	75.3	71.7	57.2	95.7	87.2	55.3
Tennessee	Haywood	470750002	52.6	56.5	63.0	76.7	59.8	64.0	60.3	63.6
Tennessee	Knox	470930021	71.6	78.7	89.8	60.7	71.3	94.8	83.3	87.2
Tennessee	Knox	470931020	77.8	92.5	92.3	63.1	70.0	103.5	88.8	101.8
Tennessee	Rutherford	471490101	72.6	43.0	57.0	55.7	47.7	58.7	52.2	38.6
Tennessee	Sevier	471550101	82.2	72.2	78.2	77.1	74.5	77.0	92.6	79.8
Tennessee	Sevier	471550102	84.3	60.8	65.2	65.7	NA	NA	NA	NA
Tennessee	Shelby	471570021	50.7	55.6	53.7	108.1	101.5	81.7	90.8	78.6
Tennessee	Shelby	471571004	46.7	60.1	58.2	81.7	98.3	70.0	94.5	81.5
Tennessee	Sullivan	471632002	66.7	71.7	84.6	62.0	82.6	102.2	85.3	91.1
Tennessee	Sullivan	471632003	69.2	71.8	91.0	NA	85.7	92.2	84.5	98.3

State	County	AIRS Site Code	July 8	July 9	July 10	July 11	July 12	July 13	July 14	July 15
Tennessee	Sumner	471650007	82.8	79.6	74.3	100.5	92.7	102.0	81.6	92.1
Tennessee	Sumner	471650101	64.1	58.1	56.7	61.8	52.1	74.7	68.2	64.1
Tennessee	Wilson	471890103	77.7	57.1	74.3	76.8	62.1	83.0	90.5	71.8
Texas	Brazoria	480391003	72.3	78.1	57.7	54.7	56.5	36.0	60.3	NA
Texas	Collin	480850005	78.2	57.2	78.0	114.5	97.1	83.8	80.2	69.6
Texas	Dallas	481130069	58.2	60.2	86.8	68.5	99.7	67.2	60.6	54.0
Texas	Dallas	481130087	50.7	58.2	71.2	63.7	89.5	NA	59.1	58.2
Texas	Galveston	481671002	76.0	95.1	70.0	65.7	66.2	82.7	62.0	68.0
Texas	Gregg	481830001	68.8	68.3	79.6	99.3	88.1	75.3	73.8	51.6
Texas	Harris	482010024	78.1	135.5	90.3	95.5	96.1	87.5	79.1	59.2
Texas	Harris	482010029	72.6	88.1	NA	NA	77.0	80.7	83.5	NA
Texas	Harris	482010046	71.6	NA	NA	83.7	81.2	85.8	61.6	43.3
Texas	Harris	482010047	70.1	121.8	72.3	79.3	79.2	67.5	66.6	53.2
Texas	Harris	482010051	113.8	91.6	64.4	75.1	69.8	58.0	71.2	63.0
Texas	Harris	482010062	89.5	78.5	65.1	78.8	62.7	68.7	59.7	61.2
Texas	Harris	482010066	102.7	86.2	52.8	63.5	57.0	58.6	74.6	64.7
Texas	Harris	482011035	85.3	111.2	NA	NA	82.7	75.2	NA	NA
Texas	Jefferson	482450009	95.0	87.6	73.7	69.5	76.0	79.8	64.0	47.3
Texas	Jefferson	482450011	69.2	90.2	81.8	69.7	89.3	87.5	52.5	43.0
Texas	Orange	483611001	95.8	82.2	86.7	75.7	88.7	78.5	63.0	42.6
Texas	Tarrant	484391002	57.3	55.8	78.6	71.5	NA	NA	NA	77.7
Texas	Tarrant	484392003	60.1	51.6	80.1	78.5	123.8	101.3	87.5	88.8
Texas	Travis	484530014	73.3	80.8	83.7	83.6	75.7	59.6	44.1	73.0
Vermont	Bennington	500030004	47.7	33.6	58.4	55.5	59.7	79.5	72.1	50.5
Virginia	Arlington	510130020	64.3	58.2	65.3	78.1	94.2	93.0	102.5	117.0
Virginia	Caroline	510330001	68.6	59.8	57.8	73.6	73.6	79.7	73.7	89.3
Virginia	Charles City	510360002	75.6	61.7	56.4	76.7	78.1	67.7	86.6	82.8
Virginia	Chesterfield	510410004	65.5	52.1	53.5	59.8	63.1	62.1	82.7	80.5
Virginia	Fairfax	510590005	61.6	52.5	64.0	64.5	83.2	74.5	51.6	80.7
Virginia	Fairfax	510590018	62.0	56.3	61.3	65.0	90.6	87.7	99.2	110.3

State	County	AIRS Site Code	July 8	July 9	July 10	July 11	July 12	July 13	July 14	July 15
Virginia	Fairfax	510595001	63.7	57.7	59.5	69.8	86.8	74.6	87.6	97.1
Virginia	Fauquier	510610002	62.8	55.3	56.5	67.3	NA	NA	NA	NA
Virginia	Frederick	510690010	48.7	52.1	61.8	60.5	80.1	89.7	79.6	92.0
Virginia	Henrico	510870014	76.2	57.2	64.7	69.3	86.6	78.6	82.3	106.3
Virginia	Madison	511130003	74.0	58.7	62.7	73.0	71.5	76.4	85.8	93.7
Virginia	Prince William	511530009	62.0	56.0	58.5	64.6	87.2	79.6	76.0	94.2
Virginia	Roanoke	511611004	65.1	64.1	69.0	62.5	75.6	75.0	71.4	85.5
Virginia	Stafford	511790001	68.2	59.1	59.2	74.1	75.7	86.7	74.5	92.8
Virginia	Wythe	511970002	68.5	55.3	70.3	66.1	70.7	68.7	70.8	90.6
Virginia	Alexandria Cit	515100009	62.1	55.8	57.3	65.5	77.7	81.8	90.8	113.0
Virginia	Hampton City	516500004	78.7	69.3	71.2	75.1	86.7	81.7	71.5	70.1
Virginia	Suffolk City	518000004	82.7	70.0	71.1	77.2	90.3	89.1	70.1	71.2
Virginia	Suffolk City	518000005	72.7	65.0	63.5	72.8	86.5	62.1	57.8	66.3
West Virginia	Cabell	540110006	50.2	84.1	78.6	92.8	96.3	112.8	72.0	100.2
West Virginia	Hancock	540291004	53.5	63.7	61.8	79.2	79.7	91.1	NA	NA
West Virginia	Ohio	540690007	53.6	62.5	72.7	71.8	79.3	92.2	86.5	78.6
West Virginia	Wood	541071002	50.8	62.0	83.2	75.2	75.5	103.1	90.2	95.3
Wisconsin	Brown	550090026	35.1	39.0	48.2	53.6	89.5	67.0	85.6	46.3
Wisconsin	Columbia	550210015	54.0	47.5	55.3	71.7	92.3	81.8	78.6	61.3
Wisconsin	Dane	550250041	49.1	44.8	51.6	64.7	70.5	68.5	67.2	66.6
Wisconsin	Dodge	550270007	45.3	46.8	52.2	76.5	88.2	79.2	72.1	52.5
Wisconsin	Door	550290004	46.2	37.7	50.5	46.3	89.1	85.3	80.2	41.2
Wisconsin	Fond Du Lac	550390006	47.5	50.0	53.5	69.8	93.6	78.5	78.0	46.7
Wisconsin	Jefferson	550550002	53.5	50.6	52.0	74.2	84.0	NA	65.7	61.5
Wisconsin	Kenosha	550590002	62.2	73.6	60.7	90.0	85.1	92.5	83.1	68.6
Wisconsin	Kenosha	550590019	73.3	79.6	67.5	92.2	101.5	107.7	92.7	77.2
Wisconsin	Kewaunee	550610002	42.6	45.7	61.2	56.7	104.6	86.3	82.3	46.2
Wisconsin	Manitowoc	550710004	41.3	47.1	57.3	66.5	110.3	81.1	73.2	52.6
Wisconsin	Manitowoc	550710007	48.3	44.5	59.3	60.0	100.6	95.3	87.2	49.6
Wisconsin	Marathon	550730012	38.8	31.5	42.1	53.8	55.3	61.8	64.1	44.2

State	County	AIRS Site Code	July 8	July 9	July 10	July 11	July 12	July 13	July 14	July 15
Wisconsin	Milwaukee	550790041	59.1	60.5	54.8	78.1	91.7	95.0	80.0	57.0
Wisconsin	Milwaukee	550790044	45.5	59.5	55.1	68.5	116.1	89.1	77.2	53.0
Wisconsin	Milwaukee	550790085	62.0	63.6	64.2	79.8	105.0	101.5	89.0	NA
Wisconsin	Milwaukee	550791025	55.2	64.6	61.3	87.6	105.8	100.1	91.7	61.8
Wisconsin	Outagamie	550870009	40.1	42.0	47.1	62.1	90.0	72.5	69.6	52.8
Wisconsin	Ozaukee	550890008	57.3	56.7	54.6	82.0	104.6	80.8	66.8	59.7
Wisconsin	Ozaukee	550890009	61.8	57.3	62.5	71.8	105.5	90.6	81.7	58.0
Wisconsin	Racine	551010017	60.2	62.7	58.8	83.8	92.3	95.1	90.5	65.6
Wisconsin	Rock	551050024	58.3	49.8	54.7	70.5	77.7	77.3	70.3	62.1
Wisconsin	St Croix	551091002	45.0	31.6	37.7	47.0	46.0	68.0	76.5	NA
Wisconsin	Sauk	551110007	40.6	42.8	42.3	66.5	69.7	65.8	67.0	61.7
Wisconsin	Vernon	551230008	45.2	32.5	44.7	50.5	61.1	62.7	61.3	51.5
Wisconsin	Walworth	551270005	55.2	57.6	58.5	72.2	NA	NA	NA	NA
Wisconsin	Washington	551310009	51.5	56.6	61.2	81.5	116.2	87.8	70.0	59.7
Wisconsin	Waukesha	551330017	43.2	50.8	37.6	63.6	102.7	88.6	73.2	NA
Wisconsin	Winnebago	551390011	46.3	44.3	51.2	66.2	84.8	75.5	79.5	53.2

8-Hour Daily Maximum 8-Hour Ozone (ppb) Measured at Monitoring Sites in the East During the August 1995 Episode														
State	County	AIRS Site Code	Aug 10	Aug 11	Aug 12	Aug 13	Aug 14	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21
Alabama	Clay	10270001	65.0	68.1	100.1	83.6	71.5	89.8	92.2	97.3	89.5	97.4	53.4	43.5
Alabama	Jefferson	10731003	84.5	68.2	72.1	89.2	94.2	77.6	67.6	79.2	89.3	69.7	70.7	57.1
Alabama	Jefferson	10731005	105.6	82.5	90.8	89.5	69.5	92.2	93.1	101.2	123.3	77.3	74.2	64.5
Alabama	Jefferson	10732006	86.1	91.3	84.5	88.2	100.6	109.1	80.6	109.3	107.6	77.7	70.7	62.0
Alabama	Jefferson	10735002	59.2	56.8	65.6	74.7	87.8	77.0	68.3	79.5	79.3	72.6	82.6	56.7
Alabama	Jefferson	10736002	67.8	68.8	71.8	81.2	126.2	78.0	76.6	78.5	81.5	70.0	84.5	56.2
Alabama	Lawrence	10790002	64.6	58.6	69.8	67.7	53.6	61.8	63.8	68.1	74.7	80.6	46.1	60.5
Alabama	Madison	10890014	78.3	NA	NA	NA	NA	77.7	68.0	76.5	72.0	72.7	62.5	59.6
Alabama	Mobile	10970003	43.2	55.8	48.5	62.6	47.1	60.3	53.1	85.3	81.2	58.6	68.1	52.8
Alabama	Shelby	11170004	80.0	90.1	80.7	79.5	81.1	107.5	100.1	106.3	110.2	77.1	68.1	53.7
Alabama	Sumter	11190002	54.7	50.7	48.2	45.1	42.0	43.8	53.8	59.0	71.2	60.7	42.0	46.5
Arkansas	Crittenden	50350005	52.8	64.5	72.3	56.1	57.7	43.4	57.6	79.3	84.8	68.0	57.6	58.6
Arkansas	Montgomery	50970001	46.7	55.5	56.6	52.5	47.6	39.0	44.6	51.0	58.7	68.1	74.0	59.6
Arkansas	Pulaski	51190007	60.7	70.8	70.3	63.6	48.8	52.3	56.2	84.7	56.5	72.5	65.8	58.8
Arkansas	Pulaski	51191002	64.6	74.3	72.0	68.1	53.0	49.3	54.2	77.0	61.3	71.3	54.0	60.5
Connecticut	Fairfield	90010017	60.1	38.8	72.0	30.5	62.1	49.1	24.1	NA	NA	NA	NA	NA
Connecticut	Fairfield	90011123	69.8	53.2	51.7	24.3	86.5	69.7	47.2	55.3	44.6	44.7	51.5	68.7
Connecticut	Fairfield	90013007	71.8	41.1	80.2	29.5	66.7	46.6	20.3	58.7	54.2	49.5	65.8	115.0
Connecticut	Hartford	90031003	72.6	61.1	57.7	25.2	73.0	50.1	40.3	72.8	47.8	51.3	60.1	NA
Connecticut	Middlesex	90070007	95.0	54.1	76.0	30.1	73.2	41.5	27.7	74.8	49.0	53.6	67.8	86.0
Connecticut	New Haven	90093002	90.1	43.3	71.5	40.8	68.0	32.1	19.1	56.5	55.7	48.2	53.3	126.6
Connecticut	New London	90110008	59.3	24.7	54.5	38.1	66.5	31.0	15.7	50.3	47.3	48.5	43.6	113.1
Connecticut	Tolland	90131001	75.2	65.5	50.6	26.3	65.0	49.6	34.7	66.1	44.6	47.1	44.7	73.0
Delaware	Kent	100010002	33.0	29.0	80.7	51.5	59.5	48.1	25.5	47.1	80.1	54.3	72.5	83.8
Delaware	New Castle	100031003	41.1	35.7	77.7	48.2	56.8	57.0	41.1	57.2	65.4	64.2	74.7	115.3
Delaware	New Castle	100031007	38.5	35.7	82.5	50.7	65.2	56.2	58.1	NA	NA	80.2	89.5	120.0
Delaware	New Castle	100031010	34.1	37.0	66.3	41.2	58.6	62.0	52.3	63.8	57.2	65.7	66.1	111.1
Delaware	Sussex	100051002	32.0	30.2	91.6	60.6	64.6	47.6	24.7	42.3	77.1	50.5	72.1	74.8
D.C.	Washington	110010025	31.1	50.7	56.1	49.7	66.3	73.8	79.6	60.8	58.2	62.3	79.6	82.7
D.C.	Washington	110010041	33.1	44.5	68.6	59.8	73.6	67.7	71.7	62.0	63.0	65.0	94.3	94.7

State	County	AIRS Site Code	Aug 10	Aug 11	Aug 12	Aug 13	Aug 14	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21
D.C.	Washington	110010043	38.7	56.1	71.7	64.3	87.0	77.2	90.6	69.7	68.6	75.3	98.8	99.1
Florida	Brevard	120094001	36.6	39.8	45.5	NA	NA	58.6	34.5	57.0	61.5	56.5	59.6	42.8
Florida	Duval	120310077	40.8	35.0	54.7	52.1	55.0	57.5	62.3	81.0	61.1	39.3	46.8	38.5
Florida	Escambia	120330004	50.3	55.7	60.5	54.6	60.1	69.1	80.1	95.1	68.0	75.6	68.1	50.7
Florida	Escambia	120330018	49.0	55.5	57.1	45.3	55.7	79.6	96.8	91.7	59.5	61.1	65.2	52.3
Florida	Hillsborough	120570081	59.5	73.7	58.2	52.1	59.0	60.3	80.3	84.4	58.6	70.5	62.2	74.7
Florida	Hillsborough	120571035	48.6	56.5	51.6	52.5	56.6	67.7	65.0	82.7	60.7	56.2	50.0	59.8
Florida	Hillsborough	120571065	44.0	66.1	53.7	53.8	52.1	74.1	80.7	82.0	62.8	59.1	55.1	59.7
Florida	Orange	120950008	43.8	72.1	60.2	80.3	75.3	75.2	55.3	72.2	74.8	66.3	55.2	50.8
Florida	Orange	120952002	30.7	54.5	49.3	76.7	64.0	67.1	43.5	69.0	70.8	51.1	54.0	41.5
Florida	Osceola	120972002	36.6	50.5	50.7	54.6	54.5	69.0	61.5	66.6	56.1	68.3	46.2	43.2
Florida	Palm Beach	120992004	46.0	34.2	42.8	55.6	46.7	57.3	41.6	66.8	62.8	63.8	45.2	21.2
Florida	Pasco	121012001	37.0	49.6	47.6	38.3	45.7	54.8	71.6	62.0	49.7	41.1	55.8	63.0
Florida	Pinellas	121030004	41.7	48.5	47.5	41.2	43.6	NA	70.0	63.3	52.6	41.3	56.5	72.0
Florida	Pinellas	121030018	38.0	49.2	35.8	29.3	33.7	49.7	68.6	56.2	39.6	NA	NA	NA
Florida	Pinellas	121035002	31.5	42.6	41.6	36.7	40.6	58.0	63.6	66.1	50.2	38.2	44.0	59.0
Florida	Polk	121056005	36.6	44.0	48.5	48.1	44.3	66.5	65.4	61.1	71.6	50.5	42.5	51.2
Florida	Polk	121056006	44.6	42.6	52.0	50.0	54.1	68.5	59.5	66.2	77.1	51.0	46.2	58.2
Florida	St Lucie	121111002	33.0	47.3	40.6	48.6	62.1	57.1	32.7	64.7	45.8	53.6	35.3	15.7
Florida	Sarasota	121151005	64.5	40.6	36.5	34.6	39.0	56.0	87.3	68.6	44.3	43.5	53.6	62.8
Florida	Seminole	121171002	31.6	47.8	46.3	54.2	59.5	70.1	47.6	70.8	59.1	51.2	52.1	45.3
Florida	Volusia	121272001	32.5	48.8	45.6	52.7	56.6	59.1	21.0	59.0	59.3	49.6	50.7	44.0
Florida	Volusia	121275002	35.0	52.0	48.8	56.6	58.2	62.5	40.8	67.5	62.8	50.6	53.6	40.1
Georgia	Chatham	130510021	35.6	54.5	67.8	64.3	56.3	51.8	65.6	76.1	73.3	56.5	42.3	44.7
Georgia	De Kalb	130890002	91.7	84.7	105.8	95.1	95.8	101.1	98.1	99.1	126.3	81.1	58.8	41.2
Georgia	De Kalb	130893001	82.0	72.6	75.1	98.0	87.7	97.6	86.6	NA	117.1	62.6	54.5	38.2
Georgia	Fulton	131210055	94.5	81.8	105.0	109.1	106.5	118.2	108.7	112.5	128.7	84.3	NA	NA
Georgia	Glynn	131270006	47.0	57.6	62.1	59.7	61.7	60.7	71.2	79.4	69.1	57.0	49.6	43.7
Georgia	Gwinnett	131350002	65.8	66.1	65.5	72.1	77.6	72.6	80.3	92.1	93.8	74.7	55.7	35.3
Georgia	Muscogee	132150008	49.7	63.2	78.6	84.8	66.3	83.5	80.6	87.1	89.7	82.0	59.5	40.6
Georgia	Muscogee	132151003	49.5	66.6	81.8	75.7	46.6	57.1	53.8	51.7	64.0	50.6	18.2	24.2

State	County	AIRS Site Code	Aug 10	Aug 11	Aug 12	Aug 13	Aug 14	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21
Georgia	Richmond	132450091	54.6	67.6	71.8	72.6	74.6	80.2	79.6	74.2	99.8	64.7	55.2	61.8
Georgia	Rockdale	132470001	67.8	81.6	87.8	82.2	100.1	70.3	74.7	111.6	120.8	72.2	59.1	45.5
Illinois	Adams	170010006	44.1	60.3	55.7	44.1	38.0	45.3	30.2	40.0	50.5	33.1	40.0	42.0
Illinois	Champaign	170190004	40.6	57.3	67.6	56.8	59.1	59.0	48.5	51.6	46.7	41.3	46.1	60.2
Illinois	Cook	170310001	34.7	49.2	64.1	59.2	46.1	31.8	28.0	48.7	54.1	42.5	38.6	43.2
Illinois	Cook	170310032	49.2	69.8	81.8	73.1	65.2	48.8	45.6	59.7	56.0	NA	44.1	59.3
Illinois	Cook	170310050	40.6	55.3	74.7	60.5	49.5	32.0	32.0	57.8	45.2	40.2	39.8	50.1
Illinois	Cook	170310064	37.1	58.0	82.8	65.6	49.8	40.3	32.2	59.1	48.6	41.7	41.3	55.0
Illinois	Cook	170310072	42.0	51.6	106.1	NA	NA	49.7	40.5	56.8	55.2	41.3	43.0	62.6
Illinois	Cook	170311003	32.6	51.4	65.0	56.0	46.1	42.6	26.8	50.8	48.6	27.8	39.1	54.3
Illinois	Cook	170311601	39.2	51.8	59.3	54.2	46.3	26.6	33.6	36.2	62.7	35.8	46.8	52.0
Illinois	Cook	170314002	36.0	50.2	70.5	55.1	44.2	25.3	26.7	29.7	38.8	26.8	35.2	47.8
Illinois	Cook	170314006	49.2	69.8	81.8	73.1	65.2	48.8	45.6	59.7	56.0		44.1	59.3
Illinois	Cook	170317002	37.5	60.3	104.2	65.6	55.3	54.1	38.4	55.3	50.5	40.7	44.8	61.0
Illinois	Cook	170318003	38.3	51.7	79.7	59.8	51.6	36.1	39.1	59.6	46.7	46.7	38.8	40.5
Illinois	Du Page	170436001	38.0	46.5	59.2	44.0	49.1	39.5	36.1	40.6	62.1	39.8	48.7	52.7
Illinois	Effingham	170491001	55.1	63.0	57.7	53.2	60.1	49.6	55.5	58.2	72.5	43.5	48.2	57.5
Illinois	Jersey	170831001	39.8	48.0	64.5	54.3	58.1	72.6	47.2	51.2	50.8	60.0	42.7	51.1
Illinois	Kane	170890005	40.7	53.5	61.2	57.0	54.8	43.7	52.5	47.2	67.8	40.2	50.0	57.3
Illinois	Lake	170971002	44.5	61.6	102.8	52.2	51.7	44.3	43.8	46.1	41.0	31.5	38.0	44.3
Illinois	Lake	170971007	46.5	79.2	95.1	56.3	56.1	47.5	48.7	48.5	45.1	35.0	39.6	46.3
Illinois	Lake	170973001	39.3	47.7	59.6	48.6	46.5	40.3	41.6	34.0	32.8	23.5	38.0	41.0
Illinois	McHenry	171110001	42.8	57.7	65.8	58.2	60.3	52.6	60.3	NA	NA	NA	NA	NA
Illinois	Macon	171150013	38.1	51.7	68.8	60.2	50.5	65.6	55.2	53.3	51.1	44.6	43.2	58.0
Illinois	Macoupin	171170002	34.6	43.1	58.1	64.5	52.0	55.3	42.0	45.6	50.1	44.8	44.6	54.7
Illinois	Madison	171190008	46.0	69.5	88.7	70.6	75.6	75.7	67.0	65.1	78.3	63.6	42.8	55.8
Illinois	Madison	171191009	53.6	73.0	71.6	48.7	59.2	48.1	46.2	72.8	89.0	62.0	40.6	52.7
Illinois	Madison	171192007	57.8	94.6	96.5	68.6	77.1	65.1	63.8	76.0	94.0	64.6	45.3	55.5
Illinois	Madison	171193007	40.6	87.6	99.0	73.1	73.2	73.8	66.2	62.3	79.2	62.0	43.0	53.8
Illinois	Peoria	171430024	41.0	57.2	65.3	49.5	44.8	45.4	45.1	52.0	42.3	46.0	41.7	48.7
Illinois	Peoria	171431001	45.8	63.6	68.5	61.3	45.3	46.5	62.0	59.5	63.2	65.6	50.2	53.0

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Illinois	Randolph	171570001	39.0	44.7	46.5	45.0	44.1	43.5	46.6	49.6	55.2	63.0	48.0	62.8
Illinois	St Clair	171630010	81.1	71.1	82.0	53.6	63.6	55.7	56.8	76.8	112.5	65.3	32.6	58.7
Illinois	Sangamon	171670010	38.2	60.8	63.2	60.1	48.5	45.7	45.5	46.6	50.1	50.2	39.7	45.3
Illinois	Will	171971008	41.8	51.3	58.5	56.5	47.5	51.0	33.7	43.7	63.3	39.1	51.7	56.6
Illinois	Will	171971011	34.6	41.8	56.5	49.2	46.1	49.5	39.0	37.5	56.1	35.8	51.8	64.6
Illinois	Winnebago	172010009	44.7	59.0	63.5	56.1	47.7	33.7	48.2	43.3	51.7	40.6	47.0	52.3
Illinois	Winnebago	172012001	43.2	58.0	62.5	55.0	47.2	37.7	49.7	40.2	49.1	40.3	44.5	50.5
Indiana	Allen	180030002	56.2	60.3	72.8	64.8	64.5	61.4	68.8	47.0	61.3	70.2	78.1	60.6
Indiana	Allen	180030004	51.5	53.0	64.8	NA	NA	61.5	NA	NA	59.5	67.6	70.3	57.1
Indiana	Clark	180190003	66.6	62.6	60.2	70.2	83.5	114.1	NA	NA	NA	71.6	75.0	73.3
Indiana	Floyd	180431004	63.8	68.3	56.0	66.8	86.2	79.5	74.6	67.0	53.7	59.3	75.7	66.7
Indiana	Hamilton	180571001	56.5	64.1	67.3	68.7	71.6	80.3	96.3	53.6	50.6	58.6	74.2	59.3
Indiana	Hancock	180590003	57.3	69.6	67.8	76.6	66.2	71.0	70.5	49.2	39.5	47.8	58.7	45.6
Indiana	Lake	180890022	49.5	65.0	95.1	64.3	58.6	51.1	47.3	79.5	60.8	59.3	45.2	70.8
Indiana	Lake	180892008	53.1	62.5	96.1	66.7	61.7	44.7	36.3	74.0	51.2	59.8	50.0	58.1
Indiana	La Porte	180910005	61.2	68.1	108.6	63.3	61.2	57.2	59.5	71.0	63.8	71.1	54.1	73.3
Indiana	Madison	180950010	63.2	73.5	74.7	82.2	73.5	76.2	80.0	56.7	51.7	58.6	67.2	58.1
Indiana	Marion	180970042	NA	61.5	58.3	59.7	57.2	37.6	61.1	NA	28.0	59.3	56.2	59.1
Indiana	Marion	180970050	69.0	72.5	69.5	76.5	68.2	72.0	81.3	53.1	48.6	59.3	70.6	59.2
Indiana	Marion	180970057	56.7	65.8	64.7	68.8	58.8	58.8	78.0	50.3	38.7	55.3	65.7	56.6
Indiana	Marion	180970073	64.1	66.7	70.5	73.5	64.3	62.1	NA	NA	39.2	60.8	74.5	61.5
Indiana	Porter	181270020	45.5	51.8	62.8	NA	48.2	47.8	44.3	65.7	52.4	53.3	44.2	65.2
Indiana	Porter	181270024	55.0	65.0	95.0	63.0	61.1	54.7	NA	NA	NA	65.8	57.5	78.8
Indiana	St Joseph	181410010	48.2	58.2	70.2	54.8	58.4	53.8	58.4	50.2	50.8	60.3	53.7	60.3
Indiana	St Joseph	181411007	NA	40.8	86.3	53.1	44.5	43.6		47.6	48.2	55.0	44.2	50.8
Indiana	St Joseph	181411008	53.6	59.8	84.5	58.5	59.1	49.3	56.7	52.7	54.2	59.3	50.5	58.5
Indiana	Vanderburgh	181630012	56.8	68.5	64.1	58.1	70.0	68.6	63.1	52.3	75.7	63.7	53.1	72.3
Indiana	Vanderburgh	181630013	55.1	58.1	57.0	56.6	74.2	72.2	69.5	57.2	73.0	55.3	53.7	69.2
Indiana	Vigo	181670018	50.1	61.6	59.3	55.3	55.7	66.0	70.7	50.0	57.8	54.3	54.7	55.2
Indiana	Warrick	181730002	54.0	80.6	63.2	58.1	62.6	63.2	NA	NA	NA	NA	NA	NA
Indiana	Warrick	181730008	51.8	69.4	66.8	62.8	64.3	69.1	61.1	66.0	78.7	56.6	48.1	62.1

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Indiana	Warrick	181730009	67.6	76.1	66.6	63.6	75.1	72.1	75.1	55.5	78.0	57.3	53.7	64.3
Iowa	Polk	191530058	28.0	35.8	44.0	29.6	22.8	21.2	21.0	26.0	35.8	24.3	30.6	34.1
Iowa	Scott	191632011	42.5	63.6	60.7	47.5	41.5	44.0	49.1	53.2	51.6	28.8	40.5	42.6
Kansas	Sedgwick	201730001	51.2	62.5	65.0	40.0	45.0	40.0	33.3	30.0	32.5	32.5	51.2	33.7
Kansas	Sedgwick	201730010	41.8	47.5	54.3	28.1	36.8	33.1	20.0	24.3	28.7	32.5	48.7	38.7
Kentucky	Bell	210130002	47.7	55.6	55.1	56.2	51.8	53.7	86.8	72.2	64.6	58.5	42.5	55.7
Kentucky	Boone	210150003	49.2	49.3	58.2	60.2	74.1	68.5	73.7	70.2	43.8	44.5	66.3	60.1
Kentucky	Boyd	210190015	63.0	54.3	76.6	73.2	66.6	71.1	103.6	76.7	66.1	66.6	70.3	78.5
Kentucky	Bullitt	210290006	60.5	62.6	53.1	65.6	62.8	82.3	74.3	83.0	55.7	69.7	71.5	74.0
Kentucky	Daviess	210590005	58.2	77.8	63.7	66.0	58.6	53.2	72.1	65.5	76.3	53.6	39.3	59.5
Kentucky	Fayette	210670001	54.6	61.1	62.8	62.8	68.7	73.1	71.8	85.0	51.7	56.4	54.5	68.7
Kentucky	Fayette	210670012	60.7	69.0	75.2	71.1	77.7	86.1	83.0	99.5	61.0	63.6	63.8	77.5
Kentucky	Graves	210830003	49.0	53.6	47.1	45.5	49.6	52.8	55.6	48.5	65.1	59.3	42.5	53.6
Kentucky	Greenup	210890007	57.7	49.5	72.8	67.6	69.8	71.5	95.3	69.6	58.5	65.6	66.1	67.3
Kentucky	Hancock	210910012	59.2	84.2	65.1	64.8	79.5	66.8	78.8	65.3	77.3	66.6	49.0	64.2
Kentucky	Henderson	211010013	67.7	87.2	68.0	50.2	69.5	62.6	69.0	68.3	82.7	61.7	43.2	51.1
Kentucky	Henderson	211010014	54.6	71.7	58.1	51.6	55.5	60.8	61.0	60.2	74.6	65.2	46.0	55.8
Kentucky	Jefferson	211110027	52.2	63.2	64.8	68.7	83.5	77.2	72.0	92.1	65.5	64.0	65.3	73.8
Kentucky	Jefferson	211110051	60.2	65.0	58.7	66.8	75.3	89.1	73.7	83.0	62.0	58.1	73.5	78.6
Kentucky	Jefferson	211111021	50.1	60.6	54.2	68.3	69.3	81.5	67.7	66.0	53.3	59.1	66.6	69.8
Kentucky	Jessamine	211130001	54.2	63.1	70.6	65.0	68.6	79.8	87.5	104.2	52.2	58.2	66.0	65.0
Kentucky	Kenton	211170007	45.0	52.1	69.8	72.6	90.5	62.5	93.1	87.1	44.6	60.8	63.1	73.8
Kentucky	Livingston	211390003	61.5	69.2	50.7	53.8	56.5	58.3	62.6	55.3	57.3	58.5	43.6	60.1
Kentucky	Livingston	211390004	63.5	65.5	51.7	50.8	57.3	35.6	44.5	58.5	56.7	52.8	39.0	61.8
Kentucky	McCracken	211451024	59.0	62.5	51.3	51.3	54.6	55.2	60.1	52.2	64.3	57.8	41.0	49.5
Kentucky	McLean	211490001	61.0	62.6	63.8	60.5	57.7	52.1	56.0	64.5	66.2	69.5	44.6	63.6
Kentucky	Oldham	211850004	65.8	61.8	NA	79.0	83.0	88.8	NA	88.0	53.7	50.0	70.6	64.8
Kentucky	Pike	211950002	63.7	67.0	66.1	70.1	68.7	85.5	99.6	105.3	70.6	56.5	62.3	68.8
Kentucky	Pulaski	211990003	52.8	62.1	74.7	84.8	60.8	73.1	77.7	93.8	58.8	67.6	56.5	60.5
Kentucky	Scott	212090001	61.3	68.0	67.5	64.7	78.6	76.7	80.5	72.8	49.1	50.7	55.1	74.6
Kentucky	Simpson	212130004	61.0	56.8	76.1	79.3	65.8	70.3	75.0	97.3	66.1	76.6	57.8	54.3

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Louisiana	Ascension	220050004	NA	NA	NA	NA	NA	NA	NA	53.5	54.6	69.5	88.2	67.3
Louisiana	Beauregard	220110002	54.0	38.8	30.5	16.1	24.1	45.5	40.1	78.6	49.8	58.0	47.1	50.8
Louisiana	Bossier	220150008	56.2	51.5	64.0	48.1	30.1	34.3	55.7	65.2	60.7	64.8	66.1	53.7
Louisiana	Caddo	220170001	59.0	58.0	70.7	46.6	33.0	36.3	64.5	84.7	68.1	59.5	60.6	46.1
Louisiana	Calcasieu	220190002	53.1	31.8	25.7	15.8	22.3	25.2	66.1	61.1	54.2	77.2	56.8	58.7
Louisiana	Calcasieu	220190008	35.3	19.0	13.8	4.2	7.1	12.6	23.8	39.1	22.6	30.1	23.0	24.5
Louisiana	Calcasieu	220190009	61.6	34.3	29.2	19.0	20.2	23.7	57.7	66.5	49.8	64.2	51.3	46.6
Louisiana	East Baton Rou	220330003	56.0	47.7	101.7	33.5	43.8	54.7	81.2	65.5	49.7	77.7	65.6	95.1
Louisiana	East Baton Rou	220330009	59.3	48.3	95.3	32.1	40.5	50.7	76.7	56.5	40.7	72.6	65.0	76.3
Louisiana	East Baton Rou	220330013	49.2	47.1	47.7	42.0	49.2	42.6	46.0	54.8	39.8	63.1	51.8	20.5
Louisiana	East Baton Rou	220331001	49.7	47.3	62.0	31.8	41.2	44.7	61.3	53.8	51.6	69.2	56.6	58.8
Louisiana	Grant	220430001	51.6	59.8	51.0	47.5	36.2	44.4	48.8	50.2	52.5	65.6	59.5	54.5
Louisiana	Iberville	220470007	60.2	58.3	83.3	37.8	17.7	45.8	83.5	52.3	33.6	99.1	59.6	68.3
Louisiana	Iberville	220470009	63.1	54.5	83.8	39.7	27.7	68.6	75.6	69.1	62.7	94.6	59.3	69.7
Louisiana	Jefferson	220511001	47.3	41.5	60.7	43.1	42.6	56.0	71.6	59.1	73.0	79.3	78.3	61.1
Louisiana	Lafayette	220550005	66.0	50.6	48.7	37.8	34.1	43.6	62.6	65.1	63.6	86.7	67.1	64.2
Louisiana	Livingston	220630002	46.2	44.6	61.3	35.1	33.1	40.3	60.8	49.7	56.5	61.1	65.3	51.8
Louisiana	Orleans	220710012	41.8	31.6	48.6	33.8	31.6	43.0	48.2	38.8	65.3	62.5	67.7	42.8
Louisiana	Pointe Coupee	220770001	45.3	51.3	59.3	33.3	28.2	34.5	44.7	45.6	39.1	68.5	48.5	42.2
Louisiana	St Bernard	220870002	44.3	30.3	47.2	33.7	37.1	46.8	70.3	52.0	72.8	59.8	68.6	56.1
Louisiana	St Charles	220890003	53.1	41.4	65.7	38.8	37.5	48.6	73.8	54.0	63.8	86.3	73.3	56.7
Louisiana	St James	220930002	49.1	36.1	61.0	32.2	29.8	48.2	78.8	46.2	56.7	82.2	80.6	53.7
Louisiana	St John The Ba	220950002	52.2	39.4	63.8	32.8	40.5	44.8	79.8	31.5	73.0	82.5	75.7	55.1
Louisiana	St Mary	221010003	45.2	37.5	40.1	40.2	25.1	57.6	65.6	73.1	69.2	83.2	84.1	88.2
Louisiana	West Baton Rou	221210001	53.0	39.5	72.2	25.3	32.3	40.6	63.5	43.1	37.0	62.6	58.3	53.0
Maine	Cumberland	230052003	98.6	91.5	58.0	26.5	36.2	29.5	29.5	57.5	34.8	33.5	35.6	74.1
Maine	Hancock	230090102	71.5	79.2	49.5	22.0	33.8	35.7	44.0	41.6	31.5	41.7	35.0	71.5
Maine	Kennebec	230112005	52.6	73.8	38.7	19.5	31.1	22.3	64.3	36.0	26.8	32.7	35.6	58.1
Maine	Knox	230130004	78.1	86.1	49.7	22.7	29.3	32.5	24.5	49.7	32.6	30.2	26.2	78.2
Maine	Oxford	230173001	41.1	50.6	31.8	21.8	31.6	29.2	43.0	31.5	29.2	33.0	36.6	44.5
Maine	Penobscot	230194008	57.6	78.5	45.8	20.8	30.6	28.1	67.6	41.0	35.1	34.6	37.0	58.8

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Maine	York	230312002	106.1	93.0	53.3	30.0	38.0	37.2	33.3	57.8	32.0	32.3	33.3	72.8
Maine	York	230313002	99.6	NA	NA	NA	40.5	35.7	41.3	52.5	31.1	35.2	33.7	61.7
Maryland	Anne Arundel	240030014	38.3	42.3	82.7	73.2	98.2	66.8	87.8	68.1	74.5	80.3	84.8	112.7
Maryland	Anne Arundel	240030019	35.2	59.0	72.7	59.8	95.0	69.1	78.0	73.3	73.0	78.5	98.2	100.2
Maryland	Baltimore	240051007	45.3	34.8	68.1	61.2	79.5	64.5	84.2	77.5	66.7	61.7	81.0	95.2
Maryland	Baltimore	240053001	43.2	31.7	68.6	61.0	93.6	49.0	72.8	64.3	66.6	73.6	80.5	93.1
Maryland	Carroll	240130001	48.6	46.8	63.7	55.1	68.2	78.1	86.3	80.8	68.7	56.8	74.8	86.0
Maryland	Cecil	240150003	43.7	42.7	76.5	49.2	76.8	58.1	62.7	66.8	62.7	66.7	68.5	114.7
Maryland	Charles	240170010	31.0	33.7	79.3	81.0	86.0	53.8	70.6	79.3	79.1	65.5	76.3	84.6
Maryland	Harford	240251001	44.8	37.7	84.0	60.1	107.5	55.0	79.8	68.8	63.1	74.6	78.6	100.8
Maryland	Harford	240259001	45.7	38.6	70.1	54.5	102.0	51.8	75.5	71.7	59.3	70.3	70.0	106.1
Maryland	Kent	240290002	40.3	37.3	78.1	54.6	53.7	50.1	45.3	64.8	71.7	67.1	77.8	NA
Maryland	Montgomery	240313001	42.7	55.7	59.0	50.5	72.6	86.7	73.8	63.1	57.8	56.0	74.0	80.7
Maryland	Prince Georges	240330002	36.6	50.8	69.1	61.6	85.1	67.8	79.1	72.2	71.7	74.7	96.1	93.1
Maryland	Prince Georges	240338001	36.3	46.0	70.7	71.0	84.0	69.0	71.7	69.6	74.2	71.8	95.6	99.3
Massachusetts	Barnstable	250010002	100.5	55.5	46.5	30.6	51.6	31.1	31.7	45.7	45.5	32.5	32.2	122.2
Massachusetts	Berkshire	250034002	52.8	51.3	40.3	22.8	62.7	50.7	62.8	38.1	35.6	37.1	47.0	64.7
Massachusetts	Bristol	250051002	80.0	33.2	40.1	47.6	67.0	32.8	18.5	48.0	35.7	33.5	34.5	124.5
Massachusetts	Essex	250090005	68.1	58.0	43.3	26.7	32.7	44.2	39.3	NA	30.6	NA	NA	NA
Massachusetts	Essex	250092006	98.6	74.5	59.5	46.0	46.1	36.2	41.2	51.6	35.1	38.1	34.7	86.8
Massachusetts	Essex	250094004	101.2	68.2	48.6	28.7	42.5	33.1	NA	63.7	33.2	33.6	33.2	63.6
Massachusetts	Hampden	250130003	65.8	69.8	51.7	23.1	73.5	63.5	67.3	62.2	50.2	47.1	67.0	70.5
Massachusetts	Hampden	250130008	68.7	70.0	45.1	24.6	74.0	63.3	65.2	57.1	48.5	47.1	51.7	72.0
Massachusetts	Hampshire	250150103	69.5	66.3	38.5	23.6	58.2	62.6	72.0	40.7	48.7	45.8	48.1	67.8
Massachusetts	Hampshire	250154002	74.3	70.7	45.5	22.5	61.0	53.2	53.6	55.1	48.5	49.5	52.0	73.3
Massachusetts	Worcester	250270015	82.0	69.3	52.2	22.0	48.2	48.7	38.1	69.7	44.2	48.1	63.7	75.1
Michigan	Allegan	260050003	63.8	64.8	88.5	110.0	105.8	52.6	53.7	63.7	56.5	72.1	50.7	63.3
Michigan	Benzie	260190003	57.3	44.3	42.2	44.3	54.0	30.3	36.8	36.2	69.1	50.6	41.6	39.2
Michigan	Berrien	260210014	52.1	67.6	111.0	81.5	81.0	62.2	62.7	67.6	53.3	73.0	50.8	68.2
Michigan	Cass	260270003	52.0	68.5	98.3	69.1	65.6	55.3	54.7	56.3	51.8	62.0	49.2	58.8
Michigan	Clinton	260370001	48.7	51.3	43.1	61.1	50.8	54.7	41.2	38.0	56.6	64.3	32.7	40.2

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Michigan	Genesee	260490021	66.7	56.8	43.1	59.6	52.2	54.8	62.5	35.5	56.7	57.8	39.3	37.8
Michigan	Genesee	260492001	NA	NA	NA	52.7	51.1	52.6	52.7	33.7	58.0	49.1	33.1	36.5
Michigan	Huron	260630007	80.5	50.7	43.8	38.0	63.6	52.1	44.6	38.6	45.8	56.1	43.3	45.1
Michigan	Ingham	260650012	52.2	54.7	51.2	71.8	51.3	56.1	46.3	34.1	67.8	80.1	41.5	44.5
Michigan	Kent	260810020	44.8	58.7	56.6	91.0	89.6	46.6	48.1	35.7	56.5	78.7	41.6	49.1
Michigan	Lenawee	260910007	50.8	55.1	60.6	NA	NA	NA	NA	NA	35.8	38.0	61.1	35.7
Michigan	Macomb	260990009	56.6	90.5	46.8	57.0	64.8	69.6	58.7	34.7	46.7	60.6	68.5	45.2
Michigan	Macomb	260991003	60.6	70.7	52.6	68.1	56.3	97.5	58.3	36.0	46.7	60.3	82.6	45.6
Michigan	Muskegon	261210039	51.2	63.5	55.1	93.5	94.0	49.3	38.7	51.6	50.6	62.0	44.8	55.5
Michigan	Oakland	261250001	47.1	68.7	52.1	60.0	51.3	81.2	50.6	25.0	5.8	73.2	96.2	46.5
Michigan	Ottawa	261390005	50.2	59.2	79.8	91.0	94.3	51.7	49.0	42.6	NA	NA	43.2	52.8
Michigan	St Clair	261470005	52.5	81.8	42.8	48.0	74.8	58.8	55.2	23.1	54.1	53.3	48.2	47.2
Michigan	Wayne	261630001	42.5	55.3	58.7	61.6	52.2	61.0	60.8	32.7	53.8	58.1	85.2	39.5
Michigan	Wayne	261630016	26.5	48.7	57.6	56.8	54.8	63.7	50.1	33.6	48.7	60.3	77.8	46.8
Michigan	Wayne	261630019	60.5	80.6	58.7	63.6	61.2	85.2	59.5	41.6	53.0	60.1	88.0	52.1
Minnesota	Anoka	270031001	54.5	32.3	28.8	44.5	30.5	49.8	38.1	42.5	46.8	35.0	37.1	42.0
Minnesota	Anoka	270031002	57.7	37.3	41.5	51.6	31.2	44.8	36.5	47.2	50.0	39.7	42.5	60.5
Minnesota	Dakota	270376018	43.0	40.0	41.4	46.0	33.0	40.0	39.7	48.3	43.7	42.5	37.2	60.7
Mississippi	Adams	280010004	43.8	47.1	46.3	40.1	32.2	30.3	45.1	50.2	40.8	47.0	54.7	50.5
Mississippi	De Soto	280330002	NA	59.3	76.8	66.7	46.3	47.2	27.3	59.6	68.3	70.8	67.0	61.1
Mississippi	Hancock	280450001	59.6	50.5	64.0	59.0	52.8	NA	NA	NA	NA	NA	NA	84.4
Mississippi	Hinds	280490010	50.4	53.6	61.1	54.2	56.0	41.2	51.2	51.7	69.8	61.2	55.5	48.3
Mississippi	Jackson	280590006	41.6	43.5	48.0	57.1	45.0	65.5	57.1	60.5	69.2	67.2	67.0	53.5
Mississippi	Madison	280890002	48.5	55.0	50.3	59.1	51.5	35.7	48.7	54.2	70.0	60.3	53.7	52.2
Mississippi	Warren	281490004	54.7	61.7	63.0	51.1	28.0	42.5	52.6	54.4	52.0	66.0	55.0	55.7
Missouri	Clay	290470003	67.2	82.2	84.8	47.7	51.6	53.0	44.5	54.0	76.5	38.5	41.7	46.5
Missouri	Clay	290470005	64.7	82.0	84.1	45.3	50.2	59.6	43.7	55.0	75.2	37.5	49.2	49.5
Missouri	Clay	290470025	52.1	76.5	77.0	41.5	40.1	47.1	36.1	46.0	68.3	34.2	50.6	41.8
Missouri	Greene	290770026	57.5	50.0	58.3	53.7	42.6	44.2	44.3	45.3	58.6	69.1	46.2	54.5
Missouri	Greene	290770036	64.8	68.4	68.5	62.5	52.6	54.7	53.5	50.7	73.1	73.1	49.3	56.2
Missouri	Jefferson	290990012	88.8	57.7	73.5	54.1	60.5	60.3	50.6	55.2	74.2	88.5	44.1	82.1

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Missouri	Monroe	291370001	46.2	69.8	65.2	55.8	50.5	52.6	49.1	48.7	56.0	52.3	50.6	57.8
Missouri	Platte	291650023	46.5	57.5	72.3	41.0	43.5	43.0	41.3	44.1	64.8	33.3	42.3	46.1
Missouri	St Charles	291831002	54.5	80.1	97.8	72.6	87.0	98.7	74.0	71.7	78.7	72.8	48.5	59.0
Missouri	St Charles	291831004	49.8	72.2	81.7	63.7	75.5	88.8	55.5	63.2	71.3	76.5	46.3	55.5
Missouri	St Louis	291890006	56.2	69.0	65.3	47.1	60.8	58.8	49.5	57.8	80.8	70.7	42.3	59.3
Missouri	St Louis	291893001	54.8	64.7	70.5	49.0	62.3	58.6	47.7	57.7	82.0	71.1	39.7	57.6
Missouri	St Louis	291895001	71.0	78.5	86.7	59.2	75.3	77.0	58.0	62.1	89.1	72.5	36.7	55.2
Missouri	St Louis City	295100007	58.7	46.2	58.7	35.1	47.1	42.0	35.2	54.5	84.0	66.2	36.0	54.7
Missouri	St Louis City	295100072	57.7	42.2	65.2	45.7	48.6	40.3	36.1	47.7	64.8	47.5	24.0	41.0
Nebraska	Douglas	310550028	47.2	53.0	60.2	50.1	30.6	18.7	34.3	36.8	41.1	28.2	42.1	35.7
Nebraska	Douglas	310550032	39.8	36.3	38.6	32.0	NA	NA	NA	31.5	32.2	23.7	35.0	25.8
Nebraska	Douglas	310550035	49.7	55.3	62.2	50.1	29.0	12.8	24.3	35.5	41.1	33.2	38.7	29.8
Nebraska	Lancaster	311090016	44.0	49.8	56.5	46.6	28.6	11.8	30.5	32.5	35.6	31.0	44.0	37.0
New Hampshire	Cheshire	330050007	59.3	NA	NA	NA	26.4	49.5	62.8	37.1	40.6	43.6	48.5	56.1
New Hampshire	Hillsborough	330111010	73.1	NA	NA	NA	43.6	62.5	NA	NA	37.0	41.0	56.1	68.1
New Hampshire	Merrimack	330130007	47.6	57.2	43.0	17.6	23.8	39.2	51.8	32.5	24.2	30.7	39.8	NA
New Hampshire	Rockingham	330150012	98.3	NA	NA	NA	33.8	36.8	35.6	61.0	27.3	29.7	31.6	64.8
New Jersey	Atlantic	340010005	33.3	24.3	81.6	51.5	56.0	35.5	18.7	34.2	64.3	52.3	56.1	96.7
New Jersey	Camden	340070003	50.8	42.8	76.8	48.6	69.7	55.3	34.3	55.8	67.1	65.7	73.6	102.0
New Jersey	Camden	340071001	54.6	42.8	92.0	67.2	75.0	49.8	31.8	50.6	91.3	66.5	79.8	99.7
New Jersey	Cumberland	340110007	39.7	26.3	77.0	62.6	58.7	42.6	22.6	42.5	72.7	53.2	65.1	86.1
New Jersey	Gloucester	340150002	47.7	38.8	80.6	53.8	65.7	56.6	39.7	60.5	70.2	64.8	73.5	108.5
New Jersey	Hudson	340170006	48.5	33.5	78.1	46.3	66.5	42.7	26.0	57.2	51.6	51.1	53.7	95.7
New Jersey	Hunterdon	340190001	65.1	56.7	68.5	43.1	83.8	60.0	45.0	72.2	58.5	66.3	66.3	90.3
New Jersey	Mercer	340210005	52.2	39.2	74.5	41.3	86.6	57.1	43.6	48.5	64.7	70.6	81.7	95.6
New Jersey	Middlesex	340230011	62.0	45.6	73.2	36.6	83.6	49.6	37.1	45.5	62.1	61.0	63.6	93.1
New Jersey	Monmouth	340250005	NA	NA	NA	NA	NA	NA	NA	37.6	66.0	53.8	59.2	116.8
New Jersey	Morris	340273001	66.6	58.7	71.5	37.8	95.7	65.6	77.1	73.8	58.2	63.3	80.7	98.6
New Jersey	Ocean	340290006	NA	33.2	91.3	50.0	68.8	53.0	29.1	47.2	75.7	64.1	70.1	117.6
New York	Albany	360010012	69.6	54.8	39.7	25.0	68.5	71.6	70.3	44.1	55.6	42.5	61.3	64.3
New York	Bronx	360050083	44.7	26.7	67.0	48.2	58.2	51.3	15.7	73.5	50.3	57.1	60.2	93.6

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New York	Chautauqua	360130011	65.2	70.5	57.2	42.0	76.3	71.5	72.5	59.1	81.7	67.8	85.7	74.2
New York	Chemung	360150003	48.1	52.0	45.3	31.1	57.8	52.2	58.1	49.6	47.8	51.5	66.5	49.0
New York	Dutchess	360270007	68.1	67.0	44.6	26.8	93.7	70.0	68.2	45.5	45.3	40.0	55.3	77.6
New York	Erie	360290002	52.5	54.6	43.2	42.7	69.2	61.0	42.2	47.1	38.6	64.1	83.1	50.3
New York	Essex	360310002	58.6	63.0	56.7	23.6	40.1	64.1	68.0	NA	NA	NA	78.1	65.7
New York	Essex	360310003	49.8	51.8	48.6	18.5	21.8	59.8	55.6	39.5	37.8	33.5	66.2	65.5
New York	Hamilton	360410005	53.8	53.2	42.6	21.3	29.1	53.7	53.0	34.7	42.1	43.1	60.2	53.2
New York	Herkimer	360430005	51.5	49.3	36.6	21.3	31.3	48.6	47.5	33.6	41.6	42.3	61.2	46.7
New York	Jefferson	360450002	59.2	63.1	46.8	25.1	47.7	78.0	46.7	44.5	46.1	60.7	79.6	60.7
New York	Madison	360530006	52.6	59.0	44.6	33.8	51.7	52.0	67.2	40.0	46.3	54.2	67.5	56.7
New York	Monroe	360551004	59.3	54.8	45.6	28.6	51.3	64.7	41.5	41.1	45.3	69.7	81.0	53.7
New York	Niagara	360631006	51.6	48.5	51.0	27.8	75.3	60.8	40.5	37.6	39.3	68.2	81.8	59.6
New York	Oneida	360650004	53.6	52.7	40.0	20.8	52.8	58.5	42.6	30.6	42.7	51.6	67.8	50.4
New York	Onondaga	360671015	52.7	55.0	47.8	29.2	60.8	67.5	49.3	36.6	46.5	55.7	76.5	60.7
New York	Orange	360715001	57.8	48.6	52.8	25.5	88.8	66.6	90.7	65.6	58.7	43.6	70.5	NA
New York	Putnam	360790005	64.5	58.3	52.5	25.3	85.8	60.0	49.2	48.3	43.0	39.7	47.8	77.0
New York	Richmond	360850067	42.8	29.7	73.0	45.7	61.3	37.2	NA	NA	NA	54.2	65.3	100.3
New York	Saratoga	360910004	75.3	29.1	5.5	8.7	17.0	25.8	18.0	8.5	11.2	7.8	13.5	41.1
New York	Schenectady	360930003	72.1	49.8	40.1	22.5	57.8	71.6	74.5	40.5	51.8	46.8	64.8	55.3
New York	Suffolk	361030002	48.2	30.5	77.6	47.2	65.8	44.5	35.5	67.6	63.8	53.0	58.1	112.1
New York	Suffolk	361030004	65.2	33.7	66.1	37.1	59.5	33.0	21.0	49.3	51.3	45.5	43.3	109.1
New York	Ulster	361111005	49.5	55.3	47.2	27.5	73.5	54.1	57.6	45.8	52.1	44.6	53.0	68.0
New York	Wayne	361173001	55.5	57.8	52.5	23.6	56.7	76.7	42.5	42.7	48.5	65.2	80.3	65.3
New York	Westchester	361192004	65.0	37.0	66.6	40.8	74.0	66.1	25.7	71.8	55.5	58.8	69.7	92.2
North Carolina	Buncombe	370210030	32.7	36.5	40.3	48.6	50.1	58.6	53.6	60.1	66.7	61.2	43.8	46.1
North Carolina	Caldwell	370270003	52.8	62.1	60.1	66.7	70.1	68.3	71.3	62.2	79.0	52.8	56.0	66.8
North Carolina	Camden	370290099	27.3	32.2	53.5	64.8	68.3	NA	NA	NA	NA	NA	NA	NA
North Carolina	Caswell	370330001	25.3	32.2	56.6	66.2	58.3	49.5	66.0	62.3	68.7	57.7	64.7	79.3
North Carolina	Chatham	370370004	41.3	44.1	71.8	77.8	88.2	62.0	81.5	81.6	85.8	70.8	73.8	73.1
North Carolina	Cumberland	370510008	28.8	38.2	66.7	73.6	89.2	72.1	75.7	93.5	87.0	68.6	57.0	77.0
North Carolina	Duplin	370610002	26.3	26.8	58.6	56.7	53.0	53.0	46.6	45.6	62.5	48.7	42.6	57.2

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North Carolina	Durham	370630013	32.7	38.1	61.7	71.5	75.8	75.3	73.8	83.0	76.8	63.1	68.3	82.5
North Carolina	Forsyth	370670022	32.8	36.2	62.7	62.0	58.0	74.3	67.8	66.7	78.5	54.2	77.6	69.6
North Carolina	Forsyth	370670027	33.1	44.8	59.7	66.1	66.3	67.8	68.8	67.6	89.2	42.7	53.7	60.1
North Carolina	Forsyth	370671008	43.3	47.1	67.3	76.7	60.3	77.6	60.8	68.1	81.7	54.0	76.2	75.5
North Carolina	Franklin	370690001	26.6	38.6	71.5	60.2	55.2	56.3	69.6	72.8	67.0	60.8	61.8	79.2
North Carolina	Granville	370770001	38.0	44.3	82.3	74.3	74.5	79.8	83.2	86.5	76.7	72.0	77.8	88.6
North Carolina	Guilford	370810011	25.2	39.0	65.8	70.8	61.8	65.1	67.3	67.8	83.6	65.5	77.1	95.7
North Carolina	Haywood	370870035	NA	55.3	54.1	56.8	61.8	69.3	78.2	80.3	85.6	74.5	57.1	54.2
North Carolina	Haywood	370870036	44.1	58.2	54.2	56.0	66.3	74.5	92.1	93.3	92.8	62.8	46.0	58.5
North Carolina	Johnston	371010002	32.0	38.2	82.6	71.8	74.0	69.3	76.6	84.7	82.6	63.5	57.7	76.2
North Carolina	Lincoln	371090004	51.5	58.5	67.3	65.1	70.0	83.6	83.2	69.7	101.3	58.1	48.8	60.7
North Carolina	Martin	371170001	19.1	25.0	60.6	60.3	59.8	34.0	21.6	40.5	62.1	44.8	36.3	59.1
North Carolina	Mecklenburg	371191005	59.2	67.3	91.5	81.5	96.7	73.3	86.2	73.7	100.1	52.3	53.7	43.1
North Carolina	Mecklenburg	371191009	60.5	67.3	91.2	75.6	84.1	82.2	80.1	95.3	84.0	52.7	50.1	74.8
North Carolina	Northampton	371310002	27.2	30.5	60.5	75.3	58.0	68.1	40.6	62.3	86.7	50.8	66.3	81.2
North Carolina	Pitt	371470099	31.2	31.6	84.3	71.3	72.0	67.0	37.0	55.2	82.6	49.5	44.8	88.1
North Carolina	Rockingham	371570099	30.0	34.1	56.1	62.6	65.2	61.1	63.7	67.5	67.1	61.1	61.7	53.2
North Carolina	Rowan	371590021	55.0	51.0	70.7	87.7	110.7	82.5	90.4	72.6	80.6	49.6	66.3	82.8
North Carolina	Rowan	371590022	60.5	65.7	68.0	71.2	77.0	77.2	71.8	76.7	84.8	46.3	51.0	71.2
North Carolina	Swain	371730002	33.0	45.6	48.5	47.2	55.8	55.3	67.0	70.5	62.0	49.3	40.7	48.5
North Carolina	Wake	371830014	26.3	40.8	79.7	69.2	64.7	61.7	75.1	81.6	78.7	63.6	64.5	81.5
North Carolina	Wake	371830015	30.2	42.5	79.8	78.2	72.8	66.1	77.1	86.3	80.8	67.0	68.7	87.0
North Carolina	Wake	371830016	34.8	49.0	75.5	77.5	80.8	69.5	76.3	88.7	90.7	66.2	71.2	75.1
North Carolina	Wake	371830017	NA	43.3	81.5	79.6	88.0	77.2	82.5	86.0	82.7	66.0	63.7	77.3
North Carolina	Yancey	371990003	65.5	72.3	69.0	68.8	67.2	81.0	88.2	98.1	102.0	78.1	72.1	66.1
Ohio	Allen	390030002	52.5	48.8	65.2	65.3	58.1	54.1	73.1	42.5	53.2	83.2	74.1	53.6
Ohio	Ashtabula	390071001	67.1	71.0	62.7	58.8	82.7	74.2	72.3	72.3	69.7	77.7	81.3	85.1
Ohio	Butler	390170004	52.1	NA	NA	NA	NA	NA	83.2	34.5	43.2	59.8	71.0	59.1
Ohio	Butler	390171004	56.3	62.3	69.1	70.5	76.1	85.4	100.7	73.5	48.3	64.0	69.8	65.7
Ohio	Clark	390230001	63.3	55.8	62.3	62.7	72.3	66.5	79.8	69.7	49.3	58.1	70.5	63.6
Ohio	Clark	390230003	61.6	63.0	70.8	69.5	73.1	73.7	76.7	69.7	45.0	68.3	63.7	71.8

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Ohio	Clinton	390271002	69.6	68.6	70.8	75.2	101.0	71.5	78.0	NA	NA	NA	NA	NA
Ohio	Cuyahoga	390350034	71.5	76.7	79.2	66.7	58.0	70.2	67.8	59.6	50.6	87.3	75.2	66.3
Ohio	Cuyahoga	390350064	56.7	90.5	77.2	64.7	56.6	68.0	77.2	82.1	41.8	97.8	81.2	66.3
Ohio	Cuyahoga	390355002	60.7	73.3	78.8	72.0	60.6	73.1	62.3	57.8	50.8	78.5	76.0	64.6
Ohio	Franklin	390490081	49.0	49.2	55.7	NA	NA	NA	NA	74.7	49.3	79.2	72.6	72.6
Ohio	Hamilton	390610006	58.3	67.1	69.3	69.0	76.1	81.0	94.6	79.3	39.5	54.0	58.6	63.6
Ohio	Hamilton	390610010	52.3	58.0	59.8	56.3	65.2	66.4	79.0	73.8	42.1	55.3	70.7	63.3
Ohio	Knox	390830002	64.3	54.7	58.1	62.7	64.3	62.7	56.0	65.1	54.1	84.5	69.3	68.3
Ohio	Lake	390850003	96.5	91.6	76.8	76.1	71.3	72.6	72.3	72.8	61.1	90.3	93.2	89.0
Ohio	Lake	390853002	85.2	79.0	79.6	70.8	71.1	71.1	58.2	56.2	47.0	62.1	74.5	78.0
Ohio	Lawrence	390870006	58.7	50.7	77.6	71.5	63.5	65.3	94.2	71.1	67.3	67.6	69.7	68.2
Ohio	Lawrence	390870011	64.1	39.0	69.7	58.2	71.6	61.8	77.8	58.5	48.5	48.7	55.0	59.3
Ohio	Licking	390890005	59.1	61.1	71.6	73.6	89.1	64.6	73.1	66.7	48.6	76.1	78.8	82.8
Ohio	Lucas	390950034	43.5	74.5	63.1	57.8	55.0	65.1	65.3	44.0	63.3	70.6	70.2	55.0
Ohio	Lucas	390950081	23.8	60.3	57.3	66.2	61.2	55.6	67.5	49.8	59.6	66.5	70.1	45.1
Ohio	Madison	390970007	66.8	72.6	73.6	72.8	91.1	65.8	70.8	81.6	46.2	77.6	67.1	82.0
Ohio	Medina	391030003	57.1	56.3	60.2	NA	NA	63.1	77.6	65.0	40.7	92.0	87.1	69.6
Ohio	Miami	391090005	52.2	51.3	61.5	60.2	61.2	54.8	74.7	55.6	51.3	61.0	64.8	55.3
Ohio	Montgomery	391130019	48.5	58.6	68.6	63.3	64.7	61.1	87.6	59.2	45.0	61.3	63.3	65.0
Ohio	Portage	391331001	54.0	70.2	73.6	61.1	61.8	56.2	62.6	69.3	47.3	73.7	92.6	65.7
Ohio	Preble	391351001	52.5	58.3	61.6	54.3	NA	NA	72.5	49.1	43.5	55.3	74.2	52.7
Ohio	Stark	391510016	57.0	62.2	61.7	68.3	68.8	64.8	71.8	69.0	62.7	80.5	72.2	63.2
Ohio	Stark	391510019	51.6	60.3	63.8	62.5	71.0	57.6	86.0	68.7	34.7	76.0	77.7	67.8
Ohio	Stark	391511009	54.0	62.8	62.3	69.5	67.7	65.6	75.3	68.5	56.1	77.2	67.5	67.6
Ohio	Stark	391514005	53.5	60.8	57.7	66.8	65.1	66.5	84.0	72.1	65.5	83.8	68.0	76.0
Ohio	Summit	391530020	47.3	63.5	67.6	67.0	63.2	60.6	69.8	82.3	49.2	86.6	93.6	70.0
Ohio	Trumbull	391550008	55.6	49.3	76.1	79.5	70.7	74.8	70.7	64.3	56.0	86.1	85.6	70.0
Ohio	Trumbull	391550009	57.2	51.6	67.3	66.8	67.1	68.5	69.0	56.1	47.6	81.1	78.6	61.5
Ohio	Washington	391670004	55.8	57.2	57.2	57.1	72.0	98.2	72.0	77.5	68.7	61.1	76.3	83.1
Oklahoma	Cleveland	400270049	58.5	58.3	43.7	27.7	41.0	34.5	31.1	39.5	49.1	85.5	73.8	74.7
Oklahoma	Oklahoma	401090033	57.8	60.2	46.7	29.0	42.6	36.7	33.2	40.7	51.6	82.7	66.3	64.0

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Oklahoma	Oklahoma	401091037	62.8	64.5	49.1	30.2	45.1	38.8	32.1	44.3	56.6	74.8	58.1	58.6
Oklahoma	Tulsa	401430137	65.3	85.7	64.5	46.3	53.3	49.6	46.8	49.4	67.7	67.1	55.7	64.6
Oklahoma	Tulsa	401430174	69.6	84.1	67.7	48.8	52.2	48.0	53.3	56.6	71.0	97.0	71.8	81.2
Pennsylvania	Allegheny	420030008	56.3	31.6	55.1	85.7	66.7	90.2	66.0	71.5	71.6	77.2	93.0	82.1
Pennsylvania	Allegheny	420030067	57.6	49.3	57.8	76.3	67.1	81.2	73.6	87.3	78.7	71.6	86.1	76.6
Pennsylvania	Allegheny	420030088	57.5	35.2	55.3	98.0	69.1	100.1	54.5	60.5	55.6	69.2	82.5	84.4
Pennsylvania	Allegheny	420031005	67.8	36.7	58.5	80.7	71.6	115.7	72.2	70.2	62.6	78.1	89.6	85.0
Pennsylvania	Beaver	420070002	56.5	NA	NA	60.3	63.7	NA	NA	49.8	58.1	56.2	62.7	53.2
Pennsylvania	Beaver	420070005	42.3	39.5	56.7	70.8	68.1	65.3	NA	78.1	NA	NA	79.5	76.6
Pennsylvania	Beaver	420070014	52.8	NA	NA	67.0	58.1	62.1	65.7	69.0	66.7	86.3	84.1	78.0
Pennsylvania	Berks	420110001	43.0	47.0	56.8	35.7	82.6	37.5	76.6	63.0	52.6	57.1	77.5	82.8
Pennsylvania	Berks	420110009	37.6	46.0	61.7	37.8	78.7	NA	71.0	60.1	45.7	53.6	70.0	91.3
Pennsylvania	Blair	420130801	43.2	39.7	52.5	44.7	69.7	90.7	36.1	57.1	49.8	53.6	76.0	67.2
Pennsylvania	Bucks	420170012	61.2	54.2	84.7	45.8	86.3	60.1	35.2	52.5	69.5	71.7	83.0	107.1
Pennsylvania	Cambria	420210011	32.3	38.2	51.6	39.5	64.7	79.0	65.8	56.3	52.1	58.3	77.0	62.8
Pennsylvania	Dauphin	420430401	27.5	38.5	57.6	50.7	60.3	71.1	78.0	66.5	52.8	57.5	77.3	76.2
Pennsylvania	Dauphin	420431100	25.7	44.1	61.2	46.6	68.2	74.5	91.7	68.1	53.7	57.5	83.8	85.6
Pennsylvania	Delaware	420450002	46.2	41.8	74.3	48.2	65.3	66.2	34.6	54.0	62.5	63.6	74.3	110.5
Pennsylvania	Erie	420490003	NA	NA	61.2	47.8	81.7	71.0	77.5	69.5	73.5	75.2	94.8	78.1
Pennsylvania	Lackawanna	420690101	44.1	56.6	52.2	34.8	82.1	86.6	57.3	50.8	47.2	44.1	82.6	68.0
Pennsylvania	Lackawanna	420692006	42.8	55.3	51.7	34.1	79.1	82.6	58.8	55.3	49.5	46.2	93.7	68.6
Pennsylvania	Lancaster	420710007	42.0	49.1	64.7	52.1	79.8	61.7	87.1	71.5	56.3	55.6	89.1	88.5
Pennsylvania	Lawrence	420730015	45.2	32.8	65.3	69.1	54.6	49.3	59.2	57.7	56.3	88.7	82.5	73.0
Pennsylvania	Lehigh	420770004	39.8	42.3	55.3	39.0	70.5	36.5	68.5	55.2	45.3	51.7	67.0	79.3
Pennsylvania	Luzerne	420791100	35.7	51.3	49.3	31.7	66.1	69.8	61.7	63.8	53.7	55.6	72.0	79.3
Pennsylvania	Luzerne	420791101	40.3	57.1	54.8	35.2	76.2	81.2	68.2	64.3	54.6	50.8	85.6	86.0
Pennsylvania	Lycoming	420810403	30.8	49.7	53.1	32.6	53.6	62.3	57.3	55.0	47.8	52.0	68.8	58.6
Pennsylvania	Mercer	420850100	49.1	42.0	70.7	74.6	67.5	65.0	63.7	59.6	47.5	91.0	84.6	66.0
Pennsylvania	Montgomery	420910013	44.1	45.1	69.1	43.7	71.1	49.7	54.4	59.0	55.0	70.6	62.4	101.3
Pennsylvania	Perry	420990301	38.3	48.6	66.3	44.0	54.7	88.1	70.2	80.2	54.8	70.8	85.8	79.5
Pennsylvania	Philadelphia	421010004	40.0	30.0	60.0	36.2	53.7	45.0	22.5	45.0	45.7	58.7	61.2	77.5

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Pennsylvania	Philadelphia	421010014	56.6	50.0	72.5	46.2	76.2	51.2	50.0	66.2	67.1	78.7	71.2	108.7
Pennsylvania	Philadelphia	421010024	63.7	53.7	82.5	51.2	81.2	63.7	40.0	62.5	72.8	76.2	77.5	107.5
Pennsylvania	Philadelphia	421010136	28.7	27.5	62.5	37.5	48.5	NA	NA	NA	NA	NA	NA	71.2
Pennsylvania	Washington	421250005	58.8	47.7	60.0	80.2	68.1	95.0	81.0	90.6	75.3	71.1	80.2	79.8
Pennsylvania	Washington	421250200	49.5	41.3	55.3	63.0	59.2	80.1	70.2	87.2	67.2	74.3	77.0	71.3
Pennsylvania	Washington	421255001	56.3	47.6	54.1	62.7	60.6	74.3	71.3	79.6	83.3	76.8	88.3	68.2
Pennsylvania	Westmoreland	421290006	49.0	31.3	38.7	73.0	49.2	83.2	62.0	66.2	61.3	66.6	79.7	74.5
Pennsylvania	York	421330008	39.8	39.7	58.8	51.5	63.0	64.2	79.8	58.0	57.2	56.2	78.8	74.1
Rhode Island	Kent	440030002	87.0	50.5	61.2	24.5	53.1	32.1	22.3	69.5	43.3	47.0	64.1	110.2
Rhode Island	Providence	440071010	95.2	55.5	65.0	31.8	59.8	29.6	24.8	55.6	37.5	38.1	43.5	96.6
South Carolina	Abbeville	450010001	62.0	64.5	64.3	61.2	71.5	82.8	87.5	70.0	88.6	62.3	46.7	50.0
South Carolina	Aiken	450030003	43.3	66.1	79.2	69.7	64.1	64.5	66.2	65.6	67.1	49.0	48.2	46.7
South Carolina	Anderson	450070003	71.8	64.3	76.0	72.5	75.5	93.7	84.2	88.0	97.5	75.3	53.0	46.0
South Carolina	Barnwell	450110001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
South Carolina	Berkeley	450150002	24.8	46.8	66.8	62.0	NA	53.2	72.7	79.2	63.3	43.6	37.3	41.0
South Carolina	Charleston	450190042	29.6	49.3	63.1	71.0	77.7	55.3	72.1	81.1	NA	NA	NA	NA
South Carolina	Charleston	450190046	23.2	44.0	74.0	57.5	75.3	56.5	71.1	91.0	75.5	52.7	39.3	32.2
South Carolina	Cherokee	450210002	53.5	59.5	63.2	64.3	80.1	81.5	80.1	82.7	79.2	65.0	42.1	51.1
South Carolina	Chester	450230002	74.4	80.5	72.7	70.6	105.2	83.2	95.1	93.5	109.8	59.5	50.2	51.8
South Carolina	Darlington	450310003	31.2	31.5	69.2	61.7	64.3	63.0	69.8	84.2	72.6	46.8	50.6	56.6
South Carolina	Edgefield	450370001	51.3	58.0	58.5	51.3	67.2	75.6	69.6	77.1	76.8	60.3	59.7	53.0
South Carolina	Oconee	450730001	39.6	41.7	46.3	44.7	41.1	56.6	60.1	67.6	64.0	70.1	45.6	39.5
South Carolina	Pickens	450770002	55.8	65.5	NA	NA	NA	82.1	79.6	82.2	92.8	75.1	50.0	42.7
South Carolina	Richland	450790007	37.8	50.8	80.7	67.1	80.1	67.6	92.8	82.1	74.4	51.1	56.2	56.5
South Carolina	Richland	450791002	37.3	52.0	77.8	67.5	77.1	70.1	93.8	82.8	81.8	47.8	55.6	56.5
South Carolina	Spartanburg	450830009	56.5	56.0	61.5	72.8	76.3	71.2	74.8	83.0	83.7	74.7	46.2	44.8
South Carolina	Union	450870001	65.0	65.5	65.1	63.7	68.1	71.3	91.5	85.7	83.0	52.2	46.5	37.6
South Carolina	Williamsburg	450890001	24.7	32.7	46.6	52.1	56.0	53.8	62.7	71.8	48.4	43.5	38.8	47.3
South Carolina	York	450910006	64.6	68.5	73.6	61.2	95.1	81.8	87.6	96.1	108.2	52.3	48.1	47.2
Tennessee	Anderson	470010101	59.5	72.6	70.0	68.8	83.7	77.2	82.5	100.6	94.1	69.3	52.5	66.8
Tennessee	Blount	470090101	67.1	84.5	72.8	72.3	98.7	81.7	103.6	105.5	90.2	72.0	58.5	64.6

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Tennessee	Blount	470090102	45.5	54.7	52.1	52.1	83.7	55.8	77.5	77.2	56.7	59.6	38.1	43.1
Tennessee	Davidson	470370011	66.2	55.0	81.8	86.2	58.7	60.0	43.7	55.0	31.2	43.1	44.3	45.0
Tennessee	Davidson	470370026	96.8	76.8	88.7	86.2	86.4	87.5	80.0	85.6	71.2	70.6	64.3	67.5
Tennessee	Hamilton	470650028	75.3	59.0	NA	NA	73.6	57.1	75.7	89.6	77.6	57.5	45.1	56.8
Tennessee	Hamilton	470651011	57.6	NA	55.3	56.3	51.8	57.7	78.8	86.5	75.5	50.6	41.2	49.1
Tennessee	Haywood	470750002	60.0	NA	50.0	47.3	63.0	55.6	49.5	62.8	50.8	54.6	51.0	56.3
Tennessee	Knox	470930021	53.6	58.8	61.1	68.3	61.1	79.5	87.6	84.6	84.2	63.5	45.5	47.8
Tennessee	Knox	470931020	48.6	60.5	62.0	68.8	74.5	68.6	86.1	83.5	84.2	63.1	41.3	52.1
Tennessee	Rutherford	471490101	50.2	26.0	29.0	28.6	25.5	31.3	67.2	71.0	27.8	52.2	49.7	47.7
Tennessee	Sevier	471550101	67.0	71.7	68.8	75.2	84.8	86.0	97.6	98.8	91.5	70.7	62.8	64.7
Tennessee	Sevier	471550102	59.3	61.7	60.2	62.0	65.5	77.8	80.1	95.0	87.0	61.7	63.0	61.8
Tennessee	Shelby	471570021	51.7	57.2	81.8	55.6	45.0	30.3	71.6	108.6	NA	NA	60.2	54.7
Tennessee	Shelby	471571004	80.3	59.0	72.0	87.5	75.5	62.2	78.0	63.7	76.3	62.5	61.5	54.1
Tennessee	Sullivan	471632002	58.3	57.7	81.1	78.0	83.8	72.5	85.6	94.0	91.0	69.0	61.1	62.2
Tennessee	Sullivan	471632003	51.7	58.2	78.7	75.7	83.6	68.3	83.6	89.2	91.1	72.0	56.3	67.1
Tennessee	Sumner	471650007	85.6	63.6	77.3	83.8	76.8	89.8	79.8	82.5	66.1	70.3	59.2	66.7
Tennessee	Sumner	471650101	56.8	51.8	59.7	71.5	56.8	48.3	65.0	66.6	53.8	68.2	54.0	46.7
Tennessee	Wilson	471890103	63.3	63.3	65.6	63.6	64.8	49.2	64.5	74.7	58.3	80.1	49.3	51.1
Texas	Brazoria	480391003	33.6	18.2	13.7	13.3	14.0	16.1	18.6	42.1	65.0	86.6	84.8	63.0
Texas	Collin	480850005	84.8	82.6	50.3	43.8	39.0	43.1	NA	NA	NA	68.7	68.5	NA
Texas	Dallas	481130069	57.8	61.6	36.1	26.5	23.0	28.6	25.7	44.3	67.6	60.8	81.0	60.8
Texas	Dallas	481130087	54.0	56.1	31.6	19.3	18.6	26.1	21.2	39.7	62.7	66.5	80.3	70.0
Texas	Galveston	481671002	39.7	23.8	22.0	NA	NA	16.8	22.6	60.5	61.0	128.1	112.4	140.5
Texas	Gregg	481830001	77.6	69.0	53.8	53.3	29.8	40.0	35.2	67.3	83.6	84.7	95.5	87.5
Texas	Harris	482010024	56.8	36.0	31.6	28.3	21.6	33.0	48.2	101.6	55.8	76.7	85.1	81.8
Texas	Harris	482010029	NA	NA	NA	NA	NA	NA	50.7	83.2	61.1	77.0	82.8	65.8
Texas	Harris	482010046	51.8	35.1	24.1	25.0	21.7	27.6	47.0	84.6	44.5	74.3	95.6	78.5
Texas	Harris	482010047	53.8	31.7	22.6	18.1	13.3	23.5	38.7	64.8	47.1	83.2	105.5	69.7
Texas	Harris	482010051	58.6	25.5	21.6	17.5	17.5	29.5	35.2	52.3	55.0	118.0	107.1	93.1
Texas	Harris	482010062	48.0	25.7	21.2	18.2	24.3	23.1	27.2	48.3	48.8	107.2	111.7	89.0
Texas	Harris	482010066	63.7	38.0	25.2	17.0	16.2	26.5	28.6	56.2	55.8	96.0	100.1	71.8

State	County	AIRS Site Code	Aug 10	Aug 11	Aug 12	Aug 13	Aug 14	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21
Texas	Harris	482011035	47.7	22.2	17.7	17.1	18.8	18.6	26.0	58.0	42.6	NA	NA	NA
Texas	Jefferson	482450009	69.6	31.0	29.7	21.0	19.2	18.5	57.7	75.1	52.6	107.6	74.1	96.6
Texas	Jefferson	482450011	50.8	25.1	16.1	13.0	19.2	11.7	66.2	86.5	51.5	112.0	76.8	105.5
Texas	Orange	483611001	61.5	32.2	22.2	22.7	20.0	22.0	73.8	84.6	59.0	96.6	52.2	71.8
Texas	Tarrant	484391002	67.7	76.7	44.8	31.5	33.2	38.1	37.2	55.8	80.0	79.1	82.3	76.0
Texas	Tarrant	484392003	75.3	NA	NA	NA	NA	NA	NA	45.5	69.2	62.6	66.0	59.0
Texas	Travis	484530014	67.3	55.3	26.0	29.3	24.3	27.6	32.0	37.7	48.3	74.5	78.5	76.5
Vermont	Bennington	500030004	58.6	47.3	27.1	22.5	51.0	46.2	54.0	38.6	36.5	32.3	47.2	59.5
Virginia	Arlington	510130020	34.5	54.0	67.8	65.1	94.2	73.0	82.2	64.0	60.3	72.5	97.5	97.5
Virginia	Caroline	510330001	26.0	44.7	55.5	66.6	78.2	57.5	61.8	77.1	91.7	47.5	77.5	65.8
Virginia	Charles City	510360002	28.5	29.3	74.0	66.8	77.8	58.7	44.6	75.3	63.7	42.0	55.7	88.6
Virginia	Chesterfield	510410004	26.5	41.1	59.6	66.7	96.7	65.7	56.2	72.6	82.6	52.1	79.5	78.3
Virginia	Fairfax	510590005	39.5	56.0	55.7	56.5	63.1	93.1	84.8	72.8	60.3	67.0	81.3	79.0
Virginia	Fairfax	510590018	32.0	42.2	66.3	60.3	102.5	70.2	76.3	64.6	63.2	71.5	99.7	94.3
Virginia	Fairfax	510595001	34.7	43.5	67.1	58.0	80.5	83.0	84.3	77.6	65.6	70.2	89.3	86.0
Virginia	Fauquier	510610002	34.4	40.2	55.5	55.2	61.8	81.7	84.7	75.8	64.2	59.8	72.1	73.8
Virginia	Frederick	510690010	34.8	37.6	58.7	63.2	63.5	82.7	80.2	66.0	64.1	53.8	70.0	68.0
Virginia	Henrico	510870014	28.8	33.0	68.3	70.2	83.0	56.2	55.6	80.7	76.5	47.0	71.8	92.3
Virginia	Madison	511130003	33.0	47.1	62.8	69.8	69.6	78.4	85.1	85.5	64.4	54.5	59.5	87.0
Virginia	Prince William	511530009	37.0	50.0	67.5	63.7	68.7	100.8	91.7	75.7	67.2	60.5	76.8	77.7
Virginia	Roanoke	511611004	34.3	51.7	61.8	74.1	67.3	62.5	79.5	74.3	71.3	66.1	60.8	72.2
Virginia	Stafford	511790001	29.2	51.7	58.2	68.0	83.2	76.5	86.1	84.5	90.6	69.6	99.1	76.6
Virginia	Wythe	511970002	51.5	62.0	64.8	68.3	66.7	67.0	67.5	76.0	84.8	71.2	56.3	59.8
Virginia	Alexandria Cit	515100009	28.8	45.5	64.3	67.2	91.2	68.3	76.2	54.0	55.8	68.2	90.3	86.0
Virginia	Hampton City	516500004	28.6	29.4	74.1	74.1	69.0	37.2	22.1	54.8	57.6	42.7	43.1	76.2
Virginia	Suffolk City	518000004	23.1	28.7	75.6	63.8	62.6	34.0	27.8	62.1	57.2	43.0	42.6	75.0
Virginia	Suffolk City	518000005	27.0	36.0	62.5	67.5	86.6	45.5	28.5	52.5	68.0	48.5	51.0	74.2
West Virginia	Cabell	540110006	72.2	49.3	87.0	87.8	80.0	74.3	NA	63.5	72.5	59.0	65.8	79.6
West Virginia	Hancock	540291004	52.0	45.5	50.1	58.7	63.0	65.8	72.7	80.5	86.8	80.3	84.7	71.1
West Virginia	Ohio	540690007	42.2	37.3	55.2	58.0	63.7	73.5	56.7	66.8	52.3	66.3	71.6	57.8
West Virginia	Wood	541071002	56.1	61.2	61.0	56.7	79.7	95.7	90.1	92.0	62.8	64.7	78.8	81.3

State	County	AIRS Site Code	Aug 10	Aug 11	Aug 12	Aug 13	Aug 14	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21
Wisconsin	Brown	550090026	50.8	41.7	34.0	44.0	45.0	25.4	38.1	47.5	45.3	39.2	41.8	41.5
Wisconsin	Columbia	550210015	45.8	54.3	63.0	55.7	45.0	43.6	56.2	45.6	49.5	40.3	41.8	47.0
Wisconsin	Dane	550250041	40.7	51.8	58.8	46.1	44.1	42.8	45.2	40.8	45.8	32.8	44.6	44.2
Wisconsin	Dodge	550270007	NA	42.8	47.7	48.1	40.3	37.1	53.1	39.0	48.7	35.5	37.0	40.3
Wisconsin	Door	550290004	60.1	44.8	37.7	44.5	46.6	38.1	45.3	55.7	55.1	52.7	40.5	38.4
Wisconsin	Fond Du Lac	550390006	36.3	43.7	43.8	48.0	41.7	34.2	47.6	44.3	46.5	34.6	39.2	39.8
Wisconsin	Jefferson	550550002	41.1	57.8	56.7	58.8	49.5	42.1	57.6	50.8	53.8	38.2	43.7	48.7
Wisconsin	Kenosha	550590002	44.8	73.7	92.5	58.2	56.8	52.2	51.0	60.3	53.5	37.6	46.6	49.1
Wisconsin	Kenosha	550590019	55.1	94.8	105.0	64.1	63.3	57.1	61.0	65.5	58.5	43.0	49.1	53.6
Wisconsin	Kewaunee	550610002	52.6	45.8	43.2	46.7	46.8	37.1	42.1	50.3	57.7	44.8	40.1	39.3
Wisconsin	Manitowoc	550710004	39.3	44.1	39.1	45.3	45.6	27.7	47.3	46.2	48.2	39.3	45.8	47.3
Wisconsin	Manitowoc	550710007	45.0	43.6	40.2	46.0	43.7	37.1	45.1	46.7	49.6	40.1	41.7	40.3
Wisconsin	Marathon	550730012	34.5	37.6	28.8	42.2	40.8	33.0	32.1	34.7	44.2	37.4	34.3	36.4
Wisconsin	Milwaukee	550790041	35.5	61.6	75.0	61.3	54.6	47.7	59.0	61.5	67.2	45.1	44.7	45.1
Wisconsin	Milwaukee	550790044	37.3	56.1	63.5	58.7	49.6	39.2	52.8	52.7	58.6	37.0	44.2	41.0
Wisconsin	Milwaukee	550790085	45.5	74.0	70.1	63.6	56.7	49.0	61.8	62.6	61.1	37.7	44.3	46.7
Wisconsin	Milwaukee	550791025	45.8	58.3	77.6	59.5	55.2	51.5	60.5	63.1	NA	NA	NA	NA
Wisconsin	Outagamie	550870009	36.7	36.2	27.2	38.2	38.2	23.3	38.4	45.7	45.1	30.8	36.3	40.0
Wisconsin	Ozaukee	550890008	37.1	63.5	56.1	51.5	42.7	47.3	58.6	49.7	59.1	36.1	43.5	40.2
Wisconsin	Ozaukee	550890009	44.5	62.6	55.5	63.6	52.3	52.3	58.1	53.0	59.5	42.0	45.3	48.2
Wisconsin	Racine	551010017	41.7	85.2	87.2	56.6	51.0	46.7	52.5	59.3	53.6	32.8	41.0	46.0
Wisconsin	Rock	551050024	40.5	54.0	59.1	53.0	44.8	33.8	50.3	39.1	50.1	35.6	44.0	NA
Wisconsin	St Croix	551091002	48.5	29.8	31.2	37.1	28.3	34.5	31.5	37.2	39.7	32.2	42.0	40.0
Wisconsin	Sauk	551110007	36.3	49.8	50.8	45.5	37.5	36.6	40.1	41.0	44.5	29.8	37.3	43.0
Wisconsin	Vernon	551230008	34.6	49.7	47.7	44.3	39.3	30.3	30.0	34.3	39.7	34.1	31.5	49.3
Wisconsin	Walworth	551270005	44.8	65.1	NA	NA	NA	NA	52.4	43.6	61.0	34.1	44.8	51.5
Wisconsin	Washington	551310009	40.0	52.5	55.6	58.3	46.1	42.8	58.8	46.2	55.5	41.8	42.8	44.7
Wisconsin	Waukesha	551330017	39.1	55.0	58.3	56.5	48.1	36.1	48.2	46.1	60.5	47.0	42.5	44.8
Wisconsin	Winnebago	551390011	36.8	44.6	41.0	38.0	39.8	32.5	43.8	42.7	46.0	34.7	39.0	41.2

Technical Support Document
for the Final
Clean Air Interstate Rule

Air Quality Modeling Analyses

Appendix D

CAMx Model Performance Evaluation

Introduction

An operational model performance evaluation for surface ozone for the five episodes was performed in order to estimate the ability of the modeling system to replicate base year ozone concentrations. This evaluation is comprised principally of statistical assessments of model versus observed pairs. The robustness of an operational evaluation is directly proportional to the amount and quality of the ambient data available for comparison.

a. Statistical Definitions

Below are the definitions of those statistics used for the evaluation. The format of all the statistics is such that negative values indicate model ozone predictions that were less than their observed counterparts. Positively-valued statistics indicate model overestimation of surface ozone. Statistics were not generated for the first three days of an episode to avoid the initialization period. The statistics were calculated for (a) the entire HDE domain, (b) four quadrants (Midwest, Northeast, Southeast, Southwest), and (c) 51 local areas. The statistics that were calculated for each of these sets of areas are described below.

<u>Domainwide unpaired peak prediction accuracy:</u> This metric simply compares the peak concentration modeled anywhere in the selected area against the peak ambient concentration anywhere in the same area. The difference of the peaks (model - observed) is then normalized by the peak observed concentration.

<u>Peak prediction accuracy:</u> This metric averages the paired peak prediction accuracy calculated for each monitor in the subregion. It characterizes the capacity of the model to replicate peak (afternoon) ozone over a subregion. The daily peak model versus daily peak observed residuals are paired in space but not in time.

<u>Mean normalized bias:</u> This performance statistic averages the normalized (by observation) difference (model - observed) over all pairs in which the observed values were greater than 60 ppb. A value of zero would indicate that the model over predictions and model under predictions exactly cancel each other out.

<u>Mean normalized gross error:</u> The last metric used to assess the performance of the HDE base cases is similar to the above statistic, except in this case it is the absolute value of the residual which is normalized by the observation, and then averaged over all sites. A zero gross error value would indicate that all model concentrations (in which their observed counterpart was greater than 60 ppb) exactly matched the ambient values.

b. Domainwide Model Performance

As with previous regional photochemical modeling studies, the degree that model predictions replicate observed concentrations varies by day and location over the large eastern U.S. modeling domain. From a qualitative standpoint, there appears to be considerable similarity on most days between the observed and simulated ozone patterns. Additionally, where possible to discern, the model appears to follow the day-to-day variations in synoptic-scale ozone fairly closely. More quantitative comparisons of the model predictions and ambient data are provided below.

When all hourly observed ozone values (greater than 60 ppb) are compared to their model counterparts for the 30 episode modeling days in the eastern U.S. simulations, the mean normalized bias is -1.1 percent and the mean normalized gross error is 20.5 percent As shown in Table III-3, the model generally underestimates observed ozone values for the June and July episodes, but predicts higher than observed amounts for the August episode.

Table III-3. Performance statistics for hourly ozone in the Eastern U.S. CAMx simulations.

	Average Accuracy of the Peak	**Mean Normalized Bias**	**Mean Normalized Gross Error**
June 1995	-7.3	-8.8	19.6
July 1995	-3.3	-5.0	19.1
August 1995	9.6	8.6	23.3

Depending on the episode and region, the normalized biases can range from an underestimation of 18 percent to an overestimation of 16 percent. Gross errors tend to average between 17 and 25 percent. As shown in Table III-4, when the model domain is subdivided into four quadrants, it is found that most of the underestimations in the June and July episodes are driven by the Northeast and Midwest quadrants (i.e., the two northern ones). Conversely, most of the overestimated ozone in the August episode is due to the Midwest, Southeast and Southwest quadrants. Hourly ozone is consistently underestimated in the Northeast quadrant. The model does slightly better in replicating the peak values for each monitoring site than it does at replicating the mean values, especially in the Northeast where the underpredictions are not as large for the highest ozone observations.

Table III-4. Regional/Episodic performance statistics for hourly ozone predictions.

	Average Accuracy of the Peak			**Mean Normalized Bias**			**Mean Normalized Gross Error**		
	June	*July*	*August*	*June*	*July*	*August*	*June*	*July*	*August*
Whole Grid	-7.3	-3.3	9.6	-8.8	-5.0	8.6	19.6	19.1	23.3
Northeast	-14.7	-5.0	-4.3	-18.4	-7.2	-6.0	24.7	19.1	22.6
Midwest	-7.3	-6.2	15.5	-8.7	-7.2	15.5	18.0	19.4	23.7
Southeast	-2.9	1.9	15.1	-3.0	1.3	14.7	17.4	19.1	24.1
Southwest	-0.9	1.3	7.0	0.7	3.1	10.3	19.0	20.0	22.6

At present, there are no accepted criteria by which one can determine if a regional ozone modeling exercise is exhibiting adequate model performance. As a result, EPA compares the evaluation results of regional models against applicable previous analyses. For instance, the Heavy Duty Engine (HDE) base case simulations were determined to be appropriate for use based on comparisons to previously accepted modeling analyses (e.g., OTAG and Tier-2). Model performance in the base year simulations is generally similar or better than its predecessor regional ozone modeling efforts. In particular, the gross error metric is almost universally improved in the more recent modeling. In general, the CAMx modeling results are approximately 3-6 ppb higher on average than what was generated in the HDE/UAM-V modeling. In some previous regional modeling applications, there had been a tendency for the model to underestimate ozone in the early parts of an episode and then overestimate ozone at the end of an episode. The trend toward positive bias would increase throughout the episode, which may be a sign of an imbalance in the model chemistry which in turn could affect control strategy signal. In general, there does not appear to be an issue with bias creep in the base year modeling. Finally, as noted above, the base year CAMx modeling has been used before to support proposed emission control regulations (e.g., Non-Road Rulemaking).

Table III-5 presents the results from the eight-hourly ozone evaluation. In general, the gross error is noticeably less for the eight-hour ambient versus observed ozone comparisons. However, the eight-hour ozone model predictions are large overestimates of the actual observed values for the August episode, especially outside of the Northeast quadrant.

Table III-5. Regional/Episodic performance statistics for 8-hourly ozone predictions.

	Average Accuracy of the Peak			**Mean Normalized Bias**			**Mean Normalized Gross Error**		
	June	*July*	*August*	*June*	*July*	*August*	*June*	*July*	*August*
Whole Grid	-3.9	0.9	13.9	-5.7	-2.1	11.0	17.5	16.4	22.6
Northeast	-13.5	-2.4	-1.6	-15.4	-4.9	-3.8	21.3	14.6	20.8
Midwest	-4.0	-0.9	20.6	-5.8	-4.4	17.6	16.0	16.7	23.7
Southeast	1.3	5.3	20.5	0.9	4.0	18.4	16.4	17.5	24.1
Southwest	5.0	8.2	16.2	3.9	3.6	12.4	17.8	18.1	21.1

c. Local-scale Model Performance

The CAMx modeling results were also evaluated at a "local" level. For this analysis, the modeling domain was broken up into 51 local subregions as shown in Figure III-2. The primary statistics for each of the 51 subregions is shown in Table III-6.

As noted above, there is no set of established statistical benchmarks to determine the adequacy of a regional modeling operation evaluation. If one were to evaluate the performance of the 1995 eastern base cases against existing EPA requirements for acceptable levels of accuracy, bias, and error in local attainment demonstration modeling, 69% of the regions would pass for the June episode, 80% of the regions would pass for the July episodes, and 61% of the regions would pass for the August episode. This is an improvement from the HDE base case analyses where the numbers were: 57%, 45%, and 55%, respectively. The local eight-hour metrics (not shown) generally do not greatly differ from their hourly counterparts. There is a slight tendency toward greater overprediction of the eight-hourly values.

Table III-6. Local performance statistics for hourly ozone predictions.

	Average Accuracy of the Peak			Mean Normalized Bias			Mean Normalized Gross Error		
	June	*July*	*August*	*June*	*July*	*August*	*June*	*July*	*August*
Dallas	-9.6	-12.3	2.2	-10.6	-11.5	3.2	16.6	18.7	15.7
Houston/Galveston	-3.0	-5.1	0.3	-3.5	-3.9	2.2	20.8	19.0	25.7
Beaumont/Port Arthur	14.0	16.7	8.8	16.0	19.3	12.9	20.4	24.5	24.6
Baton Rouge	15.6	24.7	31.4	22.6	26.6	37.4	26.1	31.0	40.5
New Orleans	15.6	29.1	42.1	15.9	28.9	48.9	21.9	32.0	50.2
St. Louis	-0.5	-4.0	8.4	-0.6	0.6	10.5	17.0	18.4	18.2
Memphis	-7.7	-4.9	13.7	-5.9	-0.3	13.6	15.5	19.3	22.0
Alabama	5.2	-1.7	16.0	6.5	6.7	23.1	14.4	16.6	25.2
Atlanta	-3.1	5.4	19.0	-3.4	6.8	26.1	16.7	20.1	31.0
Nashville	-2.9	7.8	31.5	-2.4	9.1	36.1	18.1	24.7	37.4
Eastern TN	-14.2	-16.0	-2.7	-21.0	-17.1	-5.9	22.7	20.7	18.3
Charlotte	8.3	-2.1	6.0	5.8	4.1	14.5	13.0	16.3	18.2
Greensboro	-1.7	-1.1	17.2	-4.2	1.2	18.2	14.1	15.3	21.7
Raleigh-Durham	-11.8	1.3	-2.3	-10.7	4.2	-1.9	14.6	13.9	16.9
Evansville/Owensboro	1.2	-0.9	28.3	4.5	5.4	32.8	15.1	21.2	33.9
Indianapolis	-8.3	-13.5	15.9	-3.6	-14.4	18.0	13.1	19.3	19.7
Louisville	2.8	4.2	36.6	4.8	6.1	42.1	14.7	17.9	42.5
Cincinnati/Dayton	-4.7	-8.5	29.0	0.1	-5.6	32.7	12.8	19.1	33.5
Columbus	-8.5	-14.5	9.2	-6.2	-11.0	14.2	14.6	17.3	18.7
West Virginia	-8.8	-5.7	12.7	-7.5	-3.2	13.7	15.7	16.6	24.5
Chicago	-9.9	-4.3	10.4	-17.1	-11.1	3.5	24.5	23.5	22.3
Milwaukee	-14.8	-12.9	21.5	-16.5	-16.9	12.3	19.1	23.3	18.2
Muskegon/Grand Rapids	-10.8	-12.3	3.1	-11.6	-12.9	1.7	17.7	20.4	16.4
Gary/South Bend	-13.0	-10.0	11.8	-15.0	-14.5	9.3	19.2	24.4	20.7
Detroit	-17.2	-5.8	3.9	-20.1	-13.2	-3.2	25.1	22.5	23.4

Pittsburgh	-10.0	-3.2	9.2	-9.2	-2.1	7.9	23.1	16.1	20.4
Central PA	-6.0	-7.6	1.0	-8.5	-6.0	1.1	21.9	15.5	18.6
Norfolk	-9.0	0.0	8.3	-13.4	-5.6	5.7	19.1	18.6	24.7
Richmond	-1.2	4.8	2.6	-1.3	10.7	4.5	8.4	18.3	20.3
Baltimore/Washington	-4.7	-3.1	1.7	-6.8	-5.2	0.7	18.6	15.6	23.4
Delaware	-6.1	-5.2	2.3	-6.3	-0.2	7.5	12.9	11.6	16.2
Philadelphia	-14.1	-1.8	-8.7	-22.0	-10.5	-13.9	26.4	19.5	28.9
New York City	-16.2	-3.9	-12.2	-24.6	-14.1	-17.9	31.3	22.5	29.8
Hartford	-16.9	-5.0	-9.9	-18.5	-4.0	-7.7	23.6	18.2	20.1
Boston	-13.7	-4.7	-15.6	-19.6	-9.2	-19.6	25.9	20.9	26.5
Maine	-20.4	-4.7	-6.9	-25.0	-9.4	-6.9	25.3	19.0	15.5
Longview/Shreveport	-2.1	11.3	7.7	0.8	11.1	11.4	16.2	16.5	17.9
Kansas City	-8.5	-7.8	-4.3	-7.9	-1.5	-8.3	15.7	13.0	12.4
Western NY	-23.1	-20.6	-9.0	-25.6	-20.5	-12.1	28.1	23.8	19.0
Northeast OH	-4.0	-6.5	6.9	-6.6	-6.8	7.7	20.4	15.5	16.5
South Carolina	-2.5	1.3	11.4	-3.4	1.5	15.7	12.5	17.7	19.4
Gulf Coast	0.5	23.1	29.3	4.5	30.0	33.7	15.4	31.6	34.9
FL West Coast	-6.4	22.8	41.2	-7.3	11.9	42.8	11.3	22.7	43.7
FL East Coast	-15.9	16.2	23.3	-16.8	16.6	26.3	18.0	18.4	29.4
Jackson	0.6	10.9	21.0	1.8	10.0	24.0	16.0	16.0	24.9
Central MI	-6.9	-10.4	12.0	-9.6	-14.8	6.6	18.1	18.7	17.5
Macon/Columbus	-9.5	-11.1	21.6	-8.8	-5.7	26.4	10.9	13.0	26.9
Austin/San Antonio	-14.1	-19.6	-1.9	-11.0	-15.5	4.1	14.1	17.2	12.4
Oklahoma City/Tulsa	-12.3	-5.6	-5.2	-12.9	-3.2	-2.8	17.2	14.6	12.6
Ft. Wayne/Lima	-9.1	-13.1	3.9	-8.3	-14.1	5.1	16.0	18.2	10.6
Bangor/Hancock Co.	-17.8	-6.9	-17.7	-24.4	-8.5	-19.9	25.2	15.3	21.0

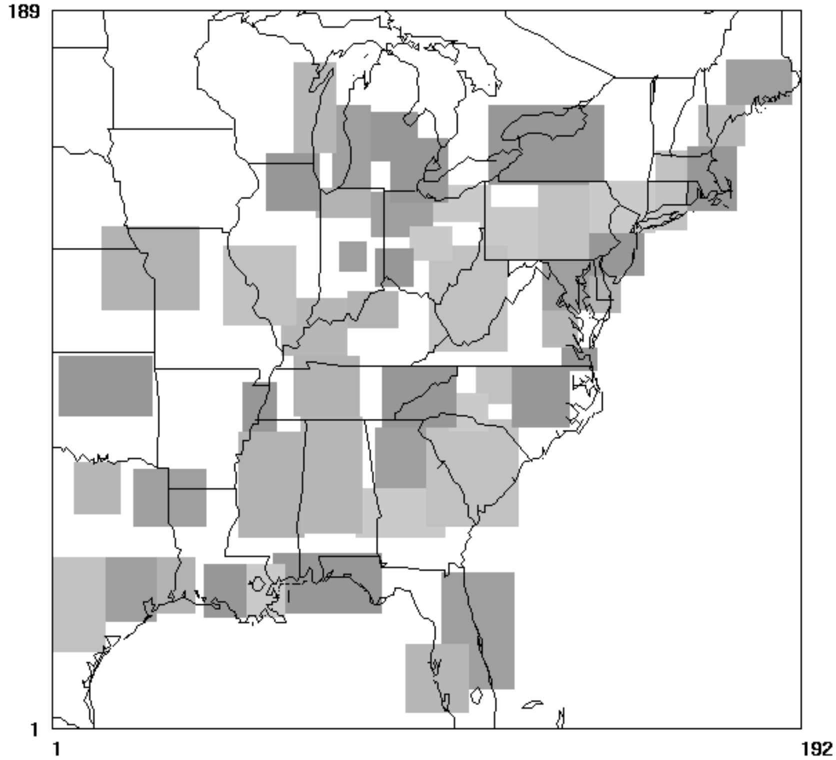

Figure III-2. Map of the 51 local-scale evaluation zones.

Technical Support Document for the Final Clean Air Interstate Rule Air Quality Modeling Analyses

Appendix E

8-Hour Ozone: Average Ambient and Projected 2010/2015 Base and CAIR

Table E-1. 8-Hour Ozone Concentrations (ppb): Average 1999-2003, 2010 Base and CAIR, 2015 Base and CAIR; and the impact of CAIR on 8-hour ozone in 2010 and 2015.

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Mobile, AL	AL	Baldwin Co	79.0	72.5	71.4	-1.1	71.3	67.4	-3.9
	AL	Clay Co	82.0	64.3	63.1	-1.2	61.0	59.2	-1.8
Montgomery, AL	AL	Elmore Co	78.3	64.3	63.5	-0.8	60.7	59.4	-1.3
Birmingham, AL	AL	Jefferson Co	86.7	70.7	70.2	-0.5	66.4	65.5	-0.9
Decatur, AL	AL	Lawrence Co	78.7	66.4	66.1	-0.3	63.7	62.3	-1.4
Huntsville, AL	AL	Madison Co	82.7	68.8	67.9	-0.9	64.3	62.7	-1.6
Mobile, AL	AL	Mobile Co	79.0	72.9	71.9	-1.0	71.9	68.0	-3.9
Montgomery, AL	AL	Montgomery Co	80.0	65.6	64.8	-0.8	62.0	60.8	-1.2
Decatur, AL	AL	Morgan Co	83.0	70.6	70.0	-0.6	67.7	66.7	-1.0
Birmingham, AL	AL	Shelby Co	91.7	73.8	73.2	-0.6	69.2	68.2	-1.0
	AL	Sumter Co	74.0	61.5	60.9	-0.6	59.5	58.2	-1.3
Tuscaloosa, AL	AL	Tuscaloosa Co	78.0	62.5	62.1	-0.4	59.3	58.3	-1.0
Memphis, TN	AR	Crittenden Co	92.7	81.5	80.8	-0.7	78.6	78.0	-0.6
	AR	Montgomery Co	68.0	60.7	58.5	-2.2	58.6	55.9	-2.7
Little Rock, AR	AR	Pulaski Co	84.7	76.3	71.8	-4.5	73.4	68.4	-5.0
New Haven-Meriden, CT	CT	Fairfield Co	98.7	92.6	92.2	-0.4	91.4	90.6	-0.8
Hartford, CT	CT	Hartford Co	89.3	80.4	80.1	-0.3	77.4	76.8	-0.6
	CT	Litchfield Co	83.0	74.0	73.9	-0.1	71.3	70.8	-0.5
Hartford, CT	CT	Middlesex Co	98.0	90.9	90.6	-0.3	89.1	88.4	-0.7
New Haven-Meriden, CT	CT	New Haven Co	99.0	91.6	91.3	-0.3	89.8	89.1	-0.7
New London-Norwich, CT	CT	New London Co	90.7	83.6	83.4	-0.2	81.8	81.1	-0.7
Hartford, CT	CT	Tolland Co	93.0	83.0	82.7	-0.3	79.7	79.1	-0.6
Dover, DE	DE	Kent Co	91.3	79.1	78.7	-0.4	76.6	75.5	-1.1
Philadelphia, PA	DE	New Castle Co	95.3	85.0	84.7	-0.3	82.8	81.5	-1.3
	DE	Sussex Co	93.3	80.9	80.3	-0.6	78.4	77.3	-1.1

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Washington-Baltimore, DC-MD	DC	Washington Co	94.3	85.2	85.0	-0.2	83.5	82.7	-0.8
Gainesville, FL	FL	Alachua Co	75.3	65.3	59.8	-5.5	61.8	55.1	-6.7
	FL	Baker Co	72.7	62.1	58.0	-4.1	58.7	53.8	-4.9
Panama City, FL	FL	Bay Co	80.0	72.8	71.3	-1.5	70.8	68.7	-2.1
Melbourne, FL	FL	Brevard Co	75.0	62.5	58.8	-3.7	58.1	53.9	-4.2
	FL	Columbia Co	71.0	60.6	56.9	-3.7	57.1	52.8	-4.3
Jacksonville, FL	FL	Duval Co	70.3	60.1	54.4	-5.7	57.2	50.6	-6.6
Pensacola, FL	FL	Escambia Co	83.7	77.8	74.1	-3.7	76.1	70.2	-5.9
	FL	Highlands Co	64.0	52.2	50.1	-2.1	48.9	46.3	-2.6
Tampa-St Petersburg, FL	FL	Hillsborough Co	80.3	68.7	67.0	-1.7	65.6	63.4	-2.2
	FL	Holmes Co	72.3	63.2	61.8	-1.4	60.5	58.3	-2.2
Orlando, FL	FL	Lake Co	76.0	64.2	60.0	-4.2	60.2	54.8	-5.4
Fort Myers, FL	FL	Lee Co	70.7	57.9	56.4	-1.5	53.8	51.8	-2.0
Tallahassee, FL	FL	Leon Co	73.3	62.8	61.5	-1.3	59.4	57.5	-1.9
Sarasota, FL	FL	Manatee Co	79.0	66.3	64.8	-1.5	63.0	60.9	-2.1
Ocala, FL	FL	Marion Co	75.7	65.4	60.1	-5.3	61.8	55.1	-6.7
Orlando, FL	FL	Orange Co	78.3	66.1	62.1	-4.0	61.7	56.8	-4.9
Orlando, FL	FL	Osceola Co	73.7	62.1	58.2	-3.9	58.1	53.2	-4.9
West Palm Beach-Boca Raton, FL	FL	Palm Beach Co	69.7	58.4	55.9	-2.5	54.2	51.3	-2.9
Tampa-St Petersburg, FL	FL	Pasco Co	77.7	66.7	64.3	-2.4	63.2	59.9	-3.3
Tampa-St Petersburg, FL	FL	Pinellas Co	77.3	67.4	65.7	-1.7	64.5	62.3	-2.2
Lakeland-Winter Haven, FL	FL	Polk Co	78.0	63.5	60.7	-2.8	59.4	55.7	-3.7
Fort Pierce, FL	FL	St Lucie Co	69.3	58.8	55.4	-3.4	55.3	51.2	-4.1
Pensacola, FL	FL	Santa Rosa Co	82.0	75.8	72.5	-3.3	74.2	69.0	-5.2
Sarasota, FL	FL	Sarasota Co	81.7	67.4	65.5	-1.9	63.5	61.1	-2.4
Orlando, FL	FL	Seminole Co	77.7	65.2	61.3	-3.9	60.9	56.0	-4.9
Daytona Beach, FL	FL	Volusia Co	72.0	60.4	56.3	-4.1	56.4	51.4	-5.0

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
	FL	Wakulla Co	76.0	66.7	65.6	-1.1	64.0	62.3	-1.7
Macon, GA	GA	Bibb Co	92.0	82.5	80.0	-2.5	78.8	77.6	-1.2
Savannah, GA	GA	Chatham Co	71.0	61.1	60.0	-1.1	58.2	56.6	-1.6
Atlanta, GA	GA	Cherokee Co	77.0	63.1	62.2	-0.9	57.2	56.0	-1.2
Atlanta, GA	GA	Cobb Co	94.7	80.6	79.4	-1.2	73.0	71.2	-1.8
Atlanta, GA	GA	Coweta Co	92.0	78.4	76.6	-1.8	72.8	69.7	-3.1
	GA	Dawson Co	82.0	67.1	66.2	-0.9	60.7	59.2	-1.5
Atlanta, GA	GA	De Kalb Co	95.3	83.3	81.9	-1.4	76.6	74.5	-2.1
Atlanta, GA	GA	Douglas Co	94.7	80.2	78.7	-1.5	73.3	71.2	-2.1
Atlanta, GA	GA	Fayette Co	90.7	78.0	76.7	-1.3	71.8	70.1	-1.7
Atlanta, GA	GA	Fulton Co	99.0	86.5	85.1	-1.4	79.7	77.6	-2.1
	GA	Glynn Co	72.7	62.9	60.0	-2.9	60.0	56.6	-3.4
Atlanta, GA	GA	Gwinnett Co	89.3	75.6	74.6	-1.0	68.0	66.6	-1.4
Atlanta, GA	GA	Henry Co	98.0	82.4	80.3	-2.1	76.5	74.3	-2.2
	GA	Murray Co	86.0	70.9	69.4	-1.5	65.4	63.1	-2.3
Columbus, GA-AL	GA	Muscogee Co	82.0	68.7	67.6	-1.1	64.1	62.2	-1.9
Atlanta, GA	GA	Paulding Co	90.3	72.2	70.7	-1.5	66.4	64.3	-2.1
Augusta-Aiken, GA-SC	GA	Richmond Co	85.7	72.9	72.1	-0.8	69.7	68.4	-1.3
Atlanta, GA	GA	Rockdale Co	96.3	81.6	80.4	-1.2	74.4	72.8	-1.6
	GA	Sumter Co	80.3	68.4	66.7	-1.7	64.1	61.8	-2.3
	IL	Adams Co	76.0	67.0	66.4	-0.6	64.7	63.4	-1.3
Champaign-Urbana, IL	IL	Champaign Co	77.3	66.3	65.9	-0.4	64.0	62.7	-1.3
	IL	Clark Co	75.0	65.7	62.9	-2.8	61.7	60.0	-1.7
Chicago, IL-IN	IL	Cook Co	87.7	82.1	81.8	-0.3	82.1	81.1	-1.0
Chicago, IL-IN	IL	Du Page Co	70.7	66.7	66.4	-0.3	67.1	66.1	-1.0
	IL	Effingham Co	77.7	67.1	66.4	-0.7	64.1	63.1	-1.0
	IL	Hamilton Co	78.7	67.1	66.5	-0.6	64.7	62.3	-2.4

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
St. Louis, MO-IL	IL	Jersey Co	89.0	77.3	77.0	-0.3	73.8	72.8	-1.0
Chicago, IL-IN	IL	Kane Co	77.7	72.0	71.7	-0.3	71.0	70.2	-0.8
Chicago, IL-IN	IL	Lake Co	83.3	77.0	76.8	-0.2	75.4	75.0	-0.4
Chicago, IL-IN	IL	McHenry Co	83.3	76.9	76.6	-0.3	75.4	74.6	-0.8
Bloomington, IL	IL	McLean Co	77.0	65.2	64.7	-0.5	62.4	61.3	-1.1
Chicago, IL-IN	IL	Macon Co	76.7	64.0	63.6	-0.4	61.7	60.6	-1.1
	IL	Macoupin Co	79.3	66.8	66.4	-0.4	63.7	62.6	-1.1
St. Louis, MO-IL	IL	Madison Co	84.7	74.8	74.5	-0.3	71.7	70.7	-1.0
Peoria, IL	IL	Peoria Co	79.0	67.2	65.5	-1.7	64.9	62.2	-2.7
	IL	Randolph Co	78.7	66.2	66.0	-0.2	64.0	63.3	-0.7
Davenport, IA-IL	IL	Rock Island Co	71.0	64.1	63.2	-0.9	62.0	60.6	-1.4
St. Louis, MO-IL	IL	St Clair Co	83.3	74.7	74.5	-0.2	72.0	71.1	-0.9
Springfield, IL	IL	Sangamon Co	76.0	63.6	63.1	-0.5	60.8	59.4	-1.4
Chicago, IL-IN	IL	Will Co	79.3	70.7	70.4	-0.3	69.9	68.9	-1.0
Rockford, IL	IL	Winnebago Co	76.0	67.0	66.6	-0.4	63.6	63.0	-0.6
Fort Wayne, IN	IN	Allen Co	87.7	76.8	76.4	-0.4	73.0	72.0	-1.0
Indianapolis, IN	IN	Boone Co	89.0	78.6	78.1	-0.5	75.4	73.0	-2.4
	IN	Carroll Co	84.0	73.7	73.1	-0.6	70.6	68.4	-2.2
Louisville, KY-IN	IN	Clark Co	89.3	78.2	78.4	0.2	75.8	73.5	-2.3
Muncie, IN	IN	Delaware Co	88.0	76.1	75.6	-0.5	72.1	70.4	-1.7
Elkhart, IN	IN	Elkhart Co	80.0	69.8	69.5	-0.3	66.6	65.8	-0.8
Louisville, KY-IN	IN	Floyd Co	83.7	74.9	75.2	0.3	72.8	70.3	-2.5
	IN	Gibson Co	71.7	62.1	61.7	-0.4	60.2	57.9	-2.3
	IN	Greene Co	88.5	76.6	75.3	-1.3	73.3	70.1	-3.2
Indianapolis, IN	IN	Hamilton Co	93.3	82.2	81.7	-0.5	78.3	76.2	-2.1
Indianapolis, IN	IN	Hancock Co	91.7	80.8	80.4	-0.4	77.1	75.0	-2.1
Indianapolis, IN	IN	Hendricks Co	86.5	76.4	75.9	-0.5	73.4	70.9	-2.5

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Fort Wayne, IN	IN	Huntington Co	85.0	74.1	73.7	-0.4	70.5	69.3	-1.2
	IN	Jackson Co	85.0	71.7	71.4	-0.3	68.6	66.6	-2.0
Indianapolis, IN	IN	Johnson Co	86.7	74.2	73.8	-0.4	71.0	68.8	-2.2
Chicago, IL-IN	IN	Lake Co	90.7	83.2	82.8	-0.4	81.6	80.7	-0.9
	IN	La Porte Co	90.0	82.1	81.8	-0.3	80.0	79.4	-0.6
Indianapolis, IN	IN	Madison Co	91.0	79.0	78.6	-0.4	74.8	72.9	-1.9
Indianapolis, IN	IN	Marion Co	90.0	80.1	79.6	-0.5	76.9	74.6	-2.3
Indianapolis, IN	IN	Morgan Co	86.7	76.0	75.7	-0.3	73.1	70.6	-2.5
	IN	Perry Co	90.0	75.4	75.3	-0.1	73.0	70.5	-2.5
Chicago, IL-IN	IN	Porter Co	89.0	81.4	81.1	-0.3	79.3	78.6	-0.7
Evansville-Henderson, IN-KY	IN	Posey Co	85.7	74.4	73.9	-0.5	72.1	70.5	-1.6
South Bend, IN	IN	St Joseph Co	89.0	78.1	77.8	-0.3	74.8	74.0	-0.8
Indianapolis, IN	IN	Shelby Co	93.5	82.1	81.6	-0.5	78.7	76.2	-2.5
Evansville-Henderson, IN-KY	IN	Vanderburgh Co	83.3	72.4	72.0	-0.4	69.9	68.3	-1.6
Terre Haute, IN	IN	Vigo Co	87.0	76.7	75.5	-1.2	73.8	70.2	-3.6
Evansville-Henderson, IN-KY	IN	Warrick Co	84.5	73.4	73.1	-0.3	71.4	69.5	-1.9
	IA	Bremer Co	70.5	62.9	62.0	-0.9	60.5	58.8	-1.7
	IA	Clinton Co	78.3	71.4	70.3	-1.1	69.4	67.5	-1.9
	IA	Harrison Co	75.7	68.8	68.0	-0.8	66.4	64.8	-1.6
Cedar Rapids, IA	IA	Linn Co	71.0	64.3	63.4	-0.9	62.5	60.8	-1.7
	IA	Palo Alto Co	66.0	59.1	58.4	-0.7	56.5	55.1	-1.4
Des Moines, IA	IA	Polk Co	58.7	51.4	50.6	-0.8	49.0	47.4	-1.6
Davenport, IA-IL	IA	Scott Co	79.0	71.7	70.6	-1.1	69.3	67.8	-1.5
	IA	Story Co	63.3	55.6	54.8	-0.8	53.0	51.5	-1.5
	IA	Van Buren Co	74.0	65.8	65.0	-0.8	63.4	61.6	-1.8
Des Moines, IA	IA	Warren Co	63.3	55.3	54.6	-0.7	52.8	51.4	-1.4
	KS	Linn Co	76.7	71.6	71.4	-0.2	69.5	68.5	-1.0

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Wichita, KS	KS	Sedgwick Co	81.0	73.7	73.2	-0.5	71.2	70.5	-0.7
	KS	Sumner Co	79.0	72.3	71.8	-0.5	69.8	69.4	-0.4
Kansas City, MO-KS	KS	Wyandotte Co	80.3	73.9	73.7	-0.2	71.2	70.7	-0.5
	KY	Bell Co	83.3	65.1	64.8	-0.3	61.5	60.1	-1.4
Cincinnati, OH-KY	KY	Boone Co	85.3	73.1	73.1	0.0	71.0	68.0	-3.0
Huntington-Ashland, WV-KY-OH	KY	Boyd Co	89.5	77.2	76.4	-0.8	74.8	74.0	-0.8
Louisville, KY-IN	KY	Bullitt Co	83.7	73.0	73.1	0.1	70.8	69.3	-1.5
Cincinnati, OH-KY	KY	Campbell Co	92.5	81.6	81.5	-0.1	78.8	76.8	-2.0
Huntington-Ashland, WV-KY-OH	KY	Carter Co	80.3	66.7	65.9	-0.8	64.2	63.2	-1.0
Clarksville, TN-KY	KY	Christian Co	85.0	64.4	63.6	-0.8	61.7	60.3	-1.4
Owensboro, KY	KY	Daviess Co	77.3	65.7	65.5	-0.2	63.9	62.4	-1.5
	KY	Edmonson Co	84.0	68.8	68.6	-0.2	65.8	64.0	-1.8
Lexington, KY	KY	Fayette Co	78.3	67.2	67.0	-0.2	64.3	62.8	-1.5
	KY	Graves Co	81.0	70.8	70.1	-0.7	68.5	65.5	-3.0
Huntington-Ashland, WV-KY-OH	KY	Greenup Co	84.0	71.7	71.0	-0.7	69.4	68.5	-0.9
	KY	Hancock Co	82.7	70.8	70.6	-0.2	68.8	66.9	-1.9
	KY	Hardin Co	80.0	68.1	68.2	0.1	65.6	63.8	-1.8
Evansville, IN-KY	KY	Henderson Co	79.5	69.2	68.9	-0.3	67.3	65.7	-1.6
Louisville, KY-IN	KY	Jefferson Co	84.3	74.7	74.9	0.2	72.8	71.1	-1.7
Lexington, KY	KY	Jessamine Co	78.0	67.1	66.9	-0.2	64.3	62.3	-2.0
Cincinnati, OH-KY	KY	Kenton Co	86.3	75.7	75.6	-0.1	73.3	71.3	-2.0
	KY	Livingston Co	85.0	75.0	74.4	-0.6	72.7	68.2	-4.5
	KY	McCracken Co	81.7	72.5	71.9	-0.6	70.4	65.9	-4.5
	KY	McLean Co	84.0	70.0	69.6	-0.4	67.9	66.4	-1.5
Louisville, KY-IN	KY	Oldham Co	88.0	75.5	75.6	0.1	73.2	71.0	-2.2
	KY	Perry Co	75.5	61.2	60.3	-0.9	58.3	56.7	-1.6
	KY	Pike Co	76.3	61.4	60.4	-1.0	58.1	56.8	-1.3

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
	KY	Pulaski Co	81.3	67.5	67.1	-0.4	64.7	62.4	-2.3
Lexington, KY	KY	Scott Co	70.3	58.6	58.6	0.0	56.4	54.3	-2.1
	KY	Simpson Co	84.0	67.7	67.2	-0.5	64.2	63.0	-1.2
	KY	Trigg Co	76.7	64.4	63.8	-0.6	62.3	60.4	-1.9
	KY	Warren Co	84.0	68.8	68.4	-0.4	65.6	63.9	-1.7
Baton Rouge, LA	LA	Ascension Parish	81.7	76.8	76.3	-0.5	76.0	75.2	-0.8
	LA	Beauregard Parish	75.0	70.1	68.8	-1.3	69.2	67.5	-1.7
Shreveport, LA	LA	Bossier Parish	84.7	78.1	77.0	-1.1	76.6	74.1	-2.5
Shreveport, LA	LA	Caddo Parish	79.7	73.3	72.3	-1.0	71.9	69.7	-2.2
Lake Charles, LA	LA	Calcasieu Parish	81.7	76.0	74.9	-1.1	75.3	73.8	-1.5
Baton Rouge, LA	LA	East Baton Rouge Parish	87.3	81.4	80.6	-0.8	80.4	79.3	-1.1
	LA	Grant Parish	77.7	70.8	69.3	-1.5	69.3	67.3	-2.0
	LA	Iberville Parish	85.0	79.9	79.4	-0.5	79.1	78.2	-0.9
New Orleans, LA	LA	Jefferson Parish	85.3	79.2	78.6	-0.6	78.3	77.1	-1.2
Lafayette, LA	LA	Lafayette Parish	80.7	74.2	73.4	-0.8	72.8	71.6	-1.2
Houma, LA	LA	Lafourche Parish	79.0	74.0	73.7	-0.3	73.3	72.7	-0.6
Baton Rouge, LA	LA	Livingston Parish	83.3	78.3	77.8	-0.5	77.5	76.6	-0.9
New Orleans, LA	LA	Orleans Parish	72.0	66.9	66.6	-0.3	66.3	65.4	-0.9
Monroe, LA	LA	Ouachita Parish	78.7	72.3	71.6	-0.7	71.4	70.2	-1.2
	LA	Pointe Coupee Parish	73.0	67.5	66.6	-0.9	66.5	65.4	-1.1
New Orleans, LA	LA	St Bernard Parish	79.3	73.3	72.9	-0.4	72.6	71.3	-1.3
New Orleans, LA	LA	St Charles Parish	81.7	76.5	76.2	-0.3	75.8	75.0	-0.8
New Orleans, LA	LA	St James Parish	77.3	72.7	72.3	-0.4	72.0	71.2	-0.8
New Orleans, LA	LA	St John The Baptist Parish	81.7	76.8	76.4	-0.4	76.1	75.3	-0.8
	LA	St Mary Parish	78.0	73.2	72.7	-0.5	72.6	71.8	-0.8

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Baton Rouge, LA	LA	W. Baton Rouge Parish	85.7	79.6	78.8	-0.8	78.6	77.4	-1.2
Portland, ME	ME	Cumberland Co	84.7	75.9	75.8	-0.1	73.4	73.0	-0.4
	ME	Hancock Co	92.0	80.7	80.5	-0.2	77.2	76.8	-0.4
	ME	Kennebec Co	77.7	68.1	68.0	-0.1	65.3	64.9	-0.4
	ME	Knox Co	83.3	73.7	73.6	-0.1	70.7	70.4	-0.3
	ME	Oxford Co	61.0	54.9	54.7	-0.2	53.2	52.7	-0.5
Bangor, ME	ME	Penobscot Co	83.0	72.8	72.6	-0.2	70.0	69.5	-0.5
	ME	York Co	89.0	80.3	80.2	-0.1	78.0	77.6	-0.4
Washington-Baltimore, DC-MD	MD	Anne Arundel Co	101.0	88.8	88.6	-0.2	86.0	84.9	-1.1
Washington-Baltimore, DC-MD	MD	Baltimore Co	93.0	83.9	83.7	-0.2	81.9	81.0	-0.9
Washington-Baltimore, DC-MD	MD	Calvert Co	89.0	74.5	74.1	-0.4	72.1	71.2	-0.9
Washington-Baltimore, DC-MD	MD	Carroll Co	91.3	80.3	80.0	-0.3	77.8	76.3	-1.5
Philadelphia, PA-DE-NJ	MD	Cecil Co	102.7	89.7	89.5	-0.2	86.9	85.4	-1.5
Washington-Baltimore, DC-MD	MD	Charles Co	94.7	79.0	78.7	-0.3	76.5	75.6	-0.9
Washington-Baltimore, DC-MD	MD	Frederick Co	90.0	78.5	78.1	-0.4	75.9	74.2	-1.7
Washington-Baltimore, DC-MD	MD	Harford Co	103.7	93.0	92.8	-0.2	90.6	89.6	-1.0
	MD	Kent Co	99.0	86.2	85.8	-0.4	83.4	82.3	-1.1
Washington-Baltimore, DC-MD	MD	Montgomery Co	88.7	79.5	79.3	-0.2	77.4	76.4	-1.0
Washington-Baltimore, DC-MD	MD	Prince Georges Co	95.0	84.4	84.2	-0.2	81.9	80.9	-1.0
Washington-Baltimore, DC-MD	MD	Washington Co	86.0	74.2	73.3	-0.9	71.6	69.3	-2.3
Washington-Baltimore, DC-MD	MD	Baltimore City	82.0	74.0	73.8	-0.2	72.3	71.4	-0.9
Barnstable-Yarmouth, MA	MA	Barnstable Co	94.7	83.7	83.6	-0.1	80.8	80.2	-0.6
	MA	Berkshire Co	87.0	76.3	76.1	-0.2	73.6	73.2	-0.4
Boston, MA-NH	MA	Bristol Co	92.7	83.1	83.0	-0.1	80.3	80.0	-0.3
Boston, MA-NH	MA	Essex Co	89.7	81.8	81.7	-0.1	80.6	80.2	-0.4
Springfield, MA	MA	Hampden Co	90.3	80.4	80.2	-0.2	77.3	76.7	-0.6

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Springfield, MA	MA	Hampshire Co	87.3	78.2	78.0	-0.2	75.4	74.9	-0.5
Boston, MA-NH	MA	Middlesex Co	88.7	79.3	79.1	-0.2	76.1	75.8	-0.3
Boston, MA-NH	MA	Suffolk Co	88.0	78.3	78.1	-0.2	75.2	74.9	-0.3
Boston, MA-NH	MA	Worcester Co	85.3	76.1	76.0	-0.1	73.3	72.9	-0.4
Grand Rapids, MI	MI	Allegan Co	92.0	82.4	82.1	-0.3	79.2	79.5	0.3
	MI	Benzie Co	87.7	78.5	77.9	-0.6	75.1	74.0	-1.1
Benton Harbor, MI	MI	Berrien Co	88.3	78.4	78.1	-0.3	75.4	74.8	-0.6
	MI	Cass Co	90.0	78.5	78.2	-0.3	75.1	74.4	-0.7
Lansing, MI	MI	Clinton Co	83.3	73.5	73.3	-0.2	70.2	69.0	-1.2
Detroit, MI	MI	Genesee Co	86.7	76.9	76.7	-0.2	73.4	72.5	-0.9
	MI	Huron Co	84.0	75.0	74.8	-0.2	72.4	71.9	-0.5
Lansing, MI	MI	Ingham Co	83.3	73.5	73.3	-0.2	70.1	69.0	-1.1
Kalamazoo-Battle Creek, MI	MI	Kalamazoo Co	83.0	72.2	71.9	-0.3	68.6	67.9	-0.7
Grand Rapids, MI	MI	Kent Co	84.7	75.0	74.6	-0.4	71.7	70.7	-1.0
Detroit, MI	MI	Lenawee Co	85.0	75.0	74.8	-0.2	72.1	71.2	-0.9
Detroit, MI	MI	Macomb Co	91.0	85.5	85.4	-0.1	85.1	84.2	-0.9
	MI	Mason Co	89.0	79.3	78.9	-0.4	75.8	74.7	-1.1
	MI	Missaukee Co	80.3	71.0	70.7	-0.3	68.0	67.4	-0.6
Grand Rapids, MI	MI	Muskegon Co	92.0	82.3	82.0	-0.3	79.3	79.2	-0.1
Detroit, MI	MI	Oakland Co	87.0	80.9	80.7	-0.2	80.0	79.2	-0.8
Grand Rapids, MI	MI	Ottawa Co	86.0	76.9	76.6	-0.3	73.6	74.0	0.4
Detroit, MI	MI	St Clair Co	87.7	80.8	80.6	-0.2	78.4	78.0	-0.4
Detroit, MI	MI	Washtenaw Co	89.0	81.1	81.0	-0.1	78.6	78.0	-0.6
Detroit, MI	MI	Wayne Co	88.0	84.8	84.7	-0.1	84.9	84.1	-0.8
Minneapolis-St Paul, MN	MN	Anoka Co	72.5	66.4	64.7	-1.7	63.3	60.8	-2.5
Minneapolis-St Paul, MN	MN	Dakota Co	68.0	62.7	62.0	-0.7	60.2	59.0	-1.2
	MN	Mille Lacs Co	72.0	65.5	63.1	-2.4	63.1	59.9	-3.2

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Minneapolis-St Paul, MN	MN	Washington Co	74.5	68.1	65.7	-2.4	64.9	61.8	-3.1
	MS	Adams Co	79.7	69.8	69.2	-0.6	68.2	67.2	-1.0
	MS	Bolivar Co	78.0	66.6	66.0	-0.6	64.3	63.4	-0.9
Memphis, TN	MS	De Soto Co	84.3	72.6	72.0	-0.6	70.4	69.7	-0.7
Biloxi-Gulfport, MS	MS	Hancock Co	83.7	75.5	74.4	-1.1	74.0	70.9	-3.1
Biloxi-Gulfport, MS	MS	Harrison Co	83.3	77.3	75.9	-1.4	75.8	69.3	-6.5
Jackson, MS	MS	Hinds Co	76.3	63.8	63.4	-0.4	60.1	59.1	-1.0
Biloxi-Gulfport, MS	MS	Jackson Co	83.0	77.0	76.0	-1.0	75.7	70.4	-5.3
	MS	Lauderdale Co	76.0	63.0	62.3	-0.7	59.9	58.3	-1.6
	MS	Lee Co	82.0	67.5	67.2	-0.3	63.9	62.1	-1.8
Jackson, MS	MS	Madison Co	76.3	64.6	64.1	-0.5	62.4	61.2	-1.2
	MS	Warren Co	76.7	58.8	58.4	-0.4	57.0	56.2	-0.8
Kansas City, MO-KS	MO	Cass Co	79.0	73.2	73.0	-0.2	70.6	70.5	-0.1
	MO	Cedar Co	82.0	74.2	73.8	-0.4	71.6	68.6	-3.0
Kansas City, MO-KS	MO	Clay Co	84.3	76.7	76.5	-0.2	73.7	73.1	-0.6
Springfield, MO	MO	Greene Co	74.7	63.5	63.6	0.1	60.2	59.0	-1.2
St. Louis, MO-IL	MO	Jefferson Co	87.3	76.9	76.7	-0.2	73.4	72.1	-1.3
	MO	Monroe Co	79.3	68.7	68.4	-0.3	66.4	65.2	-1.2
Kansas City, MO-KS	MO	Platte Co	81.7	75.2	75.0	-0.2	72.4	72.0	-0.4
St. Louis, MO-IL	MO	St Charles Co	90.7	80.7	80.5	-0.2	77.5	76.5	-1.0
	MO	Ste Genevieve Co	84.0	73.8	73.6	-0.2	70.8	69.8	-1.0
St. Louis, MO-IL	MO	St Louis Co	89.3	80.7	80.5	-0.2	77.8	76.7	-1.1
St. Louis, MO-IL	MO	St Louis City	88.5	79.6	79.4	-0.2	76.5	75.6	-0.9
Omaha, NE	NE	Douglas Co	67.5	61.2	60.5	-0.7	59.0	58.0	-1.0
Lincoln, NE	NE	Lancaster Co	54.0	49.3	49.2	-0.1	47.3	47.0	-0.3
	NH	Belknap Co	78.0	68.5	68.2	-0.3	65.8	65.0	-0.8
	NH	Carroll Co	66.5	60.3	60.0	-0.3	58.6	58.0	-0.6

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	NH	Cheshire Co	73.7	65.2	64.9	-0.3	63.1	62.0	-1.1
Boston, MA-NH	NH	Hillsborough Co	85.0	76.7	76.6	-0.1	74.1	73.9	-0.2
	NH	Merrimack Co	73.0	64.8	64.6	-0.2	62.3	61.8	-0.5
Boston, MA-NH	NH	Rockingham Co	82.7	75.2	75.1	-0.1	73.3	72.9	-0.4
Boston, MA-NH	NH	Strafford Co	77.3	69.2	69.1	-0.1	66.8	66.5	-0.3
Philadelphia, PA-DE-NJ	NJ	Atlantic Co	91.0	80.8	80.4	-0.4	78.5	77.7	-0.8
New York City,NY-NJ-CT	NJ	Bergen Co	92.5	86.9	86.0	-0.9	85.7	84.5	-1.2
Philadelphia, PA-DE-NJ	NJ	Camden Co	102.3	91.9	91.6	-0.3	89.5	88.3	-1.2
Philadelphia, PA-DE-NJ	NJ	Cumberland Co	96.7	84.8	84.4	-0.4	82.2	80.9	-1.3
New York City,NY-NJ-CT	NJ	Essex Co	68.0	64.6	64.4	-0.2	63.7	63.0	-0.7
Philadelphia, PA-DE-NJ	NJ	Gloucester Co	101.3	91.8	91.3	-0.5	89.6	88.2	-1.4
New York City,NY-NJ-CT	NJ	Hudson Co	89.0	84.6	84.3	-0.3	83.3	82.4	-0.9
New York City,NY-NJ-CT	NJ	Hunterdon Co	97.7	89.0	88.6	-0.4	86.5	85.4	-1.1
New York City,NY-NJ-CT	NJ	Mercer Co	103.0	95.6	95.2	-0.4	93.5	92.4	-1.1
New York City,NY-NJ-CT	NJ	Middlesex Co	100.7	92.4	92.1	-0.3	89.8	88.8	-1.0
New York City,NY-NJ-CT	NJ	Monmouth Co	96.0	86.6	86.4	-0.2	83.9	83.2	-0.7
New York City,NY-NJ-CT	NJ	Morris Co	97.7	86.5	85.5	-1.0	83.4	81.8	-1.6
New York City,NY-NJ-CT	NJ	Ocean Co	111.0	100.5	100.3	-0.2	98.0	96.9	-1.1
New York City,NY-NJ-CT	NJ	Passaic Co	88.3	80.4	79.7	-0.7	78.5	77.4	-1.1
Albany-Schenectady, NY	NY	Albany Co	83.0	73.7	73.4	-0.3	71.2	70.7	-0.5
New York City,NY-NJ-CT	NY	Bronx Co	82.7	80.5	79.7	-0.8	80.8	79.5	-1.3
Jamestown,NY	NY	Chautauqua Co	91.7	82.2	81.8	-0.4	79.9	78.6	-1.3
Elmira, NY	NY	Chemung Co	81.0	70.8	70.1	-0.7	67.7	66.9	-0.8
New York City,NY-NJ-CT	NY	Dutchess Co	91.3	81.4	81.0	-0.4	78.9	78.1	-0.8
Buffalo, NY	NY	Erie Co	96.0	87.3	86.9	-0.4	85.2	84.2	-1.0
	NY	Essex Co	88.5	77.9	77.6	-0.3	76.2	75.6	-0.6
	NY	Hamilton Co	79.0	70.3	70.0	-0.3	68.7	68.2	-0.5

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Utica-Rome, NY	NY	Herkimer Co	74.0	65.7	65.4	-0.3	64.1	63.5	-0.6
	NY	Jefferson Co	91.7	80.9	80.5	-0.4	78.7	78.0	-0.7
Syracuse, NY	NY	Madison Co	80.0	71.8	71.6	-0.2	69.8	69.4	-0.4
Rochester, NY	NY	Monroe Co	86.5	77.3	76.9	-0.4	75.0	74.3	-0.7
Buffalo, NY	NY	Niagara Co	91.0	82.7	82.3	-0.4	80.8	80.3	-0.5
Utica-Rome, NY	NY	Oneida Co	79.0	69.4	69.1	-0.3	67.0	66.3	-0.7
Syracuse, NY	NY	Onondaga Co	83.0	72.7	72.3	-0.4	69.7	69.0	-0.7
New York City,NY-NJ-CT	NY	Orange Co	86.0	77.6	77.1	-0.5	75.4	74.6	-0.8
New York City,NY-NJ-CT	NY	Putnam Co	91.3	82.8	82.3	-0.5	80.4	79.3	-1.1
New York City,NY-NJ-CT	NY	Queens Co	86.0	78.5	78.3	-0.2	76.7	76.0	-0.7
New York City,NY-NJ-CT	NY	Richmond Co	96.0	87.3	87.1	-0.2	84.6	83.9	-0.7
Albany-Schenectady, NY	NY	Saratoga Co	85.5	75.3	75.0	-0.3	72.6	71.8	-0.8
Albany-Schenectady, NY	NY	Schenectady Co	77.3	69.2	69.0	-0.2	66.9	66.4	-0.5
New York City,NY-NJ-CT	NY	Suffolk Co	98.5	91.1	90.8	-0.3	89.9	89.0	-0.9
	NY	Ulster Co	81.7	72.9	72.5	-0.4	70.6	70.0	-0.6
Rochester, NY	NY	Wayne Co	84.0	74.4	74.1	-0.3	72.2	71.6	-0.6
New York City,NY-NJ-CT	NY	Westchester Co	92.0	85.3	84.7	-0.6	84.2	83.1	-1.1
Hickory, NC	NC	Alexander Co	88.7	72.9	71.7	-1.2	68.4	66.8	-1.6
	NC	Avery Co	77.3	63.2	62.2	-1.0	58.7	57.4	-1.3
Asheville, NC	NC	Buncombe Co	82.0	67.1	66.7	-0.4	62.7	61.1	-1.6
Hickory, NC	NC	Caldwell Co	85.7	70.7	69.4	-1.3	66.0	64.4	-1.6
	NC	Camden Co	80.0	72.9	72.3	-0.6	71.1	70.5	-0.6
	NC	Caswell Co	89.7	72.2	71.7	-0.5	68.0	67.4	-0.6
Raleigh-Durham, NC	NC	Chatham Co	82.0	67.1	67.0	-0.1	62.8	62.2	-0.6
Fayetteville, NC	NC	Cumberland Co	87.0	72.2	71.9	-0.3	67.2	66.3	-0.9
Greensboro, NC	NC	Davie Co	94.7	76.2	75.5	-0.7	71.1	69.9	-1.2
	NC	Duplin Co	80.7	67.2	66.9	-0.3	63.3	62.2	-1.1

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Raleigh-Durham, NC	NC	Durham Co	89.0	72.8	72.5	-0.3	67.8	67.2	-0.6
Rocky Mount, NC	NC	Edgecombe Co	88.0	74.5	74.0	-0.5	71.0	70.1	-0.9
Greensboro, NC	NC	Forsyth Co	93.7	75.3	74.9	-0.4	70.2	69.5	-0.7
Raleigh-Durham, NC	NC	Franklin Co	89.0	73.6	73.3	-0.3	68.8	68.1	-0.7
	NC	Granville Co	92.0	75.4	75.1	-0.3	70.2	69.6	-0.6
Greensboro, NC	NC	Guilford Co	90.7	73.4	72.9	-0.5	68.4	67.9	-0.5
	NC	Haywood Co	86.3	69.8	69.9	0.1	65.6	63.9	-1.7
	NC	Jackson Co	85.0	68.5	68.6	0.1	64.5	62.6	-1.9
Raleigh-Durham, NC	NC	Johnston Co	85.7	71.4	71.1	-0.3	66.2	65.4	-0.8
	NC	Lenoir Co	81.3	67.6	67.3	-0.3	63.7	62.6	-1.1
Charlotte, NC-SC	NC	Lincoln Co	92.3	76.1	74.5	-1.6	70.3	68.5	-1.8
	NC	Martin Co	80.3	69.6	68.9	-0.7	66.7	65.6	-1.1
Charlotte, NC-SC	NC	Mecklenburg Co	100.3	82.5	81.4	-1.1	76.6	75.0	-1.6
Wilmington, NC	NC	New Hanover Co	77.3	66.3	65.8	-0.5	64.4	63.2	-1.2
	NC	Northampton Co	83.3	70.7	70.2	-0.5	67.6	66.9	-0.7
Person Co, NC	NC	Person Co	90.0	71.9	71.5	-0.4	67.8	67.2	-0.6
Greenville, NC	NC	Pitt Co	83.0	69.6	69.3	-0.3	65.8	65.1	-0.7
Greensboro, NC	NC	Randolph Co	85.0	68.7	68.4	-0.3	63.7	63.1	-0.6
	NC	Rockingham Co	88.7	70.6	70.2	-0.4	66.4	66.0	-0.4
Charlotte, NC-SC	NC	Rowan Co	99.7	81.3	80.1	-1.2	75.7	74.1	-1.6
	NC	Swain Co	73.7	58.6	58.7	0.1	55.6	53.3	-2.3
Charlotte, NC-SC	NC	Union Co	87.7	71.9	71.1	-0.8	66.4	65.2	-1.2
Raleigh-Durham, NC	NC	Wake Co	92.7	77.5	77.2	-0.3	71.5	70.8	-0.7
	NC	Yancey Co	86.3	70.9	69.9	-1.0	66.3	64.6	-1.7
Lima, OH	OH	Allen Co	87.7	77.2	76.8	-0.4	73.7	72.6	-1.1
Cleveland, OH	OH	Ashtabula Co	94.0	83.8	83.5	-0.3	81.2	80.0	-1.2
Cincinnati, OH-KY	OH	Butler Co	89.0	78.2	78.0	-0.2	75.2	73.6	-1.6

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Dayton, OH	OH	Clark Co	88.3	75.9	75.4	-0.5	71.2	69.9	-1.3
Cincinnati, OH-KY	OH	Clermont Co	90.0	78.1	78.0	-0.1	75.1	72.5	-2.6
	OH	Clinton Co	95.7	81.7	81.4	-0.3	77.4	75.7	-1.7
Cleveland, OH	OH	Cuyahoga Co	86.3	77.7	77.3	-0.4	75.1	74.0	-1.1
Columbus, OH	OH	Delaware Co	90.3	77.9	77.3	-0.6	73.4	72.1	-1.3
Columbus, OH	OH	Franklin Co	95.0	82.8	81.9	-0.9	78.3	77.0	-1.3
Cleveland, OH	OH	Geauga Co	98.3	87.1	86.6	-0.5	83.8	82.5	-1.3
Dayton, OH	OH	Greene Co	87.0	74.7	74.4	-0.3	70.5	69.3	-1.2
Cincinnati, OH-KY	OH	Hamilton Co	89.3	78.8	78.6	-0.2	75.8	74.3	-1.5
Steubenville-Weirton, OH-WV	OH	Jefferson Co	85.3	74.6	73.8	-0.8	72.3	71.2	-1.1
	OH	Knox Co	89.3	77.3	76.5	-0.8	72.6	71.4	-1.2
Cleveland, OH	OH	Lake Co	92.7	82.5	82.2	-0.3	80.1	78.9	-1.2
Huntington-Ashland, WV-KY-OH	OH	Lawrence Co	85.0	72.5	71.8	-0.7	70.2	69.3	-0.9
Columbus, OH	OH	Licking Co	89.0	76.5	75.2	-1.3	71.6	70.2	-1.4
Cleveland, OH	OH	Lorain Co	87.5	78.8	78.5	-0.3	76.5	75.5	-1.0
Toledo, OH	OH	Lucas Co	88.7	80.2	80.0	-0.2	77.9	76.8	-1.1
Columbus, OH	OH	Madison Co	89.0	76.9	76.3	-0.6	72.5	71.2	-1.3
Youngstown-Warren, OH	OH	Mahoning Co	88.0	75.8	75.2	-0.6	72.0	70.5	-1.5
Cleveland, OH	OH	Medina Co	87.7	76.9	76.5	-0.4	73.1	72.0	-1.1
Dayton, OH	OH	Miami Co	86.3	74.1	73.7	-0.4	69.5	68.3	-1.2
Dayton, OH	OH	Montgomery Co	86.7	75.1	74.7	-0.4	70.8	69.6	-1.2
Cleveland, OH	OH	Portage Co	92.0	80.4	79.8	-0.6	76.1	74.9	-1.2
	OH	Preble Co	80.3	68.6	68.2	-0.4	64.8	63.3	-1.5
Canton, OH	OH	Stark Co	89.0	77.1	76.3	-0.8	72.9	71.7	-1.2
Cleveland, OH	OH	Summit Co	94.3	82.9	82.4	-0.5	78.6	77.4	-1.2
Youngstown-Warren, OH	OH	Trumbull Co	92.5	80.2	79.7	-0.5	76.1	74.7	-1.4
Cincinnati, OH-KY	OH	Warren Co	92.0	80.2	80.0	-0.2	76.6	75.1	-1.5

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Parkersburg, WV-OH	OH	Washington Co	87.0	71.9	70.1	-1.8	69.4	65.1	-4.3
Toledo, OH	OH	Wood Co	87.0	77.8	77.4	-0.4	75.0	73.8	-1.2
	OK	Cherokee Co	76.0	71.9	71.2	-0.7	69.7	68.4	-1.3
Oklahoma City, OK	OK	Cleveland Co	77.3	69.0	68.7	-0.3	65.8	65.2	-0.6
	OK	Kay Co	75.0	69.2	68.9	-0.3	66.6	66.3	-0.3
Oklahoma City, OK	OK	Mc Clain Co	78.5	70.3	70.0	-0.3	67.2	66.6	-0.6
Oklahoma City, OK	OK	Oklahoma Co	80.7	72.0	71.7	-0.3	68.6	68.1	-0.5
	OK	Ottawa Co	79.0	74.3	74.1	-0.2	72.3	71.7	-0.6
Tulsa, OK	OK	Tulsa Co	85.0	79.4	79.2	-0.2	76.9	76.4	-0.5
Pittsburgh, PA	PA	Allegheny Co	93.0	82.7	81.9	-0.8	80.4	78.9	-1.5
	PA	Armstrong Co	92.0	80.6	79.7	-0.9	78.0	76.1	-1.9
Pittsburgh, PA	PA	Beaver Co	91.0	80.5	79.6	-0.9	77.9	76.8	-1.1
Reading, PA	PA	Berks Co	92.7	82.2	81.7	-0.5	79.4	76.9	-2.5
Altoona, PA	PA	Blair Co	84.3	73.0	72.5	-0.5	70.9	67.7	-3.2
Philadelphia, PA-DE-NJ	PA	Bucks Co	103.0	94.7	94.3	-0.4	93.0	91.8	-1.2
Johnstown, PA	PA	Cambria Co	87.7	77.6	76.9	-0.7	75.4	72.9	-2.5
State College, PA	PA	Centre Co	85.5	75.4	74.7	-0.7	73.1	70.7	-2.4
Philadelphia, PA-DE-NJ	PA	Chester Co	96.5	85.7	85.4	-0.3	83.7	82.2	-1.5
	PA	Clearfield Co	86.7	75.0	74.2	-0.8	72.3	70.5	-1.8
Harrisburg, PA	PA	Dauphin Co	91.0	81.3	80.8	-0.5	78.6	76.0	-2.6
Philadelphia, PA-DE-NJ	PA	Delaware Co	93.7	84.4	84.0	-0.4	82.4	81.0	-1.4
Erie, PA	PA	Erie Co	89.0	79.4	79.1	-0.3	77.1	76.0	-1.1
	PA	Franklin Co	93.0	80.7	80.2	-0.5	78.0	75.5	-2.5
	PA	Greene Co	90.3	74.0	73.2	-0.8	72.0	68.9	-3.1
Scranton--Wilkes-Barre, PA	PA	Lackawanna Co	85.3	74.3	73.6	-0.7	71.2	70.0	-1.2
Lancaster, PA	PA	Lancaster Co	94.0	83.9	83.6	-0.3	81.3	78.4	-2.9
	PA	Lawrence Co	78.7	68.3	67.7	-0.6	65.3	63.9	-1.4

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Allentown, PA	PA	Lehigh Co	93.3	82.8	82.1	-0.7	80.1	78.3	-1.8
Scranton--Wilkes-Barre, PA	PA	Luzerne Co	84.7	72.6	71.7	-0.9	69.4	67.9	-1.5
Williamsport, PA	PA	Lycoming Co	83.0	71.8	71.1	-0.7	68.9	67.4	-1.5
Sharon, PA	PA	Mercer Co	91.3	78.6	78.1	-0.5	74.6	73.2	-1.4
Philadelphia, PA-DE-NJ	PA	Montgomery Co	96.3	88.0	87.6	-0.4	86.5	84.9	-1.6
Allentown, PA	PA	Northampton Co	93.0	82.6	81.8	-0.8	79.8	78.1	-1.7
Harrisburg, PA	PA	Perry Co	84.7	74.5	74.0	-0.5	72.0	69.8	-2.2
Philadelphia, PA-DE-NJ	PA	Philadelphia Co	97.5	90.3	89.9	-0.4	88.9	87.5	-1.4
	PA	Tioga Co	83.7	72.4	71.8	-0.6	68.9	68.5	-0.4
Pittsburgh, PA	PA	Washington Co	87.7	78.2	77.3	-0.9	75.9	74.8	-1.1
Pittsburgh, PA	PA	Westmoreland Co	87.7	77.4	76.7	-0.7	75.3	73.9	-1.4
York, PA	PA	York Co	90.3	79.7	79.4	-0.3	77.1	74.8	-2.3
Providence, RI	RI	Kent Co	95.3	86.4	86.2	-0.2	83.9	83.2	-0.7
Providence, RI	RI	Providence Co	90.3	81.4	81.2	-0.2	78.6	78.1	-0.5
Providence, RI	RI	Washington Co	93.3	84.3	84.2	-0.1	81.8	81.3	-0.5
	SC	Abbeville Co	84.0	69.7	68.8	-0.9	65.3	63.6	-1.7
Augusta-Aiken, GA-SC	SC	Aiken Co	84.7	72.1	71.3	-0.8	69.0	67.7	-1.3
Greenville-Spartanburg, SC	SC	Anderson Co	88.0	72.4	71.9	-0.5	67.6	65.8	-1.8
	SC	Barnwell Co	81.3	67.9	67.2	-0.7	64.6	63.2	-1.4
Charleston, SC	SC	Berkeley Co	71.0	58.6	58.0	-0.6	56.2	55.1	-1.1
Charleston, SC	SC	Charleston Co	74.0	61.1	60.4	-0.7	58.6	57.4	-1.2
Greenville-Spartanburg, SC	SC	Cherokee Co	86.0	69.2	68.3	-0.9	64.2	62.8	-1.4
	SC	Chester Co	84.3	70.9	69.5	-1.4	65.8	64.3	-1.5
	SC	Colleton Co	78.7	66.3	65.6	-0.7	63.2	61.8	-1.4
	SC	Darlington Co	84.7	70.8	70.2	-0.6	66.9	65.8	-1.1
Augusta-Aiken, GA-SC	SC	Edgefield Co	80.7	67.5	66.7	-0.8	63.2	61.9	-1.3
	SC	Oconee Co	84.0	67.9	67.2	-0.7	62.4	61.1	-1.3

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Greenville-Spartanburg, SC	SC	Pickens Co	85.3	70.1	69.5	-0.6	65.2	63.7	-1.5
Columbia, SC	SC	Richland Co	93.0	77.7	76.9	-0.8	72.1	70.7	-1.4
Greenville-Spartanburg, SC	SC	Spartanburg Co	90.0	73.0	72.2	-0.8	67.6	66.3	-1.3
Union Co, SC	SC	Union Co	80.7	66.4	65.3	-1.1	61.7	60.1	-1.6
	SC	Williamsburg Co	72.3	59.9	59.0	-0.9	57.1	55.5	-1.6
Charlotte, NC-SC	SC	York Co	83.3	70.0	68.5	-1.5	64.8	63.2	-1.6
Knovville, TN	TN	Anderson Co	89.7	67.9	67.8	-0.1	63.9	62.8	-1.1
Knoxville, TN	TN	Blount Co	94.0	74.3	74.1	-0.2	69.8	68.5	-1.3
Nashville, TN	TN	Davidson Co	81.3	69.3	68.9	-0.4	65.6	64.9	-0.7
Chattanooga, TN-GA	TN	Hamilton Co	90.7	74.3	72.7	-1.6	69.7	67.6	-2.1
	TN	Haywood Co	89.0	75.6	75.0	-0.6	72.6	71.4	-1.2
	TN	Jefferson Co	94.0	75.6	75.6	0.0	71.7	69.6	-2.1
Knoxville, TN	TN	Knox Co	94.7	73.2	73.1	-0.1	69.4	68.1	-1.3
	TN	Lawrence Co	79.3	65.0	64.2	-0.8	61.4	59.6	-1.8
	TN	Meigs Co	90.5	72.4	71.1	-1.3	68.3	66.2	-2.1
	TN	Putnam Co	85.0	69.9	69.2	-0.7	66.3	64.4	-1.9
Nashville, TN	TN	Rutherford Co	83.3	69.5	68.9	-0.6	64.9	63.7	-1.2
Knoxville, TN	TN	Sevier Co	96.0	76.3	76.5	0.2	72.7	70.2	-2.5
Memphis, TN	TN	Shelby Co	90.7	77.3	76.7	-0.6	74.3	73.6	-0.7
Johnson City, TN-VA	TN	Sullivan Co	89.3	73.9	74.2	0.3	71.8	69.9	-1.9
Nashville, TN	TN	Sumner Co	89.0	75.8	75.4	-0.4	72.0	71.3	-0.7
Nashville, TN	TN	Williamson Co	86.3	71.2	70.2	-1.0	66.8	65.4	-1.4
Nashville, TN	TN	Wilson Co	84.7	72.3	71.8	-0.5	68.6	67.6	-1.0
San Antonio, TX	TX	Bexar Co	85.7	70.2	69.7	-0.5	67.6	66.7	-0.9
Houston, TX	TX	Brazoria Co	91.0	84.5	84.1	-0.4	83.5	82.7	-0.8
Dallas, TX	TX	Collin Co	93.3	83.1	82.5	-0.6	78.5	77.6	-0.9
Dallas, TX	TX	Dallas Co	91.0	82.7	82.2	-0.5	78.8	77.9	-0.9

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Dallas, TX	TX	Denton Co	99.0	87.4	86.8	-0.6	82.3	81.3	-1.0
Dallas, TX	TX	Ellis Co	85.3	75.2	74.6	-0.6	71.4	70.4	-1.0
Houston, TX	TX	Galveston Co	92.0	85.1	84.6	-0.5	84.1	83.2	-0.9
Longview, TX	TX	Gregg Co	88.3	79.8	79.1	-0.7	78.0	76.3	-1.7
Houston, TX	TX	Harris Co	105.0	97.9	97.4	-0.5	97.3	96.4	-0.9
Longview, TX	TX	Harrison Co	76.0	68.5	67.7	-0.8	67.2	65.2	-2.0
Dallas, TX	TX	Hood Co	84.0	73.8	72.7	-1.1	70.1	68.7	-1.4
Beaumont-Port Arthur, TX	TX	Jefferson Co	91.0	85.6	85.0	-0.6	85.0	84.1	-0.9
Dallas, TX	TX	Johnson Co	89.5	79.0	78.2	-0.8	75.1	73.9	-1.2
Dallas, TX	TX	Kaufman Co	71.5	63.9	63.4	-0.5	60.9	60.2	-0.7
Houston, TX	TX	Montgomery Co	91.0	81.6	81.2	-0.4	78.7	77.9	-0.8
Beaumont-Port Arthur, TX	TX	Orange Co	78.3	72.7	71.8	-0.9	72.0	70.8	-1.2
Dallas, TX	TX	Parker Co	87.5	77.1	76.0	-1.1	73.0	71.6	-1.4
Dallas, TX	TX	Rockwall Co	82.0	73.9	73.4	-0.5	70.5	69.7	-0.8
Tyler, TX	TX	Smith Co	82.5	73.8	73.1	-0.7	71.5	70.0	-1.5
Dallas, TX	TX	Tarrant Co	98.3	87.8	87.2	-0.6	83.1	82.2	-0.9
Austin-San Marcos, TX	TX	Travis Co	84.3	73.4	72.9	-0.5	70.3	69.4	-0.9
	VT	Bennington Co	79.7	70.3	70.0	-0.3	67.9	67.2	-0.7
Washington-Baltimore, DC-MD	VA	Arlington Co	95.7	86.2	86.0	-0.2	84.7	83.8	-0.9
	VA	Caroline Co	84.0	72.1	71.7	-0.4	69.7	68.8	-0.9
Richmond-Petersburg, VA	VA	Charles City Co	89.3	79.2	77.7	-1.5	75.7	74.9	-0.8
Richmond-Petersburg, VA	VA	Chesterfield Co	86.0	75.8	74.7	-1.1	72.6	71.8	-0.8
Washington-Baltimore, DC-MD	VA	Fairfax Co	96.3	85.7	85.4	-0.3	83.9	83.0	-0.9
Washington-Baltimore, DC-MD	VA	Fauquier Co	81.0	69.6	69.3	-0.3	67.6	66.8	-0.8
	VA	Frederick Co	84.3	71.5	70.8	-0.7	68.9	67.1	-1.8
Richmond-Petersburg, VA	VA	Hanover Co	94.0	82.0	80.9	-1.1	78.7	77.9	-0.8
Richmond-Petersburg, VA	VA	Henrico Co	90.0	79.1	78.2	-0.9	76.3	75.5	-0.8

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Washington-Baltimore, DC-MD	VA	Loudoun Co	89.3	78.9	78.6	-0.3	76.5	75.4	-1.1
	VA	Madison Co	86.3	69.3	68.7	-0.6	66.7	65.0	-1.7
	VA	Page Co	81.3	64.8	64.1	-0.7	62.5	60.5	-2.0
Washington-Baltimore, DC-MD	VA	Prince William Co	85.7	75.1	74.9	-0.2	72.9	72.0	-0.9
Roanoke, VA	VA	Roanoke Co	86.0	72.9	72.5	-0.4	69.6	68.8	-0.8
	VA	Rockbridge Co	79.0	66.9	66.5	-0.4	64.3	63.2	-1.1
Washington-Baltimore, DC-MD	VA	Stafford Co	86.3	73.6	73.3	-0.3	71.3	70.5	-0.8
	VA	Wythe Co	80.7	64.3	63.8	-0.5	61.8	60.6	-1.2
Washington-Baltimore, DC-MD	VA	Alexandria City	90.0	81.1	80.9	-0.2	79.6	78.8	-0.8
Norfolk, VA-NC	VA	Hampton City	88.7	79.2	78.7	-0.5	77.3	76.6	-0.7
Norfolk, VA-NC	VA	Suffolk City	87.3	78.0	77.5	-0.5	76.1	75.4	-0.7
Washington-Baltimore, DC-MD	WV	Berkeley Co	86.0	74.3	73.3	-1.0	71.8	69.6	-2.2
Huntington-Ashland, WV-KY-OH	WV	Cabell Co	88.0	76.3	75.5	-0.8	74.1	73.2	-0.9
	WV	Greenbrier Co	81.7	65.2	64.8	-0.4	62.6	60.8	-1.8
Steubenville-Weirton, OH-WV	WV	Hancock Co	84.3	73.7	72.9	-0.8	71.5	70.3	-1.2
Charleston, WV	WV	Kanawha Co	87.0	71.1	70.6	-0.5	68.5	68.0	-0.5
	WV	Monongalia Co	80.0	66.8	65.7	-1.1	65.0	63.6	-1.4
Wheeling, WV-OH	WV	Ohio Co	84.7	71.4	70.4	-1.0	68.7	66.5	-2.2
Parkersburg, WV-OH	WV	Wood Co	87.7	72.0	69.7	-2.3	68.7	65.0	-3.7
Green Bay, WI	WI	Brown Co	81.7	73.9	72.6	-1.3	71.1	69.0	-2.1
	WI	Columbia Co	77.7	68.4	67.9	-0.5	64.5	63.7	-0.8
Madison, WI	WI	Dane Co	77.3	68.3	67.6	-0.7	64.5	63.6	-0.9
	WI	Dodge Co	81.0	72.2	71.7	-0.5	68.4	67.7	-0.7
	WI	Door Co	92.7	83.3	82.1	-1.2	79.9	77.9	-2.0
	WI	Fond Du Lac Co	79.0	70.4	69.5	-0.9	67.2	65.9	-1.3
	WI	Green Co	74.5	65.8	65.2	-0.6	62.7	61.6	-1.1
	WI	Jefferson Co	84.5	74.5	73.9	-0.6	70.4	69.5	-0.9

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Chicago, IL-IN	WI	Kenosha Co	98.7	91.3	91.0	-0.3	89.4	88.8	-0.6
	WI	Kewaunee Co	90.0	81.0	79.9	-1.1	77.6	75.7	-1.9
	WI	Manitowoc Co	90.0	80.9	80.0	-0.9	77.4	75.9	-1.5
Wausau, WI	WI	Marathon Co	73.7	66.3	64.3	-2.0	63.3	60.8	-2.5
Milwaukee	WI	Milwaukee Co	90.7	82.5	82.1	-0.4	79.6	79.0	-0.6
Oshkosh, WI	WI	Outagamie Co	77.3	69.6	68.4	-1.2	66.8	64.9	-1.9
Milwaukee, WI	WI	Ozaukee Co	95.3	86.2	85.8	-0.4	82.9	82.0	-0.9
Milwaukee, WI	WI	Racine Co	91.7	84.2	83.9	-0.3	82.0	81.6	-0.4
Janesville-Beloit, WI	WI	Rock Co	84.3	73.9	73.4	-0.5	69.9	69.1	-0.8
Minneapolis-St Paul, MN	WI	St Croix Co	72.7	66.2	62.8	-3.4	63.1	58.9	-4.2
	WI	Sauk Co	74.3	66.3	63.0	-3.3	63.2	59.9	-3.3
Sheboygan WI	WI	Sheboygan Co	98.0	88.3	87.7	-0.6	84.7	83.6	-1.1
	WI	Vernon Co	71.7	64.2	63.1	-1.1	61.2	59.6	-1.6
	WI	Walworth Co	83.3	74.2	73.7	-0.5	70.8	70.1	-0.7
Milwaukee, WI	WI	Washington Co	82.7	75.4	75.0	-0.4	72.4	71.8	-0.6
Milwaukee, WI	WI	Waukesha Co	82.7	75.1	74.7	-0.4	71.9	71.3	-0.6
Oshkosh, WI	WI	Winnebago Co	80.0	71.7	69.9	-1.8	68.9	66.3	-2.6

Technical Support Document
for the Final
Clean Air Interstate Rule
Air Quality Modeling Analyses

Appendix F

Annual PM2.5: Average Ambient and Projected 2010/2015 Base and CAIR

Table F-1. Annual Average PM2.5 Concentrations (μg/m^3): Average 1999-2003, 2010 Base and CAIR, 2015 Base and CAIR; and the impact of CAIR on PM2.5 in 2010 and 2015.

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Mobile, AL	AL	Baldwin Co	11.43	10.87	10.18	-0.69	10.88	9.83	-1.05
	AL	Clay Co	14.27	13.72	12.46	-1.26	13.62	11.89	-1.73
Florence, AL	AL	Colbert Co	13.94	13.60	12.38	-1.22	13.53	12.17	-1.36
	AL	DeKalb Co	15.62	15.23	13.97	-1.26	15.24	13.46	-1.78
	AL	Escambia Co	13.03	12.51	11.77	-0.74	12.50	11.37	-1.13
Dothan, AL	AL	Houston Co	14.69	14.06	13.32	-0.74	14.07	12.98	-1.09
Birmingham, AL	AL	Jefferson Co	19.04	18.57	17.46	-1.11	18.85	17.36	-1.49
Huntsville, AL	AL	Madison Co	14.81	14.26	13.05	-1.21	14.20	12.62	-1.58
Mobile, AL	AL	Mobile Co	13.69	13.20	12.58	-0.62	13.52	12.57	-0.95
Montgomery, AL	AL	Montgomery Co	15.41	15.12	14.10	-1.02	15.24	13.87	-1.37
Decatur, AL	AL	Morgan Co	15.81	15.29	14.11	-1.18	15.26	13.85	-1.41
Columbus, GA-AL	AL	Russell Co	16.70	16.17	15.15	-1.02	16.10	14.66	-1.44
Birmingham, AL	AL	Shelby Co	15.33	14.92	13.83	-1.09	14.96	13.48	-1.48
	AL	Sumter Co	13.28	12.79	11.91	-0.88	12.74	11.53	-1.21
	AL	Talladega Co	16.05	15.34	14.00	-1.34	15.22	13.35	-1.87
	AR	Arkansas Co	11.90	11.37	10.71	-0.66	11.39	10.62	-0.77
	AR	Ashley Co	11.80	11.30	10.66	-0.64	11.38	10.61	-0.77
Jonesboro, AR	AR	Craighead Co	12.39	11.85	11.07	-0.78	11.79	10.89	-0.90
Memphis, TN	AR	Crittenden Co	13.35	13.12	12.33	-0.79	13.59	12.64	-0.95
Little Rock, AR	AR	Faulkner Co	12.57	12.14	11.55	-0.59	12.21	11.52	-0.69
Pine Bluff, AR	AR	Jefferson Co	13.28	13.02	12.44	-0.58	13.33	12.65	-0.68
	AR	Mississippi Co	12.04	11.74	10.93	-0.81	11.79	10.85	-0.94
	AR	Phillips Co	12.49	11.86	11.09	-0.77	11.90	10.98	-0.92
	AR	Polk Co	11.35	10.78	10.31	-0.47	10.85	10.26	-0.59
	AR	Pope Co	12.48	12.24	11.76	-0.48	12.37	11.80	-0.57
Little Rock, AR	AR	Pulaski Co	14.11	13.69	13.04	-0.65	13.85	13.09	-0.76

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Fort Smith, AR-OK	AR	Sebastian Co	12.66	12.07	11.62	-0.45	12.12	11.55	-0.57
	AR	Union Co	13.03	12.76	12.10	-0.66	13.09	12.46	-0.63
	AR	White Co	11.91	11.46	10.83	-0.63	11.54	10.80	-0.74
New Haven-Meriden, CT	CT	Fairfield Co	13.52	12.45	11.45	-1.00	12.14	10.97	-1.17
Hartford, CT	CT	Hartford Co	12.88	11.89	11.10	-0.79	11.67	10.77	-0.90
New London-Norwich, CT	CT	New London Co	11.92	11.00	10.16	-0.84	10.80	9.84	-0.96
Dover, DE	DE	Kent Co	13.30	12.96	10.97	-1.99	12.76	10.43	-2.33
Philadelphia, PA	DE	New Castle Co	16.41	16.56	14.84	-1.72	16.47	14.41	-2.06
	DE	Sussex Co	14.08	13.56	11.54	-2.02	13.30	10.97	-2.33
Washington-Baltimore, DC-MD	DC	District of Columbia	16.25	15.84	13.68	-2.16	15.57	13.11	-2.46
Gainesville, FL	FL	Alachua Co	10.36	9.69	9.21	-0.48	9.67	8.91	-0.76
Melbourne, FL	FL	Brevard Co	7.88	6.73	6.32	-0.41	6.68	6.10	-0.58
Miami-Fort Lauderdale, FL	FL	Broward Co	8.52	7.88	7.58	-0.30	7.93	7.55	-0.38
	FL	Citrus Co	9.73	8.82	8.33	-0.49	8.79	7.90	-0.89
Jacksonville, FL	FL	Duval Co	10.82	9.91	9.44	-0.47	9.93	9.23	-0.70
Pensacola, FL	FL	Escambia Co	12.21	11.96	11.30	-0.66	12.13	11.05	-1.08
Tampa-St. Petersburg, FL	FL	Hillsborough Co	11.64	9.92	9.50	-0.42	9.86	9.19	-0.67
Fort Myers, FL	FL	Lee Co	8.94	7.33	6.95	-0.38	7.33	6.83	-0.50
Tallahassee, FL	FL	Leon Co	12.93	12.31	11.78	-0.53	12.32	11.52	-0.80
Sarasota, FL	FL	Manatee Co	9.96	8.14	7.71	-0.43	8.13	7.47	-0.66
Ocala, FL	FL	Marion Co	10.37	9.38	8.96	-0.42	9.40	8.62	-0.78
Miami-Fort Lauderdale, FL	FL	Miami-Dade Co	9.82	8.99	8.65	-0.34	8.93	8.51	-0.42
Orlando, FL	FL	Orange Co	10.73	9.23	8.80	-0.43	9.16	8.43	-0.73
West Palm Beach-Boca Raton, FL	FL	Palm Beach Co	7.69	6.60	6.25	-0.35	6.60	6.16	-0.44
Tampa-St. Petersburg, FL	FL	Pinellas Co	11.14	9.22	8.80	-0.42	9.22	8.58	-0.64
Lakeland-Winter Haven, FL	FL	Polk Co	10.91	9.42	9.03	-0.39	9.42	8.82	-0.60
Fort Pierce, FL	FL	St. Lucie Co	9.00	7.66	7.22	-0.44	7.70	7.12	-0.58
Sarasota, FL	FL	Sarasota Co	9.86	8.13	7.70	-0.43	8.09	7.46	-0.63
Orlando, FL	FL	Seminole Co	9.78	8.34	7.91	-0.43	8.27	7.56	-0.71

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Daytona Beach, FL	FL	Volusia Co	9.81	8.58	8.07	-0.51	8.51	7.70	-0.81
Macon, GA	GA	Bibb Co	16.42	16.27	15.17	-1.10	16.41	14.83	-1.58
Savannah, GA	GA	Chatham Co	14.99	14.86	14.02	-0.84	15.06	13.86	-1.20
Athens, GA	GA	Clarke Co	17.07	16.39	14.96	-1.43	16.15	14.10	-2.05
Atlanta, GA	GA	Clayton Co	17.51	17.39	16.29	-1.10	17.46	15.85	-1.61
Atlanta, GA	GA	Cobb Co	17.12	16.57	15.35	-1.22	16.51	14.67	-1.84
Atlanta, GA	GA	DeKalb Co	16.86	16.75	15.70	-1.05	16.82	15.29	-1.53
Albany, GA	GA	Dougherty Co	15.10	14.72	13.85	-0.87	14.71	13.43	-1.28
	GA	Floyd Co	16.78	16.87	15.87	-1.00	17.33	15.79	-1.54
Atlanta, GA	GA	Fulton Co	19.51	18.02	16.98	16.98	18.00	16.47	16.47
	GA	Glynn Co	12.01	11.61	10.99	-0.62	11.66	10.79	-0.87
Atlanta, GA	GA	Gwinnett Co	16.34	14.99	14.02	-0.97	14.97	13.53	-1.44
	GA	Hall Co	16.08	15.60	14.28	-1.32	15.36	13.48	-1.88
Macon, GA	GA	Houston Co	12.85	12.57	11.59	-0.98	12.56	11.14	-1.42
	GA	Lowndes Co	12.04	11.55	10.98	-0.57	11.57	10.74	-0.83
Columbus, GA-AL	GA	Muscogee Co	16.19	15.65	14.57	-1.08	15.58	14.06	-1.52
Atlanta, GA	GA	Paulding Co	15.34	14.86	13.47	-1.39	14.79	12.72	-2.07
Augusta-Aiken, GA-SC	GA	Richmond Co	15.86	15.68	14.64	-1.04	15.76	14.23	-1.53
Chattanooga, TN-GA	GA	Walker Co	15.73	15.43	14.22	-1.21	15.37	13.65	-1.72
	GA	Washington Co	15.44	15.31	14.22	-1.09	15.34	13.67	-1.67
	GA	Wilkinson Co	16.26	16.27	15.22	-1.05	16.54	15.01	-1.53
	IL	Adams Co	13.04	12.41	11.90	-0.51	12.36	11.74	-0.62
Champaign-Urbana, IL	IL	Champaign Co	12.93	12.60	11.64	-0.96	12.52	11.45	-1.07
Chicago, IL-IN	IL	Cook Co	18.00	17.52	16.88	-0.64	17.71	16.95	-0.76
Chicago, IL-IN	IL	DuPage Co	15.01	14.42	13.81	-0.61	14.58	13.88	-0.70
Chicago, IL-IN	IL	Kane Co	14.40	13.88	13.31	-0.57	13.84	13.16	-0.68
Chicago, IL-IN	IL	Lake Co	12.98	12.47	12.02	-0.45	12.43	11.90	-0.53
Chicago, IL-IN	IL	McHenry Co	13.14	12.66	12.09	-0.57	12.60	11.93	-0.67
Bloomington, IL	IL	McLean Co	13.87	13.44	12.48	-0.96	13.42	12.32	-1.10
Decatur, IL	IL	Macon Co	14.22	13.85	12.92	-0.93	13.85	12.81	-1.04

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St. Louis, MO-IL	IL	Madison Co	17.40	16.66	15.96	-0.70	16.90	16.07	-0.83
Peoria, IL	IL	Peoria Co	14.33	13.88	12.92	-0.96	13.99	12.88	-1.11
	IL	Randolph Co	13.06	12.54	11.77	-0.77	12.48	11.58	-0.90
Davenport, IA-IL	IL	Rock Island Co	12.44	11.73	11.20	-0.53	11.66	11.04	-0.62
St. Louis, MO-IL	IL	St. Clair Co	16.87	16.24	15.54	-0.70	16.49	15.64	-0.85
Springfield, IL	IL	Sangamon Co	13.60	13.14	12.30	-0.84	13.11	12.13	-0.98
Chicago, IL-IN	IL	Will Co	15.35	15.03	14.30	-0.73	15.12	14.27	-0.85
Fort Wayne, IN	IN	Allen Co	14.52	14.32	13.31	-1.01	14.21	13.07	-1.14
Louisville, KY-IN	IN	Clark Co	16.90	16.51	15.15	-1.36	16.37	14.79	-1.58
Muncie, IN	IN	Delaware Co	14.71	14.45	13.21	-1.24	14.25	12.89	-1.36
	IN	Dubois Co	16.02	15.73	14.37	-1.36	15.66	14.16	-1.50
Elkhart, IN	IN	Elkhart Co	15.31	14.75	13.93	-0.82	14.73	13.80	-0.93
Louisville, KY-IN	IN	Floyd Co	15.35	14.83	13.54	-1.29	14.75	13.27	-1.48
	IN	Henry Co	13.55	13.28	12.06	-1.22	13.09	11.75	-1.34
Kokomo, IN	IN	Howard Co	14.88	14.56	13.44	-1.12	14.39	13.14	-1.25
	IN	Knox Co	13.83	13.55	12.10	-1.45	13.37	11.83	-1.54
Chicago, IL-IN	IN	Lake Co	17.76	17.26	16.48	-0.78	17.27	16.36	-0.91
	IN	La Porte Co	13.52	13.17	12.47	-0.70	13.20	12.39	-0.81
Indianapolis, IN	IN	Madison Co	14.82	14.51	13.28	-1.23	14.32	12.96	-1.36
Indianapolis, IN	IN	Marion Co	16.88	16.83	15.54	-1.29	16.77	15.38	-1.39
Chicago, IL-IN	IN	Porter Co	14.00	13.86	13.31	-0.55	14.38	13.73	-0.65
South Bend, IN	IN	St. Joseph Co	14.35	13.91	13.17	-0.74	13.86	13.00	-0.86
	IN	Spencer Co	14.43	13.96	12.63	-1.33	13.84	12.28	-1.56
Evansville-Henderson, IN-KY	IN	Vanderburgh Co	15.60	15.54	14.26	-1.28	15.56	14.17	-1.39
Terre Haute, IN	IN	Vigo Co	14.88	14.61	13.26	-1.35	14.53	13.01	-1.52
Cedar Falls, IA	IA	Black Hawk Co	11.48	10.75	10.39	-0.36	10.70	10.25	-0.45
	IA	Cerro Gordo Co	10.55	9.74	9.45	-0.29	9.63	9.29	-0.34
	IA	Clinton Co	12.26	11.63	11.08	-0.55	11.54	10.89	-0.65
	IA	Emmet Co	8.82	8.14	7.90	-0.24	8.00	7.73	-0.27
Iowa City, IA	IA	Johnson Co	11.52	10.86	10.45	-0.41	10.78	10.28	-0.50

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Cedar Rapids, IA	IA	Linn Co	11.23	10.73	10.34	-0.39	10.70	10.22	-0.48
	IA	Muscatine Co	13.03	12.40	11.88	-0.52	12.44	11.81	-0.63
Des Moines, IA	IA	Polk Co	10.68	9.96	9.66	-0.30	9.88	9.52	-0.36
Omaha, NE-IA	IA	Pottawattamie Co	10.48	9.83	9.61	-0.22	9.79	9.54	-0.25
Davenport, IA-IL	IA	Scott Co	12.76	12.00	11.49	-0.51	11.93	11.31	-0.62
	IA	Van Buren Co	10.45	9.89	9.45	-0.44	9.81	9.27	-0.54
Sioux City, IA-NE	IA	Woodbury Co	10.08	9.38	9.17	-0.21	9.29	9.07	-0.22
Kansas City, MO-KS	KS	Johnson Co	11.95	11.17	10.85	-0.32	11.09	10.71	-0.38
	KS	Linn Co	10.92	10.26	9.93	-0.33	10.20	9.78	-0.42
Wichita, KS	KS	Sedgwick Co	11.39	10.53	10.27	-0.26	10.49	10.20	-0.29
Topeka, KS	KS	Shawnee Co	11.03	10.47	10.22	-0.25	10.44	10.14	-0.30
	KS	Sumner Co	10.31	9.55	9.29	-0.26	9.51	9.22	-0.29
Kansas City, MO-KS	KS	Wyandotte Co	13.69	12.90	12.59	-0.31	12.98	12.60	-0.38
	KY	Bell Co	15.26	14.67	13.20	13.20	14.39	12.54	12.54
Huntington-Ashland, WV-KY-OH	KY	Boyd Co	15.37	15.23	13.38	-1.85	15.06	12.95	-2.11
Louisville, KY-IN	KY	Bullitt Co	15.61	15.10	13.67	-1.43	14.83	13.13	-1.70
Cincinnati, OH-KY	KY	Campbell Co	15.09	14.89	13.35	-1.54	14.68	12.89	-1.79
Huntington-Ashland, WV-KY-OH	KY	Carter Co	12.71	12.54	10.73	-1.81	12.21	10.17	-2.04
Clarksville, TN-KY	KY	Christian Co	14.10	13.63	12.39	-1.24	13.50	12.11	-1.39
Owensboro, KY	KY	Daviess Co	14.94	14.15	12.88	-1.27	14.05	12.65	-1.40
Lexington, KY	KY	Fayette Co	16.36	15.95	14.17	-1.78	15.62	13.54	-2.08
	KY	Franklin Co	14.19	13.86	12.27	-1.59	13.56	11.72	-1.84
	KY	Hardin Co	14.59	14.10	12.68	-1.42	13.85	12.14	-1.71
Louisville, KY-IN	KY	Jefferson Co	17.07	16.71	15.44	-1.27	16.61	15.13	-1.48
Cincinnati, OH-KY	KY	Kenton Co	15.50	15.30	13.72	-1.58	15.09	13.26	-1.83
	KY	McCracken Co	14.22	13.91	12.81	-1.10	13.88	12.66	-1.22
Lexington, KY	KY	Madison Co	14.26	13.87	12.20	-1.67	13.54	11.55	-1.99
	KY	Perry Co	13.54	13.12	11.51	-1.61	12.80	10.93	-1.87
	KY	Pike Co	14.86	14.41	12.59	-1.82	14.05	11.95	-2.10
	KY	Warren Co	14.55	14.07	12.72	-1.35	13.88	12.30	-1.58

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Shreveport, LA	LA	Caddo Parish	13.13	12.58	12.06	-0.52	12.74	12.04	-0.70
Lake Charles, LA	LA	Calcasieu Parish	12.02	11.68	11.04	-0.64	11.82	11.01	-0.81
Baton Rouge, LA	LA	East Baton Rouge Parish	13.71	13.78	13.30	-0.48	14.27	13.66	-0.61
	LA	Iberville Parish	13.08	12.93	12.47	-0.46	13.34	12.76	-0.58
New Orleans, LA	LA	Jefferson Parish	12.82	12.50	11.99	-0.51	12.79	12.07	-0.72
Lafayette, LA	LA	Lafayette Parish	11.60	11.38	10.78	-0.60	11.55	10.81	-0.74
New Orleans, LA	LA	Orleans Parish	13.05	12.74	12.20	-0.54	13.03	12.29	-0.74
Monroe, LA	LA	Ouachita Parish	12.15	11.95	11.41	-0.54	12.28	11.59	-0.69
New Orleans, LA	LA	St. Bernard Parish	10.88	10.41	9.79	-0.62	10.50	9.63	-0.87
	LA	Tangipahoa Parish	12.15	11.68	11.04	-0.64	11.84	11.00	-0.84
Houma, LA	LA	Terrebonne Parish	10.61	10.40	9.83	-0.57	10.58	9.82	-0.76
Baton Rouge, LA	LA	West Baton Rouge Parish	13.29	13.37	12.89	-0.48	13.84	13.23	-0.61
Lewiston, ME	ME	Androscoggin Co	10.60	10.16	9.75	-0.41	10.04	9.58	-0.46
	ME	Aroostook Co	11.16	11.41	11.11	-0.30	11.38	11.04	-0.34
Portland, ME	ME	Cumberland Co	11.44	10.66	10.23	-0.43	10.50	10.02	-0.48
	ME	Hancock Co	6.20	5.98	5.65	-0.33	5.95	5.58	-0.37
	ME	Kennebec Co	10.55	10.21	9.81	-0.40	10.12	9.67	-0.45
	ME	Oxford Co	10.29	10.23	9.74	-0.49	10.15	9.60	-0.55
Bangor, ME	ME	Penobscot Co	9.87	9.81	9.46	-0.35	9.73	9.34	-0.39
	ME	York Co	9.63	9.07	8.64	-0.43	8.97	8.50	-0.47
Washington-Baltimore, DC-MD	MD	Anne Arundel Co	15.59	15.26	12.98	-2.28	15.02	12.38	-2.64
Washington-Baltimore, DC-MD	MD	Baltimore Co	15.20	15.02	13.09	-1.93	15.08	12.75	-2.33
Washington-Baltimore, DC-MD	MD	Harford Co	13.54	13.40	11.62	-1.78	13.46	11.30	-2.16
Washington-Baltimore, DC-MD	MD	Montgomery Co	13.01	12.82	10.84	-1.98	12.59	10.34	-2.25
Washington-Baltimore, DC-MD	MD	Washington Co	14.40	13.99	11.69	-2.30	13.63	11.03	-2.60
Washington-Baltimore, DC-MD	MD	Baltimore city	17.18	16.96	14.88	-2.08	17.04	14.50	-2.54
Pittsfield, MA	MA	Berkshire Co	12.40	11.68	10.93	-0.75	11.49	10.66	-0.83
Springfield, MA	MA	Hampden Co	13.80	12.81	12.10	-0.71	12.59	11.79	-0.80

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Boston, MA-NH	MA	Plymouth Co	11.34	10.65	10.02	-0.63	10.50	9.78	-0.72
Boston, MA-NH	MA	Suffolk Co	12.81	12.05	11.48	-0.57	11.80	11.15	-0.65
Grand Rapids, MI	MI	Allegan Co	12.36	12.02	11.41	-0.61	11.93	11.21	-0.72
Saginaw, MI	MI	Bay Co	11.22	11.04	10.42	-0.62	11.01	10.30	-0.71
Benton Harbor, MI	MI	Berrien Co	12.60	12.26	11.62	-0.64	12.18	11.42	-0.76
	MI	Chippewa Co	8.28	8.06	7.83	-0.23	7.99	7.73	-0.26
Detroit-Ann Arbor-Flint, MI	MI	Genesee Co	12.70	12.34	11.55	-0.79	12.19	11.30	-0.89
Lansing, MI	MI	Ingham Co	13.35	12.97	12.19	-0.78	12.80	11.91	-0.89
Kalamazoo-Battle Creek, MI	MI	Kalamazoo Co	14.92	14.45	13.66	-0.79	14.31	13.39	-0.92
Grand Rapids, MI	MI	Kent Co	13.91	13.46	12.85	-0.61	13.33	12.60	-0.73
Detroit, MI	MI	Macomb Co	13.31	13.17	12.23	-0.94	13.05	11.99	-1.06
Detroit, MI	MI	Monroe Co	15.33	15.00	14.03	-0.97	14.87	13.76	-1.11
Grand Rapids, MI	MI	Muskegon Co	12.23	11.88	11.39	-0.49	11.81	11.19	-0.62
Detroit, MI	MI	Oakland Co	14.85	14.73	13.70	-1.03	14.63	13.48	-1.15
Grand Rapids, MI	MI	Ottawa Co	13.41	12.97	12.41	-0.56	12.86	12.17	-0.69
Saginaw, MI	MI	Saginaw Co	10.80	10.68	10.07	-0.61	10.66	9.97	-0.69
Detroit, MI	MI	St. Clair Co	13.92	13.82	12.91	-0.91	13.72	12.67	-1.05
Detroit, MI	MI	Washtenaw Co	14.57	14.30	13.28	-1.02	14.13	12.99	-1.14
Detroit, MI	MI	Wayne Co	19.62	19.41	18.23	-1.18	19.28	17.95	-1.33
Minneapolis-St Paul, MN	MN	Dakota Co	10.32	9.44	9.17	9.17	9.31	8.99	8.99
Minneapolis-St Paul, MN	MN	Hennepin Co	10.78	9.70	9.46	-0.24	9.60	9.34	-0.26
	MN	Mille Lacs Co	7.40	6.89	6.71	-0.18	6.81	6.62	-0.19
Rochester, MN	MN	Olmsted Co	11.17	10.25	9.92	-0.33	10.05	9.66	-0.39
Minneapolis-St Paul, MN	MN	Ramsey Co	12.24	10.98	10.73	-0.25	10.86	10.58	-0.28
Duluth, MN-WI	MN	St. Louis Co	8.41	7.99	7.85	-0.14	8.06	7.90	-0.16
Minneapolis-St Paul, MN	MN	Scott Co	10.42	9.53	9.29	-0.24	9.38	9.11	-0.27
St. Cloud, MN	MN	Stearns Co	9.65	8.88	8.67	-0.21	8.77	8.53	-0.24
	MS	Adams Co	11.35	11.08	10.48	-0.60	11.31	10.57	-0.74

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
	MS	Bolivar Co	12.81	11.84	11.15	-0.69	11.87	11.04	-0.83
Memphis, TN	MS	DeSoto Co	13.18	12.65	11.84	-0.81	12.76	11.78	-0.98
Hattiesburg, MS	MS	Forrest Co	13.54	13.02	12.34	-0.68	13.07	12.09	-0.98
Biloxi-Gulfport, MS	MS	Hancock Co	10.97	10.55	9.92	-0.63	10.63	9.73	-0.90
Biloxi-Gulfport, MS	MS	Harrison Co	11.56	11.11	10.55	-0.56	11.16	10.19	-0.97
Jackson, MS	MS	Hinds Co	14.06	13.42	12.73	-0.69	13.55	12.67	-0.88
Biloxi-Gulfport, MS	MS	Jackson Co	12.56	12.19	11.58	-0.61	12.32	11.36	-0.96
	MS	Jones Co	15.29	15.01	14.21	-0.80	15.18	14.06	-1.12
	MS	Lauderdale Co	13.34	12.82	12.00	-0.82	12.77	11.66	-1.11
	MS	Lee Co	13.20	12.76	11.80	-0.96	12.72	11.54	-1.18
	MS	Lowndes Co	13.68	13.20	12.31	-0.89	13.23	12.10	-1.13
	MS	Pearl River Co	11.68	11.26	10.68	-0.58	11.33	10.50	-0.83
Jackson, MS	MS	Rankin Co	13.35	12.75	12.12	-0.63	12.88	12.08	-0.80
	MS	Scott Co	11.88	11.32	10.61	-0.71	11.33	10.40	-0.93
	MS	Warren Co	12.50	11.02	10.42	-0.60	11.18	10.43	-0.75
St. Joseph, MO	MO	Buchanan Co	12.54	11.68	11.37	-0.31	11.60	11.23	-0.37
Kansas City, MO-KS	MO	Cass Co	11.39	10.66	10.35	-0.31	10.59	10.21	-0.38
	MO	Cedar Co	11.61	10.88	10.49	-0.39	10.82	10.32	-0.50
Kansas City, MO-KS	MO	Clay Co	12.88	12.15	11.85	-0.30	12.22	11.85	-0.37
Springfield, MO	MO	Greene Co	12.27	11.56	11.14	-0.42	11.53	11.02	-0.51
Kansas City, MO-KS	MO	Jackson Co	12.27	11.44	11.10	-0.34	11.38	10.96	-0.42
Joplin, MO	MO	Jasper Co	13.85	12.65	12.26	-0.39	12.66	12.18	-0.48
St. Louis, MO-IL	MO	Jefferson Co	14.79	13.97	13.32	-0.65	13.90	13.11	-0.79
	MO	Monroe Co	11.16	10.60	10.09	-0.51	10.53	9.93	-0.60
St. Louis, MO-IL	MO	St. Charles Co	14.52	14.23	13.54	-0.69	14.27	13.45	-0.82
	MO	Ste. Genevieve Co	13.98	13.42	12.68	-0.74	13.45	12.59	-0.86
St. Louis, MO-IL	MO	St. Louis Co	14.46	13.61	12.92	-0.69	13.56	12.74	-0.82
St. Louis, MO-IL	MO	St. Louis City	15.62	15.10	14.40	-0.70	15.34	14.50	-0.84

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Omaha, NE	NE	Cass Co	10.38	9.67	9.46	-0.21	9.59	9.34	-0.25
Omaha, NE	NE	Douglas Co	10.77	10.10	9.88	-0.22	10.06	9.80	-0.26
	NE	Hall Co	8.55	7.97	7.81	-0.16	7.90	7.73	-0.17
Lincoln, NE	NE	Lancaster Co	10.02	9.40	9.19	-0.21	9.34	9.11	-0.23
Omaha, NE	NE	Sarpy Co	10.32	9.68	9.47	-0.21	9.64	9.40	-0.24
Omaha, NE	NE	Washington Co	9.90	9.29	9.09	-0.20	9.21	8.99	-0.22
	NH	Cheshire Co	11.81	11.04	10.39	-0.65	10.85	10.11	-0.74
	NH	Coos Co	10.11	9.98	9.49	-0.49	9.93	9.37	-0.56
	NH	Merrimack Co	9.96	9.22	8.67	-0.55	9.11	8.49	-0.62
	NH	Sullivan Co	9.95	9.40	8.75	-0.65	9.26	8.53	-0.73
New York-New Jersey, NY-NJ-CT-PA	NJ	Bergen Co	14.09	13.31	12.05	-1.26	13.06	11.57	-1.49
Philadelphia, PA-DE-NJ	NJ	Camden Co	14.54	14.11	12.48	-1.63	13.92	12.02	-1.90
Philadelphia, PA-DE-NJ	NJ	Gloucester Co	13.99	14.15	12.52	-1.63	14.07	12.13	-1.94
New York City, NY-NJ-CT	NJ	Hudson Co	15.39	14.52	13.14	-1.38	14.22	12.64	-1.58
New York City, NY-NJ-CT	NJ	Mercer Co	14.27	13.74	12.12	-1.62	13.47	11.66	-1.81
New York City, NY-NJ-CT	NJ	Middlesex Co	12.67	12.14	10.76	-1.38	11.91	10.32	-1.59
New York City, NY-NJ-CT	NJ	Morris Co	12.68	12.27	10.79	-1.48	12.06	10.38	-1.68
New York City, NY-NJ-CT	NJ	Union Co	15.94	15.05	13.60	-1.45	14.73	13.08	-1.65
New York City, NY-NJ-CT	NJ	Warren Co	13.55	13.26	11.71	-1.55	13.10	11.31	-1.79
New York City, NY-NJ-CT	NY	Bronx Co	15.99	14.79	13.62	-1.17	14.41	13.06	-1.35
Jamestown, NY	NY	Chautauqua Co	10.97	10.74	9.40	-1.34	10.54	9.05	-1.49
Buffalo, NY	NY	Erie Co	14.35	13.94	12.39	-1.55	13.69	11.98	-1.71
	NY	Essex Co	6.49	6.33	5.79	-0.54	6.25	5.64	-0.61
New York City, NY-NJ-CT	NY	Kings Co	14.90	14.02	12.69	-1.33	13.79	12.25	-1.54
Rochester, NY	NY	Monroe Co	11.52	11.00	9.94	-1.06	10.84	9.66	-1.18
New York City, NY-NJ-CT	NY	Nassau Co	12.36	11.70	10.52	-1.18	11.52	10.16	-1.36
New York City, NY-NJ-CT	NY	New York Co	17.56	16.19	14.95	-1.24	15.76	14.33	-1.43

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Buffalo, NY	NY	Niagara Co	12.25	11.99	10.65	10.65	11.82	10.36	10.36
Syracuse, NY	NY	Onondaga Co	10.68	10.28	9.22	-1.06	10.06	8.86	-1.20
New York City, NY-NJ-CT	NY	Orange Co	11.64	11.02	10.02	-1.00	10.79	9.56	-1.23
New York City, NY-NJ-CT	NY	Queens Co	13.56	12.69	11.56	-1.13	12.41	11.11	-1.30
New York City, NY-NJ-CT	NY	Richmond Co	12.35	11.67	10.53	-1.14	11.43	10.12	-1.31
	NY	St. Lawrence Co	8.62	8.44	7.82	-0.62	8.36	7.66	-0.70
	NY	Steuben Co	9.95	9.72	8.40	-1.32	9.55	8.09	-1.46
New York City, NY-NJ-CT	NY	Suffolk Co	12.41	11.51	10.32	-1.19	11.23	9.85	-1.38
New York City, NY-NJ-CT	NY	Westchester Co	12.55	11.77	10.68	-1.09	11.51	10.26	-1.25
Greensboro, NC	NC	Alamance Co	14.47	13.98	12.62	-1.36	13.65	12.02	-1.63
Asheville, NC	NC	Buncombe Co	14.09	13.45	12.25	-1.20	13.14	11.58	-1.56
Charlotte, NC-SC	NC	Cabarrus Co	15.09	14.38	13.11	-1.27	13.97	12.34	-1.63
	NC	Caswell Co	13.90	13.43	12.09	-1.34	13.11	11.50	-1.61
Hickory, NC	NC	Catawba Co	16.32	15.48	14.07	-1.41	15.19	13.45	-1.74
Raleigh-Durham, NC	NC	Chatham Co	12.81	12.26	11.01	-1.25	11.92	10.40	-1.52
Fayetteville, NC	NC	Cumberland Co	14.69	14.09	12.89	-1.20	13.82	12.28	-1.54
Greensboro--Winston-Salem, NC	NC	Davidson Co	16.60	15.76	14.36	-1.40	15.34	13.61	-1.73
	NC	Duplin Co	12.37	11.97	10.82	-1.15	11.75	10.28	-1.47
Raleigh-Durham, NC	NC	Durham Co	14.65	13.98	12.60	-1.38	13.55	11.91	-1.64
Greensboro, NC	NC	Forsyth Co	15.46	14.72	13.16	-1.56	14.28	12.40	-1.88
Charlotte, NC-SC	NC	Gaston Co	14.65	14.00	12.71	-1.29	13.59	11.92	-1.67
Greensboro, NC	NC	Guilford Co	14.04	13.54	12.21	-1.33	13.16	11.57	-1.59
	NC	Haywood Co	14.53	13.93	12.70	-1.23	13.68	12.03	-1.65
	NC	Jackson Co	12.95	12.41	11.24	-1.17	12.18	10.60	-1.58
	NC	Lenoir Co	11.91	11.46	10.25	-1.21	11.21	9.67	-1.54
	NC	McDowell Co	15.32	14.52	13.22	-1.30	14.15	12.49	-1.66
Charlotte, NC-SC	NC	Mecklenburg Co	15.83	15.22	13.92	-1.30	14.83	13.14	-1.69
	NC	Mitchell Co	14.54	13.69	12.42	-1.27	13.36	11.78	-1.58

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
	NC	Montgomery Co	12.57	12.01	10.80	-1.21	11.66	10.15	-1.51
Jacksonville, NC	NC	Onslow Co	11.60	11.19	10.07	-1.12	10.93	9.53	-1.40
Raleigh-Durham, NC	NC	Orange Co	13.67	13.08	11.75	-1.33	12.72	11.10	-1.62
Greenville, NC	NC	Pitt Co	12.56	12.11	10.86	-1.25	11.87	10.30	-1.57
	NC	Robeson Co	12.75	12.26	11.11	-1.15	11.99	10.50	-1.49
	NC	Swain Co	13.47	13.03	11.68	-1.35	12.78	10.97	-1.81
Raleigh-Durham, NC	NC	Wake Co	14.57	14.01	12.66	-1.35	13.69	12.03	-1.66
Goldsboro, NC	NC	Wayne Co	14.51	13.66	12.34	-1.32	13.40	11.68	-1.72
Fargo, ND-MN	ND	Cass Co	8.11	7.51	7.41	-0.10	7.38	7.29	-0.09
	OH	Athens Co	12.47	12.33	10.31	-2.02	12.04	9.81	-2.23
Cincinnati, OH-KY-IN	OH	Butler Co	16.78	16.45	15.03	-1.42	16.32	14.67	-1.65
Dayton-Springfield, OH	OH	Clark Co	14.67	14.55	13.10	-1.45	14.30	12.64	-1.66
Cleveland, OH	OH	Cuyahoga Co	19.25	18.84	17.11	-1.73	18.60	16.67	-1.93
Columbus, OH	OH	Franklin Co	17.23	16.98	15.13	-1.85	16.64	14.57	-2.07
Cincinnati, OH-KY	OH	Hamilton Co	18.55	18.23	16.61	-1.62	18.03	16.10	-1.93
Steubenville-Weirton, OH-WV	OH	Jefferson Co	18.30	17.94	15.64	-2.30	17.83	15.26	-2.57
Cleveland, OH	OH	Lake Co	13.72	13.62	12.15	-1.47	13.45	11.80	-1.65
Huntington-Ashland, WV-KY-OH	OH	Lawrence Co	16.26	16.10	14.11	-1.99	15.92	13.71	-2.21
Cleveland, OH	OH	Lorain Co	13.88	13.60	12.33	-1.27	13.46	12.04	-1.42
Toledo, OH	OH	Lucas Co	15.07	14.77	13.76	-1.01	14.64	13.48	-1.16
Youngstown-Warren, OH	OH	Mahoning Co	15.77	15.39	13.40	-1.99	15.13	12.94	-2.19
Dayton, OH	OH	Montgomery Co	15.57	15.41	13.83	-1.58	15.16	13.33	-1.83
Cleveland, OH	OH	Portage Co	14.86	14.40	12.64	-1.76	14.11	12.17	-1.94
	OH	Preble Co	13.51	13.34	11.89	-1.45	13.11	11.45	-1.66
	OH	Scioto Co	18.26	18.13	15.98	-2.15	17.92	15.55	-2.37
Canton, OH	OH	Stark Co	17.85	17.14	15.08	-2.06	16.86	14.58	-2.28
Cleveland, OH	OH	Summit Co	16.95	16.47	14.69	-1.78	16.14	14.18	-1.96
Youngstown-Warren, OH	OH	Trumbull Co	15.60	15.28	13.50	-1.78	15.05	13.08	-1.97

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
	OK	Caddo Co	8.66	8.32	8.06	-0.26	8.32	7.96	-0.36
Oklahoma City, OK	OK	Canadian Co	8.99	8.34	8.07	-0.27	8.28	7.93	-0.35
	OK	Carter Co	10.21	9.60	9.29	-0.31	9.60	9.18	-0.42
	OK	Cherokee Co	11.72	11.04	10.62	-0.42	11.04	10.50	-0.54
Enid, OK	OK	Garfield Co	10.03	9.60	9.37	-0.23	9.64	9.34	-0.30
	OK	Kay Co	10.71	10.01	9.74	-0.27	9.94	9.60	-0.34
	OK	Lincoln Co	10.08	9.44	9.11	-0.33	9.41	8.97	-0.44
	OK	Mayes Co	12.01	11.99	11.63	-0.36	12.07	11.60	-0.47
	OK	Muskogee Co	12.17	11.61	11.22	11.22	11.63	11.13	11.13
Oklahoma City, OK	OK	Oklahoma Co	10.61	10.04	9.76	-0.28	10.02	9.65	-0.37
	OK	Ottawa Co	11.78	11.12	10.75	-0.37	11.08	10.62	-0.46
	OK	Pittsburg Co	11.52	10.86	10.50	-0.36	10.87	10.38	-0.49
	OK	Seminole Co	9.47	8.87	8.55	-0.32	8.86	8.43	-0.43
Tulsa, OK	OK	Tulsa Co	12.03	11.53	11.21	-0.32	11.58	11.17	-0.41
	PA	Adams Co	13.39	13.05	10.77	-2.28	12.77	10.21	-2.56
Pittsburgh, PA	PA	Allegheny Co	21.20	20.55	18.01	-2.54	20.33	17.47	-2.86
Pittsburgh, PA	PA	Beaver Co	15.97	15.78	13.61	-2.17	15.54	13.09	-2.45
Reading, PA	PA	Berks Co	16.24	15.89	13.56	-2.33	15.66	12.99	-2.67
Philadelphia, PA-DE-NJ	PA	Bucks Co	14.07	13.65	12.07	-1.58	13.46	11.62	-1.84
Johnstown, PA	PA	Cambria Co	15.62	15.14	12.72	-2.42	14.80	12.08	-2.72
State College, PA	PA	Centre Co	13.01	12.67	10.77	-1.90	12.43	10.26	-2.17
Harrisburg, PA	PA	Dauphin Co	15.65	15.17	12.88	-2.29	14.87	12.27	-2.60
Philadelphia, PA-DE-NJ	PA	Delaware Co	15.45	15.61	13.94	-1.67	15.52	13.52	-2.00
Erie, PA	PA	Erie Co	13.43	13.08	11.73	-1.35	12.92	11.42	-1.50
Scranton--Wilkes-Barre, PA	PA	Lackawanna Co	12.29	11.91	10.31	-1.60	11.71	9.87	-1.84
Lancaster, PA	PA	Lancaster Co	16.99	16.55	14.09	-2.46	16.28	13.33	-2.95
Allentown, PA	PA	Lehigh Co	14.21	13.77	12.01	-1.76	13.53	11.52	-2.01
Scranton--Wilkes-Barre, PA	PA	Luzerne Co	12.95	12.62	10.86	-1.76	12.42	10.41	-2.01

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Sharon, PA	PA	Mercer Co	14.28	14.01	12.27	-1.74	13.77	11.87	-1.90
Philadelphia, PA-DE-NJ	PA	Montgomery Co	14.10	13.80	12.02	-1.78	13.62	11.55	-2.07
Allentown, PA	PA	Northampton Co	14.42	13.93	12.35	-1.58	13.70	11.89	-1.81
Harrisburg, PA	PA	Perry Co	12.83	12.46	10.54	-1.92	12.24	10.07	-2.17
Philadelphia, PA-DE-NJ	PA	Philadelphia Co	16.54	16.65	14.98	-1.67	16.53	14.53	-2.00
Pittsburgh, PA	PA	Washington Co	15.58	15.23	12.99	-2.24	15.01	12.54	-2.47
Pittsburgh, PA	PA	Westmoreland Co	15.56	15.16	12.60	-2.56	14.75	11.89	-2.86
York, PA	PA	York Co	16.86	16.49	14.20	-2.29	16.22	13.46	-2.76
Providence, RI	RI	Kent Co	8.96	8.45	7.69	-0.76	8.33	7.45	-0.88
Providence, RI	RI	Providence Co	11.45	10.78	9.99	-0.79	10.60	9.71	-0.89
	SC	Beaufort Co	11.04	10.68	9.86	-0.82	10.70	9.52	-1.18
Charleston, SC	SC	Charleston Co	11.94	11.63	10.79	-0.84	11.54	10.32	-1.22
	SC	Chesterfield Co	12.42	11.93	10.83	-1.10	11.65	10.21	-1.44
Augusta-Aiken, GA-SC	SC	Edgefield Co	12.83	12.54	11.54	-1.00	12.45	10.99	-1.46
Florence, SC	SC	Florence Co	13.23	12.80	11.71	-1.09	12.58	11.10	-1.48
	SC	Georgetown Co	13.26	12.69	11.74	-0.95	12.54	11.25	-1.29
Greenville-Spartanburg, SC	SC	Greenville Co	15.43	14.80	13.36	-1.44	14.45	12.54	-1.91
	SC	Greenwood Co	14.01	13.47	12.18	-1.29	13.18	11.40	-1.78
Myrtle Beach, SC	SC	Horry Co	11.16	10.68	9.70	-0.98	10.50	9.20	-1.30
Columbia, SC	SC	Lexington Co	14.57	14.08	12.95	-1.13	13.83	12.27	-1.56
	SC	Oconee Co	11.47	11.13	9.86	-1.27	10.88	9.15	-1.73
Columbia, SC	SC	Richland Co	14.50	14.01	12.88	-1.13	13.76	12.20	-1.56
Greenville-Spartanburg, SC	SC	Spartanburg Co	14.51	13.99	12.58	-1.41	13.63	11.79	-1.84
	SD	Brookings Co	9.37	8.64	8.45	-0.19	8.50	8.31	-0.19
	SD	Brown Co	8.31	7.76	7.64	-0.12	7.63	7.53	-0.10
Sioux Falls, SD	SD	Minnehaha Co	9.82	9.09	8.88	-0.21	8.96	8.73	-0.23
Knoxville, TN	TN	Blount Co	14.42	13.63	12.48	-1.15	13.52	11.98	-1.54
Nashville, TN	TN	Davidson Co	15.56	15.36	14.26	-1.10	15.36	14.02	-1.34

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
	TN	Dyer Co	12.35	12.03	11.16	-0.87	12.03	11.03	-1.00
Chattanooga, TN-GA	TN	Hamilton Co	17.23	16.89	15.57	-1.32	16.82	14.94	-1.88
Knoxville, TN	TN	Knox Co	18.49	17.44	16.16	-1.28	17.34	15.61	-1.73
	TN	Lawrence Co	12.65	12.41	11.19	-1.22	12.32	10.95	-1.37
	TN	McMinn Co	15.34	14.92	13.64	-1.28	14.88	13.14	-1.74
	TN	Maury Co	13.65	14.28	13.21	-1.07	14.88	13.62	-1.26
Clarksville, TN-KY	TN	Montgomery Co	13.75	13.41	12.23	-1.18	13.34	12.02	-1.32
	TN	Putnam Co	13.94	13.56	12.27	-1.29	13.37	11.62	-1.75
	TN	Roane Co	15.56	14.97	13.58	-1.39	14.80	12.94	-1.86
Memphis, TN	TN	Shelby Co	14.81	14.59	13.77	-0.82	15.17	14.19	-0.98
Johnson City, TN-VA	TN	Sullivan Co	15.71	15.32	14.01	-1.31	15.37	13.77	-1.60
Nashville, TN	TN	Sumner Co	14.47	14.18	13.05	-1.13	14.12	12.73	-1.39
Texarkana, TX-AR	TX	Bowie Co	14.10	13.36	12.88	-0.48	13.48	12.86	-0.62
Brownsville, TX	TX	Cameron Co	9.90	9.61	9.25	-0.36	9.64	9.15	-0.49
Dallas, TX	TX	Dallas Co	13.82	13.03	12.68	-0.35	12.99	12.45	-0.54
Houston-Galveston, TX	TX	Galveston Co	9.64	9.23	8.67	-0.56	9.33	8.60	-0.73
Longview, TX	TX	Gregg Co	12.49	11.81	11.36	11.36	11.91	11.26	11.26
Houston, TX	TX	Harris Co	14.13	14.13	13.78	-0.35	14.46	13.90	-0.56
McAllen, TX	TX	Hidalgo Co	10.84	10.70	10.42	-0.28	10.89	10.50	-0.39
Beaumont-Port Arthur, TX	TX	Jefferson Co	11.25	11.12	10.63	-0.49	11.40	10.77	-0.63
Corpus Christi, TX	TX	Nueces Co	10.30	10.28	9.94	-0.34	10.49	9.98	-0.51
Beaumont-Port Arthur, TX	TX	Orange Co	11.41	11.27	10.80	-0.47	11.56	10.95	-0.61
Dallas, TX	TX	Tarrant Co	12.36	11.42	11.08	-0.34	11.42	10.93	-0.49
Burlington, VT	VT	Chittenden Co	9.49	9.19	8.55	-0.64	9.08	8.35	-0.73
Washington-Baltimore, DC-MD	VA	Arlington Co	14.64	14.30	12.31	-1.99	14.06	11.80	-2.26
Richmond-Petersburg, VA	VA	Charles City Co	13.32	12.77	11.24	-1.53	12.47	10.71	-1.76
Richmond-Petersburg, VA	VA	Chesterfield Co	13.91	13.35	11.81	-1.54	13.05	11.28	-1.77
Washington-Baltimore, DC-MD	VA	Fairfax Co	14.33	13.88	11.75	-2.13	13.54	11.13	-2.41

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
Richmond-Petersburg, VA	VA	Henrico Co	13.92	13.35	11.82	-1.53	13.05	11.29	-1.76
Washington-Baltimore, DC-MD	VA	Loudoun Co	13.65	13.23	11.14	-2.09	12.90	10.55	-2.35
	VA	Page Co	13.17	12.80	10.72	-2.08	12.44	10.10	-2.34
Johnson City, TN-VA	VA	Bristol city	15.21	14.53	13.03	-1.50	14.23	12.42	-1.81
Norfolk, VA-NC	VA	Chesapeake city	12.99	12.58	11.09	-1.49	12.45	10.63	-1.82
Norfolk, VA-NC	VA	Hampton city	12.95	12.67	11.16	-1.51	12.56	10.77	-1.79
Norfolk, VA-NC	VA	Newport News city	12.30	11.87	10.39	-1.48	11.66	9.93	-1.73
Norfolk, VA-NC	VA	Norfolk city	13.33	13.03	11.51	-1.52	12.93	11.12	-1.81
Richmond, VA	VA	Richmond city	14.48	13.88	12.29	-1.59	13.57	11.75	-1.82
Roanoke, VA	VA	Roanoke city	14.84	14.38	12.55	-1.83	13.94	11.86	-2.08
Roanoke, VA	VA	Salem city	14.95	14.49	12.70	-1.79	14.07	12.02	-2.05
Norfolk, VA-NC	VA	Virginia Beach city	12.88	12.59	11.14	-1.45	12.50	10.76	-1.74
Washington-Baltimore, DC-MD	WV	Berkeley Co	16.18	15.69	13.43	-2.26	15.32	12.73	-2.59
Steubenville-Weirton, OH-WV	WV	Brooke Co	16.96	16.63	14.42	-2.21	16.51	14.05	-2.46
Huntington-Ashland, WV-KY-OH	WV	Cabell Co	17.22	17.03	15.08	-1.95	16.86	14.64	-2.22
Steubenville-Weirton, OH-WV	WV	Hancock Co	17.40	17.06	14.89	-2.17	16.97	14.54	-2.43
	WV	Harrison Co	14.40	14.15	11.90	-2.25	13.82	11.31	-2.51
Charleston, WV	WV	Kanawha Co	17.75	17.56	15.27	-2.29	17.17	14.66	-2.51
	WV	Marion Co	15.58	15.32	12.90	-2.42	14.98	12.23	-2.75
Wheeling, WV-OH	WV	Marshall Co	16.07	15.81	13.46	-2.35	15.52	12.87	-2.65
	WV	Mercer Co	12.97	12.52	10.82	-1.70	12.14	10.16	-1.98
	WV	Monongalia Co	14.96	14.77	12.31	-2.46	14.37	11.40	-2.97
Wheeling, WV-OH	WV	Ohio Co	15.37	15.14	12.81	-2.33	14.84	12.22	-2.62
	WV	Raleigh Co	13.54	13.19	11.33	-1.86	12.80	10.66	-2.14
	WV	Summers Co	10.46	10.21	8.63	-1.58	9.89	8.07	-1.82
Parkersburg, WV-OH	WV	Wood Co	16.88	16.66	14.14	-2.52	16.69	13.88	-2.81
Green Bay, WI	WI	Brown Co	11.52	10.99	10.67	-0.32	10.93	10.54	-0.39
Madison, WI	WI	Dane Co	12.81	12.07	11.62	-0.45	11.86	11.33	-0.53

CMSA/MSA	State	County	Average 1999-2003	2010 Base	2010 CAIR	Impact of CAIR in 2010	2015 Base	2015 CAIR	Impact of CAIR in 2015
	WI	Dodge Co	11.41	10.79	10.39	-0.40	10.63	10.14	-0.49
	WI	Grant Co	11.78	11.17	10.75	-0.42	11.11	10.60	-0.51
Chicago, IL-IN-WI	WI	Kenosha Co	11.90	11.44	10.97	-0.47	11.40	10.85	-0.55
	WI	Manitowoc Co	10.09	9.55	9.21	-0.34	9.41	9.00	-0.41
Milwaukee, WI	WI	Milwaukee Co	13.74	13.35	12.88	-0.47	13.33	12.76	-0.57
Appleton, WI	WI	Outagamie Co	11.04	10.43	10.10	-0.33	10.28	9.88	-0.40
	WI	Vilas Co	6.26	5.94	5.75	-0.19	5.88	5.65	-0.23
Milwaukee, WI	WI	Waukesha Co	13.55	12.95	12.51	-0.44	12.82	12.28	-0.54

Technical Support Document for the Final Clean Air Interstate Rule

Air Quality Modeling Analyses

Appendix G

8-Hour Contributions to Each Nonattainment County in 2010

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 65							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 10				
Fairfield CT	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	Max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	Max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	24	20	20	65	100	25	64	66	10	100	19.3
	NJ	21	18	18	65	100	23	42	37	10	100	14.1
	NY	19	17	19	65	100	23	-11	-19	4	40	8.4
	VA	5	6	7	62	95	6	8	9	4	40	6.4
	OH	9	8	8	65	100	10	16	15	9	90	6.3
	MD	4	7	8	56	86	7	8	8	3	30	4.1
	WV	3	3	3	62	95	3	9	9	5	50	2.5
Contributions do not exceed screening criteria	**IN**	2	2	2	30	46	3	3	3	0	0	1.1
	NC	2	2	2	26	40	2	3	3	0	0	1.1
	DE	2	2	2	11	17	3	2	2	0	0	0.8
	IL	2	2	2	13	20	2	2	2	0	0	0.8
	MI	1	1	2	0	0	2	1	1	0	0	0.8
	KY	2	2	2	18	28	3	2	2	0	0	0.7
	WI	1	1	1	0	0	1	1	1	0	0	0.4
	MO	1	1	1	0	0	1	1	1	0	0	0.3
	IA	1	1	1	0	0	1	1	1	0	0	0.2
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 153							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 22				
Middlesex CT	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**NY**	26	21	24	153	100	31	48	48	22	100	18.6
	PA	20	20	22	153	100	25	47	47	21	96	14.2
	NJ	18	16	17	153	100	22	37	38	22	100	10.0
	OH	6	8	7	91	60	10	11	15	10	46	6.7
	MA	1	8	9	5	3	8	1	1	1	5	6.0
	VA	4	4	4	89	58	7	5	5	4	18	3.4
	WV	2	3	3	83	54	3	5	6	1	5	2.2
	MD	4	5	5	116	76	7	6	6	1	5	2.1
Contributions do not exceed screening criteria	**MI**	1	2	2	22	14	3	2	2	0	0	1.6
	IN	2	2	2	44	29	3	3	4	0	0	1.3
	NC	2	2	3	45	29	3	2	2	0	0	1.1
	DE	2	3	3	37	24	4	2	2	0	0	1.0
	IL	2	2	2	28	18	3	2	3	0	0	0.9
	KY	1	2	2	14	9	2	1	2	0	0	0.7
	NH	0	1	1	0	0	1	0	0	0	0	0.5
	RI	0	2	3	2	1	2	0	0	0	0	0.5
	MO	1	1	1	0	0	1	1	1	0	0	0.3
	VT	0	0	0	0	0	0	0	0	0	0	0.3
	IA	1	1	1	0	0	1	0	1	0	0	0.2
	TN	0	0	0	0	0	0	0	0	0	0	0.2
	WI	1	1	1	0	0	1	1	1	0	0	0.2
	AR	0	0	0	0	0	0	0	0	0	0	0.1
	ME	0	0	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 117						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 23				
New Haven CT	Upwind State	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	PA	21	21	23	117	100	24	51	50	23	100	16.5
	NY	25	21	24	117	100	29	32	27	20	87	12.8
	NJ	19	15	17	117	100	23	39	38	23	100	11.5
	OH	7	8	7	96	82	10	15	14	9	39	6.6
	MD	4	8	9	95	81	9	12	11	6	26	5.6
	VA	4	5	6	87	74	6	11	10	10	44	5.6
	WV	2	3	3	71	61	3	7	7	4	17	2.4
Contributions do not exceed screening criteria	MI	1	2	3	16	14	3	4	4	0	0	1.6
	IN	2	2	2	35	30	3	4	4	0	0	1.3
	NC	2	2	2	38	33	3	3	3	0	0	1.0
	IL	2	2	2	15	13	3	3	3	0	0	0.9
	DE	2	3	3	22	19	3	3	2	0	0	0.8
	KY	1	2	2	13	11	2	2	2	0	0	0.8
	WI	1	1	1	0	0	1	1	1	0	0	0.5
	MA	0	1	1	0	0	1	0	1	0	0	0.4
	MO	1	1	1	0	0	1	1	1	0	0	0.4
	IA	1	1	1	0	0	1	1	1	0	0	0.2
	AR	0	0	0	0	0	0	0	0	0	0	0.1
	FL	0	0	0	0	0	0	0	0	0	0	0.1
	GA	0	0	0	0	0	0	0	0	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	RI	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 10							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 3				
Washington DC	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**VA**	8	7	8	10	100	7	79	79	3	100	17.4
	MD	54	42	49	10	100	49	52	52	3	100	10.1
	OH	8	9	11	9	90	10	25	25	2	67	6.1
	PA	6	6	7	10	100	6	17	17	2	67	3.9
	WV	2	2	2	1	10	2	19	19	2	67	2.5
Contributions do not exceed screening criteria	**IL**	4	4	4	9	90	4	9	9	0	0	1.5
	IN	3	3	3	3	30	3	8	8	0	0	1.3
	MI	2	2	2	0	0	2	5	5	0	0	0.8
	KY	1	3	3	3	30	3	3	3	0	0	0.7
	MO	2	3	3	3	30	3	5	5	0	0	0.7
	IA	1	1	2	0	0	1	3	3	0	0	0.6
	NY	0	1	1	0	0	1	2	2	0	0	0.6
	DE	0	1	1	0	0	1	2	2	0	0	0.5
	NJ	0	1	1	0	0	1	2	2	0	0	0.5
	LA	1	1	1	0	0	1	1	1	0	0	0.4
	AR	1	1	1	0	0	1	1	1	0	0	0.2
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	1	1	0	0	1	0	0	0	0	0.1
	WI	0	0	0	0	0	0	1	1	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 108							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 23				
New Castle DE	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MD**	45	36	42	108	100	44	100	100	23	100	36.8
	VA	6	7	7	75	69	9	41	32	17	74	14.9
	PA	10	14	17	84	78	17	40	45	17	74	12.8
	OH	7	9	10	86	80	9	24	20	15	65	5.1
	WV	4	5	5	58	54	6	28	21	9	39	5.1
	NC	3	4	4	52	48	6	8	4	2	9	2.7
	MI	2	4	4	32	30	5	8	8	2	9	2.6
Contributions do not exceed screening criteria	**NJ**	0	3	3	2	2	3	1	1	0	0	1.5
	IN	2	3	3	25	23	3	6	5	0	0	1.2
	IL	3	3	4	33	31	4	5	4	0	0	1.0
	IA	1	2	2	8	7	2	4	3	0	0	0.8
	KY	2	2	3	36	33	4	4	3	0	0	0.8
	NY	0	2	2	0	0	2	2	1	0	0	0.6
	MO	1	2	2	20	19	2	2	2	0	0	0.4
	WI	1	1	1	0	0	1	2	1	0	0	0.3
	CT	0	0	0	0	0	0	0	0	0	0	0.2
	MA	0	1	1	0	0	1	0	0	0	0	0.2
	AR	0	1	1	0	0	1	0	0	0	0	0.1
	LA	0	1	1	0	0	1	0	0	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	MN	0	0	0	0	0	0	1	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	0	0	0	1	0	0	0	0	0.1
	TN	0	1	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	1	0	0	0	0	0.0
	GA	0	0	0	0	0	1	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 1240							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 199				
Fulton GA	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**AL**	4	14	15	585	47	23	9	7	39	20	17.8
	TN	4	7	7	796	64	8	11	9	67	34	7.1
	SC	2	7	7	316	26	8	6	4	29	15	7.0
	NC	2	5	5	238	19	7	5	4	35	18	4.7
	KY	3	6	6	608	49	7	5	4	26	13	3.6
	FL	1	5	5	162	13	6	2	3	20	10	3.2
	WV	1	3	3	120	10	3	2	2	9	5	2.8
	VA	1	2	2	46	4	3	2	2	1	1	2.4
	MS	1	2	2	37	3	3	1	1	2	1	2.3
Contributions do not exceed screening criteria	**AR**	1	2	2	73	6	3	1	1	0	0	1.8
	OH	1	3	3	101	8	4	1	1	0	0	1.1
	PA	0	3	3	58	5	3	1	1	0	0	1.1
	IN	1	2	2	6	1	2	2	1	0	0	1.0
	IL	1	2	2	80	7	2	1	1	0	0	0.8
	MO	1	2	2	0	0	2	1	1	0	0	0.7
	NY	0	1	1	0	0	1	0	0	0	0	0.3
	LA	0	1	1	0	0	1	0	0	0	0	0.2
	MD	0	1	1	0	0	1	0	0	0	0	0.2
	CT	0	0	0	0	0	0	0	0	0	0	0.1
	IA	0	0	0	0	0	0	0	0	0	0	0.1
	MA	0	0	0	0	0	0	0	0	0	0	0.1
	NJ	0	1	1	0	0	1	0	0	0	0	0.1
	WI	0	0	0	0	0	0	0	0	0	0	0.1
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MI	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 347							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 76				
Anne Arundel MD	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**VA**	9	15	18	304	88	18	60	52	68	90	29.5
	OH	8	10	10	285	82	11	26	22	45	59	7.3
	PA	6	10	12	285	82	11	23	25	47	62	6.9
	WV	3	5	5	113	33	6	16	13	16	21	5.9
	NC	1	5	5	56	16	9	4	2	7	9	3.5
	MI	2	4	4	70	20	5	6	5	4	5	2.9
Contributions do not exceed screening criteria	**WI**	1	3	3	29	8	3	3	3	0	0	1.8
	IL	3	4	4	135	39	4	6	6	0	0	1.5
	KY	2	3	3	135	39	4	3	2	0	0	1.4
	IN	2	3	3	145	42	3	5	4	0	0	1.3
	IA	1	1	2	0	0	2	2	2	0	0	0.7
	MO	2	3	3	106	31	3	2	2	0	0	0.7
	NY	0	1	2	0	0	1	1	1	0	0	0.6
	DE	0	1	1	0	0	1	1	1	0	0	0.5
	MN	0	1	1	0	0	1	1	1	0	0	0.5
	NJ	0	1	1	0	0	1	1	1	0	0	0.5
	LA	0	1	1	0	0	1	0	0	0	0	0.3
	AR	1	1	1	0	0	1	0	0	0	0	0.2
	CT	0	0	0	0	0	0	0	0	0	0	0.2
	MA	0	1	1	0	0	1	0	0	0	0	0.2
	FL	0	1	1	0	0	1	0	0	0	0	0.1
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	1	1	0	0	1	0	0	0	0	0.1
	TN	1	1	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 168							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 31				
Cecil MD	Upwind State	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	PA	12	14	15	150	89	22	44	43	25	81	15.6
	VA	6	13	15	103	61	14	34	32	21	68	12.9
	WV	3	5	5	64	38	6	19	18	9	29	5.8
	OH	7	9	10	126	75	9	19	17	16	52	5.1
	MI	2	3	3	58	35	4	6	6	2	7	2.8
Contributions do not exceed screening criteria	NC	2	4	4	48	29	6	4	3	0	0	2.0
	IN	2	3	3	67	40	3	5	4	0	0	1.2
	KY	2	3	3	38	23	4	3	3	0	0	1.1
	IL	3	4	4	59	35	4	4	4	0	0	0.9
	IA	1	2	2	2	1	2	3	2	0	0	0.8
	DE	1	2	2	26	16	4	1	1	0	0	0.6
	NY	0	1	2	0	0	2	2	2	0	0	0.6
	NJ	0	1	1	0	0	1	1	1	0	0	0.5
	MO	1	2	2	57	34	2	2	2	0	0	0.4
	MA	0	1	1	0	0	1	0	0	0	0	0.3
	WI	1	1	1	0	0	1	1	1	0	0	0.3
	CT	0	0	0	0	0	0	0	0	0	0	0.2
	FL	0	1	1	0	0	1	0	0	0	0	0.2
	LA	0	1	1	0	0	1	0	0	0	0	0.2
	AR	0	1	1	0	0	1	0	0	0	0	0.1
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	1	0	0	1	0	0	0	0	0.1
	TN	0	1	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 260							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 53				
Harford MD	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**VA**	7	13	15	136	52	15	34	32	29	55	15.9
	PA	11	15	17	229	88	25	34	29	39	74	15.8
	WV	2	5	6	45	17	6	12	13	9	17	7.1
	OH	6	9	10	192	74	10	17	17	22	42	5.3
	NC	1	3	4	48	19	5	3	3	4	8	2.6
	MI	2	3	3	84	32	4	6	5	1	2	2.2
Contributions do not exceed screening criteria	**WI**	1	3	3	15	6	3	2	2	0	0	1.7
	IN	2	3	3	74	29	3	4	4	0	0	1.5
	KY	1	3	3	41	16	4	2	2	0	0	1.5
	IL	2	4	4	74	29	4	4	4	0	0	1.2
	IA	1	2	2	0	0	2	2	2	0	0	0.8
	NY	0	1	2	0	0	1	1	1	0	0	0.6
	MO	1	2	2	53	20	3	2	2	0	0	0.5
	NJ	0	1	1	0	0	1	1	1	0	0	0.5
	LA	0	1	1	0	0	1	0	0	0	0	0.4
	MN	0	1	1	0	0	1	1	1	0	0	0.4
	FL	0	1	1	0	0	1	0	0	0	0	0.3
	AR	0	1	1	0	0	1	0	0	0	0	0.2
	CT	0	0	0	0	0	0	0	0	0	0	0.2
	DE	0	1	1	0	0	2	0	1	0	0	0.2
	GA	0	1	1	0	0	1	0	0	0	0	0.2
	MA	0	1	1	0	0	1	0	0	0	0	0.2
	SC	0	0	1	0	0	1	0	0	0	0	0.2
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	1	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 172							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 29				
Kent MD	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**VA**	7	13	15	118	69	13	45	49	20	69	22.8
	PA	6	10	11	116	67	13	18	17	14	48	8.7
	OH	9	9	10	157	91	11	27	29	22	76	6.8
	WV	4	4	4	87	51	5	20	21	14	48	4.7
	NC	3	6	6	56	33	9	5	7	6	21	3.6
	MI	2	4	5	34	20	5	5	5	3	10	2.6
Contributions do not exceed screening criteria	**IN**	3	3	3	98	57	3	6	7	0	0	1.5
	IL	3	4	4	82	48	4	6	6	0	0	1.2
	IA	1	1	1	0	0	2	3	3	0	0	0.8
	KY	2	2	2	73	42	4	3	3	0	0	0.8
	NY	0	1	2	0	0	1	1	1	0	0	0.6
	MO	2	2	2	56	33	3	2	2	0	0	0.5
	NJ	0	1	1	0	0	1	1	1	0	0	0.5
	DE	0	0	0	0	0	1	0	0	0	0	0.4
	MA	0	1	1	0	0	1	0	0	0	0	0.3
	WI	1	1	1	0	0	1	1	1	0	0	0.3
	CT	0	0	0	0	0	0	0	0	0	0	0.2
	MN	0	0	0	0	0	0	0	0	0	0	0.2
	AR	0	1	1	0	0	1	0	0	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	1	1	0	0	1	0	0	0	0	0.1
	TN	1	1	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	1	0	0	0	0	0.0
	GA	0	0	0	0	0	1	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		**CAMX Source Apportionment Modeling** Base Case: Total Number of Exceedances (grid-hours) = 102						**CAMX State Zero-Out Modeling** Base Case: Total Number of Exceedances (grids-days) = 28				
Macomb MI	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**IL**	14	13	14	102	100	16	60	68	27	96	10.9
	IN	4	8	9	75	74	9	24	27	11	39	7.8
	OH	3	8	9	37	36	9	18	19	7	25	6.9
	WI	3	4	5	43	42	5	11	8	6	21	3.1
	IA	3	4	5	55	54	5	15	20	3	11	2.7
	KY	1	6	7	9	9	6	4	2	3	11	2.4
Contributions do not exceed screening criteria	**MO**	3	3	3	40	39	4	12	14	0	0	1.7
	AR	2	2	2	1	1	2	3	3	0	0	0.8
	LA	1	2	2	1	1	2	1	1	0	0	0.4
	TN	0	1	1	0	0	1	1	1	0	0	0.2
	AL	0	0	0	0	0	0	0	0	0	0	0.1
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	MS	1	1	1	0	0	1	0	0	0	0	0.1
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	MD	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	NY	0	0	0	0	0	0	0	0	0	0	0.0
	PA	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VA	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0
	WV	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 54							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 13				
Bergen NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	31	27	29	54	100	31	97	99	13	100	23.8
	VA	5	8	9	42	78	8	19	15	6	46	7.3
	OH	7	7	7	44	82	9	19	15	6	46	4.9
	MD	5	6	7	41	76	7	16	18	5	39	4.6
	WV	3	3	3	37	69	3	13	12	4	31	2.2
	MI	1	4	5	7	13	5	4	5	2	15	2.1
Contributions do not exceed screening criteria	**DE**	3	3	3	25	46	4	6	6	0	0	1.8
	NC	2	2	2	20	37	3	6	6	0	0	1.2
	IN	2	2	2	13	24	3	4	4	0	0	0.9
	KY	2	2	2	13	24	3	2	2	0	0	0.8
	WI	1	1	1	0	0	1	2	3	0	0	0.7
	IA	1	2	2	0	0	2	2	2	0	0	0.6
	IL	2	2	2	6	11	2	3	3	0	0	0.6
	NY	3	14	16	18	33	15	-34	-56	0	0	0.3
	MN	0	0	0	0	0	0	1	1	0	0	0.2
	MO	1	1	1	0	0	1	1	1	0	0	0.2
	CT	0	0	0	0	0	0	0	0	0	0	0.1
	FL	0	0	0	0	0	0	0	0	0	0	0.1
	GA	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 122							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 28				
Camden NJ	Upwind State	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	PA	35	32	36	122	100	39	71	61	24	86	25.1
	MD	18	24	25	105	86	29	57	66	22	79	21.1
	VA	4	6	6	62	51	8	16	16	13	46	6.8
	DE	11	10	11	122	100	12	40	45	24	86	6.6
	OH	5	7	8	87	71	8	16	14	15	54	4.5
	WV	2	4	4	37	30	5	10	11	5	18	4.4
	MI	3	5	5	45	37	6	12	12	7	25	3.8
Contributions do not exceed screening criteria	NC	2	4	4	34	28	5	3	4	0	0	1.8
	NY	1	3	3	8	7	3	2	3	0	0	1.4
	IA	1	2	2	28	23	2	3	3	0	0	1.1
	IL	2	3	3	43	35	3	5	4	0	0	1.0
	IN	2	2	2	6	5	2	4	4	0	0	1.0
	WI	1	2	2	0	0	2	3	3	0	0	0.9
	KY	1	2	2	11	9	3	2	1	0	0	0.5
	MN	0	0	0	0	0	0	1	1	0	0	0.3
	MO	1	2	2	0	0	2	1	1	0	0	0.3
	SC	0	1	1	0	0	1	0	0	0	0	0.2
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	LA	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	1	1	0	0	1	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	1	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 94							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 20				
Gloucester NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MD**	28	30	32	93	99	35	87	90	20	100	27.9
	PA	21	23	27	94	100	31	55	50	14	70	14.3
	DE	14	18	21	94	100	18	64	58	19	95	13.2
	VA	5	6	7	52	55	8	26	24	11	55	7.4
	WV	3	4	5	36	38	5	17	17	6	30	4.8
	MI	3	4	4	40	43	5	15	12	8	40	3.2
	OH	7	6	6	76	81	6	23	19	14	70	3.1
Contributions do not exceed screening criteria	**NC**	2	4	4	36	38	5	5	5	0	0	1.6
	IA	2	2	2	22	23	2	5	4	0	0	1.0
	IL	3	3	4	40	43	3	7	5	0	0	1.0
	IN	2	2	2	7	7	2	5	5	0	0	0.7
	KY	2	2	2	19	20	3	2	2	0	0	0.7
	NY	0	1	2	0	0	1	1	2	0	0	0.5
	WI	1	1	1	0	0	1	3	2	0	0	0.4
	MO	1	2	2	0	0	2	2	1	0	0	0.3
	LA	0	0	1	0	0	0	0	0	0	0	0.1
	MN	0	0	0	0	0	0	1	1	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	1	1	0	0	1	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	1	0	0	0	0	0.0
	GA	0	0	0	0	0	1	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 71							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 20				
Hunterton NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	46	34	39	71	100	46	100	100	20	100	32.9
	VA	2	10	11	15	21	10	9	11	4	20	9.4
	MD	4	8	10	24	34	10	16	18	6	30	7.3
	DE	4	5	6	60	85	6	18	19	4	20	3.8
	OH	2	7	8	19	27	8	13	14	2	10	3.3
	WV	1	4	4	8	11	4	9	10	2	10	2.8
Contributions do not exceed screening criteria	**NY**	3	3	3	45	63	4	14	15	0	0	1.9
	MI	2	3	4	13	18	4	9	9	0	0	1.6
	NC	1	2	2	4	6	3	4	4	0	0	0.9
	WI	1	2	2	0	0	2	4	4	0	0	0.8
	IN	1	2	2	5	7	3	3	3	0	0	0.7
	KY	1	2	3	5	7	3	2	2	0	0	0.7
	IL	1	2	2	0	0	2	4	4	0	0	0.4
	MN	0	0	0	0	0	0	1	1	0	0	0.3
	FL	0	0	1	0	0	1	0	0	0	0	0.1
	GA	0	0	1	0	0	1	0	0	0	0	0.1
	IA	1	1	1	0	0	1	1	1	0	0	0.1
	LA	0	0	0	0	0	0	1	1	0	0	0.1
	MO	0	1	1	0	0	1	1	1	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 86					
Mercer NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	41	40	41	86	100	47
	MD	8	12	12	56	65	17
	MI	3	5	6	40	47	6
	DE	5	5	6	61	71	7
	VA	2	5	5	29	34	6
	NY	2	5	5	13	15	6
	WV	1	3	4	23	27	4
	OH	4	5	6	62	72	7
Contributions do not exceed screening criteria	**NC**	1	3	3	22	26	4
	IA	1	2	2	17	20	2
	IL	2	3	3	19	22	3
	IN	1	2	2	2	2	2
	KY	1	2	2	9	11	3
	WI	1	1	1	0	0	1
	MO	1	1	2	0	0	2
	MN	0	0	0	0	0	0
	TN	0	0	0	0	0	0
	AL	0	0	0	0	0	0
	AR	0	1	1	0	0	1
	CT	0	0	0	0	0	0
	FL	0	0	0	0	0	0
	GA	0	0	0	0	0	0
	LA	0	0	0	0	0	0
	MA	0	0	0	0	0	0
	ME	0	0	0	0	0	0
	MS	0	0	0	0	0	0
	NH	0	0	0	0	0	0
	RI	0	0	0	0	0	0
	SC	0	0	0	0	0	0
	VT	0	0	0	0	0	0

Downwind Nonattainment Receptor		CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 16				
Mercer NJ	**Upwind State**	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	90	90	16	100	36.0
	MD	25	27	8	50	13.4
	MI	8	8	4	25	3.9
	DE	10	11	3	19	3.6
	VA	7	7	3	19	3.4
	NY	6	5	3	19	3.3
	WV	6	6	4	25	3.2
	OH	8	8	2	13	2.6
Contributions do not exceed screening criteria	**NC**	2	2	0	0	1.4
	IA	2	2	0	0	0.8
	IL	3	3	0	0	0.7
	IN	3	3	0	0	0.6
	KY	1	1	0	0	0.5
	WI	2	2	0	0	0.4
	MO	1	1	0	0	0.2
	MN	0	0	0	0	0.1
	TN	0	0	0	0	0.1
	AL	0	0	0	0	0.0
	AR	0	0	0	0	0.0
	CT	0	0	0	0	0.0
	FL	0	0	0	0	0.0
	GA	0	0	0	0	0.0
	LA	0	0	0	0	0.0
	MA	0	0	0	0	0.0
	ME	0	0	0	0	0.0
	MS	0	0	0	0	0.0
	NH	0	0	0	0	0.0
	RI	0	0	0	0	0.0
	SC	0	0	0	0	0.0
	VT	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 172						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 32				
Middlesex NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	30	33	38	172	100	36	80	78	31	97	28.7
	MD	5	9	8	86	50	13	12	11	9	28	7.7
	VA	2	7	8	59	34	8	7	8	9	28	7.2
	NY	3	8	8	66	38	12	8	7	8	25	3.2
	MI	3	5	5	73	42	6	6	6	6	19	3.0
	DE	3	4	5	68	40	6	5	5	2	6	2.4
	OH	3	5	5	103	60	7	6	6	2	6	2.4
	WV	1	3	3	47	27	4	4	4	7	22	2.4
Contributions do not exceed screening criteria	**NC**	1	3	3	37	22	3	2	2	0	0	1.3
	IA	1	2	2	27	16	2	1	1	0	0	0.7
	IL	2	2	3	39	23	3	2	2	0	0	0.5
	IN	1	2	2	8	5	2	2	2	0	0	0.5
	WI	1	1	1	0	0	1	1	1	0	0	0.5
	KY	1	2	2	17	10	3	1	1	0	0	0.4
	CT	0	0	0	0	0	0	0	0	0	0	0.1
	FL	0	0	1	0	0	1	0	0	0	0	0.1
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	MO	1	1	1	0	0	1	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	0	1	0	0	1	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 318						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 55				
Monmouth NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	31	33	37	318	100	45	73	72	54	98	33.6
	MD	8	10	11	217	68	21	17	17	28	51	11.4
	VA	3	6	6	113	36	8	7	7	10	18	5.0
	NY	3	11	12	66	21	17	6	6	8	15	4.8
	DE	4	5	6	218	69	8	9	10	12	22	4.0
	OH	3	5	6	190	60	6	6	6	7	13	3.1
	WV	1	3	3	71	22	4	5	5	9	16	3.0
	MI	2	4	4	99	31	6	5	5	8	15	2.8
Contributions do not exceed screening criteria	**NC**	1	3	3	80	25	4	2	2	0	0	1.5
	IA	1	2	2	19	6	2	1	1	0	0	0.8
	IN	1	2	2	1	0	2	2	2	0	0	0.7
	IL	2	2	2	69	22	3	2	2	0	0	0.6
	WI	1	1	1	0	0	1	1	1	0	0	0.5
	MA	0	1	1	0	0	1	0	0	0	0	0.4
	CT	0	0	1	0	0	0	0	0	0	0	0.3
	KY	1	1	1	17	5	2	1	1	0	0	0.3
	MN	0	0	0	0	0	0	0	0	0	0	0.2
	FL	0	1	1	0	0	1	0	0	0	0	0.1
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	MO	1	1	1	0	0	2	0	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	RI	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	1	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	0	0	0	0	1	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 151							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 34				
Morris NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	32	31	34	151	100	37	88	88	34	100	27.6
	VA	5	9	10	78	52	10	30	32	12	35	8.6
	MD	4	7	8	75	50	11	16	16	12	35	5.7
	OH	3	8	8	79	52	9	11	12	6	18	5.0
	NY	4	11	13	71	47	12	10	10	6	18	3.8
	MI	1	6	7	5	3	6	4	4	1	3	3.1
	DE	3	4	4	72	48	5	12	11	6	18	3.0
	WV	1	3	4	24	16	3	8	10	5	15	2.4
Contributions do not exceed screening criteria	**IN**	1	2	2	17	11	3	3	3	0	0	1.0
	KY	1	2	2	17	11	3	2	2	0	0	0.9
	NC	1	2	2	8	5	3	3	4	0	0	0.9
	IA	0	2	3	1	1	2	1	1	0	0	0.7
	WI	1	1	2	0	0	1	2	2	0	0	0.7
	IL	1	2	2	4	3	2	3	3	0	0	0.6
	MO	0	1	1	0	0	1	1	1	0	0	0.3
	MN	0	0	0	0	0	0	1	1	0	0	0.2
	AR	0	0	1	0	0	0	0	0	0	0	0.1
	FL	0	0	0	0	0	1	0	0	0	0	0.1
	GA	0	0	0	0	0	1	0	0	0	0	0.1
	LA	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 359						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 59				
Ocean NJ	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**PA**	34	30	35	359	100	46	86	90	58	98	30.0
	MD	12	17	17	298	83	25	31	35	39	66	14.0
	VA	3	7	7	164	46	9	12	15	16	27	6.8
	DE	8	7	8	336	94	9	24	25	47	80	5.9
	WV	2	4	4	77	21	4	8	9	8	14	4.0
	OH	5	6	7	264	74	7	13	12	19	32	3.9
	NY	1	7	8	12	3	7	2	3	1	2	3.7
	MI	3	4	4	144	40	6	8	7	10	17	3.1
	NC	1	4	4	66	18	5	2	3	1	2	2.0
Contributions do not exceed screening criteria	**IA**	1	2	2	52	15	2	3	2	0	0	0.9
	IN	2	2	2	18	5	2	3	3	0	0	0.9
	IL	3	3	3	174	49	4	3	3	0	0	0.8
	WI	1	1	1	0	0	1	2	2	0	0	0.5
	KY	1	1	2	15	4	3	1	1	0	0	0.4
	MA	0	1	1	0	0	1	0	1	0	0	0.4
	CT	0	1	1	0	0	1	0	0	0	0	0.3
	MN	0	0	0	0	0	0	1	1	0	0	0.2
	MO	1	1	2	0	0	2	1	1	0	0	0.2
	SC	0	1	1	0	0	1	0	0	0	0	0.2
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.1
	NH	0	0	0	0	0	0	0	0	0	0	0.1
	RI	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	1	1	0	0	1	0	0	0	0	0.0
	FL	0	0	0	0	0	1	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 16							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 4				
Erie NY	Upwind State	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	PA	2	12	14	2	13	12	5	1	1	25	6.8
	MD	2	8	9	2	13	8	4	1	1	25	3.9
	WI	6	5	6	14	88	5	62	72	3	75	3.8
	NJ	1	5	6	2	13	5	4	1	1	25	3.4
	VA	1	6	7	2	13	6	4	1	1	25	3.1
	MI	4	3	4	14	88	4	38	42	2	50	2.1
Contributions do not exceed screening criteria	DE	0	2	3	2	13	2	4	1	0	0	1.3
	IL	4	3	3	14	88	3	18	16	0	0	1.2
	NC	1	3	4	2	13	3	4	1	0	0	1.1
	IA	3	2	2	14	88	2	12	14	0	0	0.7
	MO	3	2	2	6	38	2	13	14	0	0	0.7
	AR	1	1	1	0	0	1	5	6	0	0	0.3
	CT	0	0	0	0	0	0	1	0	0	0	0.1
	MA	0	0	1	0	0	0	1	0	0	0	0.1
	MN	0	0	0	0	0	0	2	2	0	0	0.1
	OH	0	0	0	0	0	0	1	1	0	0	0.1
	SC	0	1	1	0	0	1	1	0	0	0	0.1
	WV	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	IN	0	0	0	0	0	0	1	1	0	0	0.0
	KY	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	1	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 47							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 8				
Richmond NY	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**NJ**	41	40	45	47	100	52	74	75	8	100	41.2
	PA	25	30	29	47	100	34	63	59	6	75	21.2
	MD	5	8	8	28	60	10	9	9	2	25	5.4
	VA	3	6	7	20	43	7	7	7	4	50	5.3
	MI	3	5	5	25	53	5	5	5	2	25	2.3
	WV	1	3	3	15	32	3	4	3	2	25	2.2
Contributions do not exceed screening criteria	**DE**	2	5	4	19	40	5	4	4	0	0	2.0
	OH	4	5	5	29	62	6	5	5	0	0	1.8
	NC	1	3	3	14	30	3	2	2	0	0	1.3
	IA	1	2	2	7	15	2	1	1	0	0	0.6
	IL	2	2	2	12	26	3	2	1	0	0	0.5
	WI	1	1	1	0	0	1	1	1	0	0	0.5
	IN	1	2	1	0	0	2	1	1	0	0	0.4
	KY	1	1	1	2	4	2	0	0	0	0	0.2
	MN	0	0	0	0	0	0	0	0	0	0	0.2
	FL	0	1	1	0	0	1	0	0	0	0	0.1
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	MO	1	1	1	0	0	1	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 1088							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 153				
Suffolk NY	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**NJ**	22	19	21	1088	100	39	64	64	151	99	36.7
	PA	18	25	27	1050	97	34	42	42	136	89	22.2
	CT	4	9	8	395	36	26	13	7	42	28	16.1
	VA	3	8	8	355	33	11	9	8	35	23	8.4
	MD	6	10	12	790	73	15	13	12	80	52	6.5
	DE	3	5	5	528	49	6	7	7	26	17	4.6
	OH	3	5	5	310	29	7	5	5	12	8	3.3
	NC	1	4	4	282	26	6	3	2	11	7	3.2
	WV	1	2	3	235	22	3	4	4	16	11	2.8
	MA	1	3	3	93	9	7	1	1	1	1	2.2
	MI	2	3	3	220	20	5	4	5	2	1	2.1
Contributions do not exceed screening criteria	**WI**	1	1	1	0	0	2	2	2	0	0	1.0
	IA	1	1	2	4	0	2	1	1	0	0	0.7
	IN	1	1	1	0	0	2	2	2	0	0	0.7
	IL	1	2	2	125	12	3	2	2	0	0	0.5
	MN	0	0	0	0	0	1	1	1	0	0	0.5
	KY	1	1	1	1	0	2	1	1	0	0	0.4
	RI	0	1	1	3	0	2	0	0	0	0	0.3
	MO	1	1	1	0	0	1	0	0	0	0	0.2
	AR	0	0	0	0	0	0	0	0	0	0	0.1
	FL	0	1	1	0	0	1	0	0	0	0	0.1
	ME	0	0	0	0	0	1	0	0	0	0	0.1
	NH	0	0	0	0	0	1	0	0	0	0	0.1
	SC	0	0	0	0	0	1	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	VT	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	1	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 81							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 15				
Westchester NY	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**NJ**	29	29	32	81	100	35	79	67	15	100	25.6
	PA	24	22	23	81	100	28	75	83	15	100	20.1
	VA	6	7	8	66	82	8	21	20	8	53	7.5
	OH	7	8	8	70	86	10	15	18	7	47	5.6
	MD	5	7	7	65	80	8	11	13	6	40	3.0
	WV	2	3	3	40	49	3	9	13	4	27	2.3
Contributions do not exceed screening criteria	**DE**	2	2	3	22	27	3	5	5	0	0	1.4
	NC	2	2	2	13	16	2	3	5	0	0	1.2
	IN	2	2	2	25	31	3	3	4	0	0	1.0
	IL	2	2	2	10	12	2	2	2	0	0	0.7
	KY	1	2	2	17	21	3	2	2	0	0	0.7
	MI	1	1	2	0	0	2	2	2	0	0	0.7
	WI	1	1	1	0	0	1	1	1	0	0	0.4
	IA	1	1	1	0	0	1	1	1	0	0	0.2
	MO	0	1	1	0	0	1	1	1	0	0	0.2
	CT	0	0	0	0	0	0	0	0	0	0	0.1
	LA	0	0	0	0	0	0	0	0	0	0	0.1
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 60						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 17				
Geauga OH	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**IL**	10	15	17	60	100	15	46	42	15	88	10.9
	IN	5	8	10	56	93	9	28	23	6	35	5.5
	MI	9	7	8	47	78	9	50	54	11	65	5.1
	KY	1	8	9	5	8	9	6	2	2	12	4.6
	MO	4	6	7	49	82	6	16	14	6	35	2.9
Contributions do not exceed screening criteria	**IA**	2	2	2	0	0	2	8	6	0	0	0.7
	AR	1	2	2	1	2	2	5	4	0	0	0.6
	LA	2	2	2	15	25	2	6	6	0	0	0.6
	WI	1	1	1	0	0	1	4	3	0	0	0.4
	WV	0	1	1	0	0	1	1	0	0	0	0.4
	MN	0	0	0	0	0	0	1	1	0	0	0.1
	MS	1	0	1	0	0	1	1	1	0	0	0.1
	PA	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	1	1	0	0	1	1	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	MD	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	NY	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VA	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 110							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 31				
Bucks PA	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**NJ**	12	18	20	83	76	27	38	25	18	58	14.4
	MD	7	10	11	77	70	15	38	45	11	36	12.7
	OH	4	7	7	62	56	8	16	16	6	19	4.1
	MI	2	6	7	38	35	6	14	12	5	16	3.9
	DE	7	6	6	106	96	8	25	24	9	29	3.7
	WV	1	4	4	23	21	4	8	10	6	19	3.4
	VA	2	4	4	23	21	6	7	9	3	10	2.9
Contributions do not exceed screening criteria	**NY**	2	2	2	18	16	3	8	7	0	0	1.7
	WI	1	2	2	0	0	2	5	5	0	0	1.3
	NC	1	2	3	16	15	3	2	3	0	0	1.2
	IA	1	2	3	3	3	2	2	2	0	0	0.9
	IN	1	2	2	13	12	3	4	5	0	0	0.9
	KY	1	2	3	15	14	3	2	2	0	0	0.9
	IL	2	3	3	3	3	3	5	5	0	0	0.7
	MN	0	0	0	0	0	0	1	1	0	0	0.4
	MO	1	2	2	0	0	2	2	2	0	0	0.3
	LA	0	0	0	0	0	1	1	1	0	0	0.2
	AR	0	1	1	0	0	1	0	0	0	0	0.1
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 126							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 39				
Chester PA	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MD**	30	32	37	126	100	39	95	94	33	85	28.4
	DE	8	15	17	92	73	22	29	40	10	26	14.3
	VA	5	12	14	85	68	13	41	28	17	44	12.1
	NJ	2	15	17	15	12	15	11	11	5	13	10.4
	WV	3	5	5	40	32	5	31	26	11	28	5.1
	OH	6	7	8	87	69	9	35	28	13	33	4.8
	MI	2	5	6	15	12	6	16	13	3	8	3.7
	NY	1	3	4	8	6	3	8	5	1	3	2.4
Contributions do not exceed screening criteria	**NC**	1	3	4	30	24	4	7	5	0	0	1.6
	KY	2	3	3	35	28	5	9	7	0	0	1.5
	IN	2	2	3	30	24	4	14	10	0	0	1.3
	IA	1	2	2	5	4	2	4	4	0	0	1.0
	IL	2	3	4	15	12	3	11	8	0	0	0.8
	CT	0	1	1	0	0	1	2	0	0	0	0.7
	MA	0	1	1	0	0	1	1	0	0	0	0.4
	MO	1	2	2	7	6	2	4	3	0	0	0.4
	LA	0	1	1	0	0	1	1	1	0	0	0.3
	WI	1	1	1	0	0	1	4	3	0	0	0.3
	FL	0	1	1	0	0	1	0	0	0	0	0.2
	AL	0	0	0	0	0	0	0	0	0	0	0.1
	AR	0	1	1	0	0	1	1	1	0	0	0.1
	GA	0	1	1	0	0	1	0	0	0	0	0.1
	MN	0	0	0	0	0	0	1	1	0	0	0.1
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	RI	0	0	0	0	0	0	0	0	0	0	0.1
	SC	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	1	1	0	0	0.1
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 46							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 13				
Montgomery PA	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MD**	13	13	14	46	100	21	69	69	11	85	11.7
	DE	11	11	12	46	100	15	53	50	7	54	9.9
	NJ	4	10	12	19	41	11	24	21	6	46	6.8
	OH	5	7	8	26	57	8	21	20	3	23	3.9
	WV	2	4	5	13	28	4	16	16	3	23	3.8
	NY	1	3	4	4	9	3	8	6	1	8	2.2
Contributions do not exceed screening criteria	**MI**	2	4	4	6	13	4	9	9	0	0	2.0
	VA	2	3	4	16	35	5	12	12	0	0	1.9
	WI	1	2	3	1	2	2	3	2	0	0	1.3
	IN	2	2	3	9	20	3	7	6	0	0	0.9
	KY	1	3	3	11	24	3	4	4	0	0	0.9
	NC	1	2	3	8	17	3	3	3	0	0	0.9
	CT	0	1	1	0	0	1	2	0	0	0	0.6
	IL	2	2	2	0	0	2	6	6	0	0	0.5
	MN	0	1	1	0	0	1	1	1	0	0	0.4
	MA	0	1	1	0	0	1	1	0	0	0	0.3
	IA	1	1	1	0	0	1	2	2	0	0	0.2
	LA	0	1	1	0	0	1	1	1	0	0	0.2
	MO	1	1	1	0	0	1	3	2	0	0	0.2
	AR	0	0	0	0	0	0	1	1	0	0	0.1
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	RI	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 36							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 9				
Philadelphia PA	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MD**	18	19	20	31	86	24	81	79	7	78	21.5
	NJ	3	10	11	6	17	14	10	7	2	22	10.1
	DE	11	9	9	36	100	11	42	42	8	89	6.3
	MI	2	6	7	3	8	6	9	10	1	11	4.2
	VA	4	5	6	21	58	7	20	21	4	44	4.2
	WV	3	4	4	15	42	4	17	17	3	33	3.9
	OH	5	6	6	26	72	7	15	15	2	22	2.5
Contributions do not exceed screening criteria	**NC**	2	3	4	15	42	4	6	6	0	0	1.7
	NY	1	2	2	3	8	2	4	4	0	0	1.1
	IA	1	2	3	3	8	2	2	3	0	0	1.0
	IL	2	3	3	3	8	3	4	4	0	0	0.8
	IN	2	2	2	1	3	2	4	4	0	0	0.6
	KY	1	2	2	6	17	3	2	2	0	0	0.5
	WI	1	1	1	0	0	1	2	2	0	0	0.4
	MO	1	2	2	0	0	2	1	1	0	0	0.2
	LA	0	0	0	0	0	0	0	0	0	0	0.1
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	AR	0	1	1	0	0	1	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	1	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 134							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 18				
Kent RI	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MA**	1	26	30	3	2	27	1	1	1	6	26.3
	NY	26	22	23	134	100	29	77	77	17	94	20.3
	PA	17	22	25	131	98	22	39	37	17	94	12.2
	NJ	16	14	17	131	98	18	45	41	17	94	9.8
	CT	10	8	9	125	93	15	29	35	17	94	9.7
	OH	6	7	7	75	56	9	9	12	7	39	3.6
	VA	4	5	5	75	56	6	6	5	3	17	2.9
Contributions do not exceed screening criteria	**MD**	4	5	5	113	84	5	7	5	0	0	1.6
	WV	2	2	2	50	37	3	4	4	0	0	1.4
	NH	0	3	3	3	2	3	1	0	0	0	1.3
	MI	1	2	2	28	21	3	3	4	0	0	1.2
	IN	2	2	2	22	16	2	3	4	0	0	0.8
	DE	2	3	3	27	20	3	3	2	0	0	0.7
	NC	2	3	3	42	31	3	1	1	0	0	0.7
	IL	2	2	2	8	6	2	2	3	0	0	0.5
	KY	1	2	2	0	0	2	1	1	0	0	0.3
	ME	0	1	1	0	0	1	0	0	0	0	0.3
	MO	1	1	1	0	0	1	1	1	0	0	0.2
	VT	0	0	0	0	0	0	0	0	0	0	0.2
	AR	0	0	0	0	0	0	0	0	0	0	0.1
	IA	1	1	1	0	0	1	0	1	0	0	0.1
	TN	0	0	0	0	0	0	0	0	0	0	0.1
	WI	1	0	1	0	0	1	1	1	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	**CAMX Source Apportionment Modeling** Base Case: Total Number of Exceedances (grid-hours) = 188							**CAMX State Zero-Out Modeling** Base Case: Total Number of Exceedances (grids-days) = 48				
Galveston TX	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**LA**	13	10	12	188	100	13	64	58	48	100	6.7
	AR	3	3	4	85	45	3	16	13	9	19	2.7
Contributions do not exceed screening criteria	**AL**	3	4	4	101	54	4	9	9	0	0	1.7
	MS	3	3	4	108	57	3	15	14	0	0	1.6
	GA	2	3	3	2	1	3	7	7	0	0	1.5
	NC	1	2	2	0	0	2	5	6	0	0	1.1
	TN	3	2	3	49	26	2	10	9	0	0	0.9
	KY	2	2	2	0	0	2	7	6	0	0	0.7
	MO	1	1	2	0	0	1	3	3	0	0	0.7
	IL	1	2	2	0	0	2	3	2	0	0	0.6
	OH	1	2	2	0	0	2	5	5	0	0	0.6
	VA	1	1	1	0	0	1	4	4	0	0	0.6
	IN	1	1	1	0	0	1	3	3	0	0	0.5
	SC	1	1	1	0	0	1	2	3	0	0	0.5
	WV	1	1	1	0	0	1	4	4	0	0	0.4
	FL	0	1	1	0	0	1	1	1	0	0	0.3
	PA	1	1	1	0	0	1	2	2	0	0	0.3
	MI	0	1	1	0	0	1	2	2	0	0	0.2
	MD	0	0	1	0	0	0	1	1	0	0	0.1
	NY	0	0	0	0	0	0	0	0	0	0	0.1
	WI	0	0	0	0	0	0	1	1	0	0	0.1
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	IA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 740							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 191				
Harris TX	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**LA**	13	13	15	740	100	15	68	66	190	100	9.1
	AR	3	3	3	424	57	4	18	15	39	20	2.6
	MS	3	4	5	315	43	5	15	16	15	8	2.6
	AL	3	4	4	301	41	4	12	13	15	8	2.4
Contributions do not exceed screening criteria	**GA**	2	3	3	179	24	3	9	9	0	0	1.5
	NC	1	2	2	0	0	2	4	4	0	0	1.0
	TN	2	2	3	126	17	3	9	9	0	0	0.9
	IL	1	2	2	0	0	2	3	3	0	0	0.8
	KY	2	2	2	0	0	2	6	5	0	0	0.8
	MO	1	1	2	0	0	2	4	3	0	0	0.8
	IN	1	1	1	0	0	1	4	3	0	0	0.7
	OH	1	2	2	0	0	2	5	4	0	0	0.6
	VA	1	1	1	0	0	1	3	3	0	0	0.6
	SC	1	1	1	0	0	1	2	2	0	0	0.4
	WV	0	1	1	0	0	1	3	3	0	0	0.4
	FL	0	1	1	0	0	1	1	1	0	0	0.3
	MI	0	1	1	0	0	1	1	1	0	0	0.2
	PA	1	1	1	0	0	1	2	2	0	0	0.2
	IA	0	0	0	0	0	0	0	0	0	0	0.1
	MD	0	0	1	0	0	1	1	1	0	0	0.1
	NY	0	0	0	0	0	0	0	0	0	0	0.1
	WI	0	0	0	0	0	0	1	1	0	0	0.1
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 356						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 99				
Jefferson TX	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**LA**	26	33	38	356	100	39	97	98	98	99	23.3
	AR	4	4	4	271	76	5	33	29	29	29	3.3
	MS	3	5	6	141	40	5	20	21	13	13	3.0
	AL	2	4	5	135	38	4	15	17	11	11	2.3
Contributions do not exceed screening criteria	**GA**	1	2	3	69	19	2	9	9	0	0	1.1
	MO	1	2	2	0	0	2	10	10	0	0	1.0
	KY	2	2	2	0	0	2	9	7	0	0	0.8
	TN	2	2	3	96	27	3	12	11	0	0	0.8
	IL	1	2	2	0	0	2	7	7	0	0	0.6
	OH	1	1	2	0	0	2	7	6	0	0	0.6
	IN	1	1	1	0	0	1	6	5	0	0	0.4
	WV	0	1	1	0	0	1	3	3	0	0	0.4
	NC	1	1	1	0	0	1	3	3	0	0	0.3
	VA	0	1	1	0	0	1	2	2	0	0	0.3
	FL	0	1	1	0	0	1	2	2	0	0	0.2
	MI	0	1	1	0	0	1	2	1	0	0	0.2
	IA	0	0	0	0	0	0	1	1	0	0	0.1
	PA	0	0	1	0	0	1	2	2	0	0	0.1
	SC	0	0	1	0	0	1	2	1	0	0	0.1
	WI	0	0	0	0	0	0	1	1	0	0	0.1
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	MD	0	0	0	0	0	0	1	1	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	NY	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 11							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 2				
Arlington VA	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MD**	51	45	44	11	100	51	24	24	1	50	6.8
	OH	8	10	11	11	100	10	26	26	2	100	6.5
	PA	6	6	6	7	64	6	12	12	1	50	3.3
	WV	2	2	2	1	9	2	11	11	1	50	2.0
Contributions do not exceed screening criteria	**IL**	4	4	4	11	100	4	7	7	0	0	1.5
	IN	3	3	3	4	36	3	6	6	0	0	1.3
	KY	1	3	3	4	36	3	2	2	0	0	0.8
	MI	2	2	2	2	18	2	4	4	0	0	0.8
	MO	2	3	3	4	36	3	4	4	0	0	0.7
	IA	1	1	2	0	0	1	2	2	0	0	0.6
	LA	1	1	1	0	0	1	1	1	0	0	0.3
	AR	1	1	1	0	0	1	1	1	0	0	0.2
	WI	1	0	0	0	0	0	1	1	0	0	0.2
	MS	0	0	0	0	0	0	0	0	0	0	0.1
	TN	1	1	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	NY	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 73							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 15				
Fairfax VA	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**MD**	53	41	47	73	100	52	64	65	15	100	20.3
	PA	8	6	7	73	100	7	29	31	15	100	4.5
	OH	4	5	6	63	86	6	11	13	3	20	3.5
	WV	2	2	2	3	4	2	11	12	4	27	2.7
Contributions do not exceed screening criteria	**IN**	2	2	2	17	23	3	5	5	0	0	1.1
	DE	1	1	1	1	1	2	4	5	0	0	1.0
	IL	2	2	3	14	19	3	4	5	0	0	1.0
	NJ	1	1	1	0	0	2	4	5	0	0	1.0
	MI	1	2	2	1	1	2	3	3	0	0	0.9
	NY	2	2	2	0	0	2	4	5	0	0	0.9
	MO	2	2	2	0	0	2	3	3	0	0	0.7
	LA	1	1	1	0	0	2	2	2	0	0	0.5
	AR	1	1	1	0	0	1	1	1	0	0	0.3
	WI	0	0	0	0	0	0	1	1	0	0	0.2
	CT	0	0	0	0	0	0	0	0	0	0	0.1
	IA	0	0	1	0	0	1	1	1	0	0	0.1
	MS	0	0	0	0	0	1	1	1	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	KY	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MN	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 136						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 29				
Kenosha WI	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**IL**	55	47	48	136	100	57	100	100	29	100	48.6
	IN	11	14	15	113	83	19	32	31	15	52	12.7
	MO	9	10	10	136	100	12	35	35	25	86	7.2
	IA	1	4	5	14	10	5	5	6	2	7	2.4
Contributions do not exceed screening criteria	**AR**	3	3	4	59	43	4	5	6	0	0	1.9
	GA	1	2	2	3	2	2	1	2	0	0	1.2
	AL	1	2	3	21	15	3	2	2	0	0	1.1
	MI	1	1	1	6	4	3	2	2	0	0	1.1
	LA	2	3	4	38	28	4	2	2	0	0	0.9
	MS	1	2	2	1	1	2	1	2	0	0	0.9
	TN	1	2	2	0	0	2	1	1	0	0	0.4
	KY	0	1	1	0	0	1	0	0	0	0	0.1
	MN	0	0	0	0	0	0	0	0	0	0	0.1
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	MD	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	NY	0	0	0	0	0	0	0	0	0	0	0.0
	OH	0	0	0	0	0	0	0	0	0	0	0.0
	PA	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	VA	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0
	WV	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor	CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 62							CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 11				
Ozaukee WI	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**IL**	49	37	40	62	100	43	100	100	11	100	34.4
	IN	10	10	10	47	76	14	33	33	7	64	9.6
	MO	11	9	10	62	100	10	38	40	8	73	6.1
Contributions do not exceed screening criteria	**IA**	2	3	4	7	11	4	5	4	0	0	1.9
	LA	1	3	4	14	23	3	1	2	0	0	0.8
	AR	1	1	1	0	0	1	0	1	0	0	0.2
	MI	0	0	0	0	0	1	1	1	0	0	0.2
	MN	0	0	0	0	0	0	1	1	0	0	0.1
	MS	0	1	1	0	0	1	0	0	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	KY	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	MD	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	NY	0	0	0	0	0	0	0	0	0	0	0.0
	OH	0	0	0	0	0	0	0	0	0	0	0.0
	PA	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VA	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0
	WV	0	0	0	0	0	0	0	0	0	0	0.0

Downwind Nonattainment Receptor		CAMX Source Apportionment Modeling Base Case: Total Number of Exceedances (grid-hours) = 39						CAMX State Zero-Out Modeling Base Case: Total Number of Exceedances (grids-days) = 10				
Sheboygan WI	**Upwind State**	Average 3-episode % contribution	Highest daily average (ppb)	Highest daily average (%)	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution	% total ppb reduced	% pop-wgt total ppb reduced	# reduced >= 2 ppb	% reduced >= 2 ppb	max 8-hr ppb contribution
Contributions exceed screening criteria	**IL**	41	32	36	39	100	36	100	100	10	100	24.6
	IN	9	9	10	26	67	12	47	29	7	70	8.8
	MO	11	9	10	39	100	10	59	49	7	70	5.5
	IA	3	4	4	13	33	4	15	31	3	30	2.4
Contributions do not exceed screening criteria	**MI**	1	1	1	0	0	1	1	1	0	0	0.2
	AR	1	1	1	0	0	1	-1	-3	0	0	0.1
	MN	0	0	0	0	0	0	1	1	0	0	0.1
	AL	0	0	0	0	0	0	0	0	0	0	0.0
	CT	0	0	0	0	0	0	0	0	0	0	0.0
	DE	0	0	0	0	0	0	0	0	0	0	0.0
	FL	0	0	0	0	0	0	0	0	0	0	0.0
	GA	0	0	0	0	0	0	0	0	0	0	0.0
	KY	0	0	0	0	0	0	0	0	0	0	0.0
	LA	0	0	0	0	0	0	0	0	0	0	0.0
	MA	0	0	0	0	0	0	0	0	0	0	0.0
	MD	0	0	0	0	0	0	0	0	0	0	0.0
	ME	0	0	0	0	0	0	0	0	0	0	0.0
	MS	0	0	0	0	0	0	0	0	0	0	0.0
	NC	0	0	0	0	0	0	0	0	0	0	0.0
	NH	0	0	0	0	0	0	0	0	0	0	0.0
	NJ	0	0	0	0	0	0	0	0	0	0	0.0
	NY	0	0	0	0	0	0	0	0	0	0	0.0
	OH	0	0	0	0	0	0	0	0	0	0	0.0
	PA	0	0	0	0	0	0	0	0	0	0	0.0
	RI	0	0	0	0	0	0	0	0	0	0	0.0
	SC	0	0	0	0	0	0	0	0	0	0	0.0
	TN	0	0	0	0	0	0	0	0	0	0	0.0
	VA	0	0	0	0	0	0	0	0	0	0	0.0
	VT	0	0	0	0	0	0	0	0	0	0	0.0
	WV	0	0	0	0	0	0	0	0	0	0	0.0

Technical Support Document for the Final Clean Air Interstate Rule

Air Quality Modeling Analyses

Appendix H

PM2.5 Contributions to Each Nonattainment County in 2010

Downwind Nonattainment Counties		Upwind States - Part 1							
State	County	AL	FL	GA	IL	IN	IA	KY	LA
Alabama	Jefferson	2.29	0.24	0.72	0.21	0.31	0.07	0.23	0.25
Alabama	Russell	1.05	0.45	1.24	0.14	0.22	0.05	0.18	0.24
Delaware	New Castle	0.05	< 0.05	0.10	0.12	0.15	< 0.05	0.11	< 0.05
District of Columbia		0.08	< 0.05	0.15	0.13	0.19	0.05	0.16	< 0.05
Georgia	Bibb	0.62	0.35	1.85	0.13	0.20	< 0.05	0.17	0.19
Georgia	Clarke	0.63	0.25	2.42	0.17	0.27	0.05	0.23	0.18
Georgia	Clayton	0.66	0.22	1.81	0.13	0.21	< 0.05	0.18	0.16
Georgia	Cobb	0.73	0.20	2.07	0.14	0.23	< 0.05	0.20	0.16
Georgia	DeKalb	0.64	0.22	1.84	0.13	0.21	< 0.05	0.18	0.16
Georgia	Floyd	0.95	0.13	1.42	0.14	0.22	< 0.05	0.20	0.14
Georgia	Fulton	0.54	0.18	1.87	0.13	0.20	< 0.05	0.18	0.14
Georgia	Walker	0.91	0.13	1.16	0.18	0.32	0.05	0.30	0.15
Illinois	Cook	0.06	< 0.05	< 0.05	1.04	0.66	0.28	0.13	0.06
Illinois	Madison	0.13	< 0.05	0.09	0.80	0.47	0.27	0.21	0.18
Illinois	St. Clair	0.12	< 0.05	0.08	0.83	0.48	0.28	0.20	0.18
Indiana	Clark	0.29	0.05	0.32	0.39	0.90	0.11	0.90	0.11
Indiana	Dubois	0.26	0.05	0.19	0.58	1.22	0.14	0.64	0.13
Indiana	Lake	0.07	< 0.05	0.05	1.02	0.89	0.26	0.16	0.06
Indiana	Marion	0.16	< 0.05	0.12	0.76	1.44	0.21	0.42	0.08
Indiana	Vanderburgh	0.33	0.06	0.21	0.76	1.11	0.18	0.52	0.17
Kentucky	Fayette	0.30	0.06	0.39	0.32	0.68	0.09	1.10	0.10
Kentucky	Jefferson	0.27	0.05	0.30	0.38	0.87	0.11	0.86	0.11
Maryland	Anne Arundel	0.07	< 0.05	0.13	0.13	0.18	0.05	0.14	< 0.05
Maryland	Baltimore City	0.07	< 0.05	0.12	0.13	0.17	0.05	0.13	< 0.05
Michigan	Wayne	0.09	< 0.05	0.10	0.42	0.57	0.14	0.19	< 0.05

Downwind Nonattainment Counties		Upwind States - Part 1							
State	County	AL	FL	GA	IL	IN	IA	KY	LA
New Jersey	Union	0.05	< 0.05	0.08	0.12	0.15	0.05	0.10	< 0.05
New York	New York	< 0.05	< 0.05	0.08	0.11	0.14	< 0.05	0.09	< 0.05
North Carolina	Catawba	0.28	0.09	0.56	0.15	0.26	0.05	0.29	0.08
North Carolina	Davidson	0.23	0.10	0.56	0.12	0.20	< 0.05	0.21	0.07
Ohio	Butler	0.18	< 0.05	0.24	0.38	0.87	0.11	0.65	0.08
Ohio	Cuyahoga	0.08	< 0.05	0.11	0.32	0.43	0.11	0.23	< 0.05
Ohio	Franklin	0.20	< 0.05	0.26	0.40	0.67	0.11	0.43	0.05
Ohio	Hamilton	0.18	< 0.05	0.24	0.38	0.91	0.12	0.68	0.09
Ohio	Jefferson	0.08	< 0.05	0.11	0.18	0.25	0.07	0.20	< 0.05
Ohio	Lawrence	0.21	< 0.05	0.25	0.21	0.40	0.06	0.62	0.07
Ohio	Mahoning	0.08	< 0.05	0.10	0.25	0.32	0.09	0.21	< 0.05
Ohio	Montgomery	0.15	< 0.05	0.20	0.44	0.85	0.12	0.46	0.06
Ohio	Scioto	0.25	0.05	0.29	0.25	0.48	0.08	0.67	0.09
Ohio	Stark	0.09	< 0.05	0.12	0.26	0.36	0.09	0.25	< 0.05
Ohio	Summit	0.09	< 0.05	0.12	0.30	0.41	0.10	0.25	< 0.05
Pennsylvania	Allegheny	0.10	< 0.05	0.14	0.21	0.31	0.08	0.24	< 0.05
Pennsylvania	Beaver	0.08	< 0.05	0.10	0.19	0.26	0.07	0.18	< 0.05
Pennsylvania	Berks	0.07	< 0.05	0.10	0.14	0.19	0.06	0.15	< 0.05
Pennsylvania	Cambria	0.07	< 0.05	0.09	0.14	0.20	0.05	0.16	< 0.05
Pennsylvania	Dauphin	0.07	< 0.05	0.12	0.14	0.19	0.06	0.15	< 0.05
Pennsylvania	Delaware	0.05	< 0.05	0.10	0.12	0.15	0.05	0.11	< 0.05
Pennsylvania	Lancaster	0.07	< 0.05	0.12	0.15	0.20	0.06	0.16	< 0.05
Pennsylvania	Philadelphia	0.05	< 0.05	0.10	0.12	0.15	0.05	0.11	< 0.05
Pennsylvania	Washington	0.09	< 0.05	0.12	0.18	0.27	0.07	0.21	< 0.05
Pennsylvania	Westmoreland	0.09	< 0.05	0.12	0.18	0.26	0.06	0.22	< 0.05
Pennsylvania	York	0.06	< 0.05	0.10	0.14	0.18	0.05	0.14	< 0.05
Tennessee	Hamilton	0.98	0.14	1.27	0.20	0.34	0.06	0.32	0.15

Downwind Nonattainment Counties		Upwind States - Part 1							
State	County	AL	FL	GA	IL	IN	IA	KY	LA
Tennessee	Knox	0.48	0.10	0.86	0.17	0.32	0.05	0.44	0.13
West Virginia	Berkeley	0.08	< 0.05	0.13	0.14	0.21	0.05	0.17	< 0.05
West Virginia	Brooke	0.07	< 0.05	0.10	0.17	0.24	0.06	0.19	< 0.05
West Virginia	Cabell	0.24	0.06	0.29	0.21	0.42	0.07	0.71	0.08
West Virginia	Hancock	0.08	< 0.05	0.11	0.18	0.26	0.07	0.19	< 0.05
West Virginia	Kanawha	0.18	0.05	0.24	0.20	0.35	0.06	0.46	0.06
West Virginia	Marion	0.10	< 0.05	0.15	0.17	0.26	0.05	0.24	< 0.05
West Virginia	Marshall	0.09	< 0.05	0.13	0.18	0.27	0.07	0.23	< 0.05
West Virginia	Ohio	0.09	< 0.05	0.13	0.18	0.27	0.06	0.23	< 0.05
West Virginia	Wood	0.12	< 0.05	0.16	0.19	0.31	0.06	0.31	< 0.05

Downwind Nonattainment Counties		Upwind States - Part 2							
State	**County**	**MD/DC**	**MI**	**MN**	**MS**	**MO**	**NY**	**NC**	**OH**
Alabama	Jefferson	0.07	0.08	< 0.05	0.23	0.15	< 0.05	0.13	0.32
Alabama	Russell	0.09	0.07	< 0.05	0.17	0.11	< 0.05	0.17	0.29
Connecticut	New Haven	0.15	0.12	< 0.05	< 0.05	< 0.05	0.31	0.07	0.31
Delaware	New Castle	0.45	0.21	< 0.05	< 0.05	0.05	0.20	0.16	0.58
District of Columbia		0.51	0.17	< 0.05	< 0.05	0.06	0.11	0.26	0.77
Georgia	Bibb	0.11	0.07	< 0.05	0.12	0.10	< 0.05	0.22	0.32
Georgia	Clarke	0.10	0.10	< 0.05	0.10	0.12	< 0.05	0.31	0.43
Georgia	Clayton	0.06	0.07	< 0.05	0.09	0.09	< 0.05	0.19	0.30
Georgia	Cobb	0.06	0.08	< 0.05	0.09	0.10	< 0.05	0.18	0.34
Georgia	DeKalb	0.06	0.07	< 0.05	0.09	0.09	< 0.05	0.19	0.31
Georgia	Floyd	0.05	0.08	< 0.05	0.08	0.10	< 0.05	0.12	0.29
Georgia	Fulton	0.06	0.07	< 0.05	0.08	0.09	< 0.05	0.19	0.30
Georgia	Walker	0.06	0.11	< 0.05	0.09	0.13	< 0.05	0.14	0.41
Illinois	Cook	< 0.05	0.40	0.21	< 0.05	0.31	< 0.05	< 0.05	0.24
Illinois	Madison	< 0.05	0.13	0.13	0.09	1.05	< 0.05	< 0.05	0.21
Illinois	St. Clair	< 0.05	0.13	0.13	0.08	1.07	< 0.05	< 0.05	0.21
Indiana	Clark	< 0.05	0.20	< 0.05	0.06	0.22	< 0.05	0.06	0.66
Indiana	Dubois	< 0.05	0.19	0.05	0.06	0.30	< 0.05	< 0.05	0.44
Indiana	Lake	< 0.05	0.35	0.20	< 0.05	0.29	< 0.05	< 0.05	0.30
Indiana	Marion	< 0.05	0.30	0.10	0.05	0.27	< 0.05	< 0.05	0.66
Indiana	Vanderburgh	< 0.05	0.17	0.07	0.09	0.40	< 0.05	< 0.05	0.36
Kentucky	Fayette	< 0.05	0.25	< 0.05	0.06	0.17	< 0.05	0.08	1.08
Kentucky	Jefferson	< 0.05	0.19	< 0.05	0.06	0.20	< 0.05	0.05	0.62
Maryland	Anne Arundel	0.86	0.18	< 0.05	< 0.05	0.06	0.14	0.24	0.72
Maryland	Baltimore City	0.75	0.19	< 0.05	< 0.05	0.06	0.15	0.20	0.71

Downwind Nonattainment Counties		Upwind States - Part 2							
State	County	MD/DC	MI	MN	MS	MO	NY	NC	OH
Michigan	Wayne	0.05	1.04	0.11	< 0.05	0.14	0.08	< 0.05	1.04
New Jersey	Union	0.25	0.20	< 0.05	< 0.05	0.05	0.34	0.11	0.51
New York	New York	0.25	0.19	< 0.05	< 0.05	< 0.05	0.51	0.11	0.51
North Carolina	Catawba	0.10	0.13	< 0.05	< 0.05	0.10	< 0.05	0.92	0.63
North Carolina	Davidson	0.14	0.12	< 0.05	< 0.05	0.07	0.06	1.21	0.59
Ohio	Butler	< 0.05	0.29	< 0.05	< 0.05	0.17	< 0.05	0.05	1.25
Ohio	Cuyahoga	0.08	0.62	0.06	< 0.05	0.12	0.09	0.07	1.75
Ohio	Franklin	< 0.05	0.41	0.05	< 0.05	0.15	< 0.05	0.06	1.67
Ohio	Hamilton	< 0.05	0.30	< 0.05	0.05	0.18	< 0.05	0.06	1.29
Ohio	Jefferson	0.13	0.29	< 0.05	< 0.05	0.09	0.08	0.10	1.54
Ohio	Lawrence	0.06	0.20	< 0.05	< 0.05	0.11	< 0.05	0.14	1.28
Ohio	Mahoning	0.11	0.44	0.05	< 0.05	0.10	0.11	0.08	1.67
Ohio	Montgomery	< 0.05	0.36	0.05	< 0.05	0.18	< 0.05	< 0.05	1.38
Ohio	Scioto	0.06	0.24	< 0.05	0.05	0.13	< 0.05	0.13	1.51
Ohio	Stark	0.10	0.42	< 0.05	< 0.05	0.11	0.09	0.08	1.75
Ohio	Summit	0.08	0.54	0.05	< 0.05	0.12	0.09	0.07	1.75
Pennsylvania	Allegheny	0.19	0.33	0.05	< 0.05	0.10	0.11	0.13	1.67
Pennsylvania	Beaver	0.13	0.34	< 0.05	< 0.05	0.09	0.10	0.09	1.67
Pennsylvania	Berks	0.48	0.25	< 0.05	< 0.05	0.07	0.24	0.13	0.76
Pennsylvania	Cambria	0.23	0.21	< 0.05	< 0.05	0.08	0.11	0.09	1.08
Pennsylvania	Dauphin	0.43	0.23	< 0.05	< 0.05	0.07	0.17	0.15	0.87
Pennsylvania	Delaware	0.44	0.20	< 0.05	< 0.05	0.05	0.19	0.15	0.57
Pennsylvania	Lancaster	0.69	0.27	< 0.05	< 0.05	0.07	0.21	0.17	0.84
Pennsylvania	Philadelphia	0.44	0.20	< 0.05	< 0.05	0.05	0.19	0.16	0.57
Pennsylvania	Washington	0.16	0.29	< 0.05	< 0.05	0.09	0.09	0.12	1.44
Pennsylvania	Westmoreland	0.20	0.27	< 0.05	< 0.05	0.09	0.09	0.12	1.43
Pennsylvania	York	0.47	0.24	< 0.05	< 0.05	0.06	0.18	0.14	0.83

Downwind Nonattainment Counties		Upwind States - Part 2							
State	**County**	**MD/DC**	**MI**	**MN**	**MS**	**MO**	**NY**	**NC**	**OH**
Tennessee	Hamilton	0.06	0.12	< 0.05	0.10	0.14	< 0.05	0.15	0.44
Tennessee	Knox	0.06	0.12	< 0.05	0.06	0.14	< 0.05	0.20	0.54
West Virginia	Berkeley	0.34	0.18	< 0.05	< 0.05	0.08	0.10	0.15	0.91
West Virginia	Brooke	0.12	0.27	< 0.05	< 0.05	0.08	0.07	0.09	1.47
West Virginia	Cabell	0.06	0.20	< 0.05	< 0.05	0.12	< 0.05	0.17	1.12
West Virginia	Hancock	0.12	0.29	< 0.05	< 0.05	0.09	0.08	0.10	1.50
West Virginia	Kanawha	0.09	0.19	< 0.05	< 0.05	0.11	< 0.05	0.22	1.15
West Virginia	Marion	0.15	0.21	< 0.05	< 0.05	0.08	0.06	0.15	1.24
West Virginia	Marshall	0.13	0.27	< 0.05	< 0.05	0.08	0.07	0.12	1.48
West Virginia	Ohio	0.13	0.27	< 0.05	< 0.05	0.08	0.07	0.12	1.49
West Virginia	Wood	0.09	0.24	< 0.05	< 0.05	0.08	< 0.05	0.13	1.59

Downwind Nonattainment Counties		Upwind States - Part 3						
State	County	PA	SC	TN	TX	VA	WV	WI
Alabama	Jefferson	0.10	0.12	0.32	0.19	0.06	0.13	0.06
Alabama	Russell	0.14	0.23	0.22	0.15	0.08	0.16	< 0.05
Connecticut	New Haven	0.39	< 0.05	< 0.05	< 0.05	0.08	0.13	< 0.05
Delaware	New Castle	0.88	0.06	0.08	< 0.05	0.25	0.33	0.07
District of Columbia		0.69	0.09	0.13	< 0.05	0.44	0.46	0.07
Georgia	Bibb	0.19	0.32	0.23	0.14	0.10	0.16	< 0.05
Georgia	Clarke	0.21	0.40	0.40	0.13	0.11	0.21	0.06
Georgia	Clayton	0.13	0.23	0.27	0.11	0.07	0.14	< 0.05
Georgia	Cobb	0.12	0.20	0.34	0.11	0.07	0.15	< 0.05
Georgia	DeKalb	0.13	0.22	0.31	0.11	0.07	0.14	< 0.05
Georgia	Floyd	0.08	0.13	0.34	0.10	0.05	0.13	< 0.05
Georgia	Fulton	0.12	0.21	0.30	0.10	0.07	0.14	< 0.05
Georgia	Walker	0.10	0.16	0.65	0.12	0.06	0.16	0.06
Illinois	Cook	< 0.05	< 0.05	0.08	0.12	< 0.05	< 0.05	0.56
Illinois	Madison	< 0.05	< 0.05	0.18	0.29	< 0.05	0.05	0.16
Illinois	St. Clair	< 0.05	< 0.05	0.17	0.28	< 0.05	< 0.05	0.16
Indiana	Clark	0.08	0.05	0.36	0.13	< 0.05	0.16	0.12
Indiana	Dubois	0.06	< 0.05	0.30	0.16	< 0.05	0.10	0.14
Indiana	Lake	< 0.05	< 0.05	0.09	0.11	< 0.05	0.05	0.43
Indiana	Marion	0.08	< 0.05	0.18	0.12	< 0.05	0.11	0.23
Indiana	Vanderburgh	0.06	< 0.05	0.36	0.19	< 0.05	0.09	0.15
Kentucky	Fayette	0.12	0.08	0.44	0.11	0.05	0.29	0.12
Kentucky	Jefferson	0.08	0.05	0.33	0.12	< 0.05	0.15	0.11
Maryland	Anne Arundel	0.78	0.08	0.12	< 0.05	0.39	0.41	0.07
Maryland	Baltimore City	0.89	0.07	0.11	< 0.05	0.31	0.41	0.07

Downwind Nonattainment Counties		Upwind States - Part 3						
State	County	PA	SC	TN	TX	VA	WV	WI
Michigan	Wayne	0.28	< 0.05	0.09	0.08	< 0.05	0.17	0.27
New Jersey	Union	0.81	0.05	0.07	< 0.05	0.14	0.25	0.07
New York	New York	0.81	< 0.05	0.06	< 0.05	0.13	0.24	0.06
North Carolina	Catawba	0.21	0.28	0.62	0.09	0.22	0.33	0.06
North Carolina	Davidson	0.30	0.39	0.30	0.07	0.25	0.30	0.05
Ohio	Butler	0.10	< 0.05	0.23	0.10	< 0.05	0.22	0.13
Ohio	Cuyahoga	0.34	< 0.05	0.12	0.06	0.05	0.29	0.17
Ohio	Franklin	0.19	< 0.05	0.19	0.09	< 0.05	0.34	0.15
Ohio	Hamilton	0.11	0.05	0.25	0.11	< 0.05	0.23	0.15
Ohio	Jefferson	0.54	< 0.05	0.13	0.06	0.08	0.61	0.10
Ohio	Lawrence	0.20	0.07	0.33	0.07	0.09	0.60	0.09
Ohio	Mahoning	0.54	< 0.05	0.11	0.06	0.07	0.43	0.13
Ohio	Montgomery	0.11	< 0.05	0.18	0.10	< 0.05	0.24	0.16
Ohio	Scioto	0.18	0.09	0.38	0.10	0.08	0.52	0.11
Ohio	Stark	0.44	< 0.05	0.12	0.07	0.07	0.43	0.13
Ohio	Summit	0.36	< 0.05	0.12	0.06	0.06	0.34	0.15
Pennsylvania	Allegheny	0.92	< 0.05	0.16	0.07	0.13	0.84	0.11
Pennsylvania	Beaver	0.59	< 0.05	0.12	0.05	0.08	0.48	0.11
Pennsylvania	Berks	1.38	0.05	0.10	< 0.05	0.21	0.40	0.08
Pennsylvania	Cambria	1.12	< 0.05	0.10	0.05	0.15	0.53	0.07
Pennsylvania	Dauphin	1.17	0.05	0.11	< 0.05	0.23	0.45	0.08
Pennsylvania	Delaware	0.87	0.06	0.08	< 0.05	0.24	0.32	0.07
Pennsylvania	Lancaster	1.54	0.06	0.11	< 0.05	0.28	0.47	0.09
Pennsylvania	Philadelphia	0.85	0.06	0.09	< 0.05	0.24	0.32	0.07
Pennsylvania	Washington	0.67	< 0.05	0.14	0.06	0.11	0.72	0.10
Pennsylvania	Westmoreland	0.94	< 0.05	0.14	0.05	0.14	0.81	0.10
Pennsylvania	York	1.43	< 0.05	0.10	< 0.05	0.23	0.44	0.07

Downwind Nonattainment Counties		Upwind States - Part 3						
State	**County**	**PA**	**SC**	**TN**	**TX**	**VA**	**WV**	**WI**
Tennessee	Hamilton	0.10	0.18	0.69	0.12	0.06	0.17	0.06
Tennessee	Knox	0.11	0.19	1.20	0.11	0.06	0.24	0.06
West Virginia	Berkeley	0.84	0.05	0.12	0.05	0.24	0.59	0.07
West Virginia	Brooke	0.52	< 0.05	0.12	0.05	0.08	0.57	0.09
West Virginia	Cabell	0.20	0.09	0.39	0.08	0.11	0.56	0.09
West Virginia	Hancock	0.52	< 0.05	0.12	0.06	0.08	0.58	0.10
West Virginia	Kanawha	0.29	0.08	0.31	0.07	0.17	1.10	0.09
West Virginia	Marion	0.53	< 0.05	0.17	0.05	0.14	1.06	0.08
West Virginia	Marshall	0.53	< 0.05	0.15	0.06	0.10	0.74	0.09
West Virginia	Ohio	0.54	< 0.05	0.15	0.05	0.10	0.75	0.09
West Virginia	Wood	0.32	0.05	0.18	0.06	0.09	0.72	0.09

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Appendix I

Projected Visibility for the 20% Best and 20% Worst Days in Class I Areas

Example Calculation of the Predicted Change in Visibility on the 20% Worst Days at an IMPROVE Site

Day	2001 IMPROVE Deciviews	IMPROVE bext	IMPROVE SO4 bext	IMPROVE NO3 bext	IMPROVE OMC bext	IMPROVE EC bext	IMPROVE soil bext	IMPROVE coarse bext	2015c RRF SO4	2015c RRF NO3	2015c RRF OMC	2015c RRF EC	2015c RRF soil	2015c RRF coarse
Day 1	21.66	87.27	46.45	14.53	9.10	3.87	0.46	2.86	1.09	1.01	0.85	0.72	0.98	1.08
Day 2	21.50	85.83	53.58	4.50	7.79	3.92	0.65	5.38	0.94	1.04	0.95	0.76	1.02	1.10
Day 3	23.54	105.31	67.83	11.24	8.32	4.26	0.30	3.35	0.54	0.74	0.80	0.62	1.08	1.10
Day 4	20.11	74.72	53.60	1.93	4.84	3.04	0.13	1.18	0.57	1.70	0.70	0.50	1.06	1.08
Day 5	21.85	88.93	51.43	7.38	10.18	1.43	0.25	8.26	0.58	1.84	0.77	0.48	1.13	1.13
Day 6	23.83	108.41	74.33	4.42	10.62	4.13	0.28	4.63	0.58	1.14	0.83	0.52	1.13	1.11
Day 7	24.69	118.16	80.05	5.64	12.08	7.95	0.47	1.98	0.59	0.98	0.73	0.43	1.13	1.11
Day 8	22.34	93.35	41.44	1.65	30.37	6.73	0.28	2.88	0.74	0.70	0.91	0.81	1.07	1.11
Day 9	22.47	94.56	59.46	4.35	12.62	3.66	0.29	4.19	0.87	0.43	0.80	0.55	1.13	1.13
Day 10	24.11	111.40	88.74	1.26	6.50	3.49	0.02	1.39	0.61	0.42	0.78	0.45	1.14	1.12
Day 11	32.94	269.47	235.95	1.29	15.09	6.52	0.09	0.54	0.55	0.99	0.77	0.50	1.11	1.11
Day 12	25.23	124.60	90.91	4.25	12.87	4.67	0.33	1.58	0.70	0.38	0.88	0.62	1.12	1.13
Day 13	30.50	211.16	179.59	3.26	11.20	5.42	0.07	1.62	0.53	1.27	0.73	0.48	1.11	1.10
Day 14	22.30	93.00	57.95	8.26	10.37	3.50	0.28	2.65	0.60	1.28	0.76	0.44	1.11	1.11
Day 15	24.07	111.05	77.79	3.03	13.68	3.47	0.23	2.85	0.73	1.26	0.87	0.57	1.08	1.09
Day 16	23.37	103.49	69.05	2.34	10.74	4.87	0.33	6.15	0.82	0.88	0.89	0.77	1.08	1.10
Day 17	20.27	75.91	54.19	1.77	4.66	2.45	0.16	2.69	1.00	0.94	0.94	0.97	1.00	1.06
Day 18	19.98	73.76	46.74	2.46	6.05	5.49	0.15	2.85	0.74	0.66	0.80	0.68	0.96	1.07
Day 19	22.15	91.58	65.68	2.83	6.14	4.43	0.11	2.38	0.76	1.18	0.82	0.65	0.99	1.06
Average dv	**23.52**													

Step 1

2001 Observed values at an IMPROVE site
(10 Mm-1 is added to each total bext value to account for Rayleigh scattering)

Step 2

Relative Reduction Factors are calculated from CMAQ for each species based on the model predicted % reduction for each day.
RRFs represent the predicted reduction from the 2001 base case to the 2015 CAIR control case. An RRF of 0.85 indicates a 15% reduction.

2015c SO4 bext	2015c NO3 bext	2015c OMC bext	2015c EC bext	2015c soil bext	2015c coarse bext	2015c Total bext	2015c Deciviews
50.72	14.73	7.74	2.80	0.45	3.08	89.52	21.92
50.56	4.67	7.43	2.99	0.66	5.93	82.24	21.07
36.96	8.35	6.68	2.62	0.32	3.67	68.60	19.26
30.32	3.27	3.39	1.52	0.13	1.27	49.90	16.07
29.60	13.55	7.84	0.69	0.28	9.29	71.25	19.64
43.09	5.01	8.77	2.14	0.32	5.13	74.46	20.08
47.55	5.52	8.80	3.39	0.53	2.20	77.98	20.54
30.47	1.16	27.58	5.48	0.30	3.20	78.18	20.56
51.88	1.88	10.11	2.01	0.33	4.74	80.94	20.91
54.45	0.52	5.04	1.58	0.02	1.56	73.18	19.90
129.76	1.28	11.58	3.28	0.10	0.60	156.59	27.51
63.97	1.63	11.29	2.90	0.36	1.78	91.93	22.18
95.33	4.13	8.23	2.59	0.08	1.79	122.15	25.03
34.82	10.55	7.86	1.55	0.31	2.93	68.03	19.17
57.15	3.82	11.93	1.99	0.25	3.11	88.25	21.78
56.81	2.06	9.60	3.76	0.35	6.77	89.36	21.90
54.39	1.66	4.36	2.38	0.16	2.85	75.80	20.26
34.51	1.62	4.82	3.73	0.15	3.05	57.87	17.56
49.62	3.34	5.05	2.87	0.10	2.52	73.50	19.95
					Average dv 2015c		**20.80**

Step 3

The RRFs are multiplied by the base year bext values to get the 2015 control bext predictions.
The daily total bext values are converted to deciviews and then the deciview values are averaged across all days.

2001 dv	1998-2002 dv	2015c final "normalized" dv
23.5	**24.7**	**22.0**

Step 4

The future year dv value is normalized by the difference between the observed value in 2001 and the 5 year average for the 1998-2002 time period. In this case the future year dv value is adjusted upwards by the difference between 23.52 dv and 24.67 dv. In this way, the future year dv values are numerically consistant with the base year 5 year average visibility impairment. The final values are rounded to the tenths digit.

Table Appendix I-2. Current visibility (1998-2002) on the 20% best days and 20% worst days at 116 IMPROVE sites.

Class I Area	IMPROVE Representative Site	IMPROVE Site Identifier	State	Number of Years of Complete Data	1998-2002 Baseline Visibility (in dv) 20% Best Days	1998-2002 Baseline Visibility (in dv) 20% Worst Days
Acadia	Acadia	ACAD	ME	5	8.4	22.7
Agua Tibia	Agua Tibia	AGTI	CA	2	10.0	23.2
Alpine Lakes	Snoqualmie Pass	SNPA	WA	3	5.6	18.0
Anaconda - Pintler	Sula	SULA	MT	2	3.1	12.3
Arches	Canyonlands	CANY	UT	5	5.3	12.0
Badlands	Badlands	BADL	SD	5	7.1	17.3
Bandelier	Bandelier	BAND	NM	5	6.3	13.2
Big Bend	Big Bend	BIBE	TX	4	7.7	18.4
Black Canyon of the Gunnison	Weminuche	WEMI	CO	4	4.4	11.6
Bob Marshall	Monture	MONT	MT	2	4.5	14.2
Boundary Waters Canoe Area	Boundary Waters	BOWA	MN	3	6.4	20.0
Bridger	Bridger	BRID	WY	5	3.8	11.5
Brigantine	Brigantine	BRIG	NJ	4	13.6	27.6
Bryce Canyon	Bryce Canyon	BRCA	UT	5	4.1	12.0
Cabinet Mountains	Cabinet Mountains	CABI	MT	2	4.1	13.8
Caney Creek	Caney Creek	CACR	AR	2	12.1	25.9
Canyonlands	Canyonlands	CANY	UT	5	5.3	12.0
Cape Romain	Cape Romain	ROMA	SC	4	13.8	25.9
Caribou	Lassen Volcanic	LAVO	CA	5	3.3	14.8
Carlsbad Caverns	Guadalupe Mountains	GUMO	NM	5	7.2	17.6
Chassahowitzka	Chassahowitzka	CHAS	FL	4	16.4	25.7
Chiricahua NM	Chiricahua	CHIR	AZ	5	5.9	13.9

Class I Area	IMPROVE Representative Site	IMPROVE Site Identifier	State	Number of Years of Complete Data	1998-2002 Baseline Visibility (in dv) 20% Best Days	1998-2002 Baseline Visibility (in dv) 20% Worst Days
Chiricahua W	Chiricahua	CHIR	AZ	5	5.9	13.9
Craters of the Moon	Craters of the Moon	CRMO	ID	2	5.0	14.7
Desolation	Bliss	BLIS	CA	3	3.5	12.9
Dolly Sods	Dolly Sods	DOSO	WV	5	13.0	27.6
Dome Land	Dome Land	DOME	CA	2	5.4	20.3
Eagle Cap	Starkey	STAR	OR	2	5.6	19.6
Eagles Nest	White River	WHRI	CO	2	2.8	11.3
Emigrant	Yosemite	YOSE	CA	5	4.0	17.6
Everglades	Everglades	EVER	FL	2	10.8	20.3
Fitzpatrick	Bridger	BRID	WY	5	3.8	11.5
Flat Tops	White River	WHRI	CO	2	2.8	11.3
Galiuro	Chiricahua	CHIR	AZ	5	5.9	13.9
Gates of the Mountains	Gates of the Mountains	GAMO	MT	2	3.1	11.2
Gila	Gila Cliffs	GICL	NM	4	5.1	13.5
Glacier	Glacier	GLAC	MT	4	7.3	19.5
Glacier Peak	North Cascades	NOCA	WA	2	2.8	14.0
Grand Teton	Yellowstone	YELL	WY	4	3.7	12.1
Great Gulf	Great Gulf	GRGU	NH	2	7.8	23.2
Great Sand Dunes	Great Sand Dunes	GRSA	CO	5	5.7	13.1
Great Smoky Mountains	Great Smoky Mountains	GRSM	TN	5	14.2	29.5
Guadalupe Mountains	Guadalupe Mountains	GUMO	TX	5	7.2	17.6
Hells Canyon	Hells Canyon	HECA	OR	2	5.4	18.1
Isle Royale	Isle Royale	ISLE	MI	3	6.2	21.1
James River Face	James River Face	JARI	VA	3	15.5	28.5
Jarbidge	Jarbidge	JARB	NV	3	3.0	12.6

Class I Area	IMPROVE Representative Site	IMPROVE Site Identifier	State	Number of Years of Complete Data	1998-2002 Baseline Visibility (in dv) 20% Best Days	1998-2002 Baseline Visibility (in dv) 20% Worst Days
Joshua Tree	Joshua Tree	JOSH	CA	2	6.6	19.5
Joyce Kilmer - Slickrock	Great Smoky Mountains	GRSM	NC	5	14.2	29.5
Kalmiopsis	Kalmiopsis	KALM	OR	2	4.7	14.8
Kings Canyon	Sequoia	SEQU	CA	3	8.8	23.5
La Garita	Weminuche	WEMI	CO	4	4.4	11.6
Lassen Volcanic	Lassen Volcanic	LAVO	CA	5	3.3	14.8
Lava Beds	Lava Beds	LABE	CA	2	3.7	16.6
Linville Gorge	Linville Gorge	LIGO	NC	2	12.2	27.9
Lostwood	Lostwood	LOST	ND	3	8.3	19.6
Lye Brook	Lye Brook	LYBR	VT	4	6.6	23.9
Mammoth Cave	Mammoth Cave	MACA	KY	4	16.5	30.2
Marble Mountain	Trinity	TRIN	CA	1	3.5	17.1
Maroon Bells - Snowmass	White River	WHRI	CO	2	2.8	11.3
Mazatzal	Ike's Backbone	IKBA	AZ	2	6.1	13.1
Medicine Lake	Medicine Lake	MELA	MT	3	7.5	17.7
Mesa Verde	Mesa Verde	MEVE	CO	5	5.5	12.8
Mingo	Mingo	MING	MO	2	14.1	27.5
Mission Mountains	Monture	MONT	MT	2	4.5	14.2
Mokelumne	Bliss	BLIS	CA	3	3.5	12.9
Moosehorn	Moosehorn	MOOS	ME	5	8.6	21.4
Mount Hood	Mount Hood	MOHO	OR	2	2.5	14.0
Mount Jefferson	Three Sisters	THSI	OR	5	2.8	15.7
Mount Rainier	Mount Rainier	MORA	WA	5	4.9	18.9
Mount Washington	Three Sisters	THSI	OR	5	2.8	15.7
Mount Zirkel	Mount Zirkel	MOZI	CO	4	4.4	11.7

Class I Area	IMPROVE Representative Site	IMPROVE Site Identifier	State	Number of Years of Complete Data	1998-2002 Baseline Visibility (in dv) 20% Best Days	1998-2002 Baseline Visibility (in dv) 20% Worst Days
North Cascades	North Cascades	NOCA	WA	2	2.8	14.0
Okefenokee	Okefenokee	OKEF	GA	5	15.5	26.4
Otter Creek	Dolly Sods	DOSO	WV	5	13.0	27.6
Pasayten	Pasayten	PASA	WA	2	2.9	14.7
Petrified Forest	Petrified Forest	PEFO	AZ	5	6.3	13.5
Pine Mountain	Ike's Backbone	IKBA	AZ	2	6.1	13.1
Presidential Range - Dry	Great Gulf	GRGU	NH	2	7.8	23.2
Rawah	Mount Zirkel	MOZI	CO	4	4.4	11.7
Red Rock Lakes	Yellowstone	YELL	WY	4	3.7	12.1
Redwood	Redwood	REDW	CA	5	5.0	16.5
Rocky Mountain	Rocky Mountain	ROMO	CO	5	3.7	14.1
Roosevelt Campobello	Moosehorn	MOOS	ME	5	8.6	21.4
Salt Creek	Salt Creek	SACR	NM	2	8.3	17.7
San Gorgonio	San Gorgonio	SAGO	CA	4	6.8	21.5
San Jacinto	San Gorgonio	SAGO	CA	4	6.8	21.5
San Pedro Parks	San Pedro Parks	SAPE	NM	2	3.5	11.4
Sawtooth	Sawtooth	SAWT	ID	2	4.3	13.6
Scapegoat	Monture	MONT	MT	2	4.5	14.2
Selway - Bitterroot	Sula	SULA	MT	2	3.1	12.3
Seney	Seney	SENE	MI	3	6.4	23.8
Sequoia	Sequoia	SEQU	CA	3	8.8	23.5
Shenandoah	Shenandoah	SHEN	VA	4	12.2	27.6
Sierra Ancha	Sierra Ancha	SIAN	AZ	2	6.8	13.4
Sipsey	Sipsey	SIPS	AL	4	16.3	28.7
South Warner	Lava Beds	LABE	CA	2	3.7	16.6

Class I Area	IMPROVE Representative Site	IMPROVE Site Identifier	State	Number of Years of Complete Data	1998-2002 Baseline Visibility (in dv) 20% Best Days	1998-2002 Baseline Visibility (in dv) 20% Worst Days
Strawberry Mountain	Starkey	STAR	OR	2	5.6	19.6
Superstition	Tonto	TONT	AZ	3	7.4	14.7
Swanquarter	Swanquarter	SWAN	NC	2	12.4	24.6
Sycamore Canyon	Sycamore Canyon	SYCA	AZ	2	6.7	16.1
Teton	Yellowstone	YELL	WY	4	3.7	12.1
Theodore Roosevelt	Theodore Roosevelt	THRO	ND	2	7.8	17.6
Thousand Lakes	Lassen Volcanic	LAVO	CA	5	3.3	14.8
Three Sisters	Three Sisters	THSI	OR	5	2.8	15.7
UL Bend	UL Bend	ULBE	MT	2	4.6	14.7
Upper Buffalo	Upper Buffalo	UPBU	AR	5	12.2	25.5
Voyageurs	Voyageurs	VOYA	MN	3	6.4	18.4
Weminuche	Weminuche	WEMI	CO	4	4.4	11.6
West Elk	White River	WHRI	CO	2	2.8	11.3
Wind Cave	Wind Cave	WICA	SD	3	5.7	16.0
Wolf Island	Okefenokee	OKEF	GA	5	15.5	26.4
Yellowstone	Yellowstone	YELL	WY	4	3.7	12.1
Yolla Bolly - Middle Eel	Trinity	TRIN	CA	1	3.5	17.1
Yosemite	Yosemite	YOSE	CA	5	4.0	17.6
Zion	Zion	ZION	UT	2	5.4	13.5

Table Appendix I-3. **Projected visibility for the 2010 and 2015 baseline and visibility improvement from the CAIR strategy on the 20% best days, at 116 Class I areas.**

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Acadia	ME	8.4	8.0	-0.2	8.2	-0.2
Agua Tibia	CA	10.0	10.0	0.0	10.1	0.0
Alpine Lakes	WA	5.6	4.9	0.0	5.6	0.0
Anaconda - Pintler	MT	3.1	3.1	0.0	3.1	0.0
Arches	UT	5.3	5.3	0.0	5.4	0.0
Badlands	SD	7.1	6.7	0.0	6.8	0.0
Bandelier	NM	6.3	6.2	0.0	6.3	0.0
Big Bend	TX	7.7	7.6	0.0	7.7	0.0
Black Canyon of the Gunnison	CO	4.4	4.2	0.0	4.2	0.0
Bob Marshall	MT	4.5	4.4	0.0	4.4	0.0
Boundary Waters Canoe Area	MN	6.4	6.1	0.0	6.2	0.0
Bridger	WY	3.8	3.5	0.0	3.6	0.0
Brigantine	NJ	13.6	13.4	-0.4	15.0	-0.4
Bryce Canyon	UT	4.1	3.9	0.0	4.0	0.0
Cabinet Mountains	MT	4.1	4.0	0.0	4.0	0.0
Caney Creek	AR	12.1	11.5	-0.1	11.6	-0.1
Canyonlands	UT	5.3	5.3	0.0	5.4	0.0
Cape Romain	SC	13.8	13.2	-0.3	13.4	-0.4
Caribou	CA	3.3	3.2	0.0	3.3	0.0
Carlsbad Caverns	NM	7.2	7.3	0.0	7.4	0.0
Chassahowitzka	FL	16.4	15.1	-0.2	15.2	-0.6
Chiricahua NM	AZ	5.9	5.8	0.0	5.9	0.0
Chiricahua W	AZ	5.9	5.8	0.0	5.9	0.0

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Craters of the Moon	ID	5.0	4.9	0.0	4.9	0.0
Desolation	CA	3.5	3.6	0.0	3.7	0.0
Dolly Sods	WV	13.0	12.7	-1.0	12.6	-1.1
Dome Land	CA	5.4	5.3	0.0	6.0	0.0
Eagle Cap	OR	5.6	5.3	0.0	5.3	0.0
Eagles Nest	CO	2.8	2.7	0.0	2.8	0.0
Emigrant	CA	4.0	4.0	0.0	4.1	0.0
Everglades	FL	10.8	10.5	-0.1	11.3	-0.1
Fitzpatrick	WY	3.8	3.5	0.0	3.6	0.0
Flat Tops	CO	2.8	2.7	0.0	2.7	0.0
Galiuro	AZ	5.9	6.0	0.0	6.1	0.0
Gates of the Mountains	MT	3.1	2.9	0.0	2.9	0.0
Gila	NM	5.1	5.2	0.0	5.3	0.0
Glacier	MT	7.3	6.9	0.0	6.9	0.0
Glacier Peak	WA	2.8	2.4	0.0	2.5	0.0
Grand Teton	WY	3.7	3.6	0.0	3.6	0.0
Great Gulf	NH	7.8	7.8	0.0	7.9	0.0
Great Sand Dunes	CO	5.7	5.6	0.0	5.6	0.0
Great Smoky Mountains	TN	14.2	14.0	-0.5	14.0	-0.7
Guadalupe Mountains	TX	7.2	7.4	0.0	7.4	0.0
Hells Canyon	OR	5.4	5.2	0.0	5.2	0.0
Isle Royale	MI	6.2	6.1	0.0	6.1	0.0
James River Face	VA	15.5	15.4	-0.8	15.4	-0.9
Jarbidge	NV	3.0	3.0	0.0	3.0	0.0
Joshua Tree	CA	6.6	6.7	-0.1	7.3	0.0
Joyce Kilmer - Slickrock	NC	14.2	14.0	-0.5	14.0	-0.7

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Kalmiopsis	OR	4.7	4.6	0.0	4.9	0.0
Kings Canyon	CA	8.8	9.2	0.0	9.4	0.0
La Garita	CO	4.4	4.3	0.0	4.3	0.0
Lassen Volcanic	CA	3.3	3.2	0.0	3.3	0.0
Lava Beds	CA	3.7	3.6	0.0	3.7	0.0
Linville Gorge	NC	12.2	11.9	-0.4	11.9	-0.5
Lostwood	ND	8.3	8.0	0.0	8.0	0.0
Lye Brook	VT	6.6	6.3	0.0	6.3	-0.0
Mammoth Cave	KY	16.5	16.1	-0.5	16.0	-0.6
Marble Mountain	CA	3.5	3.5	0.0	3.6	0.0
Maroon Bells - Snowmass	CO	2.8	2.6	0.0	2.7	0.0
Mazatzal	AZ	6.1	6.3	0.0	6.4	0.0
Medicine Lake	MT	7.5	7.1	0.0	7.1	0.0
Mesa Verde	CO	5.5	5.4	0.0	5.5	0.0
Mingo	MO	14.1	13.6	-0.2	13.7	-0.2
Mission Mountains	MT	4.5	4.1	0.0	4.0	0.0
Mokelumne	CA	3.5	3.5	0.0	3.6	0.0
Moosehorn	ME	8.6	8.6	-0.1	8.7	-0.1
Mount Hood	OR	2.5	2.3	0.0	2.6	0.0
Mount Jefferson	OR	2.8	2.6	0.0	2.7	0.0
Mount Rainier	WA	4.9	4.3	0.0	6.8	0.0
Mount Washington	OR	2.8	2.7	0.0	3.3	0.0
Mount Zirkel	CO	4.4	4.3	0.0	4.4	0.0
North Cascades	WA	2.8	2.6	0.0	2.8	0.0
Okefenokee	GA	15.5	15.1	-0.3	15.4	-0.4
Otter Creek	WV	13.0	12.9	-1.1	12.7	-1.3

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Pasayten	WA	2.9	2.5	0.0	2.5	0.0
Petrified Forest	AZ	6.3	6.3	0.0	6.4	0.0
Pine Mountain	AZ	6.1	6.2	0.0	6.4	0.0
Presidential Range - Dry	NH	7.8	7.6	-0.1	7.7	-0.1
Rawah	CO	4.4	4.3	0.0	4.4	0.0
Red Rock Lakes	WY	3.7	3.6	0.0	3.7	0.0
Redwood	CA	5.0	4.9	0.0	5.5	0.0
Rocky Mountain	CO	3.7	3.7	0.0	3.8	0.0
Roosevelt Campobello	ME	8.6	8.6	-0.1	8.7	-0.1
Salt Creek	NM	8.3	8.0	0.0	8.1	0.0
San Gorgonio	CA	6.8	6.8	0.0	6.9	0.0
San Jacinto	CA	6.8	6.8	0.0	6.8	0.0
San Pedro Parks	NM	3.5	3.5	0.0	3.5	0.0
Sawtooth	ID	4.3	4.2	0.0	4.2	0.0
Scapegoat	MT	4.5	4.3	0.0	4.3	0.0
Selway - Bitterroot	MT	3.1	3.1	0.0	3.1	0.0
Seney	MI	6.4	6.2	0.0	6.3	0.0
Sequoia	CA	8.8	8.7	0.0	9.0	-0.0
Shenandoah	VA	12.2	12.0	-1.0	12.1	-1.3
Sierra Ancha	AZ	6.8	7.0	0.0	7.2	0.0
Sipsey	AL	16.3	16.0	-0.5	16.0	-0.6
South Warner	CA	3.7	3.6	0.0	3.7	0.0
Strawberry Mountain	OR	5.6	5.4	0.0	5.4	0.0
Superstition	AZ	7.4	7.4	0.0	7.5	0.0
Swanquarter	NC	12.4	12.1	-0.1	12.2	-0.2
Sycamore Canyon	AZ	6.7	6.7	0.0	6.9	0.0

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Teton	WY	3.7	3.6	0.0	3.6	0.0
Theodore Roosevelt	ND	7.8	7.5	0.0	7.5	0.0
Thousand Lakes	CA	3.3	3.2	0.0	3.3	0.0
Three Sisters	OR	2.8	2.7	0.0	3.3	0.0
UL Bend	MT	4.6	4.3	0.0	4.3	0.0
Upper Buffalo	AR	12.2	11.8	-0.1	11.8	-0.1
Voyageurs	MN	6.4	6.3	0.0	6.5	0.0
Weminuche	CO	4.4	4.3	0.0	4.3	0.0
West Elk	CO	2.8	2.6	0.0	2.7	0.0
Wind Cave	SD	5.7	5.4	0.0	5.5	0.0
Wolf Island	GA	15.5	15.2	-0.2	15.5	-0.3
Yellowstone	WY	3.7	3.7	0.0	3.7	0.0
Yolla Bolly - Middle Eel	CA	3.5	3.5	0.0	3.5	0.0
Yosemite	CA	4.0	3.9	0.0	4.0	0.0
Zion	UT	5.4	5.3	0.0	5.4	0.0

Table Appendix I-4. Projected visibility for the 2010 and 2015 baseline and visibility improvement from the CAIR strategy on the 20% worst days at 116 IMPROVE sites.

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Acadia	ME	22.7	22.1	-0.9	22.0	-1.0
Agua Tibia	CA	23.2	23.3	0.0	23.3	0.0
Alpine Lakes	WA	18.0	17.3	0.0	17.4	0.0
Anaconda - Pintler	MT	12.3	12.1	0.0	12.2	0.0
Arches	UT	12.0	11.9	0.0	12.1	0.0
Badlands	SD	17.3	16.9	-0.1	16.9	-0.1
Bandelier	NM	13.2	13.2	0.0	13.2	0.0
Big Bend	TX	18.4	18.4	-0.1	18.4	-0.2
Black Canyon of the Gunnison	CO	11.6	11.4	0.0	11.4	0.0
Bob Marshall	MT	14.2	14.0	0.0	14.0	0.0
Boundary Waters Canoe Area	MN	20.0	19.4	-0.3	19.3	-0.3
Bridger	WY	11.5	11.2	0.0	11.3	0.0
Brigantine	NJ	27.6	27.3	-1.9	27.4	-2.1
Bryce Canyon	UT	12.0	11.9	0.0	11.9	0.0
Cabinet Mountains	MT	13.8	13.5	0.0	13.5	0.0
Caney Creek	AR	25.9	25.4	-1.1	25.4	-1.3
Canyonlands	UT	12.0	11.9	0.0	12.0	0.0
Cape Romain	SC	25.9	25.4	-1.0	25.3	-1.4
Caribou	CA	14.8	14.6	0.0	14.6	0.0
Carlsbad Caverns	NM	17.6	17.6	0.0	17.8	-0.1
Chassahowitzka	FL	25.7	24.6	-0.9	24.6	-1.7
Chiricahua NM	AZ	13.9	13.8	-0.1	14.0	-0.1

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Chiricahua W	AZ	13.9	13.8	-0.1	14.0	-0.1
Craters of the Moon	ID	14.7	14.7	0.0	14.7	0.0
Desolation	CA	12.9	12.8	0.0	12.8	0.0
Dolly Sods	WV	27.6	27.0	-2.4	26.7	-2.7
Dome Land	CA	20.3	20.0	0.0	19.9	0.0
Eagle Cap	OR	19.6	19.1	0.0	19.0	0.0
Eagles Nest	CO	11.3	11.3	0.0	11.4	0.0
Emigrant	CA	17.6	17.4	0.0	17.4	0.0
Everglades	FL	20.3	19.5	-0.4	19.7	-0.5
Fitzpatrick	WY	11.5	11.2	0.0	11.3	0.0
Flat Tops	CO	11.3	11.3	0.0	11.4	0.0
Galiuro	AZ	13.9	13.9	-0.1	14.2	-0.1
Gates of the Mountains	MT	11.2	10.8	0.0	10.8	0.0
Gila	NM	13.5	13.5	-0.1	13.6	-0.1
Glacier	MT	19.5	19.1	0.0	19.1	0.0
Glacier Peak	WA	14.0	13.5	0.0	13.8	0.0
Grand Teton	WY	12.1	12.0	0.0	12.0	0.0
Great Gulf	NH	23.2	22.9	-1.3	22.8	-1.6
Great Sand Dunes	CO	13.1	13.0	0.0	13.0	0.0
Great Smoky Mountains	TN	29.5	29.1	-1.9	28.7	-2.6
Guadalupe Mountains	TX	17.6	17.5	-0.1	17.6	-0.1
Hells Canyon	OR	18.1	18.0	0.0	18.0	0.0
Isle Royale	MI	21.1	20.6	-0.3	20.5	-0.4
James River Face	VA	28.5	28.0	-2.1	27.6	-2.4
Jarbidge	NV	12.6	12.6	0.0	12.8	0.0

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Joshua Tree	CA	19.5	19.9	0.0	20.4	0.0
Joyce Kilmer - Slickrock	NC	29.5	29.1	-1.9	28.7	-2.6
Kalmiopsis	OR	14.8	14.0	0.0	14.4	0.0
Kings Canyon	CA	23.5	24.2	0.0	24.2	0.0
La Garita	CO	11.6	11.5	0.0	11.5	0.0
Lassen Volcanic	CA	14.8	14.6	0.0	14.6	0.0
Lava Beds	CA	16.6	16.4	0.0	16.5	0.0
Linville Gorge	NC	27.9	27.2	-1.7	26.8	-2.1
Lostwood	ND	19.6	18.8	-0.1	18.7	0.0
Lye Brook	VT	23.9	23.4	-1.8	23.2	-2.1
Mammoth Cave	KY	30.2	29.8	-1.7	29.5	-2.5
Marble Mountain	CA	17.1	16.7	0.0	16.8	0.0
Maroon Bells - Snowmass	CO	11.3	11.2	0.0	11.3	0.0
Mazatzal	AZ	13.1	13.3	0.0	13.5	0.0
Medicine Lake	MT	17.7	17.2	0.0	17.1	0.0
Mesa Verde	CO	12.8	12.7	0.0	12.8	0.0
Mingo	MO	27.5	27.0	-0.8	26.9	-0.9
Mission Mountains	MT	14.2	13.9	0.0	14.0	0.0
Mokelumne	CA	12.9	12.7	0.0	12.8	0.0
Moosehorn	ME	21.4	21.2	-0.8	21.2	-0.9
Mount Hood	OR	14.0	13.3	0.0	13.7	0.0
Mount Jefferson	OR	15.7	14.9	0.0	15.2	0.0
Mount Rainier	WA	18.9	17.3	0.0	19.4	0.0
Mount Washington	OR	15.7	14.9	0.0	15.2	0.0
Mount Zirkel	CO	11.7	11.7	0.0	11.8	0.0

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
North Cascades	WA	14.0	13.7	0.0	14.0	0.0
Okefenokee	GA	26.4	26.1	-1.0	26.1	-1.4
Otter Creek	WV	27.6	27.3	-2.5	27.0	-2.9
Pasayten	WA	14.7	14.4	0.0	14.5	0.0
Petrified Forest	AZ	13.5	13.6	0.0	13.8	0.0
Pine Mountain	AZ	13.1	13.2	0.0	13.5	0.0
Presidential Range - Dry	NH	23.2	22.7	-1.5	22.6	-1.8
Rawah	CO	11.7	11.6	0.0	11.7	0.0
Red Rock Lakes	WY	12.1	12.0	0.0	12.1	0.0
Redwood	CA	16.5	15.6	0.0	16.5	0.0
Rocky Mountain	CO	14.1	14.1	0.0	14.1	0.0
Roosevelt Campobello	ME	21.4	21.0	-0.8	21.0	-0.9
Salt Creek	NM	17.7	17.4	-0.1	17.5	-0.2
San Gorgonio	CA	21.5	21.7	0.0	22.1	0.0
San Jacinto	CA	21.5	21.6	0.0	21.4	0.0
San Pedro Parks	NM	11.4	11.4	0.0	11.5	0.0
Sawtooth	ID	13.6	13.4	0.0	13.5	0.0
Scapegoat	MT	14.2	14.0	0.0	14.1	0.0
Selway - Bitterroot	MT	12.3	12.1	0.0	12.1	0.0
Seney	MI	23.8	23.5	-0.7	23.4	-0.8
Sequoia	CA	23.5	24.0	0.0	24.1	0.0
Shenandoah	VA	27.6	27.2	-2.8	26.7	-3.3
Sierra Ancha	AZ	13.4	13.5	0.0	13.7	0.0
Sipsey	AL	28.7	28.3	-1.5	28.1	-2.1
South Warner	CA	16.6	16.5	0.0	16.5	0.0

Class I Areas (IMPROVE Site)	State	1998-2002 Baseline Visibility (in dv) 20% Best Days	2010 Baseline Visibility (dv)	2010 Visibility Improvement from CAIR (dv)	2015 Baseline Visibility (dv)	2015 Visibility Improvement from CAIR (dv)
Strawberry Mountain	OR	19.6	19.2	0.0	19.2	0.0
Superstition	AZ	14.7	14.8	0.0	15.0	0.0
Swanquarter	NC	24.6	24.1	-1.4	23.8	-1.9
Sycamore Canyon	AZ	16.1	16.2	0.0	16.6	0.0
Teton	WY	12.1	12.1	0.0	12.1	0.0
Theodore Roosevelt	ND	17.6	17.0	0.0	16.9	0.0
Thousand Lakes	CA	14.8	14.6	0.0	14.6	0.0
Three Sisters	OR	15.7	14.9	0.0	15.2	0.0
UL Bend	MT	14.7	14.1	0.0	14.1	0.0
Upper Buffalo	AR	25.5	25.0	-0.7	25.1	-0.8
Voyageurs	MN	18.4	17.8	-0.1	17.7	-0.1
Weminuche	CO	11.6	11.4	0.0	11.5	0.0
West Elk	CO	11.3	11.2	0.0	11.3	0.0
Wind Cave	SD	16.0	15.5	-0.1	15.4	0.0
Wolf Island	GA	26.4	26.0	-0.8	26.1	-1.1
Yellowstone	WY	12.1	12.1	0.0	12.1	0.0
Yolla Bolly - Middle Eel	CA	17.1	16.8	0.0	16.9	0.0
Yosemite	CA	17.6	17.4	0.0	17.4	0.0
Zion	UT	13.5	13.2	0.0	13.3	0.0