Appendix 2: Additional Emissions Modeling Platform Information

2a.1 Discussion of Similarities and Differences Between Emissions Modeling Platforms Used in Ozone NAAQS Proposal and Final

All emissions modeling in the Ozone NAAQS Proposal was based off the 2001 emissions modeling platform. Version 3 of the 2002 emissions modeling platform (EPA, 2008) is used for the Final Ozone NAAQS. In both platforms, emissions are first projected to a year 2020 Base case. The following discusses similarities and differences in the 2001 and 2002 emission platforms, as well as assumptions used to project emissions to the year 2020.

2a.1.1 Similarities in the 2001 and 2002 Emissions Modeling Platforms

The 2001 and 2002 emissions platforms share the same Canada, Mexico, and offshore oil production emissions. Both platforms also share the same wildfire and prescribed burning emissions. Most input ancillary files used in the emissions processor are also unchanged; specifically, almost all cross-reference factors used in speciation profile assignments and temporal and spatial allocations are the same. The land use data for biogenic emissions (BELD3) is the same. The projection approach for stationary non-EGU emissions is also unchanged; however, for a couple of source categories, activity growth was slightly modified to account for the change in starting year -2002, rather than 2001. This effect on year 2020 activity (growth) factors is very small. Plant closures, consent decrees and settlements, and most national programs for stationary non-EGUs are applied as consistently as possible in 2002 as in 2001, by which, we used a cross-reference file to match controls for plants in the 2001 to the 2002 inventories.

2a.1.2 Key Changes to the Emissions Modeling Platform

As discussed in Chapter 2, the Final Ozone NAAQS utilizes the 2020 inventory, projected from the 2002 Version 3 emissions modeling platform. The Proposal utilized the 2001-based, projected to year 2020, "PM NAAQS" platform (EPA, 2006). The most significant change in the emissions modeling platform is the improvements to emissions estimates over multiple inventory sectors. See the 2002, Version 3 documentation for detailed information on these improvements. The SMOKE input ancillary data was updated to account for new source categories appearing in different inventory sectors; examples include farms and airports in the point source inventory and the new inclusion of portable fuel container emissions resulting from the Mobile Source Air Toxics (MSAT2) Rule (EPA, 2007a and 2007b). Another significant change in the emissions modeling platforms is the use of a new chemical mechanism -CB05 (Yarwood, 2005) versus CB-IV in the proposal platform.

Emissions by geographic area and by model platform in the base and future years are shown in Figure 2a.1 and Figure 2a.2, for NOx and VOC, respectively. "Northeast" in all figures represents the full OTC (Ozone Transport Commission) member states: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Delaware, and the District of Columbia. Emissions summaries from the northern counties of Virginia, while part of the OTC, are included in the "rest of US" geographic area. The "Midwest" geographic area includes Illinois, Indiana, Ohio, Michigan, and Wisconsin.

Figure 2a.1: Total Anthropogenic NOx Emissions [tons/year] by Year and Platform

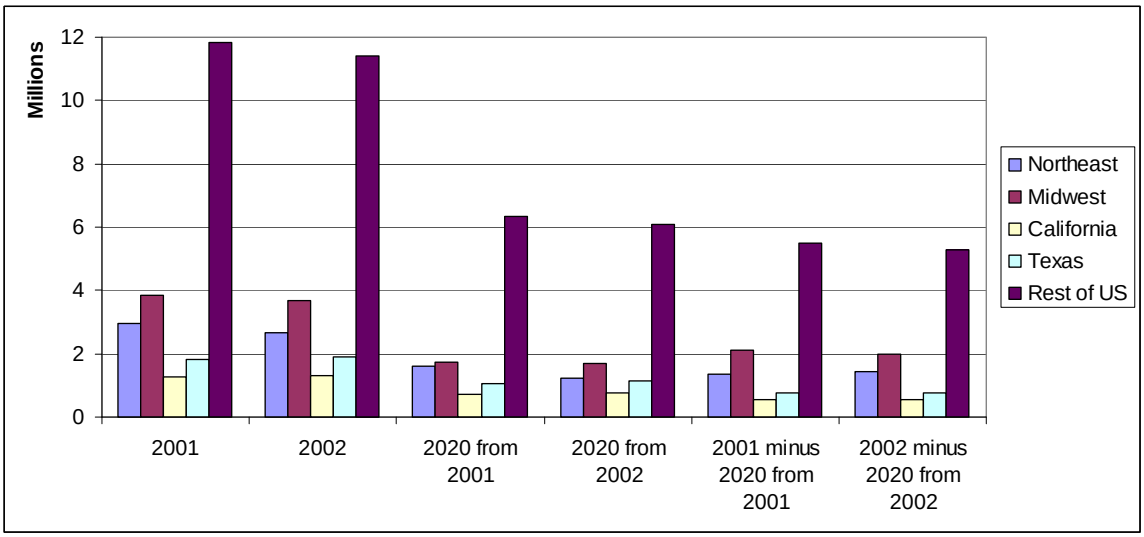

Figure 2a.2: Total Anthropogenic VOC Emissions [tons/year] by Year and Platform

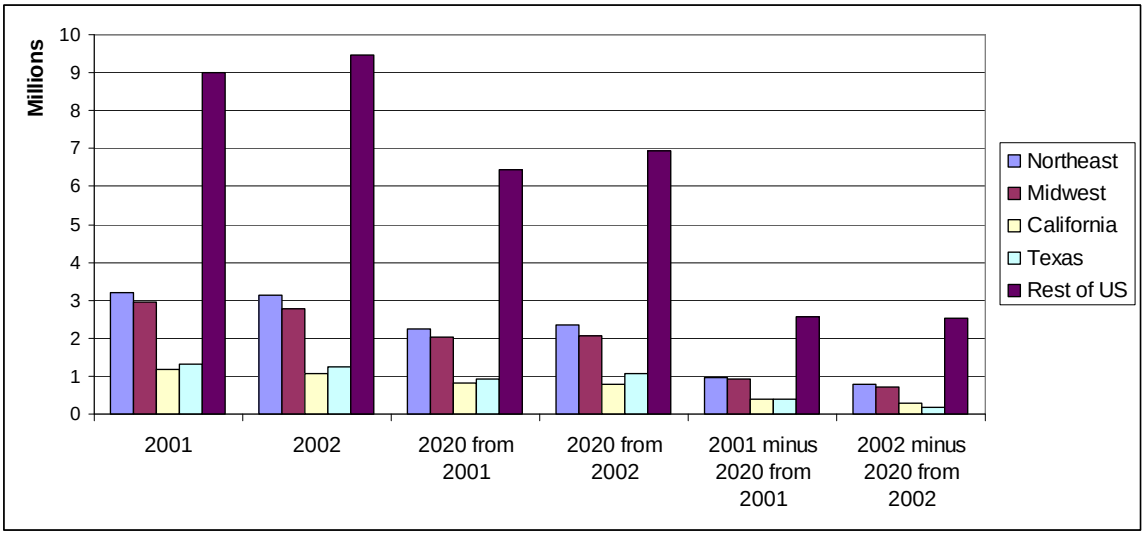

Figure 2a.1 and Figure 2a.2 demonstrate that total NOx and VOC emissions do not differ significantly by geographic area when comparing the inventories used in the proposal (2001) and final (2002). Small decreases in NOx and VOC are evident in the Northeast and Midwest, and small decreases in NOx are also seen in the rest of the US. In contrast, slight overall increases of NOx in Texas and VOC in the rest of the US can be seen.

Year 2020 emissions, projected from the 2001 and 2002 emission platforms show slightly less NOx in 2020 in the 2002-based platform in the Northeast, Midwest, and rest of the US. Perhaps most significant from an air quality modeling aspect is the relative change in emissions in 2020 when migrating from the 2001 to the 2002 emission platforms, represented by the last 2 sets of

columns in Figure 2a.1 and Figure 2a.2. These show slightly less raw reductions in NOx and VOC for all regions with the exception of a very slight increase in NOx reductions in 2020-based-off-2002 in the Northeast and California. The net effect of these emission summaries is that large changes in air quality modeling ozone estimates are unlikely to be explained by significant changes in the overall emission changes by migrating from the 2001-based emissions platform in the proposal to the 2002-based emissions platform used in the final rulemaking.

Emissions inventory summaries broken down by sectors (e.g., EGU, non-EGU Point, Onroad Mobile, Nonroad Mobile…) also do not show any significant differences by geographic area for year 2020 between the 2001-based and 2002-based emission modeling platforms.

2a.2 References

U.S. Environmental Protection Agency (EPA). 2006. "Regulatory Impact Analysis for the Review of the Particulate Matter National Ambient Air Quality Standards (Chapter 2: Defining the PM 2.5 Air Quality Problem)." EPA-HQ-OAR-2006-0834-0048.3.

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U.S. Environmental Protection Agency (EPA). 2007b. *National Scale Modeling for the Final Mobile Source Air Toxics Rule*, Office of Air Quality Planning and Standards, Emissions Analysis and Monitoring Division, Research Triangle Park, NC 27711, EPA 454/R-07-002, February 2007. Available at http://www.epa.gov/otaq/regs/toxics/454r07002.pdf.

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Yarwood, G., S. Rao, M. Yocke, and G. Whitten, 2005. Updates to the Carbon Bond Chemical Mechanism: CB05. Final Report to the U.S. EPA, RT-0400675. Available at http://www.camx.com/publ/pdfs/CB05_Final_Report_120805.pdf.