# MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

## APPENDICES

## VOLUME FIVE

## DECEMBER 2016

MARICOPA ASSOCIATION of GOVERNMENTS

# MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

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# APPENDIX B

RAMBOLL ENVIRON WEIGHT-OF-EVIDENCE REPORT

# Weight of Evidence Analyses to Support the MAG Moderate Area Eight-Hour Ozone Attainment Demonstration for the 2008 Ozone Standard

## Final Report

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RAMBOLL ENVIRON

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# 1.0 INTRODUCTION

The Maricopa Association of Governments (MAG) has contracted with Ramboll Environ (RE) to provide technical support for weight-of-evidence (WOE) analyses as part of the MAG moderate area attainment demonstration for the 2008 ozone standard. The goal was to identify and develop additional WOE analyses with which to bolster analyses that MAG has performed for the attainment demonstration.

EPA's modeling guidance (EPA, 2014) suggests developing WOE assessments to support the attainment determination. Supplemental analyses used in the WOE will help determine whether attainment will be reached where modeled results indicate future ozone levels are near the National Ambient Air Quality Standards (NAAQS) of 75 ppb. The guidance recommends three basic types of analyses: 1) additional modeling analyses, 2) analyses of trends in ambient air quality and emissions, and 3) additional emissions controls and reductions.

RE reviewed the MAG attainment demonstration and WOE analyses for the 2008 ozone standard and discussed with MAG on conference calls. The WOE analyses that MAG has completed for the attainment demonstration are as follows:

- Impact on future year ozone predictions from the choice of global atmospheric chemistry model (i.e., MOZART, CAM-Chem, and GEOS-Chem) used to derive initial and boundary conditions;
- Impact on future year ozone predictions from the choice of meteorological year (2011 vs. 2012);
- Trends in ambient air quality and ozone exceedance counts;
- Chemical process analysis (CPA);
- Ozone source apportionment analysis (OSAT);
- Decoupled direct method (DDM);
- Zero-out anthropogenic source emissions analysis.

This report presents our review of trends, CPA, OSAT, and zero-out analyses that MAG conducted, and additional analyses to support MAG's WOE. Chapter 2 provides additional modeling analyses and Chapter 3 includes additional ambient trend analyses. A summary is provided in Chapter 4.

# 2.0 SUPPLEMENTAL MODELING ANALYSES

## 2.1 EPA's Projected 2017 Ozone Concentrations

The EPA's 2014 modeling guidance suggests including results from additional modeling that may be available for the area of interest and that may have used different models and/or inputs. In this section we describe modeling results from EPA's proposed Cross-State Air Pollution Rule (CSAPR) for the 2008 ozone NAAQS (EPA, 2015). EPA released this modeling dataset as part of the July 23, 2015 Notice of Data Availability. The modeling results include 2017 projected ozone design values at individual monitoring sites for each US county and estimated state-by-state contributions to those 2017 concentrations. The 2017 projections are used by EPA to identify ozone monitoring sites that are projected to be nonattainment or have maintenance problems for the 2008 ozone NAAQS.

None of the monitoring sites in Maricopa County are projected to exceed the 2008 ozone NAAQS in 2017 based on EPA's CSAPR modeling (Table 2-1). EPA projected the 5-year weighted design value centered on 2011 to 2017 ("average" design value) to determine ozone attainment. EPA also projected the maximum 3-year design value from the same 5-year period to 2017 ("maximum" design value). Monitoring sites with a 2017 average design value below the NAAQS, but with a maximum design value that exceeds the NAAQS, are considered maintenance-only sites. The peak 2017 average design value is 75.0 ppb at the North Phoenix site (40131004), while all other sites are all below 73 ppb. Only the North Phoenix site has a 2017 maximum design value marginally above 75 ppb, so this site would be considered a maintenance-only site. These results affirm that Maricopa County would be in attainment of the 2008 ozone NAAQS in 2017.

## 2.2 NOx-Limited Ozone Reactions in the Urban Core and the Role of NOx Emissions

MAG has conducted Chemical Process Analysis (CPA) with CAMx to investigate NOx- vs. VOC-limited chemistry. The ozone formation process is controlled by the relative availability of NOx and VOC, and so ozone formation is described either as NOx-limited or VOC-limited, respectively. The ratio of the production rates of hydrogen peroxide ($H_2O_2$) and nitric acid ($HNO_3$) is the indicator used to classify ozone formation as being instantaneously limited by NOx or VOC. Ozone formation is classified as being NOx-limited when $P(H_2O_2)/P(HNO_3) > 0.35$ (Sillman, 1995). The CPA results (shown in Figure 2-1 as episode average from May through September) indicate a movement from 2011 VOC-limited conditions in the urban core to 2017 NOx-limited chemistry. This means NOx emission controls are the best mechanism for decreasing Maricopa ozone levels by 2017 and beyond. On-the-books and any further NOx reductions should be effective in bringing ozone levels down at monitors in this area. The area outside of the urban core of the Maricopa Nonattainment area is consistently NOx-limited.

**Table 2-1. EPA's 2017 Projected Average and Maximum Design Values at each Maricopa County monitoring site from the CSAPR modeling (EPA, 2015). MAG's 2017 projected design values are shown in the last column.**

| Monitor ID | Site Name | EPA projections | | MAG projections |
|---|---|---|---|---|
| | | 2017 Projected Average Design Value | 2017 Projected Maximum Design Value | 2017 Projected Average Design Value |
| 40130019 | West Phoenix | 72.9 | 75.0 | 73.3 |
| 40131004 | North Phoenix | **75.0** | **76.2** | **75.6** |
| 40131010 | Falcon Field | 64.7 | 66.8 | 64.9 |
| 40132001 | Glendale | 70.8 | 72.1 | 71.9 |
| 40132005 | Pinnacle Peak | 71.1 | 72.0 | 70.1 |
| 40133002 | Central Phoenix | 69.9 | 71.5 | 69.7 |
| 40133003 | South Scottsdale | 71.2 | 72.4 | 71.6 |
| 40134003 | South Phoenix | 71.9 | 73.1 | 71.5 |
| 40134004 | West Chandler | 68.3 | 69.5 | 69.8 |
| 40134005 | Tempe | 65.6 | 66.8 | 67.7 |
| 40134008 | Cave Creek | 70.7 | 71.3 | 71.6 |
| 40134010 | Dysart | 66.1 | 67.0 | 68.1 |
| 40134011 | Buckeye | 61.5 | 62.5 | 63.4 |
| 40137003 | St. John | 66.4 | 67.6 | Not available |
| 40137020 | Senior Center | 69.3 | 70.5 | 69.6 |
| 40137021 | Red Mountain | 71.4 | 71.7 | 71.6 |
| 40137022 | Lehi | 68.2 | 69.8 | 69.4 |
| 40137024 | High School | 68.9 | 69.6 | 68.9 |
| 40139508 | Humboldt Mountain | 68.3 | 70.1 | 69.8 |
| 40139702 | Blue Point | 69.5 | 71.7 | 70 |
| 40139704 | Fountain Hills | 69.5 | 70.9 | 69.4 |
| 40139706 | Rio Verde | 69.0 | 69.9 | 68.3 |
| 40139997 | Super Site | 72.5 | 73.4 | 72.8 |

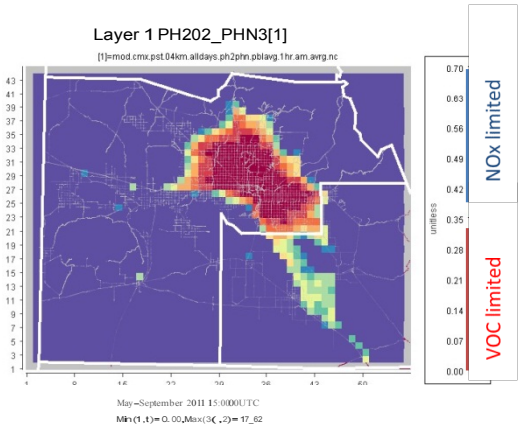
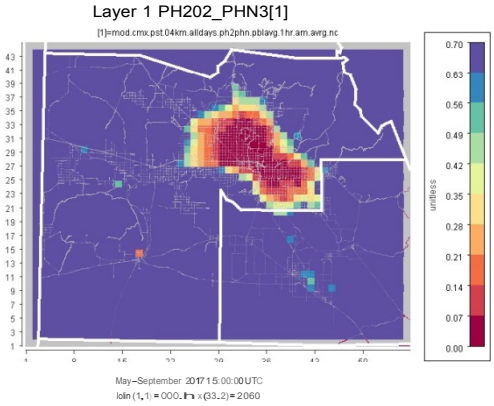
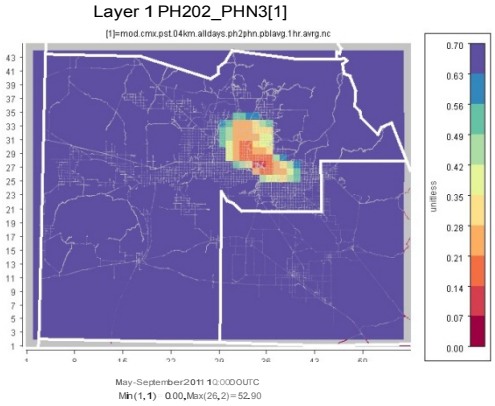
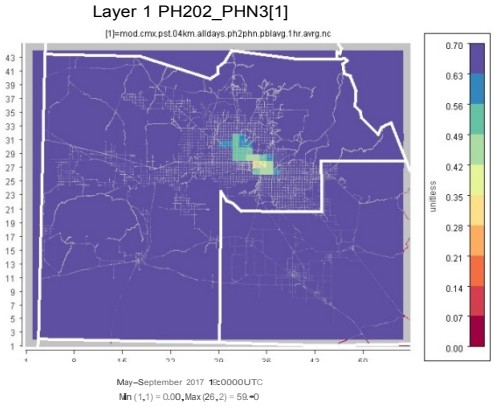
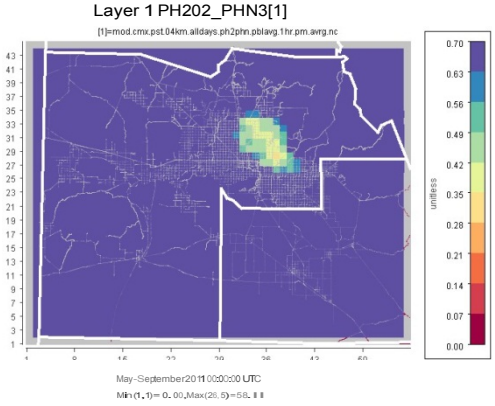
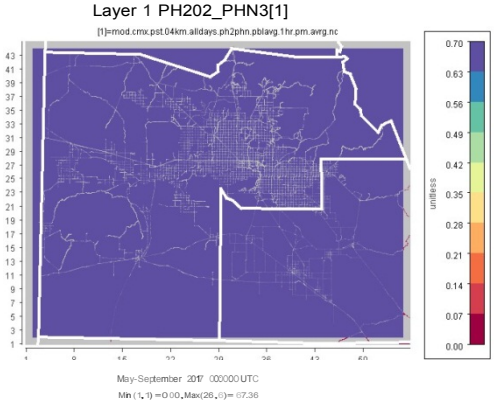
| Time Period | 2011 | 2017 |
|---|---|---|
| **AM Peak (8:00am)** |   |   |
| **Mid-Day (12:00pm)** |   |   |
| **PM Peak (5:00pm)** |   |   |

**Figure 2-1. Chemical Process Analysis results by time of day (episode average from May through September). Warm colors denote VOC-limited conditions, cool colors denote NOx-limited conditions.**

These CPA results are consistent with findings by Kemball-Cook et al. (2013), who evaluated ambient air quality levels in the Maricopa Nonattainment Area for the years 2011 and 2012. Kemball-Cook et al. showed that the suburban monitors to the northeast of the Phoenix urban core are NOx-limited. For these monitors, on-the-books NOx reductions should continue to bring ozone levels down. Analysis of weekday/weekend[1] ozone differences showed that from 2009-2012, monitors in the Phoenix urban core varied together by year between being NOx- and VOC-limited (Figure 2-2). These results indicate that the Phoenix urban core is in a transitional regime, moving from VOC to NOx sensitive. This agrees with 2008-2011 trends in the Maricopa Nonattainment Area emission inventory, which indicates that NOx reductions have been larger than VOC reductions (later described in Figure 3-7). Recent Federal emissions control programs (e.g., reductions in highway and off-road vehicle emissions limits) have been primarily aimed at reducing NOx emissions. Wolff et al. (2013) note that, nationwide, a larger decline in NOx emissions than VOC emissions has pushed many areas from being VOC-limited to being NOx-limited. This means the Maricopa area may benefit from both NOx and VOC emission controls to reduce ozone in the short term, but that NOx emission controls are the best mechanism for decreasing Maricopa ozone levels in the long term.

Another indicator of whether ozone formation in a region is NOx-limited or VOC-limited is the VOC/NOx ratio of the emission inventory. Kemball-Cook et al. calculated the VOC/NOx ratio for the 2011 Maricopa Nonattainment Area emission inventory to be 6.2, which is within the VOC-limited regime, while the 2011 weekday/weekend analysis showed all but one monitor to be NOx-limited. Therefore, the VOC:NOx ratio of the emission inventory may be biased low as a result of too little VOC and/or too much NOx. If NOx emissions are overstated, adjustment to NOx emissions would improve effectiveness of ozone reduction in Maricopa County. In the next section, we examine model performance for NOx to determine whether NOx emissions are overstated.

## 2.3 NOx Model Performance Evaluation

We evaluate model performance for the 2011 baseline simulation of $NO_2$ to look for any indication of overstated NOx emissions in the inventory. Hourly $NO_2$ concentrations from the 2011 simulation are compared to observations at six monitors within Maricopa County. Monitor locations are shown in Figure 2-3. Five of these monitors (Super Site, West Phoenix, South Scottsdale, Greenwood, and Central Phoenix) are in the Phoenix urban area and the sixth monitor (Buckeye) is located southwest of the urban core.

Scatter plots of predicted and observed hourly $NO_2$ concentrations show over estimation biases with the predictions generally grouped above the 1:1 line (representing perfect agreement) at

[1] The main differences between weekday and weekend emissions are the absence of morning and evening commute periods and less heavy-duty truck traffic on weekends. NOx differences between weekdays and weekends are thus most pronounced during morning and afternoon commute hours; looking at the weekday-weekend difference is approximately equivalent to testing the effect on ozone of reducing NOx emissions. We might expect that since NOx and VOC emissions from traffic are lower on weekends, daily peak ozone would also be consistently lower. However, in some urban areas, the opposite occurs; this is known as the weekday/weekend effect. In NOx-rich, VOC-limited areas, lower NOx emissions on weekends remove the inhibiting effect of NOx and increase ozone production efficiency.

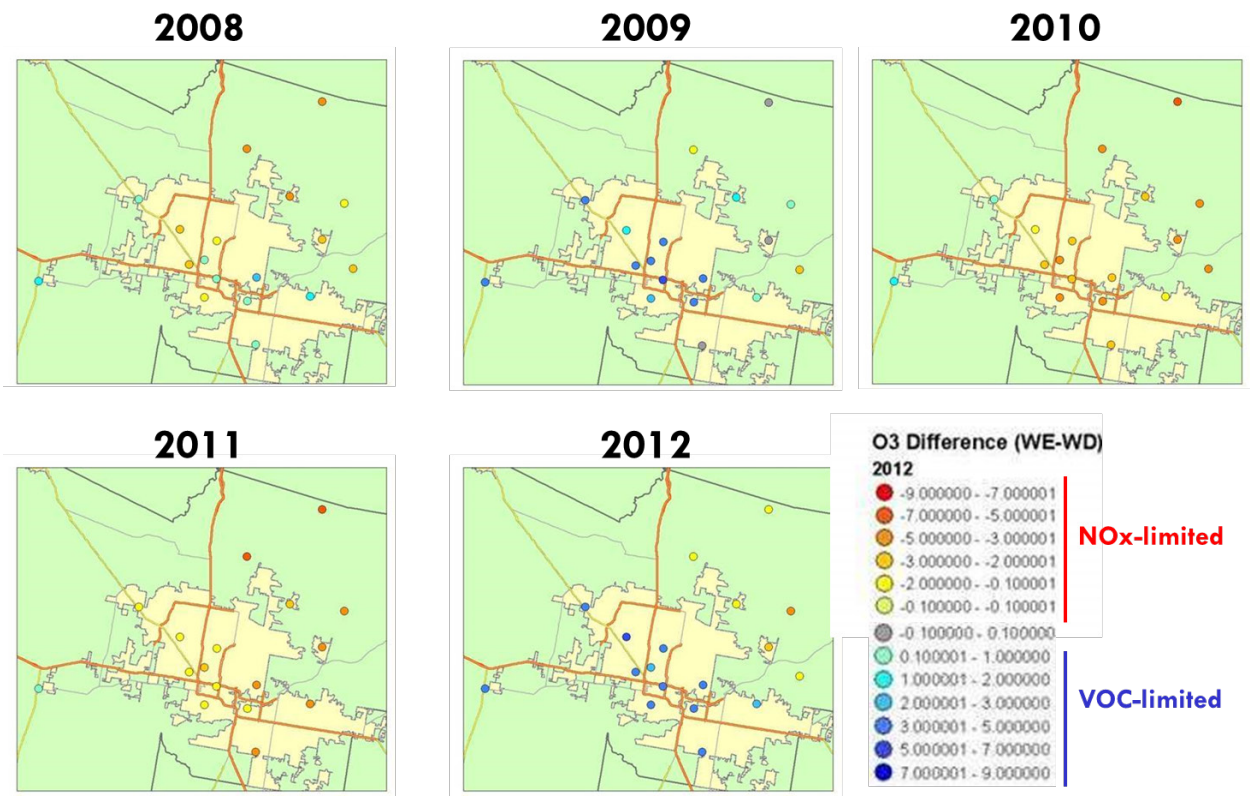



**Figure 2-2. Peak weekday/weekend ozone differences in the Maricopa area; yellow area denotes the Maricopa urban core.**

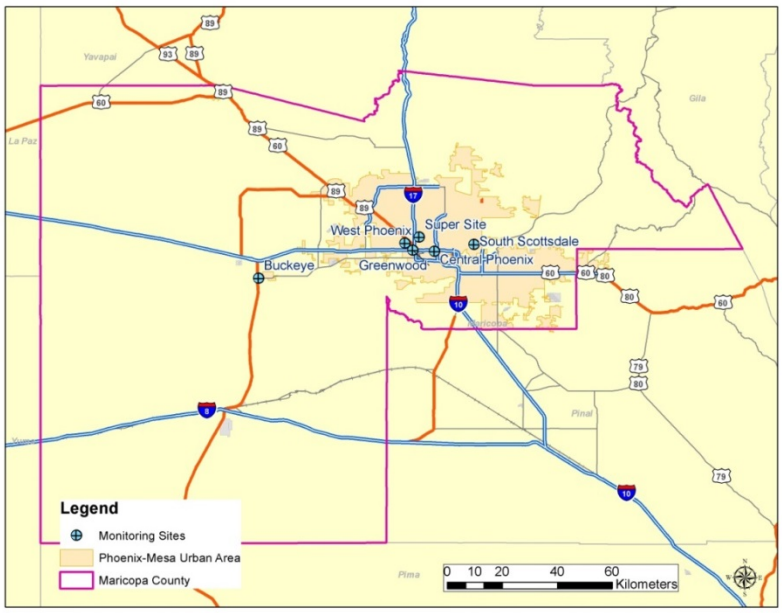



**Figure 2-3. Location of $NO_2$ monitoring sites within Maricopa County.**

all five urban monitors (Figure 2-4). The over prediction bias is largest at West Phoenix and Supersite where normalized mean biases (NMB) are about 60% and normalized mean errors (NME) are about 80%. Time series at Supersite show that the model reproduces the diurnal pattern of $NO_2$ relatively well but largely overestimates both morning and evening peaks (Figure 2-5). Midday $NO_2$ predictions agree well with the observations. In contrast, $NO_2$ is under predicted at Buckeye with NMB of -63% and NME of 68% (Figure 2-6).

Many factors can influence $NO_2$ model performance. High biased night-time $NO_2$ at urban sites may indicate insufficient mixing. The $NO_2$ over-prediction in the morning and evening may be related to insufficient mixing as well as overstated commute-hour emissions (i.e., on-road mobile sources) since they occur during the same time of day. Recent studies by the National Aeronautics and Space Administration (NASA), Air Quality Applied Sciences Team (AQAST) program, have used top-down estimates from satellite and aircraft remote sensing to show evidence of high NOx emission biases (Anderson et al., 2014; Travis et al., 2016). They have implicated the high bias to the EPA's Motor Vehicle Emissions Simulator (MOVES) model and noted that NEI emission estimates from mobile sources may be too high by a factor of two or more. If the NOx emissions are overstated as suggested in Section 2.2, the effectiveness of NOx emission reductions in lowering ozone concentrations in Maricopa County may be understated in the model.

## 2.4 Role and Importance of Non-Local Sources

Air masses arriving in the Maricopa Nonattainment Area come from various origins. The area is downwind from major source regions in Southern California and Northern Mexico. It is also close to mountainous areas where seasonal forest fires may influence ozone levels, and where late spring and early summer stratospheric ozone intrusions have been documented, especially in the Rocky Mountains (Lin, et al., 2012, 2015; Yates, et al., 2013). Trajectory analyses can qualitatively identify geographic origins of air masses on exceedance days, but give no information on quantifiable contributions. Source apportionment applications and sensitivity runs in which certain emission sectors or regions are zeroed-out can quantify contributions from specific geographic region to local ozone concentrations.

### 2.4.1 Review of Trajectory Analyses and Conceptual Model

A conceptual model identifies necessary and sufficient conditions for high ozone concentrations to occur in the local area. The conceptual model developed for the Maricopa Ozone Nonattainment area (MAG, 2015) found elevated ozone concentrations to be associated with intense summer photochemical reactions, local stagnation or long range transport of ozone precursor emissions, and synoptic and mesoscale atmospheric dynamics. More than 80% of exceedances during 2005-2014 occurred during the three months from May to July. The largest proportion of exceedance days and total exceedances occurred in June, followed by July and August. Analyses of 24-hour back trajectories on ozone exceedance days in 2011 revealed varied geographic origins of air masses (Figure 2-7):

- May exceedances are associated with westerly wind bringing air from Southern California enhanced by cold fronts and stratospheric intrusions from late spring low pressure systems.
- June exceedances are associated with westerly wind bringing air from Southern California enhanced by high temperature and long exposure to sunlight.
- July exceedances are associated with extremely high daytime temperatures and are influenced much more by the regional monsoon pattern. A large scale upper level high pressure feature usually aligns over the Four Corners area and pumps moist, unstable air from the southeast. The trajectories show multiple days of upwind air masses from Northern Mexico. Under monsoonal steering winds, small scale thunderstorms thrive under these favorable dynamics. High pressure often controls the local flow in between thunderstorm events. Stagnant winds can last long enough to combine with the extreme heat to trap pollutants and create the highest ozone of the season.
- August has similar meteorological conditions to July. Peak biogenic VOC emissions can enhance ozone formation.

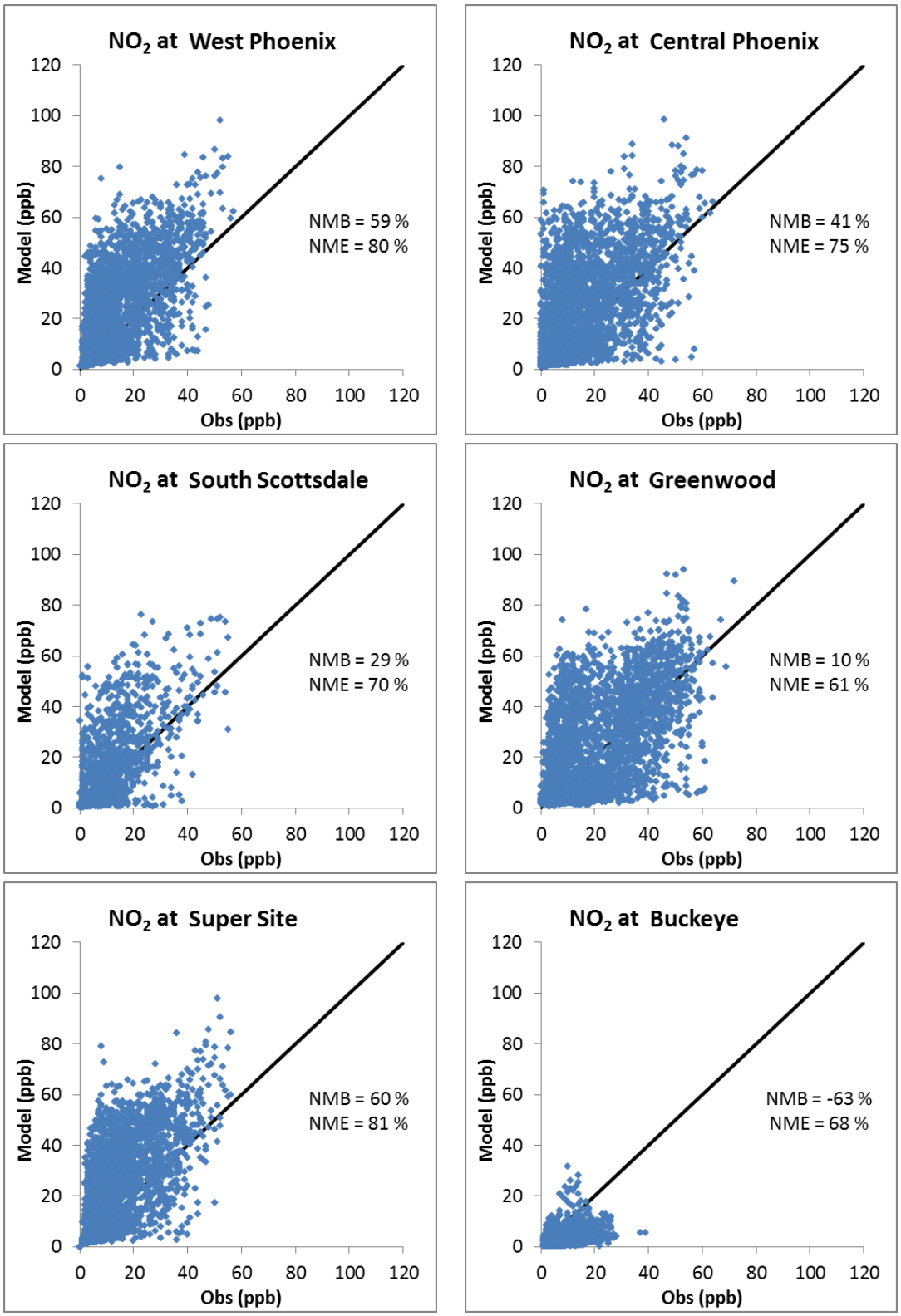



**Figure 2-4. Scatter plots of predicted and observed hourly $NO_2$ concentrations for monitors in Maricopa County.**

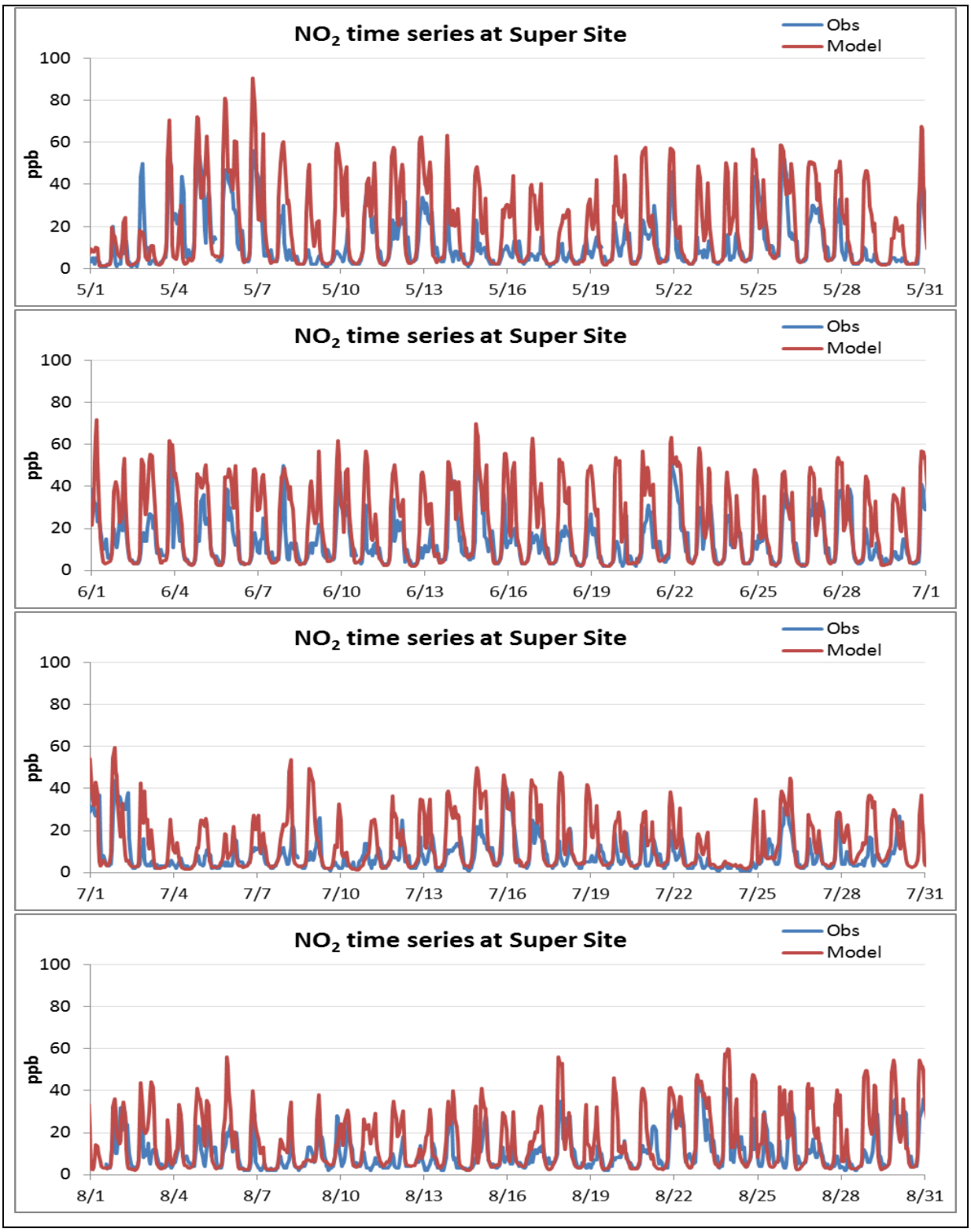



**Figure 2-5. Time series of observed (blue) and predicted (red) $NO_2$ at Supersite in May-August, 2011.**

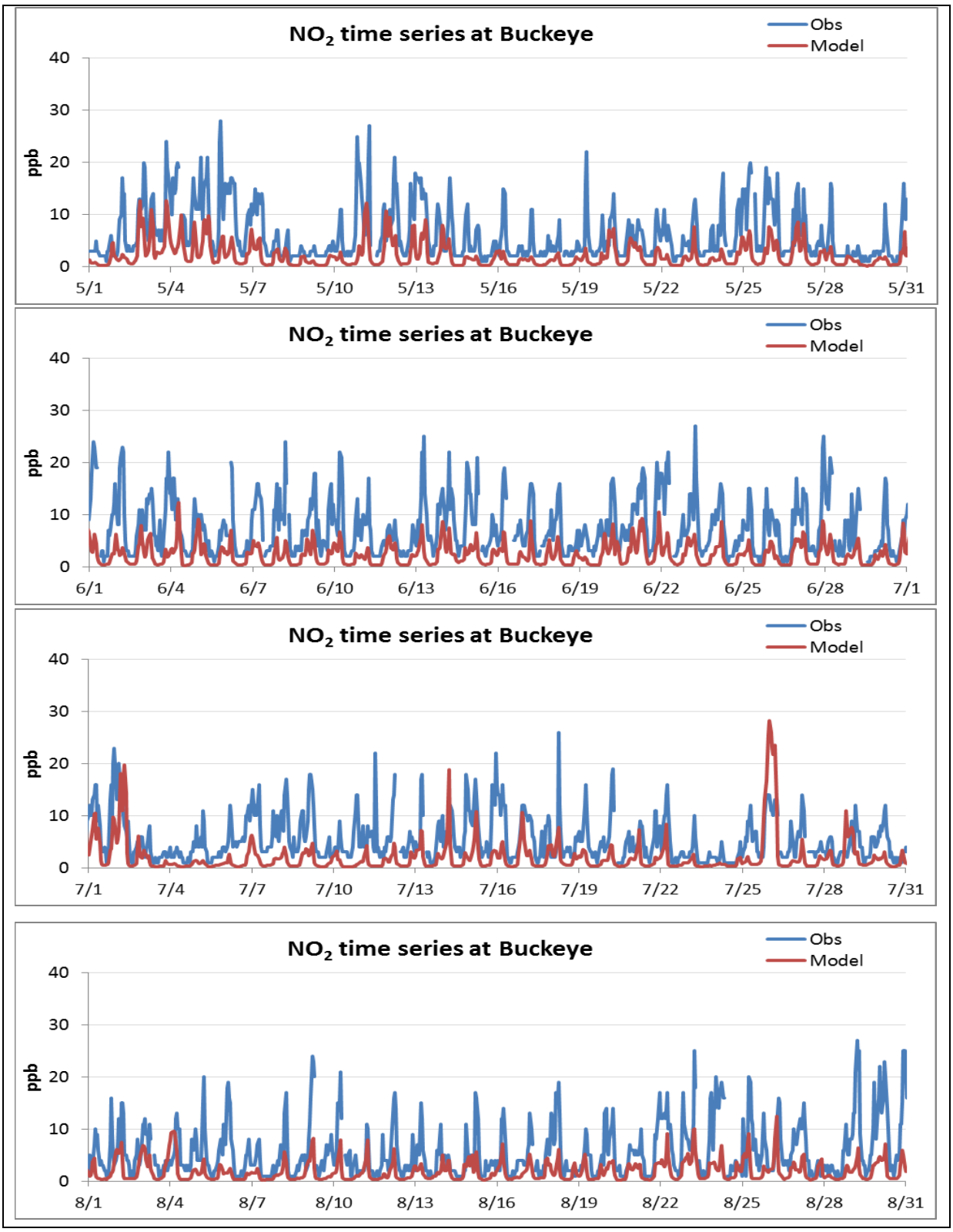



**Figure 2-6. Time series of observed (blue) and predicted (red) $NO_2$ at Buckeye in May-August, 2011.**

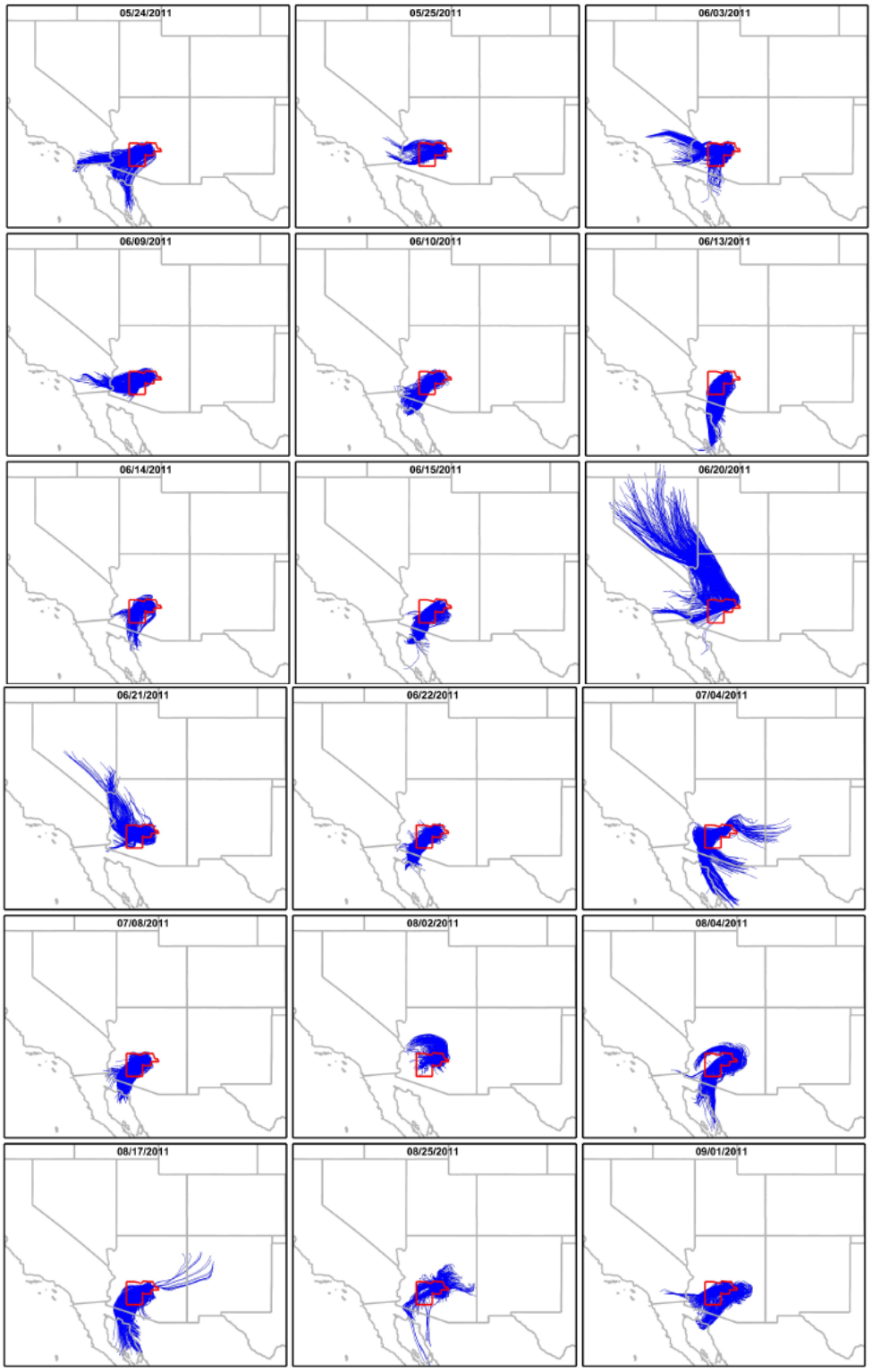



**Figure 2-7. Daily maps of 24-hour HYSPLIT back trajectories for each day in the 2011 ozone season with at least one exceeding monitoring site in the Maricopa Ozone Nonattainment Area.**

### 2.4.2 Background Ozone

Ozone and certain precursors can be transported long distances in the mid and upper troposphere (3-10 km) because their chemical lifetimes can span weeks. EPA recognized that sources other than US anthropogenic emissions can contribute large fractions of ozone at certain times and locations. EPA has defined US background (USB) ozone specific to the context of NAAQS implementation. USB includes all global natural sources of ozone (biogenic, wildfire, stratospheric, lightning), and all anthropogenic sources from outside the US. Appendix A summarizes the EPA (2015) characterization of background ozone.

Background ozone plays a major role in Maricopa County. Ozone contributions from Mexico and USB from a zero-out analysis conducted by MAG are shown in Table 2-2. The contributions are expressed as ppb (or %) of the 2017 Design Value (DVF) based on the top 10 highest daily maximum 8-hour (MDA8) days. Mexico contributes 3% (1.9 ppb) of the 2017 DVF with the highest impact predicted in July (10% or 7.1 ppb). USB contributes 63% (47.3 ppb), with more than 60% in all summer months except August. High background contributions would make local ozone less responsive to local emission controls.

**Table 2-2. Predicted contributions of US background ozone and Mexico to the 2017 DVF based on the top 10 MDA8 days in each month and for the entire May-September period.**

| | Mexico | | USB | |
|---|---|---|---|---|
| **Month** | **ppb** | **%** | **ppb** | **%** |
| May | 0.6 | 1% | 68.1 | 87% |
| Jun | 3.2 | 4% | 56.8 | 73% |
| Jul | 7.1 | 10% | 48.4 | 66% |
| Aug | 4.5 | 6% | 36.9 | 51% |
| Sep | 3.5 | 5% | 46.4 | 61% |
| **May-Sep** | **1.9** | **3%** | **47.3** | **63%** |

The EPA's updated ozone transport modeling described in Section 2.1 analyzed 2017 ozone contributions at individual monitoring sites. Modeling results are used to quantify projected 2017 ozone contributions from Tribal, Canada & Mexico, Offshore, Initial & Boundary Concentration, and Biogenics categories. The analysis also includes interstate contributions from emissions in each upwind state to ozone concentrations at projected 2017 nonattainment and maintenance sites in other states (i.e., in downwind states). Contributions are calculated based on data for all model-predicted 8-hour ozone exceedance days (i.e., >=76 ppb) in the 2017 modeling. For those sites with fewer than 5 modeled exceedance days in 2017, the contributions were calculated based on the top 5 concentration days.

According to EPA's modeling, the 2017 ozone contributions from non-US anthropogenic sources (USB) are 52% at North Phoenix, the site with highest predicted 2017 ozone concentrations, and 55% averaged across all Maricopa County sites (Figure 2-8). These results confirm significant impacts from USB to local ozone in Maricopa County.

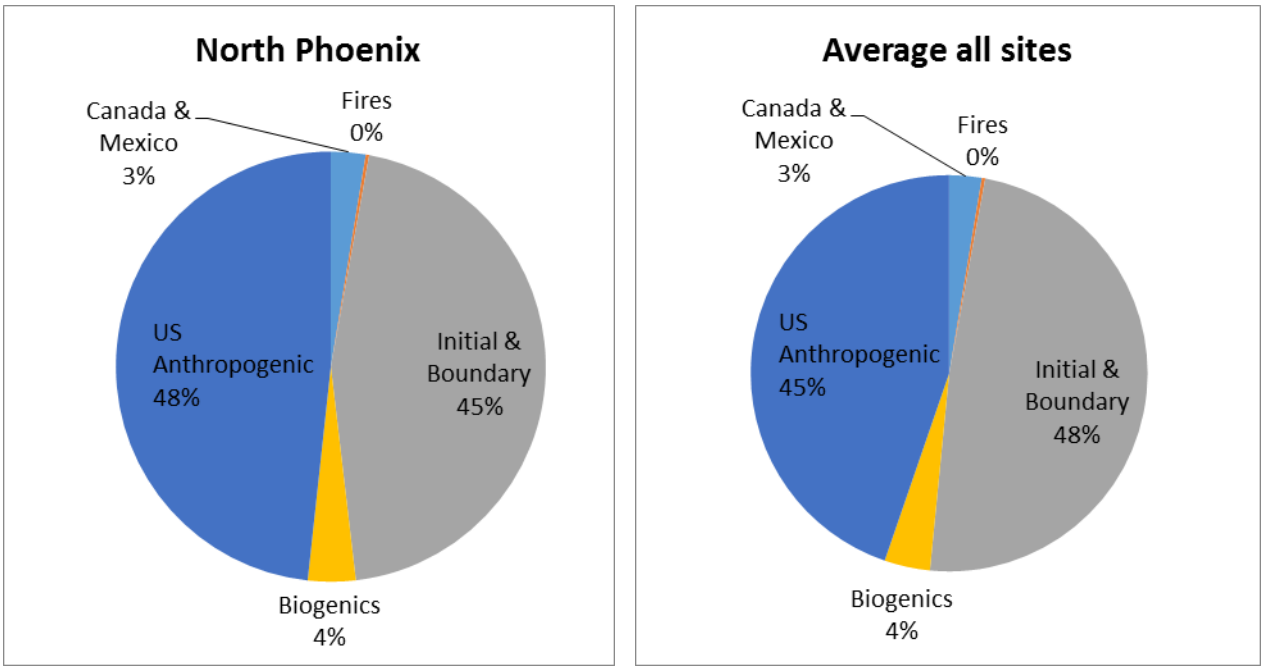



**Figure 2-8. 2017 ozone contributions from US and non-US sources [Source: EPA's modeling data released as part of the July 23, 2015 Notice of Data Availability]**

Observed ozone trends at rural locations in the western US suggest that background ozone is rising in response to increasing non-US emissions (Parrish et al., 2012; Cooper et al., 2012). Long-term regional modeling found increasing USB in Phoenix through 2020 in the absence of meteorological variation (Nopmongcol et al., 2016). The 2020 4$^{th}$ highest MDA8 USB in Phoenix is predicted to reach 50.4 ppb. Average MDA8 USB over the top 30 USB days and over all summer days (May – September) is rising more rapidly than the 4$^{th}$ highest MDA8 USB. USB contributions to surface ozone concentrations over the top 10 USB days exceed 60% in Phoenix and much of the southwestern US. These results are in agreement with MAG's zero-out analysis described above. Rising background ozone would make attaining the NAAQS an ever-increasing challenge.

### 2.4.3 Interstate transport

Interstate air pollution transport is a combination of local emissions and emissions from upwind sources. Back-trajectories described in Section 2.4.1 suggest influences from Southern California and Northern Mexico on high ozone days. In this Section we examine source contributions from neighboring and nearby states.

Based on the EPA's 2017 modeling described in Section 2.1, the top 5 states contributing ozone transport to monitors within Maricopa County are (in descending order) California, Texas, Nevada, Utah, and New Mexico (Table 2-3). EPA used a one percent screening threshold of the 75 ppb NAAQS (0.75 ppb) to define whether a state significantly contributes to or interferes with maintenance of the standard in downwind areas. California contributions exceed this

threshold at all Maricopa County sites and reach a maximum of 4.25 ppb at Cave Creek (Site 40134008). Clearly, ozone precursor emissions from California play a major role in attaining the 8-hour ozone NAAQS in Maricopa County. Contributions from other states are almost entirely below the 0.75 ppb threshold.

Significant contributions from California to ozone in Maricopa County are confirmed by the zero-out modeling performed by MAG. California contributions, shown in Table 2-4 are expressed as contributions (in ppb) of the 2017 DVF based on the top 10 MDA8 days by month. The contributions are roughly 2 ppb in May across all monitors, increase to a range of 2.7-7.3 ppb in June, and then drop to under 2 ppb in July and August. Peak contributions in June are consistent with back trajectories described in Section 2.4.1.

**Table 2-3. 2017 ozone contributions (ppb) from nearby states according to EPA CSAPR modeling of 2017. Contributions greater than 1% of the 2008 ozone NAAQS (0.75 ppb) are highlighted.**

| Monitor ID | AZ | CA | TX | NV | UT | NM | Tribal |
|---|---|---|---|---|---|---|---|
| 40130019 | **29.29** | **2.76** | 0.24 | 0.18 | 0.04 | 0.05 | 0.04 |
| 40131004 | **31.57** | **3.44** | 0.16 | 0.27 | 0.11 | 0.06 | 0.09 |
| 40131010 | **24.60** | **2.24** | 0.36 | 0.16 | 0.05 | 0.08 | 0.06 |
| 40132001 | **30.75** | **2.70** | 0.19 | 0.21 | 0.06 | 0.07 | 0.07 |
| 40132005 | **27.32** | **4.14** | 0.05 | 0.27 | 0.11 | 0.01 | 0.08 |
| 40133002 | **28.46** | **3.36** | 0.21 | 0.08 | 0.05 | 0.07 | 0.05 |
| 40133003 | **29.43** | **2.54** | 0.27 | 0.23 | 0.09 | 0.07 | 0.07 |
| 40134003 | **26.88** | **2.38** | 0.19 | 0.17 | 0.04 | 0.04 | 0.04 |
| 40134004 | **23.35** | **1.65** | **0.95** | 0.28 | 0.08 | 0.25 | 0.08 |
| 40134005 | **26.23** | **2.61** | 0.06 | 0.15 | 0.03 | 0.02 | 0.05 |
| 40134008 | **27.15** | **4.25** | 0.08 | 0.13 | 0.12 | 0.03 | 0.12 |
| 40134010 | **29.82** | **1.86** | 0.47 | 0.18 | 0.12 | 0.17 | 0.08 |
| 40134011 | **19.18** | **2.78** | 0.17 | 0.19 | 0.14 | 0.25 | 0.11 |
| 40137003 | **17.42** | **2.98** | 0.68 | 0.22 | 0.16 | 0.36 | 0.05 |
| 40137020 | **28.64** | **2.47** | 0.27 | 0.22 | 0.09 | 0.07 | 0.07 |
| 40137021 | **29.70** | **2.20** | 0.25 | 0.20 | 0.08 | 0.07 | 0.07 |
| 40137022 | **28.37** | **2.10** | 0.24 | 0.19 | 0.08 | 0.06 | 0.07 |
| 40137024 | **28.48** | **2.46** | 0.26 | 0.22 | 0.09 | 0.07 | 0.07 |
| 40139508 | **19.72** | **3.55** | 0.04 | 0.17 | 0.09 | 0.05 | 0.03 |
| 40139702 | **27.96** | **2.35** | 0.39 | 0.29 | 0.13 | 0.11 | 0.13 |
| 40139704 | **27.13** | **3.34** | 0.27 | 0.21 | 0.10 | 0.08 | 0.10 |
| 40139706 | **26.45** | **3.81** | 0.05 | 0.26 | 0.10 | 0.02 | 0.09 |
| 40139997 | **29.52** | **3.48** | 0.22 | 0.09 | 0.05 | 0.07 | 0.05 |
| **Average** | **26.84** | **2.85** | 0.26 | 0.20 | 0.09 | 0.09 | 0.07 |

[Source: EPA's modeling data released as part of the July 23, 2015 Notice of Data Availability]

**Table 2-4. California contributions to the Maricopa 2017 eight-hour ozone (ppb).**

| AIRSID | Site Name | County | DVB (2011) | Influence on the Maricopa Eight-Hour Ozone (ppb) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | May | June | July | August | September | May-September |
| 40070010 | Tonto NM | Gila | 73.7 | 2.1 | 2.7 | 1.1 | 1.1 | 2.0 | 2.1 |
| 40130019 | West Phoenix | Maricopa | 76.7 | 2.7 | 4.9 | 2.0 | 1.1 | 3.2 | 1.6 |
| 40131004 | North Phoenix | Maricopa | **79.7** | 2.4 | 4.5 | 1.8 | 1.1 | 3.1 | 1.3 |
| 40131010 | Falcon Field | Maricopa | 69.7 | 1.9 | 3.2 | 1.4 | 0.9 | 2.5 | 1.0 |
| 40132001 | Glendale | Maricopa | 74.7 | 2.5 | 5.3 | 2.2 | 1.1 | 3.2 | 1.6 |
| 40132005 | Pinnacle Peak | Maricopa | 76.0 | 2.3 | 3.5 | 1.9 | 1.1 | 2.4 | 1.4 |
| 40133002 | Central Phoenix | Maricopa | 73.3 | 2.4 | 4.6 | 1.6 | 0.9 | 3.2 | 1.2 |
| 40133003 | South Scottsdale | Maricopa | 75.7 | 2.2 | 4.1 | 1.7 | 1.0 | 2.8 | 1.2 |
| 40134003 | South Phoenix | Maricopa | 74.7 | 2.2 | 6.5 | n/a | 1.1 | 3.3 | 1.7 |
| 40134004 | West Chandler | Maricopa | 72.7 | 2.4 | 4.0 | 0.7 | 0.9 | 3.2 | 1.5 |
| 40134005 | Tempe | Maricopa | 69.7 | 2.2 | 4.2 | 1.4 | 0.9 | 2.9 | 1.1 |
| 40134008 | Cave Creek | Maricopa | 76.3 | 2.1 | 4.2 | 1.2 | 1.0 | 2.6 | 1.8 |
| 40134010 | Dysart | Maricopa | 71.0 | 2.2 | 6.6 | 1.2 | 1.3 | 3.0 | 1.7 |
| 40134011 | Buckeye | Maricopa | 65.0 | 2.3 | 7.3 | n/a | n/a | 4.7 | 2.0 |
| 40135100 | Yuma Frank[1] | Maricopa | 70.3 | 2.1 | 2.9 | 1.8 | 1.0 | 2.0 | 1.4 |
| 40137020 | Senior Center[2] | Maricopa | 73.7 | 2.1 | 3.6 | 1.6 | 0.9 | 2.4 | 1.0 |
| 40137021 | Red Mountain[2] | Maricopa | 76.7 | 2.1 | 3.5 | 1.5 | 1.0 | 2.7 | 1.1 |
| 40137022 | Lehi[2] | Maricopa | 73.3 | 2.1 | 3.6 | 1.5 | 0.8 | 2.7 | 1.1 |
| 40137024 | High School[2] | Maricopa | 73.3 | 2.0 | 3.5 | 1.5 | 0.8 | 2.3 | 1.1 |
| 40139508 | Humboldt Mountain | Maricopa | 74.0 | 2.5 | 4.0 | 1.3 | 1.8 | 2.2 | 3.4 |
| 40139702 | Blue Point | Maricopa | 74.7 | 2.0 | 3.2 | 1.4 | 0.9 | 2.5 | 1.6 |
| 40139704 | Fountain Hills | Maricopa | 74.3 | 2.2 | 3.3 | 1.9 | 1.0 | 2.1 | 1.4 |
| 40139706 | Rio Verde | Maricopa | 74.0 | 2.1 | 3.3 | 1.8 | 1.5 | 2.4 | 2.2 |
| 40139997 | Super Site | Maricopa | 76.0 | 2.6 | 4.7 | 1.8 | 1.0 | 3.1 | 1.2 |
| 40213001 | Apache Junction | Pinal | 73.0 | 2.0 | 3.2 | 1.3 | 1.0 | 2.5 | 1.3 |
| 40218001 | Queen Valley | Pinal | 75.0 | 2.0 | 3.1 | 1.7 | 1.2 | 2.2 | 1.2 |
| Monitored Area Max | | | **79.7** | 2.7 | 7.3 | 2.2 | 1.8 | 4.7 | 3.4 |

1. Fort McDowell Yavapai Nation
2. Salt River Pima-Maricopa Indian Community

# 3.0 SUPPLEMENTAL TREND ANALYSES

## 3.1 Causes of High Ozone in 2011/2012

The projected 2017 design values are influenced by a selection of baseline ozone and meteorological conditions. MAG chose the year 2011 as the base year because the EPA's National Emissions Inventory (NEI) for the year 2011 is the most recently compiled and quality assured national inventory. However, the 2011 design values were among the highest during the span of 2002-2014. Kemball-Cook et al. (2013), under contract to MAG, evaluated recent ozone trends in Maricopa County to specifically determine the cause(s) of rising ozone concentrations in 2011-2012 (Figure 3-1). They evaluated a number of hypotheses that included both local and regional factors, including:

- Changes in emissions
  - Summer-time use of 10% ethanol gasoline blend fuel since 2011
  - Local/regional anthropogenic emissions
  - Local biogenic emissions
  - Local and regional wildfire activity
- Shifts from volatile organic compound (VOC)-limited ozone formation in the urban core toward nitrogen oxide (NOx)-sensitive conditions (described in Section 2.2)
- Changes in local and regional meteorological and climatic conditions
  - Temperature, winds, clouds/rainfall, El Nino phase, etc.
- Changes in background ozone concentrations and transport

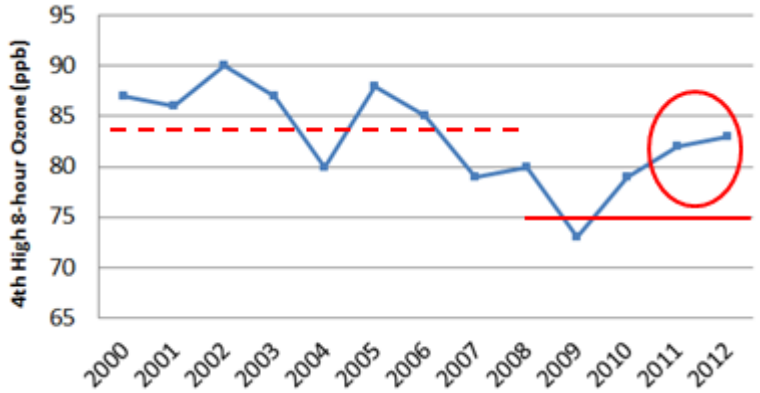



**Figure 3-1. Maximum 4th highest daily maximum 8-hour (MDA8) ozone concentration among Maricopa County ozone monitors from 2000-2012, including the 1997 ozone standard (dashed red line) and the 2008 ozone standard (solid red line). Data supplied by MAG.**

The analyses revealed that the 2008-2012 ozone trend observed at Maricopa County monitors was similar to ozone trends measured in other large metropolitan areas in nearby states (Figure

3-2). This suggested that regional-scale factors were important in determining 2011-2012 ozone levels in Maricopa County.

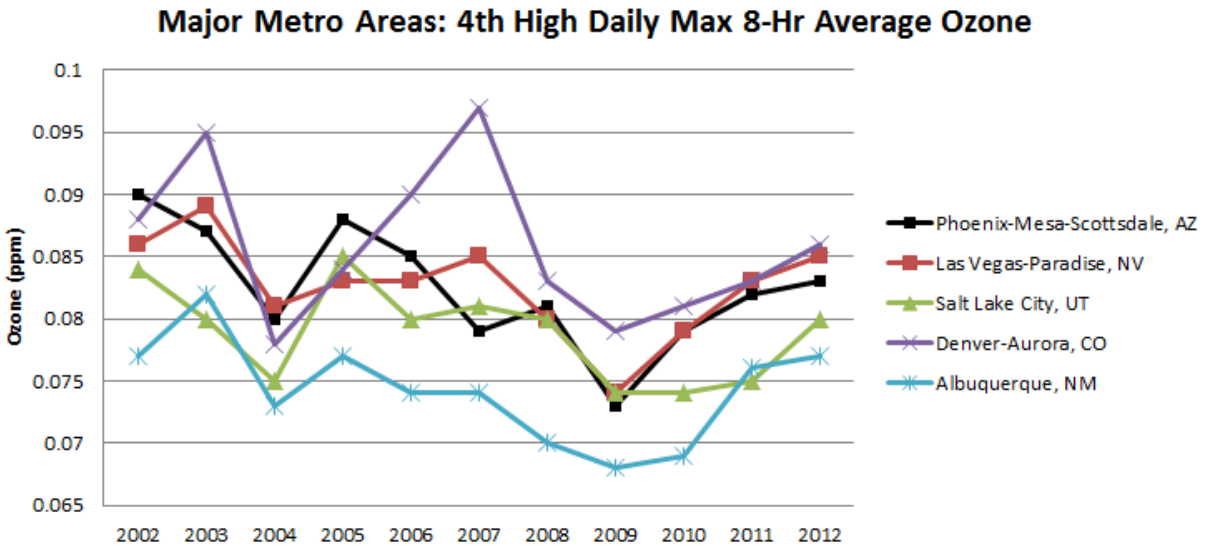



**Figure 3-2. 2002-2012 4th high MDA8 ozone trends for major metropolitan areas in the western US located east of the Sierra Nevada Mountains. Data from U.S. EPA www.epa.gov/airdata/ad_rep_mon.html.**

The May-June period during 2008-2012 recorded the largest number of high ozone days in Maricopa County (Figure 3-3). This period precedes the cloudy/rainy summer monsoon that typically begins in July and lasts into August. Variations in May-June cloudiness during 2008-2012 were consistent with Maricopa ozone trends. Satellite-derived measures of regional cloudiness and local Phoenix cloud cover data (Figure 3-4) showed an unusually large amount of cloud cover in May-June 2009 and an unusually small amount of cloud cover in May-June 2011-2012.

Other factors that may have contributed to high ozone levels in 2012 included an unusually large number of high-temperature days in 2012 (Figure 3-5), and more potential impacts from wildfire emissions in 2012 than in 2008-2011 (Figure 3-6). No inter-annual changes were evident in transport patterns or in background ozone entering the US that would indicate that regional or international transport played a significant role in rising Maricopa ozone levels in 2011-2012.

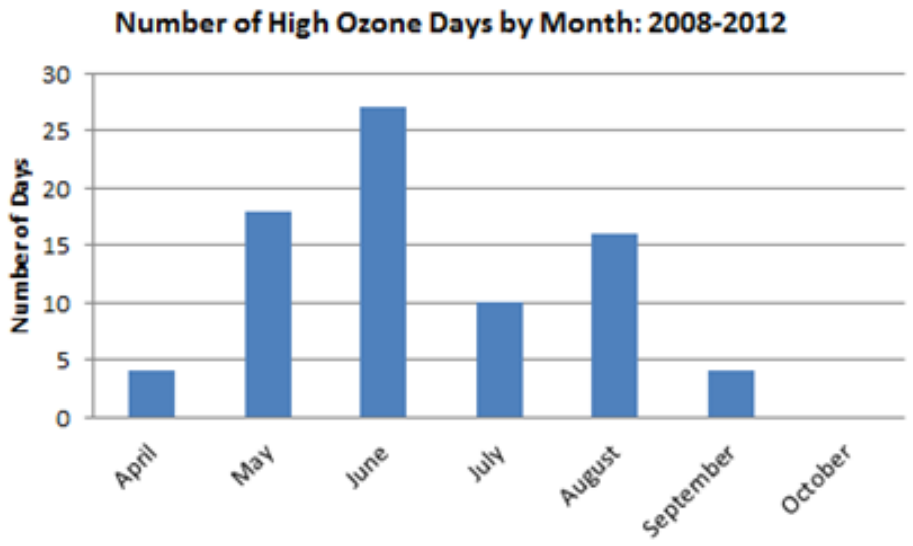



**Figure 3-3. Number of high ozone days by month for Maricopa County during 2008-2012. High ozone days are defined to be any day for which one or more Maricopa County ozone monitors has MDA8>75 ppb.**

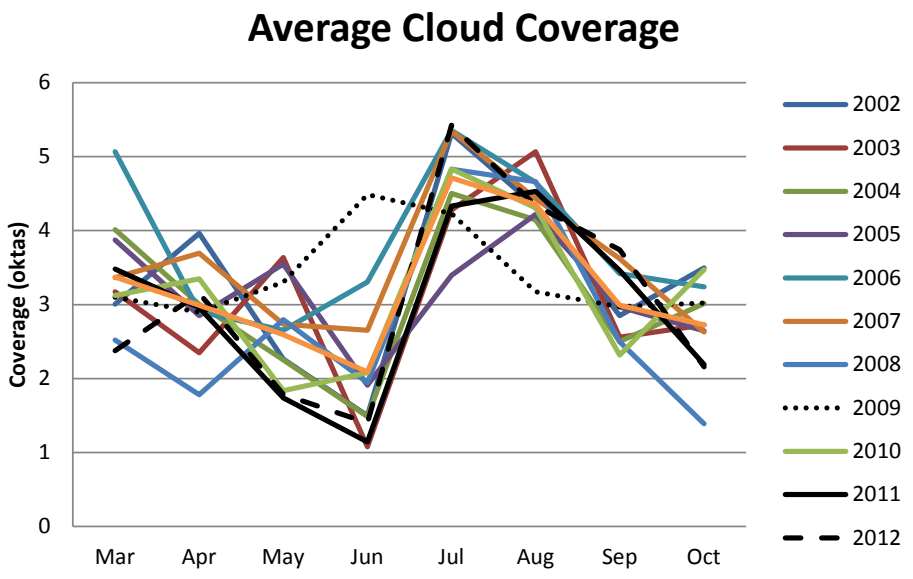



**Figure 3-4. Monthly average cloud coverage for each year from 2002-2012 for the Phoenix Sky Harbor Airport (KPHX).**

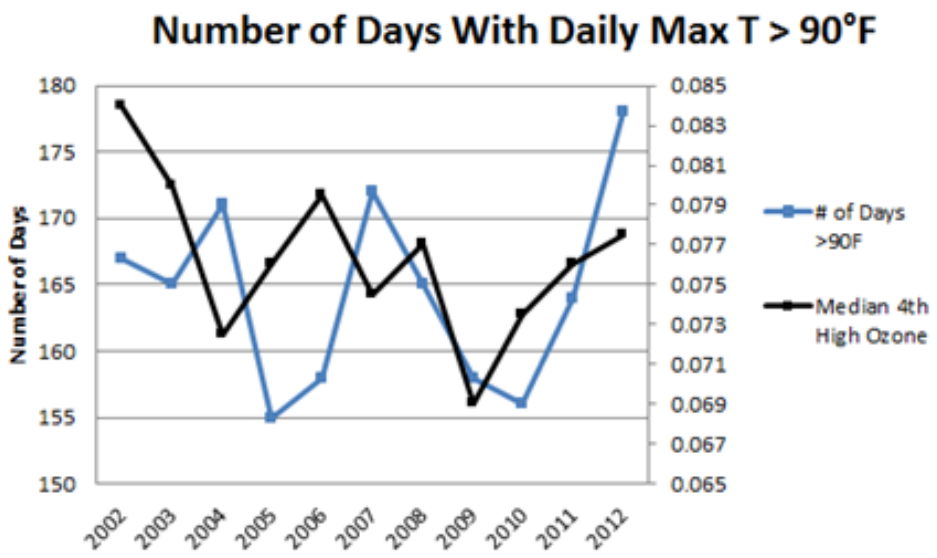



**Figure 3-5. Number of days with daily maximum temperature >90°F for each year from 2002-2012 for the Phoenix Sky Harbor Airport, KPHX, and median value of the 4th high MDA8 among all Maricopa County ozone monitors.**

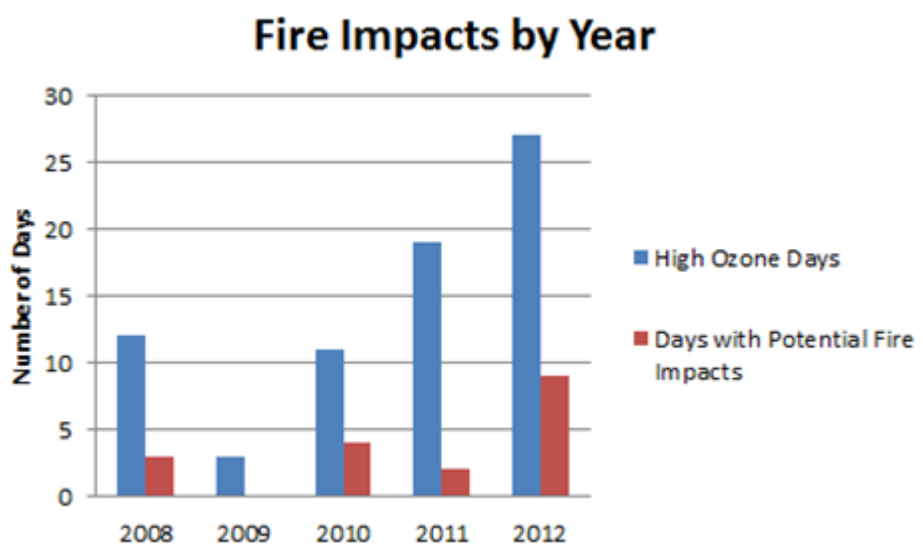



**Figure 3-6. Number of high ozone days (MDA8>75 ppb for one or more Maricopa County monitors) and number of high ozone days with potential ozone impacts from fire emissions during 2008-2012.**

Anthropogenic NOx and VOC emissions generally decreased during 2008-2011 in the Maricopa Nonattainment Area (Figure 3-7). Modeling of on-road mobile sources using the U.S. Environmental Protection Agency's Motor Vehicle Emissions Simulator (MOVES) model indicated that vehicle emissions declined overall during 2008-2012, but do show some increase in VOC emissions after 2010 due to the use of 10% ethanol blend (E10) fuel (Figure 3-8).

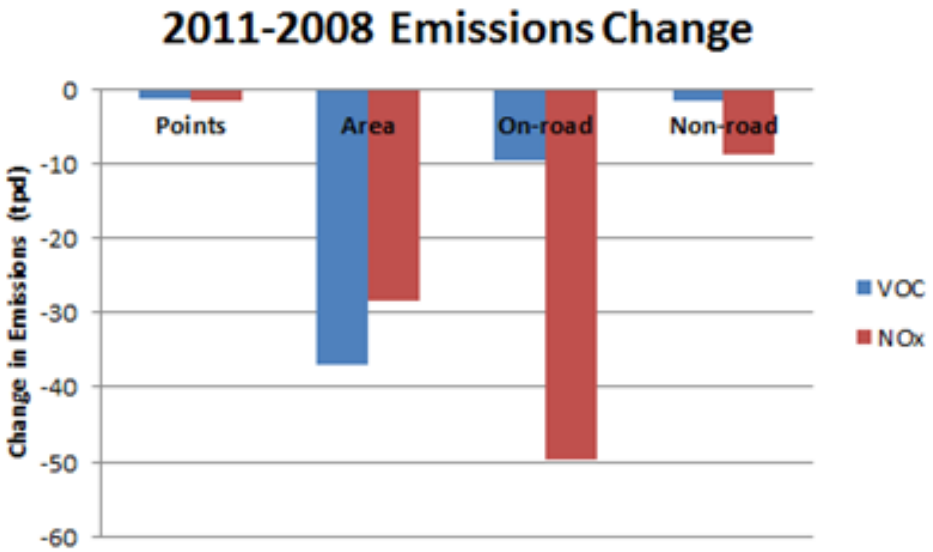



**Figure 3-7. Emissions trends for Maricopa Nonattainment Area: 2008 to 2011. Emission inventory data provided by MAG.**

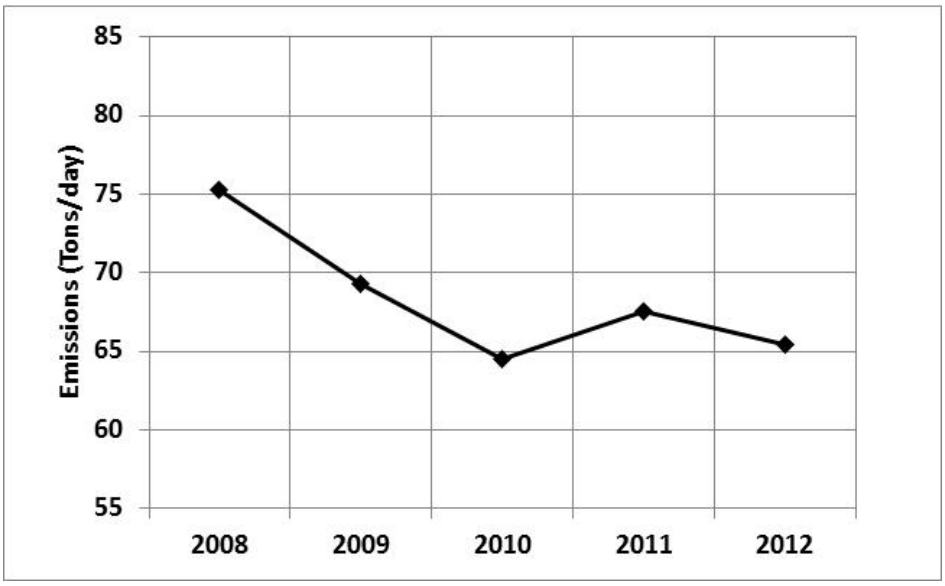



**Figure 3-8. MOVES ozone season average on-road VOC emissions for Maricopa County.**

## 3.2 Air quality related trends

### 3.2.1 Ozone Precursor Trends

The Maricopa Ozone Nonattainment Area has seen a continual decline of NOx and VOC emissions in the past decade. Point source growth has been modest. Tightening federal regulations on vehicle tailpipe sources and Tier 2, Tier 3, and Tier 4 non-road standards push the emission trends downward despite continued growth in vehicle miles traveled, population and housing in the Phoenix area. This trend continues through 2017.

Efforts in reducing emissions are realized in the ambient air quality trends. Ambient NOx concentrations at the Supersite show a strong downward trend ($R^2$ = 0.9) since 1999 (Figure 3-9). Summer season mean NOx in 2015 has reduced to only one third of the 1999 level. VOC concentrations (shown in Figure 3-9 as Total Non-methane Organic Carbon or TNMOC) have also declined by more than half during the same period. VOCs with molecules containing the carbonyl (C=O) bond can efficiently provide radical sources which are important to ozone formation. The simplest VOC molecule that contains the carbonyl bond is formaldehyde followed by acetaldehyde. Concentrations of both VOCs declined at the Supersite during 1999-2010, slightly increased in 2011, and then re-established the decreasing trend in 2012. The increase in 2011 may reflect the adoption of 10% ethanol gasoline blend fuel that year. The downward trends of ozone precursor are expected to continue through 2017.

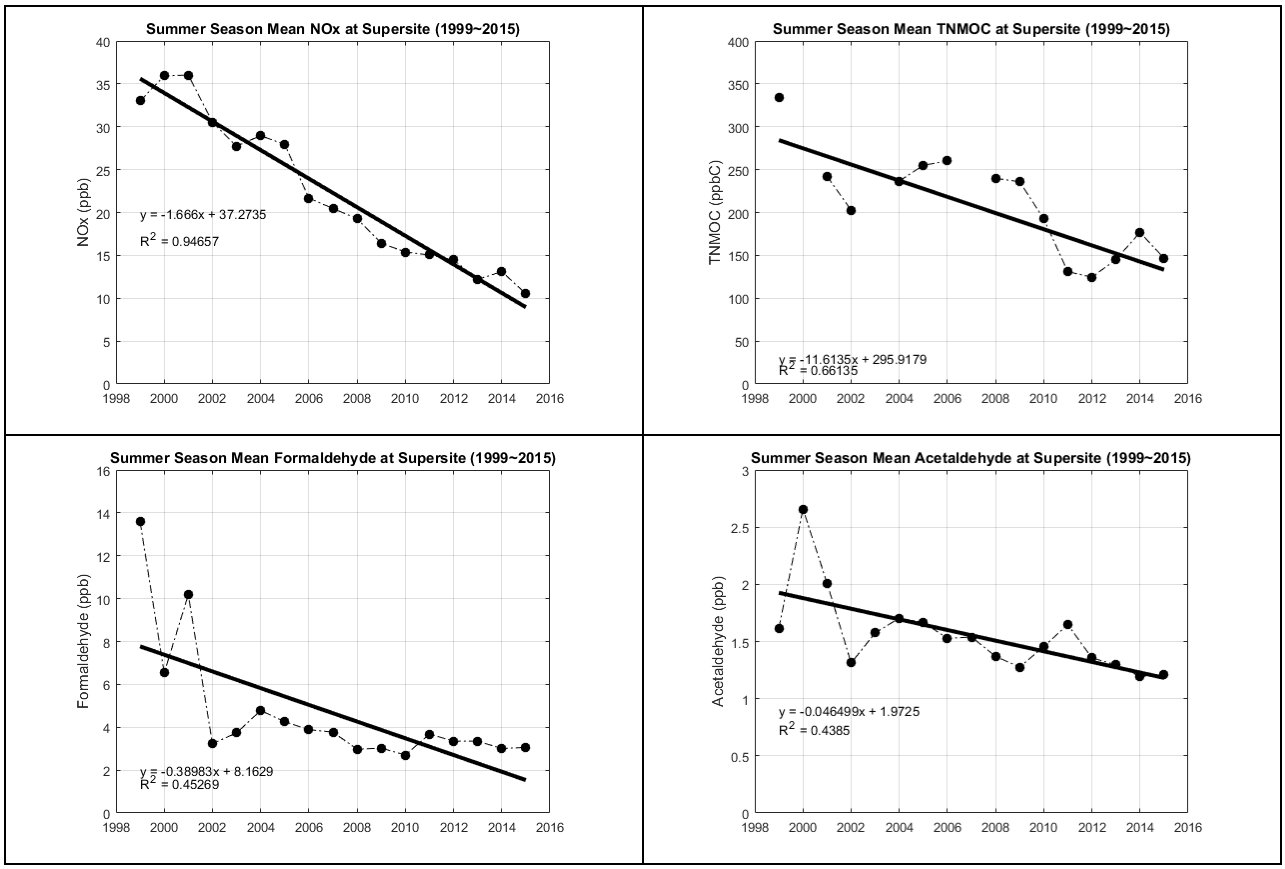
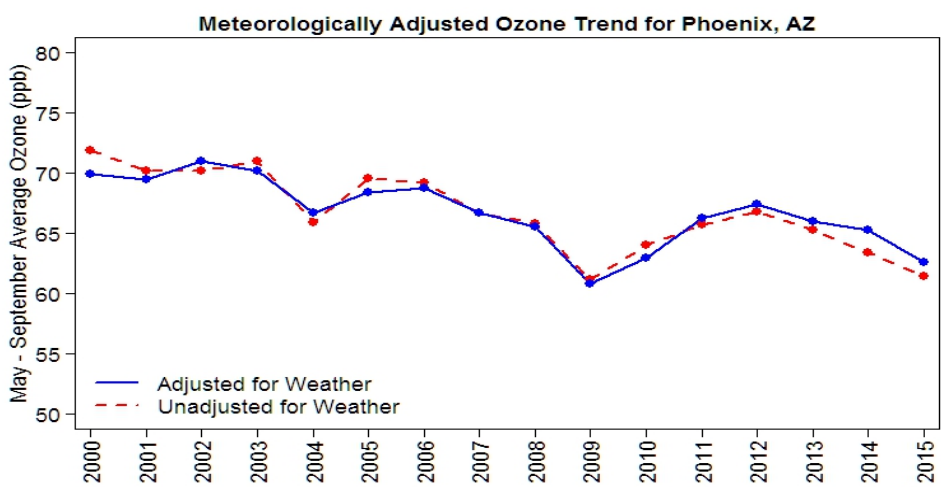



**Figure 3-9. Ambient ozone precursor trends at the Phoenix Supersite.**

### 3.2.2 Ozone Trends

Ambient data and emissions trends are very important elements of WOE analyses when the attainment date for an area is in the near future. The EPA's 2014 modeling guidance suggests that if an area is only one or two years away from their attainment date, ambient data is in most cases the best predictor of likely air quality levels in the near future. The guidance also suggests accounting for year-to-year meteorological variations when assessing the ambient data trends. Although the meteorologically adjusted ozone trends through 2016 will not be available in time for this WOE analysis, they are not likely to diverge significantly from the trends through 2015 as illustrated in Figure 3-10. Preliminary 2016 ozone concentration data through August 18, 2016 are presented and discussed in Section 3.2.3.

Unadjusted ozone trends at sites in Maricopa County that were exceeding the NAAQS in 2011 have similar patterns (Figure 3-11). During the span of 1995-2009, design values decreased but then increased between 2009 and 2012. The years of 2013, 2014, and 2015 have reestablished the decreasing trend. As a result, the overall ozone trends between 2000 and 2015 are very weak despite significant reduction of precursor emissions during the same period. Due to the non-linear relationship between ozone and its NOx and VOC precursors, it is impossible to establish a relationship between past emissions changes and historical and current ozone air quality. The weak ozone trends, despite sharp downward precursor trends, emphasize the stiffness of ozone responses to local emission reductions. Nonetheless, the 2015 ozone design values at West Phoenix and Cave Creek are lower than 75 ppb. Ozone at North Phoenix has also been lower in the past three years. When excluding the years 2009 and 2011-2012 to remove effects of unusual meteorology and fire influences (as described in Section 3.1), the annual 4$^{th}$ highest MDA8 since 2005 trends downward to below 75 ppb by 2017 (Figure 3-12). For these reasons, it is expected that the 2017 design values would be at or below the 2008 ozone NAAQS at these three sites.




Source: https://www.epa.gov/sites/production/files/2016-06/_metadj_all.zip

**Figure 3-10. Comparison of metrological adjusted and unadjusted summer (May – September) average of daily maximum 8-hour ozone concentrations in Phoenix, according to analyses conducted by EPA.**

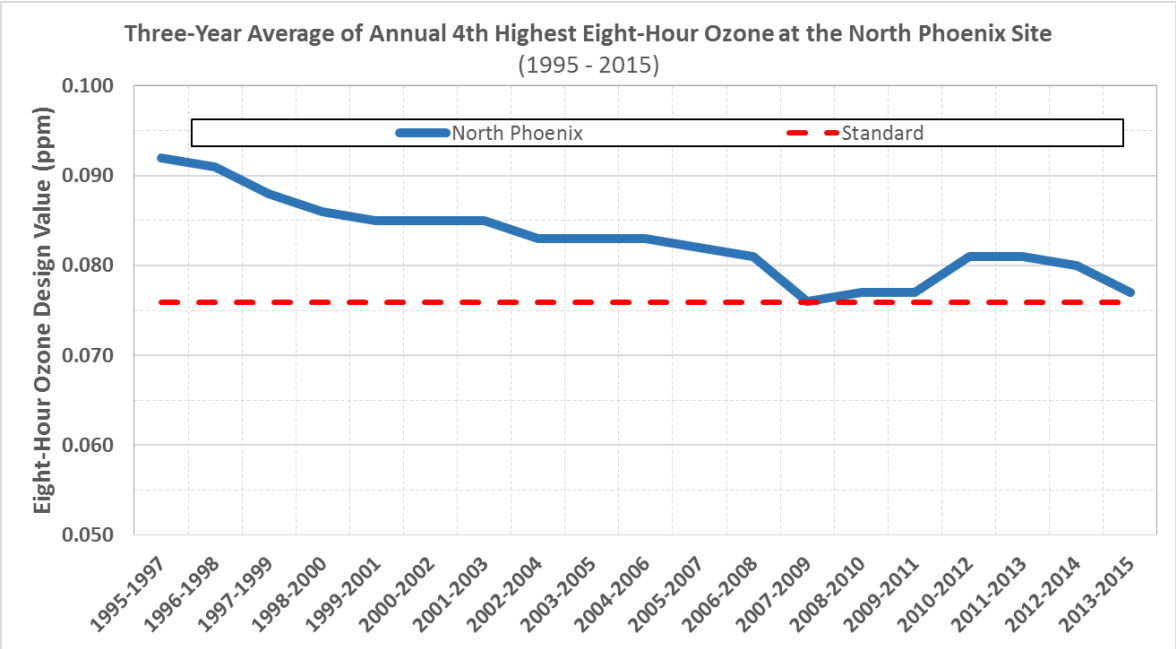



**Figure 3-11(a). Design value ozone trends from 1995 to 2015 at monitors in Maricopa County: North Phoenix.**

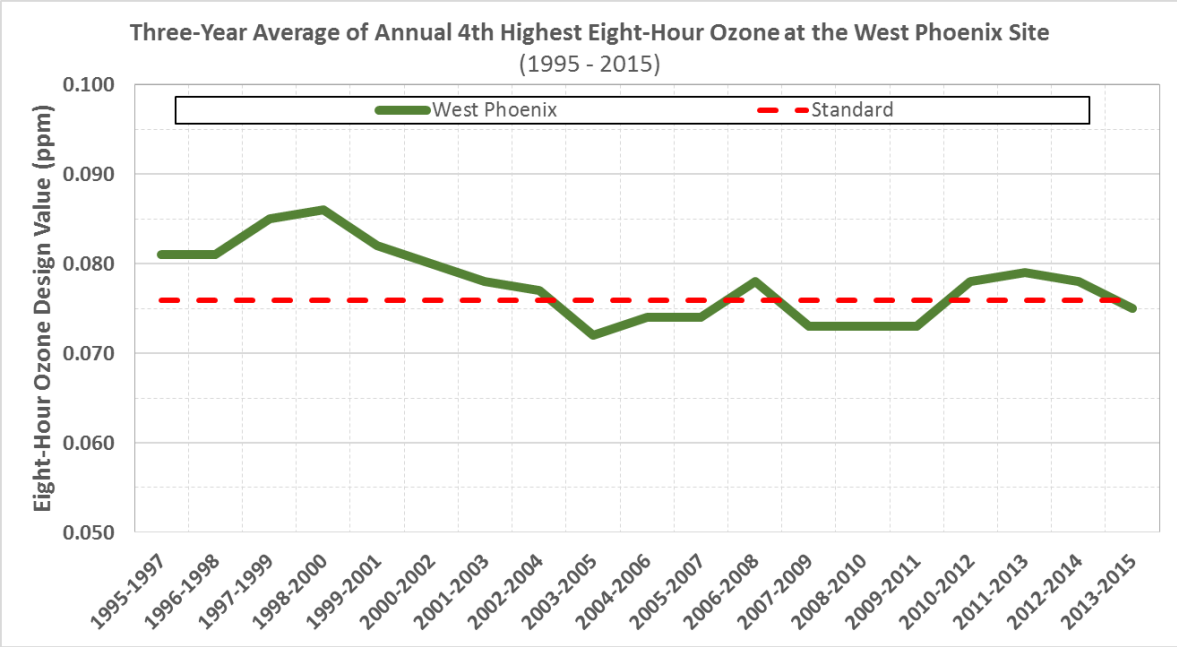



**Figure 3-11(b). Design value ozone trends from 1995 to 2015 at monitors in Maricopa County: West Phoenix.**

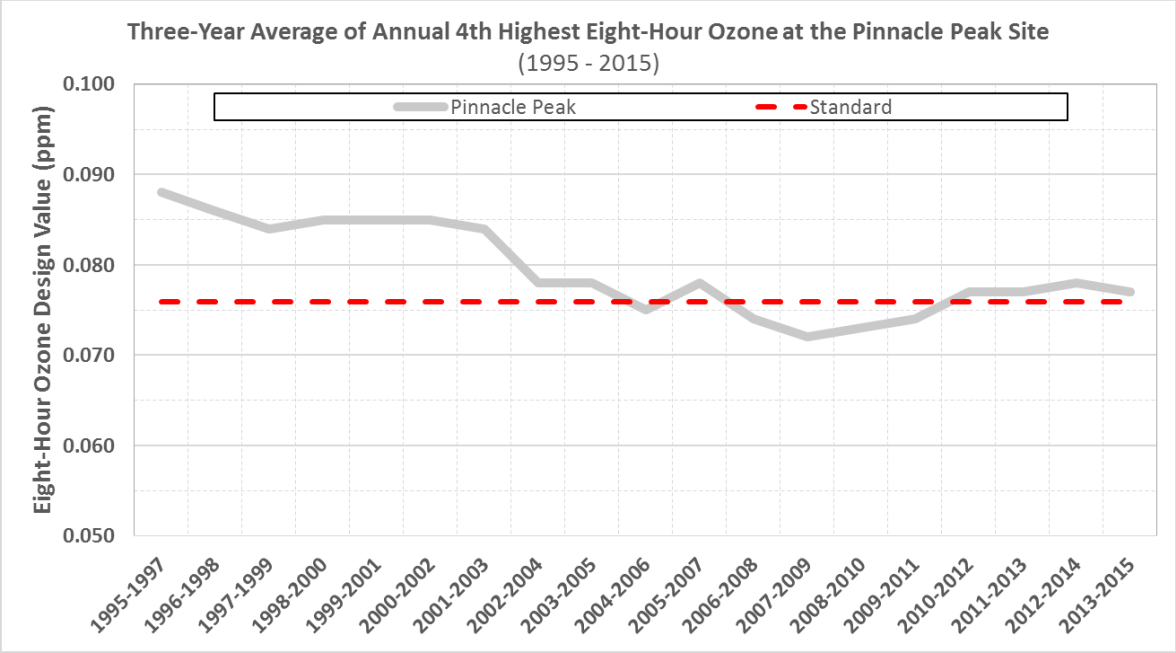



**Figure 3-11(c). Design value ozone trends from 1995 to 2015 at monitors in Maricopa County: Pinnacle Peak.**

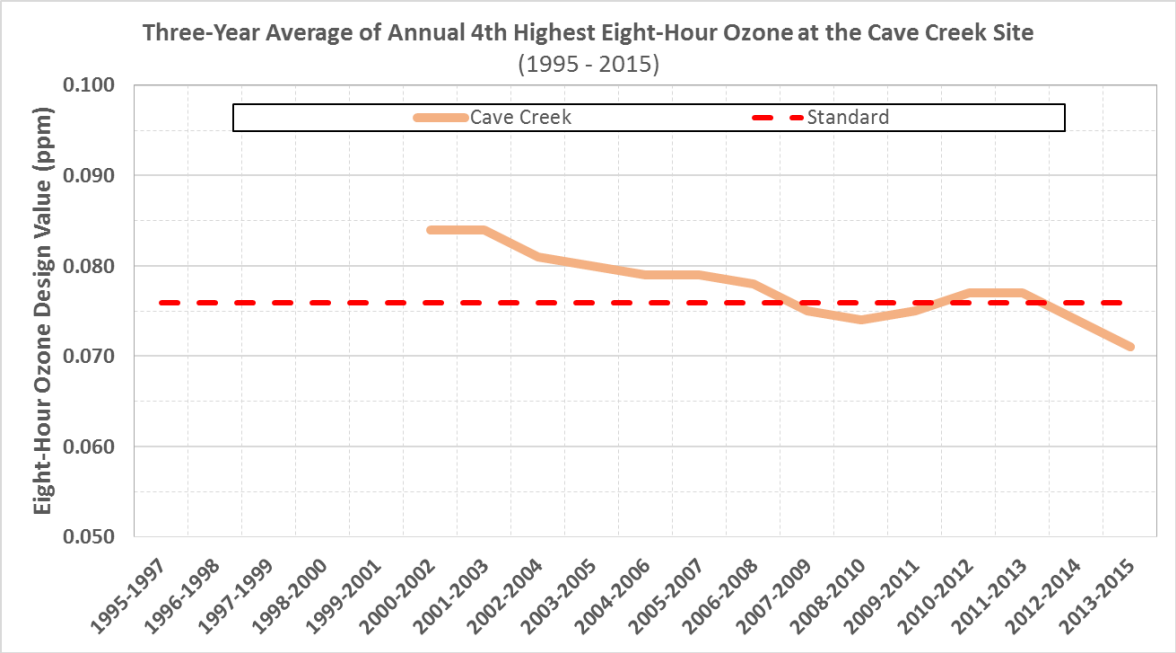



**Figure 3-11(d). Design value ozone trends from 1995 to 2015 at monitors in Maricopa County: Cave Creek.**

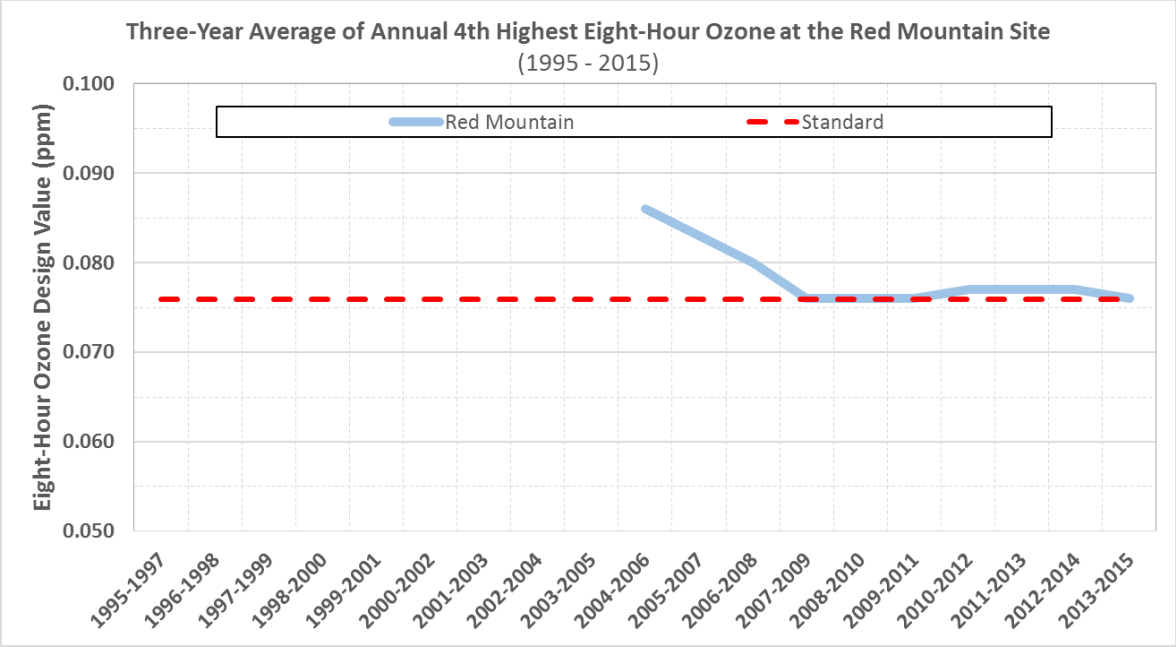



**Figure 3-11(e). Design value ozone trends from 1995 to 2015 at monitors in Maricopa County: Red Mountain.**

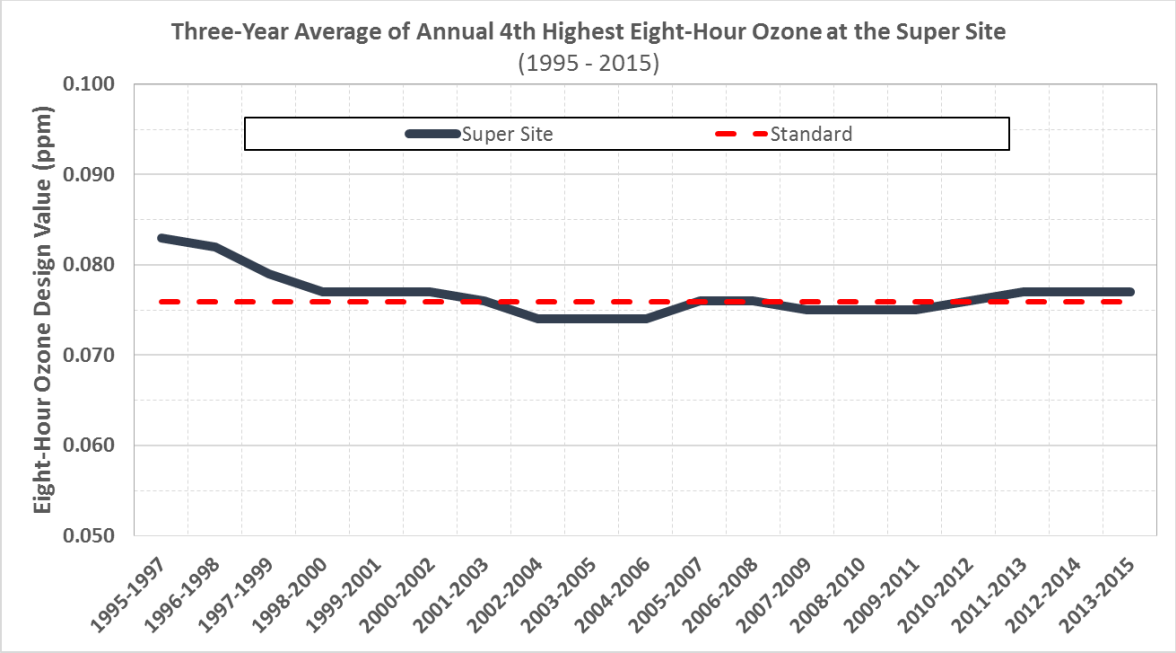



**Figure 3-11(f). Design value ozone trends from 1995 to 2015 at monitors in Maricopa County: Super Site.**

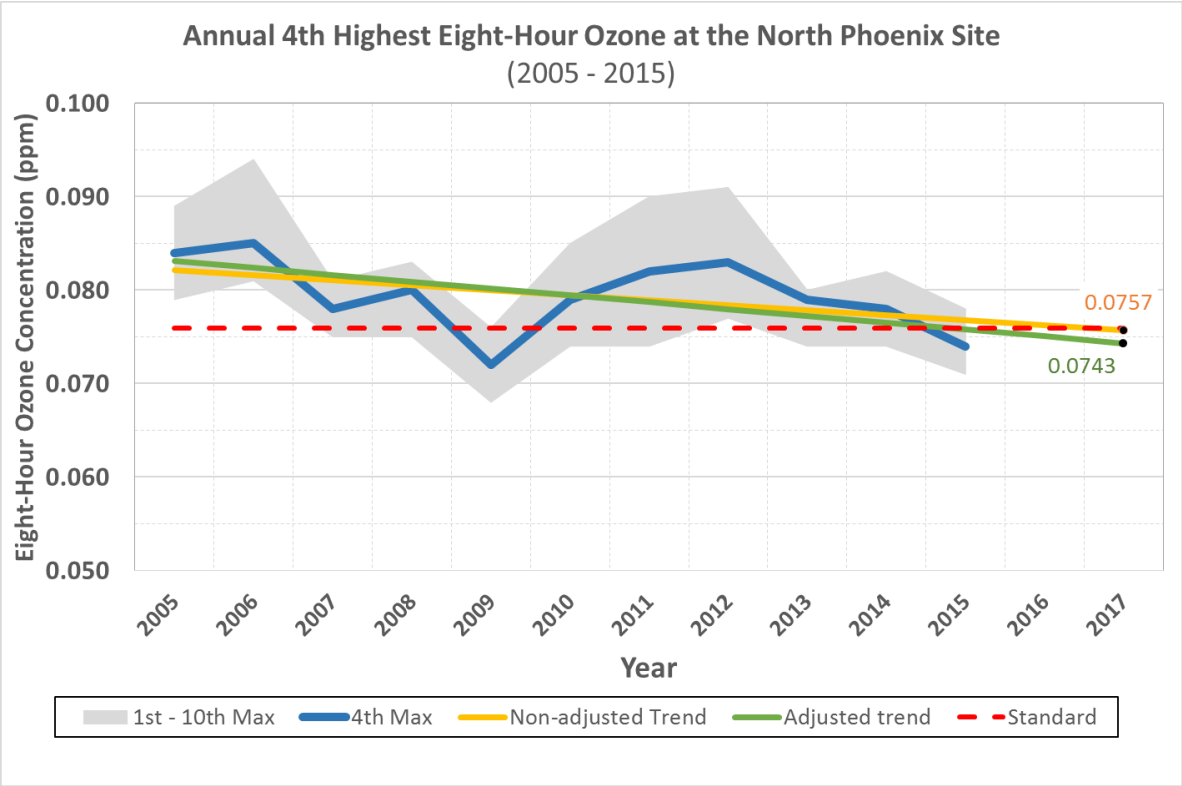



**Figure 3-12. Annual 4th highest MDA8 ozone trends from 2005 to 2015 at North Phoenix Site. Adjusted trend excludes the years 2009 and 2011-2012.**

### 3.2.3 Preliminary 2016 Ozone Concentrations

Data on ozone concentrations gathered through August 18, 2016 in the Maricopa eight-hour ozone nonattainment area confirm the continuing trend of declining ozone concentrations at the nonattainment area monitors. While the 2016 data are still preliminary, and the 2016 ozone season is not yet complete, the likelihood of additional exceedances of the 2008 ozone standard in 2016 beyond August 18, 2016 is significantly lower than during the peak ozone season months of June and July.

As of August 18, 2016, all nonattainment area monitors have 2016 fourth-high maximum daily eight-hour average ozone concentrations of 0.075 ppm or less, at or below the 2008 ozone standard. This is a continuation of the trend seen in 2015, where all nonattainment area monitors had fourth-high ozone concentrations of 0.075 ppm or less, after exclusion of the June 20, 2015 ozone concentrations attributed to an ozone wildfire exceptional event. Currently, only one nonattainment area monitor (Pinnacle Peak) has a preliminary 2014-2016 ozone design value (0.076 ppm) that is over the 2008 ozone standard. All other nonattainment area monitors are meeting the standard based upon preliminary 2014-2016 ozone design values.

These data confirm that the downward trend in ozone concentrations is likely to continue through the remainder of 2016 and into 2017. As only one of the 20 nonattainment area monitors is just slightly over the 2008 ozone standard based upon 2014-2016 data, it is expected that the 2015-2017 ozone design values at all nonattainment area monitors will attain the 2008 ozone standard.

## 4.0 SUMMARY

This report contains weight-of-evidence (WOE) analyses for the MAG moderate area attainment demonstration for the 2008 ozone standard. The following section summarizes the principal findings from these analyses.

- An alternative modeling database recently used in EPA's rulemakings (Cross-State Air Pollution Rule) suggest that the Maricopa Ozone Nonattainment Area would be in attainment in 2017.
- NOx emissions controls are the best mechanism for decreasing Maricopa ozone levels by 2017 and beyond. The NOx emissions and ambient trends have continued to decline and will benefit ozone levels.
- NOx emissions from on-road sources in the modeling inventory may be overstated based on our analyses. Recent literature using top-down estimates from satellite and aircraft remote sensing implicated MOVES in overestimating NOx by a factor of two. For this reason, the effectiveness of NOx emission reductions in lowering ozone concentrations in Maricopa County may be understated in the model. It is anticipated that adjustment to NOx emissions would lower the 2017 design values.
- Back trajectories and source apportionment analyses suggest significant contributions to elevated ozone in Maricopa County from background ozone (USB) and California.
- Ambient NOx and VOC concentrations show an aggressive and persistent downward trend since 2000. In contrast, ozone trends are weak, indicating stiffness in the model because the area is significantly impacted by outside sources, especially background ozone, and possibly because of overstated NOx from on-road sources.
- Design value ozone in recent years show a re-established downward trend that would suggest attainment in 2017.

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# APPENDIX A

## EPA's Characterization of Background Ozone

# Appendix A. EPA's Characterization of Background Ozone

During the latest review of the NAAQS for ozone, the US Environmental Protection Agency (EPA) recognized that sources other than US anthropogenic emissions can contribute large fractions of ozone at certain times and locations. EPA developed a white paper (EPA, 2015) that clarifies EPA's definition of this "background" ozone, describes its sources and processes, summarizes its spatial and seasonal variability, and describes policy tools with which to address implementation challenges stemming from high background contributions. On February 24-25, 2016, EPA held a workshop with States, Tribes and stakeholders in Phoenix, Arizona to discuss information from the white paper. This section summarizes the EPA (2015) characterization of background ozone.

**Definition**

EPA considers a specific definition for background ozone specific to the context of NAAQS implementation: US background (USB) includes all global natural sources of ozone (biogenic, wildfire, stratospheric, lightning), and all anthropogenic sources from outside the US. EPA notes that it can be difficult to determine whether certain emission sectors are within the US (e.g., marine shipping and aviation) or considered anthropogenic (e.g., prescribed fires). EPA acknowledges that stakeholders may define background ozone differently, such as all sources outside a specific local jurisdiction. USB does not include intrastate or interstate transport of anthropogenic ozone and precursors within the US; such processes are addressed by specific provisions of the Clean Air Act (CAA).

**Sources**

Ozone and certain precursors can be transported long distances in the mid and upper troposphere (3-10 km) because their chemical lifetimes can span weeks. Ozone at such altitudes can be transported vertically to the surface by several meteorological processes. Stratospheric chemistry (>10 km) is the largest natural source of ozone; dynamic exchange processes continually transport ozone-laden stratospheric air into the upper troposphere. Certain meteorological conditions can bring filaments of stratospheric air deep into the troposphere and directly raise surface ozone concentrations. Referred to as stratospheric intrusions, such events can result in relatively high USB episodes, particularly in elevated terrain (e.g., Langford et al., 2009; 2015). Wildfires, lightning and vegetation are other natural sources of ozone precursors, which can significantly raise USB over episodic to seasonal time scales. Anthropogenic precursor emissions from other countries contribute to the global tropospheric ozone burden and can impact USB on episodic to seasonal scales according to intercontinental transport patterns. Global natural and anthropogenic emissions of methane, which are slowly converted to ozone over annual time scales, also contribute to USB.

**Characterization**

USB can vary considerably in space and time, and contribute toward a wide range of the total ozone measured at any particular point. Photochemical models have been widely used to quantify background contributions (Fiore et al., 2003; Wang et al., 2009; Zhang et al., 2011; Emery et al., 2012; Lin et al., 2012; EPA, 2014; Lefohn et al., 2014; Dolwick et al., 2015) because

of inherent limitations in using monitoring data for this purpose. Two basic approaches are used to model USB: "zero-out" and "source apportionment." The former approach refers to removing certain emission sectors from the model (e.g., zeroing US anthropogenic precursor emissions, resulting in a "brute-force" estimate of USB). The latter approach employs internal chemical apportionment algorithms that meter the contribution of specific source sectors to ozone chemistry as the model runs (i.e., emissions are not altered, resulting in an estimate of USB as part of the total ozone prediction). Note that zero-out alters the model's chemical environment because emissions are explicitly modified, whereas source apportionment does not alter the model's chemistry.

**Historical Estimates of Background Ozone**

As part of the Integrated Science Assessment (ISA) developed for the 2015 NAAQS review, EPA (2013) summarized results from independent modeling studies published before 2012:

1) Seasonal mean background ozone is highest in the inter-mountain western US;
2) Seasonal mean background ozone is generally highest in the spring and early summer;
3) Background contributions occur on episodic and non-episodic scales with the highest contributions associated with discrete events such as stratospheric intrusions or wildfires;
4) Models compare reasonably with one another in terms of seasonal mean background ozone estimates, but are not capable of precise background estimates on a daily level.

For example, Zhang et al. (2011) report model estimates of seasonal mean USB ranging from a low of 24 ppb in the summer in the northeast US to a high of 42 ppb in the spring at high elevation sites in the western US. More recently, Fiore et al. (2014) show greater variability in modeled background estimates, with April-June mean values reaching up to 50 ppb at many western high elevation sites. A modeling analysis conducted by Lefohn et al. (2014) concluded that background ozone could comprise greater than 70% of the annual-average hourly total ozone at such high elevation sites.

**EPA Estimates of USB**

As part of the Policy Assessment (PA) for the 2015 NAAQS review, EPA (2014) summarized results from their zero-out and source apportionment modeling. The two approaches estimated similar seasonal-mean (April through October) USB impacts over rural areas of the western US (Dolwick et al., 2015). However, the greatest differences between the two approaches occurred in urban areas, where source apportionment estimated lower USB concentrations as a result of maintaining the chemical destruction of USB ozone from nitrogen oxide (NOx) emissions, a process that was absent with the removal of US anthropogenic emissions in the zero-out case. EPA's results were consistent with previous studies described above: seasonal mean USB ranged 25-50 ppb across the US, with contributions greater than 40 ppb in the inter-mountain western US and lower values in the eastern US. USB represented a relatively larger percentage (60-80%) of seasonal mean ozone within the inter-mountain western US and along the borders with Mexico and Canada. In locations where ozone is generally higher (e.g., urban areas in California and the eastern US), seasonal mean background fractions were smaller (e.g., 40-60%).

From the NAAQS implementation perspective, the level of USB on ozone exceedance days is more important than seasonal means. EPA (2014) concluded, based on results from Zhang et al. (2011), Emery et al. (2012), and EPA (2012), that "results suggest that background concentrations on the days with the highest total $O_3$ concentrations are not dramatically higher than typical seasonal average background concentrations." As a result, days with high modeled ozone tend to have smaller relative contributions from USB and conversely greater contributions from US anthropogenic sources. EPA (2014) further concluded that "anthropogenic sources within the US are largely responsible for 4$^{th}$ highest 8-hour [average] daily maximum $O_3$ [MDA8] concentrations."

However, EPA (2014) acknowledged some cases when model-estimated USB fractions were much higher during periods of "high" (>60 ppb) total ozone concentrations. These usually occurred in relation to specific events and in specific locations (e.g., stratospheric intrusions in high elevations or areas influenced by wildfires). Assessments based on monitoring have indicated similar event-oriented USB impacts on high ozone days (California Air Resources Board, 2011; Wyoming Department of Environmental Quality, 2013; Langford et al., 2015).

**Trends in USB**

According to analyses of remote monitoring data (Cooper et al, 2012; Lin et al., 2015), over the past 20 years mid-tropospheric ozone concentrations have been increasing at roughly 0.4±0.1-0.7 ppb/year. This trend will depend on future global emissions of ozone precursors and methane (HTAP, 2010), as well as climate change effects (temperatures, wildfires, weather patterns, etc.; Jacob and Winner; 2009). NOx emissions in North America and Europe are expected to decline out to 2030, while NOx emissions in East and South Asia are expected to increase. Global methane emissions are expected to continue to increase. Technologies and policies exist that, if implemented, could decrease global NOx and methane emissions. Additionally, aggressive climate change mitigation policy might halt the growth of global NOx and methane emissions (Amann et al., 2013; Klimont et al., 2015).

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# APPENDIX C

DATA FILE LIST

## Directory Structure for the Data Files

```
Root
├──cmx
│   ├──pre
│   │   ├──wrfcamx_v4.3
│   │   ├──bndextr
│   │   ├──cmaq2camx
│   │   ├──ncf2uam
│   │   ├──mozart2camx_v3.0
│   │   ├──tshift_bc
│   │   ├──tuv4.8.camx6.20
│   │   └──stitchncf
│   ├──run
│   │   ├──2017
│   │   └──2011
│   ├──inp
│   │   ├──met
│   │   │   └──2011
│   │   ├──tuv
│   │   │   └──2011
│   │   ├──o3map
│   │   │   └──2011
│   │   ├──emis
│   │   │   ├──2011
│   │   │   └──2017
│   │   ├──icbc
│   │   │   ├──2011
│   │   │   └──2017
│   │   └──wlf
│   │       └──2011
│   ├──pst
│   │   ├──2011
│   │   └──2017
│   └──out
│       ├──2011
│       └──2017
├──wrf
│   ├──WPS
│   │   ├──inp
│   │   └──out
│   │       ├──geogrid
│   │       └──metgrid
│   └──WRF3.7.2011
│       ├──Log
│       │   ├──rs4wrf
│       │   └──rs4real
│       ├──Sim
│       ├──Inl
│       └──Evl
├──ems
│   └──model
│       ├──Sky Ranch-18AZ
│       ├──Falcon Field Airport
│       ├──Phoenix Skyharbor Airport
│       ├──Gila Bend Muni
│       ├──Phoenix-Mesa Gateway_2011fleet
│       ├──Pleasant Valley-P48
│       ├──Glendale Airport_nospecialE
│       ├──Goodyear_GAfleet_TG_2011
│       ├──DeerValley_2011_GAfleet_TG_nospecialE
│       ├──Buckeye
│       ├──Stellar-P19
```

```
│        ├──Scottsdale Airport_2011_fleet_nospecialE
│        ├──Chandler Airport
│        ├──Wickenburg
│        └──00Pinal_County
│            ├──Eloy
│            ├──Casa_grande
│            ├──Arizona_Soaring
│            ├──Coolidge
│            ├──Pinal_Airpark
│            └──Ak_Chin
├──gcm
│   └──MOZART
├──man
│   └──wld
├──mov
│   ├──run
│   │   ├──2011
│   │   └──2017
│   ├──den
│   │   ├──2011
│   │   └──2017
│   └──out
│       ├──2011
│       └──2017
├──non
│   ├──run
│   │   ├──2011
│   │   └──2017
│   ├──in
│   └──out
├──meg
│   └──ozsip2011
│       ├──inp
│       │   ├──MGNMET
│       │   └──MAP
│       └──out
│           └──CB6
├──sps
│   ├──cfg
│   │   ├──srgtool_US_36km
│   │   ├──srgtool_US_12km
│   │   ├──srgtools_2015_Maricopa_4km
│   │   ├──srgtools_2015_Pinal_4km
│   │   ├──srgtool_Canada_NAESI
│   │   ├──srgtool_Canada_non_NAESI
│   │   └──srgtool_2015_MX
│   └──inp
│       └──data_shapefile
│           ├──emiss_shp2003
│           ├──maricopa
│           │   ├──MAG2012_landuse_data_stateplane
│           │   ├──Maricopa_Pinal_Census_2010.gdb
│           │   └──NLCD_2011
│           ├──pinal
│           ├──emiss_shp2010
│           │   ├──tiger
│           │   ├──spatial_insights
│           │   ├──usgs
│           │   ├──extended_idle
│           │   ├──state_group
│           │   ├──ladco
│           │   ├──nlcd
│           │   ├──fema
│           │   ├──acs
```

```
│           │   ├──ntad
│           │   ├──offshore
│           │   └──census
│           ├──outside_MCPC
│           ├──Can_MEX
│           │   └──Canada
│           │       └──Canada_2010_surrogate_v1
│           │           ├──NAESI
│           │           └──Non_NAESI
│           └──mexico
└──smk
    ├──inp
    │   ├──ge_dat
    │   │   ├──nhapexclude
    │   │   ├──gridding
    │   │   ├──point
    │   │   ├──speciation
    │   │   ├──temporal
    │   │   └──smkreport
    │   │       └──repconfig
    │   ├──run
    │   │   ├──run2011
    │   │   └──run2017
    │   ├──assigns
    │   │   ├──assigns2017
    │   │   └──assigns2011
    │   ├──list
    │   │   ├──list2011
    │   │   │   ├──ptnonipm
    │   │   │   ├──area
    │   │   │   ├──airport
    │   │   │   ├──np_oilgas
    │   │   │   ├──onroad
    │   │   │   ├──pointwfus
    │   │   │   ├──c1c2rail
    │   │   │   ├──c3marine
    │   │   │   ├──xptegu_magcem
    │   │   │   ├──pointpfus
    │   │   │   ├──rwc
    │   │   │   ├──pointmxcn
    │   │   │   ├──areamxcn
    │   │   │   ├──agfire
    │   │   │   ├──onroadmxcn
    │   │   │   ├──pointwfcn
    │   │   │   ├──nonroad
    │   │   │   ├──ptegu
    │   │   │   ├──pointwfmx
    │   │   │   ├──pointmxcn_sce
    │   │   │   └──pt_oilgas
    │   │   └──list2017
    │   │       ├──rwcp
    │   │       ├──ptnonipm
    │   │       ├──ptnonipm2018
    │   │       ├──area
    │   │       ├──airport
    │   │       ├──np_oilgas
    │   │       ├──onroad
    │   │       ├──pointwfus
    │   │       ├──c1c2rail
    │   │       ├──c3marine
    │   │       ├──xptegu_magcem
    │   │       ├──pointpfus
    │   │       ├──rwc
    │   │       ├──pointmxcn
```

```
│   │       ├──areamxcn
│   │       ├──onroadmxcn
│   │       ├──nonroad2018
│   │       ├──pointwfcn
│   │       ├──area2018
│   │       ├──airport2018
│   │       ├──nonroad
│   │       ├──ptegu
│   │       ├──pointwfmx
│   │       ├──pointmxcn_sce
│   │       └──pt_oilgas
│   └──inventory
│       ├──EPA_platformv62
│       │   ├──2017
│       │   │   ├──2017eh_cb6v2_v6_11g_ar
│       │   │   │   ├──np_oilgas
│       │   │   │   ├──c1c2rail
│       │   │   │   └──rwc
│       │   │   ├──onroad
│       │   │   ├──2017eh_cb6v2_v6_11g_oth
│       │   │   │   └──inputs
│       │   │   │       └──othpt
│       │   │   ├──area_by_state
│       │   │   │   └──2017
│       │   │   │       └──for12km
│       │   │   ├──2017eh_cb6v2_v6_11g_pt
│       │   │   │   └──inputs
│       │   │   │       ├──ptnonipm
│       │   │   │       ├──ptegu
│       │   │   │       └──pt_oilgas
│       │   │   ├──2017eh_cb6v2_v6_11g_cem
│       │   │   │   └──inputs
│       │   │   │       └──cem
│       │   │   └──2017eh_cb6v2_v6_11g_nr
│       │   │       └──inputs
│       │   │           └──nonroad
│       │   └──2011
│       │       ├──2011eh_onroad_by_state
│       │       ├──2011eh_cb05_v6_11g_nr
│       │       │   └──inputs
│       │       │       └──nonroad
│       │       ├──2011eh_cb05_v6_11g_ptfire
│       │       │   └──inputs
│       │       │       ├──ptfire
│       │       │       ├──ptwildfire
│       │       │       └──ptprescfire
│       │       ├──area_by_state
│       │       ├──2011eh_cb05_v6_11g_pt
│       │       │   └──inputs
│       │       │       ├──ptnonipm
│       │       │       ├──ptegu
│       │       │       └──pt_oilgas
│       │       ├──2011eh_v6_11g_inputs_oth
│       │       │   └──2011eh_cb05_v6_11g
│       │       │       └──inputs
│       │       │           └──othpt
│       │       └──2011eh_v6_11g_inputs_cem
│       │           └──2011eh_cb05_v6_11g
│       │               └──inputs
│       │                   ├──cem17
│       │                   └──cem
│       ├──MAG_LOCAL_data_Ozone_SIP
│       │   ├──area
│       │   │   ├──2017
```

```
│         │   │   ├──2018
│         │   │   └──2011
│         │   ├──airport
│         │   ├──point
│         │   │   ├──2017
│         │   │   ├──2018
│         │   │   └──2011
│         │   └──nonroad
│         │       ├──2017
│         │       ├──2018
│         │       └──2011
│         └──ERG_OZSIP_2011_2017_v08142015
│             └──final_smoke
├──check
└──out
    └──emis
        ├──2017
        │   ├──4km
        │   │   ├──v6_elvated_pt_2017
        │   │   │   ├──elv_ptnonipm
        │   │   │   ├──elv_xptegu
        │   │   │   ├──elv_0ptnonipmMCPC
        │   │   │   └──elv_ptnonipm_v2
        │   │   └──v9_merged_2D
        │   ├──12km
        │   │   ├──v9_merged_2D_w2012bio
        │   │   ├──v6_elevated_pt_final_zeroout_4km_pt
        │   │   │   ├──0ptnonipm
        │   │   │   ├──0ptegu
        │   │   │   ├──0pointmxcn_sce
        │   │   │   ├──0pt_oilgas
        │   │   │   └──0pointmxcn
        │   │   └──v9_merged_2D
        │   └──36km
        │       ├──v9_merged_2D_w2012bio
        │       ├──v6_elevated_pt
        │       └──v9_merged_2D
        └──2011
            ├──4km
            │   ├──v9_merged_2D_w2012bio
            │   ├──v6_elvated_pt
            │   │   ├──elv_ptnonipm
            │   │   ├──elv_xptegu_annual_adjusted_tpro
            │   │   └──elv_0ptnonipmMCPC2011
            │   └──v9_merged_2D
            ├──12km
            │   ├──v9_merged_2D_w2012bio
            │   ├──v6_elevated_pt_final_zeroout_4km_pt
            │   │   ├──elv_pointmxcn_2011
            │   │   ├──elv_ptnonipm_2011
            │   │   ├──elv_pointmxcn_sce_2011
            │   │   ├──elv_ptegu_2011
            │   │   └──elv_pt_oilgas_2011
            │   └──v9_merged_2D
            └──36km
                ├──v9_merged_2D_w2012bio
                ├──v9_elevated_pt
                └──v9_merged_2D
```

## Complete File List

```
.:
cmx  ems  gcm  man  meg  mov  non  smk  sps  wrf

./cmx:
inp  out  pre  pst  run

./cmx/inp:
emis     icbc     met      o3map    tuv      wlf
CAMx6.2.chemparam.2_NONE     mech.2.CAMx6.2
mech.3.CAMx6.2     mech.5.CAMx6.2     mech.6.CAMx6.2

./cmx/inp/emis:
2011  2017

./cmx/inp/emis/2011:
pre.smk.ems.04km.20110501.bin ~ pre.smk.ems.04km.20110930.bin
pre.smk.ems.12km.20110501.bin ~ pre.smk.ems.12km.20110930.bin
pre.smk.ems.36km.20110501.bin ~ pre.smk.ems.36km.20110930.bin

./cmx/inp/emis/2017:
pre.smk.ems.04km.20110501.bin ~ pre.smk.ems.04km.20110930.bin
pre.smk.ems.12km.20110501.bin ~ pre.smk.ems.12km.20110930.bin
pre.smk.ems.36km.20110501.bin ~ pre.smk.ems.36km.20110930.bin

./cmx/inp/icbc:
2011  2017

./cmx/inp/icbc/2011:
pre.cmx.bc.cb6.12km.20110501.bin ~ pre.cmx.bc.cb6.12km.20110930.bin
pre.cmx.ic.cb6.12km.20110501.bin

./cmx/inp/icbc/2017:
pre.cmx.bc.cb6.12km.20110501.bin ~ pre.cmx.bc.cb6.12km.20110930.bin
pre.cmx.ic.cb6.12km.20110501.bin

./cmx/inp/met:
2011

./cmx/inp/met/2011:
pre.wrf.2d.04km.20110430.bin  ~  pre.wrf.2d.04km.20110930.bin
pre.wrf.2d.12km.20110430.bin  ~  pre.wrf.2d.12km.20110930.bin
pre.wrf.2d.36km.20110430.bin  ~  pre.wrf.2d.36km.20110930.bin
pre.wrf.3d.04km.20110430.bin  ~  pre.wrf.3d.04km.20110930.bin
pre.wrf.3d.12km.20110430.bin  ~  pre.wrf.3d.12km.20110930.bin
pre.wrf.3d.36km.20110430.bin  ~  pre.wrf.3d.36km.20110930.bin
pre.wrf.cr.04km.20110430.bin  ~  pre.wrf.cr.04km.20110930.bin
pre.wrf.cr.12km.20110430.bin  ~  pre.wrf.cr.12km.20110930.bin
pre.wrf.cr.36km.20110430.bin  ~  pre.wrf.cr.36km.20110930.bin
pre.wrf.kv.04km.20110430.bin.CMAQ  ~  pre.wrf.kv.04km.20110930.bin.CMAQ
pre.wrf.kv.12km.20110430.bin.CMAQ  ~  pre.wrf.kv.12km.20110930.bin.CMAQ
pre.wrf.kv.36km.20110430.bin.CMAQ  ~  pre.wrf.kv.36km.20110930.bin.CMAQ
pre.wrf.lu.04km.20110430.bin  ~  pre.wrf.lu.04km.20110930.bin
pre.wrf.lu.12km.20110430.bin  ~  pre.wrf.lu.12km.20110930.bin
pre.wrf.lu.36km.20110430.bin  ~  pre.wrf.lu.36km.20110930.bin

./cmx/inp/o3map:
2011

./cmx/inp/o3map/2011:
pre.o3m.04km.20110501.txt ~  pre.o3m.04km.20110930.txt
pre.o3m.12km.20110501.txt ~  pre.o3m.12km.20110930.txt
pre.o3m.36km.20110501.txt ~  pre.o3m.36km.20110930.txt

./cmx/inp/tuv:
2011

./cmx/inp/tuv/2011:
pre.tuv.do.cb6.04km.20110501.txt ~ pre.tuv.do.cb6.04km.20110930.txt
pre.tuv.do.cb6.12km.20110501.txt ~ pre.tuv.do.cb6.12km.20110930.txt
pre.tuv.do.cb6.36km.20110501.txt ~ pre.tuv.do.cb6.36km.20110930.txt

./cmx/inp/wlf:
2011

./cmx/inp/wlf/2011:
04km  12km  36km

./cmx/inp/wlf/2011/04km:
egts_l.20110501.1.MCIP_4km.mag4.ncf ~  egts_l.20110930.1.MCIP_4km.mag4.ncf

./cmx/inp/wlf/2011/12km:
egts_l.20110501.1.MCIP_12km.mag12.ncf ~  egts_l.20110930.1.MCIP_12km.mag12.ncf

./cmx/inp/wlf/2011/04km:
egts_l.20110501.1.MCIP_36km.mag36.ncf ~  egts_l.20110930.1.MCIP_36km.mag36.ncf

./cmx/out:
2011  2017

./cmx/out/2011:
mod.cmx.12km.20110501.avrg.grd01 ~  mod.cmx.12km.20110930.avrg.grd01
mod.cmx.12km.20110501.avrg.grd02 ~  mod.cmx.12km.20110930.avrg.grd02
mod.cmx.12km.20110501.depn.grd01 ~  mod.cmx.12km.20110930.depn.grd01
```

```
mod.cmx.12km.20110501.depn.grd02 ~  mod.cmx.12km.20110930.depn.grd02
mod.cmx.12km.20110501.diag  ~  mod.cmx.12km.20110930.diag
mod.cmx.12km.20110501.finst ~  mod.cmx.12km.20110930.finst
mod.cmx.12km.20110501.inst  ~  mod.cmx.12km.20110930.inst
mod.cmx.12km.20110501.mass  ~  mod.cmx.12km.20110930.mass
mod.cmx.12km.20110501.out   ~  mod.cmx.12km.20110930.out
mod.cmx.12km.20110501.pig   ~  mod.cmx.12km.20110930.pig
mod.cmx.36km.20110501.avrg.grd01 ~  mod.cmx.36km.20110930.avrg.grd01
mod.cmx.36km.20110501.depn.grd01 ~  mod.cmx.36km.20110930.depn.grd01
mod.cmx.36km.20110501.diag  ~  mod.cmx.36km.20110930.diag
mod.cmx.36km.20110501.finst ~  mod.cmx.36km.20110930.finst
mod.cmx.36km.20110501.inst  ~  mod.cmx.36km.20110930.inst
mod.cmx.36km.20110501.mass  ~  mod.cmx.36km.20110930.mass
mod.cmx.36km.20110501.out   ~  mod.cmx.36km.20110930.out
mod.cmx.36km.20110501.pig   ~  mod.cmx.36km.20110930.pig

./cmx/out/2017:
mod.cmx.12km.20110501.avrg.grd01 ~  mod.cmx.12km.20110930.avrg.grd01
mod.cmx.12km.20110501.avrg.grd02 ~  mod.cmx.12km.20110930.avrg.grd02
mod.cmx.12km.20110501.depn.grd01 ~  mod.cmx.12km.20110930.depn.grd01
mod.cmx.12km.20110501.depn.grd02 ~  mod.cmx.12km.20110930.depn.grd02
mod.cmx.12km.20110501.diag  ~  mod.cmx.12km.20110930.diag
mod.cmx.12km.20110501.finst ~  mod.cmx.12km.20110930.finst
mod.cmx.12km.20110501.inst  ~  mod.cmx.12km.20110930.inst
mod.cmx.12km.20110501.mass  ~  mod.cmx.12km.20110930.mass
mod.cmx.12km.20110501.out   ~  mod.cmx.12km.20110930.out
mod.cmx.12km.20110501.pig   ~  mod.cmx.12km.20110930.pig
mod.cmx.36km.20110501.avrg.grd01 ~  mod.cmx.36km.20110930.avrg.grd01
mod.cmx.36km.20110501.depn.grd01 ~  mod.cmx.36km.20110930.depn.grd01
mod.cmx.36km.20110501.diag  ~  mod.cmx.36km.20110930.diag
mod.cmx.36km.20110501.finst ~  mod.cmx.36km.20110930.finst
mod.cmx.36km.20110501.inst  ~  mod.cmx.36km.20110930.inst
mod.cmx.36km.20110501.mass  ~  mod.cmx.36km.20110930.mass
mod.cmx.36km.20110501.out   ~  mod.cmx.36km.20110930.out
mod.cmx.36km.20110501.pig   ~  mod.cmx.36km.20110930.pig

./cmx/pre:
bndextr    mozart2camx_v3.0  stitchncf  tuv4.8.camx6.20
cmaq2camx  ncf2uam       tshift_bc      wrfcamx_v4.3

./cmx/pre/bndextr:
bndextr.f  bndextr.linux

./cmx/pre/cmaq2camx:
cmaq2camx.rev.04km.2011.job   mrguam.srf.rev.12km.2017.job
cmaq2camx.rev.04km.2017.job   mrguam.srf.rev.36km.2011.job
cmaq2camx.rev.12km.2011.job   mrguam.srf.rev.36km.2017.job
cmaq2camx.rev.12km.2017.job   ptsmrg.fnl.04km.2011.job
cmaq2camx.rev.36km.2011.job   ptsmrg.fnl.04km.2017.job
cmaq2camx.rev.36km.2017.job   ptsmrg.fnl.12km.2011.job
mrguam.srf.rev.04km.2011.job  ptsmrg.fnl.12km.2017.job
mrguam.srf.rev.04km.2017.job  ptsmrg.fnl.36km.2011.job
mrguam.srf.rev.12km.2011.job  ptsmrg.fnl.36km.2017.job

./cmx/pre/mozart2camx_v3.0:
mozart2camx.v02.36km.cb6.2011.bc.job  mozart2camx.v02.36km.cb6.2011.ic.job

./cmx/pre/ncf2uam:
ncf2uam.smk.elv.fnl.04km.2011.job  ncf2uam.smk.srf.rev.04km.2011.job
ncf2uam.smk.elv.fnl.04km.2017.job  ncf2uam.smk.srf.rev.04km.2017.job
ncf2uam.smk.elv.fnl.12km.2011.job  ncf2uam.smk.srf.rev.12km.2011.job
ncf2uam.smk.elv.fnl.12km.2017.job  ncf2uam.smk.srf.rev.12km.2017.job
ncf2uam.smk.elv.fnl.36km.2011.job  ncf2uam.smk.srf.rev.36km.2011.job
ncf2uam.smk.elv.fnl.36km.2017.job  ncf2uam.smk.srf.rev.36km.2017.job

./cmx/pre/stitchncf:
stitchncf.wlf.v02.04km.2011.job  stitchncf.wlf.v02.36km.2011.job
stitchncf.wlf.v02.12km.2011.job

./cmx/pre/tshift_bc:
tshift.bc.2011.cb6.36km.v02.job

./cmx/pre/tuv4.8.camx6.20:
tuv.do.cb6.04km.2011.job  tuv.do.cb6.12km.2011.job  tuv.do.cb6.36km.2011.job

./cmx/pre/wrfcamx_v4.3:
wrfcamx.v02.04km.2011.job  wrfcamx.v02.12km.2011.job  wrfcamx.v02.36km.2011.job

./cmx/pst:
2011  o3.mc.lcp.2011.txt        postproc.rev.04km.2017.job
2017  postproc.rev.04km.2011.job

./cmx/pst/2011:
extstats.04km.alldays.o3.1hr.txt
extstats.04km.alldays.o3.8hr.txt
mod.cmx.pst.04km.20110501.o3.1hr.avrg  ~  mod.cmx.pst.04km.20110930.o3.1hr.avrg
mod.cmx.pst.04km.20110501.o3.8hr.avrg  ~  mod.cmx.pst.04km.20110930.o3.8hr.avrg
mod.cmx.pst.04km.alldays.o3.1hr.avrg
mod.cmx.pst.04km.alldays.o3.8hr.avrg
obsmax.04km.20110501.o3.1hr.txt  ~  obsmax.04km.20110930.o3.1hr.txt
obsmax.04km.20110501.o3.8hr.txt  ~  obsmax.04km.20110930.o3.8hr.txt
predobs.04km.20110501.o3.1hr.txt ~  predobs.04km.20110930.o3.1hr.txt
predobs.04km.20110501.o3.8hr.txt ~  predobs.04km.20110930.o3.8hr.txt
stats.04km.20110501.o3.1hr.txt ~  stats.04km.20110930.o3.1hr.txt
stats.04km.20110501.o3.8hr.txt ~  stats.04km.20110930.o3.8hr.txt
```

```
./cmx/pst/2017:
extstats.04km.alldays.o3.1hr.txt
extstats.04km.alldays.o3.8hr.txt
mod.cmx.pst.04km.20110501.o3.1hr.avrg  ~  mod.cmx.pst.04km.20110930.o3.1hr.avrg
mod.cmx.pst.04km.20110501.o3.8hr.avrg  ~  mod.cmx.pst.04km.20110930.o3.8hr.avrg
mod.cmx.pst.04km.alldays.o3.1hr.avrg
mod.cmx.pst.04km.alldays.o3.8hr.avrg
obsmax.04km.20110501.o3.1hr.txt  ~  obsmax.04km.20110930.o3.1hr.txt
obsmax.04km.20110501.o3.8hr.txt  ~  obsmax.04km.20110930.o3.8hr.txt
predobs.04km.20110501.o3.1hr.txt ~  predobs.04km.20110930.o3.1hr.txt
predobs.04km.20110501.o3.8hr.txt ~  predobs.04km.20110930.o3.8hr.txt
stats.04km.20110501.o3.1hr.txt ~  stats.04km.20110930.o3.1hr.txt
stats.04km.20110501.o3.8hr.txt ~  stats.04km.20110930.o3.8hr.txt

./cmx/run:
2011  2017

./cmx/run/2011:
run.cmx.rev.12km.pig.omp.job  run.cmx.rev.36km.pig.omp.job

./cmx/run/2017:
run.cmx.rev.12km.pig.omp.job  run.cmx.rev.36km.pig.omp.job

./ems:
model

./ems/model:
00Pinal_County                                LUF_emissions_10222015_v1.xlsx
Buckeye                                       Phoenix-Mesa Gateway_2011fleet
Chandler Airport                              Phoenix Skyharbor Airport
DeerValley_2011_GAfleet_TG_nospecialE         Pleasant Valley-P48
Falcon Field Airport                          Scottsdale Airport_2011_fleet_nospecialE
Gila Bend Muni                                Sky Ranch-18AZ
Glendale Airport_nospecialE                   Stellar-P19
Goodyear_GAfleet_TG_2011                      Wickenburg

./ems/model/00Pinal_County:
Ak_Chin  Arizona_Soaring  Casa_grande  Coolidge  Eloy  Pinal_Airpark

./ems/model/00Pinal_County/Ak_Chin:
AC_EMIS.dbf   ANALYEAR.dbf  GSE_GATE.dbf  REC_NETC.dbf      STN_EMIS.dbf
AC_GSE.dbf    Baseline      GSE_POP.dbf   REC_NETP.dbf      TAXIPATH.dbf
AC_HAPS.dbf   BUILDING.dbf  PARKING.dbf   ROADWAYS.dbf      TAXIWAYS.dbf
AC_MAIN.dbf   CNFGRNWY.dbf  PROF_DAY.dbf  RUNWAYS.dbf       VEH_EMIS.dbf
AC_OPS.dbf    CONFIGS.dbf   PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf     PROF_QHR.dbf  SCNAPT.dbf
Ak_Chin.edm   GATES.dbf     REC_DISC.dbf  SCNAPTYR.dbf
ALL_EMIS.dbf  GSE_EMIS.dbf  REC_DISP.dbf  STATNRY.dbf

./ems/model/00Pinal_County/Arizona_Soaring:
AC_EMIS.dbf   Arizona_Soaring.edm  GSE_GATE.dbf  REC_NETC.dbf  STN_EMIS.dbf
AC_GSE.dbf    Baseline             GSE_POP.dbf   REC_NETP.dbf  TAXIPATH.dbf
AC_HAPS.dbf   BUILDING.dbf         PARKING.dbf   ROADWAYS.dbf  TAXIWAYS.dbf
AC_MAIN.dbf   CNFGRNWY.dbf         PROF_DAY.dbf  RUNWAYS.dbf   VEH_EMIS.dbf
AC_OPS.dbf    CONFIGS.dbf          PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf            PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  GATES.dbf            REC_DISC.dbf  SCNAPTYR.dbf
ANALYEAR.dbf  GSE_EMIS.dbf         REC_DISP.dbf  STATNRY.dbf

./ems/model/00Pinal_County/Casa_grande:
AC_EMIS.dbf   Baseline         GSE_GATE.dbf  REC_NETC.dbf  STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf     GSE_POP.dbf   REC_NETP.dbf  TAXIPATH.dbf
AC_HAPS.dbf   Casa_grande.edm  PARKING.dbf   ROADWAYS.dbf  TAXIWAYS.dbf
AC_MAIN.dbf   CNFGRNWY.dbf     PROF_DAY.dbf  RUNWAYS.dbf   VEH_EMIS.dbf
AC_OPS.dbf    CONFIGS.dbf      PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf        PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  GATES.dbf        REC_DISC.dbf  SCNAPTYR.dbf
ANALYEAR.dbf  GSE_EMIS.dbf     REC_DISP.dbf  STATNRY.dbf

./ems/model/00Pinal_County/Coolidge:
AC_EMIS.dbf   Baseline      GSE_GATE.dbf  REC_NETC.dbf      STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf  GSE_POP.dbf   REC_NETP.dbf      TAXIPATH.dbf
AC_HAPS.dbf   CNFGRNWY.dbf  PARKING.dbf   ROADWAYS.dbf      TAXIWAYS.dbf
AC_MAIN.dbf   CONFIGS.dbf   PROF_DAY.dbf  RUNWAYS.dbf       VEH_EMIS.dbf
AC_OPS.dbf    Coolidge.edm  PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf     PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  GATES.dbf     REC_DISC.dbf  SCNAPTYR.dbf
ANALYEAR.dbf  GSE_EMIS.dbf  REC_DISP.dbf  STATNRY.dbf

./ems/model/00Pinal_County/Eloy:
AC_EMIS.dbf   Baseline      GSE_GATE.dbf  REC_NETC.dbf      STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf  GSE_POP.dbf   REC_NETP.dbf      TAXIPATH.dbf
AC_HAPS.dbf   CNFGRNWY.dbf  PARKING.dbf   ROADWAYS.dbf      TAXIWAYS.dbf
AC_MAIN.dbf   CONFIGS.dbf   PROF_DAY.dbf  RUNWAYS.dbf       VEH_EMIS.dbf
AC_OPS.dbf    Eloy.edm      PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf     PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  GATES.dbf     REC_DISC.dbf  SCNAPTYR.dbf
ANALYEAR.dbf  GSE_EMIS.dbf  REC_DISP.dbf  STATNRY.dbf

./ems/model/00Pinal_County/Pinal_Airpark:
AC_EMIS.dbf   Baseline      GSE_POP.dbf        REC_NETC.dbf  STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf  PARKING.dbf        REC_NETP.dbf  TAXIPATH.dbf
AC_HAPS.dbf   CNFGRNWY.dbf  Pinal_Airpark.edm  ROADWAYS.dbf  TAXIWAYS.dbf
AC_MAIN.dbf   CONFIGS.dbf   PROF_DAY.dbf       RUNWAYS.dbf   VEH_EMIS.dbf
AC_OPS.dbf    FIRES.dbf     PROF_MON.dbf       SCENARIO.dbf
AIRPORTS.dbf  GATES.dbf     PROF_QHR.dbf       SCNAPT.dbf
ALL_EMIS.dbf  GSE_EMIS.dbf  REC_DISC.dbf       SCNAPTYR.dbf
```

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ANALYEAR.dbf  GSE_GATE.dbf  REC_DISP.dbf       STATNRY.dbf

./ems/model/Buckeye:
AC_EMIS.dbf   Baseline             GSE_GATE.dbf  REC_NETC.dbf  STN_EMIS.dbf
AC_GSE.dbf    Buckeye 2011 Oz.edm  GSE_POP.dbf   REC_NETP.dbf  TAXIPATH.dbf
AC_HAPS.dbf   BUILDING.dbf         PARKING.dbf   ROADWAYS.dbf  TAXIWAYS.dbf
AC_MAIN.dbf   CNFGRNWY.dbf         PROF_DAY.dbf  RUNWAYS.dbf   VEH_EMIS.dbf
AC_OPS.dbf    CONFIGS.dbf          PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf            PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  GATES.dbf            REC_DISC.dbf  SCNAPTYR.dbf
ANALYEAR.dbf  GSE_EMIS.dbf         REC_DISP.dbf  STATNRY.dbf

./ems/model/Chandler Airport:
AC_EMIS2.txt  ANALYEAR.dbf  GSE_EMIS.dbf  REC_DISP.dbf      STATNRY.dbf
AC_EMIS.dbf   Baseline      GSE_GATE.dbf  REC_NETC.dbf      STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf  GSE_POP.dbf   REC_NETP.dbf      TAXIPATH.dbf
AC_HAPS.dbf   Chandler.edm  PARKING.dbf   ROADWAYS.dbf      TAXIWAYS.dbf
AC_MAIN.dbf   CNFGRNWY.dbf  PROF_DAY.dbf  RUNWAYS.dbf       VEH_EMIS.dbf
AC_OPS.dbf    CONFIGS.dbf   PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf     PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  GATES.dbf     REC_DISC.dbf  SCNAPTYR.dbf

./ems/model/DeerValley_2011_GAfleet_TG_nospecialE:
AC_EMIS.dbf   Baseline                GSE_GATE.dbf  REC_NETC.dbf  STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf            GSE_POP.dbf   REC_NETP.dbf  TAXIPATH.dbf
AC_HAPS.dbf   CNFGRNWY.dbf            PARKING.dbf   ROADWAYS.dbf  TAXIWAYS.dbf
AC_MAIN.dbf   CONFIGS.dbf             PROF_DAY.dbf  RUNWAYS.dbf   VEH_EMIS.dbf
AC_OPS.dbf    DVT 2011_2011fleet.edm  PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  FIRES.dbf               PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  GATES.dbf               REC_DISC.dbf  SCNAPTYR.dbf
ANALYEAR.dbf  GSE_EMIS.dbf            REC_DISP.dbf  STATNRY.dbf

./ems/model/Falcon Field Airport:
AC_EMIS.dbf   BUILDING.dbf              PARKING.dbf   RUNWAYS.dbf
AC_GSE.dbf    CNFGRNWY.dbf              PROF_DAY.dbf  SCENARIO.dbf
AC_HAPS.dbf   CONFIGS.dbf               PROF_MON.dbf  SCNAPT.dbf
AC_MAIN.dbf   Falcon Field Airport.edm  PROF_QHR.dbf  SCNAPTYR.dbf
AC_OPS.dbf    FIRES.dbf                 REC_DISC.dbf  STATNRY.dbf
AIRPORTS.dbf  GATES.dbf                 REC_DISP.dbf  STN_EMIS.dbf
ALL_EMIS.dbf  GSE_EMIS.dbf              REC_NETC.dbf  TAXIPATH.dbf
ANALYEAR.dbf  GSE_GATE.dbf              REC_NETP.dbf  TAXIWAYS.dbf
Baseline      GSE_POP.dbf               ROADWAYS.dbf  VEH_EMIS.dbf

./ems/model/Gila Bend Muni:
AC_EMIS.dbf   BUILDING.dbf                PARKING.dbf       RUNWAYS.dbf
AC_GSE.dbf    CNFGRNWY.dbf                PROF_DAY.dbf      SCENARIO.dbf
AC_HAPS.dbf   CONFIGS.dbf                 PROF_MON.dbf      SCNAPT.dbf
AC_MAIN.dbf   FIRES.dbf                   PROF_QHR.dbf      SCNAPTYR.dbf
AC_OPS.dbf    GATES.dbf                   REC_DISC.dbf      STATNRY.dbf
AIRPORTS.dbf  Gila Bend Muni 2011 Oz.edm  REC_DISP.dbf      STN_EMIS.dbf
ALL_EMIS.dbf  GSE_EMIS.dbf                REC_NETC.dbf      TAXIPATH.dbf
ANALYEAR.dbf  GSE_GATE.dbf                REC_NETP.dbf      TAXIWAYS.dbf
Baseline      GSE_POP.dbf                 ROADWAYS.dbf      VEH_EMIS.dbf

./ems/model/Glendale Airport_nospecialE:
AC_EMIS.dbf   Baseline              GSE_GATE.dbf  REC_NETC.dbf        STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf          GSE_POP.dbf   REC_NETP.dbf        TAXIPATH.dbf
AC_HAPS.dbf   CNFGRNWY.dbf          PARKING.dbf   ROADWAYS.dbf        TAXIWAYS.dbf
AC_MAIN.dbf   CONFIGS.dbf           PROF_DAY.dbf  RUNWAYS.dbf         VEH_EMIS.dbf
AC_OPS.dbf    FIRES.dbf             PROF_MON.dbf  SCENARIO.dbf
AIRPORTS.dbf  GATES.dbf             PROF_QHR.dbf  SCNAPT.dbf
ALL_EMIS.dbf  Glendale Airport.edm  REC_DISC.dbf  SCNAPTYR.dbf
ANALYEAR.dbf  GSE_EMIS.dbf          REC_DISP.dbf  STATNRY.dbf

./ems/model/Goodyear_GAfleet_TG_2011:
AC_EMIS.dbf   CNFGRNWY.dbf                    PROF_DAY.dbf     SCNAPT.dbf
AC_GSE.dbf    CONFIGS.dbf                     PROF_MON.dbf     SCNAPTYR.dbf
AC_HAPS.dbf   FIRES.dbf                       PROF_QHR.dbf     STATNRY.dbf
AC_MAIN.dbf   GATES.dbf                       REC_DISC.dbf     STN_EMIS.dbf
AC_OPS.dbf    Goodyear 2011_GAfleet_2011.edm  REC_DISP.dbf     TAXIPATH.dbf
AIRPORTS.dbf  GSE_EMIS.dbf                    REC_NETC.dbf     TAXIWAYS.dbf
ALL_EMIS.dbf  GSE_GATE.dbf                    REC_NETP.dbf
ANALYEAR.dbf  GSE_POP.dbf                     ROADWAYS.dbf
Baseline      PARKING.dbf                     RUNWAYS.dbf
BUILDING.dbf  SCENARIO.dbf                    VEH_EMIS.dbf

./ems/model/Phoenix-Mesa Gateway_2011fleet:
AC_EMIS.dbf   FIRES.dbf                                          REC_NETC.dbf
AC_GSE.dbf    GATES.dbf                                          REC_NETP.dbf
AC_HAPS.dbf   GSE_EMIS.dbf                                       ROADWAYS.dbf
AC_MAIN.dbf   GSE_GATE.dbf                                       RUNWAYS.dbf
AC_OPS.dbf    GSE_POP.dbf                                        SCENARIO.dbf
AIRPORTS.dbf  PARKING.dbf                                        SCNAPT.dbf
ALL_EMIS.dbf  Phoenix-Mesa Gateway 2011 Ozone_2011fleet.edm      SCNAPTYR.dbf
ANALYEAR.dbf  PROF_DAY.dbf                                       STATNRY.dbf
Baseline      PROF_MON.dbf                                       STN_EMIS.dbf
BUILDING.dbf  PROF_QHR.dbf                                       TAXIPATH.dbf
CNFGRNWY.dbf  REC_DISC.dbf                                       TAXIWAYS.dbf
CONFIGS.dbf   REC_DISP.dbf                                       VEH_EMIS.dbf

./ems/model/Phoenix Skyharbor Airport:
AC_EMIS.dbf   FIRES.dbf                                  REC_NETC.dbf
AC_GSE.dbf    GATES.dbf                                  REC_NETP.dbf
AC_HAPS.dbf   GSE_EMIS.dbf                               ROADWAYS.dbf
AC_MAIN.dbf   GSE_GATE.dbf                               RUNWAYS.dbf
AC_OPS.dbf    GSE_POP.dbf                                SCENARIO.dbf
AIRPORTS.dbf  PARKING.dbf                                SCNAPT.dbf
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ALL_EMIS.dbf  Phoenix Skyharbor Airport 2011 Ozone.edm      SCNAPTYR.dbf
ANALYEAR.dbf  PROF_DAY.dbf                                  STATNRY.dbf
Baseline      PROF_MON.dbf                                  STN_EMIS.dbf
BUILDING.dbf  PROF_QHR.dbf                                  TAXIPATH.dbf
CNFGRNWY.dbf  REC_DISC.dbf                                  TAXIWAYS.dbf
CONFIGS.dbf   REC_DISP.dbf                                  VEH_EMIS.dbf

./ems/model/Pleasant Valley-P48:
AC_EMIS.dbf   BUILDING.dbf  Pleasant Valley 2011 Oz.edm      RUNWAYS.dbf
AC_GSE.dbf    CNFGRNWY.dbf  PROF_DAY.dbf                     SCENARIO.dbf
AC_HAPS.dbf   CONFIGS.dbf   PROF_MON.dbf                     SCNAPT.dbf
AC_MAIN.dbf   FIRES.dbf     PROF_QHR.dbf                     SCNAPTYR.dbf
AC_OPS.dbf    GATES.dbf     REC_DISC.dbf                     STATNRY.dbf
AIRPORTS.dbf  GSE_EMIS.dbf  REC_DISP.dbf                     STN_EMIS.dbf
ALL_EMIS.dbf  GSE_GATE.dbf  REC_NETC.dbf                     TAXIPATH.dbf
ANALYEAR.dbf  GSE_POP.dbf   REC_NETP.dbf                     TAXIWAYS.dbf
Baseline      PARKING.dbf   ROADWAYS.dbf                     VEH_EMIS.dbf

./ems/model/Scottsdale Airport_2011_fleet_nospecialE:
AC_EMIS.dbf   BUILDING.dbf  PROF_DAY.dbf  SCENARIO.dbf
AC_GSE.dbf    CNFGRNWY.dbf  PROF_MON.dbf  SCNAPT.dbf
AC_HAPS.dbf   CONFIGS.dbf   PROF_QHR.dbf  SCNAPTYR.dbf
AC_MAIN.dbf   FIRES.dbf     REC_DISC.dbf  Scottsdale Airport 2011 Ozone.edm
AC_OPS.dbf    GATES.dbf     REC_DISP.dbf  STATNRY.dbf
AIRPORTS.dbf  GSE_EMIS.dbf  REC_NETC.dbf  STN_EMIS.dbf
ALL_EMIS.dbf  GSE_GATE.dbf  REC_NETP.dbf  TAXIPATH.dbf
ANALYEAR.dbf  GSE_POP.dbf   ROADWAYS.dbf  TAXIWAYS.dbf
Baseline      PARKING.dbf   RUNWAYS.dbf   VEH_EMIS.dbf

./ems/model/Sky Ranch-18AZ:
AC_EMIS.dbf   Baseline            GSE_POP.dbf   REC_NETP.dbf           STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf  PARKING.dbf   ROADWAYS.dbf                 TAXIPATH.dbf
AC_HAPS.dbf   CNFGRNWY.dbf  PROF_DAY.dbf  RUNWAYS.dbf                  TAXIWAYS.dbf
AC_MAIN.dbf   CONFIGS.dbf   PROF_MON.dbf  SCENARIO.dbf                 VEH_EMIS.dbf
AC_OPS.dbf    FIRES.dbf     PROF_QHR.dbf  SCNAPT.dbf
AIRPORTS.dbf  GATES.dbf     REC_DISC.dbf  SCNAPTYR.dbf
ALL_EMIS.dbf  GSE_EMIS.dbf  REC_DISP.dbf  Sky Ranch_2011 Oz.edm
ANALYEAR.dbf  GSE_GATE.dbf  REC_NETC.dbf  STATNRY.dbf

./ems/model/Stellar-P19:
AC_EMIS.dbf   Baseline      GSE_POP.dbf   REC_NETP.dbf             STN_EMIS.dbf
AC_GSE.dbf    BUILDING.dbf  PARKING.dbf   ROADWAYS.dbf             TAXIPATH.dbf
AC_HAPS.dbf   CNFGRNWY.dbf  PROF_DAY.dbf  RUNWAYS.dbf              TAXIWAYS.dbf
AC_MAIN.dbf   CONFIGS.dbf   PROF_MON.dbf  SCENARIO.dbf             VEH_EMIS.dbf
AC_OPS.dbf    FIRES.dbf     PROF_QHR.dbf  SCNAPT.dbf
AIRPORTS.dbf  GATES.dbf     REC_DISC.dbf  SCNAPTYR.dbf
ALL_EMIS.dbf  GSE_EMIS.dbf  REC_DISP.dbf  STATNRY.dbf
ANALYEAR.dbf  GSE_GATE.dbf  REC_NETC.dbf  Stellar 2011_Oz.edm

./ems/model/Wickenburg:
AC_EMIS.dbf   Baseline      GSE_POP.dbf   REC_NETP.dbf      TAXIPATH.dbf
AC_GSE.dbf    BUILDING.dbf  PARKING.dbf   ROADWAYS.dbf      TAXIWAYS.dbf
AC_HAPS.dbf   CNFGRNWY.dbf  PROF_DAY.dbf  RUNWAYS.dbf       VEH_EMIS.dbf
AC_MAIN.dbf   CONFIGS.dbf   PROF_MON.dbf  SCENARIO.dbf      Wickenburg_2011_Oz.edm
AC_OPS.dbf    FIRES.dbf     PROF_QHR.dbf  SCNAPT.dbf
AIRPORTS.dbf  GATES.dbf     REC_DISC.dbf  SCNAPTYR.dbf
ALL_EMIS.dbf  GSE_EMIS.dbf  REC_DISP.dbf  STATNRY.dbf
ANALYEAR.dbf  GSE_GATE.dbf  REC_NETC.dbf  STN_EMIS.dbf

./gcm:
MOZART

./gcm/MOZART:
MOZART_output

./man:
wld

./man/wld:
mod.man.wld.all.day.cn.wrap.2011.txt  mod.man.wld.all.inv.cn.wrap.2011.txt
mod.man.wld.all.day.mx.wrap.2011.txt  mod.man.wld.all.inv.mx.wrap.2011.txt
mod.man.wld.all.day.us.wrap.2011.txt  mod.man.wld.all.inv.us.wrap.2011.txt

./meg:
ozsip2011

./meg/ozsip2011:
inp  out

./meg/ozsip2011/inp:
MAP  MGNMET

./meg/ozsip2011/inp/MAP:
EF_MAG_2008_12km_org.csv  LAI_MAG_2008_12km_org.csv  PFT_MAG_2008_12km_org.csv
EF_MAG_2008_36km_org.csv  LAI_MAG_2008_36km_org.csv  PFT_MAG_2008_36km_org.csv
EF_MAG_2008_4km_org.csv   LAI_MAG_2008_4km_org.csv   PFT_MAG_2008_4km_org.csv
EF_MAG_2008_4km_upd.csv   LAI_MAG_2008_4km_upd.csv   PFT_MAG_2008_4km_upd.csv

./meg/ozsip2011/inp/MGNMET:
MET.MEGAN.d01.2011119.ncf  ~  MET.MEGAN.d01.2011273.ncf
MET.MEGAN.d02.2011119.ncf  ~  MET.MEGAN.d02.2011273.ncf
MET.MEGAN.d03.2011119.ncf  ~  MET.MEGAN.d03.2011273.ncf

./meg/ozsip2011/out:
CB6

./meg/ozsip2011/out/CB6:
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MEGANv2.10.upd.d01.CB6.2011119.moles.ncf  ~  MEGANv2.10.upd.d01.CB6.2011273.moles.ncf
MEGANv2.10.upd.d01.CB6.2011119.TONHR.ncf  ~  MEGANv2.10.upd.d01.CB6.2011273.TONHR.ncf
MEGANv2.10.upd.d02.CB6.2011119.moles.ncf  ~  MEGANv2.10.upd.d02.CB6.2011273.moles.ncf
MEGANv2.10.upd.d02.CB6.2011119.TONHR.ncf  ~  MEGANv2.10.upd.d02.CB6.2011273.TONHR.ncf
MEGANv2.10.upd.d03.CB6.2011119.moles.ncf  ~  MEGANv2.10.upd.d03.CB6.2011273.moles.ncf
MEGANv2.10.upd.d03.CB6.2011119.TONHR.ncf  ~  MEGANv2.10.upd.d03.CB6.2011273.TONHR.ncf

./mov:
out  run

./mov/out:
2011  2017

./mov/out/2011:
mod.mov.04km.ia.20110430.nc  ~  mod.mov.04km.ia.20111001.nc
mod.mov.04km.ic.20110430.nc  ~  mod.mov.04km.ic.20111001.nc
mod.mov.04km.oac.20110430.nc ~  mod.mov.04km.oac.20111001.nc

./mov/out/2017:
mod.mov.04km.ia.20110430.nc  ~  mod.mov.04km.ia.20111001.nc
mod.mov.04km.ic.20110430.nc  ~  mod.mov.04km.ic.20111001.nc
mod.mov.04km.oac.20110430.nc ~  mod.mov.04km.oac.20111001.nc

./mov/run:
2011  2017

./mov/run/2011:
mag_oz_mod_ia_20110430_m2014a_out_ei.mrs  ~  mag_oz_mod_ia_20111001_m2014a_out_ei.mrs
mag_oz_mod_ia_20110430_m2014a_out_er.mrs  ~  mag_oz_mod_ia_20111001_m2014a_out_er.mrs
mag_oz_mod_ic_20110430_m2014a_out_ei.mrs  ~  mag_oz_mod_ic_20111001_m2014a_out_ei.mrs
mag_oz_mod_ic_20110430_m2014a_out_er.mrs  ~  mag_oz_mod_ic_20111001_m2014a_out_er.mrs
mag_oz_mod_oac_20110430_m2014a_out_ei.mrs  ~  mag_oz_mod_oac_20111001_m2014a_out_ei.mrs
mag_oz_mod_oac_20110430_m2014a_out_er.mrs  ~  mag_oz_mod_oac_20111001_m2014a_out_er.mrs

./mov/run/2017:
mag_oz_mod_ia_20170430_m2014a_out_ei.mrs  ~  mag_oz_mod_ia_20171001_m2014a_out_ei.mrs
mag_oz_mod_ia_20170430_m2014a_out_er.mrs  ~  mag_oz_mod_ia_20171001_m2014a_out_er.mrs
mag_oz_mod_ic_20170430_m2014a_out_ei.mrs  ~  mag_oz_mod_ic_20171001_m2014a_out_ei.mrs
mag_oz_mod_ic_20170430_m2014a_out_er.mrs  ~  mag_oz_mod_ic_20171001_m2014a_out_er.mrs
mag_oz_mod_oac_20170430_m2014a_out_ei.mrs  ~  mag_oz_mod_oac_20171001_m2014a_out_ei.mrs
mag_oz_mod_oac_20170430_m2014a_out_er.mrs  ~  mag_oz_mod_oac_20171001_m2014a_out_er.mrs

./non:
in  out  run

./non/in:
Nonroad_activity_input_MC_MOVES2014a.xlsx  Nonroad_pop_input_MC_MOVES2014a.xlsx

./non/out:
mod.non.all.04km.mc.2011.txt  mod.non.all.04km.pc.2011.txt
mod.non.all.04km.mc.2017.txt  mod.non.all.04km.pc.2017.txt

./non/run:
2011  2017  SIP_batch_MOVES2014a.bat

./non/run/2011:
MC_SIP_2011-05-01.mrs  ~  MC_SIP_2011-09-30.mrs
PC_SIP_2011-05-01.mrs  ~  PC_SIP_2011-09-30.mrs

./non/run/2017:
MC_SIP_2017-05-01.mrs  ~  MC_SIP_2017-09-30.mrs
PC_SIP_2017-05-01.mrs  ~  PC_SIP_2017-09-30.mrs

./smk:
check  inp  out

./smk/check:
CheckCO36km.docx
Check_SMK_v5.docx
Emission and EMission Processing.docx
Emission and EMission Processing.pdf
QA_4km_all_v1_20160405.xlsx
smoke_2011_24hrs_4kmDomain_in_12km.v6.dat
smoke_2011_24hrs_4kmDomain_in_36km.v6.dat
smoke_2011_24hrs_4kmDomain_in_4km.v6.dat
smoke_2011_daily_4kmDomain_in_12km.v6.dat
smoke_2011_daily_4kmDomain_in_36km.v6.dat
smoke_2011_daily_4kmDomain_in_4km.v6
smoke_2011_daily_emissions_in_different_domains_v3.xlsx
smoke_2011_daily_emissions_in_different_domains.xlsx
smoke_2011_daily_Maricopa_County_in_36km.xlsx
smoke_2011_daily.v6.xlsx

./smk/inp:
assigns  ge_dat  inventory  list  run

./smk/inp/assigns:
assigns2011  assigns2017

./smk/inp/assigns/assigns2011:
ASSIGNS.MAG_CB6_12km_CM_201105_AREA
ASSIGNS.MAG_CB6_12km_CM_201105_ONROAD
ASSIGNS.MAG_CB6_12km_CM_201105_POINT
ASSIGNS.MAG_CB6_12km_US_201105_AREA
ASSIGNS.MAG_CB6_12km_US_201105_AREA_05
ASSIGNS.MAG_CB6_12km_US_201105_AREA_06
ASSIGNS.MAG_CB6_12km_US_201105_AREA_07
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ASSIGNS.MAG_CB6_12km_US_201105_AREA_08
ASSIGNS.MAG_CB6_12km_US_201105_AREA_09
ASSIGNS.MAG_CB6_12km_US_201105_FIRE
ASSIGNS.MAG_CB6_12km_US_201105_FIRE_days
ASSIGNS.MAG_CB6_12km_US_201105_NONROAD
ASSIGNS.MAG_CB6_12km_US_201105_NONROAD_05
ASSIGNS.MAG_CB6_12km_US_201105_NONROAD_06
ASSIGNS.MAG_CB6_12km_US_201105_NONROAD_07
ASSIGNS.MAG_CB6_12km_US_201105_NONROAD_08
ASSIGNS.MAG_CB6_12km_US_201105_NONROAD_09
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD_mag2014
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD_mag2014_05
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD_mag2014_06
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD_mag2014_07
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD_mag2014_08
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD_mag2014_09
ASSIGNS.MAG_CB6_12km_US_201105_ONROAD_mag2014_CM
ASSIGNS.MAG_CB6_12km_US_201105_POINT
ASSIGNS.MAG_CB6_12km_US_201105_PTNONIPM
ASSIGNS.MAG_CB6_12km_US_201105_PT_OILGAS
ASSIGNS.MAG_CB6_12km_US_201105_RWC
ASSIGNS.MAG_CB6_36km_201105
ASSIGNS.MAG_CB6_36km_CM_201105_AREA
ASSIGNS.MAG_CB6_36km_CM_201105_ONROAD
ASSIGNS.MAG_CB6_36km_CM_201105_ONROAD_days
ASSIGNS.MAG_CB6_36km_CM_201105_POINT
ASSIGNS.MAG_CB6_36km_US_201105_AREA
ASSIGNS.MAG_CB6_36km_US_201105_AREA_05
ASSIGNS.MAG_CB6_36km_US_201105_AREA_06
ASSIGNS.MAG_CB6_36km_US_201105_AREA_07
ASSIGNS.MAG_CB6_36km_US_201105_AREA_08
ASSIGNS.MAG_CB6_36km_US_201105_AREA_09
ASSIGNS.MAG_CB6_36km_US_201105_FIRE
ASSIGNS.MAG_CB6_36km_US_201105_FIRE_days
ASSIGNS.MAG_CB6_36km_US_201105_NONROAD
ASSIGNS.MAG_CB6_36km_US_201105_NONROAD_05
ASSIGNS.MAG_CB6_36km_US_201105_NONROAD_06
ASSIGNS.MAG_CB6_36km_US_201105_NONROAD_07
ASSIGNS.MAG_CB6_36km_US_201105_NONROAD_08
ASSIGNS.MAG_CB6_36km_US_201105_NONROAD_09
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_CM
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_mag2014
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_mag2014_05
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_mag2014_06
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_mag2014_07
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_mag2014_08
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_mag2014_09
ASSIGNS.MAG_CB6_36km_US_201105_ONROAD_mag2014_CM
ASSIGNS.MAG_CB6_36km_US_201105_POINT
ASSIGNS.MAG_CB6_36km_US_201105_PTNONIPM
ASSIGNS.MAG_CB6_36km_US_201105_PT_OILGAS
ASSIGNS.MAG_CB6_36km_US_201105_RWC
ASSIGNS.MAG_CB6_4km_US_201105_AREA
ASSIGNS.MAG_CB6_4km_US_201105_AREA_5months
ASSIGNS.MAG_CB6_4km_US_201105_FIRE
ASSIGNS.MAG_CB6_4km_US_201105_NONROAD
ASSIGNS.MAG_CB6_4km_US_201105_NONROAD_05
ASSIGNS.MAG_CB6_4km_US_201105_NONROAD_06
ASSIGNS.MAG_CB6_4km_US_201105_NONROAD_07
ASSIGNS.MAG_CB6_4km_US_201105_NONROAD_08
ASSIGNS.MAG_CB6_4km_US_201105_NONROAD_09
ASSIGNS.MAG_CB6_4km_US_201105_POINT
ASSIGNS.MAG_CB6_4km_US_201105_POINT_magtpro
ASSIGNS.MAG_CB6_4km_US_201105_PTNONIPM
ASSIGNS.MAG_CB6_4km_US_201105_PTNONIPM_5months
check_settings.scr
set_case.scr
set_dirs.scr
setmerge_files.scr
setmerge_files.scr_12km
setmerge_files.scr_36km
setmerge_files.scr_4km
smk_mkdir
smk_rmfiles.scr
sysflags
unset.scr

./smk/inp/assigns/assigns2017:
ASSIGNS.MAG_CB6_12km_CM_201705_AREA
ASSIGNS.MAG_CB6_12km_CM_201705_ONROAD
ASSIGNS.MAG_CB6_12km_CM_201705_POINT
ASSIGNS.MAG_CB6_12km_CM_201705_POINTX
ASSIGNS.MAG_CB6_12km_US_201705_AREA
ASSIGNS.MAG_CB6_12km_US_201705_AREAX
ASSIGNS.MAG_CB6_12km_US_201705_FIRE
ASSIGNS.MAG_CB6_12km_US_201705_FIRE_2
ASSIGNS.MAG_CB6_12km_US_201705_FIRE_3
ASSIGNS.MAG_CB6_12km_US_201705_FIRE_4
ASSIGNS.MAG_CB6_12km_US_201705_FIRE_5
ASSIGNS.MAG_CB6_12km_US_201705_NONROAD
ASSIGNS.MAG_CB6_12km_US_201705_NONROADX
ASSIGNS.MAG_CB6_12km_US_201705_NONROADX_05
ASSIGNS.MAG_CB6_12km_US_201705_NONROADX_06
ASSIGNS.MAG_CB6_12km_US_201705_NONROADX_07
ASSIGNS.MAG_CB6_12km_US_201705_NONROADX_08
```

```
ASSIGNS.MAG_CB6_12km_US_201705_NONROADX_09
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014_05
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014_06
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014_07
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014_08
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014_09
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014_CM
ASSIGNS.MAG_CB6_12km_US_201705_ONROAD_mag2014X
ASSIGNS.MAG_CB6_12km_US_201705_POINT
ASSIGNS.MAG_CB6_12km_US_201705_POINTX
ASSIGNS.MAG_CB6_12km_US_201705_PTNONIPM
ASSIGNS.MAG_CB6_12km_US_201705_PTNONIPMX
ASSIGNS.MAG_CB6_12km_US_201705_PT_OILGAS
ASSIGNS.MAG_CB6_12km_US_201705_PT_OILGASX
ASSIGNS.MAG_CB6_12km_US_201705_RWC
ASSIGNS.MAG_CB6_12km_US_201705_RWCX
ASSIGNS.MAG_CB6_36km_CM_201705_AREA
ASSIGNS.MAG_CB6_36km_CM_201705_ONROAD
ASSIGNS.MAG_CB6_36km_CM_201705_POINT
ASSIGNS.MAG_CB6_36km_CM_201705_POINTX
ASSIGNS.MAG_CB6_36km_US_201705_AREA
ASSIGNS.MAG_CB6_36km_US_201705_AREAX
ASSIGNS.MAG_CB6_36km_US_201705_FIRE
ASSIGNS.MAG_CB6_36km_US_201705_FIRE_1
ASSIGNS.MAG_CB6_36km_US_201705_FIRE_2
ASSIGNS.MAG_CB6_36km_US_201705_FIRE_3
ASSIGNS.MAG_CB6_36km_US_201705_FIRE_4
ASSIGNS.MAG_CB6_36km_US_201705_FIRE_5
ASSIGNS.MAG_CB6_36km_US_201705_NONROAD
ASSIGNS.MAG_CB6_36km_US_201705_NONROADX
ASSIGNS.MAG_CB6_36km_US_201705_NONROADX_05
ASSIGNS.MAG_CB6_36km_US_201705_NONROADX_06
ASSIGNS.MAG_CB6_36km_US_201705_NONROADX_07
ASSIGNS.MAG_CB6_36km_US_201705_NONROADX_08
ASSIGNS.MAG_CB6_36km_US_201705_NONROADX_09
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_CM
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014_05
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014_06
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014_07
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014_08
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014_09
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014_CM
ASSIGNS.MAG_CB6_36km_US_201705_ONROAD_mag2014X
ASSIGNS.MAG_CB6_36km_US_201705_POINT
ASSIGNS.MAG_CB6_36km_US_201705_POINTX
ASSIGNS.MAG_CB6_36km_US_201705_PTNONIPM
ASSIGNS.MAG_CB6_36km_US_201705_PTNONIPMX
ASSIGNS.MAG_CB6_36km_US_201705_PT_OILGAS
ASSIGNS.MAG_CB6_36km_US_201705_PT_OILGASX
ASSIGNS.MAG_CB6_36km_US_201705_RWC
ASSIGNS.MAG_CB6_36km_US_201705_RWCX
ASSIGNS.MAG_CB6_4km_US_201705_AREA
ASSIGNS.MAG_CB6_4km_US_201705_FIRE
ASSIGNS.MAG_CB6_4km_US_201705_NONROAD
ASSIGNS.MAG_CB6_4km_US_201705_NONROAD_05
ASSIGNS.MAG_CB6_4km_US_201705_NONROAD_06
ASSIGNS.MAG_CB6_4km_US_201705_NONROAD_07
ASSIGNS.MAG_CB6_4km_US_201705_NONROAD_08
ASSIGNS.MAG_CB6_4km_US_201705_NONROAD_09
ASSIGNS.MAG_CB6_4km_US_201705_POINT
ASSIGNS.MAG_CB6_4km_US_201705_POINT_magtpro
ASSIGNS.MAG_CB6_4km_US_201705_PTNONIPM
ASSIGNS.MAG_CB6_4km_US_201705_PTNONIPM_orig
check_settings.scr
set_case.scr
set_dirs.scr
setmerge_files.scr
setmerge_files.scr_12km
setmerge_files.scr_36km
setmerge_files.scr_4km
smk_mkdir
smk_rmfiles.scr
sysflags
unset.scr

./smk/inp/ge_dat:
artopnt_2002detroit_12jul2007_v0.txt
costcy_for_2007platform_10mar2015_nf_v13.txt
gridding
holidays.txt
invtable_2011v2_platform_cb6_integrate_12mar2015_v1.txt
invtable_2011v2_platform_cb6_integrate_16dec2014_v0.txt
invtable_hapcap_cb05_no_bafm_12nov2014_v8.txt
invtable_hapcapnohapuse_cb05soa_nomp_nohg_14aug2013_v9.txt
invtable_MOVES2014_25sep2014_nf_v1.txt
nhapexclude
orisdesc_04dec2006_v0.txt
orisdesc_27dec2013_v1.txt_updated_20131227
oris_info.txt
point
pstk.m3.txt
scc_desc.txt
sic_desc.txt
```

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smkreport
speciation
temporal

./smk/inp/ge_dat/gridding:
agref_np_oilgas_for_20140211_surrogates_27jan2015_v2.txt
amgref_can2010_mex2010v3_12US1_05jan2015_v7.txt
amgref_can2010_mex2010v3_12US1_05jan2015_v7.txtmag
amgref_us_2011platform_05jan2015_v8.txt
amgref_us_2011platform_05jan2015_v8.txt_4km
Canada_Mexico_2010_surrogate_descriptions_25aug2014_v1.txt
griddesc_lambertonly_18sep2014_v61.txt
mgref_us_2011v2platform_onroad_28jan2015_v2.txt
srgdesc_CONUS12_2010_v5_12nov2014_v4.txt
xportfrac.12US2.from4km.v2.ncf

./smk/inp/ge_dat/nhapexclude:
c3marine_nhapexclude_2011eg_12nov2014_v3.txt
nhapexclude_2011eg_pt_oilgas_14jan2015_nf_v3.txt
nhapexclude_2011NEIv2_c1c2rail_25sep2014_v0.txt
nhapexclude_2011NEIv2_nonpt_csv_03dec2014_v1.txt
nhapexclude_2011NEIv2_nonpt_csv_12mar2015_v2.txt
nhapexclude_2011NEIv2_np_oilgas_25sep2014_v0.txt
nhapexclude_2011NEIv2_rwc_25sep2014_v0.txt
nhapexclude_nonroad_2011ec_10sep2013_v2.txt
nhapexclude_nonroad_LPGCNG_Calif_19jul2012_v0.txt
nhapexclude_othpt_with_nonUS_c3_23aug2013_v0.txt

./smk/inp/ge_dat/point:
pelvconfig_inline_20m_13nov2012_v0.txt
pelvconfig.inline.txt
pelvconfig_ptfire_inline_pf31_03may2011_v1.txt
pelvconfig_seca_c3_22jul2010_v1.txt
pstk_20nov2006_v0.txt

./smk/inp/ge_dat/smkreport:
naicsdesc_02jan2008_v0.txt  repconfig
orisdesc_04dec2006_v0.txt   sccdesc_pf31_05jan2015_v22.txt

./smk/inp/ge_dat/smkreport/repconfig:
repconfig_afdust_invgrid_2011platform_11aug2014_v0.txt
repconfig_area_inv_2011platform_11aug2014_v0.txt
repconfig_area_inv_2011platform_11aug2014_v1.txt
repconfig_area_inv2_2011platform_11aug2014_v0.txt
repconfig_area_inv2_2011platform_11aug2014_v1.txt
repconfig_area_inv2_2011platform_11aug2014_v2.txt
repconfig_area_invgrid_2011platform_11aug2014_v0.txt
repconfig_area_invgrid_2011platform_11aug2014_v1.txt
repconfig_area_invgrid_2011platform_29oct2014_v3.txt
repconfig_area_noPM_inv_2011platform_11aug2014_v1.txt
repconfig_nonroad_inv2a_2011platform_11aug2014_v0.txt
repconfig_nonroad_inv2b_2011platform_11aug2014_v0.txt
repconfig_nonroad_inv2c_2011platform_11aug2014_v0.txt
repconfig_onroad_inv_2011platform_11may2011_v0.txt
repconfig_onroad_invgrid_2011platform_18aug2014_v1.txt
repconfig_point_inv_2011platform_11aug2014_v0.txt
repconfig_point_inv_2011platform_11aug2014_v1.txt
repconfig_point_inv_2011platform_11aug2014_v2.txt
repconfig_point_inv_2011platform_2016_v1.txt
repconfig_point_inv2_2011platform_11aug2014_v0.txt
repconfig_point_invgrid_2011platform_11aug2014_v0.txt

./smk/inp/ge_dat/speciation:
gscnv_cmaq_cb6_2011eh_cb6v2_v6_11g_nf.txt
gscnv_cmaq_cb6_2025eh_cb6v2_v6_11g_12mar2015.txt
gspro_beis_cmaq_cb05_soa_2011eh_cb05_v6_11g_19apr2013.txt
gspro_cmaq_cb6_2011eh_cb6v2_v6_11g_28feb2015.txt
gspro_cmaq_cb6_2025eh_cb6v2_v6_11g_12mar2015.txt
gspro_combo_2010cdc_2010ef_nonpt_12nov2012_v0.txt
gspro_combo_2010cdc_2010ef_nonroad_05jan2015_v1.txt
gspro_combo_2017eh_stationary_13mar2015_v0.txt
gspro_combo_2025eh_stationary_12mar2015_v0.txt
gspro_combo_canadamexico2005_27jan2015_v2.txt
gspro_combo_canadamexico2005_29jan2013_v1.txt
gspro_MOVES2014_CB6_29dec2014_v0.txt
gsref_2011eh_v6_11g_05jan2015.txt
gsref_2011eh_v6_11g_05jan2015.txt_mag
gsref_ag_othar_2011eh_v6_11g_05jan2015.txt
gsref_ag_othar_cmaq_cb6_2025eh_cb6_v6_11g_05jan2015.txt
gsref_cmaq_cb6_2025eh_cb6v2_v6_11g_nf.txt
gsref_othpt_2011eh_v6_11g_05jan2015.txt
gsref_othpt_cmaq_cb6_2025eh_cb6_v6_11g_11mar2015.txt
testing_gsref_MOVES2014_dummy_nei_17nov2014_v2.txt

./smk/inp/ge_dat/temporal:
amptpro_Canada_2010_tpro_hourly_05jan2015_v1
amptpro_Canada_2010_tpro_monthly_06nov2014_v0
amptpro_Canada_2010_tpro_weekly_05jan2015_v1
amptpro_for_2011_platform_with_carb_mobile_2011CEM_moves_13aug2013_v0_tpro_monthly_13aug2014_v0
amptpro_general_2011platform_tpro_hourly_6nov2014_13nov2014_v1
amptpro_general_2011platform_tpro_hourly_6nov2014_13nov2014_v1mag
amptpro_general_2011platform_tpro_monthly_6nov2014_06nov2014_v0
amptpro_general_2011platform_tpro_monthly_6nov2014_06nov2014_v0mag
amptpro_general_2011platform_tpro_weekly_6nov2014_13nov2014_v1
amptpro_general_2011platform_tpro_weekly_6nov2014_13nov2014_v1mag
amptref_Canada_2010_tref_05jan2015_v1
amptref_Canada_2010_tref_05jan2015_v1mag
```

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amptref_Canada_2010_tref_06nov2014_v0
amptref_general_2011platform_tref_6nov2014_05jan2015_v3
amptref_general_2011platform_tref_6nov2014_05jan2015_v3mag
atref_rwc_forGentpro_2011v2platform_SMOKE36_07nov2014_v1
Gentpro_TPRO_DAY_RWC_2011ef_11g_SMOKE36_07nov2014_v0
Gentpro_TPRO_DAY_RWC_2011ef_11g_SMOKE36_mag09282015_v1
Gentpro_TPRO_HOUR_HOURLY_BASH_NH3.agNH3_bash_2011ef_11g-newgent_smk36.ncf
holidays_04may2006_v0.txt
mtpro_hourly_moves2014_23oct2014_13nov2014_v1
mtpro_weekly_moves2014_17oct2014_13nov2014_v2
mtref_onroad_moves2014_23oct2014_28jan2015_v3
summer_diurnal_egu_tpro_2011_21nov2014_v0
summer_diurnal_egu_tref_2011_13mar2015_v2
summer_diurnal_egu_tref_2011_15jan2015_v1
tpro_monthly_Gentpro_RWC_2011eg_11g_07nov2014_v0
winter_diurnal_egu_tpro_2011_csv_21nov2014_v0
winter_diurnal_egu_tref_2011_15jan2015_v1

./smk/inp/inventory:
EPA_platformv62  ERG_OZSIP_2011_2017_v08142015    MAG_LOCAL_data_Ozone_SIP

./smk/inp/inventory/EPA_platformv62:
2011  2017

./smk/inp/inventory/EPA_platformv62/2011:
2011eh_cb05_v6_11g_nr            2011eh_onroad_by_state    area_by_state
2011eh_cb05_v6_11g_pt            2011eh_v6_11g_inputs_cem
2011eh_cb05_v6_11g_ptfire  2011eh_v6_11g_inputs_oth

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_nr:
inputs

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_nr/inputs:
nonroad

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_nr/inputs/nonroad:
2011NEIv1_nonroad_20130621_17oct2014_v6_part1.csv
2011NEIv1_nonroad_20130621_17oct2014_v6_part2.csv
2011_SLT_nonroad_01feb2013_Texas_monthly_ff10_07feb2014_v3.csv
nonroad_ff10_california_2011nei_augmented_VOC_11sep2013_v7.csv

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_pt:
inputs

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_pt/inputs:
ptegu  ptnonipm  pt_oilgas

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_pt/inputs/ptegu:
2011NEIv2_POINT_ptegu_NOV_2014_29jan2015_v1.csv
ptipm_ff10_noncem_2011eg_Nov19_2014_29jan2015_v2
ptipm_ff10_noncem_2011eg_prevdec_Nov19_2014_29jan2015_v2

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_pt/inputs/ptnonipm:
ethanol_plants_2011NEIv2_POINT_20141123_03feb2015_v1.csv
ptnonipm_2011NEIv2_POINT_20140913_revised_20150115_09feb2015_v2.csv
refueling_2011NEIv2_POINT_20140913_04dec2014_v2.csv

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_pt/inputs/pt_oilgas:
pt_oilgas_2011NEIv2_POINT_20140913_03feb2015_v4.csv

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_ptfire:
inputs

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_ptfire/inputs:
ptfire    ptprescfire  ptwildfire

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_ptfire/inputs/ptfire:
ptinv_ptfire_2011_SF2_Plus_GA_Submit_24nov2014_v5_orl.txt

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_ptfire/inputs/ptprescfire:
ptday_ptfire_apr_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_aug_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_dec_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_feb_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_jan_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_jul_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_jun_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_mar_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_may_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_nov_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_oct_2011v2_prescribed_16jan2015_v0_orl.txt
ptday_ptfire_sep_2011v2_prescribed_16jan2015_v0_orl.txt
ptinv_ptfire_2011_SF2_Plus_GA_Submit_from_v5_prescribed_16jan2015_v0_orl.txt

./smk/inp/inventory/EPA_platformv62/2011/2011eh_cb05_v6_11g_ptfire/inputs/ptwildfire:
ptday_ptfire_apr_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_aug_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_dec_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_feb_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_jan_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_jul_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_jun_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_mar_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_may_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_nov_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_oct_2011v2_wild_16jan2015_v0_orl.txt
ptday_ptfire_sep_2011v2_wild_16jan2015_v0_orl.txt
```

```
ptinv_ptfire_2011_SF2_Plus_GA_Submit_from_v5_wild_16jan2015_v0_orl.txt

./smk/inp/inventory/EPA_platformv62/2011/2011eh_onroad_by_state:
2011eh_onroad_SMOKE_MOVES_MOVES2014_no_speciated_pm.csv

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_cem:
2011eh_cb05_v6_11g

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_cem/2011eh_cb05_v6_11g:
inputs

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_cem/2011eh_cb05_v6_11g/inputs:
cem  cem17

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_cem/2011eh_cb05_v6_11g/inputs/cem:
cemsum_2011_corrected_2.1_Nov12_revised_partial_year.txt
HOUR_UNIT_2010_12_31dec.txt
HOUR_UNIT_2011_01_1-30jan.txt
HOUR_UNIT_2011_01_31jan.txt
HOUR_UNIT_2011_02_1-28feb.txt
HOUR_UNIT_2011_02_28feb.txt
HOUR_UNIT_2011_03_1-30mar.txt
HOUR_UNIT_2011_03_31mar.txt
HOUR_UNIT_2011_04_1-29apr.txt
HOUR_UNIT_2011_04_30apr.txt
HOUR_UNIT_2011_05_1-30may.txt
HOUR_UNIT_2011_05_31may.txt
HOUR_UNIT_2011_06_1-29jun.txt
HOUR_UNIT_2011_06_30jun.txt
HOUR_UNIT_2011_07_1-30jul.txt
HOUR_UNIT_2011_07_31jul.txt
HOUR_UNIT_2011_08_1-30aug.txt
HOUR_UNIT_2011_08_31aug.txt
HOUR_UNIT_2011_09_1-29sep.txt
HOUR_UNIT_2011_09_30sep.txt
HOUR_UNIT_2011_10_1-30oct.txt
HOUR_UNIT_2011_10_31oct.txt
HOUR_UNIT_2011_11_1-29nov.txt
HOUR_UNIT_2011_11_30nov.txt
HOUR_UNIT_2011_12_1-30dec.txt
HOUR_UNIT_2011_12_31dec.txt

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_oth:
2011eh_cb05_v6_11g

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_oth/2011eh_cb05_v6_11g:
inputs

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_oth/2011eh_cb05_v6_11g/inputs:
othpt

./smk/inp/inventory/EPA_platformv62/2011/2011eh_v6_11g_inputs_oth/2011eh_cb05_v6_11g/inputs/othpt:
othpt_offshore_oil_2011NEIv2_POINT_20140913_16sep2014_v0.csv
point_oilsands_canada_2010_FF10_20130606_06aug2014_v0.csv
ptinv_eca_imo_nonUS_nonCANADA_caps_vochaps_2011_22aug2013_v0_orl.txt

./smk/inp/inventory/EPA_platformv62/2011/area_by_state:
agburn_monthly_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_01.csv
 ~ agburn_monthly_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_88.csv
c1c2rail_2011NEIv2_NONPOINT_20141108_11nov2014_v1_FIPS_01.csv
 ~ c1c2rail_2011NEIv2_NONPOINT_20141108_11nov2014_v1_FIPS_88.csv
c3marine_2011NEIv2_NONPOINT_20141108_14nov2014_v1_FIPS_01.csv
 ~ c3marine_2011NEIv2_NONPOINT_20141108_14nov2014_v1_FIPS_55.csv
nonpt_2011NEIv2_NONPOINT_20141108_21jan2015_v5_FIPS_01.csv
 ~ nonpt_2011NEIv2_NONPOINT_20141108_21jan2015_v5_FIPS_88.csv
np_oilgas_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_01.csv
 ~ np_oilgas_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_78.csv
pfc_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_01.csv
 ~ pfc_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_88.csv
refueling_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_01.csv
 ~ refueling_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_88.csv
rwc_2011NEIv2_NONPOINT_20141108_24nov2014_v3_FIPS_01.csv
 ~ rwc_2011NEIv2_NONPOINT_20141108_24nov2014_v3_FIPS_88.csv

./smk/inp/inventory/EPA_platformv62/2017:
2017eh_cb6v2_v6_11g_ar        2017eh_cb6v2_v6_11g_oth       onroad
2017eh_cb6v2_v6_11g_cem       2017eh_cb6v2_v6_11g_pt
2017eh_cb6v2_v6_11g_nr        area_by_state

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_ar:
c1c2rail  np_oilgas  rwc

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_ar/c1c2rail:
2017eh_from_c1c2_offshore_2011NEIv2_NONPOINT_20141108_25feb2015_v0.csv
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0.csv

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_ar/np_oilgas:
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0.csv

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_ar/rwc:
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0.csv

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_cem:
inputs

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_cem/inputs:
cem
```

```
./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_cem/inputs/cem:
cemsum_2017eh_adj_final.txt           HOUR_UNIT_2011_06_2017eh_30jun.txt
HOUR_UNIT_2010_12_2017eh_31dec.txt    HOUR_UNIT_2011_07_2017eh_1-30jul.txt
HOUR_UNIT_2011_01_2017eh_1-30jan.txt  HOUR_UNIT_2011_07_2017eh_31jul.txt
HOUR_UNIT_2011_01_2017eh_31jan.txt    HOUR_UNIT_2011_08_2017eh_1-30aug.txt
HOUR_UNIT_2011_02_2017eh_1-28feb.txt  HOUR_UNIT_2011_08_2017eh_31aug.txt
HOUR_UNIT_2011_02_2017eh_28feb.txt    HOUR_UNIT_2011_09_2017eh_1-29sep.txt
HOUR_UNIT_2011_03_2017eh_1-30mar.txt  HOUR_UNIT_2011_09_2017eh_30sep.txt
HOUR_UNIT_2011_03_2017eh_31mar.txt    HOUR_UNIT_2011_10_2017eh_1-30oct.txt
HOUR_UNIT_2011_04_2017eh_1-29apr.txt  HOUR_UNIT_2011_10_2017eh_31oct.txt
HOUR_UNIT_2011_04_2017eh_30apr.txt    HOUR_UNIT_2011_11_2017eh_1-29nov.txt
HOUR_UNIT_2011_05_2017eh_1-30may.txt  HOUR_UNIT_2011_11_2017eh_30nov.txt
HOUR_UNIT_2011_05_2017eh_31may.txt    HOUR_UNIT_2011_12_2017eh_1-30dec.txt
HOUR_UNIT_2011_06_2017eh_1-29jun.txt  HOUR_UNIT_2011_12_2017eh_31dec.txt

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_nr:
inputs

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_nr/inputs:
nonroad

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_nr/inputs/nonroad:
2017_california_nonroad_monthly_ff10_18oct2013_v2.csv
2017_nonroad_ff10_adjusted_from_2018_noCalif_23mar2015_v0.csv

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_oth:
inputs

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_oth/inputs:
othpt

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_oth/inputs/othpt:
othpt_offshore_oil_2011NEIv2_POINT_20140913_16sep2014_v0.csv
point_oilsands_canada_2010_FF10_20130606_06aug2014_v0.csv
ptinv_2017eh_from_eca_imo_nonUS_nonCANADA_caps_vochaps_2011_25feb2015_v0_orl.txt

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_pt:
inputs

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_pt/inputs:
ptegu  ptnonipm  pt_oilgas

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_pt/inputs/ptegu:
Flatfile_2017_20150319_23mar2015_v2.csv
ptipm_ff10_noncem_2017eh_final_adj_29apr2015_v0
ptipm_ff10_noncem_2017eh_final_adj_prev_dec_29apr2015_v0

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_pt/inputs/ptnonipm:
2017eh_from_ethanol_plants_2011NEIv2_POINT_20141123_10mar2015_v0.csvx
2017eh_from_ptnonipm_2011NEIv2_POINT_20140913_revised_20150115_10mar2015_v0.csvx
2017eh_from_refueling_2011NEIv2_POINT_20140913_10mar2015_v0.csvx
Biodiesel_Plants_2018_ff10_11apr2013_v0.csvx
cement_newkilns_year_2018_from_ISIS2013_NEI2011v1_17mar2015_v2.csvx

./smk/inp/inventory/EPA_platformv62/2017/2017eh_cb6v2_v6_11g_pt/inputs/pt_oilgas:
2017eh_from_pt_oilgas_2011NEIv2_POINT_20140913_09mar2015_v0.csv_without_PM

./smk/inp/inventory/EPA_platformv62/2017/area_by_state:
2017

./smk/inp/inventory/EPA_platformv62/2017/area_by_state/2017:
2017eh_from_afdust_2011NEIv2_NONPOINT_20141108_10mar2015_v0_FIPS_01.csv
 ~ 2017eh_from_afdust_2011NEIv2_NONPOINT_20141108_10mar2015_v0_FIPS_88.csv
2017eh_from_ag_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_01.csv
 ~ 2017eh_from_ag_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_88.csv
2017eh_from_c3marine_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_01.csv
 ~ 2017eh_from_c3marine_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_55.csv
2017eh_from_EPA_2011_afdust_no_precipadj_paved_unpaved_noNEIv2RPOstates_10mar2015_v0_FIPS_01.csv
 ~ 2017eh_from_EPA_2011_afdust_no_precipadj_paved_unpaved_noNEIv2RPOstates_10mar2015_v0_FIPS_56.csv
2018_cellulosic_inventory_06jan2014_v1_FIPS_06.csv
2018_cellulosic_inventory_06jan2014_v1_FIPS_17.csv
2018_cellulosic_inventory_06jan2014_v1_FIPS_26.csv
2018_cellulosic_inventory_06jan2014_v1_FIPS_39.csv
2018_cellulosic_inventory_06jan2014_v1_FIPS_42.csv
2018_cellulosic_inventory_06jan2014_v1_FIPS_48.csv
cellulosic_new_Iowa_plants_from2018docket_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_19.csv
cement_newkilns_year_2018_from_ISIS2013_NEI2011v1_NONPOINT_12feb2015_v1_FIPS_13.csv
cement_newkilns_year_2018_from_ISIS2013_NEI2011v1_NONPOINT_12feb2015_v1_FIPS_42.csv
cement_newkilns_year_2018_from_ISIS2013_NEI2011v1_NONPOINT_12feb2015_v1_FIPS_45.csv
cement_newkilns_year_2018_from_ISIS2013_NEI2011v1_NONPOINT_12feb2015_v1_FIPS_48.csv
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_01.csv
 ~ CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_88.csv
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_01.csv
 ~ CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_88.csv
for12km
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_01.csv
 ~ pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_56.csv

./smk/inp/inventory/EPA_platformv62/2017/area_by_state/2017/for12km:
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_04.csvx
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_06.csvx
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_08.csvx
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_32.csvx
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_35.csvx
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_48.csvx
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_49.csvx
2017eh_from_c1c2rail_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_88.csvx
```

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2017eh_from_c3marine_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_06.csvx
2017eh_from_c3marine_2011NEIv2_NONPOINT_20141108_25feb2015_v0_FIPS_48.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_04.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_06.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_08.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_32.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_35.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_48.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_49.csvx
2017eh_from_rwc_2011NEIv2_NONPOINT_20141108_03mar2015_v0_FIPS_88.csvx
2018_cellulosic_inventory_06jan2014_v1_FIPS_06.csvx
2018_cellulosic_inventory_06jan2014_v1_FIPS_48.csvx
cement_newkilns_year_2018_from_ISIS2013_NEI2011v1_NONPOINT_12feb2015_v1_FIPS_48.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_04.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_06.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_06.csvx2
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_08.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_32.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_35.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_48.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_48.csvx2
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_49.csvx
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_88.csvx
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_04.csvx
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_06.csvx
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_08.csvx
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_32.csvx
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_35.csvx
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_48.csvx
CoST_step2_2017eh_from_np_oilgas_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_49.csvx
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_04.csvx
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_06.csvx
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_32.csvx
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_35.csvx
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_48.csvx
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_49.csvx
CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_88.csvx
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_04.csvx
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_06.csvx
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_08.csvx
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_32.csvx
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_35.csvx
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_48.csvx
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_49.csvx

./smk/inp/inventory/EPA_platformv62/2017/onroad:
2017eh_onroad_SMOKE_MOVES_MOVES2014_no_speciated_pm.csv

./smk/inp/inventory/ERG_OZSIP_2011_2017_v08142015:
final_smoke

./smk/inp/inventory/ERG_OZSIP_2011_2017_v08142015/final_smoke:
CA_Area_2011_Annual_OSD_v2.csv
CA_Area_2017_Annual_OSD_v2.csv
Canada_Onroad_2017_Annual_OSD_FF10_v2.csv
CA_Nonroad_2011_Annual_OSD_v2.csv
CA_Nonroad_2017_Annual_OSD_v2.csv
CA_Onroad_2011_Annual_OSD_v2.csv
CA_Point_2011_Annual_FF10_v1.csv
CA_Point_2017_Annual_FF10_v1.csv
Mex_Area_2011_Annual_OSD_v2.csv
Mex_Area_2017_Annual_OSD_v2.csv
Mexico_Onroad_2011_Annual_OSD_FF10_v2.csv
Mexico_Onroad_2017_Annual_OSD_FF10_v2.csv
Mex_Nonroad_2011_Annual_OSD_v2.csv
Mex_Nonroad_2017_Annual_OSD_v2.csv
Mex_Point_2011_Annual_FF10_v1.csv
Mex_Point_2017_Annual_FF10_v1.csv

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP:
airport  area  nonroad        point

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/airport:
airport_sources_list_v4_2011_2017.FF10_zeros
airport_sources_list_v4_2011_2017.FF10_zeros_PINAL
Aviation_emissions_PINAL_SIP_FF10_hourly_20110501_20110930_v20160624.csv
Aviation_emissions_PINAL_SIP_FF10_hourly_20170501_20170930_v20160624.csv
Aviation_emissions_SIP_FF10_hourly_20110501_20110930_v20160624_v13.csv
Aviation_emissions_SIP_FF10_hourly_20170501_20170930_v20160624_v13.csv
Aviation_emissions_SIP_FF10_hourly_20180501_20180930_v20160624_v13.csv
zxfinalRevised_2011NEIv2_Maricopa_pointx_faked_ELEVATED.csv

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/area:
2011  2018
2017  MAG_Maricopa_year_2011_2017area_annual_norwc_0126_v9_zero_emissions.csv

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/area/2011:
agburn_monthly_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_04.csv_WO_MCPC_VOCNOXCO
MAG_Maricopa_year_2011_area_week_days_norwc_05232016_v11_3holidays.csv
MAG_Pinal_year_2011_area_annual_norwc_10082015_v6.csv
nonpt_2011NEIv2_NONPOINT_20141108_21jan2015_v5_FIPS_04.csv_WO_MCPC_VOCNOXCO
pfc_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_04.csv_WO_MCPC
refueling_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_04.csv_WO_MCPC

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/area/2017:
agburn_monthly_2011NEIv2_NONPOINT_20141108_11nov2014_v0_FIPS_04.csv_WO_MCPC_VOCNOXCO
CoST_step2_2017eh_from_nonpt_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_04.csvx_VOCNOXCO_header
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CoST_step2_2017eh_from_refueling_2011NEIv2_NONPOINT_20141108_09mar2015_v0_FIPS_04.csvx_VOCNOXCO_header
MAG_Maricopa_year_2017_area_week_days_norwc_05232016_v11_3holidays.csv
MAG_Pinal_year_2017_area_annual_norwc_10082015_v6.csv
pfc_2018_2011v6_2_ff10_28jan2015_28jan2015_v0_FIPS_04.csvx_WO_MCPC_VOC

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/area/2018:
MAG_Maricopa_year_2018_area_week_days_norwc_05232016_v11_3holidays.csv
MAG_Pinal_year_2018_area_annual_norwc_05232016_v10.csv

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/nonroad:
2011  Nonroad_zeroemis_inv_04013_2011_norr.csv
2017  Nonroad_zeroemis_inv_04021_2011_norr.csv
2018

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/nonroad/2011:
2011NEIv1_nonroad_20130621_17oct2014_v6_part1.csv_AZ_WO_MCPC_VOCNOXCO
MAG_Maricopa_year_2011_locomotive_annual_10082015_v6.csv
MAG_Maricopa_year_2011_locomotive_peakday_10082015_v6.csv
MAG_Pinal_year_2011_locomotive_annual_10082015_v6.csv
mod.non.all.04km.mc.2011.txt
mod.non.all.04km.pc.2011.txt

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/nonroad/2017:
2017_nonroad_ff10_adjusted_from_2018_noCalif_23mar2015_v0.csv_WOMCPC_VOCNOXCO_w_header
MAG_Maricopa_year_2017_locomotive_annual_10082015_v6.csv
MAG_Maricopa_year_2017_locomotive_peakday_10082015_v6.csv
MAG_Pinal_year_2017_locomotive_annual_10082015_v6.csv
mod.non.all.04km.mc.2017.txt
mod.non.all.04km.pc.2017.txt
Nonroad_zeroemis_inv_04013_2017_norr.csv
Nonroad_zeroemis_inv_04021_2017_norr.csv

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/nonroad/2018:
mod.non.all.04km.mc.2018.txt  mod.non.all.04km.pc.2018.txt

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/point:
2011  2017  2018

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/point/2011:
finalRevised_2011NEIv2_Maricopa_pointx_csv_EGU_CEMonly_EGU_profile_adjusted.csv
finalRevised_2011NEIv2_Pinal_pointx_csv_EGU_CEMonly.csv
MAG_Maricopa_from_EGU_2_ptnonipm_day_specific_2011.csv
MAG_Maricopa_PTEGU_CEMonly_day_specific_2011.csv
MAG_Maricopa_ptnonimp_day_specific_2011_v3_12182015.csv
ptnonipm_2011NEIv2_POINT_20140913_revised_20150115_09feb2015_v2.csv_AZ_WO_MCPC_VOCCONOX_complete
zfinalRevised_2011NEIv2_Maricopa_pointx_csv_nonpim.csv
zfinalRevised_2011NEIv2_Pinal_pointx_csv_nonpim.csv

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/point/2017:
2017eh_from_ptnonipm_2011NEIv2_POINT_20140913_revised_20150115_10mar2015_v0_FIPS_04.csv_WO_MCPC_VOCNOXCO_header_v3
finalRevised_2017NEIv2_Maricopa_pointx.csv_EGU_CEMonly_EGU_profile_adjusted
finalRevised_2017NEIv2_Pinal_pointx.csv_EGU_CEMonly
MAG_Maricopa_from_EGU_2_ptnonipm_day_specific_2017.csv
MAG_Maricopa_PTEGU_CEMonly_day_specific_2017.csv
MAG_Maricopa_ptnonimp_day_specific_2017_v3_12182015.csv
zfinalRevised_2017NEIv2_Maricopa_pointx_csv_nonpim.csv
zfinalRevised_2017NEIv2_Pinal_pointx_csv_nonpim.csv

./smk/inp/inventory/MAG_LOCAL_data_Ozone_SIP/point/2018:
MAG_Maricopa_ptnonimp_day_specific_2018_v4_06012016.csv
zfinalRevised_2018NEIv2_Pinal_pointx.csv_nonpim_revised_06012016

./smk/inp/list:
list2011  list2017

./smk/inp/list/list2011:
agfire    c1c2rail   onroad         pointpfus     ptegu     xptegu_magcem
airport   c3marine   onroadmxcn     pointwfcn     ptnonipm
area      nonroad    pointmxcn      pointwfmx     pt_oilgas
areamxcn  np_oilgas  pointmxcn_sce  pointwfus     rwc

./smk/inp/list/list2011/agfire:
arinv.agfire.12lst  arinv.agfire.lst

./smk/inp/list/list2011/airport:
pthour.airport.4lst  ptinv.airport.4lst

./smk/inp/list/list2011/area:
arday.area.4lst  arinv.area.12lst  arinv.area.4lst  arinv.area.lst

./smk/inp/list/list2011/areamxcn:
arinv.areamxcn.12lst  arinv.areamxcn.lst

./smk/inp/list/list2011/c1c2rail:
arday.c1c2rail.4lst   arinv.c1c2rail.4lst
arinv.c1c2rail.12lst  arinv.c1c2rail.lst

./smk/inp/list/list2011/c3marine:
arinv.c3marine.12lst  arinv.c3marine.lst

./smk/inp/list/list2011/nonroad:
arday.nonroad.4lst  arinv.nonroad.12lst  arinv.nonroad.4lst  arinv.nonroad.lst

./smk/inp/list/list2011/np_oilgas:
arinv.np_oilgas.12lst  arinv.np_oilgas.lst

./smk/inp/list/list2011/onroad:
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```
arinv.onroad.12lst  arinv.onroad.4lst  arinv.onroad.lst

./smk/inp/list/list2011/onroadmxcn:
arinv.onroadmxcn.12lst        arinv.onroadmxcn.lst

./smk/inp/list/list2011/pointmxcn:
ptinv.pointmxcn.12lst  ptinv.pointmxcn.lst

./smk/inp/list/list2011/pointmxcn_sce:
ptinv.pointmxcn_sce.12lst  ptinv.pointmxcn_sce.lst

./smk/inp/list/list2011/pointpfus:
ptday.pointpfus.12lst  ptday.pointpfus.lst    ptinv.pointpfus.4lst
ptday.pointpfus.4lst   ptinv.pointpfus.12lst  ptinv.pointpfus.lst

./smk/inp/list/list2011/pointwfcn:
ptday.pointwfcn.lst  ptinv.pointwfcn.lst

./smk/inp/list/list2011/pointwfmx:
ptday.pointwfmx.12lst  ptinv.pointwfmx.12lst
ptday.pointwfmx.lst    ptinv.pointwfmx.lst

./smk/inp/list/list2011/pointwfus:
ptday.pointwfus.12lst  ptday.pointwfus.lst    ptinv.pointwfus.4lst
ptday.pointwfus.4lst   ptinv.pointwfus.12lst  ptinv.pointwfus.lst

./smk/inp/list/list2011/ptegu:
ptday.ptegu.12lst  pthour.ptegu.12lst  ptinv.ptegu.12lst
ptday.ptegu.lst    pthour.ptegu.lst    ptinv.ptegu.lst

./smk/inp/list/list2011/ptnonipm:
ptday.ptnonipm.4lst   ptinv.ptnonipm.4lst
ptinv.ptnonipm.12lst  ptinv.ptnonipm.lst

./smk/inp/list/list2011/pt_oilgas:
ptinv.pt_oilgas.12lst  ptinv.pt_oilgas.lst

./smk/inp/list/list2011/rwc:
arinv.rwc.12lst  arinv.rwc.12lst.bak  arinv.rwc.lst  arinv.rwc.lst.bak

./smk/inp/list/list2011/xptegu_magcem:
ptday.xptegu_magcem.4lst  pthour.xptegu_magcem.4lst  ptinv.xptegu_magcem.4lst

./smk/inp/list/list2017:
airport      c1c2rail     onroad         pointwfcn   ptnonipm2018  xptegu_magcem
airport2018  c3marine     onroadmxcn     pointwfmx   pt_oilgas
area         nonroad      pointmxcn      pointwfus   readme
area2018     nonroad2018  pointmxcn_sce  ptegu       rwc
areamxcn     np_oilgas    pointpfus      ptnonipm    rwcp

./smk/inp/list/list2017/airport:
pthour.airport.4lst  ptinv.airport.4lst

./smk/inp/list/list2017/airport2018:
pthour.airport2018.4lst  ptinv.airport2018.4lst
pthour.airport.4lst  ptinv.airport.4lst

./smk/inp/list/list2017/area:
arday.area.4lst  arinv.area.12lst  arinv.area.4lst  arinv.area.lst

./smk/inp/list/list2017/area2018:
arday.area2018.4lst                arinv.area2018.4lst
arday.area2018.4lst_v11_w3holidays  mytemp

./smk/inp/list/list2017/areamxcn:
arinv.areamxcn.12lst  arinv.areamxcn.lst

./smk/inp/list/list2017/c1c2rail:
arday.c1c2rail.4lst   arinv.c1c2rail.4lst
arinv.c1c2rail.12lst  arinv.c1c2rail.lst

./smk/inp/list/list2017/c3marine:
arinv.c3marine.12lst  arinv.c3marine.lst

./smk/inp/list/list2017/nonroad:
arday.nonroad.4lst  arinv.nonroad.12lst  arinv.nonroad.4lst  arinv.nonroad.lst

./smk/inp/list/list2017/nonroad2018:
arday.nonroad2018.4lst        arinv.nonroad2018.4lst

./smk/inp/list/list2017/np_oilgas:
arinv.np_oilgas.12lst  arinv.np_oilgas.lst

./smk/inp/list/list2017/onroad:
arinv.onroad.12lst  arinv.onroad.4lst  arinv.onroad.lst

./smk/inp/list/list2017/onroadmxcn:
arinv.onroadmxcn.12lst        arinv.onroadmxcn.lst

./smk/inp/list/list2017/pointmxcn:
ptinv.pointmxcn.12lst  ptinv.pointmxcn.lst

./smk/inp/list/list2017/pointmxcn_sce:
ptinv.pointmxcn_sce.12lst  ptinv.pointmxcn_sce.lst

./smk/inp/list/list2017/pointpfus:
ptday.pointpfus.12lst  ptday.pointpfus.lst    ptinv.pointpfus.4lst
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ptday.pointpfus.4lst   ptinv.pointpfus.12lst  ptinv.pointpfus.lst

./smk/inp/list/list2017/pointwfcn:
ptday.pointwfcn.lst  ptinv.pointwfcn.lst

./smk/inp/list/list2017/pointwfmx:
ptday.pointwfmx.12lst  ptinv.pointwfmx.12lst
ptday.pointwfmx.lst    ptinv.pointwfmx.lst

./smk/inp/list/list2017/pointwfus:
ptday.pointwfus.12lst  ptday.pointwfus.lst    ptinv.pointwfus.4lst
ptday.pointwfus.4lst   ptinv.pointwfus.12lst  ptinv.pointwfus.lst

./smk/inp/list/list2017/ptegu:
ptday.ptegu.12lst  pthour.ptegu.12lst  ptinv.ptegu.12lst
ptday.ptegu.lst    pthour.ptegu.lst    ptinv.ptegu.lst

./smk/inp/list/list2017/ptnonipm:
ptday.ptnonipm.4lst   ptinv.ptnonipm.4lst
ptinv.ptnonipm.12lst  ptinv.ptnonipm.lst

./smk/inp/list/list2017/ptnonipm2018:
ptday.ptnonipm2018.4lst  ptinv.ptnonipm2018.4lst

./smk/inp/list/list2017/pt_oilgas:
ptinv.pt_oilgas.12lst  ptinv.pt_oilgas.lst

./smk/inp/list/list2017/rwc:
arinv.rwc.12lst  arinv.rwc.lst

./smk/inp/list/list2017/rwcp:
arinv.rwcp.4lst

./smk/inp/list/list2017/xptegu_magcem:
ptday.ptegu_mag.4lst            pthour.xptegu_magcem.4lst
ptday.ptegu_magcem.4lst   ptinv.xptegu_magcem.4lst
ptday.xptegu_magcem.4lst  ptinv.xptegu_magcem.4lst_default_annual

./smk/inp/run:
run2011  run2017

./smk/inp/run/run2011:
cntl_run.csh
make_invdir.csh
mybat
qa_run.csh
smk_area_nctox.csh
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_temp_05
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_temp_06
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_temp_07
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_temp_08
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_temp_09
smk_area_ozsip_12km_cb6.csh_agfire_hap_exclude
smk_area_ozsip_12km_cb6.csh_agfire_hap_exclude_05
smk_area_ozsip_12km_cb6.csh_agfire_hap_exclude_06
smk_area_ozsip_12km_cb6.csh_agfire_hap_exclude_07
smk_area_ozsip_12km_cb6.csh_agfire_hap_exclude_08
smk_area_ozsip_12km_cb6.csh_agfire_hap_exclude_09
smk_area_ozsip_12km_cb6.csh_area_hap_exclude
smk_area_ozsip_12km_cb6.csh_c1c2rail_hap_exclude
smk_area_ozsip_12km_cb6.csh_c3marine_hap_exclude
smk_area_ozsip_12km_cb6.csh_np_oilgas_hap_exclude
smk_area_ozsip_12km_cb6.csh_rwc_hap_exclude
smk_area_ozsip_36km_cb6.csh_agfire_hap_exclude
smk_area_ozsip_36km_cb6.csh_agfire_hap_exclude_05
smk_area_ozsip_36km_cb6.csh_agfire_hap_exclude_06
smk_area_ozsip_36km_cb6.csh_agfire_hap_exclude_07
smk_area_ozsip_36km_cb6.csh_agfire_hap_exclude_08
smk_area_ozsip_36km_cb6.csh_agfire_hap_exclude_09
smk_area_ozsip_36km_cb6.csh_area_hap_exclude
smk_area_ozsip_36km_cb6.csh_c1c2rail_hap_exclude
smk_area_ozsip_36km_cb6.csh_c3marine_hap_exclude
smk_area_ozsip_36km_cb6.csh_np_oilgas_hap_exclude
smk_area_ozsip_36km_cb6.csh_rwc_hap_exclude
smk_area_ozsip_4km_cb6.csh_agfire
smk_area_ozsip_4km_cb6.csh_c1c2rail_hap_exclude
smk_area_ozsip_4km_cb6.csh_xarea
smk_bg_nctox.csh
smk_fire_ozsip_12km_cb6_US_prescb
smk_fire_ozsip_12km_cb6_US_wild
smk_fire_ozsip_12km_cb6_wfmx
smk_fire_ozsip_36km_cb6_US_prescb
smk_fire_ozsip_36km_cb6_US_wild
smk_fire_ozsip_36km_cb6_wfcn
smk_fire_ozsip_36km_cb6_wfmx
smk_fire_ozsip_4km_cb6_US_prescb
smk_fire_ozsip_4km_cb6_US_wild
smk_nonroad_nctox.csh
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_05
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_06
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_07
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_08
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_09
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_05
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smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_06
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_07
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_08
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_09
smk_onroadmxcn_ozsip_12km_cb6_final_v2
smk_onroadmxcn_ozsip_12km_cb6_mag2014
smk_onroadmxcn_ozsip_36km_cb6
smk_onroadmxcn_ozsip_36km_cb6_final_days
smk_onroadmxcn_ozsip_36km_cb6_final_v2
smk_onroad_ozsip_12km_cb6
smk_onroad_ozsip_12km_cb6_mag2014
smk_onroad_ozsip_12km_cb6_mag2014_05
smk_onroad_ozsip_12km_cb6_mag2014_06
smk_onroad_ozsip_12km_cb6_mag2014_07
smk_onroad_ozsip_12km_cb6_mag2014_08
smk_onroad_ozsip_12km_cb6_mag2014_09
smk_onroad_ozsip_36km_cb6
smk_onroad_ozsip_36km_cb6_mag2014
smk_onroad_ozsip_36km_cb6_mag2014_05
smk_onroad_ozsip_36km_cb6_mag2014_06
smk_onroad_ozsip_36km_cb6_mag2014_07
smk_onroad_ozsip_36km_cb6_mag2014_08
smk_onroad_ozsip_36km_cb6_mag2014_09
smk_onroad_ozsip_36km_cb6_mag2014_update_spro
smk_onroad_ozsip_36km_cb6_tmp
smk_ozsip.csh_mag_12km_cb6_areamxcn
smk_ozsip.csh_mag_36km_cb6_areamxcn
smk_ozsip_mrgall_cb6_2D.csh_4km
smk_ozsip_mrgall_cb6.csh_12km
smk_ozsip_mrgall_cb6.csh_36km
smk_ozsip_mrgall_cb6_wf_3D.csh_12km
smk_ozsip_mrgall_cb6_wf_3D.csh_36km
smk_ozsip_mrgall_cb6_wf_3D.csh_4km
smk_point_nctox.csh
smk_point_nctox.csh_mag_4km_cb6
smk_point_nctox.csh_mag_4km_cb6_xairport
smk_point_nctox.csh_mag_4km_cb6_xptnonipm
smk_point_ozsip_12km_cb6.csh_pointmxcn
smk_point_ozsip_12km_cb6.csh_pointmxcn_sce
smk_point_ozsip_12km_cb6.csh_ptegu
smk_point_ozsip_12km_cb6.csh_ptegu_flat
smk_point_ozsip_12km_cb6.csh_ptnonipm
smk_point_ozsip_12km_cb6.csh_pt_oilgas_hap_exclude
smk_point_ozsip_36km_cb6.csh_pointmxcn
smk_point_ozsip_36km_cb6.csh_pointmxcn_sce
smk_point_ozsip_36km_cb6.csh_ptegu
smk_point_ozsip_36km_cb6.csh_ptnonipm
smk_point_ozsip_36km_cb6.csh_pt_oilgas
smk_point_ozsip_36km_cb6.csh_pt_oilgas_hap_exclude
smk_point_ozsip_4km_cb6.csh_xptegu_magcem_skipcem_magtpro_adjusted_annual
smk_run.csh
smk_run_wf.csh

./smk/inp/run/run2017:
cntl_run.csh
make_invdir.csh
movelog.csh
qa_run.csh
smk_area_nctox.csh
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_tmp_05
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_tmp_06
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_tmp_07
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_tmp_08
smk_area_nctox.csh_mag_4km_cb6_SIP_xnonroad_tmp_09
smk_area_ozsip_12km_cb6.csh_area_hap_exclude
smk_area_ozsip_12km_cb6.csh_c1c2rail_hap_exclude
smk_area_ozsip_12km_cb6.csh_c3marine_hap_exclude
smk_area_ozsip_12km_cb6.csh_np_oilgas_hap_exclude
smk_area_ozsip_12km_cb6.csh_rwc_hap_exclude
smk_area_ozsip_36km_cb6.csh_area_hap_exclude
smk_area_ozsip_36km_cb6.csh_c1c2rail_hap_exclude
smk_area_ozsip_36km_cb6.csh_c3marine_hap_exclude
smk_area_ozsip_36km_cb6.csh_np_oilgas_hap_exclude
smk_area_ozsip_36km_cb6.csh_rwc_hap_exclude
smk_area_ozsip_4km_cb6.csh
smk_area_ozsip_4km_cb6.csh_c1c2rail_hap_exclude
smk_area_ozsip_4km_cb6.csh_xarea
smk_area_ozsip_4km_cb6.csh_xarea2018
smk_bg_nctox.csh
smk_fire_ozsip_12km_cb6_US_prescb
smk_fire_ozsip_12km_cb6_US_wild
smk_fire_ozsip_12km_cb6_wfmx
smk_fire_ozsip_36km_cb6_US_prescb
smk_fire_ozsip_36km_cb6_US_wild
smk_fire_ozsip_36km_cb6_wfcn
smk_fire_ozsip_36km_cb6_wfmx
smk_fire_ozsip_4km_cb6_US_prescb
smk_fire_ozsip_4km_cb6_US_wild
smk_nonroad_nctox.csh
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_05
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_06
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_07
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_08
smk_NONROAD_nctox.csh_mag_12km_cb6_hap_exclude_09
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude
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smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_05
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_06
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_07
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_08
smk_NONROAD_nctox.csh_mag_36km_cb6_hap_exclude_09
smk_NONROAD_nctox.csh_mag_4km_cb6
smk_onroadmxcn_ozsip_12km_cb6_final_v2
smk_onroadmxcn_ozsip_12km_cb6_mag2014
smk_onroadmxcn_ozsip_36km_cb6
smk_onroadmxcn_ozsip_36km_cb6_final_v2
smk_onroadmxcn_ozsip_36km_cb6_mag2014
smk_onroad_ozsip_12km_cb6
smk_onroad_ozsip_12km_cb6_mag2014
smk_onroad_ozsip_12km_cb6_mag2014_05
smk_onroad_ozsip_12km_cb6_mag2014_06
smk_onroad_ozsip_12km_cb6_mag2014_07
smk_onroad_ozsip_12km_cb6_mag2014_08
smk_onroad_ozsip_12km_cb6_mag2014_09
smk_onroad_ozsip_36km_cb6
smk_onroad_ozsip_36km_cb6_mag2014
smk_onroad_ozsip_36km_cb6_mag2014_05
smk_onroad_ozsip_36km_cb6_mag2014_06
smk_onroad_ozsip_36km_cb6_mag2014_07
smk_onroad_ozsip_36km_cb6_mag2014_08
smk_onroad_ozsip_36km_cb6_mag2014_09
smk_ozsip.csh_mag_12km_cb6_areamxcn
smk_ozsip.csh_mag_36km_cb6_areamxcn
smk_ozsip_mrgall_cb6_2D.csh_4km
smk_ozsip_mrgall_cb6_2D.csh_4km_no_anthrop
smk_ozsip_mrgall_cb6.csh_12km
smk_ozsip_mrgall_cb6.csh_12km_no_US_anthrop
smk_ozsip_mrgall_cb6.csh_36km
smk_ozsip_mrgall_cb6.csh_36km_days
smk_ozsip_mrgall_cb6.csh_36km_no_US_anthrop
smk_ozsip_mrgall_cb6_wf_3D.csh_1
smk_ozsip_mrgall_cb6_wf_3D.csh_12km
smk_ozsip_mrgall_cb6_wf_3D.csh_12km_2
smk_ozsip_mrgall_cb6_wf_3D.csh_12km_3
smk_ozsip_mrgall_cb6_wf_3D.csh_12km_4
smk_ozsip_mrgall_cb6_wf_3D.csh_12km_5
smk_ozsip_mrgall_cb6_wf_3D.csh_36km_2
smk_ozsip_mrgall_cb6_wf_3D.csh_36km_3
smk_ozsip_mrgall_cb6_wf_3D.csh_36km_4
smk_ozsip_mrgall_cb6_wf_3D.csh_36km_5
smk_ozsip_mrgall_cb6_wf_3D.csh_4km
smk_point_nctox.csh
smk_point_nctox.csh_mag_4km_cb6
smk_point_nctox.csh_mag_4km_cb6_xairport
smk_point_nctox.csh_mag_4km_cb6_xairport2018
smk_point_nctox.csh_mag_4km_cb6_xptnonipm
smk_point_nctox.csh_mag_4km_cb6_xptnonipm2018
smk_point_ozsip_12km_cb6.csh_pointmxcn
smk_point_ozsip_12km_cb6.csh_pointmxcn_sce
smk_point_ozsip_12km_cb6.csh_ptegu
smk_point_ozsip_12km_cb6.csh_ptegu_wo_day_just_hour
smk_point_ozsip_12km_cb6.csh_ptnonipm
smk_point_ozsip_12km_cb6.csh_pt_oilgas_hap_exclude
smk_point_ozsip_36km_cb6.csh_pointmxcn
smk_point_ozsip_36km_cb6.csh_pointmxcn_sce
smk_point_ozsip_36km_cb6.csh_pointmxcn_sce_5days
smk_point_ozsip_36km_cb6.csh_ptegu
smk_point_ozsip_36km_cb6.csh_ptnonipm
smk_point_ozsip_36km_cb6.csh_pt_oilgas
smk_point_ozsip_36km_cb6.csh_pt_oilgas_hap_exclude
smk_point_ozsip_4km_cb6.csh_xptegu_magcem_skipcem_magtpro_annual
smk_run.csh
smk_run_wf.csh

./smk/out:
emis

./smk/out/emis:
2011  2017

./smk/out/emis/2011:
12km  36km  4km

./smk/out/emis/2011/12km:
readme_no_change_to_elvated_since_v6  v9_merged_2D
v6_elevated_pt_final_zeroout_4km_pt   v9_merged_2D_w2012bio

./smk/out/emis/2011/12km/v6_elevated_pt_final_zeroout_4km_pt:
elv_pointmxcn_2011            elv_ptegu_2011         elv_pt_oilgas_2011
elv_pointmxcn_sce_2011        elv_ptnonipm_2011

./smk/out/emis/2011/12km/v6_elevated_pt_final_zeroout_4km_pt/elv_pointmxcn_2011:
inlnts_l.pointmxcn.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.pointmxcn.20111001.1.MCIP_12km.mag12.ncf
stack_groups.pointmxcn.MCIP_12km.mag12.ncf

./smk/out/emis/2011/12km/v6_elevated_pt_final_zeroout_4km_pt/elv_pointmxcn_sce_2011:
inlnts_l.pointmxcn_sce.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.pointmxcn_sce.20111001.1.MCIP_12km.mag12.ncf
stack_groups.pointmxcn_sce.MCIP_12km.mag12.ncf

./smk/out/emis/2011/12km/v6_elevated_pt_final_zeroout_4km_pt/elv_ptegu_2011:
inlnts_l.ptegu.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.ptegu.20111001.1.MCIP_12km.mag12.ncf
stack_groups.ptegu.MCIP_12km.mag12.ncf
```

```
./smk/out/emis/2011/12km/v6_elevated_pt_final_zeroout_4km_pt/elv_ptnonipm_2011:
inlnts_l.ptnonipm.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.ptnonipm.20111001.1.MCIP_12km.mag12.ncf
stack_groups.ptnonipm.MCIP_12km.mag12.ncf

./smk/out/emis/2011/12km/v6_elevated_pt_final_zeroout_4km_pt/elv_pt_oilgas_2011:
inlnts_l.pt_oilgas.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.pt_oilgas.20111001.1.MCIP_12km.mag12.ncf
stack_groups.pt_oilgas.MCIP_12km.mag12.ncf

./smk/out/emis/2011/36km:
readme_no_change_to_elevated_pt    v9_merged_2D
v9_elevated_pt                     v9_merged_2D_w2012bio

./smk/out/emis/2011/4km:
v6_elvated_pt  v9_merged_2D  v9_merged_2D_w2012bio

./smk/out/emis/2017:
12km  36km  4km

./smk/out/emis/2017/12km:
v6_elevated_pt_final_zeroout_4km_pt  v9_merged_2D  v9_merged_2D_w2012bio

./smk/out/emis/2017/12km/v6_elevated_pt_final_zeroout_4km_pt:
0pointmxcn  0pointmxcn_sce  0ptegu  0ptnonipm  0pt_oilgas

./smk/out/emis/2017/12km/v6_elevated_pt_final_zeroout_4km_pt/0pointmxcn:
inlnts_l.pointmxcn.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.pointmxcn.20111001.1.MCIP_12km.mag12.ncf
stack_groups.pointmxcn.MCIP_12km.mag12.ncf

./smk/out/emis/2017/12km/v6_elevated_pt_final_zeroout_4km_pt/0pointmxcn_sce:
inlnts_l.pointmxcn_sce.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.pointmxcn_sce.20111001.1.MCIP_12km.mag12.ncf
stack_groups.pointmxcn_sce.MCIP_12km.mag12.ncf

./smk/out/emis/2017/12km/v6_elevated_pt_final_zeroout_4km_pt/0ptegu:
inlnts_l.ptegu.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.ptegu.20111001.1.MCIP_12km.mag12.ncf
stack_groups.ptegu.MCIP_12km.mag12.ncf

./smk/out/emis/2017/12km/v6_elevated_pt_final_zeroout_4km_pt/0ptnonipm:
inlnts_l.ptnonipm.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.ptnonipm.20111001.1.MCIP_12km.mag12.ncf
stack_groups.ptnonipm.MCIP_12km.mag12.ncf

./smk/out/emis/2017/12km/v6_elevated_pt_final_zeroout_4km_pt/0pt_oilgas:
inlnts_l.pt_oilgas.20110428.1.MCIP_12km.mag12.ncf  ~  inlnts_l.pt_oilgas.20111001.1.MCIP_12km.mag12.ncf
stack_groups.pt_oilgas.MCIP_12km.mag12.ncf

./smk/out/emis/2017/36km:
readme_no_change_elv_pt  v6_elevated_pt  v9_merged_2D  v9_merged_2D_w2012bio

./smk/out/emis/2017/4km:
readme    v6_elvated_pt_2017  v9_merged_2D

./sps:
cfg  inp  out  readme

./sps/cfg:
srgtool_Canada_NAESI
srgtool_Canada_non_NAESI
srgtool_Canada_non_NAESI_91201
srgtools_2015_Maricopa_4km
srgtools_2015_MX
srgtools_2015_Pinal_4km
srgtool_US_12km
srgtool_US_36km
WWW_surrogate_specification_2015_v6_09162015.xlsx

./sps/cfg/srgtool_Canada_NAESI:
control_variables_GRID101_CAN_NAESI.csv  surrogate_generation_can_naesi.csv
GRIDDESC                                 surrogate_IDs_can_naesi.csv
shapefile_catalog_2010_can_naesi.csv     surrogate_specification_can_naesi.csv

./sps/cfg/srgtool_Canada_non_NAESI:
control_variables_GRID101_CAN.csv  surrogate_generation_canada.csv
GRIDDESC                           surrogate_ID_can.csv
shapefile_catalog_2006.csv         surrogate_specification_can.csv

./sps/cfg/srgtool_Canada_non_NAESI_91201:
control_variables_GRID101_CAN.csv  surrogate_generation_canada.csv
GRIDDESC                           surrogate_ID_can.csv
shapefile_catalog_2006.csv         surrogate_specification_can.csv

./sps/cfg/srgtools_2015_Maricopa_4km:
control_variables_grid_MAG2015_4km_MC_20150705_v4.csv
GRIDDESC
shapefile_catalog_201506_MC_v4.csv
surrogate_codes_2015_MC_v4.csv
surrogate_generation_grid_2015_MC_v4.csv
surrogate_specification_2015_MC_v5.csv
SurrogateTools.jar
WWW_surrogate_specification_2015_v5_08182015.xlsx

./sps/cfg/srgtools_2015_MX:
control_variables_grid_MAG2015_12km_MEX.csv
control_variables_grid_MAG2015_36km_MEX.csv
GRIDDESC
shapefile_catalog_2015_3600_MEX.csv
surrogate_codes_MAG2015.csv
surrogate_generation_grid_2015MAG_MX.csv
surrogate_specification_2015_v1.csv
```

```
WWW_MEXICO_Spatial_surrogates_09102015_v1.xlsx

./sps/cfg/srgtools_2015_Pinal_4km:
control_variables_grid_MAG2015_4km_PC_20150820_v2.csv
GRIDDESC
shapefile_catalog_201506_MC_v4.csv
spatial_surrogate_PC.xlsx
surrogate_codes_2015_MC_v4.csv
surrogate_generation_grid_2015_PC_v2.csv
surrogate_specification_2015_PC_CGA_v2.csv

./sps/cfg/srgtool_US_12km:
control_variables_grid_MAG2015_12km_v01.csv  shapefile_catalog_2015_v02.csv
control_variables_grid_MAG2015_12km_v02.csv  shapefile_catalog_2015_v03.csv
control_variables_grid_MAG2015_12km_v03.csv  shapefile_catalog_2015_v04.csv
control_variables_grid_MAG2015_12km_v04.csv  surrogate_codes_2015.csv
GRIDDESC                                     surrogate_generation_grid_2015.csv
shapefile_catalog_2015_v01.csv               surrogate_specification_2015.csv

./sps/cfg/srgtool_US_36km:
control_variables_grid_MAG2015_12km_v01.csv  ~  control_variables_grid_MAG2015_12km_v04.csv
control_variables_grid_MAG2015_36km_v00.csv  ~  control_variables_grid_MAG2015_36km_v25.csv
control_variables_grid_MAG2015_4km_v00_out_MCPC.csv
GRIDDESC
shapefile_catalog_2015_4km_v00.csv
shapefile_catalog_2015_v00.csv  ~  shapefile_catalog_2015_v25.csv
shapefile_catalog_2015_v1201.csv ~ shapefile_catalog_2015_v1204.csv
surrogate_codes_2015.csv
surrogate_generation_grid_2015.csv
surrogate_generation_grid_2015_v1.csv
surrogate_specification_2015.csv
US_SpatialSurrogate_Workbook_v072115.xlsx

./sps/inp:
data_shapefile

./sps/inp/data_shapefile:
Canada           emiss_shp2010  mexico        pinal
emiss_shp2003    maricopa       outside_MCPC

./sps/inp/data_shapefile/Canada:
Canada                                  US_SpatialSurrogate_Documentation_v070115.pdf
SurrogateTools_Scripts_2014.zip         US_SpatialSurrogate_Workbook_v072115.xlsx

./sps/inp/data_shapefile/Canada/Canada:
2010_surrogate_documentation_workbook_16Jan2013.xlsx
Canada_2010_surrogate_v1

./sps/inp/data_shapefile/Canada/Canada/Canada_2010_surrogate_v1:
NAESI  Non_NAESI

./sps/inp/data_shapefile/Canada/Canada/Canada_2010_surrogate_v1/NAESI:
control_variables_GRID101_CAN_NAESI.csv  surrogate_generation_can_naesi.csv
SHAPEFILE                                surrogate_IDs_can_naesi.csv
shapefile_catalog_2010_can_naesi.csv     surrogate_specification_can_naesi.csv

./sps/inp/data_shapefile/Canada/Canada/Canada_2010_surrogate_v1/NAESI/SHAPEFILE:
gisnodat.shp  naesi_dat.shp

./sps/inp/data_shapefile/Canada/Canada/Canada_2010_surrogate_v1/Non_NAESI:
control_variables_GRID101_CAN.csv  surrogate_generation_canada.csv
SHAPEFILE                          surrogate_ID_can.csv
shapefile_catalog_2006.csv         surrogate_specification_can.csv

./sps/inp/data_shapefile/Canada/Canada/Canada_2010_surrogate_v1/Non_NAESI/SHAPEFILE:
CANRAIL.shp
chboisv8S0_.shp
da2006_pop_labour.shp
lowmedjet_ll.shp
marine.shp
merge123_10km.shp
naesi_fert.shp
paved4.shp
pr2001ca_regions_bc_waste.shp
pr2001ca_regions_simplify.shp
treesa.shp
ua2001.shp
unpaved4.shp
unpaved5.shp

./sps/inp/data_shapefile/emiss_shp2003:
airport-area.shp
county_lu2k.shp
military_air.shp
mines_nlcd.shp
us_ag2k.shp
uscells05g.shp
us_dryclean.shp
us_gas_sta.shp
us_golf.shp
us_oilgas.shp
us_oil.shp
us_timb.shp
us_wwtp.shp

./sps/inp/data_shapefile/emiss_shp2010:
acs
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census
cty_pophu2k_revised.shp
ERTAC_railyard_WRF.shp
extended_idle
fema
ladco
nlcd
ntad
offshore
spatial_insights
state_group
state_pophu2010.shp
tiger
US_Airports_NEI08v2_WRF.shp
usgs

./sps/inp/data_shapefile/emiss_shp2010/acs:
heating_fuels_acs0510_c2010.shp

./sps/inp/data_shapefile/emiss_shp2010/census:
pophu_bg2010_AZ4.shp
pophu_bg2010.shp

./sps/inp/data_shapefile/emiss_shp2010/extended_idle:
potential_idling_locations_v2_final.shp

./sps/inp/data_shapefile/emiss_shp2010/fema:
fema_bsf_2002bnd_04013.shp
fema_bsf_2002bnd.shp

./sps/inp/data_shapefile/emiss_shp2010/ladco:
GreatLakes_IWW_EI_EERA_2011_WRF.shp

./sps/inp/data_shapefile/emiss_shp2010/nlcd:
nlcd2006_10s_waterland.shp
nlcd2006_20s_developed.shp
nlcd2006_40_forest.shp
nlcd2006_80s_agri.shp
nlcd2011az_10s_250m_nosimple_latlon.shp
nlcd2011az_10s_250m_nosimple_stateplane.shp
nlcd2011az_20s_250m_nosimv2_latlon.shp
nlcd2011az_40s_250m_nos_v2_latlon.shp
nlcd2011az_80s_250m_nos_v2_latlon.shp
nlcd2011az_lakes_stateplane.shp

./sps/inp/data_shapefile/emiss_shp2010/ntad:
ipcd.shp
ports_ntad2010.shp
rail_lines_ntad2012.shp
waterway_ntad2011.shp

./sps/inp/data_shapefile/emiss_shp2010/offshore:
GulfofMexico_SupportVessels_Density_WRF.shp
nav_water_activity.shp
NewFederalStateWaters120606.shp
Ports_081412_NEI2011_NOx_WRF.shp
ShippingLanes_112812_NEI2011_NOx_WRF.shp
TUGvessel_SURROGATE_GREATLAKES.shp

./sps/inp/data_shapefile/emiss_shp2010/spatial_insights:
drycleaner_surrogate.shp
gas_station_surrogate.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group:
12km_only  group03  group07  group11   group122  group14  group18  group22
group_000  group04  group08  group12   group123  group15  group19  group23
group01    group05  group09  group120  group124  group16  group20  group24
group02    group06  group10  group121  group13   group17  group21  group25

./sps/inp/data_shapefile/emiss_shp2010/state_group/12km_only:
cty_pophu2k_revised_12kmClip.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group_000:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group01:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group02:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group03:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group04:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group05:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group06:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group07:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group08:
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cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group09:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group10:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group11:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group12:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group120:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group121:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group122:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group123:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group124:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group13:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group14:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group15:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group16:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group17:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group18:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group19:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group20:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group21:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group22:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group23:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group24:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/state_group/group25:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/emiss_shp2010/tiger:
rail_tiger2010.shp
rd_ps_tiger2010_az.shp
rd_ps_tiger2010.shp

./sps/inp/data_shapefile/emiss_shp2010/usgs:
mines_usgs2003_wrf.shp
quarries_usgs2003_wrf.shp

./sps/inp/data_shapefile/maricopa:
Active_MSW_Landfills.shp
ARIZONA_RAILROAD_latlon.shp
AZ_all_hospital_latlon.shp
AZ_landfill_except_NW_latlon.shp
AZ_medical_facilities_latlon.shp
cty_pophu2k_revised_PC.shp
cty_pophu2k_revised.shp
MAG_2011_Traffic_data_latlon_roadtype24.shp
MAG_2011_Traffic_data_latlon_roadtype2.shp
MAG_2011_Traffic_data_latlon_roadtype3.shp
MAG_2011_Traffic_data_latlon_roadtype4.shp
MAG_2011_Traffic_data_latlon_roadtype5.shp
MAG_2011_Traffic_data_latlon.shp
MAG_2012_Traffic_data.shp
MAG_landuse_2012_latlon.shp
MAG_Maricopa_Pinal_2010Census_latlon.shp
MAG_Residential_construction_completed_2011.shp
Maricopa_2011_employers_latlon.shp
Maricopa_2012_commercial_land.shp
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Maricopa_agriculture_2010_latlon.shp
Maricopa_agriculture_2012_latlon.shp
Maricopa_industrial_2012_latlon.shp
Maricopa_only_lakes_latlon.shp
Maricopa_Pinal_golf_latlon.shp
Maricopa_single_family_all_latlon.shp
Maricopa_single_low_intensity.shp
Maricopa_vacant_land_2012_latlon.shp
MC_15_airports_latlon.shp
MC_employers_2011dryclean.shp
MC_multiple_family_latlon.shp
MC_singleFamily_low_medium_latlon.shp
MC_single_highdensity_latlon.shp
MC_wastewater_treatment_latlon.shp
PINAL_agriculture_2011_latlon.shp
us_ag2k_lonlat.shp
XY_Fueling_Facilities_MC_and_PC_latlon.shp

./sps/inp/data_shapefile/mexico:
A_Agricola.shp
BOSQUE_LAD.shp
carretera_ESPHE.shp
carretera_latlong.shp
CARR_POB.shp
com_ind_viv.shp
hwybdrx.shp
mexico_air.shp
mexico_hh.shp
Mexico_muni.shp
Mexico_pop.shp
mexico_ports.shp
mexico_region.shp
mexico_rivers.shp
mexico_roads.shp
mexico_rr.shp
mexico.shp
mexmunic_new.shp
municipal_MXFIPS.shp
REP_CRUCES.shp
REPMEX_ES_HEAT1.shp

./sps/inp/data_shapefile/outside_MCPC:
cty_pophu2k_revised.shp

./sps/inp/data_shapefile/pinal:
CAAG_2010_employment_ll.shp
Pinal_2010_all_residential_ll.shp
Pinal_2010_all_residential_norural_ll.shp
Pinal_2010_CAG_landuse_lonlat.shp
Pinal_2011_all_residential_norural_ll.shp
PINAL_landuse_2011_ll.shp
Pinal_Resd_Comme_Indus_Insti_Goven.shp
PINAL_Residential_completed_2011_ll.shp

./sps/inp/data_shapefile/readme:
2010shapefiles.acs.tar.contents.txt
2010shapefiles.census_full.tar.contents.txt
2010shapefiles.census_split.tar.contents.txt
2010shapefiles.fema.tar.contents.txt
2010shapefiles.ladco.tar.contents.txt
2010shapefiles.mexico.tar.contents.txt
2010shapefiles.misc.tar.contents.txt
2010shapefiles.nlcd_agri_forest.tar.contents.txt
2010shapefiles.nlcd_devwaterland.tar.contents.txt
2010shapefiles.ntad.tar.contents.txt
2010shapefiles.offshore.tar.contents.txt
2010shapefiles.tiger.tar.contents.txt
2010shapefiles.usgs.tar.contents.txt
README

./sps/out:
Spatial_Surrogate_12km        Spatial_Surrogate_36km        Spatial_Surrogate_4km

./sps/out/Spatial_Surrogate_12km:
MEX_10_NOFILL.txt  ~  MEX_888_NOFILL.txt
SRGDESC.txt
USA_100_FILL.txt   ~  USA_890_FILL.txt
USA_100_NOFILL.txt ~  USA_890_NOFILL.txt

./sps/out/Spatial_Surrogate_36km:
CA_9100_NOFILL.txt  ~  CA_9997_NOFILL.txt
CA_91201_NOFILL.txt ~  CA_92457_NOFILL.txt
MEX_10_NOFILL.txt   ~  MEX_888_NOFILL.txt
SRGDESC.txt
USA_100_FILL.txt    ~  USA_890_FILL.txt
USA_100_NOFILL.txt  ~  USA_890_NOFILL.txt

./sps/out/Spatial_Surrogate_4km:
SRGDESC.txt
USA_100_NOFILL.txt  ~  USA_890_NOFILL.txt

./wrf:
WPS   WRF3.7.2011

./wrf/WPS:
inp   out
```

```
./wrf/WPS/inp:
2011042400.AWIP3D ~  2011100200.AWIP3D
2011042400.AWIPSF ~  2011100200.AWIPSF
2011042403.AWIP3D ~  2011100203.AWIP3D
2011042403.AWIPSF ~  2011100203.AWIPSF
2011042406.AWIP3D ~  2011100206.AWIP3D
2011042406.AWIPSF ~  2011100206.AWIPSF
2011042409.AWIP3D ~  2011100209.AWIP3D
2011042409.AWIPSF ~  2011100209.AWIPSF
2011042412.AWIP3D ~  2011100212.AWIP3D
2011042412.AWIPSF ~  2011100212.AWIPSF
2011042415.AWIP3D ~  2011100215.AWIP3D
2011042415.AWIPSF ~  2011100215.AWIPSF
2011042418.AWIP3D ~  2011100218.AWIP3D
2011042418.AWIPSF ~  2011100218.AWIPSF
2011042421.AWIP3D ~  2011100221.AWIP3D
2011042421.AWIPSF ~  2011100221.AWIPSF

./wrf/WPS/out:
geogrid metgrid

./wrf/WPS/out/geogrid:
geo_em.d01.nc  geo_em.d02.nc  geo_em.d03.nc

./wrf/WPS/out/metgrid:
met_em.d01.2011-04-20_00:00:00.nc  ~  met_em.d01.2011-10-02_00:00:00.nc
met_em.d01.2011-04-20_03:00:00.nc  ~  met_em.d01.2011-10-02_03:00:00.nc
met_em.d01.2011-04-20_06:00:00.nc  ~  met_em.d01.2011-10-02_06:00:00.nc
met_em.d01.2011-04-20_09:00:00.nc  ~  met_em.d01.2011-10-02_09:00:00.nc
met_em.d01.2011-04-20_12:00:00.nc  ~  met_em.d01.2011-10-02_12:00:00.nc
met_em.d01.2011-04-20_15:00:00.nc  ~  met_em.d01.2011-10-02_15:00:00.nc
met_em.d01.2011-04-20_18:00:00.nc  ~  met_em.d01.2011-10-02_18:00:00.nc
met_em.d01.2011-04-20_21:00:00.nc  ~  met_em.d01.2011-10-02_21:00:00.nc
met_em.d02.2011-04-20_00:00:00.nc  ~  met_em.d02.2011-10-02_00:00:00.nc
met_em.d02.2011-04-20_03:00:00.nc  ~  met_em.d02.2011-10-02_03:00:00.nc
met_em.d02.2011-04-20_06:00:00.nc  ~  met_em.d02.2011-10-02_06:00:00.nc
met_em.d02.2011-04-20_09:00:00.nc  ~  met_em.d02.2011-10-02_09:00:00.nc
met_em.d02.2011-04-20_12:00:00.nc  ~  met_em.d02.2011-10-02_12:00:00.nc
met_em.d02.2011-04-20_15:00:00.nc  ~  met_em.d02.2011-10-02_15:00:00.nc
met_em.d02.2011-04-20_18:00:00.nc  ~  met_em.d02.2011-10-02_18:00:00.nc
met_em.d02.2011-04-20_21:00:00.nc  ~  met_em.d02.2011-10-02_21:00:00.nc
met_em.d03.2011-04-20_00:00:00.nc  ~  met_em.d03.2011-10-02_00:00:00.nc
met_em.d03.2011-04-20_03:00:00.nc  ~  met_em.d03.2011-10-02_03:00:00.nc
met_em.d03.2011-04-20_06:00:00.nc  ~  met_em.d03.2011-10-02_06:00:00.nc
met_em.d03.2011-04-20_09:00:00.nc  ~  met_em.d03.2011-10-02_09:00:00.nc
met_em.d03.2011-04-20_12:00:00.nc  ~  met_em.d03.2011-10-02_12:00:00.nc
met_em.d03.2011-04-20_15:00:00.nc  ~  met_em.d03.2011-10-02_15:00:00.nc
met_em.d03.2011-04-20_18:00:00.nc  ~  met_em.d03.2011-10-02_18:00:00.nc
met_em.d03.2011-04-20_21:00:00.nc  ~  met_em.d03.2011-10-02_21:00:00.nc

./wrf/WRF3.7.2011:
Inl  Sim

./wrf/WRF3.7.2011/Inl:
wrfbdy_d01  wrfinput_d01  wrfinput_d02  wrfinput_d03

./wrf/WRF3.7.2011/Sim:
wrfout_d01_2011-04-24_12.nc ~ wrfout_d01_2011-10-01_12.nc
wrfout_d01_2011-04-25_00.nc ~ wrfout_d01_2011-10-02_00.nc
wrfout_d02_2011-04-24_12.nc ~ wrfout_d02_2011-10-01_12.nc
wrfout_d02_2011-04-25_00.nc ~ wrfout_d02_2011-10-02_00.nc
wrfout_d03_2011-04-24_12.nc ~ wrfout_d03_2011-10-01_12.nc
wrfout_d03_2011-04-25_00.nc ~ wrfout_d03_2011-10-02_00.nc
```

# APPENDIX D

2011 AND 2017 EMISSIONS INVENTORY SUMMARY

## Area Source

Table D-1. Ozone season average daily area source emissions for Maricopa County in 2011 and 2017 (unit: metric tons/day)

| No. | SCC | Description | 2011 | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOC | NOx | CO | VOC | NOx | CO |
| 1 | 2102004001 | Industrial distillate oil: Boilers | 0.002 | 0.177 | 0.044 | 0.002 | 0.207 | 0.052 |
| 2 | 2102004002 | Industrial distillate oil: Engines | 0.000 | 5.345 | 1.150 | 0.000 | 6.253 | 1.346 |
| 3 | 2102006000 | Industrial natural gas | 0.099 | 1.952 | 1.216 | 0.116 | 2.284 | 1.423 |
| 4 | 2103004001 | Commercial/institutional distillate oil: Boilers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 5 | 2103004002 | Commercial/institutional distillate oil: Engines | 0.000 | 0.011 | 0.002 | 0.000 | 0.012 | 0.003 |
| 6 | 2103006000 | Commercial/institutional natural gas | 0.114 | 2.267 | 1.390 | 0.126 | 2.501 | 1.534 |
| 7 | 2104006000 | Residential natural gas | 0.054 | 0.927 | 0.395 | 0.060 | 1.023 | 0.435 |
| 8 | 2301000000 | Chemical manufacturing | 0.272 | 0.000 | 0.000 | 0.318 | 0.000 | 0.000 |
| 9 | 2302002100 | Commercial cooking - Conveyorized charbroiling | 0.062 | 0.000 | 0.218 | 0.068 | 0.000 | 0.241 |
| 10 | 2302002200 | Commercial cooking - Underfired charbroiling | 0.213 | 0.000 | 0.695 | 0.235 | 0.000 | 0.766 |
| 11 | 2302003000 | Commercial cooking - Deep fat frying | 0.065 | 0.000 | 0.000 | 0.072 | 0.000 | 0.000 |
| 12 | 2302003100 | Commercial cooking - Flat griddle frying | 0.031 | 0.000 | 0.065 | 0.034 | 0.000 | 0.072 |
| 13 | 2302003200 | Commercial cooking - Clamshell griddle frying | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 14 | 2302050000 | Bakeries | 0.248 | 0.000 | 0.000 | 0.274 | 0.000 | 0.000 |
| 15 | 2304000000 | Secondary metal production | 0.139 | 0.049 | 0.316 | 0.163 | 0.057 | 0.370 |
| 16 | 2308000000 | Rubber/Plastic product mfg. | 6.428 | 0.000 | 0.000 | 7.091 | 0.000 | 0.000 |
| 17 | 2312000000 | Machinery (electrical) | 0.338 | 0.062 | 0.007 | 0.396 | 0.072 | 0.009 |
| 18 | 2399000000 | Industrial processes, not elsewhere classified (NEC) | 0.148 | 0.565 | 0.238 | 0.173 | 0.661 | 0.279 |
| 19 | 2401001000 | Architectural coatings | 13.890 | 0.000 | 0.000 | 15.322 | 0.000 | 0.000 |
| 20 | 2401005000 | Auto refinishing | 4.652 | 0.000 | 0.000 | 5.132 | 0.000 | 0.000 |
| 21 | 2401008000 | Traffic markings | 0.827 | 0.000 | 0.000 | 0.849 | 0.000 | 0.000 |
| 22 | 2401015000 | Factory finished wood | 0.634 | 0.000 | 0.000 | 0.699 | 0.000 | 0.000 |
| 23 | 2401020000 | Wood furniture | 1.558 | 0.000 | 0.000 | 1.719 | 0.000 | 0.000 |
| 24 | 2401075000 | Aircraft surface coatings | 0.215 | 0.000 | 0.000 | 0.225 | 0.000 | 0.000 |
| 25 | 2401090000 | Miscellaneous surface coatings | 1.112 | 0.000 | 0.000 | 1.226 | 0.000 | 0.000 |

| No. | SCC | Description | 2011 | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOC | NOx | CO | VOC | NOx | CO |
| 26 | 2415000000 | Degreasing | 0.658 | 0.000 | 0.000 | 0.726 | 0.000 | 0.000 |
| 27 | 2420000000 | Dry cleaning | 0.081 | 0.000 | 0.000 | 0.089 | 0.000 | 0.000 |
| 28 | 2425000000 | Graphics arts | 1.010 | 0.000 | 0.000 | 1.114 | 0.000 | 0.000 |
| 29 | 2440000000 | Misc. Ind. Solvent use | 2.325 | 0.000 | 0.000 | 2.720 | 0.000 | 0.000 |
| 30 | 2460100000 | Personal care products | 9.751 | 0.000 | 0.000 | 10.756 | 0.000 | 0.000 |
| 31 | 2460200000 | Household products | 9.238 | 0.000 | 0.000 | 10.190 | 0.000 | 0.000 |
| 32 | 2460400000 | Automotive aftermarket products | 6.980 | 0.000 | 0.000 | 7.699 | 0.000 | 0.000 |
| 33 | 2460500000 | Coatings and related products | 4.875 | 0.000 | 0.000 | 5.378 | 0.000 | 0.000 |
| 34 | 2460600000 | Adhesives and sealants | 2.925 | 0.000 | 0.000 | 3.227 | 0.000 | 0.000 |
| 35 | 2460800000 | FIFRA related products | 9.135 | 0.000 | 0.000 | 10.077 | 0.000 | 0.000 |
| 36 | 2460900000 | Miscellaneous products, NEC | 0.359 | 0.000 | 0.000 | 0.396 | 0.000 | 0.000 |
| 37 | 2461021000 | Cutback Asphalt | 2.072 | 0.000 | 0.000 | 2.126 | 0.000 | 0.000 |
| 38 | 2461022000 | Emulsified Asphalt | 2.147 | 0.000 | 0.000 | 2.202 | 0.000 | 0.000 |
| 39 | 2461023000 | Roofing Asphalt | 0.011 | 0.000 | 0.000 | 0.012 | 0.000 | 0.000 |
| 40 | 2461850000 | Agricultural Pesticides | 1.317 | 0.000 | 0.000 | 1.285 | 0.000 | 0.000 |
| 41 | 2501011011 | Residential Permeation | 2.205 | 0.000 | 0.000 | 0.141 | 0.000 | 0.000 |
| 42 | 2501011012 | Residential Evaporation | 4.306 | 0.000 | 0.000 | 0.276 | 0.000 | 0.000 |
| 43 | 2501011013 | Residential Spill in Transport | 0.562 | 0.000 | 0.000 | 0.551 | 0.000 | 0.000 |
| 44 | 2501011014 | Residential Vapor Displacement | 0.206 | 0.000 | 0.000 | 0.214 | 0.000 | 0.000 |
| 45 | 2501011015 | Residential Spill at Pump | 0.016 | 0.000 | 0.000 | 0.018 | 0.000 | 0.000 |
| 46 | 2501012011 | Commercial Permeation | 0.070 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 |
| 47 | 2501012012 | Commercial Evaporation | 0.138 | 0.000 | 0.000 | 0.009 | 0.000 | 0.000 |
| 48 | 2501012013 | Commercial Spill in Transport | 0.766 | 0.000 | 0.000 | 0.751 | 0.000 | 0.000 |
| 49 | 2501012014 | Commercial Vapor Displacement | 0.397 | 0.000 | 0.000 | 0.413 | 0.000 | 0.000 |
| 50 | 2501012015 | Commercial Spill at Pump | 0.032 | 0.000 | 0.000 | 0.035 | 0.000 | 0.000 |
| 51 | 2501055120 | Bulk plants | 0.299 | 0.000 | 0.000 | 0.271 | 0.000 | 0.000 |
| 52 | 2501060051 | Gasoline Service Stations Stage 1: Submerged Filling | 0.240 | 0.000 | 0.000 | 0.217 | 0.000 | 0.000 |
| 53 | 2501060053 | Gasoline Service Stations Stage 1: Balanced Submerged Filling | 0.647 | 0.000 | 0.000 | 0.586 | 0.000 | 0.000 |

| No. | SCC | Description | 2011 | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOC | NOx | CO | VOC | NOx | CO |
| 54 | 2501060201 | Gasoline Service Stations Underground Tank: Breathing and Emptying | 1.877 | 0.000 | 0.000 | 1.700 | 0.000 | 0.000 |
| 55 | 2501080050 | Airports : Aviation Gasoline Stage 1: Total | 0.864 | 0.000 | 0.000 | 0.782 | 0.000 | 0.000 |
| 56 | 2501080100 | Airports : Aviation Gasoline Stage 2: Total | 0.045 | 0.000 | 0.000 | 0.041 | 0.000 | 0.000 |
| 57 | 2505030120 | Truck: Gasoline (Tank Trucks in Transit) | 0.143 | 0.000 | 0.000 | 0.130 | 0.000 | 0.000 |
| 58 | 2505040120 | Pipeline Gasoline | 0.043 | 0.000 | 0.000 | 0.039 | 0.000 | 0.000 |
| 59 | 2510000000 | Volatile organic liquid (VOL) storage and transport | 0.083 | 0.000 | 0.000 | 0.091 | 0.000 | 0.000 |
| 60 | 2601000000 | Onsite incineration | 0.000 | 0.010 | 0.002 | 0.001 | 0.011 | 0.003 |
| 61 | 2610000500 | Land clearing debris | 0.009 | 0.004 | 0.088 | 0.010 | 0.005 | 0.097 |
| 62 | 2620000000 | Landfills | 0.091 | 0.076 | 0.271 | 0.100 | 0.084 | 0.298 |
| 63 | 2630020000 | Publicly owned treatment works | 0.262 | 0.000 | 0.000 | 0.289 | 0.000 | 0.000 |
| 64 | 2650000000 | Other waste | 0.005 | 0.056 | 0.196 | 0.005 | 0.061 | 0.216 |
| 65 | 2660000000 | Leaking underground storage tanks | 0.015 | 0.000 | 0.000 | 0.013 | 0.000 | 0.000 |
| 66 | 2801500000 | Agricultural Field burning (ditchbank & fence row) | 0.365 | 0.162 | 3.445 | 0.356 | 0.158 | 3.361 |
| 67 | 2810030000 | Structure Fires | 0.033 | 0.004 | 0.179 | 0.033 | 0.004 | 0.179 |
| 68 | 2810040000 | Aircraft engine testing | 0.012 | 0.118 | 0.041 | 0.012 | 0.124 | 0.043 |
| 69 | 2810050000 | Vehicle Fires | 0.023 | 0.003 | 0.090 | 0.023 | 0.003 | 0.090 |
| 70 | 2810060100 | Crematories | 0.023 | 0.040 | 0.008 | 0.026 | 0.044 | 0.009 |
| 71 | 2830001000 | Accidental releases | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 72 | 2850000000 | Hospitals (Total: All Operations) | 0.024 | 0.000 | 0.000 | 0.026 | 0.000 | 0.000 |

Table D-2. Ozone season average daily area source emissions for Pinal County in 2011 and 2017 (unit: metric tons/day)

| No. | SCC | Description | 2011 | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOC | NOx | CO | VOC | NOx | CO |
| 1 | 2103008000 | Commercial/institutional wood | 0.001 | 0.009 | 0.024 | 0.001 | 0.008 | 0.023 |
| 2 | 2104004000 | Residential distillate oil | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 2104006000 | Residential natural gas | 0.008 | 0.132 | 0.056 | 0.009 | 0.153 | 0.065 |
| 4 | 2104007000 | Residential liquefied petroleum gas (LPG) | 0.002 | 0.051 | 0.028 | 0.002 | 0.059 | 0.033 |
| 5 | 2302002100 | Commercial cooking - Conveyorized charbroiling | 0.004 | 0.000 | 0.013 | 0.004 | 0.000 | 0.015 |
| 6 | 2302002200 | Commercial cooking - Under-fired charbroiling | 0.013 | 0.000 | 0.042 | 0.015 | 0.000 | 0.049 |
| 7 | 2302003000 | Commercial cooking - Deep fat frying | 0.002 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 |
| 8 | 2302003100 | Commercial cooking - Flat griddle frying | 0.002 | 0.000 | 0.003 | 0.002 | 0.000 | 0.004 |
| 9 | 2302003200 | Commercial cooking - Clamshell griddle frying | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10 | 2401001000 | Architectural coatings | 0.099 | 0.000 | 0.000 | 0.115 | 0.000 | 0.000 |
| 11 | 2401005000 | Auto refinishing | 0.051 | 0.000 | 0.000 | 0.060 | 0.000 | 0.000 |
| 12 | 2401008000 | Traffic markings | 0.002 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 |
| 13 | 2401015000 | Factory finished wood | 0.007 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 |
| 14 | 2401020000 | Wood furniture | 0.020 | 0.000 | 0.000 | 0.023 | 0.000 | 0.000 |
| 15 | 2401055000 | Machinery and Equipment coatings | 0.002 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 |
| 16 | 2401065000 | Electronic and Other Electrical coatings | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 17 | 2401070000 | Motor Vehicles coatings | 0.015 | 0.000 | 0.000 | 0.017 | 0.000 | 0.000 |
| 18 | 2401075000 | Aircraft surface coatings | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 19 | 2401090000 | Miscellaneous surface coatings | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 20 | 2401100000 | Surface Coating, Industrial Maintenance Coatings | 0.070 | 0.000 | 0.000 | 0.067 | 0.000 | 0.000 |
| 21 | 2401200000 | Surface Coating, Other Special Purpose Coatings | 0.030 | 0.000 | 0.000 | 0.029 | 0.000 | 0.000 |
| 22 | 2415000000 | Degreasing | 0.094 | 0.000 | 0.000 | 0.109 | 0.000 | 0.000 |
| 23 | 2420000000 | Dry cleaning | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 24 | 2460100000 | Personal care products | 0.887 | 0.000 | 0.000 | 1.027 | 0.000 | 0.000 |
| 25 | 2460200000 | Household products | 0.841 | 0.000 | 0.000 | 0.973 | 0.000 | 0.000 |
| 26 | 2460400000 | Automotive aftermarket products | 0.635 | 0.000 | 0.000 | 0.735 | 0.000 | 0.000 |
| 27 | 2460500000 | Coatings and related products | 0.444 | 0.000 | 0.000 | 0.513 | 0.000 | 0.000 |

| No. | SCC | Description | 2011 | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOC | NOx | CO | VOC | NOx | CO |
| 28 | 2460600000 | Adhesives and sealants | 0.266 | 0.000 | 0.000 | 0.308 | 0.000 | 0.000 |
| 29 | 2460800000 | FIFRA related products | 0.831 | 0.000 | 0.000 | 0.962 | 0.000 | 0.000 |
| 30 | 2460900000 | Miscellaneous products, NEC | 0.033 | 0.000 | 0.000 | 0.038 | 0.000 | 0.000 |
| 31 | 2461021000 | Cutback Asphalt | 0.232 | 0.000 | 0.000 | 0.238 | 0.000 | 0.000 |
| 32 | 2461022000 | Emulsified Asphalt | 0.192 | 0.000 | 0.000 | 0.196 | 0.000 | 0.000 |
| 33 | 2461850000 | Agricultural Pesticides | 1.570 | 0.000 | 0.000 | 1.563 | 0.000 | 0.000 |
| 34 | 2501011011 | Permeation | 0.080 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 |
| 35 | 2501011012 | Evaporation (includes Diurnal losses) | 0.156 | 0.000 | 0.000 | 0.010 | 0.000 | 0.000 |
| 36 | 2501011013 | Spillage During Transport | 0.020 | 0.000 | 0.000 | 0.020 | 0.000 | 0.000 |
| 37 | 2501011014 | Refilling at the Pump - Vapor Displacement | 0.007 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 |
| 38 | 2501011015 | Refilling at the Pump - Spillage | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 39 | 2501012011 | Permeation | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 40 | 2501012012 | Evaporation (includes Diurnal losses) | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 41 | 2501012013 | Spillage During Transport | 0.028 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| 42 | 2501012014 | Refilling at the Pump - Vapor Displacement | 0.014 | 0.000 | 0.000 | 0.015 | 0.000 | 0.000 |
| 43 | 2501012015 | Refilling at the Pump - Spillage | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 44 | 2501060051 | Gasoline Service Stations Stage 1: Submerged Filling | 0.861 | 0.000 | 0.000 | 0.779 | 0.000 | 0.000 |
| 45 | 2501060052 | Gasoline Service Stations Stage 1: Splash Filling | 0.198 | 0.000 | 0.000 | 0.179 | 0.000 | 0.000 |
| 46 | 2501060201 | Gasoline Service Stations Underground Tank: Breathing and Emptying | 0.208 | 0.000 | 0.000 | 0.188 | 0.000 | 0.000 |
| 47 | 2501080050 | Airports : Aviation Gasoline Stage 1: Total | 0.081 | 0.000 | 0.000 | 0.073 | 0.000 | 0.000 |
| 48 | 2501080100 | Airports : Aviation Gasoline Stage 2: Total | 0.004 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 |
| 49 | 2505030120 | Truck: Gasoline (Tank Trucks in Transit) | 0.014 | 0.000 | 0.000 | 0.012 | 0.000 | 0.000 |
| 50 | 2505040120 | Pipeline Gasoline | 0.005 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 |
| 51 | 2610000500 | Land clearing debris | 0.048 | 0.022 | 0.457 | 0.056 | 0.025 | 0.529 |
| 52 | 2610030000 | Household waste | 0.087 | 0.061 | 0.863 | 0.101 | 0.071 | 0.999 |
| 53 | 2620000000 | Landfills | 0.128 | 0.002 | 0.005 | 0.148 | 0.002 | 0.005 |
| 54 | 2630020000 | Publicly owned treatment works | 0.015 | 0.000 | 0.000 | 0.018 | 0.000 | 0.000 |
| 55 | 2810060100 | Crematories | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

**Locomotive Source**

Table D-3. Ozone season average daily locomotive emissions for Maricopa County in 2011 and 2017 (unit: metric tons/day)

| No. | SCC | Description | 2011 | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOC | NOx | CO | VOC | NOx | CO |
| 1 | 2285002006 | Locomotives Line Haul Class I | 0.171 | 3.139 | 0.576 | 0.126 | 2.314 | 0.425 |
| 2 | 2285002008 | Locomotives Passenger Trains | 0.001 | 0.021 | 0.003 | 0.001 | 0.016 | 0.002 |
| 3 | 2285002010 | Locomotives Yard Locomotives | 0.021 | 0.334 | 0.031 | 0.015 | 0.246 | 0.023 |

Table D-4. Ozone season average daily locomotive emissions for Pinal County in 2011 and 2017 (unit: metric tons/day)

| No. | SCC | Description | 2011 | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOC | NOx | CO | VOC | NOx | CO |
| 1 | 2285002006 | Locomotives Line Haul Class I | 0.159 | 3.090 | 0.457 | 0.117 | 2.277 | 0.337 |
| 2 | 2285002007 | Line Haul Locomotives: Class II / III Operations | 0.013 | 0.327 | 0.032 | 0.009 | 0.241 | 0.024 |

## Growth Factors

Table D-5. Growth factors for area sources in Maricopa County

| No. | SCC | Description | Growth Index | Growth Factor |
|---|---|---|---|---|
| 1 | 2102004001 | Industrial distillate oil: Boilers | Industrial Employment | 1.17 |
| 2 | 2102004002 | Industrial distillate oil: Engines | Industrial Employment | 1.17 |
| 3 | 2102006000 | Industrial natural gas | Industrial Employment | 1.17 |
| 4 | 2103004001 | Commercial/institutional distillate oil: Boilers | Population | 1.10 |
| 5 | 2103004002 | Commercial/institutional distillate oil: Engines | Population | 1.10 |
| 6 | 2103006000 | Commercial/institutional natural gas | Population | 1.10 |
| 7 | 2104006000 | Residential natural gas | Population | 1.10 |
| 8 | 2301000000 | Chemical manufacturing | Industrial Employment | 1.17 |
| 9 | 2302002100 | Commercial cooking - Conveyorized charbroiling | Population | 1.10 |
| 10 | 2302002200 | Commercial cooking - Underfired charbroiling | Population | 1.10 |
| 11 | 2302003000 | Commercial cooking - Deep fat frying | Population | 1.10 |
| 12 | 2302003100 | Commercial cooking - Flat griddle frying | Population | 1.10 |
| 13 | 2302003200 | Commercial cooking - Clamshell griddle frying | Population | 1.10 |
| 14 | 2302050000 | Bakeries | Population | 1.10 |
| 15 | 2304000000 | Secondary metal production | Industrial Employment | 1.17 |
| 16 | 2308000000 | Rubber/Plastic product mfg. | Population | 1.10 |
| 17 | 2312000000 | Machinery (electrical) | Industrial Employment | 1.17 |
| 18 | 2399000000 | Industrial processes, not elsewhere classified (NEC) | Industrial Employment | 1.17 |
| 19 | 2401001000 | Architectural coatings | Population | 1.10 |
| 20 | 2401005000 | Auto refinishing | Population | 1.10 |
| 21 | 2401008000 | Traffic markings | Roadway Lane Miles | 1.03 |
| 22 | 2401015000 | Factory finished wood | Population | 1.10 |
| 23 | 2401020000 | Wood furniture | Population | 1.10 |
| 24 | 2401075000 | Aircraft surface coatings | Airport Operations | 1.05 |
| 25 | 2401090000 | Miscellaneous surface coatings | Population | 1.10 |
| 26 | 2415000000 | Degreasing | Population | 1.10 |
| 27 | 2420000000 | Dry cleaning | Population | 1.10 |
| 28 | 2425000000 | Graphics arts | Population | 1.10 |
| 29 | 2440000000 | Miscellaneous Industrial Solvent use | Industrial Employment | 1.17 |
| 30 | 2460100000 | Personal care products | Population | 1.10 |
| 31 | 2460200000 | Household products | Population | 1.10 |
| 32 | 2460400000 | Automotive aftermarket products | Population | 1.10 |
| 33 | 2460500000 | Coatings and related products | Population | 1.10 |
| 34 | 2460600000 | Adhesives and sealants | Population | 1.10 |
| 35 | 2460800000 | FIFRA related products | Population | 1.10 |

| No. | SCC | Description | Growth Index | Growth Factor |
|---|---|---|---|---|
| 36 | 2460900000 | Miscellaneous products, NEC | Population | 1.10 |
| 37 | 2461021000 | Cutback Asphalt | Roadway Lane Miles | 1.03 |
| 38 | 2461022000 | Emulsified Asphalt | Roadway Lane Miles | 1.03 |
| 39 | 2461023000 | Roofing Asphalt | Population | 1.10 |
| 40 | 2461850000 | Agricultural Pesticides | Agricultural Acres | 0.98 |
| 41 | 2501011011 | Residential Permeation | Gas Can Rule | 0.06 |
| 42 | 2501011012 | Residential Evaporation | Gas Can Rule | 0.06 |
| 43 | 2501011013 | Residential Spill in Transport | Gas Can Rule | 0.98 |
| 44 | 2501011014 | Residential Vapor Displacement | Gas Can Rule | 1.04 |
| 45 | 2501011015 | Residential Spill at Pump | Gas Can Rule | 1.12 |
| 46 | 2501012011 | Commercial Permeation | Gas Can Rule | 0.06 |
| 47 | 2501012012 | Commercial Evaporation | Gas Can Rule | 0.06 |
| 48 | 2501012013 | Commercial Spill in Transport | Gas Can Rule | 0.98 |
| 49 | 2501012014 | Commercial Vapor Displacement | Gas Can Rule | 1.04 |
| 50 | 2501012015 | Commercial Spill at Pump | Gas Can Rule | 1.12 |
| 51 | 2501055120 | Bulk plants | Gasoline Consumption | 0.91 |
| 52 | 2501060051 | Gasoline Service Stations Stage 1: Submerged Filling | Gasoline Consumption | 0.91 |
| 53 | 2501060053 | Gasoline Service Stations Stage 1: Balanced Submerged Filling | Gasoline Consumption | 0.91 |
| 54 | 2501060201 | Gasoline Service Stations Underground Tank: Breathing and Emptying | Gasoline Consumption | 0.91 |
| 55 | 2501080050 | Airports : Aviation Gasoline Stage 1: Total | Gasoline Consumption | 0.91 |
| 56 | 2501080100 | Airports : Aviation Gasoline Stage 2: Total | Gasoline Consumption | 0.91 |
| 57 | 2505030120 | Truck: Gasoline (Tank Trucks in Transit) | Gasoline Consumption | 0.91 |
| 58 | 2505040120 | Pipeline Gasoline | Gasoline Consumption | 0.91 |
| 59 | 2510000000 | Volatile organic liquid (VOL) storage and transport | Population | 1.10 |
| 60 | 2601000000 | Onsite incineration | Population | 1.10 |
| 61 | 2610000500 | Land clearing debris | Population | 1.10 |
| 62 | 2620000000 | Landfills | Population | 1.10 |
| 63 | 2630020000 | Publicly owned treatment works | Population | 1.10 |
| 64 | 2650000000 | Other waste | Population | 1.10 |
| 65 | 2660000000 | Leaking underground storage tanks | Gasoline Consumption | 0.91 |
| 66 | 2801500000 | Agricultural Field burning (ditchbank & fence row) | Agricultural Acres | 0.98 |
| 67 | 2810030000 | Structure Fires | No Growth | 1.00 |
| 68 | 2810040000 | Aircraft engine testing | Airport Operations | 1.05 |
| 69 | 2810050000 | Vehicle Fires | No Growth | 1.00 |
| 70 | 2810060100 | Crematories | Population | 1.10 |
| 71 | 2830001000 | Accidental releases | No Growth | 1.00 |
| 72 | 2850000000 | Hospitals (Total: All Operations) | Population | 1.10 |

Table D-6. Growth factors for area sources in Pinal County

| No. | SCC | Description | Growth Index | Growth Factor |
|---|---|---|---|---|
| 1 | 2103008000 | Commercial/institutional wood | Industrial Employment | 0.96 |
| 2 | 2104004000 | Residential distillate oil | Population | 1.16 |
| 3 | 2104006000 | Residential natural gas | Population | 1.16 |
| 4 | 2104007000 | Residential liquefied petroleum gas (LPG) | Population | 1.16 |
| 5 | 2302002100 | Commercial cooking - Conveyorized charbroiling | Population | 1.16 |
| 6 | 2302002200 | Commercial cooking - Under-fired charbroiling | Population | 1.16 |
| 7 | 2302003000 | Commercial cooking - Deep fat frying | Population | 1.16 |
| 8 | 2302003100 | Commercial cooking - Flat griddle frying | Population | 1.16 |
| 9 | 2302003200 | Commercial cooking - Clamshell griddle frying | Population | 1.16 |
| 10 | 2401001000 | Architectural coatings | Population | 1.16 |
| 11 | 2401005000 | Auto refinishing | Population | 1.16 |
| 12 | 2401008000 | Traffic markings | Roadway Lane Miles | 1.02 |
| 13 | 2401015000 | Factory finished wood | Population | 1.16 |
| 14 | 2401020000 | Wood furniture | Population | 1.16 |
| 15 | 2401055000 | Machinery and Equipment coatings | Industrial Employment | 0.96 |
| 16 | 2401065000 | Electronic and Other Electrical coatings | Industrial Employment | 0.96 |
| 17 | 2401070000 | Motor Vehicles coatings | Population | 1.16 |
| 18 | 2401075000 | Aircraft surface coatings | Airport Operations | 1.49 |
| 19 | 2401090000 | Miscellaneous surface coatings | Population | 1.16 |
| 20 | 2401100000 | Surface Coating, Industrial Maintenance Coatings | Industrial Employment | 0.96 |
| 21 | 2401200000 | Surface Coating, Other Special Purpose Coatings | Industrial Employment | 0.96 |
| 22 | 2415000000 | Degreasing | Population | 1.16 |
| 23 | 2420000000 | Dry cleaning | Population | 1.16 |
| 24 | 2460100000 | Personal care products | Population | 1.16 |
| 25 | 2460200000 | Household products | Population | 1.16 |
| 26 | 2460400000 | Automotive aftermarket products | Population | 1.16 |
| 27 | 2460500000 | Coatings and related products | Population | 1.16 |
| 28 | 2460600000 | Adhesives and sealants | Population | 1.16 |
| 29 | 2460800000 | FIFRA related products | Population | 1.16 |
| 30 | 2460900000 | Miscellaneous products, NEC | Population | 1.16 |
| 31 | 2461021000 | Cutback Asphalt | Roadway Lane Miles | 1.02 |
| 32 | 2461022000 | Emulsified Asphalt | Roadway Lane Miles | 1.02 |
| 33 | 2461850000 | Agricultural Pesticides | Agricultural Acres | 1.00 |
| 34 | 2501011011 | Permeation | Gas Can Rule | 0.06 |
| 35 | 2501011012 | Evaporation (includes Diurnal losses) | Gas Can Rule | 0.06 |
| 36 | 2501011013 | Spillage During Transport | Gas Can Rule | 0.98 |
| 37 | 2501011014 | Refilling at the Pump - Vapor Displacement | Gas Can Rule | 1.04 |

| No. | SCC | Description | Growth Index | Growth Factor |
|---|---|---|---|---|
| 38 | 2501011015 | Refilling at the Pump - Spillage | Gas Can Rule | 1.12 |
| 39 | 2501012011 | Permeation | Gas Can Rule | 0.06 |
| 40 | 2501012012 | Evaporation (includes Diurnal losses) | Gas Can Rule | 0.06 |
| 41 | 2501012013 | Spillage During Transport | Gas Can Rule | 0.98 |
| 42 | 2501012014 | Refilling at the Pump - Vapor Displacement | Gas Can Rule | 1.04 |
| 43 | 2501012015 | Refilling at the Pump - Spillage | Gas Can Rule | 1.12 |
| 44 | 2501060051 | Gasoline Service Stations Stage 1: Submerged Filling | Gasoline Consumption | 0.91 |
| 45 | 2501060052 | Gasoline Service Stations Stage 1: Splash Filling | Gasoline Consumption | 0.91 |
| 46 | 2501060201 | Gasoline Service Stations Underground Tank: Breathing and Emptying | Gasoline Consumption | 0.91 |
| 47 | 2501080050 | Airports : Aviation Gasoline Stage 1: Total | Gasoline Consumption | 0.91 |
| 48 | 2501080100 | Airports : Aviation Gasoline Stage 2: Total | Gasoline Consumption | 0.91 |
| 49 | 2505030120 | Truck: Gasoline (Tank Trucks in Transit) | Gasoline Consumption | 0.91 |
| 50 | 2505040120 | Pipeline Gasoline | Gasoline Consumption | 0.91 |
| 51 | 2610000500 | Land clearing debris | Population | 1.16 |
| 52 | 2610030000 | Household waste | Population | 1.16 |
| 53 | 2620000000 | Landfills | Population | 1.16 |
| 54 | 2630020000 | Publicly owned treatment works | Population | 1.16 |
| 55 | 2810060100 | Crematories | Population | 1.16 |

**Wildfires**

Table D-7. Day-specific wildfire emissions in the Maricopa eight-hour ozone nonattainment area and the 4 km modeling domain (unit: metric tons/day)

| Date | Maricopa Eight-Hour Ozone NA | | | 4 km Modeling Domain | | |
|---|---|---|---|---|---|---|
| | VOC | NOx | CO | VOC | NOx | CO |
| 5/7/11 | 0.000 | 0.000 | 0.000 | 0.053 | 0.006 | 0.223 |
| 5/8/11 | 0.000 | 0.000 | 0.000 | 10.193 | 1.222 | 42.443 |
| 5/27/11 | 0.000 | 0.000 | 0.000 | 0.011 | 0.001 | 0.046 |
| 6/1/11 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.007 |
| 6/2/11 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.017 |
| 6/4/11 | 0.000 | 0.000 | 0.000 | 0.138 | 0.017 | 0.573 |
| 6/5/11 | 0.000 | 0.000 | 0.000 | 0.138 | 0.017 | 0.573 |
| 6/6/11 | 0.000 | 0.000 | 0.000 | 0.106 | 0.013 | 0.441 |
| 6/7/11 | 0.000 | 0.000 | 0.000 | 0.060 | 0.007 | 0.249 |
| 6/8/11 | 0.000 | 0.000 | 0.000 | 0.060 | 0.007 | 0.249 |
| 6/9/11 | 0.000 | 0.000 | 0.000 | 0.032 | 0.004 | 0.132 |
| 6/10/11 | 17.399 | 1.467 | 73.190 | 17.431 | 1.471 | 73.323 |
| 6/11/11 | 0.000 | 0.000 | 0.000 | 0.032 | 0.004 | 0.132 |
| 6/12/11 | 0.000 | 0.000 | 0.000 | 0.759 | 0.091 | 3.160 |
| 6/16/11 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.007 |
| 6/18/11 | 0.090 | 0.011 | 0.377 | 0.090 | 0.011 | 0.377 |
| 6/19/11 | 0.001 | 0.000 | 0.003 | 0.001 | 0.000 | 0.003 |
| 6/27/11 | 22.108 | 2.650 | 92.056 | 22.108 | 2.650 | 92.056 |
| 7/2/11 | 3.066 | 0.368 | 12.767 | 3.066 | 0.368 | 12.767 |
| 7/9/11 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.002 |
| 7/10/11 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.002 |
| 7/23/11 | 1.041 | 0.128 | 4.331 | 1.043 | 0.128 | 4.339 |
| 7/28/11 | 11.680 | 1.151 | 48.932 | 11.680 | 1.151 | 48.932 |
| 7/31/11 | 0.000 | 0.000 | 0.000 | 0.032 | 0.004 | 0.134 |
| 8/11/11 | 0.759 | 0.091 | 3.160 | 0.759 | 0.091 | 3.160 |
| 8/18/11 | 0.000 | 0.000 | 0.000 | 0.011 | 0.001 | 0.045 |
| 8/20/11 | 1.362 | 0.163 | 5.672 | 1.362 | 0.163 | 5.672 |
| 8/21/11 | 10.807 | 1.295 | 45.001 | 10.807 | 1.295 | 45.001 |
| 8/24/11 | 0.000 | 0.000 | 0.000 | 9.713 | 1.018 | 40.619 |
| 8/29/11 | 0.000 | 0.000 | 0.000 | 13.293 | 1.631 | 55.307 |
| 8/30/11 | 0.000 | 0.000 | 0.000 | 150.883 | 17.353 | 629.143 |
| 8/31/11 | 0.000 | 0.000 | 0.000 | 133.580 | 16.392 | 555.758 |
| 9/1/11 | 0.000 | 0.000 | 0.000 | 72.078 | 8.178 | 300.683 |
| 9/2/11 | 0.000 | 0.000 | 0.000 | 4.432 | 0.544 | 18.439 |
| 9/3/11 | 0.000 | 0.000 | 0.000 | 8.862 | 1.088 | 36.871 |
| 9/7/11 | 0.000 | 0.000 | 0.000 | 3.229 | 0.377 | 13.456 |
| 9/8/11 | 0.000 | 0.000 | 0.000 | 0.006 | 0.001 | 0.024 |

| Date | Maricopa Eight-Hour Ozone NA | | | 4 km Modeling Domain | | |
|---|---|---|---|---|---|---|
| | VOC | NOx | CO | VOC | NOx | CO |
| 9/9/11 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.003 |
| 9/15/11 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.011 |
| 9/16/11 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.011 |
| 9/17/11 | 0.759 | 0.091 | 3.160 | 4.643 | 0.420 | 19.498 |
| 9/18/11 | 0.005 | 0.001 | 0.020 | 0.005 | 0.001 | 0.020 |
| 9/19/11 | 0.005 | 0.001 | 0.020 | 0.005 | 0.001 | 0.020 |
| 9/20/11 | 0.005 | 0.001 | 0.020 | 0.005 | 0.001 | 0.020 |
| 9/22/11 | 0.000 | 0.000 | 0.000 | 3.888 | 0.329 | 16.356 |
| 9/23/11 | 0.000 | 0.000 | 0.000 | 3.888 | 0.329 | 16.356 |
| 9/27/11 | 0.000 | 0.000 | 0.000 | 9.228 | 0.636 | 38.989 |
| 9/29/11 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.003 |
| 9/30/11 | 1.278 | 0.157 | 5.316 | 1.278 | 0.157 | 5.316 |
| Total | 70.364 | 7.574 | 294.026 | 499.002 | 57.175 | 2,080.971 |

## Spatial Surrogate

Table D-8. Configuration of the spatial surrogate tool for Maricopa County

| No. | Surrogate | Surrogate Code | Data Shapefile | Weight Attribute | Function |
|---|---|---|---|---|---|
| 1 | Population | 100 | MAG_Maricopa_Pinal_2010Census_latlon | TOTAL_POP | None |
| 2 | Construction | 141 | MAG_Residential_construction_completed_2011 | SQFT | None |
| 3 | Total Road Miles | 240 | MAG_2011_Traffic_data_latlon | LANE_LENGTH | None |
| 4 | NTAD Total Railroad Density | 261 | ARIZONA_RAILROAD_latlon | NONE | None |
| 5 | Agriculture | 309 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 1) |
| 6 | Water | 350 | Maricopa_only_lakes_latlon | NONE | None |
| 7 | Open Land | 401 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 15,16,28) |
| 8 | Commercial Land | 500 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 3,9,21,22) |
| 9 | Aircraft Engine Manufacturers | 504 | Maricopa_2011_employers_latlon | EMPLOYEES | Filter Function (NAICS = 336412) |
| 10 | Industrial Land | 505 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 10) |
| 11 | Commercial plus Industrial | 510 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 3,9,10,21,22) |
| 12 | Commercial plus Institutional Land | 515 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 3,9,20,21,22) |
| 13 | Residential | 531 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 12,23,24,25) |
| 14 | Residential + Commercial + Industrial + Institutional + Government | 535 | MAG_landuse_2012_latlon | NONE | Filter Function (LONG_DISPL = 3,9,10,14,20,12,21,22, 23,24,25) |
| 15 | Auto refinish | 544 | Maricopa_2011_employers_latlon | EMPLOYEES | Filter Function (NAICS = 811121) |
| 16 | Hospital (COM6) | 560 | AZ_all_hospital_latlon | CAPACITY | None |
| 17 | Fuel Dispensing Facility | 601 | XY_Fueling_Facilities_MC_and_PC_latlon | NONE | None |
| 18 | Golf Courses | 850 | Maricopa_Pinal_golf_latlon | NONE | None |
| 19 | Wastewater Treatment Facilities | 870 | MC_wastewater_treatment_latlon | Capacity | None |
| 20 | Landfills | 871 | AZ_landfill_except_NW_latlon | NONE | None |
| 21 | Crematories | 872 | Maricopa_2011_employers_latlon | EMPLOYEES | Filter Function (NAICS = 812220) |

Table D-9. Configuration of the spatial surrogate tool for Pinal County

| No. | Surrogate | Surrogate Code | Data Shapefile | Weight Attribute | Filter/Weight Function |
|---|---|---|---|---|---|
| 1 | Population | 100 | MAG_Maricopa_Pinal_2010Census_latlon | TOTAL_POP | None |
| 2 | Construction | 141 | PINAL_Residential_completed_2011_ll | SQFT | None |
| 3 | Total Road Miles | 240 | MAG_2011_Traffic_data_latlon | LANE_LENGTH | None |
| 4 | NTAD Total Railroad Density | 261 | ARIZONA_RAILROAD_latlon | NONE | None |
| 5 | Agriculture | 309 | nlcd2011az_80s_250m_nos_v2_latlon | NONE | Filter Function (GRID_CODE = 81,82) |
| 6 | Water | 350 | Maricopa_only_lakes_latlon | NONE | None |
| 7 | Open Land | 401 | pophu_bg2010_AZ4 | NONE | Filter Function (AREA_CODE = 2,3,4) |
| 8 | Commercial Land | 500 | fema_bsf_2002bnd | NONE | Weight Function (COM1+COM2+COM3+COM4+COM5+COM6+COM7+COM8+COM9) |
| 9 | Industrial Land | 505 | fema_bsf_2002bnd | NONE | Weight Function (IND1+IND2+IND3+IND4+IND5+IND6) |
| 10 | Commercial plus Industrial | 510 | fema_bsf_2002bnd | NONE | Weight Function (COM1+COM2+COM3+COM4+COM5+COM6+COM7+COM8+COM9+IND1+IND2+IND3+IND4+IND5+IND6) |
| 11 | Commercial plus Institutional Land | 515 | fema_bsf_2002bnd | NONE | Weight Function (COM1+COM2+COM3+COM4+COM5+COM6+COM7+COM8+COM9+RES5+RES6+EDU1+EDU2+REL1) |
| 12 | Residential | 531 | Pinal_2011_all_residential_norural_ll | NONE | None |
| 13 | Residential + Commercial + Industrial + Institutional + Government | 535 | Pinal_Resd_Comme_Indus_Insti_Goven | NONE | None |
| 14 | Auto refinish | 544 | CAAG_2010_employment_ll | JOBS2010 | Filter Function (NAICS_= 811121) |
| 15 | Hospital (COM6) | 560 | AZ_all_hospital_latlon | CAPACITY | None |
| 16 | Fuel Dispensing Facility | 601 | XY_Fueling_Facilities_MC_and_PC_latlon | NONE | None |
| 17 | Golf Courses | 850 | Maricopa_Pinal_golf_latlon | NONE | None |
| 18 | Wastewater Treatment Facilities | 870 | CAAG_2010_employment_ll | JOBS2010 | Filter Function (NAICS = 221320) |
| 19 | Landfills | 871 | AZ_landfill_except_NW_latlon | NONE | None |
| 20 | Crematories | 872 | CAAG_2010_employment_ll | JOBS2010 | Filter Function (NAICS = 812220) |

Table D-10. Spatial surrogates used for area sources in the 4 km modeling domain

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 1 | 2102004001 | Stationary Source Fuel Combustion | Industrial | Distillate Oil | All Boiler Types | 505 | Industrial Land |
| 2 | 2102004002 | Stationary Source Fuel Combustion | Industrial | Distillate Oil | All IC Engine Types | 505 | Industrial Land |
| 3 | 2102006000 | Stationary Source Fuel Combustion | Industrial | Natural Gas | Total: Boilers and IC Engines | 505 | Industrial Land |
| 4 | 2103004001 | Stationary Source Fuel Combustion | Commercial/ Institutional | Distillate Oil | Boilers | 515 | Commercial plus Institutional Land |
| 5 | 2103004002 | Stationary Source Fuel Combustion | Commercial/ Institutional | Distillate Oil | IC Engines | 515 | Commercial plus Institutional Land |
| 6 | 2103006000 | Stationary Source Fuel Combustion | Commercial/ Institutional | Natural Gas | Total: Boilers and IC Engines | 515 | Commercial plus Institutional Land |
| 7 | 2104001000 | Stationary Source Fuel Combustion | Residential | Anthracite Coal | Total: All Combustor Types | 531 | Residential |
| 8 | 2104002000 | Stationary Source Fuel Combustion | Residential | Bituminous/Subbituminous Coal | Total: All Combustor Types | 531 | Residential |
| 9 | 2104004000 | Stationary Source Fuel Combustion | Residential | Distillate Oil | Total: All Combustor Types | 531 | Residential |
| 10 | 2104006000 | Stationary Source Fuel Combustion | Residential | Natural Gas | Total: All Combustor Types | 531 | Residential |
| 11 | 2104007000 | Stationary Source Fuel Combustion | Residential | Liquified Petroleum Gas (LPG) | Total: All Combustor Types | 531 | Residential |
| 12 | 2104008100 | Stationary Source Fuel Combustion | Residential | Wood | Fireplace: general | 531 | Residential |
| 13 | 2104008210 | Stationary Source Fuel Combustion | Residential | Wood | Woodstove: fireplace inserts; non-EPA certified | 531 | Residential |
| 14 | 2104008220 | Stationary Source Fuel Combustion | Residential | Wood | Woodstove: fireplace inserts; EPA certified; non-catalytic | 531 | Residential |
| 15 | 2104008230 | Stationary Source Fuel Combustion | Residential | Wood | Woodstove: fireplace inserts; EPA certified; catalytic | 531 | Residential |
| 16 | 2104008310 | Stationary Source Fuel Combustion | Residential | Wood | Woodstove: freestanding, non-EPA certified | 531 | Residential |
| 17 | 2104008320 | Stationary Source Fuel Combustion | Residential | Wood | Woodstove: freestanding, EPA certified, non-catalytic | 531 | Residential |
| 18 | 2104008330 | Stationary Source Fuel Combustion | Residential | Wood | Woodstove: freestanding, EPA certified, catalytic | 531 | Residential |
| 19 | 2104008400 | Stationary Source Fuel Combustion | Residential | Wood | Woodstove: pellet-fired, general (freestanding or FP insert) | 531 | Residential |
| 20 | 2104008610 | Stationary Source Fuel Combustion | Residential | Wood | Hydronic heater: outdoor | 531 | Residential |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 21 | 2104008700 | Stationary Source Fuel Combustion | Residential | Wood | Outdoor wood burning device, NEC (fire-pits, chimineas, etc) | 531 | Residential |
| 22 | 2104009000 | Stationary Source Fuel Combustion | Residential | Firelog | Total: All Combustor Types | 531 | Residential |
| 23 | 2104011000 | Stationary Source Fuel Combustion | Residential | Kerosene | Total: All Heater Types | 531 | Residential |
| 24 | 2301000000 | Industrial Processes | Chemical Manufacturing: SIC 28 | All Processes | Total | 505 | Industrial Land |
| 25 | 2302002100 | Industrial Processes | Food and Kindred Products: SIC 20 | Commercial Cooking - Charbroiling | Conveyorized Charbroiling | 500 | Commercial Land |
| 26 | 2302002200 | Industrial Processes | Food and Kindred Products: SIC 20 | Commercial Cooking - Charbroiling | Under-fired Charbroiling | 500 | Commercial Land |
| 27 | 2302003000 | Industrial Processes | Food and Kindred Products: SIC 20 | Commercial Cooking - Frying | Deep Fat Fying | 500 | Commercial Land |
| 28 | 2302003100 | Industrial Processes | Food and Kindred Products: SIC 20 | Commercial Cooking - Frying | Flat Griddle Frying | 500 | Commercial Land |
| 29 | 2302003200 | Industrial Processes | Food and Kindred Products: SIC 20 | Commercial Cooking - Frying | Clamshell Griddle Frying | 500 | Commercial Land |
| 30 | 2302050000 | Industrial Processes | Food and Kindred Products: SIC 20 | Bakery Products | Total | 500 | Commercial Land |
| 31 | 2304000000 | Industrial Processes | Secondary Metal Production: SIC 33 | All Processes | Total | 505 | Industrial Land |
| 32 | 2308000000 | Industrial Processes | Rubber/Plastics: SIC 30 | All Processes | Total | 505 | Industrial Land |
| 33 | 2312000000 | Industrial Processes | Machinery: SIC 35 | All Processes | Total | 505 | Industrial Land |
| 34 | 2399000000 | Industrial Processes | Industrial Processes: NEC | Industrial Processes: NEC | Total | 505 | Industrial Land |
| 35 | 2401001000 | Solvent Utilization | Surface Coating | Architectural Coatings | Total: All Solvent Types | 535 | Residential + Commercial + Industrial + Institutional + Government |
| 36 | 2401005000 | Solvent Utilization | Surface Coating | Auto Refinishing: SIC 7532 | Total: All Solvent Types | 544 | Auto refinish |
| 37 | 2401008000 | Solvent Utilization | Surface Coating | Traffic Markings | Total: All Solvent Types | 240 | Total Road Miles |
| 38 | 2401015000 | Solvent Utilization | Surface Coating | Factory Finished Wood: SIC 2426 thru 242 | Total: All Solvent Types | 505 | Industrial Land |
| 39 | 2401020000 | Solvent Utilization | Surface Coating | Wood Furniture: SIC 25 | Total: All Solvent Types | 505 | Industrial Land |
| 40 | 2401075000 | Solvent Utilization | Surface Coating | Aircraft: SIC 372 | Total: All Solvent Types | 505 | Industrial Land |
| 41 | 2401090000 | Solvent Utilization | Surface Coating | Miscellaneous Manufacturing | Total: All Solvent Types | 505 | Industrial Land |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 42 | 2415000000 | Solvent Utilization | Degreasing | All Processes/ All Industries | Total: All Solvent Types | 510 | Commercial plus Industrial |
| 43 | 2420000000 | Solvent Utilization | Dry Cleaning | All Processes | Total: All Solvent Types | 500 | Commercial Land |
| 44 | 2425000000 | Solvent Utilization | Graphic Arts | All Processes | Total: All Solvent Types | 500 | Commercial Land |
| 45 | 2440000000 | Solvent Utilization | Miscellaneous Industrial | All Processes | Total: All Solvent Types | 500 | Commercial Land |
| 46 | 2460100000 | Solvent Utilization | Miscellaneous Non-industrial: Consumer and Commercial | All Personal Care Products | Total: All Solvent Types | 531 | Residential |
| 47 | 2460200000 | Solvent Utilization | Miscellaneous Non-industrial: Consumer and Commercial | All Household Products | Total: All Solvent Types | 531 | Residential |
| 48 | 2460400000 | Solvent Utilization | Miscellaneous Non-industrial: Consumer and Commercial | All Automotive Aftermarket Products | Total: All Solvent Types | 531 | Residential |
| 49 | 2460500000 | Solvent Utilization | Miscellaneous Non-industrial: Consumer and Commercial | All Coatings and Related Products | Total: All Solvent Types | 531 | Residential |
| 50 | 2460600000 | Solvent Utilization | Miscellaneous Non-industrial: Consumer and Commercial | All Adhesives and Sealants | Total: All Solvent Types | 531 | Residential |
| 51 | 2460800000 | Solvent Utilization | Miscellaneous Non-industrial: Consumer and Commercial | All FIFRA Related Products | Total: All Solvent Types | 531 | Residential |
| 52 | 2460900000 | Solvent Utilization | Miscellaneous Non-industrial: Consumer and Commercial | Miscellaneous Products (Not Otherwise Covered) | Total: All Solvent Types | 531 | Residential |
| 53 | 2461021000 | Solvent Utilization | Miscellaneous Non-industrial: Commercial | Cutback Asphalt | Total: All Solvent Types | 240 | Total Road Miles |
| 54 | 2461022000 | Solvent Utilization | Miscellaneous Non-industrial: Commercial | Emulsified Asphalt | Total: All Solvent Types | 240 | Total Road Miles |
| 55 | 2461023000 | Solvent Utilization | Miscellaneous Non-industrial: Commercial | Asphalt Roofing | Total: All Solvent Types | 531 | Residential |
| 56 | 2461850000 | Solvent Utilization | Miscellaneous Non-industrial: Commercial | Pesticide Application: Agricultural | All Processes | 309 | Agriculture |
| 57 | 2501011011 | Storage and Transport | Petroleum and Petroleum Product Storage | Residential Portable Gas Cans | Permeation | 531 | Residential |
| 58 | 2501011012 | Storage and Transport | Petroleum and Petroleum Product Storage | Residential Portable Gas Cans | Evaporation (includes Diurnal losses) | 531 | Residential |
| 59 | 2501011013 | Storage and Transport | Petroleum and Petroleum Product Storage | Residential Portable Gas Cans | Spillage During Transport | 531 | Residential |
| 60 | 2501011014 | Storage and Transport | Petroleum and Petroleum Product Storage | Residential Portable Gas Cans | Refilling at the Pump - Vapor Displacement | 601 | Fuel Dispensing Facility |
| 61 | 2501011015 | Storage and Transport | Petroleum and Petroleum Product Storage | Residential Portable Gas Cans | Refilling at the Pump - Spillage | 601 | Fuel Dispensing Facility |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 62 | 2501012011 | Storage and Transport | Petroleum and Petroleum Product Storage | Commercial Portable Gas Cans | Permeation | 500 | Commercial Land |
| 63 | 2501012012 | Storage and Transport | Petroleum and Petroleum Product Storage | Commercial Portable Gas Cans | Evaporation (includes Diurnal losses) | 500 | Commercial Land |
| 64 | 2501012013 | Storage and Transport | Petroleum and Petroleum Product Storage | Commercial Portable Gas Cans | Spillage During Transport | 500 | Commercial Land |
| 65 | 2501012014 | Storage and Transport | Petroleum and Petroleum Product Storage | Commercial Portable Gas Cans | Refilling at the Pump - Vapor Displacement | 601 | Fuel Dispensing Facility |
| 66 | 2501012015 | Storage and Transport | Petroleum and Petroleum Product Storage | Commercial Portable Gas Cans | Refilling at the Pump - Spillage | 601 | Fuel Dispensing Facility |
| 67 | 2501050120 | Storage and Transport | Petroleum and Petroleum Product Storage | Bulk Terminals: All Evaporative Losses | Gasoline | 601 | Fuel Dispensing Facility |
| 68 | 2501055120 | Storage and Transport | Petroleum and Petroleum Product Storage | Bulk Plants: All Evaporative Losses | Gasoline | 601 | Fuel Dispensing Facility |
| 69 | 2501060051 | Storage and Transport | Petroleum and Petroleum Product Storage | Gasoline Service Stations | Stage 1: Submerged Filling | 601 | Fuel Dispensing Facility |
| 70 | 2501060053 | Storage and Transport | Petroleum and Petroleum Product Storage | Gasoline Service Stations | Stage 1: Balanced Submerged Filling | 601 | Fuel Dispensing Facility |
| 71 | 2501060100 | Storage and Transport | Petroleum and Petroleum Product Storage | Gasoline Service Stations | Stage 2: Total | 601 | Fuel Dispensing Facility |
| 72 | 2501060201 | Storage and Transport | Petroleum and Petroleum Product Storage | Gasoline Service Stations | Underground Tank: Breathing and Emptying | 601 | Fuel Dispensing Facility |
| 73 | 2501080050 | Storage and Transport | Petroleum and Petroleum Product Storage | Airports : Aviation Gasoline | Stage 1: Total | 710 | Airport Points |
| 74 | 2501080100 | Storage and Transport | Petroleum and Petroleum Product Storage | Airports : Aviation Gasoline | Stage 2: Total | 710 | Airport Points |
| 75 | 2505030120 | Storage and Transport | Petroleum and Petroleum Product Transport | Truck | Gasoline | 240 | Total Road Miles |
| 76 | 2505040120 | Storage and Transport | Petroleum and Petroleum Product Transport | Pipeline | Gasoline | 240 | Total Road Miles |
| 77 | 2510000000 | Storage and Transport | Organic Chemical Storage | All Storage Types: Breathing Loss | Total: All Products | 505 | Industrial Land |
| 78 | 2601000000 | Waste Disposal, Treatment, and Recovery | On-site Incineration | All Categories | Total | 505 | Industrial Land |
| 79 | 2610000100 | Waste Disposal, Treatment, and Recovery | Open Burning | All Categories | Yard Waste - Leaf Species Unspecified | 531 | Residential |
| 80 | 2610000300 | Waste Disposal, Treatment, and Recovery | Open Burning | All Categories | Yard Waste - Weed Species Unspecified (incl Grass) | 531 | Residential |
| 81 | 2610000400 | Waste Disposal, Treatment, and Recovery | Open Burning | All Categories | Yard Waste - Brush Species Unspecified | 531 | Residential |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 82 | 2610000500 | Waste Disposal, Treatment, and Recovery | Open Burning | All Categories | Land Clearing Debris (use 28-10-005-000 for Logging Debris Burning) | 531 | Residential |
| 83 | 2620000000 | Waste Disposal, Treatment, and Recovery | Landfills | All Categories | Total | 871 | Landfills |
| 84 | 2630020000 | Waste Disposal, Treatment, and Recovery | Wastewater Treatment | Public Owned | Total Processed | 870 | Wastewater Treatment Facilities |
| 85 | 2650000000 | Waste Disposal, Treatment, and Recovery | Scrap and Waste Materials | Scrap and Waste Materials | Total: All Processes | 505 | Industrial Land |
| 86 | 2660000000 | Waste Disposal, Treatment, and Recovery | Leaking Underground Storage Tanks | Leaking Underground Storage Tanks | Total: All Storage Types | 505 | Industrial Land |
| 87 | 2801500000 | Miscellaneous Area Sources | Agriculture Production - Crops | Agricultural Field Burning - whole field set on fire | Unspecified | 309 | Agriculture |
| 88 | 2810030000 | Miscellaneous Area Sources | Other Combustion | Structure Fires | Unspecified | 535 | Residential + Commercial + Industrial + Institutional + Government |
| 89 | 2810040000 | Miscellaneous Area Sources | Other Combustion | Aircraft/Rocket Engine Firing and Testing | Total | 504 | Aircraft Engine Manufacturers |
| 90 | 2810050000 | Miscellaneous Area Sources | Other Combustion | Motor Vehicle Fires | Unspecified | 240 | Total Road Miles |
| 91 | 2810060100 | Miscellaneous Area Sources | Other Combustion | Cremation | Humans | 872 | Crematories |
| 92 | 2830001000 | Miscellaneous Area Sources | Catastrophic/Accidental Releases | Industrial Accidents | Total | 505 | Industrial Land |
| 93 | 2850000000 | Miscellaneous Area Sources | Health Services | Hospitals | Total: All Operations | 560 | Hospital (COM6) |
| 94 | 2260001010 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Recreational Equipment | Motorcycles: Off-road | 401 | Open Land |
| 95 | 2260001020 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Recreational Equipment | Snowmobiles | 401 | Open Land |
| 96 | 2260001030 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Recreational Equipment | All Terrain Vehicles | 401 | Open Land |
| 97 | 2260001060 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Recreational Equipment | Specialty Vehicles/Carts | 401 | Open Land |
| 98 | 2260002006 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Construction and Mining Equipment | Tampers/ Rammers | 141 | Construction |
| 99 | 2260002009 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Construction and Mining Equipment | Plate Compactors | 141 | Construction |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 100 | 2260002021 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Construction and Mining Equipment | Paving Equipment | 141 | Construction |
| 101 | 2260002027 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Construction and Mining Equipment | Signal Boards/ Light Plants | 141 | Construction |
| 102 | 2260002039 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Construction and Mining Equipment | Concrete/ Industrial Saws | 141 | Construction |
| 103 | 2260002054 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Construction and Mining Equipment | Crushing/ Processing Equipment | 141 | Construction |
| 104 | 2260003030 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Industrial Equipment | Sweepers/ Scrubbers | 505 | Industrial Land |
| 105 | 2260003040 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Industrial Equipment | Other General Industrial Equipment | 505 | Industrial Land |
| 106 | 2260004015 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Rotary Tillers < 6 HP (Residential) | 531 | Residential |
| 107 | 2260004016 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Rotary Tillers < 6 HP (Commercial) | 500 | Commercial Land |
| 108 | 2260004020 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Chain Saws < 6 HP (Residential) | 531 | Residential |
| 109 | 2260004021 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Chain Saws < 6 HP (Commercial) | 500 | Commercial Land |
| 110 | 2260004025 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Trimmers/Edgers/ Brush Cutters (Residential) | 531 | Residential |
| 111 | 2260004026 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Trimmers/Edgers/ Brush Cutters (Commercial) | 500 | Commercial Land |
| 112 | 2260004030 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Leafblowers/ Vacuums (Residential) | 531 | Residential |
| 113 | 2260004031 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Leafblowers/ Vacuums (Commercial) | 500 | Commercial Land |
| 114 | 2260004035 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Snowblowers (Residential) | 531 | Residential |
| 115 | 2260004036 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Snowblowers (Commercial) | 500 | Commercial Land |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 116 | 2260004071 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Lawn and Garden Equipment | Turf Equipment (Commercial) | 500 | Commercial Land |
| 117 | 2260005035 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Agricultural Equipment | Sprayers | 309 | Agriculture |
| 118 | 2260006005 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Commercial Equipment | Generator Sets | 500 | Commercial Land |
| 119 | 2260006010 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Commercial Equipment | Pumps | 500 | Commercial Land |
| 120 | 2260006015 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Commercial Equipment | Air Compressors | 500 | Commercial Land |
| 121 | 2260006035 | Mobile Sources | Off-highway Vehicle Gasoline, 2-Stroke | Commercial Equipment | Hydro-power Units | 500 | Commercial Land |
| 122 | 2265001010 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Recreational Equipment | Motorcycles: Off-road | 401 | Open Land |
| 123 | 2265001030 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Recreational Equipment | All Terrain Vehicles | 401 | Open Land |
| 124 | 2265001050 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Recreational Equipment | Golf Carts | 850 | Golf Courses |
| 125 | 2265001060 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Recreational Equipment | Specialty Vehicles/Carts | 401 | Open Land |
| 126 | 2265002003 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Pavers | 141 | Construction |
| 127 | 2265002006 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Tampers/ Rammers | 141 | Construction |
| 128 | 2265002009 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Plate Compactors | 141 | Construction |
| 129 | 2265002015 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Rollers | 141 | Construction |
| 130 | 2265002021 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Paving Equipment | 141 | Construction |
| 131 | 2265002024 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Surfacing Equipment | 141 | Construction |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 132 | 2265002027 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Signal Boards/ Light Plants | 141 | Construction |
| 133 | 2265002030 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Trenchers | 141 | Construction |
| 134 | 2265002033 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Bore/Drill Rigs | 141 | Construction |
| 135 | 2265002039 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Concrete/Industrial Saws | 141 | Construction |
| 136 | 2265002042 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Cement and Mortar Mixers | 141 | Construction |
| 137 | 2265002045 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Cranes | 141 | Construction |
| 138 | 2265002054 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Crushing/ Processing Equipment | 141 | Construction |
| 139 | 2265002057 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Rough Terrain Forklifts | 141 | Construction |
| 140 | 2265002060 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Rubber Tire Loaders | 141 | Construction |
| 141 | 2265002066 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Tractors/Loaders/ Backhoes | 141 | Construction |
| 142 | 2265002072 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Skid Steer Loaders | 141 | Construction |
| 143 | 2265002078 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Dumpers/ Tenders | 141 | Construction |
| 144 | 2265002081 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Construction and Mining Equipment | Other Construction Equipment | 141 | Construction |
| 145 | 2265003010 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Industrial Equipment | Aerial Lifts | 505 | Industrial Land |
| 146 | 2265003020 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Industrial Equipment | Forklifts | 505 | Industrial Land |
| 147 | 2265003030 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Industrial Equipment | Sweepers/ Scrubbers | 505 | Industrial Land |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 148 | 2265003040 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Industrial Equipment | Other General Industrial Equipment | 505 | Industrial Land |
| 149 | 2265003050 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Industrial Equipment | Other Material Handling Equipment | 505 | Industrial Land |
| 150 | 2265003060 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Industrial Equipment | AC\Refrigeration | 505 | Industrial Land |
| 151 | 2265003070 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Industrial Equipment | Terminal Tractors | 505 | Industrial Land |
| 152 | 2265004010 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Lawn Mowers (Residential) | 531 | Residential |
| 153 | 2265004011 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Lawn Mowers (Commercial) | 500 | Commercial Land |
| 154 | 2265004015 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Rotary Tillers < 6 HP (Residential) | 531 | Residential |
| 155 | 2265004016 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Rotary Tillers < 6 HP (Commercial) | 500 | Commercial Land |
| 156 | 2265004025 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Trimmers/Edgers/ Brush Cutters (Residential) | 531 | Residential |
| 157 | 2265004026 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Trimmers/Edgers/ Brush Cutters (Commercial) | 500 | Commercial Land |
| 158 | 2265004030 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Leafblowers/ Vacuums (Residential) | 531 | Residential |
| 159 | 2265004031 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Leafblowers/ Vacuums (Commercial) | 500 | Commercial Land |
| 160 | 2265004035 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Snowblowers (Residential) | 531 | Residential |
| 161 | 2265004036 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Snowblowers (Commercial) | 500 | Commercial Land |
| 162 | 2265004040 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Rear Engine Riding Mowers (Residential) | 531 | Residential |
| 163 | 2265004041 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Rear Engine Riding Mowers (Commercial) | 500 | Commercial Land |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 164 | 2265004046 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Front Mowers (Commercial) | 500 | Commercial Land |
| 165 | 2265004051 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Shredders < 6 HP (Commercial) | 531 | Residential |
| 166 | 2265004055 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Lawn and Garden Tractors (Residential) | 500 | Commercial Land |
| 167 | 2265004056 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Lawn and Garden Tractors (Commercial) | 500 | Commercial Land |
| 168 | 2265004066 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Chippers/ Stump Grinders (Commercial) | 500 | Commercial Land |
| 169 | 2265004071 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Turf Equipment (Commercial) | 500 | Commercial Land |
| 170 | 2265004075 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Other Lawn and Garden Equipment (Residential) | 531 | Residential |
| 171 | 2265004076 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Lawn and Garden Equipment | Other Lawn and Garden Equipment (Commercial) | 500 | Commercial Land |
| 172 | 2265005010 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | 2-Wheel Tractors | 309 | Agriculture |
| 173 | 2265005015 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Agricultural Tractors | 309 | Agriculture |
| 174 | 2265005020 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Combines | 309 | Agriculture |
| 175 | 2265005025 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Balers | 309 | Agriculture |
| 176 | 2265005030 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Agricultural Mowers | 309 | Agriculture |
| 177 | 2265005035 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Sprayers | 309 | Agriculture |
| 178 | 2265005040 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Tillers : 6 HP | 309 | Agriculture |
| 179 | 2265005045 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Swathers | 309 | Agriculture |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 180 | 2265005055 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Other Agricultural Equipment | 309 | Agriculture |
| 181 | 2265005060 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Agricultural Equipment | Irrigation Sets | 309 | Agriculture |
| 182 | 2265006005 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Commercial Equipment | Generator Sets | 500 | Commercial Land |
| 183 | 2265006010 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Commercial Equipment | Pumps | 500 | Commercial Land |
| 184 | 2265006015 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Commercial Equipment | Air Compressors | 500 | Commercial Land |
| 185 | 2265006025 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Commercial Equipment | Welders | 500 | Commercial Land |
| 186 | 2265006030 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Commercial Equipment | Pressure Washers | 500 | Commercial Land |
| 187 | 2265006035 | Mobile Sources | Off-highway Vehicle Gasoline, 4-Stroke | Commercial Equipment | Hydro-power Units | 500 | Commercial Land |
| 188 | 2267001060 | Mobile Sources | LPG | Recreational Equipment | Specialty Vehicles/Carts | 401 | Open Land |
| 189 | 2267002003 | Mobile Sources | LPG | Construction and Mining Equipment | Pavers | 141 | Construction |
| 190 | 2267002015 | Mobile Sources | LPG | Construction and Mining Equipment | Rollers | 141 | Construction |
| 191 | 2267002021 | Mobile Sources | LPG | Construction and Mining Equipment | Paving Equipment | 141 | Construction |
| 192 | 2267002024 | Mobile Sources | LPG | Construction and Mining Equipment | Surfacing Equipment | 141 | Construction |
| 193 | 2267002030 | Mobile Sources | LPG | Construction and Mining Equipment | Trenchers | 141 | Construction |
| 194 | 2267002033 | Mobile Sources | LPG | Construction and Mining Equipment | Bore/Drill Rigs | 141 | Construction |
| 195 | 2267002039 | Mobile Sources | LPG | Construction and Mining Equipment | Concrete/ Industrial Saws | 141 | Construction |
| 196 | 2267002045 | Mobile Sources | LPG | Construction and Mining Equipment | Cranes | 141 | Construction |
| 197 | 2267002054 | Mobile Sources | LPG | Construction and Mining Equipment | Crushing/ Processing Equipment | 141 | Construction |
| 198 | 2267002057 | Mobile Sources | LPG | Construction and Mining Equipment | Rough Terrain Forklifts | 141 | Construction |
| 199 | 2267002060 | Mobile Sources | LPG | Construction and Mining Equipment | Rubber Tire Loaders | 141 | Construction |
| 200 | 2267002066 | Mobile Sources | LPG | Construction and Mining Equipment | Tractors/Loaders/ Backhoes | 141 | Construction |
| 201 | 2267002072 | Mobile Sources | LPG | Construction and Mining Equipment | Skid Steer Loaders | 141 | Construction |
| 202 | 2267002081 | Mobile Sources | LPG | Construction and Mining Equipment | Other Construction Equipment | 141 | Construction |
| 203 | 2267003010 | Mobile Sources | LPG | Industrial Equipment | Aerial Lifts | 505 | Industrial Land |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 204 | 2267003020 | Mobile Sources | LPG | Industrial Equipment | Forklifts | 505 | Industrial Land |
| 205 | 2267003030 | Mobile Sources | LPG | Industrial Equipment | Sweepers/ Scrubbers | 505 | Industrial Land |
| 206 | 2267003040 | Mobile Sources | LPG | Industrial Equipment | Other General Industrial Equipment | 505 | Industrial Land |
| 207 | 2267003050 | Mobile Sources | LPG | Industrial Equipment | Other Material Handling Equipment | 505 | Industrial Land |
| 208 | 2267003070 | Mobile Sources | LPG | Industrial Equipment | Terminal Tractors | 505 | Industrial Land |
| 209 | 2267004066 | Mobile Sources | LPG | Lawn and Garden Equipment | Chippers/ Stump Grinders (Commercial) | 500 | Commercial Land |
| 210 | 2267005055 | Mobile Sources | LPG | Agricultural Equipment | Other Agricultural Equipment | 309 | Agriculture |
| 211 | 2267005060 | Mobile Sources | LPG | Agricultural Equipment | Irrigation Sets | 309 | Agriculture |
| 212 | 2267006005 | Mobile Sources | LPG | Commercial Equipment | Generator Sets | 500 | Commercial Land |
| 213 | 2267006010 | Mobile Sources | LPG | Commercial Equipment | Pumps | 500 | Commercial Land |
| 214 | 2267006015 | Mobile Sources | LPG | Commercial Equipment | Air Compressors | 500 | Commercial Land |
| 215 | 2267006025 | Mobile Sources | LPG | Commercial Equipment | Welders | 500 | Commercial Land |
| 216 | 2267006030 | Mobile Sources | LPG | Commercial Equipment | Pressure Washers | 500 | Commercial Land |
| 217 | 2267006035 | Mobile Sources | LPG | Commercial Equipment | Hydro-power Units | 500 | Commercial Land |
| 218 | 2268002081 | Mobile Sources | CNG | Construction and Mining Equipment | Other Construction Equipment | 141 | Construction |
| 219 | 2268003020 | Mobile Sources | CNG | Industrial Equipment | Forklifts | 505 | Industrial Land |
| 220 | 2268003030 | Mobile Sources | CNG | Industrial Equipment | Sweepers/ Scrubbers | 505 | Industrial Land |
| 221 | 2268003040 | Mobile Sources | CNG | Industrial Equipment | Other General Industrial Equipment | 505 | Industrial Land |
| 222 | 2268003060 | Mobile Sources | CNG | Industrial Equipment | AC\Refrigeration | 505 | Industrial Land |
| 223 | 2268003070 | Mobile Sources | CNG | Industrial Equipment | Terminal Tractors | 505 | Industrial Land |
| 224 | 2268005055 | Mobile Sources | CNG | Agricultural Equipment | Other Agricultural Equipment | 309 | Agriculture |
| 225 | 2268005060 | Mobile Sources | CNG | Agricultural Equipment | Irrigation Sets | 309 | Agriculture |
| 226 | 2268006005 | Mobile Sources | CNG | Commercial Equipment | Generator Sets | 500 | Commercial Land |
| 227 | 2268006010 | Mobile Sources | CNG | Commercial Equipment | Pumps | 500 | Commercial Land |
| 228 | 2268006015 | Mobile Sources | CNG | Commercial Equipment | Air Compressors | 500 | Commercial Land |
| 229 | 2268006020 | Mobile Sources | CNG | Commercial Equipment | Gas Compressors | 500 | Commercial Land |
| 230 | 2268006035 | Mobile Sources | CNG | Commercial Equipment | Hydro-power Units | 500 | Commercial Land |
| 231 | 2270001060 | Mobile Sources | Off-highway Vehicle Diesel | Recreational Equipment | Specialty Vehicles/Carts | 500 | Commercial Land |
| 232 | 2270002003 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Pavers | 141 | Construction |
| 233 | 2270002006 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Tampers/ Rammers | 141 | Construction |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 234 | 2270002009 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Plate Compactors | 141 | Construction |
| 235 | 2270002015 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Rollers | 141 | Construction |
| 236 | 2270002018 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Scrapers | 141 | Construction |
| 237 | 2270002021 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Paving Equipment | 141 | Construction |
| 238 | 2270002024 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Surfacing Equipment | 141 | Construction |
| 239 | 2270002027 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Signal Boards/Light Plants | 141 | Construction |
| 240 | 2270002030 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Trenchers | 141 | Construction |
| 241 | 2270002033 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Bore/Drill Rigs | 141 | Construction |
| 242 | 2270002036 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Excavators | 141 | Construction |
| 243 | 2270002039 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Concrete/ Industrial Saws | 141 | Construction |
| 244 | 2270002042 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Cement and Mortar Mixers | 141 | Construction |
| 245 | 2270002045 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Cranes | 141 | Construction |
| 246 | 2270002048 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Graders | 141 | Construction |
| 247 | 2270002051 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Off-highway Trucks | 141 | Construction |
| 248 | 2270002054 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Crushing/ Processing Equipment | 141 | Construction |
| 249 | 2270002057 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Rough Terrain Forklifts | 141 | Construction |
| 250 | 2270002060 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Rubber Tire Loaders | 141 | Construction |
| 251 | 2270002066 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Tractors/Loaders/ Backhoes | 141 | Construction |
| 252 | 2270002069 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Crawler Tractor/ Dozers | 141 | Construction |
| 253 | 2270002072 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Skid Steer Loaders | 141 | Construction |
| 254 | 2270002075 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Off-highway Tractors | 141 | Construction |
| 255 | 2270002078 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Dumpers/ Tenders | 141 | Construction |
| 256 | 2270002081 | Mobile Sources | Off-highway Vehicle Diesel | Construction and Mining Equipment | Other Construction Equipment | 141 | Construction |
| 257 | 2270003010 | Mobile Sources | Off-highway Vehicle Diesel | Industrial Equipment | Aerial Lifts | 505 | Industrial Land |
| 258 | 2270003020 | Mobile Sources | Off-highway Vehicle Diesel | Industrial Equipment | Forklifts | 505 | Industrial Land |
| 259 | 2270003030 | Mobile Sources | Off-highway Vehicle Diesel | Industrial Equipment | Sweepers/ Scrubbers | 505 | Industrial Land |
| 260 | 2270003040 | Mobile Sources | Off-highway Vehicle Diesel | Industrial Equipment | Other General Industrial Equipment | 505 | Industrial Land |
| 261 | 2270003050 | Mobile Sources | Off-highway Vehicle Diesel | Industrial Equipment | Other Material Handling Equipment | 505 | Industrial Land |
| 262 | 2270003060 | Mobile Sources | Off-highway Vehicle Diesel | Industrial Equipment | AC\Refrigeration | 505 | Industrial Land |
| 263 | 2270003070 | Mobile Sources | Off-highway Vehicle Diesel | Industrial Equipment | Terminal Tractors | 505 | Industrial Land |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 264 | 2270004031 | Mobile Sources | Off-highway Vehicle Diesel | Lawn and Garden Equipment | Leafblowers/ Vacuums (Commercial) | 500 | Commercial Land |
| 265 | 2270004036 | Mobile Sources | Off-highway Vehicle Diesel | Lawn and Garden Equipment | Snowblowers (Commercial) | 500 | Commercial Land |
| 266 | 2270004046 | Mobile Sources | Off-highway Vehicle Diesel | Lawn and Garden Equipment | Front Mowers (Commercial) | 500 | Commercial Land |
| 267 | 2270004056 | Mobile Sources | Off-highway Vehicle Diesel | Lawn and Garden Equipment | Lawn and Garden Tractors (Commercial) | 500 | Commercial Land |
| 268 | 2270004066 | Mobile Sources | Off-highway Vehicle Diesel | Lawn and Garden Equipment | Chippers/ Stump Grinders (Commercial) | 500 | Commercial Land |
| 269 | 2270004071 | Mobile Sources | Off-highway Vehicle Diesel | Lawn and Garden Equipment | Turf Equipment (Commercial) | 500 | Commercial Land |
| 270 | 2270004076 | Mobile Sources | Off-highway Vehicle Diesel | Lawn and Garden Equipment | Other Lawn and Garden Equipment (Commercial) | 500 | Commercial Land |
| 271 | 2270005010 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | 2-Wheel Tractors | 309 | Agriculture |
| 272 | 2270005015 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Agricultural Tractors | 309 | Agriculture |
| 273 | 2270005020 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Combines | 309 | Agriculture |
| 274 | 2270005025 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Balers | 309 | Agriculture |
| 275 | 2270005030 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Agricultural Mowers | 309 | Agriculture |
| 276 | 2270005035 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Sprayers | 309 | Agriculture |
| 277 | 2270005040 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Tillers: 6 HP | 309 | Agriculture |
| 278 | 2270005045 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Swathers | 309 | Agriculture |
| 279 | 2270005055 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Other Agricultural Equipment | 309 | Agriculture |
| 280 | 2270005060 | Mobile Sources | Off-highway Vehicle Diesel | Agricultural Equipment | Irrigation Sets | 309 | Agriculture |
| 281 | 2270006005 | Mobile Sources | Off-highway Vehicle Diesel | Commercial Equipment | Generator Sets | 500 | Commercial Land |
| 282 | 2270006010 | Mobile Sources | Off-highway Vehicle Diesel | Commercial Equipment | Pumps | 500 | Commercial Land |
| 283 | 2270006015 | Mobile Sources | Off-highway Vehicle Diesel | Commercial Equipment | Air Compressors | 500 | Commercial Land |
| 284 | 2270006020 | Mobile Sources | Off-highway Vehicle Diesel | Commercial Equipment | Gas Compressors | 500 | Commercial Land |
| 285 | 2270006025 | Mobile Sources | Off-highway Vehicle Diesel | Commercial Equipment | Welders | 500 | Commercial Land |
| 286 | 2270006030 | Mobile Sources | Off-highway Vehicle Diesel | Commercial Equipment | Pressure Washers | 500 | Commercial Land |
| 287 | 2270006035 | Mobile Sources | Off-highway Vehicle Diesel | Commercial Equipment | Hydro-power Units | 500 | Commercial Land |
| 288 | 2282005010 | Mobile Sources | Pleasure Craft | Gasoline 2-Stroke | Outboard | 350 | Water |
| 289 | 2282005015 | Mobile Sources | Pleasure Craft | Gasoline 2-Stroke | Personal Water Craft | 350 | Water |
| 290 | 2282010005 | Mobile Sources | Pleasure Craft | Gasoline 4-Stroke | Inboard/Sterndrive | 350 | Water |
| 291 | 2282020005 | Mobile Sources | Pleasure Craft | Diesel | Inboard/Sterndrive | 350 | Water |
| 292 | 2282020010 | Mobile Sources | Pleasure Craft | Diesel | Outboard | 350 | Water |
| 293 | 2285002006 | Mobile Sources | Railroad Equipment | Diesel | Line Haul Locomotives: Class I Operations | 261 | NTAD Total Railroad Density |

| NO. | SCC | SCC Level One | SCC Level Two | SCC Level Three | SCC Level Four | Spatial Surrogate | Surrogate Name |
|---|---|---|---|---|---|---|---|
| 294 | 2285002008 | Mobile Sources | Railroad Equipment | Diesel | Line Haul Locomotives: Passenger Trains (Amtrak) | 261 | NTAD Total Railroad Density |
| 295 | 2285002010 | Mobile Sources | Railroad Equipment | Diesel | Yard Locomotives | 261 | NTAD Total Railroad Density |
| 296 | 2285002015 | Mobile Sources | Railroad Equipment | Diesel | Railway Maintenance | 261 | NTAD Total Railroad Density |
| 297 | 2285004015 | Mobile Sources | Railroad Equipment | Gasoline 4-Stroke | Railway Maintenance | 261 | NTAD Total Railroad Density |
| 298 | 2285006015 | Mobile Sources | Railroad Equipment | LPG | Railway Maintenance | 261 | NTAD Total Railroad Density |

# APPENDIX E

2011 AND 2017 DAILY EMISSIONS
FOR THE MODELING EPISODE
(SMOKE GRIDDED EMISSIONS)

Table E-1. Daily point source emissions extracted from the SMOKE gridded emissions in 2011 and 2017 (metric tons/day)

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 5/1 | 3.08 | 2.87 | 3.57 | 3.53 | 5.23 | 4.49 | 2.24 | 2.64 | 2.90 | 2.72 | 5.02 | 3.94 |
| 5/2 | 3.12 | 3.56 | 3.78 | 3.63 | 6.61 | 4.91 | 2.28 | 3.33 | 3.14 | 2.81 | 6.40 | 4.38 |
| 5/3 | 3.13 | 3.81 | 4.00 | 3.66 | 7.10 | 5.17 | 2.29 | 3.56 | 3.22 | 2.84 | 6.86 | 4.53 |
| 5/4 | 3.14 | 3.96 | 4.04 | 3.68 | 7.40 | 5.26 | 2.30 | 3.71 | 3.27 | 2.87 | 7.15 | 4.63 |
| 5/5 | 3.13 | 3.83 | 4.00 | 3.67 | 7.14 | 5.18 | 2.29 | 3.58 | 3.23 | 2.85 | 6.90 | 4.55 |
| 5/6 | 3.11 | 3.43 | 3.74 | 3.61 | 6.36 | 4.83 | 2.27 | 3.21 | 3.10 | 2.80 | 6.15 | 4.30 |
| 5/7 | 3.10 | 3.20 | 3.65 | 3.58 | 5.90 | 4.68 | 2.26 | 2.97 | 3.02 | 2.76 | 5.69 | 4.16 |
| 5/8 | 3.08 | 2.87 | 3.57 | 3.53 | 5.23 | 4.49 | 2.24 | 2.64 | 2.90 | 2.72 | 5.02 | 3.94 |
| 5/9 | 3.12 | 3.56 | 3.78 | 3.63 | 6.61 | 4.91 | 2.28 | 3.33 | 3.14 | 2.81 | 6.40 | 4.38 |
| 5/10 | 3.13 | 3.81 | 4.00 | 3.66 | 7.10 | 5.17 | 2.29 | 3.56 | 3.22 | 2.84 | 6.86 | 4.53 |
| 5/11 | 3.14 | 3.96 | 4.04 | 3.68 | 7.40 | 5.26 | 2.30 | 3.71 | 3.27 | 2.87 | 7.15 | 4.63 |
| 5/12 | 3.13 | 3.83 | 4.00 | 3.67 | 7.14 | 5.18 | 2.29 | 3.58 | 3.23 | 2.85 | 6.90 | 4.55 |
| 5/13 | 3.11 | 3.43 | 3.74 | 3.61 | 6.36 | 4.83 | 2.27 | 3.21 | 3.10 | 2.80 | 6.15 | 4.30 |
| 5/14 | 3.10 | 3.20 | 3.65 | 3.58 | 5.90 | 4.68 | 2.26 | 2.97 | 3.02 | 2.76 | 5.69 | 4.16 |
| 5/15 | 3.08 | 2.87 | 3.57 | 3.53 | 5.23 | 4.49 | 2.24 | 2.64 | 2.90 | 2.72 | 5.02 | 3.94 |
| 5/16 | 3.12 | 3.56 | 3.78 | 3.63 | 6.61 | 4.91 | 2.28 | 3.33 | 3.14 | 2.81 | 6.40 | 4.38 |
| 5/17 | 3.13 | 3.81 | 4.00 | 3.66 | 7.10 | 5.17 | 2.29 | 3.56 | 3.22 | 2.84 | 6.86 | 4.53 |
| 5/18 | 3.14 | 3.96 | 4.04 | 3.68 | 7.40 | 5.26 | 2.30 | 3.71 | 3.27 | 2.87 | 7.15 | 4.63 |
| 5/19 | 3.13 | 3.83 | 4.00 | 3.67 | 7.14 | 5.18 | 2.29 | 3.58 | 3.23 | 2.85 | 6.90 | 4.55 |
| 5/20 | 3.11 | 3.43 | 3.74 | 3.61 | 6.36 | 4.83 | 2.27 | 3.21 | 3.10 | 2.80 | 6.15 | 4.30 |
| 5/21 | 3.10 | 3.20 | 3.65 | 3.58 | 5.90 | 4.68 | 2.26 | 2.97 | 3.02 | 2.76 | 5.69 | 4.16 |
| 5/22 | 3.08 | 2.87 | 3.57 | 3.53 | 5.23 | 4.49 | 2.24 | 2.64 | 2.90 | 2.72 | 5.02 | 3.94 |
| 5/23 | 3.12 | 3.56 | 3.78 | 3.63 | 6.61 | 4.91 | 2.28 | 3.33 | 3.14 | 2.81 | 6.40 | 4.38 |
| 5/24 | 3.13 | 3.81 | 4.00 | 3.66 | 7.10 | 5.17 | 2.29 | 3.56 | 3.22 | 2.84 | 6.86 | 4.53 |
| 5/25 | 3.14 | 3.96 | 4.04 | 3.68 | 7.40 | 5.26 | 2.30 | 3.71 | 3.27 | 2.87 | 7.15 | 4.63 |
| 5/26 | 3.13 | 3.83 | 4.00 | 3.67 | 7.14 | 5.18 | 2.29 | 3.58 | 3.23 | 2.85 | 6.90 | 4.55 |
| 5/27 | 3.11 | 3.43 | 3.74 | 3.61 | 6.36 | 4.83 | 2.27 | 3.21 | 3.10 | 2.80 | 6.15 | 4.30 |
| 5/28 | 3.10 | 3.20 | 3.65 | 3.58 | 5.90 | 4.68 | 2.26 | 2.97 | 3.02 | 2.76 | 5.69 | 4.16 |
| 5/29 | 3.08 | 2.87 | 3.57 | 3.53 | 5.23 | 4.49 | 2.24 | 2.64 | 2.90 | 2.72 | 5.02 | 3.94 |
| 5/30 | 3.08 | 2.87 | 3.57 | 3.53 | 5.23 | 4.49 | 2.24 | 2.64 | 2.90 | 2.72 | 5.02 | 3.94 |
| 5/31 | 3.13 | 3.81 | 4.00 | 3.66 | 7.10 | 5.17 | 2.29 | 3.56 | 3.22 | 2.84 | 6.86 | 4.53 |
| 6/1 | 3.29 | 6.69 | 5.23 | 4.06 | 12.82 | 7.19 | 2.44 | 6.40 | 4.20 | 3.24 | 12.51 | 6.35 |
| 6/2 | 3.28 | 6.47 | 5.15 | 4.03 | 12.37 | 7.04 | 2.43 | 6.17 | 4.12 | 3.21 | 12.07 | 6.21 |
| 6/3 | 3.24 | 5.76 | 4.73 | 3.93 | 10.98 | 6.47 | 2.39 | 5.50 | 3.89 | 3.11 | 10.72 | 5.77 |
| 6/4 | 3.21 | 5.34 | 4.58 | 3.88 | 10.15 | 6.19 | 2.37 | 5.09 | 3.75 | 3.06 | 9.90 | 5.51 |
| 6/5 | 3.18 | 4.75 | 4.42 | 3.79 | 8.97 | 5.85 | 2.34 | 4.49 | 3.54 | 2.97 | 8.70 | 5.12 |
| 6/6 | 3.25 | 5.98 | 4.81 | 3.96 | 11.43 | 6.61 | 2.41 | 5.72 | 3.97 | 3.14 | 11.17 | 5.92 |
| 6/7 | 3.28 | 6.43 | 5.15 | 4.03 | 12.29 | 7.03 | 2.43 | 6.14 | 4.11 | 3.20 | 11.99 | 6.18 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 6/8 | 3.29 | 6.69 | 5.23 | 4.06 | 12.82 | 7.19 | 2.44 | 6.40 | 4.20 | 3.24 | 12.51 | 6.35 |
| 6/9 | 3.28 | 6.47 | 5.15 | 4.03 | 12.37 | 7.04 | 2.43 | 6.17 | 4.12 | 3.21 | 12.07 | 6.21 |
| 6/10 | 3.24 | 5.76 | 4.73 | 3.93 | 10.98 | 6.47 | 2.39 | 5.50 | 3.89 | 3.11 | 10.72 | 5.77 |
| 6/11 | 3.21 | 5.34 | 4.58 | 3.88 | 10.15 | 6.19 | 2.37 | 5.09 | 3.75 | 3.06 | 9.90 | 5.51 |
| 6/12 | 3.18 | 4.75 | 4.42 | 3.79 | 8.97 | 5.85 | 2.34 | 4.49 | 3.54 | 2.97 | 8.70 | 5.12 |
| 6/13 | 3.25 | 5.98 | 4.81 | 3.96 | 11.43 | 6.61 | 2.41 | 5.72 | 3.97 | 3.14 | 11.17 | 5.92 |
| 6/14 | 3.28 | 6.43 | 5.15 | 4.03 | 12.29 | 7.03 | 2.43 | 6.14 | 4.11 | 3.20 | 11.99 | 6.18 |
| 6/15 | 3.29 | 6.69 | 5.23 | 4.06 | 12.82 | 7.19 | 2.44 | 6.40 | 4.20 | 3.24 | 12.51 | 6.35 |
| 6/16 | 3.28 | 6.47 | 5.15 | 4.03 | 12.37 | 7.04 | 2.43 | 6.17 | 4.12 | 3.21 | 12.07 | 6.21 |
| 6/17 | 3.24 | 5.76 | 4.73 | 3.93 | 10.98 | 6.47 | 2.39 | 5.50 | 3.89 | 3.11 | 10.72 | 5.77 |
| 6/18 | 3.21 | 5.34 | 4.58 | 3.88 | 10.15 | 6.19 | 2.37 | 5.09 | 3.75 | 3.06 | 9.90 | 5.51 |
| 6/19 | 3.18 | 4.75 | 4.42 | 3.79 | 8.97 | 5.85 | 2.34 | 4.49 | 3.54 | 2.97 | 8.70 | 5.12 |
| 6/20 | 3.25 | 5.98 | 4.81 | 3.96 | 11.43 | 6.61 | 2.41 | 5.72 | 3.97 | 3.14 | 11.17 | 5.92 |
| 6/21 | 3.28 | 6.43 | 5.15 | 4.03 | 12.29 | 7.03 | 2.43 | 6.14 | 4.11 | 3.20 | 11.99 | 6.18 |
| 6/22 | 3.29 | 6.69 | 5.23 | 4.06 | 12.82 | 7.19 | 2.44 | 6.40 | 4.20 | 3.24 | 12.51 | 6.35 |
| 6/23 | 3.28 | 6.47 | 5.15 | 4.03 | 12.37 | 7.04 | 2.43 | 6.17 | 4.12 | 3.21 | 12.07 | 6.21 |
| 6/24 | 3.24 | 5.76 | 4.73 | 3.93 | 10.98 | 6.47 | 2.39 | 5.50 | 3.89 | 3.11 | 10.72 | 5.77 |
| 6/25 | 3.21 | 5.34 | 4.58 | 3.88 | 10.15 | 6.19 | 2.37 | 5.09 | 3.75 | 3.06 | 9.90 | 5.51 |
| 6/26 | 3.18 | 4.75 | 4.42 | 3.79 | 8.97 | 5.85 | 2.34 | 4.49 | 3.54 | 2.97 | 8.70 | 5.12 |
| 6/27 | 3.25 | 5.98 | 4.81 | 3.96 | 11.43 | 6.61 | 2.41 | 5.72 | 3.97 | 3.14 | 11.17 | 5.92 |
| 6/28 | 3.28 | 6.43 | 5.15 | 4.03 | 12.29 | 7.03 | 2.43 | 6.14 | 4.11 | 3.20 | 11.99 | 6.18 |
| 6/29 | 3.29 | 6.69 | 5.23 | 4.06 | 12.82 | 7.19 | 2.44 | 6.40 | 4.20 | 3.24 | 12.51 | 6.35 |
| 6/30 | 3.28 | 6.47 | 5.15 | 4.03 | 12.37 | 7.04 | 2.43 | 6.17 | 4.12 | 3.21 | 12.07 | 6.21 |
| 7/1 | 3.38 | 8.03 | 6.60 | 4.25 | 15.36 | 8.70 | 2.50 | 7.56 | 4.60 | 3.40 | 14.83 | 7.10 |
| 7/2 | 3.34 | 7.45 | 6.37 | 4.17 | 14.20 | 8.31 | 2.47 | 6.99 | 4.40 | 3.32 | 13.68 | 6.73 |
| 7/3 | 3.30 | 6.64 | 6.21 | 4.06 | 12.56 | 7.88 | 2.43 | 6.15 | 4.11 | 3.20 | 12.01 | 6.19 |
| 7/4 | 3.30 | 6.64 | 6.21 | 4.06 | 12.56 | 7.88 | 2.43 | 6.15 | 4.11 | 3.20 | 12.01 | 6.19 |
| 7/5 | 3.44 | 9.01 | 7.41 | 4.39 | 17.25 | 9.67 | 2.55 | 8.45 | 4.91 | 3.52 | 16.61 | 7.67 |
| 7/6 | 3.45 | 9.38 | 7.52 | 4.44 | 17.97 | 9.89 | 2.57 | 8.82 | 5.04 | 3.57 | 17.34 | 7.90 |
| 7/7 | 3.44 | 9.06 | 7.40 | 4.40 | 17.34 | 9.68 | 2.55 | 8.50 | 4.93 | 3.53 | 16.71 | 7.70 |
| 7/8 | 3.38 | 8.03 | 6.60 | 4.25 | 15.36 | 8.70 | 2.50 | 7.56 | 4.60 | 3.40 | 14.83 | 7.10 |
| 7/9 | 3.34 | 7.45 | 6.37 | 4.17 | 14.20 | 8.31 | 2.47 | 6.99 | 4.40 | 3.32 | 13.68 | 6.73 |
| 7/10 | 3.30 | 6.64 | 6.21 | 4.06 | 12.56 | 7.88 | 2.43 | 6.15 | 4.11 | 3.20 | 12.01 | 6.19 |
| 7/11 | 3.39 | 8.35 | 6.71 | 4.30 | 15.98 | 8.91 | 2.52 | 7.88 | 4.71 | 3.44 | 15.46 | 7.30 |
| 7/12 | 3.44 | 9.01 | 7.41 | 4.39 | 17.25 | 9.67 | 2.55 | 8.45 | 4.91 | 3.52 | 16.61 | 7.67 |
| 7/13 | 3.45 | 9.38 | 7.52 | 4.44 | 17.97 | 9.89 | 2.57 | 8.82 | 5.04 | 3.57 | 17.34 | 7.90 |
| 7/14 | 3.44 | 9.06 | 7.40 | 4.40 | 17.34 | 9.68 | 2.55 | 8.50 | 4.93 | 3.53 | 16.71 | 7.70 |
| 7/15 | 3.38 | 8.03 | 6.60 | 4.25 | 15.36 | 8.70 | 2.50 | 7.56 | 4.60 | 3.40 | 14.83 | 7.10 |
| 7/16 | 3.34 | 7.45 | 6.37 | 4.17 | 14.20 | 8.31 | 2.47 | 6.99 | 4.40 | 3.32 | 13.68 | 6.73 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 7/17 | 3.30 | 6.64 | 6.21 | 4.06 | 12.56 | 7.88 | 2.43 | 6.15 | 4.11 | 3.20 | 12.01 | 6.19 |
| 7/18 | 3.39 | 8.35 | 6.71 | 4.30 | 15.98 | 8.91 | 2.52 | 7.88 | 4.71 | 3.44 | 15.46 | 7.30 |
| 7/19 | 3.44 | 9.01 | 7.41 | 4.39 | 17.25 | 9.67 | 2.55 | 8.45 | 4.91 | 3.52 | 16.61 | 7.67 |
| 7/20 | 3.45 | 9.38 | 7.52 | 4.44 | 17.97 | 9.89 | 2.57 | 8.82 | 5.04 | 3.57 | 17.34 | 7.90 |
| 7/21 | 3.44 | 9.06 | 7.40 | 4.40 | 17.34 | 9.68 | 2.55 | 8.50 | 4.93 | 3.53 | 16.71 | 7.70 |
| 7/22 | 3.38 | 8.03 | 6.60 | 4.25 | 15.36 | 8.70 | 2.50 | 7.56 | 4.60 | 3.40 | 14.83 | 7.10 |
| 7/23 | 3.34 | 7.45 | 6.37 | 4.17 | 14.20 | 8.31 | 2.47 | 6.99 | 4.40 | 3.32 | 13.68 | 6.73 |
| 7/24 | 3.30 | 6.64 | 6.21 | 4.06 | 12.56 | 7.88 | 2.43 | 6.15 | 4.11 | 3.20 | 12.01 | 6.19 |
| 7/25 | 3.39 | 8.35 | 6.71 | 4.30 | 15.98 | 8.91 | 2.52 | 7.88 | 4.71 | 3.44 | 15.46 | 7.30 |
| 7/26 | 3.44 | 9.01 | 7.41 | 4.39 | 17.25 | 9.67 | 2.55 | 8.45 | 4.91 | 3.52 | 16.61 | 7.67 |
| 7/27 | 3.45 | 9.38 | 7.52 | 4.44 | 17.97 | 9.89 | 2.57 | 8.82 | 5.04 | 3.57 | 17.34 | 7.90 |
| 7/28 | 3.44 | 9.06 | 7.40 | 4.40 | 17.34 | 9.68 | 2.55 | 8.50 | 4.93 | 3.53 | 16.71 | 7.70 |
| 7/29 | 3.38 | 8.03 | 6.60 | 4.25 | 15.36 | 8.70 | 2.50 | 7.56 | 4.60 | 3.40 | 14.83 | 7.10 |
| 7/30 | 3.34 | 7.45 | 6.37 | 4.17 | 14.20 | 8.31 | 2.47 | 6.99 | 4.40 | 3.32 | 13.68 | 6.73 |
| 7/31 | 3.30 | 6.64 | 6.21 | 4.06 | 12.56 | 7.88 | 2.43 | 6.15 | 4.11 | 3.20 | 12.01 | 6.19 |
| 8/1 | 3.61 | 12.39 | 8.61 | 4.86 | 23.97 | 11.86 | 2.73 | 11.82 | 6.08 | 3.99 | 23.33 | 9.83 |
| 8/2 | 3.68 | 13.38 | 9.55 | 5.00 | 25.87 | 12.93 | 2.77 | 12.70 | 6.38 | 4.11 | 25.07 | 10.39 |
| 8/3 | 3.71 | 13.94 | 9.72 | 5.07 | 26.97 | 13.27 | 2.80 | 13.25 | 6.57 | 4.19 | 26.19 | 10.75 |
| 8/4 | 3.68 | 13.45 | 9.54 | 5.01 | 26.02 | 12.95 | 2.78 | 12.78 | 6.41 | 4.12 | 25.23 | 10.44 |
| 8/5 | 3.59 | 11.91 | 8.44 | 4.79 | 23.02 | 11.55 | 2.70 | 11.34 | 5.91 | 3.92 | 22.38 | 9.52 |
| 8/6 | 3.54 | 11.03 | 8.10 | 4.67 | 21.27 | 10.96 | 2.66 | 10.47 | 5.61 | 3.80 | 20.63 | 8.96 |
| 8/7 | 3.48 | 9.79 | 7.83 | 4.50 | 18.77 | 10.28 | 2.59 | 9.20 | 5.17 | 3.62 | 18.09 | 8.15 |
| 8/8 | 3.61 | 12.39 | 8.61 | 4.86 | 23.97 | 11.86 | 2.73 | 11.82 | 6.08 | 3.99 | 23.33 | 9.83 |
| 8/9 | 3.68 | 13.38 | 9.55 | 5.00 | 25.87 | 12.93 | 2.77 | 12.70 | 6.38 | 4.11 | 25.07 | 10.39 |
| 8/10 | 3.71 | 13.94 | 9.72 | 5.07 | 26.97 | 13.27 | 2.80 | 13.25 | 6.57 | 4.19 | 26.19 | 10.75 |
| 8/11 | 3.68 | 13.45 | 9.54 | 5.01 | 26.02 | 12.95 | 2.78 | 12.78 | 6.41 | 4.12 | 25.23 | 10.44 |
| 8/12 | 3.59 | 11.91 | 8.44 | 4.79 | 23.02 | 11.55 | 2.70 | 11.34 | 5.91 | 3.92 | 22.38 | 9.52 |
| 8/13 | 3.54 | 11.03 | 8.10 | 4.67 | 21.27 | 10.96 | 2.66 | 10.47 | 5.61 | 3.80 | 20.63 | 8.96 |
| 8/14 | 3.48 | 9.79 | 7.83 | 4.50 | 18.77 | 10.28 | 2.59 | 9.20 | 5.17 | 3.62 | 18.09 | 8.15 |
| 8/15 | 3.61 | 12.39 | 8.61 | 4.86 | 23.97 | 11.86 | 2.73 | 11.82 | 6.08 | 3.99 | 23.33 | 9.83 |
| 8/16 | 3.68 | 13.38 | 9.55 | 5.00 | 25.87 | 12.93 | 2.77 | 12.70 | 6.38 | 4.11 | 25.07 | 10.39 |
| 8/17 | 3.71 | 13.94 | 9.72 | 5.07 | 26.97 | 13.27 | 2.80 | 13.25 | 6.57 | 4.19 | 26.19 | 10.75 |
| 8/18 | 3.68 | 13.45 | 9.54 | 5.01 | 26.02 | 12.95 | 2.78 | 12.78 | 6.41 | 4.12 | 25.23 | 10.44 |
| 8/19 | 3.59 | 11.91 | 8.44 | 4.79 | 23.02 | 11.55 | 2.70 | 11.34 | 5.91 | 3.92 | 22.38 | 9.52 |
| 8/20 | 3.54 | 11.03 | 8.10 | 4.67 | 21.27 | 10.96 | 2.66 | 10.47 | 5.61 | 3.80 | 20.63 | 8.96 |
| 8/21 | 3.48 | 9.79 | 7.83 | 4.50 | 18.77 | 10.28 | 2.59 | 9.20 | 5.17 | 3.62 | 18.09 | 8.15 |
| 8/22 | 3.61 | 12.39 | 8.61 | 4.86 | 23.97 | 11.86 | 2.73 | 11.82 | 6.08 | 3.99 | 23.33 | 9.83 |
| 8/23 | 3.68 | 13.38 | 9.55 | 5.00 | 25.87 | 12.93 | 2.77 | 12.70 | 6.38 | 4.11 | 25.07 | 10.39 |
| 8/24 | 3.71 | 13.94 | 9.72 | 5.07 | 26.97 | 13.27 | 2.80 | 13.25 | 6.57 | 4.19 | 26.19 | 10.75 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 8/25 | 3.68 | 13.45 | 9.54 | 5.01 | 26.02 | 12.95 | 2.78 | 12.78 | 6.41 | 4.12 | 25.23 | 10.44 |
| 8/26 | 3.59 | 11.91 | 8.44 | 4.79 | 23.02 | 11.55 | 2.70 | 11.34 | 5.91 | 3.92 | 22.38 | 9.52 |
| 8/27 | 3.54 | 11.03 | 8.10 | 4.67 | 21.27 | 10.96 | 2.66 | 10.47 | 5.61 | 3.80 | 20.63 | 8.96 |
| 8/28 | 3.48 | 9.79 | 7.83 | 4.50 | 18.77 | 10.28 | 2.59 | 9.20 | 5.17 | 3.62 | 18.09 | 8.15 |
| 8/29 | 3.61 | 12.39 | 8.61 | 4.86 | 23.97 | 11.86 | 2.73 | 11.82 | 6.08 | 3.99 | 23.33 | 9.83 |
| 8/30 | 3.68 | 13.38 | 9.55 | 5.00 | 25.87 | 12.93 | 2.77 | 12.70 | 6.38 | 4.11 | 25.07 | 10.39 |
| 8/31 | 3.71 | 13.94 | 9.72 | 5.07 | 26.97 | 13.27 | 2.80 | 13.25 | 6.57 | 4.19 | 26.19 | 10.75 |
| 9/1 | 3.34 | 7.70 | 5.60 | 4.20 | 14.83 | 7.85 | 2.49 | 7.40 | 4.55 | 3.38 | 14.52 | 7.00 |
| 9/2 | 3.30 | 6.85 | 5.13 | 4.09 | 13.16 | 7.18 | 2.45 | 6.59 | 4.27 | 3.26 | 12.89 | 6.47 |
| 9/3 | 3.27 | 6.35 | 4.95 | 4.02 | 12.16 | 6.85 | 2.43 | 6.09 | 4.09 | 3.19 | 11.90 | 6.15 |
| 9/4 | 3.23 | 5.63 | 4.75 | 3.92 | 10.72 | 6.43 | 2.39 | 5.36 | 3.84 | 3.09 | 10.45 | 5.69 |
| 9/5 | 3.23 | 5.63 | 4.75 | 3.92 | 10.72 | 6.43 | 2.39 | 5.36 | 3.84 | 3.09 | 10.45 | 5.69 |
| 9/6 | 3.34 | 7.66 | 5.59 | 4.20 | 14.74 | 7.83 | 2.49 | 7.36 | 4.53 | 3.37 | 14.43 | 6.97 |
| 9/7 | 3.36 | 7.97 | 5.70 | 4.24 | 15.37 | 8.03 | 2.51 | 7.68 | 4.64 | 3.41 | 15.06 | 7.17 |
| 9/8 | 3.34 | 7.70 | 5.60 | 4.20 | 14.83 | 7.85 | 2.49 | 7.40 | 4.55 | 3.38 | 14.52 | 7.00 |
| 9/9 | 3.30 | 6.85 | 5.13 | 4.09 | 13.16 | 7.18 | 2.45 | 6.59 | 4.27 | 3.26 | 12.89 | 6.47 |
| 9/10 | 3.27 | 6.35 | 4.95 | 4.02 | 12.16 | 6.85 | 2.43 | 6.09 | 4.09 | 3.19 | 11.90 | 6.15 |
| 9/11 | 3.23 | 5.63 | 4.75 | 3.92 | 10.72 | 6.43 | 2.39 | 5.36 | 3.84 | 3.09 | 10.45 | 5.69 |
| 9/12 | 3.31 | 7.12 | 5.23 | 4.12 | 13.70 | 7.35 | 2.47 | 6.86 | 4.36 | 3.30 | 13.43 | 6.65 |
| 9/13 | 3.34 | 7.66 | 5.59 | 4.20 | 14.74 | 7.83 | 2.49 | 7.36 | 4.53 | 3.37 | 14.43 | 6.97 |
| 9/14 | 3.36 | 7.97 | 5.70 | 4.24 | 15.37 | 8.03 | 2.51 | 7.68 | 4.64 | 3.41 | 15.06 | 7.17 |
| 9/15 | 3.34 | 7.70 | 5.60 | 4.20 | 14.83 | 7.85 | 2.49 | 7.40 | 4.55 | 3.38 | 14.52 | 7.00 |
| 9/16 | 3.30 | 6.85 | 5.13 | 4.09 | 13.16 | 7.18 | 2.45 | 6.59 | 4.27 | 3.26 | 12.89 | 6.47 |
| 9/17 | 3.27 | 6.35 | 4.95 | 4.02 | 12.16 | 6.85 | 2.43 | 6.09 | 4.09 | 3.19 | 11.90 | 6.15 |
| 9/18 | 3.23 | 5.63 | 4.75 | 3.92 | 10.72 | 6.43 | 2.39 | 5.36 | 3.84 | 3.09 | 10.45 | 5.69 |
| 9/19 | 3.31 | 7.12 | 5.23 | 4.12 | 13.70 | 7.35 | 2.47 | 6.86 | 4.36 | 3.30 | 13.43 | 6.65 |
| 9/20 | 3.34 | 7.66 | 5.59 | 4.20 | 14.74 | 7.83 | 2.49 | 7.36 | 4.53 | 3.37 | 14.43 | 6.97 |
| 9/21 | 3.36 | 7.97 | 5.70 | 4.24 | 15.37 | 8.03 | 2.51 | 7.68 | 4.64 | 3.41 | 15.06 | 7.17 |
| 9/22 | 3.34 | 7.70 | 5.60 | 4.20 | 14.83 | 7.85 | 2.49 | 7.40 | 4.55 | 3.38 | 14.52 | 7.00 |
| 9/23 | 3.30 | 6.85 | 5.13 | 4.09 | 13.16 | 7.18 | 2.45 | 6.59 | 4.27 | 3.26 | 12.89 | 6.47 |
| 9/24 | 3.27 | 6.35 | 4.95 | 4.02 | 12.16 | 6.85 | 2.43 | 6.09 | 4.09 | 3.19 | 11.90 | 6.15 |
| 9/25 | 3.23 | 5.63 | 4.75 | 3.92 | 10.72 | 6.43 | 2.39 | 5.36 | 3.84 | 3.09 | 10.45 | 5.69 |
| 9/26 | 3.31 | 7.12 | 5.23 | 4.12 | 13.70 | 7.35 | 2.47 | 6.86 | 4.36 | 3.30 | 13.43 | 6.65 |
| 9/27 | 3.34 | 7.66 | 5.59 | 4.20 | 14.74 | 7.83 | 2.49 | 7.36 | 4.53 | 3.37 | 14.43 | 6.97 |
| 9/28 | 3.36 | 7.97 | 5.70 | 4.24 | 15.37 | 8.03 | 2.51 | 7.68 | 4.64 | 3.41 | 15.06 | 7.17 |
| 9/29 | 3.34 | 7.70 | 5.60 | 4.20 | 14.83 | 7.85 | 2.49 | 7.40 | 4.55 | 3.38 | 14.52 | 7.00 |
| 9/30 | 3.30 | 6.85 | 5.13 | 4.09 | 13.16 | 7.18 | 2.45 | 6.59 | 4.27 | 3.26 | 12.89 | 6.47 |
| Average | 3.33 | 7.40 | 5.95 | 4.16 | 14.16 | 7.98 | 2.47 | 7.02 | 4.41 | 3.32 | 13.75 | 6.75 |

Table E-2. Daily area source emissions extracted from the SMOKE gridded emissions in 2011 and 2017 (metric tons/day)

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 5/1 | 98.49 | 7.39 | 5.77 | 100.01 | 8.54 | 6.45 | 89.40 | 7.25 | 4.15 | 90.72 | 8.39 | 4.67 |
| 5/2 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/3 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/4 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/5 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/6 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/7 | 99.75 | 11.79 | 8.43 | 101.20 | 13.54 | 9.46 | 90.64 | 11.61 | 6.77 | 91.89 | 13.34 | 7.65 |
| 5/8 | 98.49 | 7.39 | 5.77 | 100.01 | 8.54 | 6.45 | 89.40 | 7.25 | 4.15 | 90.72 | 8.39 | 4.67 |
| 5/9 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/10 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/11 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/12 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/13 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/14 | 99.75 | 11.79 | 8.43 | 101.20 | 13.54 | 9.46 | 90.64 | 11.61 | 6.77 | 91.89 | 13.34 | 7.65 |
| 5/15 | 98.49 | 7.39 | 5.77 | 100.01 | 8.54 | 6.45 | 89.40 | 7.25 | 4.15 | 90.72 | 8.39 | 4.67 |
| 5/16 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/17 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/18 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/19 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/20 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/21 | 99.75 | 11.79 | 8.43 | 101.20 | 13.54 | 9.46 | 90.64 | 11.61 | 6.77 | 91.89 | 13.34 | 7.65 |
| 5/22 | 98.49 | 7.39 | 5.77 | 100.01 | 8.54 | 6.45 | 89.40 | 7.25 | 4.15 | 90.72 | 8.39 | 4.67 |
| 5/23 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/24 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/25 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/26 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/27 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 5/28 | 99.75 | 11.79 | 8.43 | 101.20 | 13.54 | 9.46 | 90.64 | 11.61 | 6.77 | 91.89 | 13.34 | 7.65 |
| 5/29 | 98.49 | 7.39 | 5.77 | 100.01 | 8.54 | 6.45 | 89.40 | 7.25 | 4.15 | 90.72 | 8.39 | 4.67 |
| 5/30 | 98.49 | 7.39 | 5.77 | 100.01 | 8.54 | 6.45 | 89.40 | 7.25 | 4.15 | 90.72 | 8.39 | 4.67 |
| 5/31 | 105.68 | 11.95 | 11.96 | 107.63 | 13.70 | 12.92 | 96.35 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 6/1 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/2 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/3 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/4 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 6/5 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 6/6 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/7 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 6/8 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/9 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/10 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/11 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 6/12 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 6/13 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/14 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/15 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/16 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/17 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/18 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 6/19 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 6/20 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/21 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/22 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/23 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/24 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/25 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 6/26 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 6/27 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/28 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/29 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 6/30 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/1 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/2 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 7/3 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 7/4 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 7/5 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/6 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/7 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/8 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/9 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 7/10 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 7/11 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/12 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/13 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/14 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/15 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/16 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |

| Date | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 7/17 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 7/18 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/19 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/20 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/21 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/22 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/23 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 7/24 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 7/25 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/26 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/27 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/28 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/29 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 7/30 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 7/31 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 8/1 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/2 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/3 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/4 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/5 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/6 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 8/7 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 8/8 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/9 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/10 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/11 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/12 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/13 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 8/14 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 8/15 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/16 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/17 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/18 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/19 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/20 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 8/21 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 8/22 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/23 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/24 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 8/25 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/26 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/27 | 99.90 | 11.75 | 7.92 | 101.24 | 13.50 | 8.96 | 90.68 | 11.60 | 6.77 | 91.90 | 13.34 | 7.65 |
| 8/28 | 98.65 | 7.35 | 5.27 | 100.05 | 8.51 | 5.95 | 89.44 | 7.25 | 4.14 | 90.73 | 8.39 | 4.66 |
| 8/29 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/30 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 8/31 | 105.83 | 11.92 | 11.46 | 107.67 | 13.66 | 12.42 | 96.39 | 11.70 | 8.72 | 98.11 | 13.43 | 9.56 |
| 9/1 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/2 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/3 | 99.81 | 11.77 | 8.08 | 101.26 | 13.52 | 9.11 | 90.65 | 11.61 | 6.77 | 91.90 | 13.34 | 7.65 |
| 9/4 | 98.55 | 7.37 | 5.43 | 100.07 | 8.53 | 6.10 | 89.41 | 7.25 | 4.15 | 90.73 | 8.39 | 4.67 |
| 9/5 | 98.55 | 7.37 | 5.43 | 100.07 | 8.53 | 6.10 | 89.41 | 7.25 | 4.15 | 90.73 | 8.39 | 4.67 |
| 9/6 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/7 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/8 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/9 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/10 | 99.81 | 11.77 | 8.08 | 101.26 | 13.52 | 9.11 | 90.65 | 11.61 | 6.77 | 91.90 | 13.34 | 7.65 |
| 9/11 | 98.55 | 7.37 | 5.43 | 100.07 | 8.53 | 6.10 | 89.41 | 7.25 | 4.15 | 90.73 | 8.39 | 4.67 |
| 9/12 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/13 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/14 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/15 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/16 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/17 | 99.81 | 11.77 | 8.08 | 101.26 | 13.52 | 9.11 | 90.65 | 11.61 | 6.77 | 91.90 | 13.34 | 7.65 |
| 9/18 | 98.55 | 7.37 | 5.43 | 100.07 | 8.53 | 6.10 | 89.41 | 7.25 | 4.15 | 90.73 | 8.39 | 4.67 |
| 9/19 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/20 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/21 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/22 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/23 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/24 | 99.81 | 11.77 | 8.08 | 101.26 | 13.52 | 9.11 | 90.65 | 11.61 | 6.77 | 91.90 | 13.34 | 7.65 |
| 9/25 | 98.55 | 7.37 | 5.43 | 100.07 | 8.53 | 6.10 | 89.41 | 7.25 | 4.15 | 90.73 | 8.39 | 4.67 |
| 9/26 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/27 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/28 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/29 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| 9/30 | 105.74 | 11.93 | 11.61 | 107.69 | 13.68 | 12.57 | 96.36 | 11.70 | 8.73 | 98.11 | 13.43 | 9.56 |
| Average | 103.79 | 11.16 | 10.09 | 105.54 | 12.81 | 11.02 | 94.46 | 10.96 | 7.71 | 96.05 | 12.59 | 8.50 |

Table E-3. Daily nonroad mobile source emissions extracted from the SMOKE gridded emissions in 2011 and 2017 (metric tons/day)

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 5/1 | 32.41 | 42.85 | 330.99 | 24.59 | 31.05 | 298.45 | 22.94 | 35.19 | 286.10 | 17.42 | 24.77 | 257.61 |
| 5/2 | 26.84 | 67.91 | 345.15 | 21.02 | 46.55 | 308.70 | 21.72 | 58.58 | 313.70 | 16.82 | 39.36 | 279.86 |
| 5/3 | 28.75 | 67.78 | 354.65 | 22.43 | 46.49 | 318.46 | 23.43 | 58.46 | 322.60 | 18.10 | 39.30 | 289.08 |
| 5/4 | 30.53 | 68.10 | 362.40 | 23.67 | 46.73 | 324.64 | 25.07 | 58.78 | 330.07 | 19.23 | 39.55 | 295.01 |
| 5/5 | 30.62 | 68.10 | 363.02 | 23.85 | 46.77 | 326.53 | 25.12 | 58.79 | 330.61 | 19.39 | 39.59 | 296.85 |
| 5/6 | 30.21 | 68.09 | 361.54 | 23.53 | 46.82 | 324.69 | 24.73 | 58.78 | 329.14 | 19.08 | 39.64 | 295.01 |
| 5/7 | 36.01 | 42.02 | 349.90 | 26.65 | 30.27 | 315.45 | 26.04 | 34.39 | 303.55 | 19.16 | 24.01 | 273.31 |
| 5/8 | 34.09 | 42.28 | 337.67 | 25.07 | 30.55 | 304.42 | 24.28 | 34.65 | 291.68 | 17.68 | 24.29 | 262.59 |
| 5/9 | 25.52 | 67.79 | 339.34 | 19.93 | 46.46 | 303.87 | 20.52 | 58.46 | 307.98 | 15.82 | 39.25 | 275.11 |
| 5/10 | 25.94 | 68.02 | 344.29 | 20.59 | 46.57 | 308.81 | 20.98 | 58.67 | 313.02 | 16.51 | 39.36 | 280.13 |
| 5/11 | 27.48 | 68.01 | 349.93 | 21.71 | 46.60 | 314.17 | 22.35 | 58.68 | 318.39 | 17.50 | 39.40 | 285.25 |
| 5/12 | 29.19 | 68.06 | 358.73 | 22.99 | 46.73 | 322.76 | 23.85 | 58.75 | 326.64 | 18.65 | 39.54 | 293.35 |
| 5/13 | 30.93 | 68.01 | 363.13 | 24.09 | 46.77 | 326.87 | 25.37 | 58.70 | 330.56 | 19.59 | 39.59 | 297.04 |
| 5/14 | 34.82 | 41.93 | 344.68 | 25.78 | 30.21 | 311.50 | 24.99 | 34.29 | 298.52 | 18.39 | 23.96 | 269.53 |
| 5/15 | 33.92 | 42.43 | 339.70 | 25.15 | 30.78 | 306.55 | 24.17 | 34.79 | 293.75 | 17.82 | 24.52 | 264.77 |
| 5/16 | 26.91 | 67.67 | 346.76 | 20.99 | 46.45 | 311.32 | 21.75 | 58.35 | 314.96 | 16.78 | 39.26 | 282.17 |
| 5/17 | 26.62 | 67.88 | 345.41 | 21.14 | 46.55 | 310.17 | 21.58 | 58.55 | 313.98 | 17.00 | 39.35 | 281.35 |
| 5/18 | 25.09 | 67.82 | 336.76 | 19.65 | 46.44 | 301.88 | 20.12 | 58.48 | 305.48 | 15.57 | 39.23 | 273.19 |
| 5/19 | 26.73 | 68.58 | 348.53 | 21.37 | 47.12 | 313.00 | 21.74 | 59.23 | 317.28 | 17.25 | 39.91 | 284.34 |
| 5/20 | 27.85 | 68.28 | 350.76 | 22.02 | 46.93 | 315.12 | 22.70 | 58.96 | 319.15 | 17.79 | 39.73 | 286.13 |
| 5/21 | 34.87 | 42.20 | 345.26 | 26.07 | 30.48 | 312.03 | 25.10 | 34.56 | 299.38 | 18.71 | 24.21 | 270.30 |
| 5/22 | 34.28 | 42.36 | 340.62 | 25.24 | 30.64 | 307.18 | 24.48 | 34.73 | 294.58 | 17.86 | 24.38 | 265.31 |
| 5/23 | 27.99 | 67.69 | 351.95 | 21.59 | 46.41 | 315.80 | 22.72 | 58.37 | 319.84 | 17.31 | 39.23 | 286.38 |
| 5/24 | 27.86 | 67.96 | 352.64 | 22.08 | 46.69 | 316.97 | 22.68 | 58.63 | 320.86 | 17.84 | 39.50 | 287.84 |
| 5/25 | 29.43 | 67.70 | 358.69 | 22.83 | 46.34 | 322.12 | 24.04 | 58.39 | 326.44 | 18.45 | 39.15 | 292.57 |
| 5/26 | 30.18 | 67.88 | 360.20 | 23.21 | 46.58 | 323.43 | 24.67 | 58.57 | 327.68 | 18.75 | 39.40 | 293.64 |
| 5/27 | 30.50 | 67.87 | 361.63 | 23.71 | 46.68 | 325.48 | 24.95 | 58.56 | 329.08 | 19.22 | 39.50 | 295.67 |
| 5/28 | 35.91 | 41.47 | 343.90 | 26.11 | 29.90 | 310.00 | 25.84 | 33.85 | 297.07 | 18.56 | 23.65 | 267.44 |
| 5/29 | 32.55 | 41.45 | 331.03 | 23.92 | 29.90 | 298.64 | 22.86 | 33.82 | 285.16 | 16.64 | 23.64 | 256.93 |
| 5/30 | 32.46 | 42.47 | 333.39 | 24.39 | 30.74 | 301.37 | 22.90 | 34.81 | 288.29 | 17.16 | 24.47 | 260.34 |
| 5/31 | 29.33 | 67.55 | 355.25 | 22.68 | 46.23 | 318.37 | 23.80 | 58.22 | 322.74 | 18.19 | 39.04 | 288.61 |
| 6/1 | 33.10 | 73.88 | 401.22 | 25.25 | 50.41 | 363.98 | 25.98 | 63.85 | 360.94 | 19.67 | 42.70 | 327.20 |
| 6/2 | 33.26 | 74.00 | 400.14 | 25.66 | 50.65 | 363.75 | 26.11 | 63.97 | 359.87 | 20.04 | 42.94 | 326.97 |
| 6/3 | 33.45 | 73.95 | 399.66 | 25.57 | 50.54 | 363.13 | 26.25 | 63.93 | 359.35 | 19.91 | 42.83 | 326.32 |
| 6/4 | 47.68 | 46.43 | 420.73 | 34.16 | 33.62 | 382.12 | 32.40 | 37.94 | 354.83 | 23.08 | 26.54 | 322.97 |
| 6/5 | 48.59 | 46.66 | 420.45 | 34.63 | 33.95 | 382.34 | 33.11 | 38.18 | 354.08 | 23.41 | 26.88 | 322.75 |
| 6/6 | 33.45 | 73.57 | 400.78 | 25.17 | 50.24 | 364.03 | 26.23 | 63.56 | 360.12 | 19.54 | 42.53 | 326.92 |
| 6/7 | 33.43 | 73.77 | 401.50 | 25.52 | 50.37 | 364.91 | 26.24 | 63.74 | 361.13 | 19.87 | 42.66 | 328.05 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 6/8 | 33.91 | 73.90 | 403.75 | 25.93 | 50.49 | 366.83 | 26.72 | 63.88 | 363.30 | 20.29 | 42.78 | 329.90 |
| 6/9 | 34.28 | 74.05 | 404.23 | 26.16 | 50.63 | 367.55 | 27.02 | 64.03 | 363.70 | 20.47 | 42.92 | 330.56 |
| 6/10 | 34.71 | 73.97 | 407.41 | 26.39 | 50.62 | 370.68 | 27.37 | 63.95 | 366.65 | 20.66 | 42.92 | 333.47 |
| 6/11 | 47.44 | 46.51 | 422.12 | 34.00 | 33.72 | 383.83 | 32.19 | 38.02 | 356.21 | 22.94 | 26.64 | 324.66 |
| 6/12 | 47.14 | 46.63 | 418.34 | 33.70 | 33.98 | 380.68 | 31.85 | 38.15 | 352.27 | 22.63 | 26.90 | 321.37 |
| 6/13 | 34.48 | 73.57 | 405.51 | 26.11 | 50.24 | 368.88 | 27.11 | 63.55 | 364.73 | 20.36 | 42.54 | 331.65 |
| 6/14 | 36.57 | 73.58 | 411.35 | 27.64 | 50.30 | 374.45 | 28.99 | 63.58 | 370.22 | 21.73 | 42.60 | 336.91 |
| 6/15 | 37.37 | 73.68 | 414.02 | 27.90 | 50.38 | 376.30 | 29.69 | 63.68 | 372.67 | 21.93 | 42.69 | 338.56 |
| 6/16 | 36.27 | 73.80 | 409.38 | 27.39 | 50.55 | 372.95 | 28.70 | 63.80 | 368.15 | 21.51 | 42.86 | 335.32 |
| 6/17 | 35.93 | 73.73 | 409.21 | 26.82 | 50.39 | 372.28 | 28.39 | 63.72 | 368.03 | 20.96 | 42.69 | 334.70 |
| 6/18 | 48.63 | 46.20 | 424.95 | 34.71 | 33.55 | 386.79 | 33.17 | 37.72 | 358.38 | 23.53 | 26.48 | 327.03 |
| 6/19 | 46.99 | 46.70 | 418.19 | 33.50 | 34.06 | 380.63 | 31.73 | 38.21 | 352.03 | 22.46 | 26.98 | 321.24 |
| 6/20 | 35.33 | 73.54 | 407.49 | 26.66 | 50.32 | 371.12 | 27.90 | 63.53 | 366.45 | 20.87 | 42.62 | 333.67 |
| 6/21 | 38.07 | 73.48 | 414.30 | 28.67 | 50.27 | 377.60 | 30.27 | 63.48 | 372.83 | 22.62 | 42.57 | 339.75 |
| 6/22 | 38.83 | 73.30 | 416.34 | 28.92 | 50.16 | 379.48 | 30.89 | 63.31 | 374.58 | 22.79 | 42.47 | 341.37 |
| 6/23 | 38.09 | 73.63 | 417.51 | 28.29 | 50.41 | 380.60 | 30.28 | 63.64 | 375.75 | 22.27 | 42.72 | 342.50 |
| 6/24 | 37.87 | 73.58 | 416.07 | 27.93 | 50.34 | 379.39 | 30.05 | 63.59 | 374.29 | 21.91 | 42.65 | 341.28 |
| 6/25 | 50.58 | 46.09 | 431.82 | 35.44 | 33.42 | 392.85 | 34.85 | 37.63 | 364.47 | 24.10 | 26.36 | 332.38 |
| 6/26 | 51.27 | 46.29 | 429.19 | 35.84 | 33.67 | 390.10 | 35.37 | 37.83 | 361.66 | 24.38 | 26.62 | 329.47 |
| 6/27 | 40.13 | 73.20 | 418.44 | 29.33 | 49.95 | 380.97 | 31.94 | 63.21 | 376.33 | 23.05 | 42.27 | 342.55 |
| 6/28 | 38.58 | 73.27 | 418.77 | 28.23 | 49.95 | 381.02 | 30.68 | 63.28 | 376.86 | 22.16 | 42.26 | 342.78 |
| 6/29 | 38.28 | 73.33 | 419.34 | 27.92 | 50.06 | 381.59 | 30.43 | 63.34 | 377.42 | 21.90 | 42.37 | 343.35 |
| 6/30 | 35.77 | 73.59 | 411.51 | 26.29 | 50.31 | 374.61 | 28.24 | 63.60 | 370.07 | 20.48 | 42.62 | 336.80 |
| 7/1 | 38.22 | 71.75 | 400.59 | 28.08 | 49.17 | 362.60 | 30.41 | 61.93 | 360.21 | 22.05 | 41.60 | 325.78 |
| 7/2 | 52.65 | 44.82 | 417.53 | 37.12 | 32.72 | 378.61 | 36.77 | 36.49 | 351.84 | 25.67 | 25.77 | 319.73 |
| 7/3 | 49.09 | 44.04 | 408.16 | 34.07 | 31.95 | 370.32 | 33.60 | 35.70 | 342.78 | 22.91 | 25.00 | 311.72 |
| 7/4 | 46.03 | 45.16 | 401.11 | 32.14 | 32.94 | 362.79 | 30.97 | 36.81 | 336.70 | 21.24 | 25.97 | 305.06 |
| 7/5 | 35.35 | 71.44 | 395.18 | 26.01 | 48.87 | 357.68 | 27.89 | 61.61 | 355.09 | 20.23 | 41.30 | 321.13 |
| 7/6 | 34.30 | 71.84 | 394.35 | 25.32 | 49.12 | 355.06 | 27.03 | 62.01 | 354.69 | 19.66 | 41.54 | 318.89 |
| 7/7 | 35.65 | 71.76 | 398.96 | 26.15 | 49.16 | 360.82 | 28.21 | 61.94 | 358.82 | 20.40 | 41.59 | 324.22 |
| 7/8 | 36.85 | 71.62 | 401.68 | 26.78 | 49.05 | 363.27 | 29.23 | 61.80 | 361.25 | 20.92 | 41.48 | 326.42 |
| 7/9 | 49.58 | 45.08 | 415.36 | 34.69 | 32.81 | 375.84 | 34.17 | 36.74 | 350.23 | 23.57 | 25.85 | 317.46 |
| 7/10 | 47.44 | 45.59 | 406.63 | 33.78 | 33.36 | 368.50 | 32.35 | 37.24 | 342.34 | 22.85 | 26.39 | 310.88 |
| 7/11 | 32.95 | 71.55 | 386.35 | 24.48 | 48.85 | 348.60 | 25.81 | 61.71 | 346.97 | 18.89 | 41.26 | 312.69 |
| 7/12 | 35.32 | 71.77 | 400.02 | 26.17 | 49.15 | 361.16 | 28.01 | 61.94 | 360.04 | 20.51 | 41.58 | 324.70 |
| 7/13 | 35.42 | 71.79 | 399.35 | 26.25 | 49.10 | 360.61 | 28.06 | 61.96 | 359.42 | 20.54 | 41.52 | 324.20 |
| 7/14 | 34.94 | 72.10 | 397.33 | 26.16 | 49.44 | 358.74 | 27.67 | 62.27 | 357.64 | 20.50 | 41.86 | 322.54 |
| 7/15 | 34.48 | 71.91 | 393.38 | 25.81 | 49.32 | 355.88 | 27.20 | 62.07 | 353.74 | 20.14 | 41.73 | 319.72 |
| 7/16 | 47.92 | 45.21 | 410.30 | 34.09 | 32.99 | 371.67 | 32.74 | 36.86 | 345.85 | 23.10 | 26.03 | 313.90 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 7/17 | 49.81 | 45.27 | 412.81 | 34.61 | 32.99 | 373.12 | 34.30 | 36.94 | 347.63 | 23.41 | 26.03 | 314.69 |
| 7/18 | 37.00 | 71.21 | 398.44 | 26.57 | 48.62 | 360.23 | 29.29 | 61.39 | 357.95 | 20.64 | 41.05 | 323.32 |
| 7/19 | 36.35 | 71.35 | 401.78 | 26.51 | 48.79 | 363.94 | 28.82 | 61.52 | 361.43 | 20.71 | 41.22 | 327.15 |
| 7/20 | 36.99 | 71.59 | 404.82 | 26.79 | 48.98 | 366.62 | 29.39 | 61.77 | 364.34 | 20.96 | 41.41 | 329.72 |
| 7/21 | 36.66 | 71.91 | 403.12 | 27.02 | 49.33 | 365.02 | 29.14 | 62.09 | 362.82 | 21.22 | 41.76 | 328.28 |
| 7/22 | 35.55 | 71.86 | 400.05 | 26.20 | 49.37 | 362.37 | 28.14 | 62.04 | 359.83 | 20.49 | 41.79 | 325.70 |
| 7/23 | 47.37 | 45.07 | 410.80 | 33.23 | 32.79 | 372.63 | 32.24 | 36.72 | 346.21 | 22.29 | 25.82 | 314.74 |
| 7/24 | 46.63 | 45.25 | 405.50 | 32.69 | 32.95 | 366.41 | 31.56 | 36.90 | 341.18 | 21.78 | 25.98 | 308.76 |
| 7/25 | 32.66 | 71.70 | 387.14 | 24.47 | 49.06 | 349.69 | 25.55 | 61.86 | 347.80 | 18.90 | 41.48 | 313.80 |
| 7/26 | 35.75 | 71.65 | 402.21 | 26.16 | 48.99 | 363.69 | 28.32 | 61.82 | 362.05 | 20.43 | 41.42 | 327.07 |
| 7/27 | 34.88 | 71.63 | 399.66 | 25.72 | 49.04 | 358.29 | 27.53 | 61.80 | 359.64 | 20.04 | 41.46 | 321.80 |
| 7/28 | 36.26 | 71.75 | 400.51 | 26.44 | 49.12 | 361.83 | 28.74 | 61.92 | 360.20 | 20.65 | 41.54 | 325.08 |
| 7/29 | 36.22 | 71.85 | 399.96 | 26.59 | 49.28 | 361.70 | 28.75 | 62.02 | 359.75 | 20.83 | 41.71 | 325.03 |
| 7/30 | 49.18 | 45.01 | 415.57 | 34.27 | 32.70 | 376.31 | 33.81 | 36.67 | 350.46 | 23.17 | 25.74 | 317.95 |
| 7/31 | 48.58 | 45.21 | 410.39 | 33.70 | 32.98 | 371.24 | 33.23 | 36.87 | 345.33 | 22.62 | 26.02 | 312.93 |
| 8/1 | 35.38 | 71.60 | 396.98 | 25.94 | 48.95 | 357.93 | 27.94 | 61.77 | 356.96 | 20.16 | 41.37 | 321.47 |
| 8/2 | 38.39 | 71.36 | 404.79 | 27.68 | 48.72 | 365.48 | 30.55 | 61.54 | 364.15 | 21.66 | 41.15 | 328.46 |
| 8/3 | 38.08 | 71.49 | 403.98 | 27.57 | 48.92 | 364.67 | 30.31 | 61.67 | 363.41 | 21.58 | 41.36 | 327.71 |
| 8/4 | 36.75 | 71.97 | 402.45 | 27.12 | 49.34 | 363.11 | 29.19 | 62.15 | 362.25 | 21.26 | 41.77 | 326.48 |
| 8/5 | 37.24 | 71.68 | 404.07 | 26.92 | 49.07 | 365.48 | 29.57 | 61.86 | 363.51 | 21.03 | 41.50 | 328.53 |
| 8/6 | 48.38 | 45.00 | 414.91 | 33.80 | 32.73 | 375.58 | 33.06 | 36.66 | 349.84 | 22.72 | 25.78 | 317.30 |
| 8/7 | 48.42 | 45.38 | 410.94 | 33.62 | 33.08 | 370.60 | 33.07 | 37.04 | 345.90 | 22.51 | 26.13 | 312.35 |
| 8/8 | 34.41 | 71.39 | 394.48 | 25.14 | 48.80 | 355.99 | 27.06 | 61.56 | 354.38 | 19.45 | 41.23 | 319.46 |
| 8/9 | 35.10 | 71.42 | 399.92 | 25.47 | 48.81 | 360.71 | 27.70 | 61.59 | 359.68 | 19.76 | 41.23 | 324.05 |
| 8/10 | 35.33 | 71.57 | 400.58 | 25.74 | 48.91 | 361.32 | 27.95 | 61.74 | 360.36 | 20.04 | 41.34 | 324.68 |
| 8/11 | 34.13 | 71.94 | 396.31 | 25.34 | 49.27 | 357.33 | 26.91 | 62.10 | 356.55 | 19.72 | 41.69 | 321.09 |
| 8/12 | 33.47 | 71.81 | 395.35 | 24.75 | 49.19 | 357.12 | 26.30 | 61.98 | 355.53 | 19.18 | 41.61 | 320.83 |
| 8/13 | 46.92 | 45.14 | 410.40 | 32.94 | 32.85 | 370.80 | 31.79 | 36.80 | 345.81 | 21.98 | 25.88 | 312.94 |
| 8/14 | 47.78 | 45.16 | 410.33 | 33.18 | 32.95 | 370.36 | 32.49 | 36.82 | 345.32 | 22.13 | 25.99 | 312.14 |
| 8/15 | 35.34 | 71.24 | 396.93 | 25.69 | 48.71 | 358.36 | 27.85 | 61.41 | 356.59 | 19.91 | 41.14 | 321.60 |
| 8/16 | 35.53 | 71.38 | 398.61 | 26.10 | 48.80 | 360.04 | 28.08 | 61.55 | 358.44 | 20.33 | 41.22 | 323.43 |
| 8/17 | 36.59 | 71.18 | 399.78 | 26.46 | 48.57 | 360.86 | 28.95 | 61.35 | 359.34 | 20.57 | 40.99 | 324.02 |
| 8/18 | 38.59 | 71.23 | 403.72 | 27.59 | 48.68 | 364.62 | 30.67 | 61.41 | 362.94 | 21.52 | 41.12 | 327.48 |
| 8/19 | 35.49 | 71.49 | 395.02 | 26.10 | 48.87 | 356.52 | 28.03 | 61.66 | 354.98 | 20.30 | 41.30 | 320.03 |
| 8/20 | 47.92 | 44.81 | 413.36 | 33.55 | 32.50 | 373.74 | 32.69 | 36.47 | 348.54 | 22.51 | 25.53 | 315.69 |
| 8/21 | 48.30 | 44.96 | 412.19 | 33.60 | 32.71 | 372.47 | 32.94 | 36.62 | 347.15 | 22.49 | 25.75 | 314.22 |
| 8/22 | 37.58 | 71.17 | 403.00 | 26.94 | 48.63 | 363.64 | 29.81 | 61.35 | 362.31 | 20.99 | 41.06 | 326.57 |
| 8/23 | 38.29 | 71.05 | 404.22 | 27.43 | 48.52 | 364.96 | 30.41 | 61.23 | 363.47 | 21.39 | 40.95 | 327.85 |
| 8/24 | 38.81 | 71.25 | 407.00 | 27.71 | 48.63 | 367.34 | 30.89 | 61.44 | 366.19 | 21.65 | 41.07 | 330.17 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 8/25 | 38.31 | 71.31 | 405.31 | 27.49 | 48.73 | 365.73 | 30.45 | 61.50 | 364.59 | 21.46 | 41.16 | 328.64 |
| 8/26 | 39.65 | 71.10 | 404.79 | 28.09 | 48.57 | 365.24 | 31.57 | 61.29 | 363.76 | 21.94 | 41.00 | 327.87 |
| 8/27 | 50.28 | 44.39 | 417.14 | 34.72 | 32.15 | 376.77 | 34.65 | 36.07 | 351.54 | 23.44 | 25.20 | 318.01 |
| 8/28 | 48.24 | 44.64 | 411.11 | 33.58 | 32.45 | 371.91 | 32.88 | 36.31 | 345.98 | 22.48 | 25.49 | 313.57 |
| 8/29 | 37.30 | 71.07 | 400.70 | 26.83 | 48.48 | 361.62 | 29.53 | 61.25 | 360.12 | 20.86 | 40.91 | 324.65 |
| 8/30 | 37.74 | 71.11 | 406.28 | 27.12 | 48.49 | 366.63 | 29.99 | 61.29 | 365.59 | 21.18 | 40.92 | 329.56 |
| 8/31 | 38.08 | 71.30 | 407.28 | 27.45 | 48.68 | 367.83 | 30.39 | 61.49 | 366.79 | 21.56 | 41.13 | 330.94 |
| 9/1 | 35.05 | 69.19 | 382.38 | 25.31 | 47.28 | 344.80 | 28.73 | 59.75 | 347.78 | 20.37 | 40.02 | 313.16 |
| 9/2 | 30.64 | 69.20 | 370.51 | 22.91 | 47.40 | 334.76 | 24.89 | 59.75 | 336.66 | 18.33 | 40.13 | 303.79 |
| 9/3 | 39.32 | 41.52 | 360.66 | 28.19 | 29.59 | 327.40 | 28.36 | 33.83 | 311.80 | 19.99 | 23.29 | 283.00 |
| 9/4 | 39.60 | 41.72 | 357.93 | 28.14 | 29.86 | 324.93 | 28.52 | 34.03 | 308.90 | 19.86 | 23.57 | 280.38 |
| 9/5 | 38.24 | 42.63 | 359.02 | 27.01 | 30.73 | 325.59 | 27.40 | 34.94 | 310.04 | 18.93 | 24.43 | 281.09 |
| 9/6 | 32.22 | 68.94 | 373.98 | 23.78 | 47.05 | 337.21 | 26.27 | 59.50 | 339.88 | 19.06 | 39.78 | 306.02 |
| 9/7 | 33.54 | 69.21 | 380.71 | 24.77 | 47.27 | 343.13 | 27.51 | 59.76 | 346.46 | 20.01 | 40.00 | 311.79 |
| 9/8 | 33.86 | 69.14 | 380.83 | 24.75 | 47.23 | 343.29 | 27.73 | 59.70 | 346.44 | 19.94 | 39.96 | 311.83 |
| 9/9 | 29.97 | 68.83 | 365.16 | 22.03 | 46.96 | 328.90 | 24.22 | 59.38 | 331.33 | 17.44 | 39.69 | 297.94 |
| 9/10 | 36.86 | 42.09 | 353.39 | 26.69 | 30.08 | 320.50 | 26.23 | 34.39 | 305.27 | 18.69 | 23.77 | 276.77 |
| 9/11 | 36.58 | 42.79 | 351.07 | 26.60 | 30.77 | 317.61 | 26.00 | 35.08 | 303.13 | 18.63 | 24.45 | 274.04 |
| 9/12 | 30.34 | 68.99 | 365.87 | 22.59 | 47.07 | 328.93 | 24.59 | 59.53 | 332.21 | 17.99 | 39.79 | 298.12 |
| 9/13 | 30.44 | 69.14 | 368.57 | 23.31 | 47.21 | 332.66 | 24.79 | 59.68 | 335.18 | 18.76 | 39.93 | 302.09 |
| 9/14 | 29.84 | 69.35 | 367.42 | 22.93 | 47.29 | 331.10 | 24.30 | 59.88 | 334.29 | 18.45 | 40.00 | 300.76 |
| 9/15 | 30.67 | 69.68 | 371.92 | 23.53 | 47.74 | 335.23 | 25.08 | 60.22 | 338.52 | 19.03 | 40.46 | 304.65 |
| 9/16 | 30.45 | 69.39 | 369.36 | 23.14 | 47.46 | 332.95 | 24.79 | 59.93 | 335.89 | 18.59 | 40.19 | 302.31 |
| 9/17 | 36.46 | 42.38 | 354.38 | 26.65 | 30.32 | 321.09 | 25.96 | 34.67 | 306.53 | 18.75 | 24.01 | 277.59 |
| 9/18 | 37.03 | 42.87 | 352.40 | 27.02 | 30.93 | 319.42 | 26.40 | 35.16 | 304.40 | 19.01 | 24.61 | 275.78 |
| 9/19 | 31.49 | 69.10 | 369.56 | 23.58 | 47.14 | 332.97 | 25.62 | 59.64 | 335.86 | 18.88 | 39.87 | 302.13 |
| 9/20 | 32.12 | 69.00 | 373.80 | 24.10 | 46.98 | 336.55 | 26.24 | 59.55 | 340.06 | 19.39 | 39.71 | 305.67 |
| 9/21 | 33.00 | 69.28 | 374.89 | 25.14 | 47.31 | 338.43 | 27.05 | 59.83 | 341.14 | 20.37 | 40.04 | 307.54 |
| 9/22 | 33.41 | 69.50 | 378.42 | 25.07 | 47.54 | 341.32 | 27.40 | 60.05 | 344.49 | 20.28 | 40.27 | 310.27 |
| 9/23 | 33.86 | 69.44 | 377.52 | 25.53 | 47.56 | 340.86 | 27.77 | 60.00 | 343.49 | 20.70 | 40.29 | 309.72 |
| 9/24 | 38.67 | 42.17 | 360.85 | 27.92 | 30.13 | 327.16 | 27.84 | 34.47 | 312.33 | 19.79 | 23.83 | 283.07 |
| 9/25 | 37.54 | 42.91 | 355.85 | 27.30 | 30.95 | 322.40 | 26.85 | 35.21 | 307.56 | 19.27 | 24.65 | 278.51 |
| 9/26 | 30.54 | 69.20 | 367.24 | 23.33 | 47.33 | 331.20 | 24.84 | 59.74 | 333.78 | 18.74 | 40.05 | 300.57 |
| 9/27 | 31.27 | 69.02 | 372.71 | 23.56 | 47.05 | 336.12 | 25.51 | 59.57 | 339.02 | 18.95 | 39.77 | 305.28 |
| 9/28 | 30.92 | 69.29 | 373.57 | 23.43 | 47.22 | 336.15 | 25.24 | 59.83 | 340.08 | 18.87 | 39.94 | 305.49 |
| 9/29 | 31.31 | 69.51 | 373.13 | 24.28 | 47.68 | 336.95 | 25.57 | 60.05 | 339.57 | 19.67 | 40.41 | 306.23 |
| 9/30 | 31.58 | 69.00 | 368.04 | 23.48 | 47.22 | 331.87 | 25.66 | 59.55 | 334.11 | 18.77 | 39.95 | 300.82 |
| Average | 36.60 | 62.78 | 387.21 | 26.89 | 43.49 | 350.04 | 27.89 | 53.58 | 343.58 | 20.26 | 36.26 | 310.41 |

Table E-4. Daily onroad mobile source emissions extracted from the SMOKE gridded emissions in 2011 and 2017 (metric tons/day)

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 5/1 | 53.69 | 105.56 | 473.29 | 35.86 | 60.80 | 337.60 | 48.39 | 85.22 | 427.93 | 32.05 | 47.25 | 307.14 |
| 5/2 | 69.53 | 156.91 | 688.18 | 45.04 | 89.54 | 494.60 | 62.17 | 125.87 | 620.66 | 39.88 | 68.89 | 448.61 |
| 5/3 | 74.31 | 162.72 | 743.00 | 48.25 | 92.34 | 538.07 | 66.53 | 130.76 | 670.16 | 42.72 | 71.14 | 487.98 |
| 5/4 | 77.67 | 166.88 | 774.67 | 50.49 | 94.47 | 562.39 | 69.60 | 134.18 | 698.74 | 44.70 | 72.81 | 510.01 |
| 5/5 | 78.69 | 168.22 | 785.47 | 51.15 | 95.18 | 570.87 | 70.53 | 135.24 | 708.53 | 45.28 | 73.35 | 517.72 |
| 5/6 | 79.59 | 173.75 | 809.47 | 51.52 | 98.12 | 588.54 | 71.28 | 139.69 | 729.97 | 45.59 | 75.60 | 533.56 |
| 5/7 | 67.45 | 131.32 | 623.58 | 44.78 | 74.28 | 452.47 | 60.78 | 106.03 | 562.90 | 39.88 | 57.59 | 410.72 |
| 5/8 | 59.83 | 108.19 | 524.37 | 40.06 | 61.81 | 378.85 | 54.10 | 87.66 | 474.12 | 35.88 | 48.19 | 344.57 |
| 5/9 | 67.81 | 152.90 | 661.77 | 43.71 | 87.59 | 473.41 | 60.60 | 122.51 | 596.79 | 38.71 | 67.33 | 429.41 |
| 5/10 | 67.29 | 155.87 | 656.14 | 43.32 | 89.43 | 467.47 | 60.07 | 124.72 | 591.63 | 38.33 | 68.64 | 423.98 |
| 5/11 | 71.02 | 161.45 | 714.29 | 45.89 | 92.01 | 514.15 | 63.46 | 129.44 | 644.06 | 40.59 | 70.72 | 466.20 |
| 5/12 | 75.45 | 164.60 | 759.67 | 48.90 | 93.41 | 550.54 | 67.54 | 132.17 | 685.14 | 43.29 | 71.91 | 499.24 |
| 5/13 | 81.19 | 173.57 | 821.32 | 52.67 | 97.93 | 597.90 | 72.76 | 139.63 | 740.72 | 46.61 | 75.51 | 542.08 |
| 5/14 | 65.16 | 130.15 | 614.26 | 43.09 | 73.70 | 445.22 | 58.67 | 105.04 | 554.47 | 38.41 | 57.12 | 404.13 |
| 5/15 | 59.13 | 107.88 | 519.40 | 39.60 | 61.66 | 374.98 | 53.45 | 87.39 | 469.61 | 35.46 | 48.07 | 341.05 |
| 5/16 | 70.77 | 156.18 | 703.86 | 45.85 | 88.97 | 508.01 | 63.33 | 125.40 | 634.82 | 40.63 | 68.51 | 460.76 |
| 5/17 | 69.03 | 156.22 | 685.64 | 44.53 | 89.27 | 492.39 | 61.67 | 125.19 | 618.22 | 39.41 | 68.61 | 446.51 |
| 5/18 | 67.82 | 150.83 | 656.40 | 43.58 | 86.88 | 466.87 | 60.52 | 120.60 | 591.79 | 38.54 | 66.67 | 423.39 |
| 5/19 | 68.58 | 158.53 | 685.14 | 44.13 | 90.83 | 489.19 | 61.19 | 126.85 | 617.82 | 39.02 | 69.70 | 443.65 |
| 5/20 | 72.81 | 166.21 | 743.06 | 46.91 | 94.57 | 535.71 | 65.01 | 133.23 | 669.81 | 41.46 | 72.65 | 485.57 |
| 5/21 | 64.04 | 128.65 | 604.24 | 42.37 | 72.96 | 437.31 | 57.62 | 103.78 | 545.38 | 37.74 | 56.52 | 396.94 |
| 5/22 | 60.25 | 108.60 | 527.39 | 40.36 | 62.01 | 381.23 | 54.49 | 88.00 | 476.85 | 36.14 | 48.36 | 346.74 |
| 5/23 | 72.86 | 159.53 | 731.71 | 47.17 | 90.58 | 529.97 | 65.26 | 128.26 | 660.06 | 41.83 | 69.83 | 480.71 |
| 5/24 | 71.89 | 160.82 | 719.57 | 46.50 | 91.49 | 519.43 | 64.32 | 129.09 | 648.92 | 41.19 | 70.41 | 471.05 |
| 5/25 | 76.60 | 166.33 | 771.88 | 49.65 | 94.18 | 560.29 | 68.62 | 133.73 | 696.21 | 43.97 | 72.59 | 508.09 |
| 5/26 | 79.16 | 168.34 | 793.85 | 51.40 | 95.17 | 577.62 | 70.98 | 135.40 | 716.13 | 45.53 | 73.38 | 523.87 |
| 5/27 | 81.38 | 173.53 | 825.29 | 52.72 | 97.91 | 601.02 | 72.95 | 139.61 | 744.32 | 46.68 | 75.50 | 544.92 |
| 5/28 | 69.89 | 129.82 | 646.97 | 46.25 | 73.36 | 470.83 | 63.07 | 104.97 | 584.11 | 41.26 | 56.97 | 427.42 |
| 5/29 | 57.90 | 106.50 | 510.77 | 38.65 | 60.99 | 368.18 | 52.32 | 86.22 | 461.79 | 34.62 | 47.52 | 334.86 |
| 5/30 | 55.65 | 106.74 | 491.01 | 37.24 | 61.28 | 352.15 | 50.20 | 86.29 | 443.92 | 33.30 | 47.67 | 320.32 |
| 5/31 | 76.86 | 163.76 | 759.56 | 50.03 | 92.80 | 551.01 | 68.90 | 131.70 | 685.17 | 44.31 | 71.55 | 499.75 |
| 6/1 | 75.56 | 166.65 | 765.70 | 48.66 | 93.14 | 552.36 | 67.83 | 134.85 | 691.51 | 43.23 | 72.28 | 501.34 |
| 6/2 | 75.92 | 168.01 | 768.27 | 48.97 | 93.89 | 554.06 | 68.13 | 135.91 | 693.77 | 43.48 | 72.84 | 502.83 |
| 6/3 | 77.60 | 172.82 | 789.31 | 50.00 | 96.48 | 569.34 | 69.61 | 139.75 | 712.66 | 44.36 | 74.79 | 516.59 |
| 6/4 | 69.21 | 131.46 | 623.58 | 46.04 | 73.45 | 450.38 | 62.53 | 106.71 | 563.77 | 41.07 | 57.27 | 409.31 |
| 6/5 | 68.27 | 111.16 | 556.24 | 46.01 | 62.39 | 401.70 | 62.04 | 90.81 | 503.61 | 41.23 | 49.06 | 365.66 |
| 6/6 | 76.42 | 162.59 | 765.51 | 49.28 | 90.78 | 553.10 | 68.60 | 131.26 | 691.33 | 43.86 | 70.61 | 502.13 |
| 6/7 | 76.24 | 165.61 | 765.23 | 49.23 | 92.54 | 552.15 | 68.47 | 134.07 | 691.13 | 43.74 | 71.86 | 501.17 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 6/8 | 76.71 | 167.05 | 774.05 | 49.50 | 93.28 | 558.86 | 68.89 | 135.24 | 699.09 | 43.98 | 72.43 | 507.25 |
| 6/9 | 78.24 | 169.19 | 787.10 | 50.53 | 94.39 | 568.62 | 70.28 | 136.98 | 710.85 | 44.88 | 73.29 | 516.07 |
| 6/10 | 80.96 | 173.38 | 820.69 | 52.22 | 96.55 | 593.98 | 72.74 | 140.40 | 741.16 | 46.38 | 74.96 | 539.03 |
| 6/11 | 68.37 | 131.27 | 628.18 | 45.22 | 73.31 | 454.03 | 61.79 | 106.61 | 567.96 | 40.41 | 57.18 | 412.64 |
| 6/12 | 64.93 | 110.54 | 549.05 | 43.47 | 62.10 | 396.11 | 58.88 | 89.90 | 496.95 | 38.96 | 48.44 | 360.42 |
| 6/13 | 79.19 | 163.71 | 777.75 | 51.39 | 91.29 | 562.53 | 71.17 | 132.24 | 702.41 | 45.60 | 70.45 | 510.46 |
| 6/14 | 83.97 | 168.65 | 811.58 | 54.72 | 93.84 | 588.20 | 75.54 | 136.23 | 733.00 | 48.52 | 72.40 | 533.74 |
| 6/15 | 86.75 | 168.70 | 832.64 | 56.57 | 93.81 | 604.28 | 78.09 | 136.34 | 752.06 | 50.17 | 72.42 | 548.33 |
| 6/16 | 84.17 | 170.14 | 831.13 | 54.44 | 94.60 | 602.84 | 75.68 | 137.45 | 750.63 | 48.31 | 73.00 | 546.99 |
| 6/17 | 84.97 | 172.93 | 845.03 | 55.02 | 96.16 | 612.89 | 76.33 | 139.59 | 763.05 | 48.77 | 74.12 | 555.99 |
| 6/18 | 71.92 | 131.67 | 646.06 | 47.67 | 73.41 | 467.92 | 65.01 | 106.61 | 584.02 | 42.54 | 56.86 | 425.09 |
| 6/19 | 64.38 | 110.11 | 549.71 | 42.97 | 61.88 | 396.63 | 58.38 | 89.57 | 497.55 | 38.55 | 48.27 | 360.89 |
| 6/20 | 80.90 | 163.74 | 792.47 | 52.44 | 91.18 | 573.95 | 72.77 | 132.38 | 715.80 | 46.59 | 70.45 | 520.87 |
| 6/21 | 87.23 | 169.68 | 830.31 | 56.89 | 94.25 | 602.74 | 78.58 | 137.19 | 750.01 | 50.49 | 72.80 | 546.97 |
| 6/22 | 91.73 | 170.72 | 852.05 | 60.09 | 94.70 | 619.33 | 82.76 | 138.13 | 769.68 | 53.30 | 73.20 | 562.03 |
| 6/23 | 89.55 | 168.04 | 863.38 | 58.15 | 93.34 | 627.87 | 80.72 | 135.94 | 779.92 | 51.67 | 72.14 | 569.76 |
| 6/24 | 90.15 | 168.46 | 889.90 | 58.34 | 93.59 | 647.66 | 81.19 | 136.25 | 803.80 | 51.82 | 72.32 | 587.65 |
| 6/25 | 77.83 | 129.42 | 674.83 | 51.74 | 72.10 | 490.28 | 70.53 | 104.96 | 610.14 | 46.20 | 55.95 | 445.45 |
| 6/26 | 75.07 | 111.24 | 585.51 | 50.43 | 62.25 | 424.44 | 68.37 | 90.70 | 530.04 | 45.25 | 48.69 | 386.20 |
| 6/27 | 94.66 | 166.38 | 843.45 | 62.26 | 92.25 | 613.48 | 85.62 | 134.82 | 762.08 | 55.31 | 71.45 | 556.84 |
| 6/28 | 90.62 | 164.91 | 861.74 | 58.91 | 91.59 | 627.11 | 81.78 | 133.53 | 778.56 | 52.40 | 70.88 | 569.17 |
| 6/29 | 90.69 | 159.76 | 877.94 | 58.82 | 88.99 | 639.40 | 81.79 | 129.32 | 793.22 | 52.28 | 68.85 | 580.32 |
| 6/30 | 85.57 | 168.88 | 847.02 | 55.21 | 93.88 | 615.21 | 77.01 | 136.50 | 765.07 | 49.07 | 72.49 | 558.25 |
| 7/1 | 91.29 | 170.60 | 843.27 | 59.44 | 93.61 | 613.10 | 82.45 | 138.32 | 762.01 | 52.76 | 72.41 | 556.64 |
| 7/2 | 84.51 | 125.27 | 665.97 | 56.58 | 69.00 | 484.36 | 76.95 | 102.04 | 602.43 | 50.51 | 53.75 | 440.34 |
| 7/3 | 73.74 | 98.27 | 577.73 | 49.34 | 54.88 | 419.45 | 67.23 | 80.46 | 523.29 | 44.26 | 43.13 | 381.95 |
| 7/4 | 66.89 | 93.77 | 569.06 | 44.57 | 52.63 | 412.73 | 60.83 | 76.77 | 515.43 | 40.02 | 41.38 | 375.82 |
| 7/5 | 84.09 | 139.88 | 836.91 | 54.35 | 77.68 | 608.98 | 75.82 | 113.67 | 756.48 | 48.30 | 60.36 | 553.04 |
| 7/6 | 82.10 | 140.51 | 822.60 | 53.16 | 78.16 | 597.87 | 73.93 | 114.00 | 743.46 | 47.20 | 60.63 | 542.94 |
| 7/7 | 85.08 | 143.89 | 840.39 | 54.93 | 79.77 | 611.97 | 76.77 | 116.86 | 759.71 | 48.90 | 61.93 | 555.84 |
| 7/8 | 88.82 | 153.48 | 873.73 | 57.34 | 84.75 | 636.72 | 80.15 | 124.57 | 789.73 | 51.00 | 65.70 | 578.19 |
| 7/9 | 75.48 | 115.86 | 658.10 | 49.90 | 64.20 | 478.26 | 68.47 | 94.40 | 595.29 | 44.59 | 50.08 | 434.79 |
| 7/10 | 68.00 | 94.34 | 561.31 | 45.64 | 52.96 | 406.70 | 61.82 | 77.19 | 508.38 | 40.88 | 41.61 | 370.33 |
| 7/11 | 77.28 | 133.76 | 778.90 | 49.76 | 74.65 | 564.87 | 69.58 | 108.60 | 703.94 | 44.28 | 57.98 | 512.98 |
| 7/12 | 82.45 | 148.86 | 818.96 | 53.03 | 82.39 | 595.13 | 74.34 | 120.85 | 740.18 | 47.23 | 63.90 | 540.44 |
| 7/13 | 82.75 | 164.86 | 797.85 | 53.42 | 90.77 | 578.72 | 74.57 | 133.57 | 720.98 | 47.49 | 70.18 | 525.50 |
| 7/14 | 79.99 | 162.90 | 778.27 | 51.64 | 89.84 | 563.78 | 72.02 | 131.90 | 703.25 | 45.90 | 69.42 | 511.93 |
| 7/15 | 81.59 | 166.57 | 803.57 | 52.58 | 91.79 | 582.35 | 73.41 | 134.80 | 725.96 | 46.69 | 70.87 | 528.65 |
| 7/16 | 72.91 | 127.45 | 629.24 | 48.34 | 70.28 | 455.85 | 66.07 | 103.62 | 569.08 | 43.17 | 54.63 | 414.38 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 7/17 | 74.72 | 107.28 | 566.70 | 50.20 | 59.54 | 410.89 | 68.16 | 87.71 | 513.28 | 45.02 | 46.66 | 374.15 |
| 7/18 | 87.80 | 144.40 | 822.72 | 57.02 | 79.86 | 598.84 | 79.37 | 117.46 | 743.81 | 50.73 | 62.11 | 543.97 |
| 7/19 | 87.12 | 148.40 | 843.52 | 56.32 | 81.98 | 614.18 | 78.68 | 120.63 | 762.47 | 50.15 | 63.69 | 557.76 |
| 7/20 | 87.97 | 150.12 | 855.85 | 56.73 | 82.89 | 623.66 | 79.46 | 121.96 | 773.69 | 50.52 | 64.35 | 566.44 |
| 7/21 | 87.48 | 151.66 | 834.00 | 56.78 | 83.74 | 607.02 | 79.01 | 123.15 | 753.90 | 50.51 | 64.96 | 551.33 |
| 7/22 | 85.79 | 160.12 | 848.54 | 55.09 | 88.21 | 617.24 | 77.35 | 129.85 | 766.83 | 49.04 | 68.31 | 560.43 |
| 7/23 | 72.17 | 113.12 | 654.66 | 47.54 | 62.83 | 475.60 | 65.39 | 92.15 | 592.17 | 42.51 | 49.02 | 432.37 |
| 7/24 | 65.47 | 92.65 | 561.07 | 43.59 | 52.08 | 406.52 | 59.49 | 75.83 | 508.17 | 39.13 | 40.95 | 370.17 |
| 7/25 | 77.91 | 130.97 | 785.99 | 50.40 | 73.19 | 570.37 | 70.14 | 106.38 | 710.41 | 44.79 | 56.88 | 518.01 |
| 7/26 | 84.68 | 148.98 | 829.43 | 54.62 | 82.35 | 603.25 | 76.41 | 121.02 | 749.68 | 48.64 | 63.92 | 547.82 |
| 7/27 | 83.34 | 151.90 | 823.82 | 53.62 | 83.99 | 598.86 | 75.14 | 123.22 | 744.57 | 47.74 | 65.08 | 543.84 |
| 7/28 | 86.06 | 151.23 | 832.53 | 55.56 | 83.53 | 605.89 | 77.70 | 122.80 | 752.56 | 49.49 | 64.80 | 550.29 |
| 7/29 | 86.33 | 151.48 | 861.56 | 55.58 | 83.76 | 627.33 | 77.83 | 122.90 | 778.67 | 49.42 | 64.92 | 569.63 |
| 7/30 | 77.56 | 114.78 | 664.64 | 51.61 | 63.60 | 483.35 | 70.41 | 93.56 | 601.23 | 46.07 | 49.65 | 439.42 |
| 7/31 | 72.00 | 94.66 | 576.81 | 48.24 | 53.03 | 418.74 | 65.57 | 77.54 | 522.46 | 43.23 | 41.72 | 381.29 |
| 8/1 | 84.88 | 139.77 | 837.47 | 55.22 | 78.14 | 609.99 | 76.52 | 113.57 | 756.56 | 49.06 | 60.83 | 553.66 |
| 8/2 | 91.69 | 149.75 | 867.78 | 59.71 | 83.23 | 633.04 | 82.88 | 121.76 | 783.94 | 53.12 | 64.78 | 574.53 |
| 8/3 | 90.10 | 150.64 | 867.95 | 58.46 | 83.76 | 632.88 | 81.34 | 122.37 | 784.05 | 51.98 | 65.14 | 574.36 |
| 8/4 | 88.14 | 145.38 | 859.93 | 57.44 | 81.03 | 626.68 | 79.51 | 118.13 | 776.74 | 51.00 | 63.06 | 568.69 |
| 8/5 | 90.41 | 158.77 | 900.53 | 58.21 | 88.07 | 656.92 | 81.55 | 128.88 | 813.28 | 51.78 | 68.38 | 596.00 |
| 8/6 | 75.74 | 121.37 | 680.71 | 49.95 | 67.76 | 495.78 | 68.65 | 98.58 | 615.41 | 44.69 | 52.71 | 450.48 |
| 8/7 | 70.29 | 96.32 | 586.02 | 46.88 | 54.28 | 425.89 | 63.98 | 78.84 | 530.50 | 42.11 | 42.73 | 387.56 |
| 8/8 | 84.21 | 139.07 | 844.30 | 54.52 | 77.84 | 615.33 | 75.92 | 112.98 | 762.78 | 48.51 | 60.56 | 558.53 |
| 8/9 | 84.65 | 153.89 | 834.64 | 54.52 | 85.52 | 607.34 | 76.34 | 124.94 | 753.88 | 48.58 | 66.44 | 551.17 |
| 8/10 | 84.88 | 158.30 | 838.91 | 54.66 | 87.93 | 610.37 | 76.51 | 128.39 | 757.69 | 48.67 | 68.20 | 553.89 |
| 8/11 | 81.55 | 140.62 | 841.96 | 52.48 | 78.80 | 612.76 | 73.39 | 114.09 | 760.45 | 46.68 | 61.21 | 556.04 |
| 8/12 | 82.62 | 149.83 | 866.08 | 52.91 | 83.68 | 630.20 | 74.26 | 121.43 | 782.02 | 47.02 | 64.88 | 571.70 |
| 8/13 | 72.73 | 115.65 | 672.61 | 48.04 | 64.78 | 489.49 | 65.80 | 93.96 | 608.06 | 42.89 | 50.45 | 444.76 |
| 8/14 | 69.86 | 97.56 | 583.26 | 46.53 | 54.98 | 423.74 | 63.58 | 79.81 | 528.00 | 41.82 | 43.22 | 385.61 |
| 8/15 | 86.22 | 148.71 | 834.55 | 55.85 | 82.73 | 607.75 | 77.81 | 120.82 | 753.93 | 49.71 | 64.36 | 551.65 |
| 8/16 | 85.69 | 147.22 | 845.31 | 55.47 | 82.03 | 615.61 | 77.28 | 119.59 | 763.56 | 49.36 | 63.79 | 558.68 |
| 8/17 | 89.23 | 148.29 | 876.92 | 57.74 | 82.61 | 639.85 | 80.55 | 120.44 | 792.18 | 51.40 | 64.21 | 580.71 |
| 8/18 | 89.44 | 148.89 | 864.64 | 57.95 | 82.82 | 630.30 | 80.76 | 121.00 | 781.08 | 51.58 | 64.44 | 572.04 |
| 8/19 | 87.03 | 149.89 | 881.53 | 56.42 | 83.58 | 642.16 | 78.33 | 121.58 | 796.01 | 50.04 | 64.88 | 582.55 |
| 8/20 | 74.30 | 121.23 | 670.67 | 49.07 | 67.65 | 487.97 | 67.28 | 98.48 | 606.30 | 43.85 | 52.65 | 443.37 |
| 8/21 | 71.08 | 105.01 | 573.80 | 47.43 | 58.89 | 416.38 | 64.73 | 85.78 | 519.42 | 42.63 | 46.18 | 378.92 |
| 8/22 | 90.10 | 154.55 | 844.56 | 58.52 | 85.82 | 615.54 | 81.47 | 125.53 | 763.00 | 52.14 | 66.68 | 558.71 |
| 8/23 | 92.56 | 155.25 | 861.92 | 60.23 | 86.13 | 628.50 | 83.72 | 126.16 | 778.61 | 53.63 | 66.96 | 570.40 |
| 8/24 | 93.78 | 158.61 | 873.26 | 60.96 | 87.90 | 637.04 | 84.82 | 128.83 | 788.86 | 54.28 | 68.29 | 578.14 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 8/25 | 91.83 | 154.54 | 871.17 | 59.48 | 85.76 | 635.42 | 83.01 | 125.58 | 786.96 | 52.97 | 66.68 | 576.66 |
| 8/26 | 97.68 | 160.77 | 916.75 | 63.45 | 89.02 | 669.50 | 88.33 | 130.58 | 827.99 | 56.36 | 69.16 | 607.44 |
| 8/27 | 80.63 | 119.86 | 691.51 | 53.51 | 66.85 | 504.19 | 73.18 | 97.48 | 625.21 | 47.74 | 52.10 | 458.13 |
| 8/28 | 72.11 | 97.94 | 584.40 | 48.37 | 55.16 | 424.62 | 65.65 | 80.13 | 529.03 | 43.39 | 43.37 | 386.41 |
| 8/29 | 90.01 | 151.40 | 845.02 | 58.62 | 84.13 | 615.88 | 81.36 | 123.03 | 763.43 | 52.18 | 65.43 | 559.03 |
| 8/30 | 90.49 | 155.19 | 858.27 | 58.65 | 86.10 | 625.69 | 81.80 | 126.10 | 775.30 | 52.26 | 66.94 | 567.85 |
| 8/31 | 91.75 | 157.54 | 867.64 | 59.48 | 87.36 | 632.66 | 82.90 | 127.93 | 783.77 | 52.92 | 67.87 | 574.17 |
| 9/1 | 92.03 | 158.29 | 871.56 | 59.65 | 87.82 | 635.91 | 83.11 | 128.51 | 787.01 | 53.04 | 68.10 | 576.88 |
| 9/2 | 84.56 | 154.96 | 881.75 | 54.03 | 86.44 | 642.08 | 75.98 | 125.53 | 795.81 | 47.97 | 66.86 | 582.17 |
| 9/3 | 76.90 | 127.86 | 687.72 | 50.70 | 71.01 | 500.14 | 69.60 | 104.00 | 621.15 | 45.23 | 55.24 | 453.92 |
| 9/4 | 74.04 | 107.43 | 591.86 | 49.50 | 60.10 | 429.96 | 67.38 | 87.78 | 535.42 | 44.36 | 47.09 | 390.99 |
| 9/5 | 70.04 | 101.99 | 593.07 | 46.45 | 57.31 | 430.90 | 63.66 | 83.36 | 536.51 | 41.72 | 44.94 | 391.83 |
| 9/6 | 85.39 | 147.93 | 848.60 | 55.14 | 82.53 | 618.33 | 76.92 | 120.05 | 766.25 | 49.00 | 64.02 | 560.93 |
| 9/7 | 87.05 | 154.08 | 856.58 | 56.18 | 85.77 | 624.27 | 78.45 | 124.99 | 773.41 | 49.94 | 66.46 | 566.28 |
| 9/8 | 88.36 | 158.93 | 854.48 | 57.10 | 88.18 | 622.65 | 79.67 | 128.99 | 771.52 | 50.77 | 68.36 | 564.82 |
| 9/9 | 82.78 | 164.68 | 846.90 | 52.93 | 91.48 | 615.04 | 74.31 | 133.34 | 764.18 | 46.96 | 70.71 | 557.57 |
| 9/10 | 70.01 | 120.38 | 649.53 | 46.23 | 67.32 | 470.45 | 63.14 | 97.75 | 586.52 | 41.14 | 52.31 | 426.94 |
| 9/11 | 64.42 | 100.42 | 554.33 | 43.02 | 56.69 | 400.78 | 58.36 | 81.89 | 501.38 | 38.48 | 44.35 | 364.44 |
| 9/12 | 78.85 | 145.55 | 779.93 | 50.96 | 81.48 | 565.61 | 70.87 | 117.92 | 704.09 | 45.24 | 63.10 | 513.09 |
| 9/13 | 76.75 | 145.39 | 766.87 | 49.54 | 81.55 | 554.93 | 68.86 | 117.63 | 692.13 | 43.90 | 63.07 | 503.30 |
| 9/14 | 76.08 | 144.74 | 769.15 | 49.02 | 81.30 | 556.35 | 68.21 | 117.04 | 694.08 | 43.42 | 62.83 | 504.50 |
| 9/15 | 77.80 | 150.90 | 786.48 | 50.05 | 84.42 | 569.90 | 69.82 | 122.10 | 709.81 | 44.38 | 65.25 | 516.84 |
| 9/16 | 80.96 | 159.90 | 828.70 | 51.99 | 89.13 | 600.93 | 72.60 | 129.35 | 747.66 | 46.03 | 68.84 | 544.73 |
| 9/17 | 67.59 | 127.82 | 634.71 | 44.34 | 71.22 | 458.95 | 60.92 | 103.70 | 573.09 | 39.52 | 55.26 | 416.49 |
| 9/18 | 65.23 | 108.67 | 549.41 | 43.60 | 60.99 | 396.95 | 59.12 | 88.52 | 496.92 | 39.00 | 47.61 | 360.97 |
| 9/19 | 81.39 | 157.77 | 780.65 | 52.86 | 87.83 | 566.09 | 73.23 | 127.80 | 704.71 | 46.89 | 67.94 | 513.49 |
| 9/20 | 82.83 | 162.43 | 793.13 | 53.84 | 90.29 | 575.27 | 74.51 | 131.52 | 715.89 | 47.72 | 69.79 | 521.75 |
| 9/21 | 83.51 | 164.99 | 800.50 | 54.26 | 91.63 | 580.71 | 75.12 | 133.57 | 722.53 | 48.08 | 70.80 | 526.66 |
| 9/22 | 84.70 | 164.51 | 813.24 | 54.97 | 91.30 | 590.64 | 76.24 | 133.27 | 734.08 | 48.75 | 70.60 | 535.69 |
| 9/23 | 88.45 | 174.27 | 854.92 | 57.34 | 96.40 | 621.24 | 79.57 | 141.13 | 771.44 | 50.77 | 74.49 | 563.19 |
| 9/24 | 74.01 | 134.12 | 664.18 | 48.84 | 74.36 | 481.84 | 66.88 | 108.94 | 599.81 | 43.52 | 57.73 | 437.29 |
| 9/25 | 65.84 | 108.56 | 556.74 | 43.83 | 60.92 | 402.65 | 59.71 | 88.46 | 503.57 | 39.28 | 47.56 | 366.15 |
| 9/26 | 78.13 | 158.58 | 762.45 | 50.51 | 88.36 | 552.00 | 70.21 | 128.33 | 688.20 | 44.82 | 68.27 | 500.68 |
| 9/27 | 80.12 | 159.96 | 788.05 | 51.74 | 89.01 | 571.34 | 72.00 | 129.50 | 711.31 | 45.91 | 68.81 | 518.20 |
| 9/28 | 79.01 | 156.47 | 789.23 | 50.86 | 87.29 | 572.02 | 70.95 | 126.61 | 712.31 | 45.12 | 67.45 | 518.76 |
| 9/29 | 80.11 | 157.75 | 794.75 | 51.64 | 87.92 | 576.29 | 71.97 | 127.68 | 717.30 | 45.81 | 67.95 | 522.64 |
| 9/30 | 85.01 | 168.54 | 852.12 | 54.70 | 93.47 | 619.10 | 76.38 | 136.47 | 768.90 | 48.49 | 72.24 | 561.25 |
| Average | 78.71 | 144.63 | 748.33 | 51.31 | 80.85 | 543.04 | 70.96 | 117.15 | 675.97 | 45.65 | 62.69 | 492.98 |

Table E-5. Daily biogenic source emissions extracted from the SMOKE gridded emissions in 2011 and 2017 (metric tons/day)

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 5/1 | 291.40 | 1.60 | 39.57 | 291.40 | 1.60 | 39.57 | 109.50 | 0.61 | 15.03 | 109.50 | 0.61 | 15.03 |
| 5/2 | 375.77 | 2.09 | 49.23 | 375.77 | 2.09 | 49.23 | 140.32 | 0.79 | 18.59 | 140.32 | 0.79 | 18.59 |
| 5/3 | 625.77 | 3.37 | 80.77 | 625.77 | 3.37 | 80.77 | 226.51 | 1.24 | 29.92 | 226.51 | 1.24 | 29.92 |
| 5/4 | 950.08 | 4.79 | 120.67 | 950.08 | 4.79 | 120.67 | 343.54 | 1.78 | 44.71 | 343.54 | 1.78 | 44.71 |
| 5/5 | 993.82 | 4.98 | 127.93 | 993.82 | 4.98 | 127.93 | 376.13 | 1.90 | 49.26 | 376.13 | 1.90 | 49.26 |
| 5/6 | 1,010.53 | 5.09 | 129.90 | 1,010.53 | 5.09 | 129.90 | 382.20 | 1.94 | 49.97 | 382.20 | 1.94 | 49.97 |
| 5/7 | 922.97 | 4.75 | 119.94 | 922.97 | 4.75 | 119.94 | 338.65 | 1.77 | 44.82 | 338.65 | 1.77 | 44.82 |
| 5/8 | 709.32 | 3.87 | 93.37 | 709.32 | 3.87 | 93.37 | 259.04 | 1.44 | 34.68 | 259.04 | 1.44 | 34.68 |
| 5/9 | 328.77 | 1.90 | 45.42 | 328.77 | 1.90 | 45.42 | 123.03 | 0.71 | 17.20 | 123.03 | 0.71 | 17.20 |
| 5/10 | 267.65 | 1.49 | 36.47 | 267.65 | 1.49 | 36.47 | 99.84 | 0.56 | 13.77 | 99.84 | 0.56 | 13.77 |
| 5/11 | 423.30 | 2.35 | 54.96 | 423.30 | 2.35 | 54.96 | 159.87 | 0.90 | 21.06 | 159.87 | 0.90 | 21.06 |
| 5/12 | 696.87 | 3.72 | 88.60 | 696.87 | 3.72 | 88.60 | 269.22 | 1.46 | 34.67 | 269.22 | 1.46 | 34.67 |
| 5/13 | 1,051.83 | 5.10 | 132.30 | 1,051.83 | 5.10 | 132.30 | 399.51 | 1.98 | 51.31 | 399.51 | 1.98 | 51.31 |
| 5/14 | 721.09 | 3.80 | 95.84 | 721.09 | 3.80 | 95.84 | 273.39 | 1.46 | 36.92 | 273.39 | 1.46 | 36.92 |
| 5/15 | 611.50 | 3.24 | 80.87 | 611.50 | 3.24 | 80.87 | 232.10 | 1.24 | 31.07 | 232.10 | 1.24 | 31.07 |
| 5/16 | 490.64 | 2.67 | 65.59 | 490.64 | 2.67 | 65.59 | 185.46 | 1.01 | 25.05 | 185.46 | 1.01 | 25.05 |
| 5/17 | 366.22 | 2.07 | 49.43 | 366.22 | 2.07 | 49.43 | 139.51 | 0.80 | 19.00 | 139.51 | 0.80 | 19.00 |
| 5/18 | 237.24 | 1.57 | 30.06 | 237.24 | 1.57 | 30.06 | 78.48 | 0.58 | 9.88 | 78.48 | 0.58 | 9.88 |
| 5/19 | 310.10 | 1.68 | 41.31 | 310.10 | 1.68 | 41.31 | 115.11 | 0.64 | 15.52 | 115.11 | 0.64 | 15.52 |
| 5/20 | 486.27 | 2.61 | 63.24 | 486.27 | 2.61 | 63.24 | 185.03 | 1.01 | 24.44 | 185.03 | 1.01 | 24.44 |
| 5/21 | 676.68 | 3.54 | 86.95 | 676.68 | 3.54 | 86.95 | 257.39 | 1.36 | 33.55 | 257.39 | 1.36 | 33.55 |
| 5/22 | 677.68 | 3.47 | 89.61 | 677.68 | 3.47 | 89.61 | 254.41 | 1.33 | 34.08 | 254.41 | 1.33 | 34.08 |
| 5/23 | 589.41 | 3.08 | 77.95 | 589.41 | 3.08 | 77.95 | 219.84 | 1.17 | 29.54 | 219.84 | 1.17 | 29.54 |
| 5/24 | 592.70 | 3.07 | 78.64 | 592.70 | 3.07 | 78.64 | 222.62 | 1.17 | 30.02 | 222.62 | 1.17 | 30.02 |
| 5/25 | 864.94 | 4.23 | 110.39 | 864.94 | 4.23 | 110.39 | 327.43 | 1.63 | 42.56 | 327.43 | 1.63 | 42.56 |
| 5/26 | 1,042.53 | 4.90 | 134.86 | 1,042.53 | 4.90 | 134.86 | 390.28 | 1.88 | 51.48 | 390.28 | 1.88 | 51.48 |
| 5/27 | 1,193.08 | 5.54 | 151.52 | 1,193.08 | 5.54 | 151.52 | 447.73 | 2.12 | 57.88 | 447.73 | 2.12 | 57.88 |
| 5/28 | 1,074.85 | 5.20 | 139.17 | 1,074.85 | 5.20 | 139.17 | 397.52 | 1.98 | 52.50 | 397.52 | 1.98 | 52.50 |
| 5/29 | 595.70 | 2.95 | 82.83 | 595.70 | 2.95 | 82.83 | 223.61 | 1.12 | 31.55 | 223.61 | 1.12 | 31.55 |
| 5/30 | 510.94 | 2.58 | 68.74 | 510.94 | 2.58 | 68.74 | 194.19 | 1.00 | 26.49 | 194.19 | 1.00 | 26.49 |
| 5/31 | 995.02 | 4.81 | 123.70 | 995.02 | 4.81 | 123.70 | 379.89 | 1.86 | 48.09 | 379.89 | 1.86 | 48.09 |
| 6/1 | 1,230.55 | 5.80 | 157.32 | 1,230.55 | 5.80 | 157.32 | 459.77 | 2.23 | 59.76 | 459.77 | 2.23 | 59.76 |
| 6/2 | 885.27 | 4.17 | 120.83 | 885.27 | 4.17 | 120.83 | 330.92 | 1.58 | 46.32 | 330.92 | 1.58 | 46.32 |
| 6/3 | 923.84 | 4.24 | 121.99 | 923.84 | 4.24 | 121.99 | 337.27 | 1.59 | 45.74 | 337.27 | 1.59 | 45.74 |
| 6/4 | 1,113.85 | 4.97 | 142.39 | 1,113.85 | 4.97 | 142.39 | 406.26 | 1.88 | 53.36 | 406.26 | 1.88 | 53.36 |
| 6/5 | 1,294.16 | 5.67 | 164.26 | 1,294.16 | 5.67 | 164.26 | 474.51 | 2.14 | 61.90 | 474.51 | 2.14 | 61.90 |
| 6/6 | 906.01 | 4.32 | 123.50 | 906.01 | 4.32 | 123.50 | 333.75 | 1.63 | 46.60 | 333.75 | 1.63 | 46.60 |
| 6/7 | 958.54 | 4.48 | 124.81 | 958.54 | 4.48 | 124.81 | 345.24 | 1.67 | 46.30 | 345.24 | 1.67 | 46.30 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 6/8 | 892.69 | 4.16 | 119.26 | 892.69 | 4.16 | 119.26 | 326.30 | 1.57 | 44.76 | 326.30 | 1.57 | 44.76 |
| 6/9 | 912.59 | 4.32 | 119.52 | 912.59 | 4.32 | 119.52 | 336.82 | 1.64 | 45.22 | 336.82 | 1.64 | 45.22 |
| 6/10 | 1,089.10 | 4.98 | 141.12 | 1,089.10 | 4.98 | 141.12 | 402.61 | 1.91 | 53.49 | 402.61 | 1.91 | 53.49 |
| 6/11 | 1,069.08 | 4.86 | 140.10 | 1,069.08 | 4.86 | 140.10 | 395.13 | 1.86 | 53.15 | 395.13 | 1.86 | 53.15 |
| 6/12 | 1,110.79 | 4.93 | 144.78 | 1,110.79 | 4.93 | 144.78 | 408.33 | 1.88 | 54.54 | 408.33 | 1.88 | 54.54 |
| 6/13 | 1,130.28 | 4.95 | 148.12 | 1,130.28 | 4.95 | 148.12 | 411.93 | 1.87 | 55.69 | 411.93 | 1.87 | 55.69 |
| 6/14 | 1,441.18 | 6.16 | 182.93 | 1,441.18 | 6.16 | 182.93 | 537.83 | 2.37 | 69.91 | 537.83 | 2.37 | 69.91 |
| 6/15 | 1,706.15 | 7.07 | 217.08 | 1,706.15 | 7.07 | 217.08 | 624.04 | 2.69 | 81.90 | 624.04 | 2.69 | 81.90 |
| 6/16 | 1,559.29 | 6.57 | 202.08 | 1,559.29 | 6.57 | 202.08 | 570.44 | 2.49 | 76.10 | 570.44 | 2.49 | 76.10 |
| 6/17 | 1,420.42 | 6.05 | 184.97 | 1,420.42 | 6.05 | 184.97 | 514.50 | 2.28 | 68.95 | 514.50 | 2.28 | 68.95 |
| 6/18 | 1,495.65 | 6.26 | 192.41 | 1,495.65 | 6.26 | 192.41 | 546.85 | 2.37 | 72.29 | 546.85 | 2.37 | 72.29 |
| 6/19 | 1,346.88 | 5.88 | 177.60 | 1,346.88 | 5.88 | 177.60 | 492.49 | 2.24 | 66.79 | 492.49 | 2.24 | 66.79 |
| 6/20 | 1,430.84 | 6.07 | 186.99 | 1,430.84 | 6.07 | 186.99 | 519.07 | 2.31 | 70.04 | 519.07 | 2.31 | 70.04 |
| 6/21 | 1,903.25 | 7.47 | 240.80 | 1,903.25 | 7.47 | 240.80 | 708.05 | 2.87 | 92.07 | 708.05 | 2.87 | 92.07 |
| 6/22 | 2,385.58 | 8.83 | 299.55 | 2,385.58 | 8.83 | 299.55 | 884.64 | 3.38 | 114.09 | 884.64 | 3.38 | 114.09 |
| 6/23 | 2,120.80 | 8.29 | 270.42 | 2,120.80 | 8.29 | 270.42 | 787.35 | 3.18 | 103.11 | 787.35 | 3.18 | 103.11 |
| 6/24 | 1,948.46 | 7.95 | 248.06 | 1,948.46 | 7.95 | 248.06 | 717.27 | 3.03 | 93.94 | 717.27 | 3.03 | 93.94 |
| 6/25 | 2,086.68 | 8.28 | 265.56 | 2,086.68 | 8.28 | 265.56 | 768.89 | 3.15 | 100.50 | 768.89 | 3.15 | 100.50 |
| 6/26 | 2,187.27 | 8.57 | 279.32 | 2,187.27 | 8.57 | 279.32 | 810.83 | 3.27 | 106.30 | 810.83 | 3.27 | 106.30 |
| 6/27 | 2,522.79 | 9.47 | 317.71 | 2,522.79 | 9.47 | 317.71 | 932.97 | 3.60 | 120.58 | 932.97 | 3.60 | 120.58 |
| 6/28 | 2,496.02 | 9.56 | 314.65 | 2,496.02 | 9.56 | 314.65 | 932.93 | 3.68 | 120.60 | 932.93 | 3.68 | 120.60 |
| 6/29 | 2,183.39 | 8.75 | 280.12 | 2,183.39 | 8.75 | 280.12 | 820.55 | 3.37 | 107.80 | 820.55 | 3.37 | 107.80 |
| 6/30 | 1,792.12 | 7.32 | 234.59 | 1,792.12 | 7.32 | 234.59 | 664.14 | 2.79 | 89.23 | 664.14 | 2.79 | 89.23 |
| 7/1 | 2,333.54 | 8.70 | 293.76 | 2,333.54 | 8.70 | 293.76 | 860.62 | 3.31 | 111.15 | 860.62 | 3.31 | 111.15 |
| 7/2 | 2,798.75 | 10.72 | 343.84 | 2,798.75 | 10.72 | 343.84 | 1,029.43 | 4.11 | 128.40 | 1,029.43 | 4.11 | 128.40 |
| 7/3 | 2,014.53 | 8.71 | 262.42 | 2,014.53 | 8.71 | 262.42 | 783.14 | 3.46 | 103.96 | 783.14 | 3.46 | 103.96 |
| 7/4 | 1,523.26 | 7.17 | 196.67 | 1,523.26 | 7.17 | 196.67 | 581.59 | 2.82 | 77.01 | 581.59 | 2.82 | 77.01 |
| 7/5 | 1,573.74 | 7.65 | 202.90 | 1,573.74 | 7.65 | 202.90 | 609.77 | 2.99 | 80.30 | 609.77 | 2.99 | 80.30 |
| 7/6 | 1,745.75 | 8.62 | 222.76 | 1,745.75 | 8.62 | 222.76 | 672.75 | 3.31 | 87.82 | 672.75 | 3.31 | 87.82 |
| 7/7 | 1,981.55 | 8.92 | 255.25 | 1,981.55 | 8.92 | 255.25 | 767.42 | 3.50 | 100.87 | 767.42 | 3.50 | 100.87 |
| 7/8 | 2,113.49 | 9.38 | 269.26 | 2,113.49 | 9.38 | 269.26 | 780.49 | 3.56 | 102.57 | 780.49 | 3.56 | 102.57 |
| 7/9 | 2,207.95 | 9.42 | 282.88 | 2,207.95 | 9.42 | 282.88 | 833.39 | 3.67 | 109.18 | 833.39 | 3.67 | 109.18 |
| 7/10 | 1,817.63 | 8.32 | 234.58 | 1,817.63 | 8.32 | 234.58 | 703.81 | 3.29 | 93.57 | 703.81 | 3.29 | 93.57 |
| 7/11 | 1,563.46 | 7.90 | 199.44 | 1,563.46 | 7.90 | 199.44 | 599.17 | 3.09 | 78.71 | 599.17 | 3.09 | 78.71 |
| 7/12 | 1,584.52 | 7.50 | 207.00 | 1,584.52 | 7.50 | 207.00 | 589.81 | 2.84 | 78.94 | 589.81 | 2.84 | 78.94 |
| 7/13 | 1,491.23 | 6.80 | 196.39 | 1,491.23 | 6.80 | 196.39 | 555.61 | 2.57 | 74.47 | 555.61 | 2.57 | 74.47 |
| 7/14 | 1,264.49 | 5.81 | 167.36 | 1,264.49 | 5.81 | 167.36 | 466.44 | 2.18 | 62.86 | 466.44 | 2.18 | 62.86 |
| 7/15 | 1,337.27 | 6.06 | 173.49 | 1,337.27 | 6.06 | 173.49 | 489.71 | 2.27 | 64.84 | 489.71 | 2.27 | 64.84 |
| 7/16 | 1,572.90 | 7.03 | 201.30 | 1,572.90 | 7.03 | 201.30 | 579.97 | 2.63 | 75.51 | 579.97 | 2.63 | 75.51 |

| Date | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 7/17 | 1,902.09 | 8.65 | 240.27 | 1,902.09 | 8.65 | 240.27 | 717.81 | 3.30 | 92.18 | 717.81 | 3.30 | 92.18 |
| 7/18 | 1,757.49 | 8.53 | 222.92 | 1,757.49 | 8.53 | 222.92 | 684.05 | 3.33 | 87.98 | 684.05 | 3.33 | 87.98 |
| 7/19 | 1,949.93 | 8.83 | 251.41 | 1,949.93 | 8.83 | 251.41 | 735.04 | 3.39 | 96.57 | 735.04 | 3.39 | 96.57 |
| 7/20 | 1,963.04 | 8.71 | 250.55 | 1,963.04 | 8.71 | 250.55 | 736.16 | 3.34 | 96.06 | 736.16 | 3.34 | 96.06 |
| 7/21 | 1,945.52 | 8.63 | 246.76 | 1,945.52 | 8.63 | 246.76 | 719.80 | 3.26 | 93.92 | 719.80 | 3.26 | 93.92 |
| 7/22 | 1,594.09 | 7.56 | 206.29 | 1,594.09 | 7.56 | 206.29 | 598.94 | 2.86 | 78.96 | 598.94 | 2.86 | 78.96 |
| 7/23 | 1,118.64 | 6.04 | 142.59 | 1,118.64 | 6.04 | 142.59 | 451.87 | 2.39 | 58.61 | 451.87 | 2.39 | 58.61 |
| 7/24 | 1,171.80 | 8.12 | 143.96 | 1,171.80 | 8.12 | 143.96 | 456.73 | 3.16 | 56.86 | 456.73 | 3.16 | 56.86 |
| 7/25 | 893.84 | 7.96 | 105.39 | 893.84 | 7.96 | 105.39 | 283.00 | 2.91 | 33.53 | 283.00 | 2.91 | 33.53 |
| 7/26 | 1,687.32 | 8.43 | 209.83 | 1,687.32 | 8.43 | 209.83 | 594.53 | 3.38 | 74.89 | 594.53 | 3.38 | 74.89 |
| 7/27 | 1,654.25 | 8.09 | 208.02 | 1,654.25 | 8.09 | 208.02 | 600.64 | 3.06 | 77.19 | 600.64 | 3.06 | 77.19 |
| 7/28 | 1,034.88 | 7.46 | 123.37 | 1,034.88 | 7.46 | 123.37 | 353.36 | 2.76 | 43.36 | 353.36 | 2.76 | 43.36 |
| 7/29 | 949.18 | 6.77 | 111.03 | 949.18 | 6.77 | 111.03 | 377.39 | 2.61 | 44.67 | 377.39 | 2.61 | 44.67 |
| 7/30 | 1,521.60 | 7.64 | 189.32 | 1,521.60 | 7.64 | 189.32 | 576.98 | 2.95 | 72.93 | 576.98 | 2.95 | 72.93 |
| 7/31 | 1,697.04 | 7.92 | 213.60 | 1,697.04 | 7.92 | 213.60 | 643.12 | 3.09 | 82.53 | 643.12 | 3.09 | 82.53 |
| 8/1 | 1,891.76 | 9.18 | 238.84 | 1,891.76 | 9.18 | 238.84 | 691.17 | 3.32 | 90.13 | 691.17 | 3.32 | 90.13 |
| 8/2 | 2,461.78 | 10.57 | 307.90 | 2,461.78 | 10.57 | 307.90 | 903.35 | 3.99 | 115.67 | 903.35 | 3.99 | 115.67 |
| 8/3 | 2,468.20 | 10.27 | 313.25 | 2,468.20 | 10.27 | 313.25 | 897.48 | 3.85 | 117.07 | 897.48 | 3.85 | 117.07 |
| 8/4 | 2,130.05 | 9.43 | 270.84 | 2,130.05 | 9.43 | 270.84 | 765.00 | 3.56 | 99.85 | 765.00 | 3.56 | 99.85 |
| 8/5 | 2,104.82 | 9.22 | 269.57 | 2,104.82 | 9.22 | 269.57 | 757.50 | 3.47 | 100.07 | 757.50 | 3.47 | 100.07 |
| 8/6 | 1,780.50 | 8.26 | 229.79 | 1,780.50 | 8.26 | 229.79 | 644.42 | 3.13 | 85.60 | 644.42 | 3.13 | 85.60 |
| 8/7 | 1,538.89 | 7.75 | 194.85 | 1,538.89 | 7.75 | 194.85 | 578.91 | 2.97 | 75.96 | 578.91 | 2.97 | 75.96 |
| 8/8 | 1,362.57 | 6.93 | 175.75 | 1,362.57 | 6.93 | 175.75 | 547.37 | 2.69 | 72.56 | 547.37 | 2.69 | 72.56 |
| 8/9 | 1,436.48 | 7.34 | 176.88 | 1,436.48 | 7.34 | 176.88 | 516.28 | 2.81 | 65.53 | 516.28 | 2.81 | 65.53 |
| 8/10 | 1,350.66 | 7.09 | 171.69 | 1,350.66 | 7.09 | 171.69 | 487.27 | 2.74 | 63.53 | 487.27 | 2.74 | 63.53 |
| 8/11 | 993.37 | 5.80 | 125.03 | 993.37 | 5.80 | 125.03 | 379.09 | 2.26 | 49.08 | 379.09 | 2.26 | 49.08 |
| 8/12 | 1,151.34 | 6.21 | 145.55 | 1,151.34 | 6.21 | 145.55 | 442.91 | 2.43 | 56.99 | 442.91 | 2.43 | 56.99 |
| 8/13 | 1,044.78 | 6.57 | 123.54 | 1,044.78 | 6.57 | 123.54 | 330.75 | 2.41 | 38.48 | 330.75 | 2.41 | 38.48 |
| 8/14 | 1,554.18 | 7.59 | 193.11 | 1,554.18 | 7.59 | 193.11 | 546.61 | 2.80 | 70.38 | 546.61 | 2.80 | 70.38 |
| 8/15 | 1,445.56 | 7.05 | 186.05 | 1,445.56 | 7.05 | 186.05 | 525.27 | 2.67 | 69.46 | 525.27 | 2.67 | 69.46 |
| 8/16 | 1,365.94 | 7.09 | 170.68 | 1,365.94 | 7.09 | 170.68 | 522.00 | 2.72 | 67.02 | 522.00 | 2.72 | 67.02 |
| 8/17 | 1,848.43 | 8.93 | 227.98 | 1,848.43 | 8.93 | 227.98 | 683.85 | 3.35 | 86.61 | 683.85 | 3.35 | 86.61 |
| 8/18 | 2,126.57 | 9.46 | 268.97 | 2,126.57 | 9.46 | 268.97 | 777.55 | 3.59 | 101.02 | 777.55 | 3.59 | 101.02 |
| 8/19 | 1,768.85 | 8.24 | 224.88 | 1,768.85 | 8.24 | 224.88 | 646.03 | 3.10 | 85.19 | 646.03 | 3.10 | 85.19 |
| 8/20 | 1,556.80 | 7.46 | 198.34 | 1,556.80 | 7.46 | 198.34 | 565.21 | 2.76 | 73.89 | 565.21 | 2.76 | 73.89 |
| 8/21 | 1,693.58 | 7.99 | 213.02 | 1,693.58 | 7.99 | 213.02 | 612.49 | 2.95 | 79.09 | 612.49 | 2.95 | 79.09 |
| 8/22 | 2,047.99 | 9.08 | 255.11 | 2,047.99 | 9.08 | 255.11 | 742.73 | 3.36 | 94.89 | 742.73 | 3.36 | 94.89 |
| 8/23 | 2,359.52 | 10.00 | 290.62 | 2,359.52 | 10.00 | 290.62 | 856.88 | 3.72 | 108.19 | 856.88 | 3.72 | 108.19 |
| 8/24 | 1,962.13 | 9.11 | 247.06 | 1,962.13 | 9.11 | 247.06 | 707.34 | 3.40 | 91.50 | 707.34 | 3.40 | 91.50 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 8/25 | 1,973.12 | 9.10 | 247.28 | 1,973.12 | 9.10 | 247.28 | 736.92 | 3.46 | 94.21 | 736.92 | 3.46 | 94.21 |
| 8/26 | 2,180.35 | 9.71 | 270.10 | 2,180.35 | 9.71 | 270.10 | 780.23 | 3.65 | 99.91 | 780.23 | 3.65 | 99.91 |
| 8/27 | 2,116.19 | 9.56 | 262.49 | 2,116.19 | 9.56 | 262.49 | 762.26 | 3.61 | 97.42 | 762.26 | 3.61 | 97.42 |
| 8/28 | 1,591.03 | 7.86 | 202.60 | 1,591.03 | 7.86 | 202.60 | 581.17 | 2.89 | 76.02 | 581.17 | 2.89 | 76.02 |
| 8/29 | 1,906.99 | 8.73 | 236.99 | 1,906.99 | 8.73 | 236.99 | 650.96 | 3.02 | 83.64 | 650.96 | 3.02 | 83.64 |
| 8/30 | 1,933.58 | 8.78 | 241.50 | 1,933.58 | 8.78 | 241.50 | 646.38 | 3.02 | 83.37 | 646.38 | 3.02 | 83.37 |
| 8/31 | 1,835.60 | 8.54 | 232.71 | 1,835.60 | 8.54 | 232.71 | 625.17 | 2.97 | 82.04 | 625.17 | 2.97 | 82.04 |
| 9/1 | 1,817.48 | 8.38 | 228.90 | 1,817.48 | 8.38 | 228.90 | 618.49 | 2.91 | 80.10 | 618.49 | 2.91 | 80.10 |
| 9/2 | 1,282.80 | 6.94 | 161.90 | 1,282.80 | 6.94 | 161.90 | 427.23 | 2.44 | 55.08 | 427.23 | 2.44 | 55.08 |
| 9/3 | 1,664.83 | 7.83 | 206.76 | 1,664.83 | 7.83 | 206.76 | 577.51 | 2.74 | 73.81 | 577.51 | 2.74 | 73.81 |
| 9/4 | 1,747.05 | 8.15 | 216.61 | 1,747.05 | 8.15 | 216.61 | 598.79 | 2.83 | 76.97 | 598.79 | 2.83 | 76.97 |
| 9/5 | 1,259.80 | 6.77 | 157.28 | 1,259.80 | 6.77 | 157.28 | 483.99 | 2.50 | 63.16 | 483.99 | 2.50 | 63.16 |
| 9/6 | 1,250.03 | 6.58 | 154.34 | 1,250.03 | 6.58 | 154.34 | 435.54 | 2.34 | 55.84 | 435.54 | 2.34 | 55.84 |
| 9/7 | 1,619.04 | 7.68 | 200.97 | 1,619.04 | 7.68 | 200.97 | 542.36 | 2.67 | 69.54 | 542.36 | 2.67 | 69.54 |
| 9/8 | 1,667.47 | 7.52 | 207.53 | 1,667.47 | 7.52 | 207.53 | 545.67 | 2.56 | 70.42 | 545.67 | 2.56 | 70.42 |
| 9/9 | 1,174.17 | 6.02 | 148.61 | 1,174.17 | 6.02 | 148.61 | 383.54 | 2.08 | 50.14 | 383.54 | 2.08 | 50.14 |
| 9/10 | 1,058.87 | 5.39 | 133.86 | 1,058.87 | 5.39 | 133.86 | 357.95 | 1.91 | 46.75 | 357.95 | 1.91 | 46.75 |
| 9/11 | 948.49 | 5.11 | 118.11 | 948.49 | 5.11 | 118.11 | 328.77 | 1.79 | 42.18 | 328.77 | 1.79 | 42.18 |
| 9/12 | 975.24 | 5.25 | 121.40 | 975.24 | 5.25 | 121.40 | 335.51 | 1.85 | 42.99 | 335.51 | 1.85 | 42.99 |
| 9/13 | 752.01 | 4.49 | 93.92 | 752.01 | 4.49 | 93.92 | 264.59 | 1.69 | 34.00 | 264.59 | 1.69 | 34.00 |
| 9/14 | 626.39 | 4.13 | 77.54 | 626.39 | 4.13 | 77.54 | 212.63 | 1.59 | 27.21 | 212.63 | 1.59 | 27.21 |
| 9/15 | 707.60 | 4.11 | 88.65 | 707.60 | 4.11 | 88.65 | 235.68 | 1.39 | 30.48 | 235.68 | 1.39 | 30.48 |
| 9/16 | 725.46 | 4.20 | 90.93 | 725.46 | 4.20 | 90.93 | 239.24 | 1.42 | 30.83 | 239.24 | 1.42 | 30.83 |
| 9/17 | 666.12 | 3.84 | 84.67 | 666.12 | 3.84 | 84.67 | 221.64 | 1.31 | 29.06 | 221.64 | 1.31 | 29.06 |
| 9/18 | 801.93 | 4.35 | 98.94 | 801.93 | 4.35 | 98.94 | 272.88 | 1.51 | 34.53 | 272.88 | 1.51 | 34.53 |
| 9/19 | 976.82 | 4.95 | 119.82 | 976.82 | 4.95 | 119.82 | 326.38 | 1.71 | 41.35 | 326.38 | 1.71 | 41.35 |
| 9/20 | 1,047.76 | 5.20 | 128.84 | 1,047.76 | 5.20 | 128.84 | 351.43 | 1.79 | 44.53 | 351.43 | 1.79 | 44.53 |
| 9/21 | 1,048.51 | 5.22 | 128.83 | 1,048.51 | 5.22 | 128.83 | 352.18 | 1.79 | 44.56 | 352.18 | 1.79 | 44.56 |
| 9/22 | 1,025.39 | 5.24 | 126.38 | 1,025.39 | 5.24 | 126.38 | 335.73 | 1.77 | 42.59 | 335.73 | 1.77 | 42.59 |
| 9/23 | 1,107.17 | 5.56 | 135.58 | 1,107.17 | 5.56 | 135.58 | 365.76 | 1.89 | 46.10 | 365.76 | 1.89 | 46.10 |
| 9/24 | 956.87 | 5.15 | 117.23 | 956.87 | 5.15 | 117.23 | 330.31 | 1.77 | 41.68 | 330.31 | 1.77 | 41.68 |
| 9/25 | 815.34 | 4.41 | 101.43 | 815.34 | 4.41 | 101.43 | 273.10 | 1.52 | 34.76 | 273.10 | 1.52 | 34.76 |
| 9/26 | 659.29 | 3.68 | 82.06 | 659.29 | 3.68 | 82.06 | 217.70 | 1.25 | 27.90 | 217.70 | 1.25 | 27.90 |
| 9/27 | 709.21 | 4.09 | 86.19 | 709.21 | 4.09 | 86.19 | 233.28 | 1.39 | 29.28 | 233.28 | 1.39 | 29.28 |
| 9/28 | 781.64 | 4.40 | 95.02 | 781.64 | 4.40 | 95.02 | 261.94 | 1.51 | 32.68 | 261.94 | 1.51 | 32.68 |
| 9/29 | 792.35 | 4.40 | 96.11 | 792.35 | 4.40 | 96.11 | 268.33 | 1.54 | 33.42 | 268.33 | 1.54 | 33.42 |
| 9/30 | 855.00 | 4.66 | 102.73 | 855.00 | 4.66 | 102.73 | 296.22 | 1.66 | 36.42 | 296.22 | 1.66 | 36.42 |
| Average | 1,336.57 | 6.32 | 169.62 | 1,336.57 | 6.32 | 169.62 | 487.52 | 2.37 | 63.46 | 487.52 | 2.37 | 63.46 |

Table E-6. Daily wildfire emissions extracted from the SMOKE gridded emissions in 2011 and 2017 (metric tons/day)

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 5/1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/7 | 0.05 | 0.01 | 0.22 | 0.05 | 0.01 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/8 | 10.19 | 1.22 | 42.44 | 10.19 | 1.22 | 42.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/27 | 0.01 | 0.00 | 0.05 | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5/31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/1 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/2 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/4 | 0.14 | 0.02 | 0.57 | 0.14 | 0.02 | 0.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/5 | 0.14 | 0.02 | 0.57 | 0.14 | 0.02 | 0.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/6 | 0.11 | 0.01 | 0.44 | 0.11 | 0.01 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/7 | 0.06 | 0.01 | 0.25 | 0.06 | 0.01 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Date | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 6/8 | 0.06 | 0.01 | 0.25 | 0.06 | 0.01 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/9 | 0.03 | 0.00 | 0.13 | 0.03 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/10 | 17.43 | 1.47 | 73.32 | 17.43 | 1.47 | 73.32 | 17.40 | 1.47 | 73.19 | 17.40 | 1.47 | 73.19 |
| 6/11 | 0.03 | 0.00 | 0.13 | 0.03 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/12 | 0.76 | 0.09 | 3.16 | 0.76 | 0.09 | 3.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/16 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/18 | 0.09 | 0.01 | 0.38 | 0.09 | 0.01 | 0.38 | 0.09 | 0.01 | 0.38 | 0.09 | 0.01 | 0.38 |
| 6/19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/27 | 22.11 | 2.65 | 92.06 | 22.11 | 2.65 | 92.06 | 22.11 | 2.65 | 92.06 | 22.11 | 2.65 | 92.06 |
| 6/28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6/30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/2 | 3.07 | 0.37 | 12.77 | 3.07 | 0.37 | 12.77 | 3.07 | 0.37 | 12.77 | 3.07 | 0.37 | 12.77 |
| 7/3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Date | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 7/17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/23 | 1.04 | 0.13 | 4.34 | 1.04 | 0.13 | 4.34 | 1.04 | 0.13 | 4.33 | 1.04 | 0.13 | 4.33 |
| 7/24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/28 | 11.68 | 1.15 | 48.93 | 11.68 | 1.15 | 48.93 | 11.68 | 1.15 | 48.93 | 11.68 | 1.15 | 48.93 |
| 7/29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7/31 | 0.03 | 0.00 | 0.13 | 0.03 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/11 | 0.76 | 0.09 | 3.16 | 0.76 | 0.09 | 3.16 | 0.76 | 0.09 | 3.16 | 0.76 | 0.09 | 3.16 |
| 8/12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/18 | 0.01 | 0.00 | 0.05 | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/20 | 1.36 | 0.16 | 5.67 | 1.36 | 0.16 | 5.67 | 1.36 | 0.16 | 5.67 | 1.36 | 0.16 | 5.67 |
| 8/21 | 10.81 | 1.30 | 45.00 | 10.81 | 1.30 | 45.00 | 10.81 | 1.30 | 45.00 | 10.81 | 1.30 | 45.00 |
| 8/22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/24 | 9.71 | 1.02 | 40.62 | 9.71 | 1.02 | 40.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 8/25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/29 | 13.29 | 1.63 | 55.31 | 13.29 | 1.63 | 55.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/30 | 150.88 | 17.35 | 629.14 | 150.88 | 17.35 | 629.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/31 | 133.58 | 16.39 | 555.76 | 133.58 | 16.39 | 555.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/1 | 72.08 | 8.18 | 300.68 | 72.08 | 8.18 | 300.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/2 | 4.43 | 0.54 | 18.44 | 4.43 | 0.54 | 18.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/3 | 8.86 | 1.09 | 36.87 | 8.86 | 1.09 | 36.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/7 | 3.23 | 0.38 | 13.46 | 3.23 | 0.38 | 13.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/8 | 0.01 | 0.00 | 0.02 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/15 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/16 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/17 | 4.64 | 0.42 | 19.50 | 4.64 | 0.42 | 19.50 | 0.76 | 0.09 | 3.16 | 0.76 | 0.09 | 3.16 |
| 9/18 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 |
| 9/19 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 |
| 9/20 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 |
| 9/21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/22 | 3.89 | 0.33 | 16.36 | 3.89 | 0.33 | 16.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/23 | 3.89 | 0.33 | 16.36 | 3.89 | 0.33 | 16.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/27 | 9.23 | 0.64 | 38.99 | 9.23 | 0.64 | 38.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9/30 | 1.28 | 0.16 | 5.32 | 1.28 | 0.16 | 5.32 | 1.28 | 0.16 | 5.32 | 1.28 | 0.16 | 5.32 |
| Average | 3.26 | 0.37 | 13.60 | 3.26 | 0.37 | 13.60 | 0.46 | 0.05 | 1.92 | 0.46 | 0.05 | 1.92 |

Table E-7. Daily total emissions for the 4 km modeling domain and the Maricopa eight-hour ozone nonattainment area extracted from the SMOKE gridded emissions (metric tons/day)

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 5/1 | 479.07 | 160.27 | 853.19 | 455.39 | 107.22 | 686.56 | 272.47 | 130.91 | 736.11 | 252.41 | 86.04 | 588.39 |
| 5/2 | 580.94 | 242.42 | 1,098.30 | 553.09 | 158.49 | 870.36 | 322.84 | 200.27 | 964.82 | 297.94 | 128.87 | 761.00 |
| 5/3 | 837.64 | 249.63 | 1,194.38 | 807.74 | 163.00 | 955.39 | 415.11 | 205.72 | 1,034.63 | 388.28 | 131.97 | 821.07 |
| 5/4 | 1,167.10 | 255.68 | 1,273.74 | 1,135.55 | 167.09 | 1,025.88 | 536.86 | 210.15 | 1,085.52 | 508.45 | 134.72 | 863.92 |
| 5/5 | 1,211.94 | 257.08 | 1,292.38 | 1,180.12 | 167.77 | 1,043.43 | 570.42 | 211.21 | 1,100.36 | 541.76 | 135.17 | 877.94 |
| 5/6 | 1,229.12 | 262.31 | 1,316.61 | 1,196.82 | 170.09 | 1,060.88 | 576.83 | 215.32 | 1,120.91 | 547.78 | 136.76 | 892.40 |
| 5/7 | 1,129.33 | 193.09 | 1,105.72 | 1,099.23 | 128.75 | 902.22 | 518.37 | 156.77 | 921.06 | 492.34 | 102.40 | 740.66 |
| 5/8 | 915.00 | 165.82 | 1,007.19 | 888.18 | 111.22 | 830.02 | 429.06 | 133.64 | 807.53 | 406.04 | 87.33 | 650.45 |
| 5/9 | 530.90 | 238.10 | 1,062.27 | 503.67 | 156.26 | 840.53 | 302.78 | 196.71 | 933.84 | 278.48 | 127.12 | 735.66 |
| 5/10 | 469.69 | 241.14 | 1,052.86 | 442.85 | 158.29 | 830.84 | 279.53 | 199.21 | 930.37 | 255.63 | 128.85 | 731.97 |
| 5/11 | 630.62 | 247.72 | 1,135.18 | 602.21 | 162.06 | 901.46 | 344.33 | 204.43 | 995.51 | 318.94 | 131.60 | 786.70 |
| 5/12 | 910.32 | 252.16 | 1,222.96 | 880.06 | 164.70 | 980.00 | 459.25 | 207.66 | 1,058.41 | 432.12 | 133.24 | 841.37 |
| 5/13 | 1,272.74 | 262.06 | 1,332.45 | 1,239.83 | 169.86 | 1,074.82 | 596.26 | 215.22 | 1,134.42 | 566.62 | 136.66 | 904.29 |
| 5/14 | 923.92 | 190.87 | 1,066.86 | 894.74 | 127.15 | 866.70 | 449.95 | 155.37 | 899.70 | 424.84 | 101.57 | 722.39 |
| 5/15 | 806.12 | 163.81 | 949.31 | 779.79 | 109.45 | 773.34 | 401.36 | 133.31 | 801.48 | 378.82 | 87.24 | 645.50 |
| 5/16 | 697.12 | 242.03 | 1,131.95 | 668.74 | 158.40 | 902.75 | 369.17 | 199.79 | 986.70 | 343.79 | 128.61 | 781.92 |
| 5/17 | 570.68 | 241.93 | 1,096.44 | 543.18 | 158.69 | 870.08 | 321.40 | 199.80 | 963.15 | 296.87 | 129.05 | 760.95 |
| 5/18 | 438.97 | 236.13 | 1,039.22 | 411.78 | 155.99 | 816.99 | 257.77 | 195.07 | 919.15 | 233.57 | 127.06 | 720.65 |
| 5/19 | 514.22 | 244.57 | 1,090.94 | 486.90 | 160.47 | 861.60 | 296.68 | 202.00 | 962.58 | 272.34 | 130.58 | 757.62 |
| 5/20 | 695.72 | 252.48 | 1,172.76 | 666.44 | 164.17 | 931.82 | 371.36 | 208.11 | 1,025.23 | 345.19 | 132.97 | 810.00 |
| 5/21 | 878.44 | 189.38 | 1,048.53 | 849.90 | 126.42 | 850.43 | 433.01 | 154.28 | 888.10 | 408.49 | 101.12 | 712.60 |
| 5/22 | 873.78 | 164.69 | 966.96 | 846.82 | 109.89 | 788.96 | 425.02 | 133.95 | 812.56 | 401.85 | 87.48 | 654.74 |
| 5/23 | 799.06 | 245.81 | 1,177.35 | 769.43 | 160.38 | 941.55 | 406.45 | 202.83 | 1,021.31 | 379.90 | 130.06 | 810.57 |
| 5/24 | 801.26 | 247.61 | 1,166.81 | 772.57 | 162.05 | 933.13 | 408.26 | 204.15 | 1,011.75 | 382.60 | 131.37 | 803.00 |
| 5/25 | 1,079.79 | 254.17 | 1,256.96 | 1,048.73 | 165.85 | 1,010.98 | 518.74 | 209.16 | 1,077.21 | 490.83 | 133.95 | 857.41 |
| 5/26 | 1,260.68 | 256.90 | 1,304.87 | 1,228.44 | 167.49 | 1,054.01 | 584.57 | 211.13 | 1,107.25 | 555.52 | 134.99 | 883.10 |
| 5/27 | 1,413.76 | 262.32 | 1,354.19 | 1,380.76 | 170.19 | 1,095.82 | 644.25 | 215.20 | 1,143.11 | 614.54 | 136.70 | 912.33 |
| 5/28 | 1,283.50 | 191.48 | 1,142.12 | 1,251.99 | 127.90 | 934.14 | 579.33 | 155.38 | 943.47 | 551.99 | 101.63 | 759.17 |
| 5/29 | 787.72 | 161.16 | 933.97 | 761.81 | 107.61 | 760.59 | 390.43 | 131.05 | 785.55 | 368.31 | 85.69 | 631.95 |
| 5/30 | 700.62 | 162.05 | 902.48 | 676.11 | 108.37 | 733.20 | 358.93 | 131.99 | 765.75 | 338.09 | 86.55 | 615.76 |
| 5/31 | 1,210.02 | 251.88 | 1,254.47 | 1,179.02 | 164.64 | 1,011.17 | 571.23 | 207.04 | 1,067.95 | 543.34 | 132.74 | 850.54 |
| 6/1 | 1,448.33 | 264.94 | 1,340.94 | 1,416.19 | 175.83 | 1,093.28 | 652.41 | 219.03 | 1,125.13 | 624.02 | 143.15 | 904.21 |
| 6/2 | 1,103.56 | 264.57 | 1,305.87 | 1,071.60 | 174.74 | 1,058.12 | 523.98 | 219.33 | 1,112.80 | 495.76 | 142.86 | 891.89 |
| 6/3 | 1,143.96 | 268.69 | 1,327.15 | 1,111.01 | 175.90 | 1,073.35 | 531.91 | 222.47 | 1,130.36 | 502.76 | 143.36 | 903.98 |
| 6/4 | 1,333.99 | 199.97 | 1,199.77 | 1,299.31 | 135.71 | 990.61 | 594.24 | 163.22 | 982.48 | 565.37 | 108.93 | 798.80 |
| 6/5 | 1,512.99 | 175.61 | 1,151.21 | 1,478.78 | 119.51 | 960.67 | 661.44 | 142.87 | 927.27 | 632.85 | 95.17 | 760.09 |
| 6/6 | 1,125.07 | 258.39 | 1,306.50 | 1,092.20 | 170.44 | 1,060.10 | 527.38 | 213.87 | 1,110.74 | 498.40 | 139.37 | 891.13 |
| 6/7 | 1,177.38 | 262.22 | 1,308.40 | 1,145.05 | 173.35 | 1,061.57 | 538.77 | 217.32 | 1,111.39 | 510.16 | 141.61 | 891.26 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 6/8 | 1,112.49 | 263.73 | 1,314.00 | 1,079.91 | 174.42 | 1,064.81 | 520.74 | 218.79 | 1,120.07 | 491.92 | 142.72 | 897.82 |
| 6/9 | 1,134.25 | 265.95 | 1,327.59 | 1,101.01 | 175.37 | 1,075.28 | 532.94 | 220.52 | 1,132.61 | 503.49 | 143.35 | 907.62 |
| 6/10 | 1,331.27 | 271.48 | 1,458.73 | 1,296.74 | 178.26 | 1,197.99 | 618.90 | 224.93 | 1,247.10 | 588.27 | 145.41 | 1,014.51 |
| 6/11 | 1,288.03 | 199.73 | 1,203.03 | 1,253.45 | 135.54 | 993.24 | 582.16 | 163.18 | 987.84 | 553.44 | 108.92 | 803.61 |
| 6/12 | 1,325.45 | 174.29 | 1,125.02 | 1,292.56 | 118.58 | 936.53 | 590.84 | 141.67 | 911.44 | 563.62 | 94.31 | 746.11 |
| 6/13 | 1,353.03 | 260.13 | 1,347.65 | 1,319.41 | 171.57 | 1,098.56 | 609.01 | 215.08 | 1,135.52 | 579.14 | 139.46 | 913.28 |
| 6/14 | 1,670.83 | 266.74 | 1,422.47 | 1,635.24 | 176.25 | 1,165.03 | 741.18 | 220.02 | 1,185.96 | 709.39 | 142.79 | 956.30 |
| 6/15 | 1,939.39 | 268.06 | 1,480.43 | 1,902.35 | 177.74 | 1,217.27 | 830.65 | 220.81 | 1,219.55 | 797.49 | 143.74 | 984.70 |
| 6/16 | 1,788.84 | 268.90 | 1,459.21 | 1,752.82 | 177.75 | 1,197.34 | 773.64 | 221.61 | 1,207.72 | 741.58 | 143.85 | 974.18 |
| 6/17 | 1,650.39 | 270.39 | 1,455.40 | 1,613.86 | 177.24 | 1,189.03 | 718.00 | 222.79 | 1,212.64 | 685.45 | 143.24 | 974.97 |
| 6/18 | 1,719.40 | 201.23 | 1,276.30 | 1,683.24 | 136.88 | 1,062.65 | 738.17 | 163.40 | 1,025.59 | 707.97 | 108.96 | 837.95 |
| 6/19 | 1,560.08 | 174.79 | 1,155.19 | 1,527.19 | 119.30 | 966.66 | 674.38 | 141.76 | 924.05 | 647.20 | 94.58 | 758.70 |
| 6/20 | 1,656.15 | 261.25 | 1,403.22 | 1,621.57 | 172.66 | 1,151.09 | 718.54 | 215.64 | 1,164.98 | 687.78 | 139.98 | 940.06 |
| 6/21 | 2,137.66 | 268.98 | 1,502.02 | 2,100.51 | 177.94 | 1,240.59 | 915.72 | 221.38 | 1,227.74 | 882.47 | 143.66 | 994.53 |
| 6/22 | 2,625.26 | 271.46 | 1,584.63 | 2,586.32 | 180.17 | 1,317.97 | 1,097.12 | 222.92 | 1,271.27 | 1,062.08 | 144.99 | 1,033.40 |
| 6/23 | 2,357.55 | 268.35 | 1,567.92 | 2,318.94 | 178.07 | 1,298.35 | 997.17 | 220.63 | 1,271.62 | 962.61 | 143.54 | 1,031.14 |
| 6/24 | 2,185.55 | 267.67 | 1,570.22 | 2,146.33 | 176.52 | 1,294.00 | 927.29 | 220.07 | 1,284.64 | 892.22 | 142.15 | 1,038.20 |
| 6/25 | 2,318.20 | 200.88 | 1,384.71 | 2,278.98 | 137.45 | 1,163.84 | 967.32 | 162.43 | 1,085.63 | 934.15 | 108.70 | 891.49 |
| 6/26 | 2,415.44 | 178.20 | 1,303.71 | 2,377.38 | 121.97 | 1,105.66 | 1,006.35 | 143.54 | 1,005.68 | 974.16 | 95.67 | 831.75 |
| 6/27 | 2,788.77 | 269.60 | 1,687.93 | 2,748.12 | 179.41 | 1,423.25 | 1,171.44 | 221.70 | 1,363.74 | 1,134.69 | 144.57 | 1,127.51 |
| 6/28 | 2,734.33 | 266.09 | 1,611.77 | 2,694.86 | 177.05 | 1,342.23 | 1,144.21 | 218.33 | 1,288.85 | 1,108.80 | 142.24 | 1,048.29 |
| 6/29 | 2,421.48 | 260.45 | 1,594.09 | 2,381.86 | 174.28 | 1,320.72 | 1,031.60 | 214.13 | 1,291.36 | 996.08 | 140.53 | 1,047.38 |
| 6/30 | 2,022.57 | 268.18 | 1,509.73 | 1,985.32 | 177.54 | 1,243.87 | 868.21 | 220.76 | 1,237.21 | 835.01 | 143.40 | 1,000.05 |
| 7/1 | 2,572.26 | 271.00 | 1,555.68 | 2,532.98 | 180.50 | 1,290.58 | 1,072.37 | 222.82 | 1,246.69 | 1,036.94 | 145.58 | 1,010.23 |
| 7/2 | 3,042.22 | 200.38 | 1,454.40 | 3,000.93 | 140.51 | 1,236.85 | 1,239.37 | 161.60 | 1,106.61 | 1,203.90 | 111.02 | 915.62 |
| 7/3 | 2,239.31 | 165.01 | 1,259.79 | 2,202.05 | 116.61 | 1,066.02 | 975.84 | 133.02 | 978.28 | 944.24 | 91.99 | 808.48 |
| 7/4 | 1,738.13 | 160.09 | 1,178.32 | 1,704.08 | 113.81 | 986.02 | 765.26 | 129.80 | 937.39 | 736.78 | 90.57 | 768.74 |
| 7/5 | 1,802.45 | 239.90 | 1,453.86 | 1,766.16 | 165.11 | 1,191.65 | 812.42 | 198.42 | 1,205.50 | 779.93 | 134.69 | 971.70 |
| 7/6 | 1,971.43 | 242.27 | 1,458.69 | 1,936.34 | 167.53 | 1,198.00 | 872.67 | 199.84 | 1,199.73 | 841.29 | 136.25 | 967.11 |
| 7/7 | 2,211.55 | 245.55 | 1,513.46 | 2,174.70 | 168.85 | 1,250.14 | 971.34 | 202.50 | 1,233.05 | 938.36 | 137.16 | 998.19 |
| 7/8 | 2,348.37 | 254.43 | 1,562.73 | 2,309.53 | 172.20 | 1,290.37 | 988.76 | 209.19 | 1,266.87 | 953.92 | 139.00 | 1,023.84 |
| 7/9 | 2,436.25 | 189.56 | 1,370.63 | 2,397.95 | 134.13 | 1,154.25 | 1,029.18 | 153.40 | 1,065.87 | 996.77 | 106.62 | 875.81 |
| 7/10 | 2,035.02 | 162.24 | 1,214.00 | 2,001.16 | 115.71 | 1,023.61 | 889.85 | 131.12 | 952.54 | 861.47 | 91.69 | 785.63 |
| 7/11 | 1,782.91 | 233.48 | 1,382.86 | 1,749.67 | 161.04 | 1,134.24 | 793.47 | 192.98 | 1,143.05 | 763.89 | 131.22 | 921.24 |
| 7/12 | 1,811.56 | 249.06 | 1,444.85 | 1,775.78 | 169.95 | 1,185.38 | 791.10 | 205.78 | 1,192.79 | 759.18 | 138.36 | 961.31 |
| 7/13 | 1,718.68 | 264.75 | 1,412.57 | 1,683.01 | 178.30 | 1,158.03 | 757.20 | 218.62 | 1,168.63 | 725.32 | 145.04 | 941.63 |
| 7/14 | 1,488.69 | 261.79 | 1,361.82 | 1,454.36 | 176.09 | 1,111.98 | 665.07 | 216.55 | 1,137.40 | 634.48 | 143.60 | 914.59 |
| 7/15 | 1,562.55 | 264.49 | 1,388.50 | 1,527.58 | 176.19 | 1,132.84 | 689.21 | 218.40 | 1,157.86 | 658.05 | 143.13 | 929.87 |
| 7/16 | 1,796.97 | 198.89 | 1,255.13 | 1,760.74 | 138.00 | 1,046.09 | 771.93 | 161.70 | 1,001.61 | 741.46 | 110.31 | 818.17 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 7/17 | 2,128.57 | 175.19 | 1,231.26 | 2,091.01 | 122.25 | 1,038.11 | 912.14 | 141.35 | 961.34 | 880.17 | 96.39 | 791.87 |
| 7/18 | 1,991.51 | 244.41 | 1,462.25 | 1,953.05 | 166.65 | 1,203.32 | 891.62 | 201.76 | 1,203.17 | 856.97 | 135.38 | 972.13 |
| 7/19 | 2,182.67 | 249.51 | 1,515.58 | 2,144.82 | 170.51 | 1,251.62 | 941.48 | 205.69 | 1,234.10 | 907.53 | 138.34 | 998.71 |
| 7/20 | 2,197.28 | 251.72 | 1,530.20 | 2,158.67 | 172.21 | 1,263.14 | 943.97 | 207.59 | 1,247.85 | 909.32 | 139.87 | 1,009.68 |
| 7/21 | 2,178.93 | 253.18 | 1,502.74 | 2,141.39 | 172.70 | 1,240.90 | 926.89 | 208.70 | 1,224.29 | 893.17 | 140.12 | 990.79 |
| 7/22 | 1,824.64 | 259.49 | 1,472.94 | 1,787.30 | 174.16 | 1,207.02 | 803.32 | 214.01 | 1,218.94 | 769.98 | 141.22 | 981.75 |
| 7/23 | 1,342.46 | 183.56 | 1,226.68 | 1,305.86 | 129.49 | 1,012.43 | 643.69 | 149.98 | 1,012.49 | 612.93 | 104.38 | 824.43 |
| 7/24 | 1,385.85 | 160.01 | 1,122.01 | 1,352.19 | 114.22 | 930.72 | 639.65 | 129.29 | 914.46 | 611.57 | 90.49 | 746.64 |
| 7/25 | 1,113.63 | 230.90 | 1,296.69 | 1,080.68 | 159.85 | 1,046.78 | 477.60 | 190.73 | 1,105.17 | 448.24 | 130.16 | 882.20 |
| 7/26 | 1,917.02 | 249.99 | 1,460.34 | 1,880.16 | 170.68 | 1,198.86 | 798.20 | 206.37 | 1,200.25 | 765.23 | 138.76 | 967.01 |
| 7/27 | 1,881.75 | 252.92 | 1,450.48 | 1,845.70 | 172.75 | 1,187.48 | 802.27 | 208.60 | 1,195.16 | 770.10 | 140.37 | 960.29 |
| 7/28 | 1,278.15 | 252.57 | 1,424.20 | 1,240.63 | 172.26 | 1,162.12 | 570.42 | 208.83 | 1,218.70 | 536.82 | 140.39 | 984.92 |
| 7/29 | 1,180.94 | 250.05 | 1,390.61 | 1,143.27 | 168.83 | 1,121.18 | 582.86 | 206.79 | 1,196.41 | 549.15 | 137.50 | 955.99 |
| 7/30 | 1,751.58 | 186.63 | 1,283.82 | 1,712.89 | 131.64 | 1,066.25 | 774.35 | 151.77 | 1,035.79 | 741.44 | 105.36 | 844.68 |
| 7/31 | 1,919.60 | 161.78 | 1,212.41 | 1,883.12 | 115.00 | 1,017.54 | 833.79 | 130.90 | 958.57 | 802.90 | 91.23 | 787.60 |
| 8/1 | 2,121.46 | 244.86 | 1,493.36 | 2,085.45 | 173.90 | 1,231.04 | 894.75 | 202.18 | 1,218.45 | 862.49 | 142.28 | 984.65 |
| 8/2 | 2,701.37 | 256.98 | 1,601.48 | 2,661.84 | 182.05 | 1,331.77 | 1,115.94 | 211.69 | 1,278.86 | 1,080.35 | 148.42 | 1,038.61 |
| 8/3 | 2,705.92 | 258.26 | 1,606.36 | 2,666.97 | 183.58 | 1,336.49 | 1,108.32 | 212.84 | 1,279.82 | 1,073.34 | 149.97 | 1,039.45 |
| 8/4 | 2,364.45 | 252.15 | 1,554.22 | 2,327.29 | 179.48 | 1,286.00 | 972.87 | 208.32 | 1,253.97 | 939.49 | 147.05 | 1,015.02 |
| 8/5 | 2,341.89 | 263.50 | 1,594.07 | 2,302.41 | 183.04 | 1,315.94 | 967.71 | 217.25 | 1,291.49 | 932.34 | 149.16 | 1,043.68 |
| 8/6 | 2,008.06 | 197.41 | 1,341.43 | 1,970.16 | 143.52 | 1,121.07 | 839.47 | 160.44 | 1,063.23 | 807.53 | 115.59 | 869.99 |
| 8/7 | 1,759.73 | 166.59 | 1,204.91 | 1,723.94 | 122.39 | 1,007.57 | 767.99 | 135.30 | 961.67 | 737.88 | 98.31 | 788.68 |
| 8/8 | 1,590.63 | 241.70 | 1,434.60 | 1,554.76 | 171.20 | 1,171.35 | 749.47 | 200.75 | 1,204.52 | 717.43 | 141.24 | 969.94 |
| 8/9 | 1,665.74 | 257.95 | 1,432.45 | 1,629.14 | 181.20 | 1,170.28 | 719.48 | 213.74 | 1,194.19 | 686.84 | 148.98 | 960.70 |
| 8/10 | 1,580.41 | 262.82 | 1,432.36 | 1,543.80 | 184.56 | 1,169.07 | 690.92 | 217.82 | 1,196.87 | 658.28 | 151.90 | 962.41 |
| 8/11 | 1,219.32 | 243.82 | 1,387.46 | 1,184.63 | 173.64 | 1,123.65 | 579.32 | 203.02 | 1,184.37 | 548.48 | 143.91 | 949.37 |
| 8/12 | 1,376.85 | 251.68 | 1,426.88 | 1,341.46 | 175.76 | 1,156.84 | 642.56 | 208.88 | 1,209.17 | 611.14 | 144.73 | 968.60 |
| 8/13 | 1,267.87 | 190.14 | 1,222.57 | 1,231.67 | 138.97 | 1,003.75 | 521.68 | 155.24 | 1,004.73 | 491.32 | 112.71 | 812.79 |
| 8/14 | 1,773.95 | 167.45 | 1,199.80 | 1,738.44 | 122.80 | 1,003.44 | 734.71 | 135.88 | 953.01 | 704.91 | 98.49 | 780.94 |
| 8/15 | 1,676.56 | 251.31 | 1,437.60 | 1,639.63 | 176.12 | 1,176.44 | 730.05 | 208.42 | 1,194.78 | 696.99 | 144.93 | 962.10 |
| 8/16 | 1,596.67 | 250.99 | 1,435.61 | 1,560.18 | 177.45 | 1,171.68 | 726.52 | 208.26 | 1,204.12 | 693.91 | 146.23 | 969.08 |
| 8/17 | 2,083.79 | 254.26 | 1,525.86 | 2,045.37 | 180.74 | 1,254.38 | 892.54 | 210.09 | 1,253.42 | 858.12 | 148.17 | 1,011.65 |
| 8/18 | 2,364.12 | 254.95 | 1,558.38 | 2,324.80 | 180.64 | 1,289.31 | 988.15 | 210.48 | 1,260.17 | 952.88 | 147.81 | 1,020.54 |
| 8/19 | 2,000.79 | 253.45 | 1,521.33 | 1,963.83 | 177.37 | 1,247.53 | 851.48 | 209.38 | 1,250.81 | 818.40 | 145.09 | 1,006.85 |
| 8/20 | 1,783.82 | 196.44 | 1,304.06 | 1,746.69 | 142.54 | 1,085.64 | 759.88 | 159.94 | 1,046.78 | 728.63 | 115.07 | 855.23 |
| 8/21 | 1,925.90 | 176.40 | 1,257.11 | 1,889.97 | 128.17 | 1,063.10 | 813.00 | 143.10 | 999.97 | 782.77 | 102.66 | 830.04 |
| 8/22 | 2,285.11 | 259.11 | 1,522.74 | 2,245.98 | 181.16 | 1,258.57 | 953.13 | 213.76 | 1,235.00 | 917.96 | 147.86 | 999.56 |
| 8/23 | 2,599.88 | 261.60 | 1,577.77 | 2,559.85 | 184.18 | 1,309.43 | 1,070.17 | 215.51 | 1,265.37 | 1,034.12 | 150.13 | 1,026.39 |
| 8/24 | 2,213.97 | 265.85 | 1,589.12 | 2,173.25 | 187.29 | 1,317.75 | 922.24 | 218.62 | 1,261.84 | 885.57 | 152.38 | 1,020.12 |

| | 4 km Modeling Domain | | | | | | Eight-Hour Ozone Nonattainment Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011 | | | 2017 | | | 2011 | | | 2017 | | |
| Date | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO | VOC | NOx | CO |
| 8/25 | 2,212.77 | 260.32 | 1,544.76 | 2,172.77 | 183.27 | 1,273.80 | 949.55 | 215.02 | 1,260.89 | 913.58 | 149.96 | 1,019.51 |
| 8/26 | 2,427.10 | 265.41 | 1,611.54 | 2,384.35 | 183.98 | 1,328.81 | 999.22 | 218.56 | 1,306.29 | 960.56 | 149.62 | 1,054.30 |
| 8/27 | 2,350.54 | 196.59 | 1,387.16 | 2,310.33 | 143.33 | 1,163.37 | 963.43 | 159.23 | 1,086.55 | 929.14 | 114.88 | 890.17 |
| 8/28 | 1,813.51 | 167.58 | 1,211.21 | 1,777.53 | 122.75 | 1,015.36 | 771.73 | 135.78 | 960.34 | 741.39 | 98.23 | 788.81 |
| 8/29 | 2,157.03 | 257.14 | 1,558.09 | 2,118.26 | 180.60 | 1,294.08 | 860.97 | 210.82 | 1,221.99 | 826.10 | 146.12 | 986.71 |
| 8/30 | 2,322.20 | 277.73 | 2,156.20 | 2,282.90 | 200.25 | 1,888.31 | 857.33 | 214.81 | 1,239.36 | 822.04 | 149.38 | 1,000.73 |
| 8/31 | 2,208.55 | 279.63 | 2,084.57 | 2,168.85 | 201.60 | 1,814.65 | 837.65 | 217.34 | 1,247.89 | 801.95 | 151.59 | 1,007.46 |
| 9/1 | 2,125.72 | 263.67 | 1,800.73 | 2,086.41 | 180.17 | 1,530.71 | 829.18 | 210.27 | 1,228.17 | 793.39 | 138.98 | 986.70 |
| 9/2 | 1,511.47 | 250.42 | 1,449.34 | 1,475.95 | 168.16 | 1,176.93 | 626.91 | 206.01 | 1,200.55 | 594.90 | 135.75 | 957.07 |
| 9/3 | 1,892.99 | 196.42 | 1,305.04 | 1,857.86 | 135.20 | 1,087.13 | 768.55 | 158.27 | 1,017.62 | 737.82 | 106.51 | 824.53 |
| 9/4 | 1,962.47 | 170.30 | 1,176.58 | 1,928.68 | 117.36 | 984.03 | 786.49 | 137.25 | 929.28 | 756.83 | 92.33 | 758.70 |
| 9/5 | 1,469.86 | 164.39 | 1,119.55 | 1,437.25 | 114.06 | 926.30 | 666.85 | 133.41 | 917.70 | 638.46 | 90.71 | 746.44 |
| 9/6 | 1,476.72 | 243.04 | 1,394.12 | 1,440.84 | 164.58 | 1,130.28 | 637.58 | 200.95 | 1,175.23 | 605.08 | 134.00 | 939.32 |
| 9/7 | 1,851.96 | 251.25 | 1,469.03 | 1,815.15 | 170.15 | 1,202.43 | 747.19 | 206.80 | 1,202.78 | 713.83 | 137.62 | 964.34 |
| 9/8 | 1,898.78 | 255.22 | 1,460.07 | 1,861.22 | 171.44 | 1,193.91 | 751.92 | 210.35 | 1,201.66 | 717.87 | 138.83 | 963.63 |
| 9/9 | 1,395.96 | 258.31 | 1,377.41 | 1,360.91 | 171.30 | 1,112.30 | 580.88 | 213.09 | 1,158.65 | 549.31 | 138.80 | 921.68 |
| 9/10 | 1,268.82 | 185.98 | 1,149.81 | 1,237.07 | 128.47 | 940.77 | 540.40 | 151.75 | 949.40 | 512.87 | 103.23 | 764.26 |
| 9/11 | 1,151.27 | 161.32 | 1,033.69 | 1,122.10 | 111.82 | 849.03 | 504.93 | 131.37 | 854.68 | 479.70 | 89.43 | 691.02 |
| 9/12 | 1,193.48 | 238.84 | 1,284.04 | 1,160.60 | 161.18 | 1,035.86 | 529.80 | 197.86 | 1,092.38 | 500.15 | 131.60 | 870.41 |
| 9/13 | 968.28 | 238.61 | 1,246.56 | 936.75 | 161.67 | 1,001.91 | 457.09 | 198.06 | 1,074.57 | 428.73 | 132.55 | 855.92 |
| 9/14 | 841.41 | 238.12 | 1,231.42 | 810.27 | 161.77 | 985.59 | 404.01 | 197.89 | 1,068.95 | 376.02 | 132.91 | 849.20 |
| 9/15 | 925.15 | 244.32 | 1,264.27 | 893.07 | 164.78 | 1,014.21 | 429.43 | 202.81 | 1,092.09 | 400.58 | 135.05 | 868.53 |
| 9/16 | 945.91 | 252.27 | 1,305.74 | 912.37 | 167.63 | 1,044.57 | 435.44 | 208.99 | 1,127.38 | 405.23 | 136.77 | 893.90 |
| 9/17 | 877.89 | 192.58 | 1,106.29 | 847.03 | 131.48 | 900.17 | 402.36 | 157.47 | 922.70 | 375.76 | 105.91 | 740.10 |
| 9/18 | 1,005.97 | 168.89 | 1,010.95 | 976.54 | 115.52 | 827.86 | 450.20 | 137.80 | 843.86 | 424.71 | 92.57 | 681.66 |
| 9/19 | 1,198.75 | 250.87 | 1,286.89 | 1,165.07 | 167.30 | 1,038.82 | 524.06 | 207.71 | 1,095.03 | 493.56 | 136.38 | 873.20 |
| 9/20 | 1,271.79 | 256.22 | 1,312.99 | 1,237.59 | 170.89 | 1,061.08 | 551.03 | 211.92 | 1,113.76 | 520.02 | 139.15 | 888.50 |
| 9/21 | 1,274.12 | 259.39 | 1,321.53 | 1,239.84 | 173.21 | 1,068.57 | 553.22 | 214.57 | 1,121.60 | 522.15 | 141.12 | 895.49 |
| 9/22 | 1,256.47 | 259.21 | 1,351.61 | 1,221.21 | 172.92 | 1,095.12 | 538.22 | 214.19 | 1,134.44 | 506.25 | 140.59 | 905.11 |
| 9/23 | 1,342.41 | 268.38 | 1,401.12 | 1,305.71 | 176.69 | 1,133.79 | 571.91 | 221.31 | 1,174.03 | 538.60 | 142.99 | 935.04 |
| 9/24 | 1,172.63 | 199.56 | 1,155.29 | 1,138.91 | 135.32 | 942.19 | 518.11 | 162.88 | 964.68 | 488.71 | 108.57 | 775.84 |
| 9/25 | 1,020.50 | 168.88 | 1,024.20 | 990.46 | 115.53 | 839.01 | 451.46 | 137.80 | 853.88 | 425.47 | 92.57 | 689.78 |
| 9/26 | 877.01 | 250.51 | 1,228.59 | 844.94 | 166.75 | 985.18 | 411.58 | 207.88 | 1,062.97 | 382.67 | 136.43 | 845.36 |
| 9/27 | 938.91 | 253.30 | 1,303.14 | 905.63 | 169.21 | 1,053.04 | 429.64 | 209.52 | 1,092.87 | 399.62 | 137.83 | 869.29 |
| 9/28 | 1,000.67 | 250.06 | 1,275.13 | 967.86 | 167.96 | 1,023.79 | 457.00 | 207.33 | 1,098.44 | 427.45 | 137.39 | 873.66 |
| 9/29 | 1,012.85 | 251.29 | 1,281.20 | 980.16 | 168.51 | 1,029.77 | 464.72 | 208.37 | 1,103.57 | 435.30 | 137.85 | 878.85 |
| 9/30 | 1,081.91 | 261.14 | 1,344.95 | 1,046.24 | 172.35 | 1,078.77 | 498.35 | 216.13 | 1,157.75 | 466.13 | 140.33 | 919.84 |
| Average | 1,562.26 | 232.68 | 1,334.80 | 1,527.73 | 158.01 | 1,095.30 | 683.76 | 191.12 | 1,097.06 | 653.27 | 127.71 | 884.01 |

# APPENDIX F

DEVELOPMENT OF 2018 EMISSIONS INVENTORY
FOR CONTINGENCY MEASURES

The 2018 anthropogenic emissions inventory for the Maricopa eight-hour ozone nonattainment area was based on the same approaches used in the development of 2017 emissions. The growth factors from 2011 and 2018 were developed to calculate the 2018 point, area, nonroad, and onroad source emissions. The socio-economic projections from 2011 to 2018 were used to develop the growth factors in Tables F-1 and F-2.

Table F-1. Growth indices and growth factors for non-EGU point and area sources in Maricopa County

| Growth Index | 2011 | 2018 | Growth Factor |
|---|---|---|---|
| Agricultural Acres | 275,050 | 267,006 | 0.97 |
| Airport Operations | 1,718,536 | 1,820,844 | 1.06 |
| Gasoline Consumption (gallons/day) | 4,308,054 | 3,834,168 | 0.89 |
| Industrial Employment | 336,654 | 407,742 | 1.21 |
| Number of Aircrafts at Luke AFB | 136 | 154 | 1.13 |
| Population | 3,843,373 | 4,331,088 | 1.13 |
| Roadway Lane Miles | 22,551 | 23,137 | 1.03 |

Table F-2. Growth indices and growth factors for non-EGU point and area sources in Pinal County

| Growth Index | 2011 | 2018 | Growth Factor |
|---|---|---|---|
| Agricultural Acres | 449,368 | 447,088 | 0.99 |
| Airport Operations | 175,528 | 260,812 | 1.49 |
| Gasoline Consumption (gallons/day) | 417,529 | 359,075 | 0.86 |
| Industrial Employment | 8,111 | 8,351 | 1.03 |
| Population | 384,221 | 460,921 | 1.20 |
| Roadway Lane Miles | 6,368 | 6,508 | 1.02 |

**Point Source Emissions**

The growth factors for the non-EGU point sources emissions were developed using industrial employment estimates for 2011 and 2018. Two additional growth factors based on population and the number of military aircrafts were used to calculate emissions at Northwest Regional Landfill and Luke Air Force Base (not the aircraft emissions), respectively. All EGU point source emissions in 2018 were assumed to be the same as those in 2017.

## Area Source Emissions

The 2018 area source emissions in Maricopa and Pinal Counties were projected from the 2011 base year area source emissions by applying the growth factors. The growth factors developed from the socio-economic data are available in Tables F-1 and F-2. The 2018 emissions for the ten area source categories for the portable fuel containers (PFC) were obtained by interpolating the EPA 2015 and 2020 controlled emissions for PFC.

## Nonroad Source Emissions

The EPA MOVES2014a model was used to estimate daily nonroad mobile source emissions in 2018. MOVES2014a nonroad model runs for the year 2018 are based on the 2018 default values of the model for Maricopa and Pinal Counties.

Airport emissions in 2018 were developed using the EDMS model. The 2018 operation data were obtained from the FAA Terminal Area Forecast (TAF) (FAA, 2016) for the eight major airports among the airports in Table III-3. The operation data for the six small airports were assumed to be unchanged from 2011 to 2018 because no operation data for the year 2018 were available for the small airports. The 2018 emissions for the fourteen airports were calculated using the FAA EDMS model and the 2011 temporal profiles and 2011 meteorology.

Luke AFB F-16 aircraft emissions in 2011 were projected using the ratio of F-16 aircrafts in 2018 to those in 2011. Luke AFB aircraft and GSE emissions for the future fleet of 144 F-35 aircrafts of the L6 scenario were obtained from the 2012 environmental impact statement (USAF, 2012). The 2018 future year emissions were calculated by multiplying the ratio of the 82 F-35 aircrafts in 2018 to the 144 F-35 aircrafts by the L6 scenario emissions then adding the F-16 aircraft emissions in 2018 to the F-35 emissions in 2018. The 2018 locomotive emissions were assumed to be constant between 2017 and 2018.

## Onroad Mobile Source Emissions

The 2018 onroad mobile source emissions for the Maricopa eight-hour ozone nonattainment area were developed using EPA MOVES2014a model, MOVESLINK2014 tool, and local input data. The 2018 traffic assignment data were provided by the MAG transportation modeling group to develop onroad emissions based on link-specific vehicle speeds and VMTs.

# APPENDIX G

MODEL INPUT FILES

Appendix G-1

MOVES2014a Input Files

**Onroad Mobile Sources**

In order to calculate onroad source emissions, MOVES2014a was executed using local input data for each episode day and each geographical area (Area A and outside Area A). The following contains a portion of the MOVES2014a RunSpec and local input data for June 9, 2017 as an example.

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## MOVES2014a Local Input Data

### [HPMSvTypeYear]

| HPMSVtypeID | yearID | HPMSBaseYearVMT |
|---|---|---|
| 10 | 2017 | 195,878,101 |
| 25 | 2017 | 32,458,104,889 |
| 40 | 2017 | 78,591,751 |
| 50 | 2017 | 1,255,155,459 |
| 60 | 2017 | 897,530,012 |

### [SourceTypeYear]

| yearID | sourceTypeID | sourceTypePopulation |
|---|---|---|
| 2017 | 11 | 104,220 |
| 2017 | 21 | 2,409,439 |
| 2017 | 31 | 528,885 |
| 2017 | 32 | 133,600 |
| 2017 | 41 | 268 |
| 2017 | 42 | 999 |
| 2017 | 43 | 8,962 |
| 2017 | 51 | 1,181 |
| 2017 | 52 | 41,019 |
| 2017 | 53 | 1,738 |
| 2017 | 54 | 10,716 |
| 2017 | 61 | 7,082 |
| 2017 | 62 | 7,938 |

### [FuelFormulation]

| fuel Formulation ID | fuel Subtype ID | RVP | sulfur Level | ETOH Volume | MTBE Volume | ETBE Volume | TAME Volume | aromatic Content | olefin Content | benzene Content | e200 | e300 | BioDiesel Ester Volume | Cetane Index | PAH Content | T50 | T90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 7 | 30 | 0 | 0 | 0 | 0 | 26.1 | 5.6 | 1 | 41.09 | 83.09 | 0 | 0 | 0 | 218 | 329 |
| 20 | 20 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 30 | 0 | 7.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50 | 51 | 8 | 11 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 49.9 | 89.5 | 0 | 0 | 0 | 200 | 300 |
| 90 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96 | 10 | 9 | 338 | 0 | 0 | 0 | 0 | 26.4 | 11.9 | 1.64 | 50 | 83 | 0 | 0 | 0 | 199.816 | 329.409 |
| 97 | 10 | 7 | 150 | 0 | 11.76 | 0 | 0 | 24 | 11 | 0.8 | 52 | 84 | 0 | 0 | 0 | 195.735 | 324.864 |
| 98 | 10 | 7 | 30 | 0 | 0 | 0 | 0 | 26.1 | 5.6 | 1 | 41.09 | 83.09 | 0 | 0 | 0 | 218 | 329 |
| 99 | 10 | 7 | 90 | 0 | 0 | 0 | 0 | 26.1 | 5.6 | 1 | 41.09 | 83.09 | 0 | 0 | 0 | 218 | 329 |
| 3577 | 12 | 7 | 9 | 10 | 0 | 0 | 0 | 21.98 | 4.44 | 0.53 | 44.52 | 88.81 | 0 | 0 | 0 | 211 | 303 |
| 3578 | 12 | 12 | 9 | 10 | 0 | 0 | 0 | 21.98 | 4.44 | 0.53 | 50.54 | 91.2 | 0 | 0 | 0 | 198.48 | 291.95 |
| 3579 | 12 | 10 | 9 | 10 | 0 | 0 | 0 | 21.98 | 4.44 | 0.53 | 47.91 | 90.16 | 0 | 0 | 0 | 203.85 | 296.69 |
| 25005 | 21 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 27001 | 52 | 10.5 | 8 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 49.9 | 89.5 | 0 | 0 | 0 | 200 | 300 |
| 27002 | 52 | 7.7 | 8 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 49.9 | 89.5 | 0 | 0 | 0 | 200 | 300 |
| 28001 | 30 | 0 | 7.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

### [FuelUsageFraction]

| countyID | fuelYearID | modelYearGroupID | sourceBinFuelTypeID | fuelSupplyFuelTypeID | usageFraction |
|---|---|---|---|---|---|
| 4013 | 2017 | 0 | 1 | 1 | 1 |
| 4013 | 2017 | 0 | 2 | 2 | 1 |
| 4013 | 2017 | 0 | 3 | 3 | 1 |
| 4013 | 2017 | 0 | 5 | 1 | 0.947025 |
| 4013 | 2017 | 0 | 5 | 5 | 0.052975 |
| 4013 | 2017 | 0 | 9 | 9 | 1 |

## [FuelSupply]

| fuelRegionID | fuelYearID | monthGroupID | fuelFormulationID | marketShare | marketShareCV |
|---|---|---|---|---|---|
| 1570011000 | 2017 | 6 | 3577 | 1 | 0.5 |
| 1570011000 | 2017 | 6 | 25005 | 1 | 0.5 |
| 1570011000 | 2017 | 6 | 27002 | 1 | 0.5 |
| 1570011000 | 2017 | 6 | 28001 | 1 | 0.5 |
| 1570011000 | 2017 | 6 | 90 | 1 | 0.5 |

## [CountyYear]

| countyID | yearID | refuelingVaporProgramAdjust | refuelingSpillProgramAdjust |
|---|---|---|---|
| 4013 | 2017 | 0.5 | 0 |

## [ZoneMonthHour]

| monthID | zoneID | hourID | temperature | temperatureCV | relHumidity | heatIndex | specificHumidity | relativeHumidityCV |
|---|---|---|---|---|---|---|---|---|
| 6 | 40130 | 1 | 81 | 0 | 14 | 0 | 0 | 0 |
| 6 | 40130 | 2 | 78 | 0 | 18 | 0 | 0 | 0 |
| 6 | 40130 | 3 | 76 | 0 | 20 | 0 | 0 | 0 |
| 6 | 40130 | 4 | 73 | 0 | 18 | 0 | 0 | 0 |
| 6 | 40130 | 5 | 73 | 0 | 21 | 0 | 0 | 0 |
| 6 | 40130 | 6 | 71 | 0 | 22 | 0 | 0 | 0 |
| 6 | 40130 | 7 | 73 | 0 | 17 | 0 | 0 | 0 |
| 6 | 40130 | 8 | 78 | 0 | 16 | 0 | 0 | 0 |
| 6 | 40130 | 9 | 82 | 0 | 12 | 0 | 0 | 0 |
| 6 | 40130 | 10 | 86 | 0 | 10 | 0 | 0 | 0 |
| 6 | 40130 | 11 | 89 | 0 | 9 | 0 | 0 | 0 |
| 6 | 40130 | 12 | 91 | 0 | 8 | 0 | 0 | 0 |
| 6 | 40130 | 13 | 94 | 0 | 7 | 0 | 0 | 0 |
| 6 | 40130 | 14 | 96 | 0 | 6 | 0 | 0 | 0 |
| 6 | 40130 | 15 | 97 | 0 | 6 | 0 | 0 | 0 |
| 6 | 40130 | 16 | 96 | 0 | 7 | 0 | 0 | 0 |
| 6 | 40130 | 17 | 96 | 0 | 5 | 0 | 0 | 0 |
| 6 | 40130 | 18 | 96 | 0 | 6 | 0 | 0 | 0 |
| 6 | 40130 | 19 | 95 | 0 | 6 | 0 | 0 | 0 |
| 6 | 40130 | 20 | 93 | 0 | 8 | 0 | 0 | 0 |
| 6 | 40130 | 21 | 92 | 0 | 7 | 0 | 0 | 0 |
| 6 | 40130 | 22 | 86 | 0 | 11 | 0 | 0 | 0 |
| 6 | 40130 | 23 | 88 | 0 | 10 | 0 | 0 | 0 |
| 6 | 40130 | 24 | 87 | 0 | 11 | 0 | 0 | 0 |

## [SourceTypeAgeDistribution]

| sourceTypeID | yearID | ageID | ageFraction |
|---|---|---|---|
| 11 | 2017 | 0 | 0.072895 |
| 11 | 2017 | 1 | 0.072853 |
| 11 | 2017 | 2 | 0.040005 |
| 11 | 2017 | 3 | 0.059060 |
| 11 | 2017 | 4 | 0.054325 |
| 11 | 2017 | 5 | 0.045513 |
| 11 | 2017 | 6 | 0.031160 |
| 11 | 2017 | 7 | 0.022984 |
| 11 | 2017 | 8 | 0.051146 |
| 11 | 2017 | 9 | 0.053235 |
| 11 | 2017 | 10 | 0.068588 |
| 11 | 2017 | 11 | 0.066135 |
| 11 | 2017 | 12 | 0.055870 |
| 11 | 2017 | 13 | 0.041153 |
| 11 | 2017 | 14 | 0.047875 |
| 11 | 2017 | 15 | 0.038518 |
| 11 | 2017 | 16 | 0.032886 |
| 11 | 2017 | 17 | 0.027435 |
| 11 | 2017 | 18 | 0.023529 |
| 11 | 2017 | 19 | 0.016352 |
| 11 | 2017 | 20 | 0.012991 |
| 11 | 2017 | 21 | 0.011992 |
| 11 | 2017 | 22 | 0.009993 |
| 11 | 2017 | 23 | 0.008267 |
| 11 | 2017 | 24 | 0.007631 |
| 11 | 2017 | 25 | 0.005360 |
| 11 | 2017 | 26 | 0.003997 |
| 11 | 2017 | 27 | 0.003725 |
| 11 | 2017 | 28 | 0.003906 |
| 11 | 2017 | 29 | 0.003725 |
| 11 | 2017 | 30 | 0.006898 |
| 21 | 2017 | 0 | 0.072895 |
| 21 | 2017 | 1 | 0.071856 |
| 21 | 2017 | 2 | 0.048455 |
| 21 | 2017 | 3 | 0.068901 |
| 21 | 2017 | 4 | 0.069734 |
| 21 | 2017 | 5 | 0.058824 |
| 21 | 2017 | 6 | 0.047735 |
| 21 | 2017 | 7 | 0.041595 |
| 21 | 2017 | 8 | 0.033652 |
| 21 | 2017 | 9 | 0.051082 |
| 21 | 2017 | 10 | 0.059872 |
| 21 | 2017 | 11 | 0.057392 |
| 21 | 2017 | 12 | 0.053788 |
| 21 | 2017 | 13 | 0.045747 |
| 21 | 2017 | 14 | 0.037987 |
| 21 | 2017 | 15 | 0.031571 |
| 21 | 2017 | 16 | 0.026712 |
| 21 | 2017 | 17 | 0.023291 |
| 21 | 2017 | 18 | 0.018223 |
| 21 | 2017 | 19 | 0.013413 |
| 21 | 2017 | 20 | 0.011171 |
| 21 | 2017 | 21 | 0.007774 |
| 21 | 2017 | 22 | 0.006899 |
| 21 | 2017 | 23 | 0.004998 |
| 21 | 2017 | 24 | 0.003740 |
| 21 | 2017 | 25 | 0.002874 |
| 21 | 2017 | 26 | 0.002500 |
| 21 | 2017 | 27 | 0.002006 |
| 21 | 2017 | 28 | 0.001639 |
| 21 | 2017 | 29 | 0.001272 |
| 21 | 2017 | 30 | 0.022400 |
| 31 | 2017 | 0 | 0.081981 |
| 31 | 2017 | 1 | 0.082423 |
| 31 | 2017 | 2 | 0.027645 |
| 31 | 2017 | 3 | 0.057614 |
| 31 | 2017 | 4 | 0.050416 |
| 31 | 2017 | 5 | 0.040868 |
| 31 | 2017 | 6 | 0.038081 |
| 31 | 2017 | 7 | 0.023964 |
| 31 | 2017 | 8 | 0.019103 |
| 31 | 2017 | 9 | 0.045591 |
| 31 | 2017 | 10 | 0.058512 |
| 31 | 2017 | 11 | 0.061351 |
| 31 | 2017 | 12 | 0.050534 |
| 31 | 2017 | 13 | 0.050467 |
| 31 | 2017 | 14 | 0.041227 |
| 31 | 2017 | 15 | 0.035701 |
| 31 | 2017 | 16 | 0.038348 |
| 31 | 2017 | 17 | 0.032560 |
| 31 | 2017 | 18 | 0.024358 |
| 31 | 2017 | 19 | 0.018760 |
| 31 | 2017 | 20 | 0.018924 |
| 31 | 2017 | 21 | 0.013049 |
| 31 | 2017 | 22 | 0.012618 |
| 31 | 2017 | 23 | 0.010828 |
| 31 | 2017 | 24 | 0.007191 |
| 31 | 2017 | 25 | 0.004771 |
| 31 | 2017 | 26 | 0.004036 |
| 31 | 2017 | 27 | 0.003752 |
| 31 | 2017 | 28 | 0.003843 |
| 31 | 2017 | 29 | 0.002894 |
| 31 | 2017 | 30 | 0.038590 |
| 32 | 2017 | 0 | 0.081711 |
| 32 | 2017 | 1 | 0.081957 |
| 32 | 2017 | 2 | 0.031237 |
| 32 | 2017 | 3 | 0.057905 |
| 32 | 2017 | 4 | 0.051702 |
| 32 | 2017 | 5 | 0.043745 |
| 32 | 2017 | 6 | 0.039090 |
| 32 | 2017 | 7 | 0.023896 |
| 32 | 2017 | 8 | 0.019962 |
| 32 | 2017 | 9 | 0.046609 |
| 32 | 2017 | 10 | 0.062233 |
| 32 | 2017 | 11 | 0.065143 |
| 32 | 2017 | 12 | 0.050897 |
| 32 | 2017 | 13 | 0.047906 |
| 32 | 2017 | 14 | 0.038904 |
| 32 | 2017 | 15 | 0.033444 |
| 32 | 2017 | 16 | 0.036110 |
| 32 | 2017 | 17 | 0.032566 |
| 32 | 2017 | 18 | 0.023522 |
| 32 | 2017 | 19 | 0.017785 |
| 32 | 2017 | 20 | 0.017886 |
| 32 | 2017 | 21 | 0.012393 |
| 32 | 2017 | 22 | 0.011984 |
| 32 | 2017 | 23 | 0.010170 |
| 32 | 2017 | 24 | 0.006793 |
| 32 | 2017 | 25 | 0.004510 |
| 32 | 2017 | 26 | 0.003855 |
| 32 | 2017 | 27 | 0.003585 |
| 32 | 2017 | 28 | 0.003618 |
| 32 | 2017 | 29 | 0.002730 |
| 32 | 2017 | 30 | 0.036151 |
| 41 | 2017 | 0 | 0.057008 |
| 41 | 2017 | 1 | 0.055734 |
| 41 | 2017 | 2 | 0.077462 |
| 41 | 2017 | 3 | 0.058005 |
| 41 | 2017 | 4 | 0.051580 |
| 41 | 2017 | 5 | 0.055865 |
| 41 | 2017 | 6 | 0.035647 |
| 41 | 2017 | 7 | 0.016048 |
| 41 | 2017 | 8 | 0.021699 |
| 41 | 2017 | 9 | 0.042444 |
| 41 | 2017 | 10 | 0.089177 |
| 41 | 2017 | 11 | 0.086287 |
| 41 | 2017 | 12 | 0.058977 |
| 41 | 2017 | 13 | 0.040158 |
| 41 | 2017 | 14 | 0.028521 |
| 41 | 2017 | 15 | 0.022115 |
| 41 | 2017 | 16 | 0.029584 |
| 41 | 2017 | 17 | 0.037133 |
| 41 | 2017 | 18 | 0.033207 |
| 41 | 2017 | 19 | 0.018441 |
| 41 | 2017 | 20 | 0.017480 |
| 41 | 2017 | 21 | 0.014771 |
| 41 | 2017 | 22 | 0.014430 |
| 41 | 2017 | 23 | 0.008575 |
| 41 | 2017 | 24 | 0.005922 |
| 41 | 2017 | 25 | 0.004568 |
| 41 | 2017 | 26 | 0.003785 |
| 41 | 2017 | 27 | 0.004862 |
| 41 | 2017 | 28 | 0.002850 |
| 41 | 2017 | 29 | 0.002167 |
| 41 | 2017 | 30 | 0.005500 |
| 42 | 2017 | 0 | 0.056996 |
| 42 | 2017 | 1 | 0.055740 |
| 42 | 2017 | 2 | 0.077462 |
| 42 | 2017 | 3 | 0.058005 |
| 42 | 2017 | 4 | 0.051580 |
| 42 | 2017 | 5 | 0.055866 |
| 42 | 2017 | 6 | 0.035647 |
| 42 | 2017 | 7 | 0.016049 |
| 42 | 2017 | 8 | 0.021700 |
| 42 | 2017 | 9 | 0.042444 |
| 42 | 2017 | 10 | 0.089177 |
| 42 | 2017 | 11 | 0.086288 |
| 42 | 2017 | 12 | 0.058977 |
| 42 | 2017 | 13 | 0.040158 |
| 42 | 2017 | 14 | 0.028521 |
| 42 | 2017 | 15 | 0.022115 |
| 42 | 2017 | 16 | 0.029584 |
| 42 | 2017 | 17 | 0.037133 |
| 42 | 2017 | 18 | 0.033207 |
| 42 | 2017 | 19 | 0.018441 |
| 42 | 2017 | 20 | 0.017480 |
| 42 | 2017 | 21 | 0.014771 |
| 42 | 2017 | 22 | 0.014430 |
| 42 | 2017 | 23 | 0.008575 |
| 42 | 2017 | 24 | 0.005922 |
| 42 | 2017 | 25 | 0.004568 |
| 42 | 2017 | 26 | 0.003785 |
| 42 | 2017 | 27 | 0.004862 |
| 42 | 2017 | 28 | 0.002850 |
| 42 | 2017 | 29 | 0.002167 |
| 42 | 2017 | 30 | 0.005500 |
| 43 | 2017 | 0 | 0.057022 |
| 43 | 2017 | 1 | 0.055542 |
| 43 | 2017 | 2 | 0.065161 |
| 43 | 2017 | 3 | 0.057586 |
| 43 | 2017 | 4 | 0.061693 |
| 43 | 2017 | 5 | 0.071253 |
| 43 | 2017 | 6 | 0.048220 |
| 43 | 2017 | 7 | 0.023309 |
| 43 | 2017 | 8 | 0.029156 |
| 43 | 2017 | 9 | 0.058731 |
| 43 | 2017 | 10 | 0.105822 |
| 43 | 2017 | 11 | 0.111603 |
| 43 | 2017 | 12 | 0.059966 |
| 43 | 2017 | 13 | 0.025132 |
| 43 | 2017 | 14 | 0.018150 |
| 43 | 2017 | 15 | 0.013351 |
| 43 | 2017 | 16 | 0.017008 |
| 43 | 2017 | 17 | 0.040209 |
| 43 | 2017 | 18 | 0.019004 |
| 43 | 2017 | 19 | 0.010282 |
| 43 | 2017 | 20 | 0.009713 |
| 43 | 2017 | 21 | 0.007556 |
| 43 | 2017 | 22 | 0.007113 |

| sourceTypeID | yearID | ageID | ageFraction |
|---|---|---|---|
| 43 | 2017 | 23 | 0.004592 |
| 43 | 2017 | 24 | 0.003264 |
| 43 | 2017 | 25 | 0.002399 |
| 43 | 2017 | 26 | 0.002545 |
| 43 | 2017 | 27 | 0.002487 |
| 43 | 2017 | 28 | 0.001840 |
| 43 | 2017 | 29 | 0.001517 |
| 43 | 2017 | 30 | 0.008771 |
| 51 | 2017 | 0 | 0.065776 |
| 51 | 2017 | 1 | 0.063998 |
| 51 | 2017 | 2 | 0.064529 |
| 51 | 2017 | 3 | 0.057028 |
| 51 | 2017 | 4 | 0.061095 |
| 51 | 2017 | 5 | 0.070427 |
| 51 | 2017 | 6 | 0.047492 |
| 51 | 2017 | 7 | 0.022921 |
| 51 | 2017 | 8 | 0.028613 |
| 51 | 2017 | 9 | 0.057545 |
| 51 | 2017 | 10 | 0.103685 |
| 51 | 2017 | 11 | 0.109130 |
| 51 | 2017 | 12 | 0.058541 |
| 51 | 2017 | 13 | 0.024486 |
| 51 | 2017 | 14 | 0.017654 |
| 51 | 2017 | 15 | 0.012986 |
| 51 | 2017 | 16 | 0.016509 |
| 51 | 2017 | 17 | 0.038966 |
| 51 | 2017 | 18 | 0.018377 |
| 51 | 2017 | 19 | 0.009927 |
| 51 | 2017 | 20 | 0.009358 |
| 51 | 2017 | 21 | 0.007268 |
| 51 | 2017 | 22 | 0.006940 |
| 51 | 2017 | 23 | 0.004456 |
| 51 | 2017 | 24 | 0.003224 |
| 51 | 2017 | 25 | 0.002337 |
| 51 | 2017 | 26 | 0.002478 |
| 51 | 2017 | 27 | 0.002386 |
| 51 | 2017 | 28 | 0.001749 |
| 51 | 2017 | 29 | 0.001420 |
| 51 | 2017 | 30 | 0.008698 |
| 52 | 2017 | 0 | 0.066164 |
| 52 | 2017 | 1 | 0.064310 |
| 52 | 2017 | 2 | 0.053864 |
| 52 | 2017 | 3 | 0.056621 |
| 52 | 2017 | 4 | 0.057847 |
| 52 | 2017 | 5 | 0.061868 |
| 52 | 2017 | 6 | 0.044652 |
| 52 | 2017 | 7 | 0.023006 |
| 52 | 2017 | 8 | 0.025871 |
| 52 | 2017 | 9 | 0.054194 |
| 52 | 2017 | 10 | 0.091220 |
| 52 | 2017 | 11 | 0.096008 |
| 52 | 2017 | 12 | 0.056642 |
| 52 | 2017 | 13 | 0.032082 |
| 52 | 2017 | 14 | 0.024601 |
| 52 | 2017 | 15 | 0.019941 |
| 52 | 2017 | 16 | 0.023680 |
| 52 | 2017 | 17 | 0.038299 |
| 52 | 2017 | 18 | 0.020927 |
| 52 | 2017 | 19 | 0.013109 |
| 52 | 2017 | 20 | 0.012782 |
| 52 | 2017 | 21 | 0.009437 |
| 52 | 2017 | 22 | 0.009186 |
| 52 | 2017 | 23 | 0.006807 |
| 52 | 2017 | 24 | 0.004814 |
| 52 | 2017 | 25 | 0.003309 |
| 52 | 2017 | 26 | 0.003187 |
| 52 | 2017 | 27 | 0.002998 |
| 52 | 2017 | 28 | 0.002557 |
| 52 | 2017 | 29 | 0.001997 |
| 52 | 2017 | 30 | 0.018019 |
| 53 | 2017 | 0 | 0.065910 |
| 53 | 2017 | 1 | 0.064079 |
| 53 | 2017 | 2 | 0.063750 |
| 53 | 2017 | 3 | 0.057306 |
| 53 | 2017 | 4 | 0.061224 |
| 53 | 2017 | 5 | 0.069893 |
| 53 | 2017 | 6 | 0.047438 |
| 53 | 2017 | 7 | 0.022894 |
| 53 | 2017 | 8 | 0.028388 |
| 53 | 2017 | 9 | 0.057272 |
| 53 | 2017 | 10 | 0.102540 |
| 53 | 2017 | 11 | 0.107790 |
| 53 | 2017 | 12 | 0.058100 |
| 53 | 2017 | 13 | 0.024655 |
| 53 | 2017 | 14 | 0.017785 |
| 53 | 2017 | 15 | 0.013087 |
| 53 | 2017 | 16 | 0.016662 |
| 53 | 2017 | 17 | 0.038629 |
| 53 | 2017 | 18 | 0.018337 |
| 53 | 2017 | 19 | 0.009973 |
| 53 | 2017 | 20 | 0.009417 |
| 53 | 2017 | 21 | 0.007300 |
| 53 | 2017 | 22 | 0.007435 |
| 53 | 2017 | 23 | 0.004816 |
| 53 | 2017 | 24 | 0.003771 |
| 53 | 2017 | 25 | 0.002582 |
| 53 | 2017 | 26 | 0.002764 |
| 53 | 2017 | 27 | 0.002522 |
| 53 | 2017 | 28 | 0.001814 |
| 53 | 2017 | 29 | 0.001417 |
| 53 | 2017 | 30 | 0.010448 |
| 54 | 2017 | 0 | 0.066114 |
| 54 | 2017 | 1 | 0.064212 |
| 54 | 2017 | 2 | 0.064579 |
| 54 | 2017 | 3 | 0.057072 |
| 54 | 2017 | 4 | 0.061142 |
| 54 | 2017 | 5 | 0.070481 |
| 54 | 2017 | 6 | 0.047529 |
| 54 | 2017 | 7 | 0.022938 |
| 54 | 2017 | 8 | 0.028635 |
| 54 | 2017 | 9 | 0.057589 |
| 54 | 2017 | 10 | 0.103765 |
| 54 | 2017 | 11 | 0.109214 |
| 54 | 2017 | 12 | 0.058586 |
| 54 | 2017 | 13 | 0.024504 |
| 54 | 2017 | 14 | 0.017668 |
| 54 | 2017 | 15 | 0.012996 |
| 54 | 2017 | 16 | 0.016522 |
| 54 | 2017 | 17 | 0.038996 |
| 54 | 2017 | 18 | 0.018391 |
| 54 | 2017 | 19 | 0.009934 |
| 54 | 2017 | 20 | 0.009365 |
| 54 | 2017 | 21 | 0.007273 |
| 54 | 2017 | 22 | 0.006593 |
| 54 | 2017 | 23 | 0.004237 |
| 54 | 2017 | 24 | 0.002880 |
| 54 | 2017 | 25 | 0.002179 |
| 54 | 2017 | 26 | 0.002313 |
| 54 | 2017 | 27 | 0.002326 |
| 54 | 2017 | 28 | 0.001733 |
| 54 | 2017 | 29 | 0.001465 |
| 54 | 2017 | 30 | 0.008767 |
| 61 | 2017 | 0 | 0.049879 |
| 61 | 2017 | 1 | 0.048572 |
| 61 | 2017 | 2 | 0.065772 |
| 61 | 2017 | 3 | 0.058126 |
| 61 | 2017 | 4 | 0.062271 |
| 61 | 2017 | 5 | 0.072007 |
| 61 | 2017 | 6 | 0.048854 |
| 61 | 2017 | 7 | 0.023648 |
| 61 | 2017 | 8 | 0.029615 |
| 61 | 2017 | 9 | 0.059737 |
| 61 | 2017 | 10 | 0.107634 |
| 61 | 2017 | 11 | 0.113653 |
| 61 | 2017 | 12 | 0.061150 |
| 61 | 2017 | 13 | 0.025660 |
| 61 | 2017 | 14 | 0.018557 |
| 61 | 2017 | 15 | 0.013650 |
| 61 | 2017 | 16 | 0.017411 |
| 61 | 2017 | 17 | 0.041219 |
| 61 | 2017 | 18 | 0.019505 |
| 61 | 2017 | 19 | 0.010568 |
| 61 | 2017 | 20 | 0.009996 |
| 61 | 2017 | 21 | 0.007787 |
| 61 | 2017 | 22 | 0.007394 |
| 61 | 2017 | 23 | 0.004654 |
| 61 | 2017 | 24 | 0.003428 |
| 61 | 2017 | 25 | 0.002452 |
| 61 | 2017 | 26 | 0.002651 |
| 61 | 2017 | 27 | 0.002548 |
| 61 | 2017 | 28 | 0.001807 |
| 61 | 2017 | 29 | 0.001459 |
| 61 | 2017 | 30 | 0.008333 |
| 62 | 2017 | 0 | 0.049120 |
| 62 | 2017 | 1 | 0.048270 |
| 62 | 2017 | 2 | 0.065811 |
| 62 | 2017 | 3 | 0.058160 |
| 62 | 2017 | 4 | 0.062308 |
| 62 | 2017 | 5 | 0.072049 |
| 62 | 2017 | 6 | 0.048883 |
| 62 | 2017 | 7 | 0.023662 |
| 62 | 2017 | 8 | 0.029632 |
| 62 | 2017 | 9 | 0.059772 |
| 62 | 2017 | 10 | 0.107698 |
| 62 | 2017 | 11 | 0.113720 |
| 62 | 2017 | 12 | 0.061187 |
| 62 | 2017 | 13 | 0.025676 |
| 62 | 2017 | 14 | 0.018568 |
| 62 | 2017 | 15 | 0.013659 |
| 62 | 2017 | 16 | 0.017422 |
| 62 | 2017 | 17 | 0.041244 |
| 62 | 2017 | 18 | 0.019517 |
| 62 | 2017 | 19 | 0.010575 |
| 62 | 2017 | 20 | 0.010002 |
| 62 | 2017 | 21 | 0.007792 |
| 62 | 2017 | 22 | 0.007424 |
| 62 | 2017 | 23 | 0.004740 |
| 62 | 2017 | 24 | 0.003460 |
| 62 | 2017 | 25 | 0.002495 |
| 62 | 2017 | 26 | 0.002670 |
| 62 | 2017 | 27 | 0.002573 |
| 62 | 2017 | 28 | 0.001864 |
| 62 | 2017 | 29 | 0.001512 |
| 62 | 2017 | 30 | 0.008533 |

[IMCoverage]

| polProcess ID | state ID | county ID | yearID | sourceTypeID | fuelTypeID | IMProgramID | begModelYearID | endModelYearID | inspectFreq | testStandardsID | useIMyn | compliance Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 4 | 4013 | 2017 | 21 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 101 | 4 | 4013 | 2017 | 21 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 101 | 4 | 4013 | 2017 | 21 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 101 | 4 | 4013 | 2017 | 31 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 101 | 4 | 4013 | 2017 | 31 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 101 | 4 | 4013 | 2017 | 31 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 101 | 4 | 4013 | 2017 | 32 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 101 | 4 | 4013 | 2017 | 32 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 101 | 4 | 4013 | 2017 | 32 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 101 | 4 | 4013 | 2017 | 52 | 1 | 103 | 1967 | 2013 | 1 | 13 | N | 87.20 |
| 102 | 4 | 4013 | 2017 | 21 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 102 | 4 | 4013 | 2017 | 21 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 102 | 4 | 4013 | 2017 | 21 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 102 | 4 | 4013 | 2017 | 31 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 102 | 4 | 4013 | 2017 | 31 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 102 | 4 | 4013 | 2017 | 31 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 102 | 4 | 4013 | 2017 | 32 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 102 | 4 | 4013 | 2017 | 32 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 102 | 4 | 4013 | 2017 | 32 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 102 | 4 | 4013 | 2017 | 52 | 1 | 103 | 1967 | 2013 | 1 | 13 | N | 87.20 |
| 112 | 4 | 4013 | 2017 | 21 | 1 | 108 | 1996 | 2013 | 2 | 43 | N | 83.81 |
| 112 | 4 | 4013 | 2017 | 21 | 1 | 109 | 1981 | 1995 | 2 | 44 | N | 64.12 |
| 112 | 4 | 4013 | 2017 | 31 | 1 | 108 | 1996 | 2013 | 2 | 43 | N | 83.81 |
| 112 | 4 | 4013 | 2017 | 31 | 1 | 109 | 1981 | 1995 | 2 | 44 | N | 64.12 |
| 112 | 4 | 4013 | 2017 | 32 | 1 | 108 | 1996 | 2013 | 2 | 43 | N | 83.81 |
| 112 | 4 | 4013 | 2017 | 32 | 1 | 109 | 1981 | 1995 | 2 | 44 | N | 64.12 |
| 112 | 4 | 4013 | 2017 | 52 | 1 | 107 | 1981 | 2013 | 1 | 41 | N | 86.29 |
| 201 | 4 | 4013 | 2017 | 21 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 201 | 4 | 4013 | 2017 | 21 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 201 | 4 | 4013 | 2017 | 21 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 201 | 4 | 4013 | 2017 | 31 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 201 | 4 | 4013 | 2017 | 31 | 1 | 106 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 201 | 4 | 4013 | 2017 | 31 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 201 | 4 | 4013 | 2017 | 32 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
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| 202 | 4 | 4013 | 2017 | 32 | 1 | 110 | 1996 | 2013 | 2 | 51 | N | 90.04 |
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| 301 | 4 | 4013 | 2017 | 31 | 1 | 103 | 1967 | 1980 | 1 | 13 | N | 57.62 |
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| 101 | 4 | 4013 | 2017 | 21 | 5 | 310 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 101 | 4 | 4013 | 2017 | 31 | 5 | 303 | 1967 | 1980 | 1 | 13 | N | 57.62 |
| 101 | 4 | 4013 | 2017 | 31 | 5 | 306 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 101 | 4 | 4013 | 2017 | 31 | 5 | 310 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 101 | 4 | 4013 | 2017 | 32 | 5 | 303 | 1967 | 1980 | 1 | 13 | N | 57.62 |

| polProcess ID | state ID | county ID | yearID | sourceTypeID | fuelTypeID | IMProgramID | begModelYearID | endModelYearID | inspectFreq | testStandardsID | useIMyn | compliance Factor |
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| 101 | 4 | 4013 | 2017 | 32 | 5 | 310 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 101 | 4 | 4013 | 2017 | 52 | 5 | 303 | 1967 | 2013 | 1 | 13 | N | 87.20 |
| 102 | 4 | 4013 | 2017 | 21 | 5 | 303 | 1967 | 1980 | 1 | 13 | N | 57.62 |
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| 102 | 4 | 4013 | 2017 | 52 | 5 | 303 | 1967 | 2013 | 1 | 13 | N | 87.20 |
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| 112 | 4 | 4013 | 2017 | 32 | 5 | 308 | 1996 | 2013 | 2 | 43 | N | 83.81 |
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| 201 | 4 | 4013 | 2017 | 31 | 5 | 306 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 201 | 4 | 4013 | 2017 | 31 | 5 | 310 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 201 | 4 | 4013 | 2017 | 32 | 5 | 303 | 1967 | 1980 | 1 | 13 | N | 57.62 |
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| 302 | 4 | 4013 | 2017 | 31 | 5 | 306 | 1981 | 1995 | 2 | 31 | N | 64.12 |
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| 302 | 4 | 4013 | 2017 | 32 | 5 | 306 | 1981 | 1995 | 2 | 31 | N | 64.12 |
| 302 | 4 | 4013 | 2017 | 32 | 5 | 310 | 1996 | 2013 | 2 | 51 | N | 90.04 |
| 302 | 4 | 4013 | 2017 | 52 | 5 | 303 | 1967 | 2013 | 1 | 13 | N | 87.20 |
| 101 | 4 | 4013 | 2017 | 21 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
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| 101 | 4 | 4013 | 2017 | 43 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
| 101 | 4 | 4013 | 2017 | 51 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
| 101 | 4 | 4013 | 2017 | 52 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
| 101 | 4 | 4013 | 2017 | 53 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
| 101 | 4 | 4013 | 2017 | 54 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |

| polProcess ID | state ID | county ID | yearID | sourceTypeID | fuelTypeID | IMProgramID | begModelYearID | endModelYearID | inspectFreq | testStandardsID | useIMyn | compliance Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| 101 | 4 | 4013 | 2017 | 62 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
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| 102 | 4 | 4013 | 2017 | 21 | 1 | 6 | 1981 | 1995 | 2 | 31 | Y | 63.62 |
| 102 | 4 | 4013 | 2017 | 21 | 1 | 10 | 1996 | 2013 | 2 | 51 | Y | 83.16 |
| 102 | 4 | 4013 | 2017 | 31 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
| 102 | 4 | 4013 | 2017 | 31 | 1 | 6 | 1981 | 1995 | 2 | 31 | Y | 63.62 |
| 102 | 4 | 4013 | 2017 | 31 | 1 | 10 | 1996 | 2013 | 2 | 51 | Y | 78.17 |
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| 102 | 4 | 4013 | 2017 | 32 | 1 | 6 | 1981 | 1995 | 2 | 31 | Y | 63.62 |
| 102 | 4 | 4013 | 2017 | 32 | 1 | 10 | 1996 | 2013 | 2 | 51 | Y | 73.18 |
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| 112 | 4 | 4013 | 2017 | 21 | 1 | 9 | 1981 | 1995 | 2 | 44 | Y | 63.62 |
| 112 | 4 | 4013 | 2017 | 21 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
| 112 | 4 | 4013 | 2017 | 31 | 1 | 8 | 1996 | 2013 | 2 | 45 | Y | 83.98 |
| 112 | 4 | 4013 | 2017 | 31 | 1 | 9 | 1981 | 1995 | 2 | 44 | Y | 59.80 |
| 112 | 4 | 4013 | 2017 | 31 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
| 112 | 4 | 4013 | 2017 | 32 | 1 | 8 | 1996 | 2013 | 2 | 45 | Y | 78.62 |
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| 112 | 4 | 4013 | 2017 | 32 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
| 112 | 4 | 4013 | 2017 | 41 | 1 | 7 | 1981 | 2013 | 1 | 41 | Y | 85.61 |
| 112 | 4 | 4013 | 2017 | 41 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
| 112 | 4 | 4013 | 2017 | 42 | 1 | 7 | 1981 | 2013 | 1 | 41 | Y | 85.61 |
| 112 | 4 | 4013 | 2017 | 42 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
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| 113 | 4 | 4013 | 2017 | 21 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
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| 113 | 4 | 4013 | 2017 | 31 | 1 | 9 | 1981 | 1995 | 2 | 44 | Y | 59.80 |
| 113 | 4 | 4013 | 2017 | 31 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
| 113 | 4 | 4013 | 2017 | 32 | 1 | 8 | 1996 | 2013 | 2 | 45 | Y | 78.62 |
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| 113 | 4 | 4013 | 2017 | 32 | 1 | 11 | 1967 | 1980 | 1 | 41 | Y | 86.77 |
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| 201 | 4 | 4013 | 2017 | 21 | 1 | 6 | 1981 | 1995 | 2 | 31 | Y | 63.62 |

| polProcess ID | state ID | county ID | yearID | sourceTypeID | fuelTypeID | IMProgramID | begModelYearID | endModelYearID | inspectFreq | testStandardsID | useIMyn | compliance Factor |
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| 202 | 4 | 4013 | 2017 | 21 | 1 | 10 | 1996 | 2013 | 2 | 51 | Y | 83.16 |
| 202 | 4 | 4013 | 2017 | 31 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
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| 202 | 4 | 4013 | 2017 | 31 | 1 | 10 | 1996 | 2013 | 2 | 51 | Y | 78.17 |
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| 202 | 4 | 4013 | 2017 | 41 | 1 | 3 | 1967 | 1980 | 1 | 13 | Y | 57.21 |
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| polProcess ID | state ID | county ID | yearID | sourceTypeID | fuelTypeID | IMProgramID | begModelYearID | endModelYearID | inspectFreq | testStandardsID | useIMyn | compliance Factor |
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| polProcess ID | state ID | county ID | yearID | sourceTypeID | fuelTypeID | IMProgramID | begModelYearID | endModelYearID | inspectFreq | testStandardsID | useIMyn | compliance Factor |
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| 101 | 4 | 4013 | 2017 | 61 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 101 | 4 | 4013 | 2017 | 62 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 41 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 42 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 43 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 51 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 52 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 53 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 54 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 61 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 102 | 4 | 4013 | 2017 | 62 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |

| polProcess ID | state ID | county ID | yearID | sourceTypeID | fuelTypeID | IMProgramID | begModelYearID | endModelYearID | inspectFreq | testStandardsID | useIMyn | compliance Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201 | 4 | 4013 | 2017 | 41 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 42 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 43 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 51 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 52 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 53 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 54 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 61 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 201 | 4 | 4013 | 2017 | 62 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 41 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 42 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 43 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 51 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 52 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 53 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 54 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 61 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 202 | 4 | 4013 | 2017 | 62 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 41 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 42 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 43 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 51 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 52 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 53 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 54 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 61 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 301 | 4 | 4013 | 2017 | 62 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 41 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 42 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 43 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 51 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 52 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 53 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 54 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 61 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |
| 302 | 4 | 4013 | 2017 | 62 | 5 | 504 | 1981 | 2013 | 2 | 13 | Y | 86.52 |

## [RoadType]

| roadTypeID | roadDesc | rampFraction | isAffectedByOnroad | isAffectedByNonroad | shouldDisplay |
|---|---|---|---|---|---|
| 2 | Rural Restricted Access | 0.0744035 | 1 | 0 | 1 |
| 4 | Urban Restricted Access | 0.133283 | 1 | 0 | 1 |

## [MonthVMTFraction]

| sourceTypeID | monthID | monthVMTFraction |
|---|---|---|
| 11 | 6 | 0.082456 |
| 21 | 6 | 0.082456 |
| 31 | 6 | 0.082456 |
| 32 | 6 | 0.082456 |
| 41 | 6 | 0.082456 |
| 42 | 6 | 0.082456 |
| 43 | 6 | 0.082456 |
| 51 | 6 | 0.082456 |
| 52 | 6 | 0.082456 |
| 53 | 6 | 0.082456 |
| 54 | 6 | 0.082456 |
| 61 | 6 | 0.082456 |
| 62 | 6 | 0.082456 |

## [DayVMTFraction]

| sourceTypeID | monthID | roadTypeID | dayID | dayVMTFraction |
|---|---|---|---|---|
| 11 | 6 | 1 | 5 | 0.788642 |
| 21 | 6 | 1 | 5 | 0.788642 |
| 31 | 6 | 1 | 5 | 0.788642 |
| 32 | 6 | 1 | 5 | 0.788642 |
| 41 | 6 | 1 | 5 | 0.788642 |
| 42 | 6 | 1 | 5 | 0.788642 |
| 43 | 6 | 1 | 5 | 0.788642 |
| 51 | 6 | 1 | 5 | 0.788642 |
| 52 | 6 | 1 | 5 | 0.788642 |
| 53 | 6 | 1 | 5 | 0.788642 |
| 54 | 6 | 1 | 5 | 0.788642 |
| 61 | 6 | 1 | 5 | 0.788642 |
| 62 | 6 | 1 | 5 | 0.788642 |
| 11 | 6 | 2 | 5 | 0.791091 |
| 21 | 6 | 2 | 5 | 0.791091 |
| 31 | 6 | 2 | 5 | 0.791091 |
| 32 | 6 | 2 | 5 | 0.791091 |
| 41 | 6 | 2 | 5 | 0.791091 |
| 42 | 6 | 2 | 5 | 0.791091 |
| 43 | 6 | 2 | 5 | 0.791091 |
| 51 | 6 | 2 | 5 | 0.791091 |
| 52 | 6 | 2 | 5 | 0.791091 |
| 53 | 6 | 2 | 5 | 0.791091 |
| 54 | 6 | 2 | 5 | 0.791091 |
| 61 | 6 | 2 | 5 | 0.791091 |
| 62 | 6 | 2 | 5 | 0.791091 |
| 11 | 6 | 3 | 5 | 0.786164 |
| 21 | 6 | 3 | 5 | 0.786164 |
| 31 | 6 | 3 | 5 | 0.786164 |
| 32 | 6 | 3 | 5 | 0.786164 |
| 41 | 6 | 3 | 5 | 0.786164 |
| 42 | 6 | 3 | 5 | 0.786164 |
| 43 | 6 | 3 | 5 | 0.786164 |
| 51 | 6 | 3 | 5 | 0.786164 |
| 52 | 6 | 3 | 5 | 0.786164 |
| 53 | 6 | 3 | 5 | 0.786164 |
| 54 | 6 | 3 | 5 | 0.786164 |
| 61 | 6 | 3 | 5 | 0.786164 |
| 62 | 6 | 3 | 5 | 0.786164 |
| 11 | 6 | 4 | 5 | 0.791091 |
| 21 | 6 | 4 | 5 | 0.791091 |
| 31 | 6 | 4 | 5 | 0.791091 |
| 32 | 6 | 4 | 5 | 0.791091 |
| 41 | 6 | 4 | 5 | 0.791091 |
| 42 | 6 | 4 | 5 | 0.791091 |
| 43 | 6 | 4 | 5 | 0.791091 |
| 51 | 6 | 4 | 5 | 0.791091 |
| 52 | 6 | 4 | 5 | 0.791091 |
| 53 | 6 | 4 | 5 | 0.791091 |
| 54 | 6 | 4 | 5 | 0.791091 |
| 61 | 6 | 4 | 5 | 0.791091 |
| 62 | 6 | 4 | 5 | 0.791091 |
| 11 | 6 | 5 | 5 | 0.786164 |
| 21 | 6 | 5 | 5 | 0.786164 |
| 31 | 6 | 5 | 5 | 0.786164 |
| 32 | 6 | 5 | 5 | 0.786164 |
| 41 | 6 | 5 | 5 | 0.786164 |
| 42 | 6 | 5 | 5 | 0.786164 |
| 43 | 6 | 5 | 5 | 0.786164 |
| 51 | 6 | 5 | 5 | 0.786164 |
| 52 | 6 | 5 | 5 | 0.786164 |
| 53 | 6 | 5 | 5 | 0.786164 |
| 54 | 6 | 5 | 5 | 0.786164 |
| 61 | 6 | 5 | 5 | 0.786164 |
| 62 | 6 | 5 | 5 | 0.786164 |

## [HourVMTFraction] (SourceTypeID 21: Passenger Car)

| sourceTypeID | roadTypeID | dayID | hourID | hourVMTFraction |
|---|---|---|---|---|
| 21 | 1 | 5 | 1 | 0.0079 |
| 21 | 1 | 5 | 2 | 0.0055 |
| 21 | 1 | 5 | 3 | 0.0052 |
| 21 | 1 | 5 | 4 | 0.0074 |
| 21 | 1 | 5 | 5 | 0.0217 |
| 21 | 1 | 5 | 6 | 0.0377 |
| 21 | 1 | 5 | 7 | 0.0538 |
| 21 | 1 | 5 | 8 | 0.0654 |
| 21 | 1 | 5 | 9 | 0.0608 |
| 21 | 1 | 5 | 10 | 0.0521 |
| 21 | 1 | 5 | 11 | 0.0503 |
| 21 | 1 | 5 | 12 | 0.0534 |
| 21 | 1 | 5 | 13 | 0.0565 |
| 21 | 1 | 5 | 14 | 0.0597 |
| 21 | 1 | 5 | 15 | 0.0638 |
| 21 | 1 | 5 | 16 | 0.0668 |
| 21 | 1 | 5 | 17 | 0.0686 |
| 21 | 1 | 5 | 18 | 0.0688 |
| 21 | 1 | 5 | 19 | 0.0567 |
| 21 | 1 | 5 | 20 | 0.0409 |
| 21 | 1 | 5 | 21 | 0.0338 |
| 21 | 1 | 5 | 22 | 0.0292 |
| 21 | 1 | 5 | 23 | 0.0210 |
| 21 | 1 | 5 | 24 | 0.0132 |
| 21 | 2 | 5 | 1 | 0.0098 |
| 21 | 2 | 5 | 2 | 0.0070 |
| 21 | 2 | 5 | 3 | 0.0069 |
| 21 | 2 | 5 | 4 | 0.0107 |
| 21 | 2 | 5 | 5 | 0.0336 |
| 21 | 2 | 5 | 6 | 0.0496 |
| 21 | 2 | 5 | 7 | 0.0585 |
| 21 | 2 | 5 | 8 | 0.0608 |
| 21 | 2 | 5 | 9 | 0.0585 |
| 21 | 2 | 5 | 10 | 0.0538 |
| 21 | 2 | 5 | 11 | 0.0507 |
| 21 | 2 | 5 | 12 | 0.0518 |
| 21 | 2 | 5 | 13 | 0.0547 |
| 21 | 2 | 5 | 14 | 0.0614 |
| 21 | 2 | 5 | 15 | 0.0637 |
| 21 | 2 | 5 | 16 | 0.0607 |
| 21 | 2 | 5 | 17 | 0.0589 |
| 21 | 2 | 5 | 18 | 0.0566 |
| 21 | 2 | 5 | 19 | 0.0496 |
| 21 | 2 | 5 | 20 | 0.0389 |
| 21 | 2 | 5 | 21 | 0.0338 |
| 21 | 2 | 5 | 22 | 0.0309 |
| 21 | 2 | 5 | 23 | 0.0240 |
| 21 | 2 | 5 | 24 | 0.0156 |
| 21 | 3 | 5 | 1 | 0.0061 |
| 21 | 3 | 5 | 2 | 0.0040 |
| 21 | 3 | 5 | 3 | 0.0034 |
| 21 | 3 | 5 | 4 | 0.0040 |
| 21 | 3 | 5 | 5 | 0.0096 |
| 21 | 3 | 5 | 6 | 0.0257 |
| 21 | 3 | 5 | 7 | 0.0489 |
| 21 | 3 | 5 | 8 | 0.0700 |
| 21 | 3 | 5 | 9 | 0.0633 |
| 21 | 3 | 5 | 10 | 0.0503 |
| 21 | 3 | 5 | 11 | 0.0498 |
| 21 | 3 | 5 | 12 | 0.0550 |
| 21 | 3 | 5 | 13 | 0.0584 |
| 21 | 3 | 5 | 14 | 0.0580 |
| 21 | 3 | 5 | 15 | 0.0640 |
| 21 | 3 | 5 | 16 | 0.0730 |
| 21 | 3 | 5 | 17 | 0.0785 |
| 21 | 3 | 5 | 18 | 0.0812 |
| 21 | 3 | 5 | 19 | 0.0639 |
| 21 | 3 | 5 | 20 | 0.0430 |
| 21 | 3 | 5 | 21 | 0.0338 |
| 21 | 3 | 5 | 22 | 0.0275 |
| 21 | 3 | 5 | 23 | 0.0179 |
| 21 | 3 | 5 | 24 | 0.0107 |
| 21 | 4 | 5 | 1 | 0.0098 |
| 21 | 4 | 5 | 2 | 0.0070 |
| 21 | 4 | 5 | 3 | 0.0069 |
| 21 | 4 | 5 | 4 | 0.0107 |
| 21 | 4 | 5 | 5 | 0.0336 |
| 21 | 4 | 5 | 6 | 0.0496 |
| 21 | 4 | 5 | 7 | 0.0585 |
| 21 | 4 | 5 | 8 | 0.0608 |
| 21 | 4 | 5 | 9 | 0.0585 |
| 21 | 4 | 5 | 10 | 0.0538 |
| 21 | 4 | 5 | 11 | 0.0507 |
| 21 | 4 | 5 | 12 | 0.0518 |
| 21 | 4 | 5 | 13 | 0.0547 |
| 21 | 4 | 5 | 14 | 0.0614 |
| 21 | 4 | 5 | 15 | 0.0637 |
| 21 | 4 | 5 | 16 | 0.0607 |
| 21 | 4 | 5 | 17 | 0.0589 |
| 21 | 4 | 5 | 18 | 0.0566 |
| 21 | 4 | 5 | 19 | 0.0496 |
| 21 | 4 | 5 | 20 | 0.0389 |
| 21 | 4 | 5 | 21 | 0.0338 |
| 21 | 4 | 5 | 22 | 0.0309 |
| 21 | 4 | 5 | 23 | 0.0240 |
| 21 | 4 | 5 | 24 | 0.0156 |
| 21 | 5 | 5 | 1 | 0.0061 |
| 21 | 5 | 5 | 2 | 0.0040 |
| 21 | 5 | 5 | 3 | 0.0034 |
| 21 | 5 | 5 | 4 | 0.0040 |
| 21 | 5 | 5 | 5 | 0.0096 |
| 21 | 5 | 5 | 6 | 0.0257 |
| 21 | 5 | 5 | 7 | 0.0489 |
| 21 | 5 | 5 | 8 | 0.0700 |
| 21 | 5 | 5 | 9 | 0.0633 |
| 21 | 5 | 5 | 10 | 0.0503 |
| 21 | 5 | 5 | 11 | 0.0498 |
| 21 | 5 | 5 | 12 | 0.0550 |
| 21 | 5 | 5 | 13 | 0.0584 |
| 21 | 5 | 5 | 14 | 0.0580 |
| 21 | 5 | 5 | 15 | 0.0640 |
| 21 | 5 | 5 | 16 | 0.0730 |
| 21 | 5 | 5 | 17 | 0.0785 |
| 21 | 5 | 5 | 18 | 0.0812 |
| 21 | 5 | 5 | 19 | 0.0639 |
| 21 | 5 | 5 | 20 | 0.0430 |
| 21 | 5 | 5 | 21 | 0.0338 |
| 21 | 5 | 5 | 22 | 0.0275 |
| 21 | 5 | 5 | 23 | 0.0179 |
| 21 | 5 | 5 | 24 | 0.0107 |

## [RoadTypeDistribution]

| sourceTypeID | roadTypeID | roadTypeVMTFraction |
|---|---|---|
| 11 | 1 | 0.000000 |
| 11 | 2 | 0.009333 |
| 11 | 3 | 0.075503 |
| 11 | 4 | 0.313082 |
| 11 | 5 | 0.602083 |
| 21 | 1 | 0.000000 |
| 21 | 2 | 0.010031 |
| 21 | 3 | 0.06028 |
| 21 | 4 | 0.381675 |
| 21 | 5 | 0.548013 |
| 31 | 1 | 0.000000 |
| 31 | 2 | 0.010031 |
| 31 | 3 | 0.06028 |
| 31 | 4 | 0.381675 |
| 31 | 5 | 0.548013 |
| 32 | 1 | 0.000000 |
| 32 | 2 | 0.010031 |
| 32 | 3 | 0.06028 |
| 32 | 4 | 0.381675 |
| 32 | 5 | 0.548013 |
| 41 | 1 | 0.000000 |
| 41 | 2 | 0.047379 |
| 41 | 3 | 0.059473 |
| 41 | 4 | 0.519899 |
| 41 | 5 | 0.373249 |
| 42 | 1 | 0.000000 |
| 42 | 2 | 0.047379 |
| 42 | 3 | 0.059473 |
| 42 | 4 | 0.519899 |
| 42 | 5 | 0.373249 |
| 43 | 1 | 0.000000 |
| 43 | 2 | 0.047379 |
| 43 | 3 | 0.059473 |
| 43 | 4 | 0.519899 |
| 43 | 5 | 0.373249 |
| 51 | 1 | 0.000000 |
| 51 | 2 | 0.020377 |
| 51 | 3 | 0.055302 |
| 51 | 4 | 0.559562 |
| 51 | 5 | 0.364759 |
| 52 | 1 | 0.000000 |
| 52 | 2 | 0.020377 |
| 52 | 3 | 0.055302 |
| 52 | 4 | 0.559562 |
| 52 | 5 | 0.364759 |
| 53 | 1 | 0.000000 |
| 53 | 2 | 0.020377 |
| 53 | 3 | 0.055302 |
| 53 | 4 | 0.559562 |
| 53 | 5 | 0.364759 |
| 54 | 1 | 0.000000 |
| 54 | 2 | 0.020377 |
| 54 | 3 | 0.055302 |
| 54 | 4 | 0.559562 |
| 54 | 5 | 0.364759 |
| 61 | 1 | 0.000000 |
| 61 | 2 | 0.085406 |
| 61 | 3 | 0.058587 |
| 61 | 4 | 0.612989 |
| 61 | 5 | 0.243018 |
| 62 | 1 | 0.000000 |
| 62 | 2 | 0.085406 |
| 62 | 3 | 0.058587 |
| 62 | 4 | 0.612989 |
| 62 | 5 | 0.243018 |

[AvgSpeedDistribution] (SourceTypeID 21: Passenger Car and RoadTypeID 2: Rural Restricted Access)

| sourceTypeID | roadTypeID | hourDayID | avgSpeedBinID | avgSpeedFraction |
|---|---|---|---|---|
| 21 | 2 | 15 | 1 | 0.00000 |
| 21 | 2 | 15 | 2 | 0.00000 |
| 21 | 2 | 15 | 3 | 0.00000 |
| 21 | 2 | 15 | 4 | 0.00000 |
| 21 | 2 | 15 | 5 | 0.00000 |
| 21 | 2 | 15 | 6 | 0.00000 |
| 21 | 2 | 15 | 7 | 0.00000 |
| 21 | 2 | 15 | 8 | 0.00000 |
| 21 | 2 | 15 | 9 | 0.00000 |
| 21 | 2 | 15 | 10 | 0.00000 |
| 21 | 2 | 15 | 11 | 0.00000 |
| 21 | 2 | 15 | 12 | 0.00000 |
| 21 | 2 | 15 | 13 | 0.00000 |
| 21 | 2 | 15 | 14 | 0.19937 |
| 21 | 2 | 15 | 15 | 0.80063 |
| 21 | 2 | 15 | 16 | 0.00000 |
| 21 | 2 | 25 | 1 | 0.00000 |
| 21 | 2 | 25 | 2 | 0.00000 |
| 21 | 2 | 25 | 3 | 0.00000 |
| 21 | 2 | 25 | 4 | 0.00000 |
| 21 | 2 | 25 | 5 | 0.00000 |
| 21 | 2 | 25 | 6 | 0.00000 |
| 21 | 2 | 25 | 7 | 0.00000 |
| 21 | 2 | 25 | 8 | 0.00000 |
| 21 | 2 | 25 | 9 | 0.00000 |
| 21 | 2 | 25 | 10 | 0.00000 |
| 21 | 2 | 25 | 11 | 0.00000 |
| 21 | 2 | 25 | 12 | 0.00000 |
| 21 | 2 | 25 | 13 | 0.00000 |
| 21 | 2 | 25 | 14 | 0.19937 |
| 21 | 2 | 25 | 15 | 0.80063 |
| 21 | 2 | 25 | 16 | 0.00000 |
| 21 | 2 | 35 | 1 | 0.00000 |
| 21 | 2 | 35 | 2 | 0.00000 |
| 21 | 2 | 35 | 3 | 0.00000 |
| 21 | 2 | 35 | 4 | 0.00000 |
| 21 | 2 | 35 | 5 | 0.00000 |
| 21 | 2 | 35 | 6 | 0.00000 |
| 21 | 2 | 35 | 7 | 0.00000 |
| 21 | 2 | 35 | 8 | 0.00000 |
| 21 | 2 | 35 | 9 | 0.00000 |
| 21 | 2 | 35 | 10 | 0.00000 |
| 21 | 2 | 35 | 11 | 0.00000 |
| 21 | 2 | 35 | 12 | 0.00000 |
| 21 | 2 | 35 | 13 | 0.00000 |
| 21 | 2 | 35 | 14 | 0.19937 |
| 21 | 2 | 35 | 15 | 0.80063 |
| 21 | 2 | 35 | 16 | 0.00000 |
| 21 | 2 | 45 | 1 | 0.00000 |
| 21 | 2 | 45 | 2 | 0.00000 |
| 21 | 2 | 45 | 3 | 0.00000 |
| 21 | 2 | 45 | 4 | 0.00000 |
| 21 | 2 | 45 | 5 | 0.00000 |
| 21 | 2 | 45 | 6 | 0.00000 |
| 21 | 2 | 45 | 7 | 0.00000 |
| 21 | 2 | 45 | 8 | 0.00000 |
| 21 | 2 | 45 | 9 | 0.00000 |
| 21 | 2 | 45 | 10 | 0.00000 |
| 21 | 2 | 45 | 11 | 0.00000 |
| 21 | 2 | 45 | 12 | 0.00000 |
| 21 | 2 | 45 | 13 | 0.00000 |
| 21 | 2 | 45 | 14 | 0.19937 |
| 21 | 2 | 45 | 15 | 0.80063 |
| 21 | 2 | 45 | 16 | 0.00000 |
| 21 | 2 | 55 | 1 | 0.00000 |
| 21 | 2 | 55 | 2 | 0.00000 |
| 21 | 2 | 55 | 3 | 0.00000 |
| 21 | 2 | 55 | 4 | 0.00000 |
| 21 | 2 | 55 | 5 | 0.00000 |
| 21 | 2 | 55 | 6 | 0.00000 |
| 21 | 2 | 55 | 7 | 0.00000 |
| 21 | 2 | 55 | 8 | 0.00000 |
| 21 | 2 | 55 | 9 | 0.00000 |
| 21 | 2 | 55 | 10 | 0.00000 |
| 21 | 2 | 55 | 11 | 0.00000 |
| 21 | 2 | 55 | 12 | 0.00000 |
| 21 | 2 | 55 | 13 | 0.00000 |
| 21 | 2 | 55 | 14 | 0.19937 |
| 21 | 2 | 55 | 15 | 0.80063 |
| 21 | 2 | 55 | 16 | 0.00000 |
| 21 | 2 | 65 | 1 | 0.00000 |
| 21 | 2 | 65 | 2 | 0.00000 |
| 21 | 2 | 65 | 3 | 0.00000 |
| 21 | 2 | 65 | 4 | 0.00000 |
| 21 | 2 | 65 | 5 | 0.00000 |
| 21 | 2 | 65 | 6 | 0.00000 |
| 21 | 2 | 65 | 7 | 0.00000 |
| 21 | 2 | 65 | 8 | 0.00000 |
| 21 | 2 | 65 | 9 | 0.00000 |
| 21 | 2 | 65 | 10 | 0.00000 |
| 21 | 2 | 65 | 11 | 0.00000 |
| 21 | 2 | 65 | 12 | 0.00000 |
| 21 | 2 | 65 | 13 | 0.00000 |
| 21 | 2 | 65 | 14 | 0.19937 |
| 21 | 2 | 65 | 15 | 0.80063 |
| 21 | 2 | 65 | 16 | 0.00000 |
| 21 | 2 | 75 | 1 | 0.00000 |
| 21 | 2 | 75 | 2 | 0.00000 |
| 21 | 2 | 75 | 3 | 0.00000 |
| 21 | 2 | 75 | 4 | 0.00000 |
| 21 | 2 | 75 | 5 | 0.00000 |
| 21 | 2 | 75 | 6 | 0.00000 |
| 21 | 2 | 75 | 7 | 0.00000 |
| 21 | 2 | 75 | 8 | 0.00000 |
| 21 | 2 | 75 | 9 | 0.00000 |
| 21 | 2 | 75 | 10 | 0.00000 |
| 21 | 2 | 75 | 11 | 0.19232 |
| 21 | 2 | 75 | 12 | 0.09258 |
| 21 | 2 | 75 | 13 | 0.00000 |
| 21 | 2 | 75 | 14 | 0.16303 |
| 21 | 2 | 75 | 15 | 0.55206 |
| 21 | 2 | 75 | 16 | 0.00000 |
| 21 | 2 | 85 | 1 | 0.00000 |
| 21 | 2 | 85 | 2 | 0.00000 |
| 21 | 2 | 85 | 3 | 0.00000 |
| 21 | 2 | 85 | 4 | 0.00000 |
| 21 | 2 | 85 | 5 | 0.00000 |
| 21 | 2 | 85 | 6 | 0.00000 |
| 21 | 2 | 85 | 7 | 0.00000 |
| 21 | 2 | 85 | 8 | 0.00000 |
| 21 | 2 | 85 | 9 | 0.00000 |
| 21 | 2 | 85 | 10 | 0.00000 |
| 21 | 2 | 85 | 11 | 0.19232 |
| 21 | 2 | 85 | 12 | 0.09258 |
| 21 | 2 | 85 | 13 | 0.00000 |
| 21 | 2 | 85 | 14 | 0.16303 |
| 21 | 2 | 85 | 15 | 0.55206 |
| 21 | 2 | 85 | 16 | 0.00000 |
| 21 | 2 | 95 | 1 | 0.00000 |
| 21 | 2 | 95 | 2 | 0.00000 |
| 21 | 2 | 95 | 3 | 0.00000 |
| 21 | 2 | 95 | 4 | 0.00000 |
| 21 | 2 | 95 | 5 | 0.00000 |
| 21 | 2 | 95 | 6 | 0.00000 |
| 21 | 2 | 95 | 7 | 0.00000 |

| sourceTypeID | roadTypeID | hourDayID | avgSpeedBinID | avgSpeedFraction |
|---|---|---|---|---|
| 21 | 2 | 95 | 8 | 0.00000 |
| 21 | 2 | 95 | 9 | 0.00000 |
| 21 | 2 | 95 | 10 | 0.00000 |
| 21 | 2 | 95 | 11 | 0.19232 |
| 21 | 2 | 95 | 12 | 0.09258 |
| 21 | 2 | 95 | 13 | 0.00000 |
| 21 | 2 | 95 | 14 | 0.16303 |
| 21 | 2 | 95 | 15 | 0.55206 |
| 21 | 2 | 95 | 16 | 0.00000 |
| 21 | 2 | 105 | 1 | 0.00000 |
| 21 | 2 | 105 | 2 | 0.00000 |
| 21 | 2 | 105 | 3 | 0.00000 |
| 21 | 2 | 105 | 4 | 0.00000 |
| 21 | 2 | 105 | 5 | 0.00000 |
| 21 | 2 | 105 | 6 | 0.00000 |
| 21 | 2 | 105 | 7 | 0.00000 |
| 21 | 2 | 105 | 8 | 0.00000 |
| 21 | 2 | 105 | 9 | 0.00000 |
| 21 | 2 | 105 | 10 | 0.00000 |
| 21 | 2 | 105 | 11 | 0.00000 |
| 21 | 2 | 105 | 12 | 0.00000 |
| 21 | 2 | 105 | 13 | 0.00000 |
| 21 | 2 | 105 | 14 | 0.18634 |
| 21 | 2 | 105 | 15 | 0.81366 |
| 21 | 2 | 105 | 16 | 0.00000 |
| 21 | 2 | 115 | 1 | 0.00000 |
| 21 | 2 | 115 | 2 | 0.00000 |
| 21 | 2 | 115 | 3 | 0.00000 |
| 21 | 2 | 115 | 4 | 0.00000 |
| 21 | 2 | 115 | 5 | 0.00000 |
| 21 | 2 | 115 | 6 | 0.00000 |
| 21 | 2 | 115 | 7 | 0.00000 |
| 21 | 2 | 115 | 8 | 0.00000 |
| 21 | 2 | 115 | 9 | 0.00000 |
| 21 | 2 | 115 | 10 | 0.00000 |
| 21 | 2 | 115 | 11 | 0.00000 |
| 21 | 2 | 115 | 12 | 0.00000 |
| 21 | 2 | 115 | 13 | 0.00000 |
| 21 | 2 | 115 | 14 | 0.18634 |
| 21 | 2 | 115 | 15 | 0.81366 |
| 21 | 2 | 115 | 16 | 0.00000 |
| 21 | 2 | 125 | 1 | 0.00000 |
| 21 | 2 | 125 | 2 | 0.00000 |
| 21 | 2 | 125 | 3 | 0.00000 |
| 21 | 2 | 125 | 4 | 0.00000 |
| 21 | 2 | 125 | 5 | 0.00000 |
| 21 | 2 | 125 | 6 | 0.00000 |
| 21 | 2 | 125 | 7 | 0.00000 |
| 21 | 2 | 125 | 8 | 0.00000 |
| 21 | 2 | 125 | 9 | 0.00000 |
| 21 | 2 | 125 | 10 | 0.00000 |
| 21 | 2 | 125 | 11 | 0.00000 |
| 21 | 2 | 125 | 12 | 0.00000 |
| 21 | 2 | 125 | 13 | 0.00000 |
| 21 | 2 | 125 | 14 | 0.18634 |
| 21 | 2 | 125 | 15 | 0.81366 |
| 21 | 2 | 125 | 16 | 0.00000 |
| 21 | 2 | 135 | 1 | 0.00000 |
| 21 | 2 | 135 | 2 | 0.00000 |
| 21 | 2 | 135 | 3 | 0.00000 |
| 21 | 2 | 135 | 4 | 0.00000 |
| 21 | 2 | 135 | 5 | 0.00000 |
| 21 | 2 | 135 | 6 | 0.00000 |
| 21 | 2 | 135 | 7 | 0.00000 |
| 21 | 2 | 135 | 8 | 0.00000 |
| 21 | 2 | 135 | 9 | 0.00000 |
| 21 | 2 | 135 | 10 | 0.00000 |
| 21 | 2 | 135 | 11 | 0.00000 |
| 21 | 2 | 135 | 12 | 0.00000 |
| 21 | 2 | 135 | 13 | 0.00000 |
| 21 | 2 | 135 | 14 | 0.18634 |
| 21 | 2 | 135 | 15 | 0.81366 |
| 21 | 2 | 135 | 16 | 0.00000 |
| 21 | 2 | 145 | 1 | 0.00000 |
| 21 | 2 | 145 | 2 | 0.00000 |
| 21 | 2 | 145 | 3 | 0.00000 |
| 21 | 2 | 145 | 4 | 0.00000 |
| 21 | 2 | 145 | 5 | 0.00000 |
| 21 | 2 | 145 | 6 | 0.00000 |
| 21 | 2 | 145 | 7 | 0.00000 |
| 21 | 2 | 145 | 8 | 0.00000 |
| 21 | 2 | 145 | 9 | 0.00000 |
| 21 | 2 | 145 | 10 | 0.00000 |
| 21 | 2 | 145 | 11 | 0.00000 |
| 21 | 2 | 145 | 12 | 0.00000 |
| 21 | 2 | 145 | 13 | 0.00000 |
| 21 | 2 | 145 | 14 | 0.18634 |
| 21 | 2 | 145 | 15 | 0.81366 |
| 21 | 2 | 145 | 16 | 0.00000 |
| 21 | 2 | 155 | 1 | 0.00000 |
| 21 | 2 | 155 | 2 | 0.00000 |
| 21 | 2 | 155 | 3 | 0.00000 |
| 21 | 2 | 155 | 4 | 0.00000 |
| 21 | 2 | 155 | 5 | 0.00000 |
| 21 | 2 | 155 | 6 | 0.00000 |
| 21 | 2 | 155 | 7 | 0.00000 |
| 21 | 2 | 155 | 8 | 0.00000 |
| 21 | 2 | 155 | 9 | 0.00000 |
| 21 | 2 | 155 | 10 | 0.00000 |
| 21 | 2 | 155 | 11 | 0.00000 |
| 21 | 2 | 155 | 12 | 0.13576 |
| 21 | 2 | 155 | 13 | 0.18529 |
| 21 | 2 | 155 | 14 | 0.12407 |
| 21 | 2 | 155 | 15 | 0.55488 |
| 21 | 2 | 155 | 16 | 0.00000 |
| 21 | 2 | 165 | 1 | 0.00000 |
| 21 | 2 | 165 | 2 | 0.00000 |
| 21 | 2 | 165 | 3 | 0.00000 |
| 21 | 2 | 165 | 4 | 0.00000 |
| 21 | 2 | 165 | 5 | 0.00000 |
| 21 | 2 | 165 | 6 | 0.00000 |
| 21 | 2 | 165 | 7 | 0.00000 |
| 21 | 2 | 165 | 8 | 0.00000 |
| 21 | 2 | 165 | 9 | 0.00000 |
| 21 | 2 | 165 | 10 | 0.00000 |
| 21 | 2 | 165 | 11 | 0.00000 |
| 21 | 2 | 165 | 12 | 0.13576 |
| 21 | 2 | 165 | 13 | 0.18529 |
| 21 | 2 | 165 | 14 | 0.12407 |
| 21 | 2 | 165 | 15 | 0.55488 |
| 21 | 2 | 165 | 16 | 0.00000 |
| 21 | 2 | 175 | 1 | 0.00000 |
| 21 | 2 | 175 | 2 | 0.00000 |
| 21 | 2 | 175 | 3 | 0.00000 |
| 21 | 2 | 175 | 4 | 0.00000 |
| 21 | 2 | 175 | 5 | 0.00000 |
| 21 | 2 | 175 | 6 | 0.00000 |
| 21 | 2 | 175 | 7 | 0.00000 |
| 21 | 2 | 175 | 8 | 0.00000 |
| 21 | 2 | 175 | 9 | 0.00000 |
| 21 | 2 | 175 | 10 | 0.00000 |
| 21 | 2 | 175 | 11 | 0.00000 |
| 21 | 2 | 175 | 12 | 0.13576 |
| 21 | 2 | 175 | 13 | 0.18529 |
| 21 | 2 | 175 | 14 | 0.12407 |
| 21 | 2 | 175 | 15 | 0.55488 |
| 21 | 2 | 175 | 16 | 0.00000 |
| 21 | 2 | 185 | 1 | 0.00000 |
| 21 | 2 | 185 | 2 | 0.00000 |
| 21 | 2 | 185 | 3 | 0.00000 |

| sourceTypeID | roadTypeID | hourDayID | avgSpeedBinID | avgSpeedFraction |
|---|---|---|---|---|
| 21 | 2 | 185 | 4 | 0.00000 |
| 21 | 2 | 185 | 5 | 0.00000 |
| 21 | 2 | 185 | 6 | 0.00000 |
| 21 | 2 | 185 | 7 | 0.00000 |
| 21 | 2 | 185 | 8 | 0.00000 |
| 21 | 2 | 185 | 9 | 0.00000 |
| 21 | 2 | 185 | 10 | 0.00000 |
| 21 | 2 | 185 | 11 | 0.00000 |
| 21 | 2 | 185 | 12 | 0.13576 |
| 21 | 2 | 185 | 13 | 0.18529 |
| 21 | 2 | 185 | 14 | 0.12407 |
| 21 | 2 | 185 | 15 | 0.55488 |
| 21 | 2 | 185 | 16 | 0.00000 |
| 21 | 2 | 195 | 1 | 0.00000 |
| 21 | 2 | 195 | 2 | 0.00000 |
| 21 | 2 | 195 | 3 | 0.00000 |
| 21 | 2 | 195 | 4 | 0.00000 |
| 21 | 2 | 195 | 5 | 0.00000 |
| 21 | 2 | 195 | 6 | 0.00000 |
| 21 | 2 | 195 | 7 | 0.00000 |
| 21 | 2 | 195 | 8 | 0.00000 |
| 21 | 2 | 195 | 9 | 0.00000 |
| 21 | 2 | 195 | 10 | 0.00000 |
| 21 | 2 | 195 | 11 | 0.00000 |
| 21 | 2 | 195 | 12 | 0.00000 |
| 21 | 2 | 195 | 13 | 0.00000 |
| 21 | 2 | 195 | 14 | 0.19937 |
| 21 | 2 | 195 | 15 | 0.80063 |
| 21 | 2 | 195 | 16 | 0.00000 |
| 21 | 2 | 205 | 1 | 0.00000 |
| 21 | 2 | 205 | 2 | 0.00000 |
| 21 | 2 | 205 | 3 | 0.00000 |
| 21 | 2 | 205 | 4 | 0.00000 |
| 21 | 2 | 205 | 5 | 0.00000 |
| 21 | 2 | 205 | 6 | 0.00000 |
| 21 | 2 | 205 | 7 | 0.00000 |
| 21 | 2 | 205 | 8 | 0.00000 |
| 21 | 2 | 205 | 9 | 0.00000 |
| 21 | 2 | 205 | 10 | 0.00000 |
| 21 | 2 | 205 | 11 | 0.00000 |
| 21 | 2 | 205 | 12 | 0.00000 |
| 21 | 2 | 205 | 13 | 0.00000 |
| 21 | 2 | 205 | 14 | 0.19937 |
| 21 | 2 | 205 | 15 | 0.80063 |
| 21 | 2 | 205 | 16 | 0.00000 |
| 21 | 2 | 215 | 1 | 0.00000 |
| 21 | 2 | 215 | 2 | 0.00000 |
| 21 | 2 | 215 | 3 | 0.00000 |
| 21 | 2 | 215 | 4 | 0.00000 |
| 21 | 2 | 215 | 5 | 0.00000 |
| 21 | 2 | 215 | 6 | 0.00000 |
| 21 | 2 | 215 | 7 | 0.00000 |
| 21 | 2 | 215 | 8 | 0.00000 |
| 21 | 2 | 215 | 9 | 0.00000 |
| 21 | 2 | 215 | 10 | 0.00000 |
| 21 | 2 | 215 | 11 | 0.00000 |
| 21 | 2 | 215 | 12 | 0.00000 |
| 21 | 2 | 215 | 13 | 0.00000 |
| 21 | 2 | 215 | 14 | 0.19937 |
| 21 | 2 | 215 | 15 | 0.80063 |
| 21 | 2 | 215 | 16 | 0.00000 |
| 21 | 2 | 225 | 1 | 0.00000 |
| 21 | 2 | 225 | 2 | 0.00000 |
| 21 | 2 | 225 | 3 | 0.00000 |
| 21 | 2 | 225 | 4 | 0.00000 |
| 21 | 2 | 225 | 5 | 0.00000 |
| 21 | 2 | 225 | 6 | 0.00000 |
| 21 | 2 | 225 | 7 | 0.00000 |
| 21 | 2 | 225 | 8 | 0.00000 |
| 21 | 2 | 225 | 9 | 0.00000 |
| 21 | 2 | 225 | 10 | 0.00000 |
| 21 | 2 | 225 | 11 | 0.00000 |
| 21 | 2 | 225 | 12 | 0.00000 |
| 21 | 2 | 225 | 13 | 0.00000 |
| 21 | 2 | 225 | 14 | 0.19937 |
| 21 | 2 | 225 | 15 | 0.80063 |
| 21 | 2 | 225 | 16 | 0.00000 |
| 21 | 2 | 235 | 1 | 0.00000 |
| 21 | 2 | 235 | 2 | 0.00000 |
| 21 | 2 | 235 | 3 | 0.00000 |
| 21 | 2 | 235 | 4 | 0.00000 |
| 21 | 2 | 235 | 5 | 0.00000 |
| 21 | 2 | 235 | 6 | 0.00000 |
| 21 | 2 | 235 | 7 | 0.00000 |
| 21 | 2 | 235 | 8 | 0.00000 |
| 21 | 2 | 235 | 9 | 0.00000 |
| 21 | 2 | 235 | 10 | 0.00000 |
| 21 | 2 | 235 | 11 | 0.00000 |
| 21 | 2 | 235 | 12 | 0.00000 |
| 21 | 2 | 235 | 13 | 0.00000 |
| 21 | 2 | 235 | 14 | 0.19937 |
| 21 | 2 | 235 | 15 | 0.80063 |
| 21 | 2 | 235 | 16 | 0.00000 |
| 21 | 2 | 245 | 1 | 0.00000 |
| 21 | 2 | 245 | 2 | 0.00000 |
| 21 | 2 | 245 | 3 | 0.00000 |
| 21 | 2 | 245 | 4 | 0.00000 |
| 21 | 2 | 245 | 5 | 0.00000 |
| 21 | 2 | 245 | 6 | 0.00000 |
| 21 | 2 | 245 | 7 | 0.00000 |
| 21 | 2 | 245 | 8 | 0.00000 |
| 21 | 2 | 245 | 9 | 0.00000 |
| 21 | 2 | 245 | 10 | 0.00000 |
| 21 | 2 | 245 | 11 | 0.00000 |
| 21 | 2 | 245 | 12 | 0.00000 |
| 21 | 2 | 245 | 13 | 0.00000 |
| 21 | 2 | 245 | 14 | 0.19937 |
| 21 | 2 | 245 | 15 | 0.80063 |
| 21 | 2 | 245 | 16 | 0.00000 |

## [AVFT] (SourceTypeID 42: Transit Bus)

| sourceTypeID | modelYearID | fuelTypeID | engTechID | fuelEngFraction |
|---|---|---|---|---|
| 42 | 1960 | 1 | 1 | 0.009615 |
| 42 | 1960 | 2 | 1 | 0.990385 |
| 42 | 1960 | 3 | 1 | 0.000000 |
| 42 | 1961 | 1 | 1 | 0.009615 |
| 42 | 1961 | 2 | 1 | 0.990385 |
| 42 | 1961 | 3 | 1 | 0.000000 |
| 42 | 1962 | 1 | 1 | 0.009615 |
| 42 | 1962 | 2 | 1 | 0.990385 |
| 42 | 1962 | 3 | 1 | 0.000000 |
| 42 | 1963 | 1 | 1 | 0.009615 |
| 42 | 1963 | 2 | 1 | 0.990385 |
| 42 | 1963 | 3 | 1 | 0.000000 |
| 42 | 1964 | 1 | 1 | 0.009615 |
| 42 | 1964 | 2 | 1 | 0.990385 |
| 42 | 1964 | 3 | 1 | 0.000000 |
| 42 | 1965 | 1 | 1 | 0.009615 |
| 42 | 1965 | 2 | 1 | 0.990385 |
| 42 | 1965 | 3 | 1 | 0.000000 |
| 42 | 1966 | 1 | 1 | 0.009615 |
| 42 | 1966 | 2 | 1 | 0.990385 |
| 42 | 1966 | 3 | 1 | 0.000000 |
| 42 | 1967 | 1 | 1 | 0.009615 |
| 42 | 1967 | 2 | 1 | 0.990385 |
| 42 | 1967 | 3 | 1 | 0.000000 |
| 42 | 1968 | 1 | 1 | 0.009615 |
| 42 | 1968 | 2 | 1 | 0.990385 |
| 42 | 1968 | 3 | 1 | 0.000000 |
| 42 | 1969 | 1 | 1 | 0.009615 |
| 42 | 1969 | 2 | 1 | 0.990385 |
| 42 | 1969 | 3 | 1 | 0.000000 |
| 42 | 1970 | 1 | 1 | 0.009615 |
| 42 | 1970 | 2 | 1 | 0.990385 |
| 42 | 1970 | 3 | 1 | 0.000000 |
| 42 | 1971 | 1 | 1 | 0.009615 |
| 42 | 1971 | 2 | 1 | 0.990385 |
| 42 | 1971 | 3 | 1 | 0.000000 |
| 42 | 1972 | 1 | 1 | 0.009615 |
| 42 | 1972 | 2 | 1 | 0.990385 |
| 42 | 1972 | 3 | 1 | 0.000000 |
| 42 | 1973 | 1 | 1 | 0.009615 |
| 42 | 1973 | 2 | 1 | 0.990385 |
| 42 | 1973 | 3 | 1 | 0.000000 |
| 42 | 1974 | 1 | 1 | 0.009615 |
| 42 | 1974 | 2 | 1 | 0.990385 |
| 42 | 1974 | 3 | 1 | 0.000000 |
| 42 | 1975 | 1 | 1 | 0.009615 |
| 42 | 1975 | 2 | 1 | 0.990385 |
| 42 | 1975 | 3 | 1 | 0.000000 |
| 42 | 1976 | 1 | 1 | 0.009615 |
| 42 | 1976 | 2 | 1 | 0.990385 |
| 42 | 1976 | 3 | 1 | 0.000000 |
| 42 | 1977 | 1 | 1 | 0.009615 |
| 42 | 1977 | 2 | 1 | 0.990385 |
| 42 | 1977 | 3 | 1 | 0.000000 |
| 42 | 1978 | 1 | 1 | 0.009615 |
| 42 | 1978 | 2 | 1 | 0.990385 |
| 42 | 1978 | 3 | 1 | 0.000000 |
| 42 | 1979 | 1 | 1 | 0.009615 |
| 42 | 1979 | 2 | 1 | 0.990385 |
| 42 | 1979 | 3 | 1 | 0.000000 |
| 42 | 1980 | 1 | 1 | 0.009615 |
| 42 | 1980 | 2 | 1 | 0.990385 |
| 42 | 1980 | 3 | 1 | 0.000000 |
| 42 | 1981 | 1 | 1 | 0.008696 |
| 42 | 1981 | 2 | 1 | 0.991304 |
| 42 | 1981 | 3 | 1 | 0.000000 |
| 42 | 1982 | 1 | 1 | 0.011321 |
| 42 | 1982 | 2 | 1 | 0.988679 |
| 42 | 1982 | 3 | 1 | 0.000000 |
| 42 | 1983 | 1 | 1 | 0.008081 |
| 42 | 1983 | 2 | 1 | 0.991919 |
| 42 | 1983 | 3 | 1 | 0.000000 |
| 42 | 1984 | 1 | 1 | 0.009671 |
| 42 | 1984 | 2 | 1 | 0.990329 |
| 42 | 1984 | 3 | 1 | 0.000000 |
| 42 | 1985 | 1 | 1 | 0.010448 |
| 42 | 1985 | 2 | 1 | 0.989552 |
| 42 | 1985 | 3 | 1 | 0.000000 |
| 42 | 1986 | 1 | 1 | 0.010243 |
| 42 | 1986 | 2 | 1 | 0.989757 |
| 42 | 1986 | 3 | 1 | 0.000000 |
| 42 | 1987 | 1 | 1 | 0.009825 |
| 42 | 1987 | 2 | 1 | 0.990175 |
| 42 | 1987 | 3 | 1 | 0.000000 |
| 42 | 1988 | 1 | 1 | 0.009990 |
| 42 | 1988 | 2 | 1 | 0.990010 |
| 42 | 1988 | 3 | 1 | 0.000000 |
| 42 | 1989 | 1 | 1 | 0.009441 |
| 42 | 1989 | 2 | 1 | 0.990559 |
| 42 | 1989 | 3 | 1 | 0.000000 |
| 42 | 1990 | 1 | 1 | 0.010174 |
| 42 | 1990 | 2 | 1 | 0.982645 |
| 42 | 1990 | 3 | 1 | 0.007181 |
| 42 | 1991 | 1 | 1 | 0.009632 |
| 42 | 1991 | 2 | 1 | 0.971979 |
| 42 | 1991 | 3 | 1 | 0.018389 |
| 42 | 1992 | 1 | 1 | 0.009752 |
| 42 | 1992 | 2 | 1 | 0.944149 |
| 42 | 1992 | 3 | 1 | 0.046099 |
| 42 | 1993 | 1 | 1 | 0.009238 |
| 42 | 1993 | 2 | 1 | 0.914550 |
| 42 | 1993 | 3 | 1 | 0.076212 |
| 42 | 1994 | 1 | 1 | 0.010211 |
| 42 | 1994 | 2 | 1 | 0.904914 |
| 42 | 1994 | 3 | 1 | 0.084876 |
| 42 | 1995 | 1 | 1 | 0.010022 |
| 42 | 1995 | 2 | 1 | 0.836860 |
| 42 | 1995 | 3 | 1 | 0.153118 |
| 42 | 1996 | 1 | 1 | 0.009941 |
| 42 | 1996 | 2 | 1 | 0.892002 |
| 42 | 1996 | 3 | 1 | 0.098057 |
| 42 | 1997 | 1 | 1 | 0.000000 |
| 42 | 1997 | 2 | 1 | 1.000000 |
| 42 | 1997 | 3 | 1 | 0.000000 |
| 42 | 1998 | 1 | 1 | 0.000000 |
| 42 | 1998 | 2 | 1 | 0.000000 |
| 42 | 1998 | 3 | 1 | 1.000000 |
| 42 | 1999 | 1 | 1 | 0.000000 |
| 42 | 1999 | 2 | 1 | 0.000000 |
| 42 | 1999 | 3 | 1 | 1.000000 |
| 42 | 2000 | 1 | 1 | 0.000000 |
| 42 | 2000 | 2 | 1 | 0.000000 |
| 42 | 2000 | 3 | 1 | 1.000000 |
| 42 | 2001 | 1 | 1 | 0.000000 |
| 42 | 2001 | 2 | 1 | 0.000000 |
| 42 | 2001 | 3 | 1 | 1.000000 |
| 42 | 2002 | 1 | 1 | 0.000000 |
| 42 | 2002 | 2 | 1 | 0.000000 |
| 42 | 2002 | 3 | 1 | 1.000000 |
| 42 | 2003 | 1 | 1 | 0.000000 |
| 42 | 2003 | 2 | 1 | 0.000000 |
| 42 | 2003 | 3 | 1 | 1.000000 |
| 42 | 2004 | 1 | 1 | 0.000000 |
| 42 | 2004 | 2 | 1 | 0.327869 |
| 42 | 2004 | 3 | 1 | 0.672131 |
| 42 | 2005 | 1 | 1 | 0.000000 |
| 42 | 2005 | 2 | 1 | 1.000000 |
| 42 | 2005 | 3 | 1 | 0.000000 |
| 42 | 2006 | 1 | 1 | 0.000000 |

| sourceTypeID | modelYearID | fuelTypeID | engTechID | fuelEngFraction |
|---|---|---|---|---|
| 42 | 2006 | 2 | 1 | 0.075758 |
| 42 | 2006 | 3 | 1 | 0.924242 |
| 42 | 2007 | 1 | 1 | 0.000000 |
| 42 | 2007 | 2 | 1 | 1.000000 |
| 42 | 2007 | 3 | 1 | 0.000000 |
| 42 | 2008 | 1 | 1 | 0.000000 |
| 42 | 2008 | 2 | 1 | 0.385542 |
| 42 | 2008 | 3 | 1 | 0.614458 |
| 42 | 2009 | 1 | 1 | 0.108108 |
| 42 | 2009 | 2 | 1 | 0.135135 |
| 42 | 2009 | 3 | 1 | 0.756757 |
| 42 | 2010 | 1 | 1 | 0.000000 |
| 42 | 2010 | 2 | 1 | 1.000000 |
| 42 | 2010 | 3 | 1 | 0.000000 |
| 42 | 2011 | 1 | 1 | 0.000000 |
| 42 | 2011 | 2 | 1 | 0.048780 |
| 42 | 2011 | 2 | 11 | 0.414634 |
| 42 | 2011 | 3 | 1 | 0.536585 |
| 42 | 2012 | 1 | 1 | 0.000000 |
| 42 | 2012 | 2 | 1 | 0.000000 |
| 42 | 2012 | 3 | 1 | 1.000000 |
| 42 | 2013 | 1 | 1 | 0.045455 |
| 42 | 2013 | 2 | 1 | 0.054545 |
| 42 | 2013 | 2 | 11 | 0.118182 |
| 42 | 2013 | 3 | 1 | 0.781818 |
| 42 | 2014 | 1 | 1 | 0.010417 |
| 42 | 2014 | 2 | 1 | 0.114583 |
| 42 | 2014 | 3 | 1 | 0.875000 |
| 42 | 2015 | 1 | 1 | 0.024619 |
| 42 | 2015 | 2 | 1 | 0.817351 |
| 42 | 2015 | 3 | 1 | 0.158030 |
| 42 | 2016 | 1 | 1 | 0.024619 |
| 42 | 2016 | 2 | 1 | 0.817351 |
| 42 | 2016 | 3 | 1 | 0.158030 |
| 42 | 2017 | 1 | 1 | 0.024619 |
| 42 | 2017 | 2 | 1 | 0.817351 |
| 42 | 2017 | 3 | 1 | 0.158030 |
| 42 | 2018 | 1 | 1 | 0.024619 |
| 42 | 2018 | 2 | 1 | 0.817351 |
| 42 | 2018 | 3 | 1 | 0.158030 |
| 42 | 2019 | 1 | 1 | 0.024619 |
| 42 | 2019 | 2 | 1 | 0.817351 |
| 42 | 2019 | 3 | 1 | 0.158030 |
| 42 | 2020 | 1 | 1 | 0.024619 |
| 42 | 2020 | 2 | 1 | 0.817351 |
| 42 | 2020 | 3 | 1 | 0.158030 |
| 42 | 2021 | 1 | 1 | 0.024619 |
| 42 | 2021 | 2 | 1 | 0.817351 |
| 42 | 2021 | 3 | 1 | 0.158030 |
| 42 | 2022 | 1 | 1 | 0.024619 |
| 42 | 2022 | 2 | 1 | 0.817351 |
| 42 | 2022 | 3 | 1 | 0.158030 |
| 42 | 2023 | 1 | 1 | 0.024619 |
| 42 | 2023 | 2 | 1 | 0.817351 |
| 42 | 2023 | 3 | 1 | 0.158030 |
| 42 | 2024 | 1 | 1 | 0.024619 |
| 42 | 2024 | 2 | 1 | 0.817351 |
| 42 | 2024 | 3 | 1 | 0.158030 |
| 42 | 2025 | 1 | 1 | 0.024619 |
| 42 | 2025 | 2 | 1 | 0.817351 |
| 42 | 2025 | 3 | 1 | 0.158030 |
| 42 | 2026 | 1 | 1 | 0.024619 |
| 42 | 2026 | 2 | 1 | 0.817351 |
| 42 | 2026 | 3 | 1 | 0.158030 |
| 42 | 2027 | 1 | 1 | 0.024619 |
| 42 | 2027 | 2 | 1 | 0.817351 |
| 42 | 2027 | 3 | 1 | 0.158030 |
| 42 | 2028 | 1 | 1 | 0.024619 |
| 42 | 2028 | 2 | 1 | 0.817351 |
| 42 | 2028 | 3 | 1 | 0.158030 |
| 42 | 2029 | 1 | 1 | 0.024619 |
| 42 | 2029 | 2 | 1 | 0.817351 |
| 42 | 2029 | 3 | 1 | 0.158030 |
| 42 | 2030 | 1 | 1 | 0.024619 |
| 42 | 2030 | 2 | 1 | 0.817351 |
| 42 | 2030 | 3 | 1 | 0.158030 |
| 42 | 2031 | 1 | 1 | 0.024619 |
| 42 | 2031 | 2 | 1 | 0.817351 |
| 42 | 2031 | 3 | 1 | 0.158030 |
| 42 | 2032 | 1 | 1 | 0.024619 |
| 42 | 2032 | 2 | 1 | 0.817351 |
| 42 | 2032 | 3 | 1 | 0.158030 |
| 42 | 2033 | 1 | 1 | 0.024619 |
| 42 | 2033 | 2 | 1 | 0.817351 |
| 42 | 2033 | 3 | 1 | 0.158030 |
| 42 | 2034 | 1 | 1 | 0.024619 |
| 42 | 2034 | 2 | 1 | 0.817351 |
| 42 | 2034 | 3 | 1 | 0.158030 |
| 42 | 2035 | 1 | 1 | 0.024619 |
| 42 | 2035 | 2 | 1 | 0.817351 |
| 42 | 2035 | 3 | 1 | 0.158030 |
| 42 | 2036 | 1 | 1 | 0.024619 |
| 42 | 2036 | 2 | 1 | 0.817351 |
| 42 | 2036 | 3 | 1 | 0.158030 |
| 42 | 2037 | 1 | 1 | 0.024619 |
| 42 | 2037 | 2 | 1 | 0.817351 |
| 42 | 2037 | 3 | 1 | 0.158030 |
| 42 | 2038 | 1 | 1 | 0.024619 |
| 42 | 2038 | 2 | 1 | 0.817351 |
| 42 | 2038 | 3 | 1 | 0.158030 |
| 42 | 2039 | 1 | 1 | 0.024619 |
| 42 | 2039 | 2 | 1 | 0.817351 |
| 42 | 2039 | 3 | 1 | 0.158030 |
| 42 | 2040 | 1 | 1 | 0.024619 |
| 42 | 2040 | 2 | 1 | 0.817351 |
| 42 | 2040 | 3 | 1 | 0.158030 |
| 42 | 2041 | 1 | 1 | 0.024619 |
| 42 | 2041 | 2 | 1 | 0.817351 |
| 42 | 2041 | 3 | 1 | 0.158030 |
| 42 | 2042 | 1 | 1 | 0.024619 |
| 42 | 2042 | 2 | 1 | 0.817351 |
| 42 | 2042 | 3 | 1 | 0.158030 |
| 42 | 2043 | 1 | 1 | 0.024619 |
| 42 | 2043 | 2 | 1 | 0.817351 |
| 42 | 2043 | 3 | 1 | 0.158030 |
| 42 | 2044 | 1 | 1 | 0.024619 |
| 42 | 2044 | 2 | 1 | 0.817351 |
| 42 | 2044 | 3 | 1 | 0.158030 |
| 42 | 2045 | 1 | 1 | 0.024619 |
| 42 | 2045 | 2 | 1 | 0.817351 |
| 42 | 2045 | 3 | 1 | 0.158030 |
| 42 | 2046 | 1 | 1 | 0.024619 |
| 42 | 2046 | 2 | 1 | 0.817351 |
| 42 | 2046 | 3 | 1 | 0.158030 |
| 42 | 2047 | 1 | 1 | 0.024619 |
| 42 | 2047 | 2 | 1 | 0.817351 |
| 42 | 2047 | 3 | 1 | 0.158030 |
| 42 | 2048 | 1 | 1 | 0.024619 |
| 42 | 2048 | 2 | 1 | 0.817351 |
| 42 | 2048 | 3 | 1 | 0.158030 |
| 42 | 2049 | 1 | 1 | 0.024619 |
| 42 | 2049 | 2 | 1 | 0.817351 |
| 42 | 2049 | 3 | 1 | 0.158030 |
| 42 | 2050 | 1 | 1 | 0.024619 |
| 42 | 2050 | 2 | 1 | 0.817351 |
| 42 | 2050 | 3 | 1 | 0.158030 |

## Nonroad Mobile Sources

In order to calculate nonroad mobile source emissions, MOVES2014a was executed using local input data for each episode day and each geographical area (Maricopa and Pinal County).

This section contains the MOVES2014a RunSpec for June 9 as an example.

# MOVES2014a RunSpec for Maricopa County on June 9, 2011


```
<runspec version="MOVES2014a-20151028">
<description><![CDATA[2011-06-09 Maricopa County daily nonroad for SIP modeling]]></description>
<models>
        <model value="NONROAD"/>
</models>
<modelscale value="Inv"/>
<modeldomain value="NATIONAL"/>
<geographicselections>
        <geographicselection type="COUNTY" key="4013" description="ARIZONA - Maricopa County"/>
</geographicselections>
<timespan>
        <year key="2011"/>
        <month id="6"/>
        <day id="5"/>
        <beginhour id="0"/>
        <endhour id="0"/>
        <aggregateBy key="Hour"/>
</timespan>
<onroadvehicleselections>
</onroadvehicleselections>
<offroadvehicleselections>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="5"
sectorname="Agriculture"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="6"
sectorname="Commercial"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="2"
sectorname="Construction"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="3"
sectorname="Industrial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="5" sectorname="Agriculture"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="6" sectorname="Commercial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="2" sectorname="Construction"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="3" sectorname="Industrial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="4" sectorname="Lawn/Garden"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="11" sectorname="Pleasure Craft"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="12" sectorname="Railroad"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="1" sectorname="Recreational"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="5"
sectorname="Agriculture"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="6"
sectorname="Commercial"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="2"
sectorname="Construction"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="3"
sectorname="Industrial"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="4"
sectorname="Lawn/Garden"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="12"
sectorname="Railroad"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="1"
sectorname="Recreational"/>
        <offroadvehicleselection    fueltypeid="24"    fueltypedesc="Marine    Diesel    Fuel"    sectorid="11"
sectorname="Pleasure Craft"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="5"
sectorname="Agriculture"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="6"
sectorname="Commercial"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="2"
sectorname="Construction"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="3"
sectorname="Industrial"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="4"
sectorname="Lawn/Garden"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="12"
sectorname="Railroad"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="1"
sectorname="Recreational"/>
</offroadvehicleselections>
<offroadvehiclesccs>
</offroadvehiclesccs>
<roadtypes separateramps="false">
        <roadtype roadtypeid="100" roadtypename="Nonroad" modelCombination="M2"/>
</roadtypes>
<pollutantprocessassociations>
        <pollutantprocessassociation    pollutantkey="30"    pollutantname="Ammonia    (NH3)"    processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation  pollutantkey="2"  pollutantname="Carbon  Monoxide  (CO)"  processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="1"
processname="Running Exhaust"/>
```

```
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="15"
processname="Crankcase Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="18"
processname="Refueling Displacement Vapor Loss"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="19"
processname="Refueling Spillage Loss"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="20"
processname="Evap Tank Permeation"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="21"
processname="Evap Hose Permeation"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="30"
processname="Diurnal Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="31"
processname="HotSoak Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="32"
processname="RunningLoss Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen (NOx)" processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="100" pollutantname="Primary Exhaust PM10 - Total"
processkey="1" processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total"
processkey="1" processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="31" pollutantname="Sulfur Dioxide (SO2)" processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="15"
processname="Crankcase Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="18"
processname="Refueling Displacement Vapor Loss"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="19"
processname="Refueling Spillage Loss"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="20"
processname="Evap Tank Permeation"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="21"
processname="Evap Hose Permeation"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="30"
processname="Diurnal Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="31"
processname="HotSoak Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="32"
processname="RunningLoss Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="15"
processname="Crankcase Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="18"
processname="Refueling Displacement Vapor Loss"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="19"
processname="Refueling Spillage Loss"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="20"
processname="Evap Tank Permeation"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="21"
processname="Evap Hose Permeation"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="30"
processname="Diurnal Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="31"
processname="HotSoak Fuel Vapor Venting"/>
        <pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="32"
processname="RunningLoss Fuel Vapor Venting"/>
</pollutantprocessassociations>
<databaseselections>
        <databaseselection servername="localhost" databasename="MC_SIP_2011-06-09_in" description=""/>
</databaseselections>
<internalcontrolstrategies>
<internalcontrolstrategy
classname="gov.epa.otaq.moves.master.implementation.ghg.internalcontrolstrategies.rateofprogress.RateOfProgress
Strategy"><![CDATA['useParameters No']]></internalcontrolstrategy>
</internalcontrolstrategies>
<inputdatabase servername="" databasename="" description=""/>
<uncertaintyparameters uncertaintymodeenabled="false" numberofrunspersimulation="0" numberofsimulations="0"/>
<geographicoutputdetail description="COUNTY"/>
<outputemissionsbreakdownselection>
        <modelyear selected="false"/>
        <fueltype selected="false"/>
        <fuelsubtype selected="false"/>
        <emissionprocess selected="true"/>
        <onroadoffroad selected="true"/>
        <roadtype selected="false"/>
        <sourceusetype selected="false"/>
        <movesvehicletype selected="false"/>
        <onroadscc selected="true"/>
        <estimateuncertainty selected="false" numberOfIterations="2" keepSampledData="false"
```

keepIterations="false"/>
        <sector selected="true"/>
        <engtechid selected="false"/>
        <hpclass selected="false"/>
        <regclassid selected="false"/>
</outputemissionsbreakdownselection>
<outputdatabase servername="" databasename="MC_SIP_2011-06-09_out" description=""/>
<outputtimestep value="24-Hour Day"/>
<outputvmtdata value="false"/>
<outputsho value="false"/>
<outputsh value="false"/>
<outputshp value="false"/>
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<outputpopulation value="false"/>
<scaleinputdatabase servername="" databasename="" description=""/>
<pmsize value="0"/>
<outputfactors>
        <timefactors selected="true" units="Days"/>
        <distancefactors selected="true" units="Miles"/>
        <massfactors selected="true" units="U.S. Ton" energyunits="Joules"/>
</outputfactors>
<savedata>

</savedata>

<donotexecute>

</donotexecute>

<generatordatabase shouldsave="false" servername="" databasename="" description=""/>
        <donotperformfinalaggregation selected="false"/>
<lookuptableflags scenarioid="" truncateoutput="true" truncateactivity="true" truncatebaserates="true"/>
</runspec>

# MOVES2014a RunSpec for Pinal County on June 9, 2011


```
<runspec version="MOVES2014a-20151028">
<description><![CDATA[2011-06-09 Pinal County daily nonroad for SIP modeling]]></description>
<models>
        <model value="NONROAD"/>
</models>
<modelscale value="Inv"/>
<modeldomain value="NATIONAL"/>
<geographicselections>
        <geographicselection type="COUNTY" key="4021" description="ARIZONA - Pinal County"/>
</geographicselections>
<timespan>
        <year key="2011"/>
        <month id="6"/>
        <day id="5"/>
        <beginhour id="0"/>
        <endhour id="0"/>
        <aggregateBy key="Hour"/>
</timespan>
<onroadvehicleselections>
</onroadvehicleselections>
<offroadvehicleselections>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="5"
sectorname="Agriculture"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="6"
sectorname="Commercial"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="2"
sectorname="Construction"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="3"
sectorname="Industrial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="5" sectorname="Agriculture"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="6" sectorname="Commercial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="2" sectorname="Construction"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="3" sectorname="Industrial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="4" sectorname="Lawn/Garden"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="11" sectorname="Pleasure Craft"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="12" sectorname="Railroad"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="1" sectorname="Recreational"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="5"
sectorname="Agriculture"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="6"
sectorname="Commercial"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="2"
sectorname="Construction"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="3"
sectorname="Industrial"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="4"
sectorname="Lawn/Garden"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="12"
sectorname="Railroad"/>
        <offroadvehicleselection  fueltypeid="4"  fueltypedesc="Liquefied  Petroleum  Gas  (LPG)"  sectorid="1"
sectorname="Recreational"/>
        <offroadvehicleselection    fueltypeid="24"    fueltypedesc="Marine    Diesel    Fuel"    sectorid="11"
sectorname="Pleasure Craft"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="5"
sectorname="Agriculture"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="6"
sectorname="Commercial"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="2"
sectorname="Construction"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="3"
sectorname="Industrial"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="4"
sectorname="Lawn/Garden"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="12"
sectorname="Railroad"/>
        <offroadvehicleselection    fueltypeid="23"    fueltypedesc="Nonroad    Diesel    Fuel"    sectorid="1"
sectorname="Recreational"/>
</offroadvehicleselections>
<offroadvehiclesccs>
</offroadvehiclesccs>
<roadtypes separateramps="false">
        <roadtype roadtypeid="100" roadtypename="Nonroad" modelCombination="M2"/>
</roadtypes>
<pollutantprocessassociations>
        <pollutantprocessassociation    pollutantkey="30"    pollutantname="Ammonia    (NH3)"    processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation  pollutantkey="2"  pollutantname="Carbon  Monoxide  (CO)"  processkey="1"
processname="Running Exhaust"/>
        <pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="1"
```

processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="15" processname="Crankcase Running Exhaust"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="18" processname="Refueling Displacement Vapor Loss"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="19" processname="Refueling Spillage Loss"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="20" processname="Evap Tank Permeation"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="21" processname="Evap Hose Permeation"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="30" processname="Diurnal Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="31" processname="HotSoak Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="32" processname="RunningLoss Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen (NOx)" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="100" pollutantname="Primary Exhaust PM10 - Total" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="31" pollutantname="Sulfur Dioxide (SO2)" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="15" processname="Crankcase Running Exhaust"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="18" processname="Refueling Displacement Vapor Loss"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="19" processname="Refueling Spillage Loss"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="20" processname="Evap Tank Permeation"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="21" processname="Evap Hose Permeation"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="30" processname="Diurnal Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="31" processname="HotSoak Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="32" processname="RunningLoss Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="15" processname="Crankcase Running Exhaust"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="18" processname="Refueling Displacement Vapor Loss"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="19" processname="Refueling Spillage Loss"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="20" processname="Evap Tank Permeation"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="21" processname="Evap Hose Permeation"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="30" processname="Diurnal Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="31" processname="HotSoak Fuel Vapor Venting"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="32" processname="RunningLoss Fuel Vapor Venting"/>
</pollutantprocessassociations>
<databaseselections>
<databaseselection servername="localhost" databasename="PC_SIP_2011-06-09_in" description=""/>
</databaseselections>
<internalcontrolstrategies>
<internalcontrolstrategy classname="gov.epa.otaq.moves.master.implementation.ghg.internalcontrolstrategies.rateofprogress.RateOfProgressStrategy"><![CDATA['useParameters No']]></internalcontrolstrategy>
</internalcontrolstrategies>
<inputdatabase servername="" databasename="" description=""/>
<uncertaintyparameters uncertaintymodeenabled="false" numberofrunspersimulation="0" numberofsimulations="0"/>
<geographicoutputdetail description="COUNTY"/>
<outputemissionsbreakdownselection>
<modelyear selected="false"/>
<fueltype selected="false"/>
<fuelsubtype selected="false"/>
<emissionprocess selected="true"/>
<onroadoffroad selected="true"/>
<roadtype selected="false"/>
<sourceusetype selected="false"/>
<movesvehicletype selected="false"/>
<onroadscc selected="true"/>

```
        <estimateuncertainty     selected="false"     numberOfIterations="2"     keepSampledData="false"
keepIterations="false"/>
        <sector selected="true"/>
        <engtechid selected="false"/>
        <hpclass selected="false"/>
        <regclassid selected="false"/>
</outputemissionsbreakdownselection>
<outputdatabase servername="" databasename="PC_SIP_2011-06-09_out" description=""/>
<outputtimestep value="24-Hour Day"/>
<outputvmtdata value="false"/>
<outputsho value="false"/>
<outputsh value="false"/>
<outputshp value="false"/>
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<outputpopulation value="false"/>
<scaleinputdatabase servername="" databasename="" description=""/>
<pmsize value="0"/>
<outputfactors>
        <timefactors selected="true" units="Days"/>
        <distancefactors selected="true" units="Miles"/>
        <massfactors selected="true" units="U.S. Ton" energyunits="Joules"/>
</outputfactors>
<savedata>

</savedata>

<donotexecute>

</donotexecute>

<generatordatabase shouldsave="false" servername="" databasename="" description=""/>
        <donotperformfinalaggregation selected="false"/>
<lookuptableflags scenarioid="" truncateoutput="true" truncateactivity="true" truncatebaserates="true"/>
</runspec>
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# MOVES2014a RunSpec for Maricopa County on June 9, 2017


```
<runspec version="MOVES2014a-20151028">
<description><![CDATA[2017-06-09 Maricopa County daily nonroad for SIP modeling]]></description>
<models>
        <model value="NONROAD"/>
</models>
<modelscale value="Inv"/>
<modeldomain value="NATIONAL"/>
<geographicselections>
        <geographicselection type="COUNTY" key="4013" description="ARIZONA - Maricopa County"/>
</geographicselections>
<timespan>
        <year key="2017"/>
        <month id="6"/>
        <day id="5"/>
        <beginhour id="0"/>
        <endhour id="0"/>
        <aggregateBy key="Hour"/>
</timespan>
<onroadvehicleselections>
</onroadvehicleselections>
<offroadvehicleselections>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="5"
sectorname="Agriculture"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="6"
sectorname="Commercial"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="2"
sectorname="Construction"/>
        <offroadvehicleselection  fueltypeid="3"  fueltypedesc="Compressed  Natural  Gas  (CNG)"  sectorid="3"
sectorname="Industrial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="5" sectorname="Agriculture"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="6" sectorname="Commercial"/>
        <offroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sectorid="2" sectorname="Construction"/>
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# MOVES2014a RunSpec for Pinal County on June 9, 2017


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# Appendix G-2

# EDMS Input Files

## EDMS Input File for PHX

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#Study name: Phoenix Skyharbor Airport 2011 Ozone
#Study description: Add a description.
#Study directory: C:\xia\Models\EDMS\2011_2017_Ozone_modeling\Phoenix Skyharbor Airport\
!Version 5.1.4.1
!Settings
Study Type: Emissions
Criteria Pollutants: Criteria Pollutants
Unit System: Metric
Emissions Inventory Units: Metric Tonnes

!SCENARIOS
# IN_STUDY; SCENARIO; ISBASELINE; TIM_BASIS; TAXI_MODEL; SULFR_CONV; DESCRIPT
  T       ; Baseline; T         ;         0;          0;     0.0240; Add a description.

!AIRPORTS
# IN_STUDY; APT_NAME              ; SYSAIRPORT; APT_IATA; CTRYCODE; APT_ICAO; APT_FAA; REGIONICAO;
REGION_ENG; CITY    ; STATE   ; COUNTRY                      ; ELEV_FEET; LOC_LATLON;   LATITUDE;
LONGITUDE;   NORTHING;   EASTING; UTM_ZONE; DESCRIPT
  T       ; Phoenix Sky Harbor Intl; 33112KPHX ; PHX     ; US      ; KPHX    ;         ; K
;           2; Phoenix; Arizona; United States of America;   1135.00; T           ; 33.434167;
-112.008056; 3699874.64; 406293.61;       12; Phoenix Sky Harbor Intl

!YEARS
# ANALYEAR
      2011
      2017

!PROPERTIES_FOR_SCENARIO-AIRPORT_COMBINATIONS
# SCEN_APT; SCENARIO; APT_NAME                   ; MX_HEIGHT; USEHRLYMET; TEMP_AVG; TEMP_DLYHI;
TEMP_DLYLO; PRESSURE; PRES_MSL; HUMIDITY; WIND_SPEED; WIND_DIR;  CEILING; VISIBILITY; RUN_AERMET;
AMETSFC_FN; AMETPFL_FN; AMETMET_FN; PROFBASE_M
         1; Baseline; Phoenix Sky Harbor Intl;   3000.00; T         ;    72.00;      82.35;
61.65;    28.74;    29.88;    32.59;       5.22;     0.00; 99999.99;      50.00; F         ; Y.SFC
   ; Y.PFL     ; Y.met     ;     345.95

!PROPERTIES_FOR_SCENARIO-AIRPORT-YEAR_COMBINATIONS
# SCEN_APT; ANAL_YEAR; DEFTOTTAXI; DEFTOTTAXO; DEFUIMTAXI; DEFUIMTAXO; USEACSCHED; ACSCHED_FN

         1;      2011;       7.00;      19.00;       0.00;       0.00; F         ;

         1;      2017;       7.00;      19.00;       0.00;       0.00; F         ;


!AIRCRAFT_DEFINITIONS
# SCEN_APT; STUDYAC_ID; ACCODE      ; ENGINE_UID; USER_ID                                    ;
USRCREATED; USRACNAME; USE_ANNUAL; DEP_WEIGHT; ARR_WEIGHT; USE_RWY_GS; GLIDESLOPE; USE_DEFAPU;
APU_ID; APU_TIME_D; APU_TIME_A; USE_DEFGSE; GATE_NAME; FUEL_SULFR
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  ;          ; T         ;      25000;      21000; T         ;        3.0; T         ;      0;
 13.00;      13.00; T         ;          ;   0.000680
         1;          2; A319-1     ; 3CM027    ; AC2-A319 - Airbus A319                  ; F
  ;          ; T         ;     146100;     124010; T         ;        3.0; T         ;     10;
 13.00;      13.00; T         ;          ;   0.000680
         1;          3; A320-1     ; 1CM008    ; AC3A-A320 - Airbus A320 All Series      ; F
  ;          ; T         ;     155900;     131000; T         ;        3.0; T         ;     10;
 13.00;      13.00; T         ;          ;   0.000680
         1;          4; A320-2     ; 3CM026    ; AC3B-A320 - Airbus A320 All Series      ; F
  ;          ; T         ;     155900;     131000; T         ;        3.0; T         ;     10;
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         1;          5; A321-1     ; 1IA005    ; AC5-A321 - Airbus A321 All Series       ; F
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 13.00;      13.00; T         ;          ;   0.000680
         1;          6; B737-3     ; 1CM004    ; AC4-B733 - Boeing 737-300               ; F
  ;          ; T         ;     119900;     102600; T         ;        3.0; T         ;     20;
 13.00;      13.00; T         ;          ;   0.000680
         1;          7; B737-4     ; 1CM007    ; AC19-B734 - Boeing 737-400              ; F
  ;          ; T         ;     138200;     111600; T         ;        3.0; T         ;     20;
 13.00;      13.00; T         ;          ;   0.000680
         1;          8; B737-5     ; 1CM007    ; AC9-B735 - Boeing 737-500               ; F
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;          ; T         ;     126900;      99900; T         ;        3.0; T         ;     20;
13.00;      13.00; T         ;          ;   0.000680
        1;          9; B737-7     ; 3CM030    ; AC1-B737 - Boeing 737-700                ; F
;          ; T         ;     154400;     115200; T         ;        3.0; T         ;      1;
13.00;      13.00; T         ;          ;   0.000680
        1;         10; B737-8     ; 3CM034    ; AC7-B738 - Boeing 737-800                ; F
;          ; T         ;     167600;     131700; T         ;        3.0; T         ;      1;
13.00;      13.00; T         ;          ;   0.000680
        1;         11; B737-9     ; 8CM051    ; AC11-B739 - Boeing 737-900               ; F
;          ; T         ;     167600;     131700; T         ;        3.0; T         ;      1;
13.00;      13.00; T         ;          ;   0.000680
        1;         12; B757-2     ; 5RR038    ; AC6-B752 - Boeing 757-200                ; F
;          ; T         ;     243200;     178200; T         ;        3.0; T         ;     17;
13.00;      13.00; T         ;          ;   0.000680
        1;         13; MIL-F18    ; F4044     ; ML3-F18 - Boeing FA-18 Hornet            ; F
;          ; T         ;      42840;      21000; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         14; MIL-KC135  ; 1PW002    ; ML1-K35R - Boeing KC-135 Stratotanker    ; F
;          ; T         ;     285000;     205000; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         15; MD82       ; 4PW070    ; AC10-MD82 - Boeing (Douglas) MD 82       ; F
;          ; T         ;     145838;     117000; T         ;        3.0; T         ;     21;
13.00;      13.00; T         ;          ;   0.000680
        1;         16; MD83       ; 4PW071    ; AC13-MD83 - Boeing (Douglas) MD 83       ; F
;          ; T         ;     147079;     125600; T         ;        3.0; T         ;     21;
13.00;      13.00; T         ;          ;   0.000680
        1;         17; MD83       ; 4PW071    ; ML6-MD83 - Boeing (Douglas) MD 83        ; F
;          ; T         ;     147079;     125600; T         ;        3.0; T         ;     21;
13.00;      13.00; T         ;          ;   0.000680
        1;         18; MD90       ; 1IA002    ; AC14-MD90 - Boeing (Douglas) MD 90       ; F
;          ; T         ;     151107;     127800; T         ;        3.0; T         ;      1;
13.00;      13.00; T         ;          ;   0.000680
        1;         19; CRJ2       ; 5GE084    ; AC12-CRJ2 - Bombardier CRJ-200           ; F
;          ; T         ;      36000;      29700; T         ;        3.0; T         ;      9;
13.00;      13.00; T         ;          ;   0.000680
        1;         20; CRJ2       ; 5GE084    ; AT2-CRJ2 - Bombardier CRJ-200            ; F
;          ; T         ;      36000;      33000; T         ;        3.0; T         ;      9;
13.00;      13.00; T         ;          ;   0.000680
        1;         21; CRJ7       ; 5GE083    ; AC8-CRJ7 - Bombardier CRJ-700            ; F
;          ; T         ;      80000;      73500; T         ;        3.0; T         ;     13;
13.00;      13.00; T         ;          ;   0.000680
        1;         22; CRJ9       ; 8GE110    ; AC16-CRJ9 - Bombardier CRJ-900           ; F
;          ; T         ;      80000;      73500; T         ;        3.0; T         ;     13;
13.00;      13.00; T         ;          ;   0.000680
        1;         23; CRJ9       ; 8GE107    ; AT1-CRJ9 - Bombardier CRJ-900            ; F
;          ; T         ;      80000;      73500; T         ;        3.0; T         ;     13;
13.00;      13.00; T         ;          ;   0.000680
        1;         24; CRJ9       ; 8GE107    ; ML10-CRJ9 - Bombardier CRJ-900           ; F
;          ; T         ;      80000;      73500; T         ;        3.0; T         ;     13;
13.00;      13.00; T         ;          ;   0.000680
        1;         25; CL300      ; 6AL006    ; GA31-CL30 - Bombardier (Canadair) Challe; F
;          ; T         ;      36000;      29700; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         26; CL601      ; 1GE034    ; GA7-CL60 - Bombardier Challenger 600/601; F
;          ; T         ;      43100;      32400; T         ;        3.0; T         ;      7;
13.00;      13.00; T         ;          ;   0.000680
        1;         27; LEAR35     ; 1AS001    ; GA27-LJ35 - Bombardier Learjet 35/36     ; F
;          ; T         ;      18300;      13800; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         28; LEAR36     ; 1AS001    ; AC17-LJ35 - Bombardier Learjet 35/36     ; F
;          ; T         ;      18300;      13800; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         29; LEAR45     ; 1AS001    ; GA5-LJ45 - Bombardier Learjet 45         ; F
;          ; T         ;      18300;      13800; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         30; LEAR60     ; TFE731    ; GA30-LJ60 - Bombardier Learjet 60        ; F
;          ; T         ;      18300;      13800; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         31; CNA172     ; IO360     ; GA10-C172 - Cessna Skyhawk 172/Cutlass   ; F
;          ; T         ;       2450;       2450; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         32; CNA182     ; IO360     ; GA11-C182 - Cessna Skylane 182           ; F
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;          ; T         ;       2800;       2800; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         33; CNA210     ; TIO540    ; GA24-C210 - Cessna 210 Centurion        ; F
;          ; T         ;       3000;       2700; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         34; CNA402     ; TIO540    ; AC18-C402 - Cessna 401/402              ; F
;          ; T         ;       5500;       5500; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         35; CNA414     ; TIO540    ; GA34-C414 - Cessna Chancellor 414       ; F
;          ; T         ;       5500;       5500; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         36; CNA421     ; TIO540    ; GA29-C421 - Cessna Golden Eagle 421     ; F
;          ; T         ;       5500;       5500; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         37; CNA425     ; PT6A60    ; GA37-C425 - Cessna 425 Corsair          ; F
;          ; T         ;       9850;       8424; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         38; CNA525     ; 1PW035    ; GA16-C525 - Cessna CitationJet/CJ1       ; F
;          ; T         ;      14700;      12600; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         39; CNA525     ; 1PW035    ; GA23-C25B - Cessna Citation CJ3          ; F
;          ; T         ;      14700;      12600; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         40; CNA525     ; 1PW035    ; GA32-DA40 - Diamond Star DA40            ; F
;          ; T         ;      14700;      12600; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         41; CNA525     ; 1PW035    ; GA33-C25A - Cessna Citation CJ2          ; F
;          ; T         ;      14700;      12600; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         42; CNA550     ; 1PW036    ; GA17-C550 - Cessna Citation II/Bravo     ; F
;          ; T         ;      14800;      12150; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         43; CNA560-XL  ; 1PW037    ; AT5-C56X - Cessna Excel/XLS              ; F
;          ; T         ;      14800;      12150; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         44; CNA560-XL  ; 1PW037    ; GA8-C56X - Cessna Excel/XLS              ; F
;          ; T         ;      14800;      12150; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         45; CNA560     ; 1PW037    ; GA2-C560 - Cessna Citation V/Ultra/Encor; F
;          ; T         ;      14800;      12150; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         46; CNA650     ; 1AS002    ; GA22-C650 - Cessna III/VI/VII            ; F
;          ; T         ;      20000;      15300; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         47; CNA750     ; 6AL022    ; AT6-C750 - Cessna Citation X             ; F
;          ; T         ;      35700;      28620; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         48; CNA750     ; 6AL022    ; GA21-C750 - Cessna Citation X            ; F
;          ; T         ;      35700;      28620; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         49; SR22       ; TIO540    ; GA14-SR22 - Cirrus SR 22                 ; F
;          ; T         ;       2440;       2160; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         50; FAL2000    ; 7PW080    ; GA20-F2TH - Dassault Falcon 2000         ; F
;          ; T         ;      35700;      28620; T         ;        3.0; T         ;      8;
13.00;      13.00; T         ;          ;   0.000680
        1;         51; FAL900     ; 1AS002    ; GA35-F900 - Dassault Falcon 900          ; F
;          ; T         ;      19200;      14600; T         ;        3.0; T         ;      8;
13.00;      13.00; T         ;          ;   0.000680
        1;         52; ERJ190     ; 11GE140   ; AC15-E190 - Embraer 190                  ; F
;          ; T         ;     126900;      99900; T         ;        3.0; T         ;      8;
13.00;      13.00; T         ;          ;   0.000680
        1;         53; GULF4      ; 1RR019    ; GA13-GLF4 - Gulfstream IV/G400           ; F
;          ; T         ;      63410;      59400; T         ;        3.0; T         ;      7;
13.00;      13.00; T         ;          ;   0.000680
        1;         54; GULF5      ; 4BR008    ; GA25-GLF5 - Gulfstream V/G500            ; F
;          ; T         ;      76925;      67770; T         ;        3.0; T         ;      6;
13.00;      13.00; T         ;          ;   0.000680
        1;         55; GULF1      ; RDA7      ; GA26-AC90 - Gulfstream Commander         ; F
;          ; T         ;      46500;      38700; T         ;        3.0; T         ;      8;
13.00;      13.00; T         ;          ;   0.000680
        1;         56; HS125-7    ; 1AS002    ; GA6-H25B - BAe HS 125/700-800/Hawker 800; F
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 ;          ; T         ;      28660;      24560; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         57; MIL-C130   ; T56A15    ; ML8-C130 - Lockheed 130 Hercules        ; F
 ;          ; T         ;     132000;     121500; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         58; MOONEY-M20K; TSIO36    ; GA36-M20P - Mooney M-20C Ranger         ; F
 ;          ; T         ;       3000;       2700; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         59; PC12       ; PT6A67    ; GA9-PC12 - Pilatus PC-12                ; F
 ;          ; T         ;       7875;       4250; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         60; PA28       ; IO320     ; GA15-P28A - Piper Cherokee              ; F
 ;          ; T         ;       2200;       1980; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         61; BEECH1900-C; PT6A6B    ; AT4-B190 - Beech 1900/C-12J             ; F
 ;          ; T         ;      15500;      14940; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         62; BEECH58    ; TIO540    ; GA12-BE58 - Beech 58                    ; F
 ;          ; T         ;       5500;       5500; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         63; BEECH36    ; TIO540    ; GA18-BE36 - Beech Bonanza 36            ; F
 ;          ; T         ;       7875;       4250; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         64; BEECH36    ; TIO540    ; GA19-BE35 - Beech Bonanza 35            ; F
 ;          ; T         ;       7875;       4250; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         65; BEECH400   ; 1PW037    ; GA4-BE40 - Raytheon/Beech Beechjet 400/T; F
 ;          ; T         ;      14100;      11900; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         66; BEECH400   ; 1PW037    ; ML7-BE40 - Raytheon/Beech Beechjet 400/T; F
 ;          ; T         ;      14100;      11900; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         67; HS125-1000 ; TFE731    ; ML2-TEX2 - Raytheon Texan 2             ; F
 ;          ; T         ;      18300;      13800; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         68; BEECH90    ; P6135A    ; GA1-BE9L - Beech King Air 90            ; F
 ;          ; T         ;      12500;      11070; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         69; PREMIER    ; 1PW035    ; GA28-PRM1 - Raytheon Premier 1/390 Premi; F
 ;          ; T         ;      14800;      12150; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         70; BEECH200   ; PT6A42    ; GA3-BE20 - Beech 200 Super King         ; F
 ;          ; T         ;      12500;      11070; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         71; BEECH200   ; PT6A42    ; ML4-BE20 - Beech 200 Super King         ; F
 ;          ; T         ;      12500;      11070; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         72; MIL-T38    ; J855HA    ; ML5-T38 - Northrop T-38 Talon           ; F
 ;          ; T         ;      10279;      12093; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680
        1;         73; DHC8-2     ; PW123C    ; AT3-DH8B - Bombardier DHC8-200          ; F
 ;          ; T         ;      38700;      37800; T         ;        3.0; T         ;      0;
13.00;      13.00; T         ;          ;   0.000680

!AIRCRAFT_OPERATIONS
# SCEN_APT; STUDYAC_ID; ANAL_YEAR; TAXITIME_O; TAXITIME_I;     DEP_COUNT; DEP_PROFQH; DEP_PROFDY;
DEP_PROFMO;     ARR_COUNT; ARR_PROFQH; ARR_PROFDY; ARR_PROFMO; TGO_COUNT; TGO_PROFQH; TGO_PROFDY;
TGO_PROFMO
        1;          1;      2011;      14.00;       7.00;    10.000000;          6;          8;
      8;    10.000000;          6;          8;          8;  0.000000;          0;          0;
    0
        1;          1;      2017;      14.00;       7.00;     9.000000;          6;          8;
      8;     9.000000;          6;          8;          8;  0.000000;          0;          0;
    0
        1;          2;      2011;      14.00;       7.00; 13598.000000;          2;          2;
      4; 13598.000000;          2;          2;          4;  0.000000;          0;          0;
    0
        1;          2;      2017;      14.00;       7.00; 14075.000000;          2;          2;
      4; 14075.000000;          2;          2;          4;  0.000000;          0;          0;
    0
        1;          3;      2011;      14.00;       7.00;  6219.000000;          2;          2;
      4;  6219.000000;          2;          2;          4;  0.000000;          0;          0;
```

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0
    1;          3;      2017;      14.00;       7.00;  6437.000000;          2;          2;
  4;  6437.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          4;      2011;      14.00;       7.00;  6219.000000;          2;          2;
  4;  6219.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          4;      2017;      14.00;       7.00;  6438.000000;          2;          2;
  4;  6438.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          5;      2011;      14.00;       7.00;  4573.000000;          2;          2;
  4;  4573.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          5;      2017;      14.00;       7.00;  4734.000000;          2;          2;
  4;  4734.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          6;      2011;      14.00;       7.00; 11098.000000;          2;          2;
  4; 11098.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          6;      2017;      14.00;       7.00; 11487.000000;          2;          2;
  4; 11487.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          7;      2011;      14.00;       7.00;   251.000000;          2;          2;
  4;   251.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          7;      2017;      14.00;       7.00;   260.000000;          2;          2;
  4;   260.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          8;      2011;      14.00;       7.00;  1162.000000;          2;          2;
  4;  1162.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          8;      2017;      14.00;       7.00;  1202.000000;          2;          2;
  4;  1202.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          9;      2011;      14.00;       7.00; 21562.000000;          2;          2;
  4; 21562.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;          9;      2017;      14.00;       7.00; 22318.000000;          2;          2;
  4; 22318.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;         10;      2011;      14.00;       7.00;  2826.000000;          2;          2;
  4;  2826.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;         10;      2017;      14.00;       7.00;  2925.000000;          2;          2;
  4;  2925.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;         11;      2011;      14.00;       7.00;   890.000000;          2;          2;
  4;   890.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;         11;      2017;      14.00;       7.00;   922.000000;          2;          2;
  4;   922.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;         12;      2011;      14.00;       7.00;  3723.000000;          2;          2;
  4;  3723.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;         12;      2017;      14.00;       7.00;  3854.000000;          2;          2;
  4;  3854.000000;          2;          2;          4;  0.000000;          0;          0;
0
    1;         13;      2011;      14.00;       7.00;    25.000000;          6;          8;
  8;    25.000000;          6;          8;          8;  0.000000;          0;          0;
0
    1;         13;      2017;      14.00;       7.00;    23.000000;          6;          8;
  8;    23.000000;          6;          8;          8;  0.000000;          0;          0;
0
    1;         14;      2011;      14.00;       7.00;   301.000000;          6;          8;
  8;   301.000000;          6;          8;          8;  0.000000;          0;          0;
0
    1;         14;      2017;      14.00;       7.00;   276.000000;          6;          8;
  8;   276.000000;          6;          8;          8;  0.000000;          0;          0;
0
    1;         15;      2011;      14.00;       7.00;  1158.000000;          2;          2;
  4;  1158.000000;          2;          2;          4;  0.000000;          0;          0;
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0
    1;          15;       2017;       14.00;        7.00;  1199.000000;          2;          2;
  4;  1199.000000;          2;          2;           4;  0.000000;          0;          0;
0
    1;          16;       2011;       14.00;        7.00;   803.000000;          2;          2;
  4;   803.000000;          2;          2;           4;  0.000000;          0;          0;
0
    1;          16;       2017;       14.00;        7.00;   831.000000;          2;          2;
  4;   831.000000;          2;          2;           4;  0.000000;          0;          0;
0
    1;          17;       2011;       14.00;        7.00;    16.000000;          6;          8;
  8;    16.000000;          6;          8;           8;  0.000000;          0;          0;
0
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  8;     8.000000;          6;          8;           8;  0.000000;          0;          0;
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  6;   168.000000;          4;          6;           6;  0.000000;          0;          0;
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1; 44; 2017; 14.00; 7.00; 142.000000; 4; 6;
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0
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0
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    1;          59;       2011;       14.00;        7.00;   147.000000;           4;           6;
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  2;  1964.000000;          2;          4;          2;  0.000000;          0;          0;
0

!AIRCRAFT_GSE_ASSIGNMENTS
#  SCEN_APT;  STUDYAC_ID;  SYSGSE_ID;  FUEL_TYPE;  OP_TIMEDEP;  OP_TIMEARR;  HORSEPOWER;  LOADFACTOR;
MANU_YEAR; REFERENCE
    1;          1;        21; D        ;       5.00;       5.00;         25;     0.5000;
  0; Taylor Dunn
    1;          1;        30; D        ;     120.00;       0.00;        158;     0.8200;
  0;
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     1;          1;        38; D        ;       5.00;       5.00;        115;     0.5000;
0;
     1;          1;        39; D        ;       0.00;       0.00;        140;     0.5000;
0;
     1;          2;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
     1;          2;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
     1;          2;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
     1;          2;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
     1;          2;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
     1;          2;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
     1;          2;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
     1;          2;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
     1;          2;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
     1;          2;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
     1;          2;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
     1;          3;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
     1;          3;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
     1;          3;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
     1;          3;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
     1;          3;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
     1;          3;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
     1;          3;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
     1;          3;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
     1;          3;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
     1;          3;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
     1;          3;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
     1;          4;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
     1;          4;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
     1;          4;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
     1;          4;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
     1;          4;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
     1;          4;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
     1;          4;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
     1;          4;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
     1;          4;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
     1;          4;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
     1;          4;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
     1;          5;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
```

```
      1;          5;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;          5;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;          5;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          5;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;          5;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;          5;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;          5;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;          5;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;          5;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;          5;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;          6;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;          6;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;          6;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;          6;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          6;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;          6;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;          6;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;          6;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;          6;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;          6;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;          6;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;          7;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;          7;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;          7;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;          7;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          7;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;          7;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;          7;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;          7;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;          7;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;          7;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;          7;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;          8;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;          8;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;          8;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;          8;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
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```
      1;          8;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;          8;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;          8;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;          8;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;          8;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;          8;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;          8;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;          9;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;          9;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;          9;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;          9;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          9;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;          9;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;          9;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;          9;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;          9;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;          9;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;          9;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;         10;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;         10;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;         10;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;         10;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         10;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         10;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;         10;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;         10;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;         10;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         10;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         10;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;         11;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;         11;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;         11;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;         11;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         11;        14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         11;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;         11;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
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     1;         11;         35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
     1;         11;         36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
     1;         11;         41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
     1;         11;         43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
     1;         12;          3; E        ;      23.00;       7.00;          0;     0.7500;
0;
     1;         12;          4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
     1;         12;         10; D        ;       8.00;       0.00;        190;     0.8000;
0; Stewart & Stevenson TUG GT-50H
     1;         12;         13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
     1;         12;         14; G        ;      24.00;      24.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
     1;         12;         17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
     1;         12;         23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
     1;         12;         35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
     1;         12;         36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
     1;         12;         41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
     1;         12;         43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
     1;         13;         21; D        ;       5.00;       5.00;         25;     0.5000;
0; Taylor Dunn
     1;         13;         30; D        ;     120.00;       0.00;        158;     0.8200;
0;
     1;         13;         38; D        ;       5.00;       5.00;        115;     0.5000;
0;
     1;         13;         39; D        ;       0.00;       0.00;        140;     0.5000;
0;
     1;         14;         21; D        ;       5.00;       5.00;         25;     0.5000;
0; Taylor Dunn
     1;         14;         30; D        ;     120.00;       0.00;        158;     0.8200;
0;
     1;         14;         38; D        ;       5.00;       5.00;        115;     0.5000;
0;
     1;         14;         39; D        ;       0.00;       0.00;        140;     0.5000;
0;
     1;         15;          3; E        ;      23.00;       7.00;          0;     0.7500;
0;
     1;         15;          4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
     1;         15;          8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
     1;         15;         13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
     1;         15;         14; D        ;      24.00;      24.00;         71;     0.5000;
0; Stewart & Stevenson TUG 660
     1;         15;         17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
     1;         15;         23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
     1;         15;         35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
     1;         15;         36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
     1;         15;         41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
     1;         15;         43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
     1;         16;          3; E        ;      23.00;       7.00;          0;     0.7500;
0;
     1;         16;          4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
```

```
      1;         16;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;         16;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         16;        14; D        ;      24.00;      24.00;         71;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         16;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;         16;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;         16;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;         16;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         16;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         16;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;         17;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;         17;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;         17;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;         17;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         17;        14; D        ;      24.00;      24.00;         71;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         17;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;         17;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;         17;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;         17;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         17;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         17;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;         18;         3; E        ;      23.00;       7.00;          0;     0.7500;
0;
      1;         18;         4; D        ;       7.00;       0.00;        425;     0.9000;
0; ACE 180
      1;         18;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;         18;        13; G        ;      38.00;      37.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         18;        14; D        ;      24.00;      24.00;         71;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         18;        17; D        ;      10.00;      10.00;        210;     0.5300;
0; Hi-Way F650
      1;         18;        23; D        ;       8.00;       7.00;        210;     0.5300;
0; Hi-Way F650
      1;         18;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;         18;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         18;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         18;        43; E        ;      12.00;       0.00;          0;     0.2000;
0; Gate Service
      1;         19;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;         19;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         19;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         19;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         19;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
```

```
      1;         19;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         19;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         20;         8; D        ;       8.00;       0.00;         88;     0.8000;
0; Stewart & Stevenson TUG GT-35, Douglas TBL-180
      1;         20;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         20;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         20;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         20;        35; D        ;      12.00;       0.00;        235;     0.7000;
0; F250 / F350
      1;         20;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         20;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         21;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         21;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         21;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         21;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         21;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         21;        36; G        ;       0.00;      15.00;         97;     0.2500;
0; TLD 1410
      1;         21;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         22;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         22;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         22;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         22;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         22;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         22;        36; G        ;       0.00;      15.00;         97;     0.2500;
0; TLD 1410
      1;         22;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         23;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         23;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         23;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         23;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         23;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         23;        36; G        ;       0.00;      15.00;         97;     0.2500;
0; TLD 1410
      1;         23;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         24;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         24;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         24;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         24;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         24;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         24;        36; G        ;       0.00;      15.00;         97;     0.2500;
0; TLD 1410
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      1;         24;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         25;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         25;        13; G        ;      18.00;       0.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         25;        14; G        ;      15.00;       0.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         25;        22; D        ;       5.00;       0.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         25;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         25;        33; D        ;      50.00;       0.00;        194;     0.7500;
0; TLD, 400 Hz AC
      1;         25;        36; G        ;       0.00;       0.00;         97;     0.2500;
0; TLD 1410
      1;         25;        41; D        ;       8.00;       0.00;        235;     0.2000;
0; F250 / F350
      1;         26;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         26;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         26;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         26;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         26;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         26;        33; D        ;      50.00;       0.00;        194;     0.7500;
0; TLD, 400 Hz AC
      1;         26;        36; G        ;       0.00;      15.00;         97;     0.2500;
0; TLD 1410
      1;         26;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         27;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         27;        31; G        ;      40.00;       0.00;        107;     0.7500;
0; TLD
      1;         28;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         28;        31; G        ;      40.00;       0.00;        107;     0.7500;
0; TLD
      1;         29;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         29;        31; G        ;      40.00;       0.00;        107;     0.7500;
0; TLD
      1;         30;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         30;        31; G        ;      40.00;       0.00;        107;     0.7500;
0; TLD
      1;         31;        29; D        ;      10.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         32;        29; D        ;      10.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         33;        29; D        ;      10.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         34;        29; D        ;      10.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         35;        29; D        ;      10.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         36;        29; D        ;      10.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         37;        29; D        ;      10.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         37;        32; D        ;      40.00;       0.00;         71;     0.7500;
0; TLD, 28 VDC
      1;         38;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         38;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         38;        31; G        ;      40.00;       0.00;        107;     0.7500;
0; TLD
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      1;          39;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          39;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          39;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          40;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          40;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          40;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          41;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          41;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          41;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          42;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          42;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          42;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          43;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          43;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          43;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          44;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          44;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          44;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          45;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          45;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          45;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          46;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          46;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          46;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          47;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          47;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          47;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          48;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          48;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          48;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          49;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          50;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          50;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          50;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          51;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          51;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
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      1;         51;        32; D        ;      40.00;       0.00;         71;     0.7500;
0; TLD, 28 VDC
      1;         52;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         52;        13; G        ;      18.00;       0.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         52;        14; G        ;      15.00;       0.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         52;        22; D        ;       5.00;       0.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         52;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         52;        36; D        ;       0.00;       0.00;         56;     0.2500;
0; TLD 1410
      1;         52;        41; D        ;       8.00;       0.00;        235;     0.2000;
0; F250 / F350
      1;         53;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         53;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         53;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         53;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         53;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         53;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         53;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         54;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         54;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         54;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         54;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         54;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         54;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         54;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         55;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         55;        13; G        ;      18.00;      17.00;        107;     0.5500;
0; Stewart & Stevenson TUG MA 50
      1;         55;        14; G        ;      15.00;      15.00;        107;     0.5000;
0; Stewart & Stevenson TUG 660
      1;         55;        22; D        ;       5.00;       5.00;         71;     0.5300;
0; Hi-Way / TUG 660 chasis
      1;         55;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         55;        31; G        ;      40.00;       0.00;        107;     0.7500;
0; TLD
      1;         55;        36; D        ;       0.00;      15.00;         56;     0.2500;
0; TLD 1410
      1;         55;        41; D        ;       8.00;       7.00;        235;     0.2000;
0; F250 / F350
      1;         56;        11; D        ;       5.00;       0.00;         86;     0.8000;
0; Stewart & Stevenson TUG MC
      1;         56;        29; D        ;      20.00;       0.00;        175;     0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;         56;        31; G        ;      40.00;       0.00;        107;     0.7500;
0; TLD
      1;         57;        21; D        ;       5.00;       5.00;         25;     0.5000;
0; Taylor Dunn
      1;         57;        30; D        ;     120.00;       0.00;        158;     0.8200;
0;
      1;         57;        38; D        ;       5.00;       5.00;        115;     0.5000;
0;
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      1;          57;         39; D        ;       0.00;       0.00;         140;      0.5000;
0;
      1;          58;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          59;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          59;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          59;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          60;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          61;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          61;         13; G        ;      18.00;      17.00;         107;      0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          61;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          61;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          62;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          63;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          64;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          65;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          65;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          65;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          66;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          66;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          66;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          67;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          67;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          67;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          68;         13; G        ;      18.00;      17.00;         107;      0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          68;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          68;         32; D        ;      40.00;       0.00;          71;      0.7500;
0; TLD, 28 VDC
      1;          69;         11; D        ;       5.00;       0.00;          86;      0.8000;
0; Stewart & Stevenson TUG MC
      1;          69;         29; D        ;      20.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          69;         31; G        ;      40.00;       0.00;         107;      0.7500;
0; TLD
      1;          70;         13; G        ;      18.00;      17.00;         107;      0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          70;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          70;         32; D        ;      40.00;       0.00;          71;      0.7500;
0; TLD, 28 VDC
      1;          71;         13; G        ;      18.00;      17.00;         107;      0.5500;
0; Stewart & Stevenson TUG MA 50
      1;          71;         29; D        ;      10.00;       0.00;         175;      0.2500;
0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
      1;          71;         32; D        ;      40.00;       0.00;          71;      0.7500;
0; TLD, 28 VDC
      1;          72;         21; D        ;       5.00;       0.00;          25;      0.5000;
0; Taylor Dunn
      1;          72;         30; D        ;     120.00;       0.00;         158;      0.8200;
0;
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        1;         72;        38; D        ;       5.00;       0.00;        115;     0.5000;
   0;
        1;         72;        39; D        ;       0.00;       0.00;        140;     0.5000;
   0;
        1;         73;        11; D        ;       5.00;       0.00;         86;     0.8000;
   0; Stewart & Stevenson TUG MC
        1;         73;        13; G        ;      18.00;       0.00;        107;     0.5500;
   0; Stewart & Stevenson TUG MA 50
        1;         73;        14; G        ;      15.00;       0.00;        107;     0.5000;
   0; Stewart & Stevenson TUG 660
        1;         73;        16; D        ;       5.00;       0.00;         71;     0.5300;
   0; Hi-Way / TUG 660 chasis
        1;         73;        22; D        ;       5.00;       0.00;         71;     0.5300;
   0; Hi-Way / TUG 660 chasis
        1;         73;        29; D        ;      20.00;       0.00;        175;     0.2500;
   0; F750, Dukes Transportation Services, DART 3000 to 6000 gallon
        1;         73;        32; D        ;      40.00;       0.00;         71;     0.7500;
   0; TLD, 28 VDC
        1;         73;        36; D        ;       0.00;       0.00;         56;     0.2500;
   0; TLD 1410
        1;         73;        41; D        ;       8.00;       0.00;        235;     0.2000;
   0; F250 / F350

!TRAINING_FIRES
# SCEN_APT; NAME; ANAL_YEAR; INSTUDY; USER_EDIT; ELEVATION; X; Y; PROF_QHR; PROF_DAY; PROF_MON;
GAL/YEAR; GAL/HOUR; YEAR_HOUR; FUEL_TYPE; TEMP; DIAMETER; VELOCITY; RELHEIGHT; CO_G/GAL; HC_G/GAL;
NOX_G/GAL; SOX_G/GAL; PM10_G/GAL
#No records.

!STATIONARY_SOURCES
# SCEN_APT; ANAL_YEAR; NAME; INSTUDY; SUBSTANCE; YEAR_OPS; HOUR_OPS; YEAR_HOUR; PROF_QHR; PROF_DAY;
PROF_MON; CATEGORY; TYPE; USER_EDIT; CO_UI; HC_UI; NOX_UI; SOX_UI; PM10_UI; PM10/UNIT; SULFUR;
CA2S_RATIO; ASH; CO_PCF; HC_PCF; NOX_PCF; SOX_PCF; PM10_PCF; HORSEPOWER; MODE1; MODE2; MODE3; MODE4;
TANK_HGT; TANK_DIAM; MAX_LEVEL; AVG_LEVEL; RVP_PSI; DENSITY; CONC; AREA; DISTURBS; MOISTURE;
MEAN_WIND; FAST_MILE; FRIC_SPEED; ROUGHNESS; WIND_RATIO; PM25_RATIO; ENGINE_UID; USRACNAME; ELEV;
HEIGHT; SIGMA_Z0; SIGMA_Y0; DIAMETER; VELOCITY; TEMP; AMB_TEMP; STACK; POINTS; X_01; Y_01; X_02;
Y_02; X_03; Y_03; X_04; Y_04; X_05; Y_05; X_06; Y_06; X_07; Y_07; X_08; Y_08; X_09; Y_09; X_10; Y_10;
X_11; Y_11; X_12; Y_12; X_13; Y_13; X_14; Y_14; X_15; Y_15; X_16; Y_16; X_17; Y_17; X_18; Y_18; X_19;
Y_19; X_20; Y_20
#No records.

!BUILDINGS
# SCEN_APT; NAME; INSTUDY; ELEVATION; HEIGHT; NUM_POINTS; X_01; Y_01; X_02; Y_02; X_03; Y_03; X_04;
Y_04; X_05; Y_05; X_06; Y_06; X_07; Y_07; X_08; Y_08; X_09; Y_09; X_10; Y_10; X_11; Y_11; X_12; Y_12;
X_13; Y_13; X_14; Y_14; X_15; Y_15; X_16; Y_16; X_17; Y_17; X_18; Y_18; X_19; Y_19; X_20; Y_20
#No records.

!GATES
# SCEN_APT; INSTUDY; NAME; ELEVATION; RELHEIGHT; SIGMA_Y0; SIGMA_Z0; NUMPOINTS; X_01; Y_01; X_02;
Y_02; X_03; Y_03; X_04; Y_04; X_05; Y_05; X_06; Y_06; X_07; Y_07; X_08; Y_08; X_09; Y_09; X_10; Y_10;
X_11; Y_11; X_12; Y_12; X_13; Y_13; X_14; Y_14; X_15; Y_15; X_16; Y_16; X_17; Y_17; X_18; Y_18; X_19;
Y_19; X_20; Y_20
#No records.

!RUNWAYS
# SCEN_APT; NAME1; NAME2; X1; Y1; X2; Y2; GLIDE1; GLIDE2; INSTUDY; ELEV1; ELEV2
#No records.

!RUNWAY_CONFIGURATIONS
# SCEN_APT; NAME; INSTUDY; USE_DISTR; FRACTNUSED; WINDAN_MIN; WINDAN_MAX; USEMINWANG; USEMAXWANG;
WINDSP_MIN; WINDSP_MAX; USEMINWSPD; USEMAXWSPD; HOUR_MIN; HOUR_MAX; USEMINHOUR; USEMAXHOUR;
CEILNG_MIN; CEILNG_MAX; USEMINCEIL; USEMAXCEIL; VIS_MIN; VIS_MAX; USEMINVIS; USEMAXVIS; TEMP_MIN;
TEMP_MAX; USEMINTEMP; USEMAXTEMP; NUMPOINTS; A_01; D_01; A_02; D_02; A_03; D_03
#No records.

!CONFIGURATION_RUNWAYS
# SCEN_APT; CONFIGNAME; ACSIZE; RUNWAYNAME; ARRIVAL; DEPARTURE; TGO
#No records.

!TAXIWAYS
# SCEN_APT; INSTUDY; TAXI_NAME; NUMPOINTS; WIDTH; X_01; Y_01; Z_01; SPEED_01; X_02; Y_02; Z_02;
SPEED_02; X_03; Y_03; Z_03; SPEED_03; X_04; Y_04; Z_04; SPEED_04; X_05; Y_05; Z_05; SPEED_05; X_06;
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Y_06; Z_06; SPEED_06; X_07; Y_07; Z_07; SPEED_07; X_08; Y_08; Z_08; SPEED_08; X_09; Y_09; Z_09;
SPEED_09; X_10; Y_10; Z_10; SPEED_10; X_11; Y_11; Z_11; SPEED_11; X_12; Y_12; Z_12; SPEED_12; X_13;
Y_13; Z_13; SPEED_13; X_14; Y_14; Z_14; SPEED_14; X_15; Y_15; Z_15; SPEED_15; X_16; Y_16; Z_16;
SPEED_16; X_17; Y_17; Z_17; SPEED_17; X_18; Y_18; Z_18; SPEED_18; X_19; Y_19; Z_19; SPEED_19; X_20;
Y_20; Z_20
#No records.

!TAXIPATHS
# SCEN_APT; GATE_NAME; RNWY_NAME; RNWY_EXIT; OUTBOUND; TAXI_NAME
#No records.

!PARKING_FACILITIES
# SCEN_APT; ANAL_YEAR; NAME; INSTUDY; USE_ANNUAL; VEH_TYPE; MANU_YEAR; VEH_YEAR; VEH_HOUR; SPEED;
DISTANCE; IDLE_TIME; FUEL; PROF_QHR; PROF_DAY; PROF_MON; USER_EDIT; CO_GPVM; THC_GPVM; NMHC_GPVM;
VOC_GPVM; TOG_GPVM; NOX_GPVM; SOX_GPVM; PM10_GPVM; PM25_GPVM; BENZ_GPVM; MTBE_GPVM; BUTA_GPVM;
FORM_GPVM; ACET_GPVM; ACRO_GPVM; LEVELS; HEIGHT; SPACING; ELEVATION; POINTS; X_01; Y_01; X_02; Y_02;
X_03; Y_03; X_04; Y_04; X_05; Y_05; X_06; Y_06; X_07; Y_07; X_08; Y_08; X_09; Y_09; X_10; Y_10; X_11;
Y_11; X_12; Y_12; X_13; Y_13; X_14; Y_14; X_15; Y_15; X_16; Y_16; X_17; Y_17; X_18; Y_18; X_19; Y_19;
X_20; Y_20
#No records.

!ROADWAYS
# SCEN_APT; ANAL_YEAR; NAME; INSTUDY; USE_ANNUAL; VEH_TYPE; FUEL_TYPE; MANU_YEAR; SPEED; DISTANCE;
OPS_ANNUAL; OPS_PEAK; PROF_QHR; PROF_DAY; PROF_MON; USER_EDIT; CO_GPVM; THC_GPVM; NMHC_GPVM;
VOC_GPVM; TOG_GPVM; NOX_GPVM; SOX_GPVM; PM10_GPVM; PM25_GPVM; BENZ_GPVM; MTBE_GPVM; BUTA_GPVM;
FORM_GPVM; ACET_GPVM; ACRO_GPVM; SIGMA_Z0; WIDTH; POINTS; X_01; Y_01; Z_01; X_02; Y_02; Z_02; X_03;
Y_03; Z_03; X_04; Y_04; Z_04; X_05; Y_05; Z_05; X_06; Y_06; Z_06; X_07; Y_07; Z_07; X_08; Y_08; Z_08;
X_09; Y_09; Z_09; X_10; Y_10; Z_10; X_11; Y_11; Z_11; X_12; Y_12; Z_12; X_13; Y_13; Z_13; X_14; Y_14;
Z_14; X_15; Y_15; Z_15; X_16; Y_16; Z_16; X_17; Y_17; Z_17; X_18; Y_18; Z_18; X_19; Y_19; Z_19; X_20;
Y_20; Z_20
#No records.

!GSE_POPULATION
# SCEN_APT; ANAL_YEAR; SYSGSE_ID; FUEL_TYPE; USER_ID; GSE_TYPE; REFERENCE; POPULATION; USE_ANNUAL;
OPS_ANNUAL; OPS_PEAK; PROF_QTR; PROF_DAY; PROF_MON; NONROADVER; HORSEPOWER; LOADFACTOR; NONROAD;
MANU_YEAR
#No records.

!GSE_POPULATION_GATE_ASSIGNMENTS
# SCEN_APT; SYSGSE_ID; FUEL_TYPE; USER_ID; GATE_ID; FACTOR
#No records.

!QUARTER_HOURLY_PROFILES
# SCEN_APT; PROF_ID; PROF_NAME          ;   QH01;   QH02;   QH03;   QH04;   QH05;   QH06;   QH07;
 QH08;   QH09;   QH10;   QH11;   QH12;   QH13;   QH14;   QH15;   QH16;   QH17;   QH18;   QH19;
QH20;   QH21;   QH22;   QH23;   QH24;   QH25;   QH26;   QH27;   QH28;   QH29;   QH30;   QH31;   QH32;
 QH33;   QH34;   QH35;   QH36;   QH37;   QH38;   QH39;   QH40;   QH41;   QH42;   QH43;   QH44;
QH45;   QH46;   QH47;   QH48;   QH49;   QH50;   QH51;   QH52;   QH53;   QH54;   QH55;   QH56;   QH57;
 QH58;   QH59;   QH60;   QH61;   QH62;   QH63;   QH64;   QH65;   QH66;   QH67;   QH68;   QH69;
QH70;   QH71;   QH72;   QH73;   QH74;   QH75;   QH76;   QH77;   QH78;   QH79;   QH80;   QH81;   QH82;
 QH83;   QH84;   QH85;   QH86;   QH87;   QH88;   QH89;   QH90;   QH91;   QH92;   QH93;   QH94;
QH95;   QH96
         1;       0; DEFAULT             ; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000
         1;       2; Qrtr-Hrly Profile-AC; 0.0964; 0.0964; 0.0964; 0.0964; 0.0212; 0.0212; 0.0212;
0.0212; 0.0078; 0.0078; 0.0078; 0.0078; 0.0298; 0.0298; 0.0298; 0.0298; 0.0455; 0.0455; 0.0455;
0.0455; 0.1068; 0.1068; 0.1068; 0.1068; 0.6147; 0.6147; 0.6147; 0.6147; 0.9010; 0.9010; 0.9010;
0.9010; 0.9497; 0.9497; 0.9497; 0.9497; 0.9765; 0.9765; 0.9765; 0.9765; 1.0000; 1.0000; 1.0000;
1.0000; 0.7117; 0.7117; 0.7117; 0.7117; 0.8851; 0.8851; 0.8851; 0.8851; 0.7620; 0.7620; 0.7620;
0.7620; 0.7673; 0.7673; 0.7673; 0.7673; 0.9436; 0.9436; 0.9436; 0.9436; 0.6291; 0.6291; 0.6291;
0.6291; 0.8989; 0.8989; 0.8989; 0.8989; 0.8835; 0.8835; 0.8835; 0.8835; 0.7539; 0.7539; 0.7539;
0.7539; 0.8072; 0.8072; 0.8072; 0.8072; 0.5074; 0.5074; 0.5074; 0.5074; 0.3782; 0.3782; 0.3782;
0.3782; 0.2014; 0.2014; 0.2014; 0.2014
         1;       4; Qrtr-Hrly Profile-GA; 0.2994; 0.2994; 0.2994; 0.2994; 0.0382; 0.0382; 0.0382;
0.0382; 0.0430; 0.0430; 0.0430; 0.0430; 0.0430; 0.0430; 0.0430; 0.0478; 0.0478; 0.0478;
```

```
0.0478; 0.1545; 0.1545; 0.1545; 0.1545; 0.5191; 0.5191; 0.5191; 0.5191; 0.8535; 0.8535; 0.8535;
0.8535; 0.8646; 0.8646; 0.8646; 0.8646; 1.0000; 1.0000; 1.0000; 1.0000; 0.8089; 0.8089; 0.8089;
0.8089; 0.8376; 0.8376; 0.8376; 0.8376; 0.7580; 0.7580; 0.7580; 0.7580; 0.8217; 0.8217; 0.8217;
0.8217; 0.8694; 0.8694; 0.8694; 0.8694; 0.8455; 0.8455; 0.8455; 0.8455; 0.9889; 0.9889; 0.9889;
0.9889; 0.8726; 0.8726; 0.8726; 0.8726; 0.5780; 0.5780; 0.5780; 0.5780; 0.4204; 0.4204; 0.4204;
0.4204; 0.2946; 0.2946; 0.2946; 0.2946; 0.2404; 0.2404; 0.2404; 0.2404; 0.1895; 0.1895; 0.1895;
0.1895; 0.1354; 0.1354; 0.1354; 0.1354
         1;       6; Qrtr-Hrly Profile-ML; 1.0000; 1.0000; 1.0000; 1.0000; 0.0114; 0.0114; 0.0114;
0.0114; 0.0000; 0.0000; 0.0000; 0.0000; 0.0057; 0.0057; 0.0057; 0.0057; 0.0057; 0.0057; 0.0057;
0.0057; 0.0057; 0.0057; 0.0057; 0.0057; 0.0625; 0.0625; 0.0625; 0.0625; 0.1818; 0.1818; 0.1818;
0.1818; 0.2614; 0.2614; 0.2614; 0.2614; 0.2330; 0.2330; 0.2330; 0.2330; 0.4034; 0.4034; 0.4034;
0.4034; 0.4659; 0.4659; 0.4659; 0.4659; 0.3920; 0.3920; 0.3920; 0.3920; 0.3182; 0.3182; 0.3182;
0.3182; 0.2727; 0.2727; 0.2727; 0.2727; 0.2045; 0.2045; 0.2045; 0.2045; 0.1875; 0.1875; 0.1875;
0.1875; 0.2386; 0.2386; 0.2386; 0.2386; 0.3125; 0.3125; 0.3125; 0.3125; 0.1761; 0.1761; 0.1761;
0.1761; 0.2386; 0.2386; 0.2386; 0.2386; 0.3125; 0.3125; 0.3125; 0.3125; 0.1875; 0.1875; 0.1875;
0.1875; 0.0114; 0.0114; 0.0114; 0.0114

!MONTHLY_PROFILES
# SCEN_APT; PROF_ID; PROF_NAME         ;    JAN;    FEB;    MAR;    APR;    MAY;    JUN;    JUL;
 AUG;    SEP;    OCT;    NOV;    DEC
         1;       0; DEFAULT           ; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000;
1.0000; 1.0000; 1.0000; 1.0000; 1.0000
         1;       2; Monthly Profile-AT; 0.0000; 0.0000; 0.0000; 0.0000; 0.9646; 0.9714; 0.9816;
0.9998; 1.0000; 0.0000; 0.0000; 0.0000
         1;       4; Monthly Profile-AC; 0.0000; 0.0000; 0.0000; 0.0000; 1.0000; 0.9798; 0.9984;
0.9758; 0.8927; 0.0000; 0.0000; 0.0000
         1;       6; Monthly Profile-GA; 0.0000; 0.0000; 0.0000; 0.0000; 1.0000; 0.8261; 0.8003;
0.7861; 0.9018; 0.0000; 0.0000; 0.0000
         1;       8; Monthly Profile-ML; 0.0000; 0.0000; 0.0000; 0.0000; 1.0000; 0.9129; 0.7635;
0.7510; 0.5809; 0.0000; 0.0000; 0.0000

!DAILY_PROFILES
# SCEN_APT; PROF_ID; PROF_NAME       ;    MON;    TUE;    WED;    THU;    FRI;    SAT;    SUN
         1;       0; DEFAULT         ; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000; 1.0000
         1;       2; Daily Profile-AC; 0.9580; 0.9463; 0.9537; 1.0000; 0.9933; 0.8348; 0.9152
         1;       4; Daily Profile-AT; 0.8354; 0.9432; 0.9642; 1.0000; 0.9682; 0.6420; 0.6846
         1;       6; Daily Profile-GA; 0.7260; 0.9177; 0.9244; 1.0000; 0.7901; 0.4326; 0.5358
         1;       8; Daily Profile-ML; 0.6000; 0.7886; 0.8971; 0.9943; 1.0000; 0.7184; 0.5543

!DISCRETE_CARTESIAN_RECEPTORS
# SCEN_APT; NAME; INSTUDY; X; Y; HEIGHT; ELEVATION
#No records.

!DISCRETE_POLAR_RECEPTORS
# SCEN_APT; NAME; INSTUDY; SOURCETYPE ; SOURCENAME ; DIRECTION; DISTANCE; HEIGHT; ELEVATION
#No records.

!NETWORK_CARTESIAN_RECEPTORS
# SCEN_APT; NAME; INSTUDY; X_START; Y_START; X_COUNT; Y_COUNT; X_DELTA; Y_DELTA; HEIGHT; ELEVATION
#No records.

!NETWORK_POLAR_RECEPTORS
# SCEN_APT; NAME; INSTUDY; SRCBASED; SOURCETYPE ; SOURCENAME ; X_ORIG; Y_ORIG; R_START; D_START;
R_COUNT; D_COUNT; R_DELTA; D_DELTA; HEIGHT; ELEVATION
#No records.

!ALL_EMISSIONS
# SCEN_APT; ANAL_YEAR; NAME; CO_KG; THC_KG; NMHC_KG; VOC_KG; TOG_KG; NOX_KG; SOX_KG; PM10_KG;
PM25_KG; PMNV_KG; PMSO_KG; PMFO_KG; FUEL_KG
#No records.

!AIRCRAFT_EMISSIONS
# SCEN_APT; ANAL_YEAR; STUDYAC_ID; AC_NAME; ENG_NAME; USER_ID; ACCAT_EURO; MODE; CO_KG; THC_KG;
NMHC_KG; VOC_KG; TOG_KG; NOX_KG; SOX_KG; PM10_KG; PM25_KG; PMNV_KG; PMSO_KG; PMFO_KG; FUEL_KG
#No records.

!GSE_POPULATION_EMISSIONS
# SCEN_APT; ANAL_YEAR; TYPE; FUEL; REFERENCE; NAME; CO_KG; THC_KG; NMHC_KG; VOC_KG; TOG_KG; NOX_KG;
SOX_KG; PM10_KG; PM25_KG
#No records.

!VEHICLE_EMISSIONS
```

```
# SCEN_APT; ANAL_YEAR; NAME; TYPE; CO_KG; THC_KG; NMHC_KG; VOC_KG; TOG_KG; NOX_KG; SOX_KG; PM10_KG;
PM25_KG; BENZ_KG; MTBE_KG; BUTA_KG; FORM_KG; ACET_KG; ACRO_KG
#No records.

!STATIONARY_SOURCE_EMISSIONS
# SCEN_APT; ANAL_YEAR; NAME; TYPE; CO_KG; THC_KG; NMHC_KG; VOC_KG; TOG_KG; NOX_KG; SOX_KG; PM10_KG;
PM25_KG
#No records.

!USER-CREATED_AIRCRAFT
#     USRACNAME;  CATEGORY;  AIR_TAXI  ;  EURO_GRP;  NUM_ENG;  USESYSEMIS;  EMISACCODE;  EMISENGUID;
PERFACCODE; PERFENGUID; BP_RATIO; DEF_SOX_EI; TIME_MIN_1; FUEL_KGS_1;  CO_EI_1;  HC_EI_1; NOX_EI_1;
PM_EI_1;  SN_1; TIME_MIN_2; FUEL_KGS_2;  CO_EI_2;  HC_EI_2; NOX_EI_2;  PM_EI_2;  SN_2; TIME_MIN_3;
FUEL_KGS_3;   CO_EI_3;   HC_EI_3;  NOX_EI_3;   PM_EI_3;   SN_3;  TIME_MIN_4;  FUEL_KGS_4;   CO_EI_4;
HC_EI_4; NOX_EI_4;  PM_EI_4;  SN_4; TIME_MIN_5
  My Aircraft; LCJP    ;          ; JM      ; 2      ; F         ;           ;           ; A109
  ; 250B17    ;     0.00;          ;     19.00;      0.000; 0.000000; 0.000000; 0.000000; 0.000000;
0.000;      0.70;      0.000; 0.000000; 0.000000; 0.000000; 0.000000; 0.000;      2.20;      0.000;
0.000000; 0.000000; 0.000000; 0.000000; 0.000;      4.00;      0.000; 0.000000; 0.000000; 0.000000;
0.000000; 0.000;       7.00

!USER-CREATED_APUS
#  APU_ID;  NAME;  DEF_TIME_A;  DEF_TIME_D;  USER_EMIS;  CO_KG_HR;  HC_KG_HR;  NOX_KG_HR;  SOX_KG_HR;
PM_KG_HR; SYS_APU_ID
#No records.

!USER-CREATED_GSE
# USR_GSE_ID; NAME; SYS_GSE_ID; SYS_TYPE; TYPE_YEAR; HORSEPOWER; LOADFACTOR; OPTIME_ARR; OPTIME_DEP;
ANN_OPTIME;  USER_EMIS;  DIESEL_CO;  DIESEL_HC;  DIESEL_NOX;  DIESEL_SOX;  DIESEL_PM;  GAS_CO;  GAS_HC;
GAS_NOX; GAS_SOX; GAS_PM; CNG_CO; CNG_HC; CNG_NOX; CNG_SOX; CNG_PM; LPG_CO; LPG_HC; LPG_NOX; LPG_SOX;
LPG_PM
#No records.
```

Appendix G-3

MEGAN Input Files

## TXT2IOAPI Job Script File

```
#! /bin/csh -f
source ../setcase.csh
set dom =   ( 36km 12km 4km )
set domID = ( d01  d02  d03 )
set i  = ${NO_DOMAIN}
setenv PRJ $MAPYEAR
setenv DOM $dom[$i]
setenv PROMPTFLAG N
setenv PROG   txt2ioapi
setenv EXEDIR $MGNEXE
setenv EXEC   $EXEDIR/$PROG
setenv GRIDDESC $MGNRUN/GRIDDESC_${DOM}
setenv GDNAM3D MCIP_${DOM}
setenv EFSTXTF $MGNINP/MAP/EF_MAG_${PRJ}_${DOM}_$DATAID.csv
setenv PFTTXTF $MGNINP/MAP/PFT_MAG_${PRJ}_${DOM}_$DATAID.csv
setenv LAITXTF $MGNINP/MAP/LAI_MAG_${PRJ}_${DOM}_$DATAID.csv
setenv EFMAPS  $MGNINP/MAP/EF_MAG_${PRJ}_${DOM}_$DATAID.ncf
setenv PFTS16  $MGNINP/MAP/PFT_MAG_${PRJ}_${DOM}_$DATAID.ncf
setenv LAIS46  $MGNINP/MAP/LAI_MAG_${PRJ}_${DOM}_$DATAID.ncf
setenv RUN_EFS T       # [T|F]
setenv RUN_LAI T       # [T|F]
setenv RUN_PFT T       # [T|F]
rm -f $EFMAPS $LAIS46 $PFTS16
if ( ! -e $MGNLOG/$PROG ) mkdir -p $MGNLOG/$PROG
$EXEC | tee $MGNLOG/$PROG/log.run.$PROG.${PRJ}.${DOM}.$DATAID.txt
```

## MET2MGN Job Script File

```
#!/bin/csh -f
source ../setcase.csh
set year = $MGNCASE
set STJD = ${year}120
set EDJD = ${year}275
set frstdom = 1

setenv EPISODE_SDATE $STJD
setenv EPISODE_STIME 000000
set i  =  $frstdom
while ($i <= ${NO_DOMAIN})
setenv GRIDDESC GRIDDESC_$dom[$i]
setenv GDNAM3D2 $domID[$i]
setenv GDNAM3D MCIP_$dom[$i]
setenv PROG met2mgn
if ($i == 3 ) then
setenv EXE $MGNEXE/$PROG.d03
else
setenv EXE $MGNEXE/$PROG
endif

set logdir = $MGNLOG/$PROG
if ( ! -e $logdir) mkdir -p $logdir

set INPPATH = $METMCIP
set OUTPATH = $MGNINP/MGNMET
if (! -e $OUTPATH) mkdir $OUTPATH
setenv PFILE $OUTPATH/PFILE
rm -fv $PFILE
set JDATE = $STJD

while ($JDATE <= $EDJD)
@ jdy = $JDATE - 2000000
@ kdy = $jdy + 1
setenv STDATE ${jdy}00
setenv ENDATE ${kdy}00
setenv MCIPMET Y
setenv TMCIP  TEMP2 #MCIP v3.3 or newer
setenv MCIPRAD Y
set begy = $year
set begm = 1
set endy = $begy
set endm = 12    #$begm
@ y    = $begy
@ ay   = $y % 400
@ by   = $y % 4
@ cy   = $y % 100
if( $ay == 0 ) then
  @ febd   = 29
  @ exdays = 6
else if( $by == 0 && $cy != 0 ) then
  @ febd   = 29
  @ exdays = 6
else
  @ febd   = 28
  @ exdays = 5
endif

set mday = (31 $febd 31 30 31 30 31 31 30 31 30 31)
@ fyear = $begy
@ nday = 0
while ($fyear <= $endy)
  @ mon  = 1
while ($mon <= 12 )
  @ day  = 1
while ($day <= $mday[$mon])
  @ nday = $nday + 1
if ($nday < 10 ) then
set nnday = 00$nday
```

```
endif
if ($nday < 100 && $nday >= 10 ) then
set nnday = 0$nday
endif
if ($nday >= 100 ) then
set nnday = $nday
endif
if ( $JDATE == $fyear$nnday ) then
  echo $fyear $mon $day $nnday
  if ($day < 10 ) then
    set fday = 0$day
  else
    set fday = $day
  endif
  if ($mon < 10 ) then
    set fmon = 0$mon
  else
    set fmon = $mon
  endif
  set JDATE2 = $fyear$fmon$fday

  if ($mon == $begm - 1 ) then
    @ stday = $nday + 1
  endif
endif
@ day ++
end
@ mon ++
end
@ fyear ++
end
setenv  EPISODE_SDATE $JDATE
if ($JDATE == $EPISODE_SDATE) then   #always use the file as start, otherwise there is problems
  setenv METCRO2Dfile1 $INPPATH/METCRO2D_${GDNAM3D2}_${JDATE2}.nc
else
  setenv METCRO2Dfile1 $INPPATH/METCRO2D_${GDNAM3D2}_${JDATE2}.nc
  setenv METCRO2Dfile2 $INPPATH/METCRO2D_${GDNAM3D2}_${JDATE2}.nc
endif
setenv METCRO3Dfile  $INPPATH/METCRO3D_${GDNAM3D2}_${JDATE2}.nc
setenv METDOT3Dfile  $INPPATH/METDOT3D_${GDNAM3D2}_${JDATE2}.nc

setenv OUTFILE $OUTPATH/MET.MEGAN.$GDNAM3D2.$JDATE.ncf
rm -rf $OUTFILE

$EXE |tee $logdir/log.$PROG.$GDNAM3D2.$JDATE.txt

@ JDATE++
end  # End while JDATE
@ i++
end
```

## EMPROC Job Script File

```
#! /bin/csh -f
source ../setcase.csh
set dom   = ( 36km 12km 4km )
set domID = ( d01  d02  d03 )
set i  = ${NO_DOMAIN}
set STDATE = 2011119
set ENDATE = 2011274
setenv PRJ $MAPYEAR
setenv PROMPTFLAG N
setenv PROG   emproc
setenv EXEDIR $MGNEXE
setenv EXE    $EXEDIR/$PROG
setenv INPDIR $MGNINP/MAP
setenv METDIR $MGNINP/MGNMET
setenv INTDIR $MGNINT
setenv OUTDIR $MGNOUT
setenv LOGDIR $MGNLOG/$PROG
if ( ! -e $LOGDIR ) mkdir -p $LOGDIR
set JD = $STDATE
while ($JD <= $ENDATE)
setenv SDATE $JD        #start date
setenv STIME 0
setenv RLENG 250000
setenv RUN_MEGAN   Y       # Run megan?
setenv ONLN_DT     Y       # Use online daily average temperature
                           # No will use from EFMAPS
setenv ONLN_DS     Y       # Use online daily average solar radiation
                           # No will use from EFMAPS
setenv GRIDDESC $MGNRUN/GRIDDESC_${dom[$i]}
setenv GDNAM3D MCIP_$dom[$i]
set    GDNAM3D2 =  $domID[$i]
setenv EFMAPS $INPDIR/EF_MAG_${PRJ}_${dom[$i]}_$DATAID.ncf
setenv PFTS16 $INPDIR/PFT_MAG_${PRJ}_${dom[$i]}_$DATAID.ncf
setenv LAIS46 $INPDIR/LAI_MAG_${PRJ}_${dom[$i]}_$DATAID.ncf
setenv MGNMET $METDIR/MET.MEGAN.$GDNAM3D2.${SDATE}.ncf
setenv MGNERS $INTDIR/ER.$DATAID.$GDNAM3D2.${SDATE}.ncf
if ( $RUN_MEGAN == 'Y' ) then
   rm -f $MGNERS
   time $EXE >&! $LOGDIR/log.run.$PROG.$DATAID.$GDNAM3D2.$SDATE.txt
endif

@ JD++
end  # End while JD
```

## MGN2MECH Job Script File

```
#! /bin/csh -f
source ../setcase.csh
set dom =   ( 36km 12km 4km )
set domID = ( d01  d02  d03 )
if ($MGNCASE == 2014 ) then
set i  = 3
set STDATE = 2014001
set ENDATE = 2014365
else if ($MGNCASE == 2012 ) then
set i  = 3   #(1, 2, 3)
set STDATE = 2012120
set ENDATE = 2012274
else if ($MGNCASE == 2011 ) then
set i  = 3   #(1, 2, 3)
set STDATE = 2011119
set ENDATE = 2011274
else if ($MGNCASE == 2009 ) then
set i = 3  #(1,2,3)
set STDATE = 2009119
set ENDATE = 2009273
endif
setenv PRJ $MAPYEAR
setenv PROMPTFLAG N
setenv PROG   mgn2mech
setenv EXEDIR $MGNEXE
setenv EXE    $EXEDIR/$PROG
setenv INPDIR $MGNINP/MAP
setenv INTDIR $MGNOUT/INT
setenv OUTDIR $MGNOUT
setenv METDIR $MGNINP/MGNMET
setenv GRIDDESC $MGNRUN/GRIDDESC_${dom[$i]}
setenv LOGDIR $MGNLOG/$PROG
if ( ! -e $LOGDIR ) mkdir -p $LOGDIR
setenv TSTEP 10000
setenv RUN_SPECIATE   Y    # run MG2MECH
setenv RUN_CONVERSION Y    # run conversions?
                           # run conversions MEGAN to model mechanism
                           # units are moles/s (old is mol/s)
setenv SPCTONHR       Y    # speciation output unit in tonnes per hour
                           # This will convert 138 species to tonne per
                           # hour or mechasnim species to tonne per hour.
setenv MECHANISM    CB6
setenv GDNAM3D MCIP_$dom[$i]
set    GDNAM3D2 = $domID[$i]
setenv EFMAPS  $INPDIR/EF_MAG_${PRJ}_${dom[$i]}_$DATAID.ncf
setenv PFTS16  $INPDIR/PFT_MAG_${PRJ}_${dom[$i]}_$DATAID.ncf
setenv MGNERS $INTDIR/ER.$DATAID.$GDNAM3D2.${SDATE}.ncf
set OUTPATH  = $OUTDIR/$MECHANISM
if ( ! -e $OUTPATH ) mkdir -p $OUTPATH
if ($SPCTONHR == 'Y' ) then
setenv MGNOUT $OUTPATH/MEGANv2.10.$DATAID.$GDNAM3D2.$MECHANISM.$SDATE.TONHR.ncf
else
setenv MGNOUT $OUTPATH/MEGANv2.10.$DATAID.$GDNAM3D2.$MECHANISM.$SDATE.moles.ncf
endif
if ( $RUN_SPECIATE == 'Y' ) then
   rm -f $MGNOUT
   if ($SPCTONHR == 'Y' ) then
   $EXE | tee $LOGDIR/log.run.$PROG.$DATAID.$GDNAM3D2.$MECHANISM.$SDATE.TONHR.txt
   else
   $EXE | tee $LOGDIR/log.run.$PROG.$DATAID.$GDNAM3D2.$MECHANISM.$SDATE.moles.txt
   endif
endif
@ JD++
end  # End while JD
```

# Appendix G-4

# SMOKE Input Files

| Environment Variable | Setting | Description |
|---|---|---|
| AGREF | $GE_DAT/gridding/amgref_us_2011platform_05jan2015_v8.txt_4km | |
| ATREF | $GE_DAT/temporal/amptref_general_2011platform_tref_6nov2014_05jan2015_v3 | |
| ATPRO_MONTHLY | $GE_DAT/temporal/amptpro_general_2011platform_tpro_monthly_6nov2014_06nov2014_v0 | Monthly Temporal Profiles for area sources |
| ATPRO_WEEKLY | $GE_DAT/temporal/amptpro_general_2011platform_tpro_weekly_6nov2014_13nov2014_v1 | Weekly Temporal Profiles for area sources |
| ATPRO_HOURLY | $GE_DAT/temporal/amptpro_general_2011platform_tpro_hourly_6nov2014_13nov2014_v1 | Hourly Temporal Profiles for area sources |
| ATPRO_HOURLY_NCF | $GE_DAT/temporal/Gentpro_TPRO_HOUR_HOURLY_BASH_NH3.agNH3_bash_2011ef_11g-newgent_smk36.ncf | Residential wood burning |
| GSREF | $GE_DAT/speciation/gsref_2011eh_v6_11g_05jan2015.txt | |
| GSPRO | $GE_DAT/speciation/gspro_cmaq_cb6_2011eh_cb6v2_v6_11g_28feb2015.txt | Speciation profiles |
| GSPRO_COMBO | $GE_DAT/speciation/gspro_combo_2010cdc_2010ef_nonpt_12nov2012_v0.txt | |
| PTREF | $GE_DAT/temporal/amptref_general_2011platform_tref_6nov2014_05jan2015_v3mag | |
| PTPRO_MONTHLY | $GE_DAT/temporal/amptpro_general_2011platform_tpro_monthly_6nov2014_06nov2014_v0mag | Monthly Temporal Profiles for point source |
| PTPRO_WEEKLY | $GE_DAT/temporal/amptpro_general_2011platform_tpro_weekly_6nov2014_13nov2014_v1mag | Weekly Temporal Profiles for point source |
| PTPRO_HOURLY | $GE_DAT/temporal/amptpro_general_2011platform_tpro_hourly_6nov2014_13nov2014_v1mag | Hourly Temporal Profiles for point source |
| PELVCONFIG | $GE_DAT/point/pelvconfig_inline_20m_13nov2012_v0.txt | |
| INVTABLE | $GE_DAT/invtable_2011v2_platform_cb6_integrate_16dec2014_v0.txt | AREA |
| INVTABLE | $GE_DAT/invtable_hapcap_cb05_no_bafm_12nov2014_v8.txt | NONROAD and POINT |
| GSCNV | $GE_DAT/speciation/gscnv_cmaq_cb6_2011eh_cb6v2_v6_11g_nf.txt | |
| PSTK | $GE_DAT/point/pstk_20nov2006_v0.txt | |
| DAY_SPECIFIC_YN | Y | Area, nonroad, c1c2rail, wildfire, ptnonipm |
| HOUR_SPECIFIC_YN | Y | Airport |
| POLLUTANT_CONVERSION | Y | |
| RUN_SMKINVEN | Y | |
| RUN_SPCMAT | Y | |
| RUN_GRDMAT | Y | |
| RUN_TEMPORAL | Y | |
| RUN_SMKMERGE | Y | |
| RUN_SMKREPORT | Y | |
| FILL_ANNUAL | Y | nonroad |
| RAW_DUP_CHECK | N | |
| NONHAP_TYPE | TOG | |

# Appendix G-5

# WRF Input Files

## WPS Name List

```
&share
 wrf_core = 'ARW',
 max_dom = 3,
 start_date = START_TIME,START_TIME,START_TIME,START_TIME,
 end_date   = END_TIME,END_TIME,END_TIME,END_TIME,
 interval_seconds = INTERVALS
 io_form_geogrid = 2,
/

&geogrid
 parent_id         =   1,    1,    2,  3,
 parent_grid_ratio =   1,    3,    3,  3,
 i_parent_start    =   1,   24,   51, 28,
 j_parent_start    =   1,   21,   39, 26,
 e_we              = 142,  124,   67, 67,
 e_sn              = 104,   97,   55, 55,
 geog_data_res     = GEOG,GEOG,GEOG
 dx = 36000,
 dy = 36000,
 map_proj = 'lambert',
 ref_lat   =  34.00,
 ref_lon   = -111.00,
 truelat1  =  33.0,
 truelat2  =  45.0,
 stand_lon = -111.0,
 ref_x     = 47.0,
 ref_y     = 38.33,
 geog_data_path = '/data/samba/fliu/WPS/geog'
/
&ungrib
 out_format = 'WPS',
 prefix = 'AWIP',
/

&metgrid
 fg_name = 'AWIP'
 io_form_metgrid = 2,
/
```

WPS Job File

```
#! /bin/csh -f
set landuseID    = NLCD            #MAG # MODIS   #MODIS2USGS  #MAG this is for the year after 2008
if ($landuseID == USGS ) then
set geogres      = 30s
else if ($landuseID == MODIS ) then
set geogres      = modis_30s+30s
else if ($landuseID == MAG ) then
set geogres      = mag_30s
else if ($landuseID == NLCD ) then
 set geogres      = nlcd2011_9s
# set geogres      = modis_15s
endif

set RawDataID    = GRIB1
set RawDataBase  = ( RUC  AWIP  NAM   )
set RawFrequency = ( 3600 10800 21600 )
set RawDataEndh  = ( 23   21    18    )
set RawDataUsed  = 2
set InitialID    = $RawDataBase[$RawDataUsed]

@ nr = 1
if ($nr == 1 ) then
set year  = 2011
set begm  = 04
set endm  = 10
set begd  = 20
set endd  = 02
set begh  = 00
```

```
set endh  = 21
else if ($nr == 2 ) then
set year  = 2009
set begm  = 04
set endm  = 05
set begd  = 20
set endd  = 01
set begh  = 00
set endh  = 21
#set endh  = 21 # for interval 10800, 3hours
else if ($nr == 3 ) then
set year  = 2012
set begm  = 04
set endm  = 10
set begd  = 20
set endd  = 05
set begh  = 00
set endh  = 21

endif

set DataID = AWIP #NARR
rm Vtable

if ($year == 2012 || $year == 2011 || $year == 2009 ) then
ln -fs ungrib/Variable_Tables/Vtable.$DataID Vtable
set INTERVALS = 10800
else if ($year == 2014 ) then
set INTERVALS = 21600
ln -fs ungrib/Variable_Tables/Vtable.NAM Vtable #data after Jan. 2013 according to WRFhelp
endif

set DataPath     = /data/samba/ozsip/mod/wrf/wps/$DataID/$year
set DataInDir    = $DataPath/inp
set DataOutDir   = $DataPath/out
set Intermediate = $DataOutDir/intermediate
set Metdata      = $DataOutDir/metgrid
set Geogrid      = $DataOutDir/geogrid
set Logdata      = $DataOutDir/logfile
if ( ! -d "$Intermediate" ) mkdir -p $Intermediate
if ( ! -d "$Metdata"      ) mkdir -p $Metdata
if ( ! -d "$Geogrid"      ) mkdir -p $Geogrid
if ( ! -d "$Logdata"      ) mkdir -p $Logdata

if ($DataID == AWIP ) then
./link_grib.csh $DataInDir/$year
else if ($DataID == NARR ) then
./link_grib.csh $DataInDir/rr-fixd.grb
endif

set START_TIME = ${year}-${begm}-${begd}_${begh}:00:00
set END_TIME   = ${year}-${endm}-${endd}_${endh}:00:00
cp ./namelist.wps.mag.$DataID namelist.wps.temp01
sed -e "s/START_TIME/'${START_TIME}'/g"       namelist.wps.temp01 >& namelist.wps.temp02
sed -e "s/END_TIME/'${END_TIME}'/g"           namelist.wps.temp02 >& namelist.wps.temp01
sed -e "s/INTERVALS/$INTERVALS/g"         namelist.wps.temp01 >& namelist.wps.temp02
sed -e "s/GEOG/'$geogres'/g"                  namelist.wps.temp02 >& namelist.wps

rm namelist.wps.temp01 namelist.wps.temp02
#./geogrid.exe
./ungrib.exe
mpirun -n 8 ./metgrid.exe
mv met_em.d0*     $Metdata
mv ${DataID}:*    $Intermediate
mv geogrid.log    $Logdata/geogrid.log.$year
mv ungrib.log     $Logdata/ungrib.log.$year
mv metgrid.log.*  $Logdata/
#mv geo_em.d0*     $Geogrid
mv namelist.wps   $Logdata/namelist.wps.$year
/bin/rm GRIBFILE.*
exit
```

## WRF Name List

```
&time_control
run_days                            = 1,
run_hours                           = 12,
run_minutes                         = 0,
run_seconds                         = 0,
start_year                          = 2011,  2011,  2011,  2011,
start_month                         = 09, 09, 09, 09,
start_day                           = 30,   30,   30,   30,
start_hour                          = 12,  12,  12,  12,
start_minute                        = 00,   00,   00,   00,
start_second                        = 00,   00,   00,   00,
end_year                            = 2011, 2011, 2011, 2011,
end_month                           = 10,  10,  10,  10,
end_day                             = 02,    02,    02,    02,
end_hour                            = 00,   00,   00,   00,
interval_seconds                    = 10800,
input_from_file                     = .true.,.true.,.true., .true.,
history_interval                    = 60,  60,   60,  60,
frames_per_outfile                  = 12,  12,   12,  12,
auxinput11_interval_s               = 180, 180, 180, 180,
auxinput11_end_h                    = 6, 6, 6, 6,
restart                             = .false.,
restart_interval                    = 14400,
io_form_history                     = 2
io_form_restart                     = 2
io_form_input                       = 2
io_form_boundary                    = 2
debug_level                         = 0
/

&domains
time_step                           = 180,
time_step_fract_num                 = 0,
time_step_fract_den                 = 1,
max_dom                             = 3,
e_we = 142, 124, 67, 67,
e_sn = 104,  97, 55, 55,
e_vert                              = 24,   24,   24,    24,
eta_levels                          = 1.000, 0.995, 0.990, 0.985, 0.980, 0.970,
                                      0.960, 0.950, 0.940, 0.920, 0.900, 0.880,
                                      0.860, 0.820, 0.770, 0.700, 0.650, 0.600,
                                      0.550, 0.500, 0.450, 0.250, 0.050, 0.000,
p_top_requested                     = 10000,
num_metgrid_levels                  = 27,
num_metgrid_soil_levels             = 4,
dx                                  = 36000,  12000,  4000, 1333.333
dy                                  = 36000,  12000,  4000, 1333.333
grid_id                             = 1,     2,     3,   4,
parent_id                           = 0,     1,     2,   3,
i_parent_start = 1, 24, 51, 28,
j_parent_start = 1, 21, 39, 26,
parent_grid_ratio                   = 1,     3,     3,   3,
parent_time_step_ratio              = 1,     3,     3,   3,
feedback                            = 1,
smooth_option                       = 0
nproc_x                             = -1
nproc_y                             = -1
/

&physics
mp_physics                          = 4,     8,     8,   8,
ra_lw_physics                       = 1,     1,     1,   1,
ra_sw_physics                       = 2,     2,     2,   2,
radt                                = 30,    15,    10,  10,
sf_sfclay_physics                   = 1,     1,     1,   1,
sf_surface_physics                  = 2,     2,     2,   2,
bl_pbl_physics                      = 11,    11,    11,  11,
bldt                                = 0,     0,     0,   0,
cu_physics                          = 16,    16,     0,   0,
```

```
cudt                                = 5,     5,     5,   5,
isfflx                              = 1,
ifsnow                              = 0,
icloud                              = 3,
surface_input_source                = 1,
num_land_cat                        = 40,
num_soil_layers                     = 4,
sf_urban_physics                    = 0,     0,     0,   0,
mp_zero_out                         = 2,
mp_zero_out_thresh                  = 1.e-8,
maxiens                             = 1,
mp_zero_out_thresh                  = 1.e-8,
maxiens                             = 1,
maxens                              = 3,
maxens2                             = 3,
maxens3                             = 16,
ensdim                              = 144,
/

&fdda
grid_fdda                           = 1,     1,     1,   1,
gfdda_inname                        = "wrffdda_d<domain>",
gfdda_end_h                         =  36,   36,   36,  36,
gfdda_interval_m                    = 180,  180,  180, 180,
fgdt                                = 0,     0,     0,   0,
if_no_pbl_nudging_uv                = 1,     1,     0,   0,
if_no_pbl_nudging_t                 = 1,     1,     0,   0,
if_no_pbl_nudging_q                 = 1,     1,     0,   0,
if_zfac_uv                          = 1,     1,     1,   1,
 k_zfac_uv                          = 13,   13,    13,  13,
if_zfac_t                           = 1,     1,     1,   1,
 k_zfac_t                           = 13,   13,    13,  13,
if_zfac_q                           = 1,     1,     1,   1,
 k_zfac_q                           = 13,   13,    13,   13,
guv                                 = 0.0003,     0.0003,     0.0003,    0.0003,
gt                                  = 0.0003,     0.0003,     0.0003,    0.0003,
gq                                  = 0.0003,     0.0003,     0.0003,    0.0003,
if_ramping                          = 1,
dtramp_min                          = 60.0,
/

&dynamics
rk_ord                              = 3,
w_damping                           = 1,
diff_opt                            = 1,
km_opt                              = 4,
diff_6th_opt                        = 0,     0,    0,     0,
diff_6th_factor                     = 0.12,  0.12, 0.12,  0.12,
base_temp                           = 290.
damp_opt                            = 1,
zdamp                               = 5000.,  5000.,   5000.,  5000.,
dampcoef                            = 0.01,    0.01,    0.01,   0.01,
khdif                               = 0,      0,      0,    0,
kvdif                               = 0,      0,      0,    0,
non_hydrostatic                     = .true., .true., .true., .true.,
moist_adv_opt                       = 1,      1,      1,    1,
scalar_adv_opt                      = 1,      1,      1,    1,
use_baseparam_fr_nml                = .true.,
tke_adv_opt                         = 2,      0,       0,   0,

/

&bdy_control
spec_bdy_width                      = 5,
spec_zone                           = 1,
relax_zone                          = 4,
specified                           = .true., .false.,.false., .false.,
nested                              = .false., .true., .true., .true.,
/

&grib2
/
```

```
&chem
kemit                               = 19,
chem_opt                            =  0,        0,    0,    0,
bioemdt                             = 30,       30,   30,   30,
photdt                              = 30,       30,   30,   30,
chemdt                              = 2.,       2.,   2.,   2.,
frames_per_emissfile                = 25,
emi_inname                          = "wrfchemi_d<domain>_<date>",
io_style_emissions                  = 2,
emiss_inpt_opt                      = 1,        1,    1,    1,
emiss_opt                           = 3,        3,    3,    3,
chem_in_opt                         = 0,        0,    0,    0,
phot_opt                            = 1,        1,    1,    1,
drydep_opt                          = 1,        1,    1,    1,
bio_emiss_opt                       = 1,        1,    1,    1,
dust_opt                            = 0,
dmsemis_opt                         = 0,
seas_opt                            = 0,
dmsemis_opt                         = 0,
seas_opt                            = 0,
gas_bc_opt                          = 1,        1,    1,    1,
gas_ic_opt                          = 1,        1,    1,    1,
aer_bc_opt                          = 1,        1,    1,    1,
aer_ic_opt                          = 1,        1,    1,    1,
gaschem_onoff                       = 1,        1,    1,    1,
aerchem_onoff                       = 1,        1,    1,    1,
wetscav_onoff                       = 0,        0,    0,    0,
cldchem_onoff                       = 0,        0,    0,    0,
vertmix_onoff                       = 1,        1,    1,    1,
chem_conv_tr                        = 1,        1,    1,    1,
biomass_burn_opt                    = 0,        0,    0,    0,
plumerisefire_frq                   = 30,       30,   30,  30,
aer_ra_feedback                     = 0,        0,    0,    0,
have_bcs_chem                       = .false., .false.,.false., .false.,
/

&namelist_quilt
nio_tasks_per_group = 0,
nio_groups = 1,
/
```

## WRF Job Script File

```
#! /bin/csh -f
set DomID       = d3.mag.new       #d3.mag
set ModelVN     = WRF3.7           #WRF3.3.1
set paralleID   = dmpar            #smpar #dm2sm
set Ndomain     = `echo $DomID|cut -c2`
set MPd01       = 4                #WSM5 Hong, Dudhia and Chen (2004, MWR) 2004
set MPd02       = 8                #Thompson, Field, Rasmussen and Hall (2008,MWR 2009)
set CaseID      = EPISODES         #STORM            #SWS          #EPISODES     # PM10
set DataID      = NARR             #AWIP is ds609.2, NARR is ds608.0
set EtaLevels   = 24               #71
set landuseID   = NLCD             # MAG or MODIS2USGS or NLCD
if ($landuseID == USGS || $landuseID == MAG || $landuseID == MODIS2USGS ) then
set LANDUSECAT  = 24
else if ($landuseID == MODIS ) then
set LANDUSECAT  = 20
else if ($landuseID == NLCD) then
set LANDUSECAT  = 40
endif
 set ModelID     = $ModelVN
@ nr = 1     #CASENUMBER
set year   = 2011
set nday   = 162
set mo     = ( 04 04 04 04 04 04 04 \
05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 05 \
06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 06 \
07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 07 \
08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 08 \
09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 09 \
10 10 10 10 )
set dy     = ( 24 25 26 27 28 29 30 \
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 \
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 \
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 \
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 \
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 \
01 02 03 04 )
set DataPath    = /data/samba/ozsip/mod/wrf
set DataInDir   = $DataPath/wps/$DataID/$year/out/metgrid
set DataOutDir  = $DataPath/${ModelID}.${year}
set DataSimDir  = $DataOutDir/Sim
set DataSpinDir = $DataSimDir/Spin
set DataLogDir  = $DataOutDir/Log
set RealLogDir  = $DataLogDir/rs4real
set WRFLogDir   = $DataLogDir/rs4wrf
set DataRstDir  = $DataOutDir/Rst
set DataInlDir  = $DataOutDir/Inl
set DataFddDir  = $DataOutDir/Fdd
set DataEvlDir  = $DataOutDir/Evl
set DataFigDir  = $DataOutDir/Fig
if (! -d "$DataSpinDir") mkdir -p $DataSpinDir
if (! -d "$RealLogDir")  mkdir -p $RealLogDir
if (! -d "$WRFLogDir" )  mkdir -p $WRFLogDir
if (! -d "$DataRstDir")  mkdir -p $DataRstDir
if (! -d "$DataInlDir")  mkdir -p $DataInlDir
if (! -d "$DataFddDir")  mkdir -p $DataFddDir
if (! -d "$DataEvlDir")  mkdir -p $DataEvlDir
if (! -d "$DataFigDir")  mkdir -p $DataFigDir
set WRFDATAFILE = `ls $DataInDir/`
foreach metfile ($WRFDATAFILE)
ln -sf $DataInDir/$metfile $metfile
end
@ i = 1
while ( $i <= $nday )
@ j = $i + 2   #if starth .ge. 12, otherwise j = $i + 1
cp namelist.wrf.d4.mag.new.$DataID ./namelist.temp
set startm  = $mo[$i]
set startd  = $dy[$i]
set endm    = $mo[$j]
set endd    = $dy[$j]
```

```
set runday  = 1
set runhour = 12
set starth  = 12
set endh    = 00
set month   = $mo[$i]
sed -e "s/WRF_RUN_DAYS/$runday/g"    namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_RUN_HOURS/$runhour/g"  namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_START_YEAR/$year/g"    namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_START_YEAR/$year/g"    namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_START_MONTH/$startm/g" namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_START_DAY/$startd/g"   namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_START_HOUR/$starth/g"  namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_END_MONTH/$endm/g"     namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_END_DAY/$endd/g"       namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/WRF_END_HOUR/$endh/g"      namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/LANDUSECAT/$LANDUSECAT/g"  namelist.temp >& namelist.input
mv namelist.input namelist.temp
if ($EtaLevels <= 30 ) then
sed -e "s/TIMESTEP/180/g"            namelist.temp >& namelist.input
else
sed -e "s/TIMESTEP/60/g"             namelist.temp >& namelist.input
endif
mv namelist.input namelist.temp
sed -e "s/DOMAIN_NUMBER/$Ndomain/g"  namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/MPd01/$MPd01/g"           namelist.temp >& namelist.input
mv namelist.input namelist.temp
sed -e "s/MPd02/$MPd02/g"           namelist.temp >& namelist.input

mpirun -machinefile machines -np 16 ./real.exe
mv rsl.*     $RealLogDir
mpirun -machinefile machines -np 96 ./wrf.exe
if ($i > 1 ) then   #leave the first run at the Sim dir for post processing
@ dm = 1
while ($dm <= $Ndomain )
mv wrfout_d0${dm}_${year}-${month}-${dy[$i]}_12:00:00   $DataSpinDir
@ dm++
end
endif
mv wrfout_d0*    $DataSimDir
mv wrfinput_d0*  $DataInlDir
mv wrfbdy_d01    $DataInlDir
mv wrffdda_d0*   $DataFddDir
mv rsl.*         $WRFLogDir
@ i++
end
rm namelist.temp met_em.d0*
mv namelist.output $DataLogDir
mv namelist.input  $DataLogDir
#cp go.wrf          $DataLogDir
cd $DataSimDir
chfilname2nc24     # change the file name for plot which uses the netCDF file with Ext ".nc"
cd -
exit
```

Appendix G-6

CAMx Input Files

This section contains sample CAMx input files used for modeling years 2011 and 2017.

## CAMx Input for 2011 (36 km)

```
 &CAMx_Control

 Run_Message      = 'CAMx 6.20 -- Mech2 NONE CB6 mod.cmx.36km',

!--- Model clock control ---

 Time_Zone        = 7,                 ! (0=UTC,5=EST,6=CST,7=MST,8=PST)
 Restart          = .false.,
 Start_Date_Hour  = 2011,08,01,0000,   ! (YYYY,MM,DD,HHmm)
 End_Date_Hour    = 2011,08,01,2400,   ! (YYYY,MM,DD,HHmm)

 Maximum_Timestep    = 15.,            ! minutes
 Met_Input_Frequency = 60.,            ! minutes
 Ems_Input_Frequency = 60.,            ! minutes
 Output_Frequency    = 60.,            ! minutes

!--- Map projection parameters ---

 Map_Projection           = 'LAMBERT',  ! (LAMBERT,POLAR,UTM,LATLON)
 UTM_Zone                 = 0,
 POLAR_Longitude_Pole     = 0.,        ! deg (west<0,south<0)
 POLAR_Latitude_Pole      = 0.,        ! deg (west<0,south<0)
 LAMBERT_Central_Meridian = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Longitude = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Latitude  =  33.355,   ! deg (west<0,south<0)
 LAMBERT_True_Latitude1   =  45.,      ! deg (west<0,south<0)
 LAMBERT_True_Latitude2   =  33.,      ! deg (west<0,south<0)

!--- Parameters for the master (first) grid ---

 Number_of_Grids      = 1,
 Master_Origin_XCoord = -1565.999,     ! km or deg, SW corner of cell(1,1)
 Master_Origin_YCoord = -1182.252,     ! km or deg, SW corner of cell (1,1)
 Master_Cell_XSize    = 36.,           ! km or deg
 Master_Cell_YSize    = 36.,           ! km or deg
 Master_Grid_Columns  = 135,
 Master_Grid_Rows     = 97,
 Number_of_Layers     = 23,

!--- Model options ---

 Diagnostic_Error_Check = .false.,     ! True = will stop after 1st timestep
 Advection_Solver       = 'PPM',       ! (PPM,BOTT)
 Chemistry_Solver       = 'EBI',       ! (EBI,IEH,LSODE)
 PiG_Submodel           = 'GREASD',    ! (None,GREASD,IRON)
 Probing_Tool           = 'None',      ! (None,OSAT,GOAT,APCA,PSAT,DDM,PA,RTRAC)
 Drydep_Model           = 'ZHANG03',   ! (None,WESELY89,ZHANG03)
 Chemistry              = .true.,
 Wet_Deposition         = .true.,
 ACM2_Diffusion         = .false.,
 Super_Stepping         = .true.,
 Gridded_Emissions      = .true.,
 Point_Emissions        = .true.,
 Ignore_Emission_Dates  = .true.,
 Flexi_Nest             = .false.,

!--- Output specifications ---

 Root_Output_Name         = '/data/samba/ozsip/mod/cmx/out/2011/rev/mod.cmx.36km.20110801',
 Average_Output_3D        = .false.,
 Output_3D_Grid           = .true.,
 Output_Species_Names(1)  = 'BZO2',
 Output_Species_Names(2)  = 'C2O3',
 Output_Species_Names(3)  = 'CRO',
 Output_Species_Names(4)  = 'CXO3',
 Output_Species_Names(5)  = 'EPX2',
 Output_Species_Names(6)  = 'HCO3',
 Output_Species_Names(7)  = 'HO2',
 Output_Species_Names(8)  = 'ISO2',
 Output_Species_Names(9)  = 'MEO2',
 Output_Species_Names(10) = 'O',
 Output_Species_Names(11) = 'O1D',
 Output_Species_Names(12) = 'OH',
 Output_Species_Names(13) = 'OPO3',
 Output_Species_Names(14) = 'RO2',
 Output_Species_Names(15) = 'ROR',
 Output_Species_Names(16) = 'TO2',
 Output_Species_Names(17) = 'XLO2',
 Output_Species_Names(18) = 'XO2',
```

```
 Output_Species_Names(19) = 'XO2H',
 Output_Species_Names(20) = 'XO2N',
 Output_Species_Names(21) = 'AACD',
 Output_Species_Names(22) = 'ACET',
 Output_Species_Names(23) = 'ALD2',
 Output_Species_Names(24) = 'ALDX',
 Output_Species_Names(25) = 'BENZ',
 Output_Species_Names(26) = 'CAT1',
 Output_Species_Names(27) = 'CO',
 Output_Species_Names(28) = 'CRES',
 Output_Species_Names(29) = 'CRON',
 Output_Species_Names(30) = 'EPOX',
 Output_Species_Names(31) = 'ETH',
 Output_Species_Names(32) = 'ETHA',
 Output_Species_Names(33) = 'ETHY',
 Output_Species_Names(34) = 'ETOH',
 Output_Species_Names(35) = 'FACD',
 Output_Species_Names(36) = 'FORM',
 Output_Species_Names(37) = 'GLY',
 Output_Species_Names(38) = 'GLYD',
 Output_Species_Names(39) = 'H2O2',
 Output_Species_Names(40) = 'HNO3',
 Output_Species_Names(41) = 'HONO',
 Output_Species_Names(42) = 'HPLD',
 Output_Species_Names(43) = 'INTR',
 Output_Species_Names(44) = 'IOLE',
 Output_Species_Names(45) = 'ISOP',
 Output_Species_Names(46) = 'ISPD',
 Output_Species_Names(47) = 'ISPX',
 Output_Species_Names(48) = 'KET',
 Output_Species_Names(49) = 'MEOH',
 Output_Species_Names(50) = 'MEPX',
 Output_Species_Names(51) = 'MGLY',
 Output_Species_Names(52) = 'N2O5',
 Output_Species_Names(53) = 'NO',
 Output_Species_Names(54) = 'NO2',
 Output_Species_Names(55) = 'NO3',
 Output_Species_Names(56) = 'NTR1',
 Output_Species_Names(57) = 'NTR2',
 Output_Species_Names(58) = 'O3',
 Output_Species_Names(59) = 'OLE',
 Output_Species_Names(60) = 'OPAN',
 Output_Species_Names(61) = 'OPEN',
 Output_Species_Names(62) = 'PACD',
 Output_Species_Names(63) = 'PAN',
 Output_Species_Names(64) = 'PANX',
 Output_Species_Names(65) = 'PAR',
 Output_Species_Names(66) = 'PNA',
 Output_Species_Names(67) = 'PRPA',
 Output_Species_Names(68) = 'ROOH',
 Output_Species_Names(69) = 'SO2',
 Output_Species_Names(70) = 'SULF',
 Output_Species_Names(71) = 'TERP',
 Output_Species_Names(72) = 'TOL',
 Output_Species_Names(73) = 'XOPN',
 Output_Species_Names(74) = 'XYL',
 Output_Species_Names(75) = 'ECH4',
 Pig_Sampling_Grid    = .false.,
!--- Input files ---

 Chemistry_Parameters = '/data/samba/ozsip/mod/cmx/inp/CAMx6.2.chemparam.2_NONE',
 Photolyis_Rates      = '/data/samba/ozsip/mod/cmx/inp/tuv/2011/v01/pre.tuv.do.cb6.36km.20110801.txt',
 Ozone_Column         = '/data/samba/ozsip/mod/cmx/inp/o3map/2011/v01/pre.o3m.36km.20110801.txt',
 Initial_Conditions   = '/data/samba/ozsip/mod/cmx/inp/icbc/2011/v02/pre.moz.ic.cb6.36km.20110501.bin',
 Boundary_Conditions  = '/data/samba/ozsip/mod/cmx/inp/icbc/2011/v02/pre.moz.bc.cb6.36km.20110801.bin',
 Top_Concentrations   = ' ',
 Point_Sources        = '/data/samba/ozsip/mod/cmx/inp/emis/2011/fnl/pre.smk.pnt.36km.20110801.bin',
 Master_Grid_Restart  = '/data/samba/ozsip/mod/cmx/out/2011/rev/mod.cmx.36km.20110731.inst',
 PiG_Restart          = '/data/samba/ozsip/mod/cmx/out/2011/rev/mod.cmx.36km.20110731.pig',

 Surface_Grid(1) = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.lu.36km.20110801.bin',
 Met3D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.3d.36km.20110801.bin',
 Met2D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.2d.36km.20110801.bin',
 Vdiff_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.kv.36km.20110801.bin.CMAQ',
 Cloud_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.cr.36km.20110801.bin',
 Emiss_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/emis/2011/rev/pre.smk.ems.36km.20110801.bin',

 /
!------------------------------------------------------------------------------
```

## CAMx Input for 2011 (12 & 4 km)

```
 &CAMx_Control

 Run_Message      = 'CAMx 6.20 -- Mech2 NONE CB6 mod.cmx.12km',

!--- Model clock control ---

 Time_Zone        = 7,                ! (0=UTC,5=EST,6=CST,7=MST,8=PST)
 Restart          = .false.,
 Start_Date_Hour  = 2011,08,01,0000,   ! (YYYY,MM,DD,HHmm)
 End_Date_Hour    = 2011,08,01,2400,   ! (YYYY,MM,DD,HHmm)

 Maximum_Timestep    = 15.,            ! minutes
 Met_Input_Frequency = 60.,            ! minutes
 Ems_Input_Frequency = 60.,            ! minutes
 Output_Frequency    = 60.,            ! minutes

!--- Map projection parameters ---

 Map_Projection           = 'LAMBERT',  ! (LAMBERT,POLAR,UTM,LATLON)
 UTM_Zone                 = 0,
 POLAR_Longitude_Pole     = 0.,        ! deg (west<0,south<0)
 POLAR_Latitude_Pole      = 0.,        ! deg (west<0,south<0)
 LAMBERT_Central_Meridian = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Longitude = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Latitude  =  33.355,   ! deg (west<0,south<0)
 LAMBERT_True_Latitude1   =  45.,      ! deg (west<0,south<0)
 LAMBERT_True_Latitude2   =  33.,      ! deg (west<0,south<0)

!--- Parameters for the master (first) grid ---

 Number_of_Grids      = 2,
 Master_Origin_XCoord = -786.000,     ! km or deg, SW corner of cell(1,1)
 Master_Origin_YCoord = -510.252,     ! km or deg, SW corner of cell (1,1)
 Master_Cell_XSize    = 12.,           ! km or deg
 Master_Cell_YSize    = 12.,           ! km or deg
 Master_Grid_Columns  = 113,
 Master_Grid_Rows     = 86,
 Number_of_Layers     = 23,

!--- Parameters for the second grid ---

 Nest_Meshing_Factor(2) = 3,           ! Cell size relative to master grid
 Nest_Beg_I_Index(2)    = 48,          ! Relative to master grid
 Nest_End_I_Index(2)    = 65,          ! Relative to master grid
 Nest_Beg_J_Index(2)    = 36,          ! Relative to master grid
 Nest_End_J_Index(2)    = 49,          ! Relative to master grid

!--- Model options ---

 Diagnostic_Error_Check = .false.,     ! True = will stop after 1st timestep
 Advection_Solver       = 'PPM',       ! (PPM,BOTT)
 Chemistry_Solver       = 'EBI',       ! (EBI,IEH,LSODE)
 PiG_Submodel           = 'GREASD',    ! (None,GREASD,IRON)
 Probing_Tool           = 'None',      ! (None,OSAT,GOAT,APCA,PSAT,DDM,PA,RTRAC)
 Drydep_Model           = 'ZHANG03',   ! (None,WESELY89,ZHANG03)
 Chemistry              = .true.,
 Wet_Deposition         = .true.,
 ACM2_Diffusion         = .false.,
 Super_Stepping         = .true.,
 Gridded_Emissions      = .true.,
 Point_Emissions        = .true.,
 Ignore_Emission_Dates  = .true.,
 Flexi_Nest             = .false.,

!--- Output specifications ---

 Root_Output_Name         = '/data/samba/ozsip/mod/cmx/out/2011/rev/mod.cmx.12km.20110801',
 Average_Output_3D        = .false.,
 Output_3D_Grid           = .false.,
 Output_Species_Names(1)  = 'ACET',
 Output_Species_Names(2)  = 'ALD2',
 Output_Species_Names(3)  = 'ALDX',
 Output_Species_Names(4)  = 'BENZ',
 Output_Species_Names(5)  = 'CO',
 Output_Species_Names(6)  = 'ETH',
 Output_Species_Names(7)  = 'ETHA',
 Output_Species_Names(8)  = 'ETHY',
 Output_Species_Names(9)  = 'ETOH',
 Output_Species_Names(10) = 'FORM',
```

```
 Output_Species_Names(11) = 'HNO3',
 Output_Species_Names(12) = 'HONO',
 Output_Species_Names(13) = 'IOLE',
 Output_Species_Names(14) = 'ISOP',
 Output_Species_Names(15) = 'KET',
 Output_Species_Names(16) = 'MEOH',
 Output_Species_Names(17) = 'NO',
 Output_Species_Names(18) = 'NO2',
 Output_Species_Names(19) = 'O3',
 Output_Species_Names(20) = 'OLE',
 Output_Species_Names(21) = 'PAN',
 Output_Species_Names(22) = 'PAR',
 Output_Species_Names(23) = 'PRPA',
 Output_Species_Names(24) = 'SO2',
 Output_Species_Names(25) = 'SULF',
 Output_Species_Names(26) = 'TERP',
 Output_Species_Names(27) = 'TOL',
 Output_Species_Names(28) = 'XYL',

!--- Input files ---

 Chemistry_Parameters = '/data/samba/ozsip/mod/cmx/inp/CAMx6.2.chemparam.2_NONE',
 Photolyis_Rates      = '/data/samba/ozsip/mod/cmx/inp/tuv/2011/v01/pre.tuv.do.cb6.12km.20110801.txt',
 Ozone_Column         = '/data/samba/ozsip/mod/cmx/inp/o3map/2011/v01/pre.o3m.12km.20110801.txt',
 Initial_Conditions   = '/data/samba/ozsip/mod/cmx/inp/icbc/2011/rev/pre.cmx.ic.cb6.12km.20110801.bin',
 Boundary_Conditions  = '/data/samba/ozsip/mod/cmx/inp/icbc/2011/rev/pre.cmx.bc.cb6.12km.20110801.bin',
 Top_Concentrations   = ' ',
 Point_Sources        = '/data/samba/ozsip/mod/cmx/inp/emis/2011/fnl/pre.smk.pnt.12km.20110801.bin',
 Master_Grid_Restart  = '/data/samba/ozsip/mod/cmx/out/2011/rev/mod.cmx.12km.20110731.inst',
 Nested_Grid_Restart  = '/data/samba/ozsip/mod/cmx/out/2011/rev/mod.cmx.12km.20110731.finst',
 PiG_Restart          = '/data/samba/ozsip/mod/cmx/out/2011/rev/mod.cmx.12km.20110731.pig',

 Surface_Grid(1) = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.lu.12km.20110801.bin',
 Met2D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.2d.12km.20110801.bin',
 Met3D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.3d.12km.20110801.bin',
 Vdiff_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.kv.12km.20110801.bin.CMAQ',
 Cloud_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.cr.12km.20110801.bin',
 Emiss_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/emis/2011/rev/pre.smk.ems.12km.20110801.bin',

 Surface_Grid(2) = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.lu.04km.20110801.bin',
 Met2D_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.2d.04km.20110801.bin',
 Met3D_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.3d.04km.20110801.bin',
 Vdiff_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.kv.04km.20110801.bin.CMAQ',
 Cloud_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.cr.04km.20110801.bin',
 Emiss_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/emis/2011/rev/pre.smk.ems.04km.20110801.bin',

 /
!------------------------------------------------------------------------------
```

## CAMx Input for 2017 (36 km)

```
 &CAMx_Control

 Run_Message      = 'CAMx 6.20 -- Mech2 NONE CB6 mod.cmx.36km',

!--- Model clock control ---

 Time_Zone        = 7,                 ! (0=UTC,5=EST,6=CST,7=MST,8=PST)
 Restart          = .false.,
 Start_Date_Hour  = 2011,08,01,0000,   ! (YYYY,MM,DD,HHmm)
 End_Date_Hour    = 2011,08,01,2400,   ! (YYYY,MM,DD,HHmm)

 Maximum_Timestep    = 15.,            ! minutes
 Met_Input_Frequency = 60.,            ! minutes
 Ems_Input_Frequency = 60.,            ! minutes
 Output_Frequency    = 60.,            ! minutes

!--- Map projection parameters ---

 Map_Projection           = 'LAMBERT', ! (LAMBERT,POLAR,UTM,LATLON)
 UTM_Zone                 = 0,
 POLAR_Longitude_Pole     = 0.,        ! deg (west<0,south<0)
 POLAR_Latitude_Pole      = 0.,        ! deg (west<0,south<0)
 LAMBERT_Central_Meridian = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Longitude = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Latitude  =  33.355,   ! deg (west<0,south<0)
 LAMBERT_True_Latitude1   =  45.,      ! deg (west<0,south<0)
 LAMBERT_True_Latitude2   =  33.,      ! deg (west<0,south<0)

!--- Parameters for the master (first) grid ---

 Number_of_Grids      = 1,
 Master_Origin_XCoord = -1565.999,     ! km or deg, SW corner of cell(1,1)
 Master_Origin_YCoord = -1182.252,     ! km or deg, SW corner of cell (1,1)
 Master_Cell_XSize    = 36.,           ! km or deg
 Master_Cell_YSize    = 36.,           ! km or deg
 Master_Grid_Columns  = 135,
 Master_Grid_Rows     = 97,
 Number_of_Layers     = 23,

!--- Model options ---

 Diagnostic_Error_Check = .false.,     ! True = will stop after 1st timestep
 Advection_Solver       = 'PPM',       ! (PPM,BOTT)
 Chemistry_Solver       = 'EBI',       ! (EBI,IEH,LSODE)
 PiG_Submodel           = 'GREASD',    ! (None,GREASD,IRON)
 Probing_Tool           = 'None',      ! (None,OSAT,GOAT,APCA,PSAT,DDM,PA,RTRAC)
 Drydep_Model           = 'ZHANG03',   ! (None,WESELY89,ZHANG03)
 Chemistry              = .true.,
 Wet_Deposition         = .true.,
 ACM2_Diffusion         = .false.,
 Super_Stepping         = .true.,
 Gridded_Emissions      = .true.,
 Point_Emissions        = .true.,
 Ignore_Emission_Dates  = .true.,
 Flexi_Nest             = .false.,

!--- Output specifications ---

 Root_Output_Name         = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.36km.20110801',
 Average_Output_3D        = .false.,
 Output_3D_Grid           = .true.,
 Output_Species_Names(1)  = 'BZO2',
 Output_Species_Names(2)  = 'C2O3',
 Output_Species_Names(3)  = 'CRO',
 Output_Species_Names(4)  = 'CXO3',
 Output_Species_Names(5)  = 'EPX2',
 Output_Species_Names(6)  = 'HCO3',
 Output_Species_Names(7)  = 'HO2',
 Output_Species_Names(8)  = 'ISO2',
 Output_Species_Names(9)  = 'MEO2',
 Output_Species_Names(10) = 'O',
 Output_Species_Names(11) = 'O1D',
 Output_Species_Names(12) = 'OH',
 Output_Species_Names(13) = 'OPO3',
 Output_Species_Names(14) = 'RO2',
 Output_Species_Names(15) = 'ROR',
 Output_Species_Names(16) = 'TO2',
 Output_Species_Names(17) = 'XLO2',
 Output_Species_Names(18) = 'XO2',
```

```
 Output_Species_Names(19) = 'XO2H',
 Output_Species_Names(20) = 'XO2N',
 Output_Species_Names(21) = 'AACD',
 Output_Species_Names(22) = 'ACET',
 Output_Species_Names(23) = 'ALD2',
 Output_Species_Names(24) = 'ALDX',
 Output_Species_Names(25) = 'BENZ',
 Output_Species_Names(26) = 'CAT1',
 Output_Species_Names(27) = 'CO',
 Output_Species_Names(28) = 'CRES',
 Output_Species_Names(29) = 'CRON',
 Output_Species_Names(30) = 'EPOX',
 Output_Species_Names(31) = 'ETH',
 Output_Species_Names(32) = 'ETHA',
 Output_Species_Names(33) = 'ETHY',
 Output_Species_Names(34) = 'ETOH',
 Output_Species_Names(35) = 'FACD',
 Output_Species_Names(36) = 'FORM',
 Output_Species_Names(37) = 'GLY',
 Output_Species_Names(38) = 'GLYD',
 Output_Species_Names(39) = 'H2O2',
 Output_Species_Names(40) = 'HNO3',
 Output_Species_Names(41) = 'HONO',
 Output_Species_Names(42) = 'HPLD',
 Output_Species_Names(43) = 'INTR',
 Output_Species_Names(44) = 'IOLE',
 Output_Species_Names(45) = 'ISOP',
 Output_Species_Names(46) = 'ISPD',
 Output_Species_Names(47) = 'ISPX',
 Output_Species_Names(48) = 'KET',
 Output_Species_Names(49) = 'MEOH',
 Output_Species_Names(50) = 'MEPX',
 Output_Species_Names(51) = 'MGLY',
 Output_Species_Names(52) = 'N2O5',
 Output_Species_Names(53) = 'NO',
 Output_Species_Names(54) = 'NO2',
 Output_Species_Names(55) = 'NO3',
 Output_Species_Names(56) = 'NTR1',
 Output_Species_Names(57) = 'NTR2',
 Output_Species_Names(58) = 'O3',
 Output_Species_Names(59) = 'OLE',
 Output_Species_Names(60) = 'OPAN',
 Output_Species_Names(61) = 'OPEN',
 Output_Species_Names(62) = 'PACD',
 Output_Species_Names(63) = 'PAN',
 Output_Species_Names(64) = 'PANX',
 Output_Species_Names(65) = 'PAR',
 Output_Species_Names(66) = 'PNA',
 Output_Species_Names(67) = 'PRPA',
 Output_Species_Names(68) = 'ROOH',
 Output_Species_Names(69) = 'SO2',
 Output_Species_Names(70) = 'SULF',
 Output_Species_Names(71) = 'TERP',
 Output_Species_Names(72) = 'TOL',
 Output_Species_Names(73) = 'XOPN',
 Output_Species_Names(74) = 'XYL',
 Output_Species_Names(75) = 'ECH4',

!--- Input files ---

 Chemistry_Parameters = '/data/samba/ozsip/mod/cmx/inp/CAMx6.2.chemparam.2_NONE',
 Photolyis_Rates      = '/data/samba/ozsip/mod/cmx/inp/tuv/2011/v01/pre.tuv.do.cb6.36km.20110801.txt',
 Ozone_Column         = '/data/samba/ozsip/mod/cmx/inp/o3map/2011/v01/pre.o3m.36km.20110801.txt',
 Initial_Conditions   = '/data/samba/ozsip/mod/cmx/inp/icbc/2011/v02/pre.moz.ic.cb6.36km.20110501.bin',
 Boundary_Conditions  = '/data/samba/ozsip/mod/cmx/inp/icbc/2011/v02/pre.moz.bc.cb6.36km.20110801.bin',
 Top_Concentrations   = ' ',
 Point_Sources        = '/data/samba/ozsip/mod/cmx/inp/emis/2017/fnl/pre.smk.pnt.36km.20110801.bin',
 Master_Grid_Restart  = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.36km.20110731.inst',
 Nested_Grid_Restart  = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.36km.20110731.finst',
 PiG_Restart          = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.36km.20110731.pig',

 Surface_Grid(1) = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.lu.36km.20110801.bin',
 Met3D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.3d.36km.20110801.bin',
 Met2D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.2d.36km.20110801.bin',
 Vdiff_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.kv.36km.20110801.bin.CMAQ',
 Cloud_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.cr.36km.20110801.bin',
 Emiss_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/emis/2017/rev/pre.smk.ems.36km.20110801.bin',

 /
!------------------------------------------------------------------------------
```

## CAMx Input for 2017 (12 & 4 km)

```
 &CAMx_Control

 Run_Message      = 'CAMx 6.20 -- Mech2 NONE CB6 mod.cmx.12km',

!--- Model clock control ---

 Time_Zone        = 7,                ! (0=UTC,5=EST,6=CST,7=MST,8=PST)
 Restart          = .false.,
 Start_Date_Hour  = 2011,08,01,0000,   ! (YYYY,MM,DD,HHmm)
 End_Date_Hour    = 2011,08,01,2400,   ! (YYYY,MM,DD,HHmm)

 Maximum_Timestep    = 15.,           ! minutes
 Met_Input_Frequency = 60.,           ! minutes
 Ems_Input_Frequency = 60.,           ! minutes
 Output_Frequency    = 60.,           ! minutes

!--- Map projection parameters ---

 Map_Projection           = 'LAMBERT', ! (LAMBERT,POLAR,UTM,LATLON)
 UTM_Zone                 = 0,
 POLAR_Longitude_Pole     = 0.,        ! deg (west<0,south<0)
 POLAR_Latitude_Pole      = 0.,        ! deg (west<0,south<0)
 LAMBERT_Central_Meridian = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Longitude = -111.,     ! deg (west<0,south<0)
 LAMBERT_Center_Latitude  =  33.355,   ! deg (west<0,south<0)
 LAMBERT_True_Latitude1   =  45.,      ! deg (west<0,south<0)
 LAMBERT_True_Latitude2   =  33.,      ! deg (west<0,south<0)

!--- Parameters for the master (first) grid ---

 Number_of_Grids      = 2,
 Master_Origin_XCoord = -786.000,      ! km or deg, SW corner of cell(1,1)
 Master_Origin_YCoord = -510.252,      ! km or deg, SW corner of cell (1,1)
 Master_Cell_XSize    = 12.,           ! km or deg
 Master_Cell_YSize    = 12.,           ! km or deg
 Master_Grid_Columns  = 113,
 Master_Grid_Rows     = 86,
 Number_of_Layers     = 23,

!--- Parameters for the second grid ---

 Nest_Meshing_Factor(2) = 3,           ! Cell size relative to master grid
 Nest_Beg_I_Index(2)    = 48,          ! Relative to master grid
 Nest_End_I_Index(2)    = 65,          ! Relative to master grid
 Nest_Beg_J_Index(2)    = 36,          ! Relative to master grid
 Nest_End_J_Index(2)    = 49,          ! Relative to master grid

!--- Model options ---

 Diagnostic_Error_Check = .false.,     ! True = will stop after 1st timestep
 Advection_Solver       = 'PPM',       ! (PPM,BOTT)
 Chemistry_Solver       = 'EBI',       ! (EBI,IEH,LSODE)
 PiG_Submodel           = 'GREASD',    ! (None,GREASD,IRON)
 Probing_Tool           = 'None',      ! (None,OSAT,GOAT,APCA,PSAT,DDM,PA,RTRAC)
 Drydep_Model           = 'ZHANG03',   ! (None,WESELY89,ZHANG03)
 Chemistry              = .true.,
 Wet_Deposition         = .true.,
 ACM2_Diffusion         = .false.,
 Super_Stepping         = .true.,
 Gridded_Emissions      = .true.,
 Point_Emissions        = .true.,
 Ignore_Emission_Dates  = .true.,
 Flexi_Nest             = .false.,

!--- Output specifications ---

 Root_Output_Name         = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.12km.20110801',
 Average_Output_3D        = .false.,
 Output_3D_Grid           = .false.,
 Output_Species_Names(1)  = 'ACET',
 Output_Species_Names(2)  = 'ALD2',
 Output_Species_Names(3)  = 'ALDX',
 Output_Species_Names(4)  = 'BENZ',
 Output_Species_Names(5)  = 'CO',
 Output_Species_Names(6)  = 'ETH',
 Output_Species_Names(7)  = 'ETHA',
 Output_Species_Names(8)  = 'ETHY',
 Output_Species_Names(9)  = 'ETOH',
 Output_Species_Names(10) = 'FORM',
```

```
 Output_Species_Names(11) = 'HNO3',
 Output_Species_Names(12) = 'HONO',
 Output_Species_Names(13) = 'IOLE',
 Output_Species_Names(14) = 'ISOP',
 Output_Species_Names(15) = 'KET',
 Output_Species_Names(16) = 'MEOH',
 Output_Species_Names(17) = 'NO',
 Output_Species_Names(18) = 'NO2',
 Output_Species_Names(19) = 'O3',
 Output_Species_Names(20) = 'OLE',
 Output_Species_Names(21) = 'PAN',
 Output_Species_Names(22) = 'PAR',
 Output_Species_Names(23) = 'PRPA',
 Output_Species_Names(24) = 'SO2',
 Output_Species_Names(25) = 'SULF',
 Output_Species_Names(26) = 'TERP',
 Output_Species_Names(27) = 'TOL',
 Output_Species_Names(28) = 'XYL',

!--- Input files ---

 Chemistry_Parameters = '/data/samba/ozsip/mod/cmx/inp/CAMx6.2.chemparam.2_NONE',
 Photolyis_Rates      = '/data/samba/ozsip/mod/cmx/inp/tuv/2011/v01/pre.tuv.do.cb6.12km.20110801.txt',
 Ozone_Column         = '/data/samba/ozsip/mod/cmx/inp/o3map/2011/v01/pre.o3m.12km.20110801.txt',
 Initial_Conditions   = '/data/samba/ozsip/mod/cmx/inp/icbc/2017/rev/pre.cmx.ic.cb6.12km.20110801.bin',
 Boundary_Conditions  = '/data/samba/ozsip/mod/cmx/inp/icbc/2017/rev/pre.cmx.bc.cb6.12km.20110801.bin',
 Top_Concentrations   = ' ',
 Point_Sources        = '/data/samba/ozsip/mod/cmx/inp/emis/2017/fnl/pre.smk.pnt.12km.20110801.bin',
 Master_Grid_Restart  = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.12km.20110731.inst',
 Nested_Grid_Restart  = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.12km.20110731.finst',
 PiG_Restart          = '/data/samba/ozsip/mod/cmx/out/2017/rev/mod.cmx.12km.20110731.pig',

 Surface_Grid(1) = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.lu.12km.20110801.bin',
 Met2D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.2d.12km.20110801.bin',
 Met3D_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.3d.12km.20110801.bin',
 Vdiff_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.kv.12km.20110801.bin.CMAQ',
 Cloud_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.cr.12km.20110801.bin',
 Emiss_Grid(1)   = '/data/samba/ozsip/mod/cmx/inp/emis/2017/rev/pre.smk.ems.12km.20110801.bin',

 Surface_Grid(2) = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.lu.04km.20110801.bin',
 Met2D_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.2d.04km.20110801.bin',
 Met3D_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.3d.04km.20110801.bin',
 Vdiff_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.kv.04km.20110801.bin.CMAQ',
 Cloud_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/met/2011/v02/pre.wrf.cr.04km.20110801.bin',
 Emiss_Grid(2)   = '/data/samba/ozsip/mod/cmx/inp/emis/2017/rev/pre.smk.ems.04km.20110801.bin',

 /
!------------------------------------------------------------------------------
```

# APPENDIX B

# EXHIBIT 2:

## State of Arizona Fifty-Second Legislature Senate Bill 1255 and Final Revised Fact Sheet for Senate Bill 1255.

Senate Engrossed

State of Arizona
Senate
Fifty-second Legislature
Second Regular Session
2016

# CHAPTER 34

# SENATE BILL 1255

AN ACT

REPEALING SECTION 41-3017.01, ARIZONA REVISED STATUTES; AMENDING TITLE 41, CHAPTER 27, ARTICLE 2, ARIZONA REVISED STATUTES, BY ADDING SECTION 41-3022.09; RELATING TO THE VEHICLE EMISSIONS INSPECTION PROGRAM.

(TEXT OF BILL BEGINS ON NEXT PAGE)

Be it enacted by the Legislature of the State of Arizona:

Section 1. Repeal

Section 41-3017.01, Arizona Revised Statutes, is repealed.

Sec. 2. Title 41, chapter 27, article 2, Arizona Revised Statutes, is amended by adding section 41-3022.09, to read:

41-3022.09. Vehicle emissions inspection program; termination July 1, 2022

A. THE VEHICLE EMISSIONS INSPECTION PROGRAM TERMINATES ON JULY 1, 2022.

B. TITLE 49, CHAPTER 3, ARTICLE 5 IS REPEALED ON JANUARY 1, 2023.

Sec. 3. Purpose

Pursuant to section 41-2955, subsection B, Arizona Revised Statutes, the legislature continues the vehicle emissions inspection program to identify violations and compel compliance with vehicle emissions requirements.

APPROVED BY THE GOVERNOR MARCH 17, 2016.

FILED IN THE OFFICE OF THE SECRETARY OF STATE MARCH 18, 2016.

# *ARIZONA STATE SENATE*

***Fifty-Second Legislature, Second Regular Session***

## FINAL REVISED
## FACT SHEET FOR S.B. 1255

vehicle emissions inspection program; continuation

Purpose

Continues the Vehicle Emissions Inspection Program (VEIP) for six years.

Background

The VEIP is administered either annually or bi-annually by the Department of Environmental Quality. This program was established in 1976 as a result of the designation of the Phoenix (area A) and Tucson (area B) areas as nonattainment areas. Minimum emissions standards in both areas A and B are set forth in A.R.S. § 49-542. Each inspection station must have a technical assistant available to assist persons who fail the emissions test.

A vehicle that has a model year of 1967 or later is required to be emissions tested before it can be registered in area A or B. Most vehicles of the newest five model years are exempt from emissions testing. Most light duty vehicles, from 1996 or newer, are tested with an on board diagnostics (OBD) test. With the OBD test, engine operating data is accessed by connecting directly to a computer in the vehicle that continuously monitors engine emission control systems operation. Vehicles also undergo a visual tampering inspection that includes a test of gas cap integrity (A.R.S. § 49-542).

Any registered owner or lessee of a fleet of at least 25 vehicles may apply to the director of the Arizona Department of Environmental Quality (Director) for a permit to establish a fleet emissions inspection station. Before the permit is issued, the Director is required to ensure that certain requirements are met. The holder of a fleet emissions inspection station permit may not inspect or certify any vehicle for which the permit holder is not the registered owner or lessee unless authorized by the Director. Also, any vehicle subject to these provisions is required to be inspected at least once every year following any original registration or reregistration (A.R.S. § 49-546).

There is no anticipated fiscal impact to the state General Fund associated with this legislation.

Provisions

1. Continues the Vehicle Emissions Inspection Program until July 1, 2022.

2. Repeals the Vehicle Emissions Inspection Program on January 1, 2023.

3. Contains a purpose statement.

4. Becomes effective on the general effective date.

| Senate Action | | | | House Action | | | |
|---|---|---|---|---|---|---|---|
| NR | 2/1/16 | DP | 6-1-0-0 | TI | 3/1/16 | DP | 8-0-0-1 |
| 3rd Read | 2/11/16 | | 22-7-1 | 3rd Read | 3/16/16 | | 48-11-1 |

Signed by the Governor 3/17/16
Chapter 34

Prepared by Senate Research
March 24, 2016
KN/JN/ls

# APPENDIX C

# APPENDIX C

# EXHIBIT 1:

## Public Hearing Process Documentation.

**CERTIFICATION OF HOLDING OF PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA**

I affirm that a public hearing was held by the Maricopa Association of Governments (MAG) starting at 5:30 p.m. Monday, October 17, 2016 at the MAG Offices, Saguaro Room, 302 North 1st Avenue, Phoenix, Arizona and that the hearing was held in accordance with the Arizona open meeting laws and 40 CFR 51.102(d) to receive public comment on the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area.

October 18, 2016
Date

Lindy Bauer
Lindy Bauer, MAG
Environmental Director

STATE OF ARIZONA )
) ss.
COUNTY OF MARICOPA )

Personally appeared before me the above-named Lindy Bauer known to me to be the same person who executed the foregoing instrument and to be the Environmental Director for the Maricopa Association of Governments and acknowledged to me that she executed the same as her free act.

SUBSCRIBED AND SWORN TO before me on this 18th day of October 2016.

Valerie Day
Notary Public

My Commission Expires:
August 15, 2020

VALERIE DAY
Notary Public - State of Arizona
MARICOPA COUNTY
My Commission Expires
August 15, 2020

**PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA**
October 17, 2016 at 5:30 p.m.
MAG Offices, Saguaro Room
302 North 1st Avenue, Second Floor
Phoenix, Arizona 85003
The Maricopa Association of Governments (MAG) will conduct a public hearing on the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area on October 17, 2016 at 5:30 p.m. The purpose of this hearing is to receive public comments.
According to Section 182(b) of the federal Clean Air Act, the Eight-Hour Ozone Moderate Area Plan is required to be submitted to the Environmental Protection Agency (EPA) by January 1, 2017. Collectively, the plan contains 493 existing control measures that are being implemented to reduce ozone. The plan includes reasonable further progress, reasonably available control technology, reasonably available control measures, new source review, emissions inventories, modeling attainment demonstration for 2017 (ozone season prior to the July 20, 2018 attainment date), contingency measures, and motor vehicle emissions budgets for transportation conformity.
The draft document is available for public review at the MAG Offices, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday and on the MAG website at www.azmag.gov. Public comments are welcome at the hearing, or may be submitted in writing by 5:30 p.m. on October 17, 2016 to Kara Maynard at the address below. After considering the public comments, the MAG Regional Council may take action on the plan on December 7, 2016. The ADEQ may then adopt the plan for submittal to the EPA.
Contact Person: Kara Maynard, MAG (602) 254-6300
302 N. 1st Avenue, Suite 300
Phoenix, AZ 85003
Fax: (602) 254-6490
E-mail: KMaynard@azmag.gov
Pub: September 16, 17, 2016

AFFIDAVIT OF PUBLICATION

# THE ARIZONA REPUBLIC

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

Melissa Hoekstra, being first duly sworn, upon oath deposes and says: That she is a legal advertising representative of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, Coconino, Pima and Pinal, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

**The Arizona Republic**

**9/16/2016**
**9/17/2016**

Sworn to before me this
19TH day of
September A.D. 2016

GREAT SEAL OF THE STATE OF ARIZONA 1912
BRIAN BILLINGS
Notary Public - Arizona
Maricopa County
My Commission Expires
July 25, 2018

Notary Public

MARICOPA ASSOCIATION of GOVERNMENTS

302 North 1st Avenue, Suite 300 ▲ Phoenix, Arizona 85003
Phone (602) 254-6300 ▲ FAX (602) 254-6490
E-mail: mag@azmag.gov ▲ www.azmag.gov

50th Anniversary 1967–2017

September 16, 2016

TO: Interested Parties for Air Quality

FROM: Lindy Bauer, Environmental Director

SUBJECT: PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOP NONATTAINMENT AREA

Public Hearing
October 17, 2016 at 5:30 p.m.
MAG Offices, Saguaro Room
302 North 1st Avenue, Second Floor
Phoenix, Arizona 85003

The Maricopa Association of Governments (MAG) will conduct a public hearing on the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area on October 17, 2016 at 5:30 p.m. The purpose of this hearing is to receive public comments.

According to Section 182(b) of the federal Clean Air Act, the Eight-Hour Ozone Moderate Area Plan is required to be submitted to the Environmental Protection Agency (EPA) by January 1, 2017. Collectively, the plan contains 93 existing control measures that are being implemented to reduce ozone. The plan includes reasonable further progress; reasonably available control technology; reasonably available control measures; new source review; emissions inventories; modeling attainment demonstration for 2017 (ozone season prior to the July 20, 2018 attainment date); contingency measures; and motor vehicle emissions budgets for transportation conformity.

For your information and convenience, a copy of the public hearing notice is enclosed. The draft document is available for public review at the MAG Offices, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday. In addition, the draft document is available for agency and public review on the MAG website at www.azmag.gov.

Attachment

**PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA**

October 17, 2016 at 5:30 p.m.
MAG Offices, Saguaro Room
302 North 1st Avenue, Second Floor
Phoenix, Arizona 85003

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The draft document is available for public review at the MAG Offices, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday and on the MAG website at www.azmag.gov. Public comments are welcome at the hearing, or may be submitted in writing by 5:30 p.m. on October 17, 2016 to Kara Maynard at the address below. After considering the public comments, the MAG Regional Council may take action on the plan on December 7, 2016. The Arizona Department of Environmental Quality may then adopt the plan for submittal to the EPA.

Contact Person: Kara Maynard, MAG (602) 254-6300
302 N. 1st Avenue, Suite 300
Phoenix, AZ 85003
Fax: (602) 254-6490
E-mail: KMaynard@azmag.gov

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Phone (602) 254-6300 ▲ FAX (602) 254-6490
E-mail: mag@azmag.gov ▲ www.azmag.gov

50th Anniversary 1967–2017

**TITLE VI LETTER EXAMPLE**

September 16, 2016

Ms. Cynthia Zwick
Director
Arizona Community Action Association
2700 North 3rd Street, Suite 3040
Phoenix, AZ 85004-1122

Dear Ms. Zwick:

You are cordially invited to a public hearing on the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area. The hearing will be conducted by the Maricopa Association of Governments (MAG) on Monday, October 17, 2016 at 5:30 p.m. in the Saguaro Room at the MAG Offices, 302 North 1st Avenue, Second Floor, Phoenix, Arizona, 85003. The purpose of this hearing is to receive public comments. Written and verbal comments are welcomed at the public hearing. After considering public comments, the MAG Regional Council may take action on the plan on December 7, 2016.

According to Section 182(b) of the federal Clean Air Act, the Eight-Hour Ozone Moderate Area Plan is required to be submitted to the Environmental Protection Agency (EPA) by January 1, 2017. Collectively, the plan contains 93 existing control measures that are being implemented to reduce ozone. The plan includes reasonable further progress; reasonably available control technology; reasonably available control measures; new source review; emissions inventories; modeling attainment demonstration for 2017 (ozone season prior to the July 20, 2018 attainment date); contingency measures; and motor vehicle emissions budgets for transportation conformity.

The draft document is available for review at the MAG Offices, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday. In addition, the draft document is available for agency and public review on the MAG website at www.azmag.gov. We hope to see you or your representative at the hearing and to include your input in future planning efforts. For your convenience, a copy of the public hearing notice is attached. If you have any questions or would like to set up a time for us to meet with your, organization, please do not hesitate to contact me at (602) 254-6300.

Sincerely,

Lindy Bauer

Lindy Bauer
Environmental Director

Attachment

**PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA**

October 17, 2016 at 5:30 p.m.
MAG Offices, Saguaro Room
302 North 1st Avenue, Second Floor
Phoenix, Arizona 85003

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The draft document is available for public review at the MAG Offices, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday and on the MAG website at www.azmag.gov. Public comments are welcome at the hearing, or may be submitted in writing by 5:30 p.m. on October 17, 2016 to Kara Maynard at the address below. After considering the public comments, the MAG Regional Council may take action on the plan on December 7, 2016. The Arizona Department of Environmental Quality may then adopt the plan for submittal to the EPA.

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302 N. 1st Avenue, Suite 300
Phoenix, AZ 85003
Fax: (602) 254-6490
E-mail: KMaynard@azmag.gov

MARICOPA ASSOCIATION of GOVERNMENTS

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Phone (602) 254-6300 ▲ FAX (602) 254-6490
E-mail: mag@azmag.gov ▲ www.azmag.gov

50th Anniversary 1967–2017

September 16, 2016

TO: Leslie Rogers, Federal Transit Administration
Karla Petty, Federal Highway Administration
John Halikowski, Arizona Department of Transportation
Misael Cabrera, Arizona Department of Environmental Quality
Maria Hyatt, City of Phoenix Public Transit Department
Scott Smith, Valley Metro/RPTA
Philip McNeely, Maricopa County Air Quality Department
Kenneth Hall, Central Arizona Governments
Michael Sundblom, Pinal County Air Quality Control District
Irene Higgs, Sun Corridor Metropolitan Planning Agency
Jerry Wamsley, U.S. Environmental Protection Agency, Region IX

FROM: Lindy Bauer, Environmental Director

SUBJECT: TRANSMITTAL OF THE DRAFT MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

The Maricopa Association of Governments (MAG) has prepared the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area. The draft document is available for public review at the MAG Offices, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday. In addition, the draft document is available for agency and public review on the MAG website at www.azmag.gov. Any comments are requested by 5:30 p.m. on October 17, 2016.

According to Section 182(b) of the federal Clean Air Act, the Eight-Hour Ozone Moderate Area Plan is required to be submitted to the Environmental Protection Agency (EPA) by January 1, 2017. Collectively, the plan contains 93 existing control measures that are being implemented to reduce ozone. The plan includes reasonable further progress; reasonably available control technology; reasonably available control measures; new source review; emissions inventories; modeling attainment demonstration for 2017 (ozone season prior to the July 20, 2018 attainment date); contingency measures; and motor vehicle emissions budgets for transportation conformity.

On October 17, 2016, a public hearing will be held by MAG at the MAG Offices, Saguaro Room, Second Floor, Phoenix, Arizona, at 5:30 p.m. A copy of the public hearing notice is attached. After considering public comments, the MAG Regional Council may take action on the plan on December 7, 2016. The ADEQ may then adopt the plan for submittal to the EPA. If you have any questions, please do not hesitate to contact me at (602) 254-6300.

cc: Marina Mejia, Arizona Department of Environmental Quality
Dallas Hammit, P.E., Arizona Department of Transportation

Attachment

**PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA**

October 17, 2016 at 5:30 p.m.
MAG Offices, Saguaro Room
302 North 1st Avenue, Second Floor
Phoenix, Arizona 85003

The Maricopa Association of Governments (MAG) will conduct a public hearing on the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area on October 17, 2016 at 5:30 p.m. The purpose of this hearing is to receive public comments.

According to Section 182(b) of the federal Clean Air Act, the Eight-Hour Ozone Moderate Area Plan is required to be submitted to the Environmental Protection Agency (EPA) by January 1, 2017. Collectively, the plan contains 93 existing control measures that are being implemented to reduce ozone. The plan includes reasonable further progress; reasonably available control technology; reasonably available control measures; new source review; emissions inventories; modeling attainment demonstration for 2017 (ozone season prior to the July 20, 2018 attainment date); contingency measures; and motor vehicle emissions budgets for transportation conformity.

The draft document is available for public review at the MAG Offices, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday and on the MAG website at www.azmag.gov. Public comments are welcome at the hearing, or may be submitted in writing by 5:30 p.m. on October 17, 2016 to Kara Maynard at the address below. After considering the public comments, the MAG Regional Council may take action on the plan on December 7, 2016. The Arizona Department of Environmental Quality may then adopt the plan for submittal to the EPA.

Contact Person: Kara Maynard, MAG (602) 254-6300
302 N. 1st Avenue, Suite 300
Phoenix, AZ 85003
Fax: (602) 254-6490
E-mail: KMaynard@azmag.gov

MARICOPA ASSOCIATION OF GOVERNMENTS

PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE

MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

Phoenix, Arizona

October 17, 2016

5:30 p.m.

Prepared By:

Maricopa Association of Governments

(Original)

Prepared By:

KARA MAYNARD

Administrative Assistant

MARICOPA ASSOCIATION OF GOVERNMENTS

PUBLIC HEARING ON THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

commenced at 5:45 p.m. on October, 17, 2016 at the offices of Maricopa Association of Governments, 302 North First Avenue, Suite 200, Phoenix, Arizona before KARA MAYNARD, Administrative Assistant for the Environmental Division of Maricopa Association of Governments.

* * * * *

A P P E A R A N C E S

Maricopa Association of Governments:

Lindy Bauer

Phoenix, Arizona

October 17, 2016

5:45 p.m.

PROCEEDINGS

MS. BAUER: I'd like to welcome everyone in attendance this evening to the public hearing.

This public hearing is being held by the Maricopa Association of Governments to receive public comments on the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area.

Those driving to the meeting, who parked in the garage, can have their tickets validated by the MAG staff.

Now we will begin the public hearing with an overview presentation by the MAG staff. Following the presentation hearing participants are invited to make comments for the public record. Written comments are also welcome at the public hearing.

For those participants wishing to speak, please fill out a form on the table and place it in the box.

If you need to speak early to meet a bus schedule, please tell the MAG staff; and we will accommodate that request.

As you come up to the podium, please state some information for the formal record: your name and who you represent.

I would like to note that we have a timer to assist the public with their presentations. We have a three minute limit. When two minutes have elapsed, the yellow light will come on, notifying the speaker that they have one minute to sum up. At the end of the three minute time period, the red light will come on.

Now we will begin with a presentation on the plan.

Thank you very much. Ground level ozone is a summer air pollution problem, it is not directly emitted into the atmosphere. It is formed by a chemical reaction that occurs between volatile organic compounds and nitrogen oxides in the presence of sunlight.

In accordance with the Clean Air Act, the Maricopa eight-hour ozone nonattainment area is classified as a Moderate Area for the standard set by the Environmental Protection Agency in 2008 for ozone. That standard is 0.075 parts per million. A new plan, the Moderate Area Plan, is due January 1, 2017. That plan is required to achieve at least a 15 percent reduction in volatile organic compound emissions over a six year period. That period is 2012 through 2017.

The attainment date for Moderate Areas is July 20, 2018. Since the attainment date is in the middle of the summer ozone season, the plan is required to demonstrate attainment of the standard in the prior 2017 ozone season. The region will also need three years of clean data at the monitors in 2017 to meet the standard. This will be based on data between 2015 and 2017.

The Maricopa eight-hour ozone nonattainment area

1 encompasses 5,017 square miles. There are 20 air quality monitors
2 in the nonattainment area monitoring for ozone concentrations.
3 Over time, significant progress has been made to reduce
4 ozone. There have been no violations of the one-hour ozone
5 standard since 1996 and no violations of the 1997 eight-hour ozone
6 standard since 2004. We have not yet met the 2008 ozone standard.
7 You will notice toward the end of this graph you can see
8 that in 2016 the region has only one violating monitor. That
9 monitor was the Pinnacle Peak monitor and the concentration was
10 0.076 parts per million which is only slightly over the 0.075 parts
11 per million standard. Indeed, we have made tremendous progress but
12 we need to get all monitors in compliance by the end of the ozone
13 season next year.
14 The sources of volatile organic compound emissions that
15 contribute to ozone formation are indicated on this chart.
16 Biogenics is the biggest contributor; these are plants, trees,
17 vegetation, about 58.5 percent. The second largest source is
18 called area sources, 19 percent, includes solvents, coatings,
19 landfills, fuel storage and transport, and wildfires. Then the
20 onroad category, these are cars and trucks, contribute 12.3
21 percent. This is, again, motor vehicle exhaust. Nonroad which
22 is off-road equipment and lawn and garden equipment, 9.8 percent.
23 Point sources - manufacturing, electrical generation, and power
24 plants, 0.5 percent.
25 We also need to take a look at nitrogen oxides. The

largest source is onroad for nitrogen oxides at 60.9 percent. Nonroad is 28.5 percent. Area is 6.3 percent. Point source is 3 percent. Biogenics is 1.2 percent.

The new Moderate Area Eight-Hour Ozone Plan includes 93 control measures that have been approved by the Environmental Protection Agency in prior air quality plans and existing federal control measures. We are fortunate to have 93 existing control measures in place. The plan contains a Reasonably Available Control Measure Demonstration. The 93 measures in the plan were compared to the Environmental Protection Agency's Menu of Control Measures and also to the Sacramento Metropolitan Air Quality Management District measures. The results of this analysis indicate that no new or strengthened measures were necessary to demonstrate attainment or meet reasonable further progress requirements.

The Maricopa Association of Governments maintains the latest, state-of-the-art air quality modeling system. For the attainment demonstration or predicting weather or not we are going to attain the standard, we used photochemical grid modeling and we modeled the entire ozone season. That was 153 days, it was a very rigorous effort. A subset of the 93 control measures was used for the attainment demonstration. The plan does demonstrate attainment of the standard in 2017 with a design value of 0.0756 parts per million and then it is truncated which brings it down to the standard 0.075. In addition to the modeling attainment

1 demonstration, we also did a Weight-of-the-Evidence analysis to
2 support the attainment demonstration.
3 We wanted to also indicate the size of the modeling
4 domains that we use. Ozone transports. In the blue you can see the
5 meteorological modeling domain. This covers the entire United
6 States and parts of Canada and Mexico because we have to take into
7 account their emissions as well. You can see the red border. The
8 red border is the air quality modeling domain and we use the CAMx
9 Model. When we cover the entire United States and portions of
10 Canada and Mexico, that is very important because it is good to
11 account for background ozone. Background ozone is an important
12 consideration in our nonattainment area. It is critical to take
13 that into account.
14 The inner modeling domain covers the nonattainment area
15 and portions of Maricopa and Pinal County, so it is pretty large as
16 well. There were 13 existing measures, this is the subset of the
17 93, that were used for the modeling attainment demonstration and as
18 you review this list you can see that we have Clean Burning Fuels,
19 Vehicle Emissions Testing Program, Coordinated Traffic Signal
20 Systems, Federal Vehicle Emissions Standards, Federal Nonroad
21 Equipment Standards, and also Federal Portable Fuel Container
22 Rules. Most of these measures are geared toward the onroad mobile
23 source emissions.
24 The plan is also required to include what is known as a
25 Rate of Progress Plan. This is the 15 percent reduction in

volatile organic compound emissions. The highest blue bar is the 2011 baseline for volatile organic compound emissions, 195.78 metric tons per day. The red line represents the target for the 15 percent reduction target level that the plan is supposed to reduce emissions to. The target level is 166.41 metric tons per day. The blue bar shows how far that the plan brings those emissions down. It brings them down to 165.28 metric tons per day. It is below that target. The plan demonstrates the 15 percent reduction in volatile organic compound emissions.

The plan also contains contingency measures. They are required to be implemented without further action if the area fails to attain the standard or make reasonable further progress. They are also required to represent one-year's worth of progress, which is a three percent reduction in the 2011 base year nitrogen oxide emissions or volatile organic compound emissions. Now the existing measures in the plan provide continuing emission reduction benefits of 3.86 percent above and beyond what is needed for attainment and this is what is used to meet the contingency measure requirements.

This pie chart is for the attainment year of 2017 with the measures applied. This is for volatile organic compound emissions. The onroad portion of this pie chart is used to produce a motor vehicle emissions budget for transportation conformity.

This is the pie chart for nitrogen oxide emissions in 2017 attainment year and again the onroad portion is what is used to set a motor vehicle emission budget for conformity.

The motor vehicle emissions budgets for conformity - the 2017 budget for volatile organic compounds is 45.7 metric tons per day. The 2017 budget for nitrogen oxide emissions is 62.7 metric tons per day. The Maricopa Association of Governments must demonstrate that the emissions coming from the transportation plans, programs, and projects do not exceed the motor vehicle emission budgets set by the air quality plans

Here is the schedule. On September 16, 2016, a draft plan was made available for public review. October 17, 2016, today, we are conducting the public hearing. On October 27, 2016 the MAG Air Quality Technical Advisory Committee may make a recommendation on the plan. On November 9, 2016, the MAG Management Committee may make a recommendation. Then on December 7, 2016, the MAG Regional Council may adopt the plan. On December 16, 2016, the Maricopa Association of Governments would submit the plan to the Arizona Department of Environmental Quality and the Environmental Protection Agency.

I want to point out that there will be additional opportunity for public comments on this plan beyond this hearing. Additional comments on the plan will also be accepted at the following meetings: the MAG Air Quality Technical Advisory Committee meeting on October 27, 2016 at 1:30 p.m.; at the MAG Management Committee meeting on November 9, 2016, at 12:00 noon; and at the MAG Regional Council meeting on December 7, 2016, at 11:30 a.m.

That concludes my presentation this evening. Thank you very much.

PUBLIC COMMENTS

MS. BAUER: At this time public comments are invited. Again, if you would like to speak, please fill out a speaker form and place it in the box. Please adhere to the three minute time limit. Do we have anyone wishing to speak?

It appears that we do not have anyone wishing to speak at this time and we have not received any written public comments presented at this public hearing.

The Maricopa Association of Governments appreciates your interest in regional air quality issues and we will be presenting the results of this public hearing to the MAG Air Quality Technical Advisory Committee at the October 27, 2016 meeting at 1:30 p.m. If we do receive some comments we will be preparing a response to comments and also presenting that to the MAG Air Quality Technical Advisory Committee.

Thank you very much for your participation this evening.

(The proceedings concluded at approximately 6:00 p.m.)

STATE OF ARIZONA

COUNTY OF MARICOPA

I HEREBY CERTIFY that the foregoing was taken before me, KARA MAYNARD; that I was present at the public hearing and that the public hearing was video taped, and thereafter reduced to writing by me based upon my presence at the hearing and the video tape; and that the foregoing 10 pages contain a full, true, and correct transcript of said record, all done to the best of my skill and ability.

WITNESS my hand this 20th day of October,2016.

Kara Maynard

KARA MAYNARD

Administrative Assistant

MAG Environmental Division

MARICOPA ASSOCIATION of GOVERNMENTS
302 North 1st Avenue, Suite 300 ▲ Phoenix, Arizona 85003
Phone (602) 254-6300 ▲ FAX (602) 254-6490
mag@mag.maricopa.gov

**Meeting:** Public Hearing on the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area

**Room:** Saguaro Room

**Date:** October 17, 2016

**PLEASE SIGN IN BELOW:**

| NAME | ORGANIZATION/AFFILIATION | MAILING ADDRESS |
|---|---|---|
| Megan Sheldon | city of Glendale | |
| Heather Krause | MCAQD. | |
| Phil McNeely | MCAQD | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
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# RESPONSIVENESS SUMMARY

## DRAFT MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

## OCTOBER 17, 2016 PUBLIC HEARING

An advertised public hearing on the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area was conducted on October 17, 2016. The draft document was made available for public review on September 16, 2016. No comments were received during the public hearing comment period.

# APPENDIX C

# EXHIBIT 2:

## Certification of Adoption and MAG Authority for Regional Air Quality Planning.

# RESOLUTION TO ADOPT THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

WHEREAS, the Maricopa Association of Governments (MAG) is a Council of Governments composed of twenty-seven cities and towns within Maricopa County and portions of Pinal County, Maricopa County, Pinal County, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, Arizona Department of Transportation, and Citizens Transportation Oversight Committee; and

WHEREAS, the Governor of Arizona designated MAG as the regional air quality planning agency and metropolitan planning organization for transportation for all jurisdictions in Maricopa County, including the Phoenix urbanized area and the contiguous urbanized area in Pinal County, including the Town of Florence and City of Maricopa; and

WHEREAS, the Environmental Protection Agency reclassified the Maricopa nonattainment area as a Moderate Area for the eight-hour ozone standard of 0.075 parts per million in May 2016 in accordance with the Clean Air Act; and

WHEREAS, the attainment date for Moderate Areas is July 20, 2018 and a Moderate Area Plan is required to be submitted to the Environmental Protection Agency by January 1, 2017; and

WHEREAS, MAG has prepared the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area; and

WHEREAS, A.R.S. 49-406 H. requires that the governing body of the metropolitan planning organization adopt the nonattainment area plan.

NOW THEREFORE, BE IT RESOLVED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS REGIONAL COUNCIL as follows:

SECTION 1. That the MAG Regional Council adopts the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area.

SECTION 2. That the MAG Regional Council authorizes the submission of the plan to the Arizona Department of Environmental Quality and the U.S. Environmental Protection Agency.

PASSED AND ADOPTED BY THE REGIONAL COUNCIL OF THE MARICOPA ASSOCIATION OF GOVERNMENTS THIS SEVENTH DAY OF DECEMBER 2016.

Greg Stanton
Chair, MAG Regional Council
Mayor of Phoenix

ATTEST:

Dennis Smith
Executive Director, MAG

**CERTIFICATION OF ADOPTION OF THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA**

**An Excerpt from the December 7, 2016 MAG Regional Council Meeting Minutes**

I certify that on December 7, 2016, the MAG Regional Council adopted the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area.

Dennis Smith
MAG Executive Director

12/07/16
Date

WESLEY BOLIN
GOVERNOR

# OFFICE OF THE GOVERNOR

STATE HOUSE
PHOENIX, ARIZONA 85007

IN REPLY
REFER TO:

February 7, 1978

The Honorable Douglas M. Costle
Administrator
United States Environmental Protection Agency
401 "M" Street, S.W.
Washington, DC 20460

Dear Mr. Costle:

In accordance with Section 174(a) of the Clean Air Act as amended August 7, 1977, I hereby designate the Maricopa Association of Governments as the lead planning organization for Maricopa County, (Phoenix) Arizona and the Pima Association of Governments as the lead planning organization for Pima County, (Tucson) Arizona for the purpose of determining which elements of a revised Air Quality Implementation Plan will be planned, implemented and enforced by the State and local governments in Arizona. Attached are letters from each agency requesting such designations.

This action is required because national primary ambient air quality standards for carbon monoxide and photochemical oxidants will not be attained in metropolitan Phoenix and Tucson by July 1, 1979. Detailed agreements with the above organizations of elected officials of local governments and the State of Arizona are now being developed. These agreements will identify the responsibilities of each of the participants, i.e. the Maricopa Association of Governments, the Pima Association of Governments, the Maricopa County Health Department, and the Arizona Department of Health Services. Upon completion of such agreements, they will be certified by this office and forwarded to the U.S. Environmental Protection Agency.

Sincerely,

Wesley Bolin

Wesley Bolin

WB:vabclm
Attachments

cc: Suzanne Dandoy
Bruce Scott
G. Kenneth Driggs
Thomas L. Swanson
Paul De Falco, Jr.

STATE OF ARIZONA

EXECUTIVE OFFICE

FIFE SYMINGTON
Governor

June 24, 1993

The Honorable Charles Hayes
Chairman, MAG Regional Council
1820 West Washington
Phoenix, AZ 85007

Dear Mayor Hayes:

I concur with your May 10th letter--MAG should coordinate its aviation planning with the statewide aviation planning effort.

Please inform the Regional Council that I support their continuation as the Metropolitan Planning Organization. I believe the MAG Regional Aviation System Plan will do much to help your region of the state make decisions on airport improvements. I salute your process.

If you are not aware, however, my Regional Airport Feasibility Assessment (RAFA) was a statewide aviation planning effort. In the case of the RAFA, regional does not mean a limited area like MAG but means the Southwestern United States. My RAFA study was paid for by FAA funding and focused on the statewide issue of a new major airport facility to serve needs throughout Arizona and the entire Southwest within the next 20 to 30 years. It also considers long-term economic effects on the state. Your MAG RASP was also paid for by FAA funding but focused on 10 to 20 years of airport improvements in Maricopa County. As you can see, the two studies differ greatly in scope and substance.

RECD JUN 28 1993

1700 WEST WASHINGTON, PHOENIX, ARIZONA 85007 • (602) 542-4331

I notice that about a dozen of your MAG RASP Committee Members were also on my GRAAC Committee. It seems to me that this overlap of membership provides a good basis for the coordination you seek.

Thank you for your continued concern to keep Arizona's aviation industry viable and vital in the 21st century.

Sincerely,

Fife Symington
GOVERNOR

FS/JL:me

cc: Joe Lane, Executive Assistant for the Governor
Marvin Cohen, GRAAC Chairman
Linda Brock-Nelson, GRAAC Vice Chairman
GRAAC Committee Members
MAG Regional Council

49-406. Nonattainment area plan

A. For any ozone, carbon monoxide or particulate nonattainment or maintenance area the governor shall certify the metropolitan planning organization designated to conduct the continuing, cooperative and comprehensive transportation planning process for that area under 23 United States Code section 134 as the agency responsible for the development of a nonattainment or maintenance area plan for that area.

B. For any ozone, carbon monoxide or particulate nonattainment or maintenance area for which no metropolitan planning organization exists, the department shall be certified as the agency responsible for development of a nonattainment or maintenance area plan for that area.

C. For any ozone, carbon monoxide or particulate nonattainment or maintenance area, the department, the planning agency certified pursuant to subsection A of this section on behalf of elected officials of affected local government, the county air pollution control department or district, and the department of transportation shall, by November 15, 1992, and from time to time as necessary, jointly review and update planning procedures or develop new procedures.

D. In preparing the procedures described in subsection C of this section, the department, the planning agency certified pursuant to subsection A of this section on behalf of elected officials of affected local government, the county air pollution control department or district, and the department of transportation shall determine which elements of each revised implementation plan will be developed, adopted, and implemented, through means including enforcement, by the state and which by local governments or regional agencies, or any combination of local governments, regional agencies or the state.

E. The department, the planning agency certified pursuant to subsection A of this section on behalf of elected officials of affected local government, the county air pollution control department or district, and the department of transportation shall enter into a memorandum of agreement for the purpose of coordinating the implementation of the procedures described in subsection C and D of this section.

F. At a minimum, the memorandum of agreement shall contain:

1. The relevant responsibilities and authorities of each of the coordinating agencies.
2. As appropriate, procedures, schedules and responsibilities for development of nonattainment or maintenance area plans or plan revisions and for determining reasonable further progress.
3. Assurances for adequate plan implementation.
4. Procedures and responsibilities for tracking plan implementation.
5. Responsibilities for preparing demographic projections including land use, housing, and employment.
6. Coordination with transportation programs.
7. Procedures and responsibilities for adoption of control measures and emissions limitations.
8. Responsibilities for collecting air quality, transportation and emissions data.
9. Responsibility for conducting air quality modeling.
10. Responsibility for administering and enforcing stationary source controls.
11. Provisions for the timely and periodic sharing of all data and information among the signatories relating to:

(a) Demographics.
(b) Transportation.
(c) Emissions inventories.
(d) Assumptions used in developing the model.
(e) Results of modeling done in support of the plan.
(f) Monitoring data.

G. Each agency that commits to implement any emission limitation or other control measure, means or technique contained in the implementation plan shall describe that commitment in a resolution adopted by the appropriate governing body of the agency. The resolution shall specify the following:

1. Its authority for implementing the limitation or measure as provided in statute, ordinance or rule.
2. A program for the enforcement of the limitation or measure.

3. The level of personnel and funding allocated to the implementation of the measure.

H. The state, in accordance with the rules adopted pursuant to section 49-404, and the governing body of the metropolitan planning organization shall adopt each nonattainment or maintenance area plan developed by a certified metropolitan planning organization. The adopted nonattainment or maintenance area plan shall be transmitted to the department for inclusion in the state implementation plan provided for under section 49-404.

I. After adoption of a nonattainment or maintenance area plan, if on the basis of the reasonable further progress determination described in subsection F of this section or other information, the control officer determines that any person has failed to implement an emission limitation or other control measure, means or technique as described in the resolution adopted pursuant to subsection G of this section, the control officer shall issue a written finding to the person, and shall provide an opportunity to confer. If the control officer subsequently determines that the failure has not been corrected, the county attorney, at the request of the control officer, shall file an action in superior court for a preliminary injunction, a permanent injunction, or any other relief provided by law.

J. After adoption of a nonattainment or maintenance area plan, if, on the basis of the reasonable further progress determination described in subsection F of this section or other information, the director determines that any person has failed to implement an emission limitation or other control measure, means or technique as described in the resolution adopted pursuant to subsection G of this section, and that the control officer has failed to act pursuant to subsection I of this section, the director shall issue a written finding to the person and shall provide an opportunity to confer. If the director subsequently determines that the failure has not been corrected, the attorney general, at the request of the director, shall file an action in superior court for a preliminary injunction, a permanent injunction, or any other relief provided by law.

K. Notwithstanding subsections A and B of this section, in any metropolitan area with a metropolitan statistical area population of less than two hundred fifty thousand persons, the governor shall designate an agency that meets the criteria of section 174 of the clean air act and that is recommended by the city that causes the metropolitan area to exist and the affected county. That agency shall prepare and adopt the nonattainment or maintenance area plan. If the governor does not designate an agency, the department shall be certified as the agency responsible for the development of a nonattainment or maintenance area plan for that area.

STATE OF ARIZONA
OFFICE OF THE GOVERNOR

DOUGLAS A. DUCEY
GOVERNOR

EXECUTIVE OFFICE

June 22, 2016

Ms. Alexis Strauss, Acting Regional Administrator
U.S. Environmental Protection Agency, Region IX
Mail Code ORA-1
75 Hawthorne Street
San Francisco, CA 94105

Re: Certification of Maricopa Association of Governments and Pima Association of Governments as Lead Planning Organizations under Clean Air Act § 174(a) and A.R.S. § 49-406(A)

Dear Ms. Strauss:

The purpose of this letter is to update the certification of the lead planning organizations for the Phoenix and Tucson nonattainment and maintenance areas and to designate the lead planning organization for recently designated $PM_{10}$ and $PM_{2.5}$ nonattainment areas in Pinal County under section 174(a) of the Clean Air Act (CAA), 42 U.S.C. § 7504(a), and section 49-406 of the Arizona Revised Statutes (A.R.S.).

**Designations**

- The Maricopa Association of Governments (MAG) is recertified as the lead planning organization for the following nonattainment and maintenance areas:
    - the Phoenix maintenance area for the 1-hour ozone national ambient air quality standard (NAAQS),
    - the Phoenix maintenance area for the 1997 8-hour ozone NAAQS,
    - the Phoenix nonattainment area for the 2008 8-hour ozone NAAQS,
    - the Phoenix nonattainment planning area for the $PM_{10}$ NAAQS, and
    - the Phoenix maintenance area for the carbon monoxide NAAQS.

- MAG is certified as the lead planning organization for the West Central Pinal nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS and the West Pinal nonattainment area for the $PM_{10}$ NAAQS. MAG will develop future air quality plans for these areas in cooperation with the Sun Corridor Metropolitan Planning Organization (SCMPO). As explained in greater detail below, MAG and PAG each have transportation planning responsibility for a portion of this nonattainment area.

- To the extent permissible under section 174(a), MAG is certified as the lead planning organization for the Phoenix nonattainment area for the 2015 8-hour ozone NAAQS when it is designated.

- The Pima Association of Governments (PAG) is recertified as the lead planning organization for the Tucson carbon monoxide limited maintenance area.

**Background**

Congress first adopted section 174 in the 1977 Clean Air Act Amendments.[1] Section 174(a) required Governors to designate "an organization of elected officials of local governments in the affected area or a State agency" to prepare SIPs for carbon monoxide and ozone nonattainment areas.[2]

On February 7, 1978, Governor Bolin of Arizona sent the EPA Administrator a letter (Attachment A) designating MAG "as the lead planning organization for Maricopa County (Phoenix) Arizona" and PAG "as the lead planning organization for Pima County (Tucson) Arizona for the purpose of determining which elements of a revised Air Quality Implementation Plan will be planned, implemented and enforced by the State and local governments in Arizona" under section 174(a).

In the 1990 Clean Air Act Amendments, Congress amended section 174(a) to provide that:

> The implementation plan required by this part shall be prepared by an organization certified by the State, in consultation with elected officials of local governments and in accordance with the determination under the second sentence of this subsection. Such organization shall include elected officials of local governments in the affected area, and representatives of the State air quality planning agency, the State transportation planning agency, the metropolitan planning organization designated to conduct the continuing, cooperative and comprehensive transportation planning process for the area under section 134 of title 23, the organization responsible for the air quality maintenance planning process under regulations implementing this chapter, and any other organization with responsibilities for developing, submitting, or implementing the plan required by this part. *Such organization may be one that carried out these functions before November 15, 1990.*[3]

As amended, section 174(a) applies to $PM_{10}$, as well as ozone and carbon monoxide, nonattainment and maintenance areas.

---

[1] Pub. L. No. 95-95, § 129(b), 91 Stat. 685, 748-749 (1977).
[2] At the time, the indicator for ozone pollution was "photochemical oxidants."
[3] Pub. L. No. 101-549, title I, § 102(d), 104 Stat. 2399, 2417 (1990) (codified at 42 U.S.C. § 7504(a)) (emphasis added).

In 1992, the Arizona Legislature enacted A.R.S. § 49-406 to implement the amended planning requirements of section 174(a). Section 49-406(A) requires the Governor to certify the MPO, where one exists, for "any ozone, carbon monoxide or particulate nonattainment or maintenance area," as the "agency responsible for the development of a nonattainment or maintenance area plan for that area." Section 49-406(B) requires certification of the Arizona Department of Environmental Quality (ADEQ) as the responsible agency for areas without an MPO.

MAG is the MPO for the Phoenix ozone and $PM_{10}$ nonattainment areas, the Phoenix carbon monoxide and ozone maintenance areas, and for portions of the West Pinal $PM_{10}$ and West Central Pinal $PM_{2.5}$ nonattainment areas. PAG is the MPO for the Tucson carbon monoxide limited maintenance area. Both MAG and PAG include the representatives of state, regional and local governments required by section 174(a) in their governing councils or air quality planning committees. In addition, MAG and PAG, as noted above, "carried out these functions before November 15, 1990" for the Phoenix and Tucson nonattainment and maintenance areas. Thus they qualify for certification under section 174(a).

On May 6, 2013, Governor Brewer sent a letter (Attachment B) to the Federal Highway Administration (FHWA) designating SCMPO as the metropolitan planning organization (MPO) under 23 U.S.C. § 134 for the urbanized area of Pinal County that includes Casa Grande, Coolidge and Eloy. On May 9, 2013, Governor Brewer sent the FHWA notification (Attachment C) that MAG's metropolitan planning area boundaries had been expanded to add portions of Pinal County, including the Town of Florence, the City of Maricopa, and the Pinal County portion of the Gila River Indian Community.

Together, MAG and SCMPO cover the West Pinal $PM_{10}$ and West Central Pinal $PM_{2.5}$ nonattainment areas in their entirety with respect to transportation planning. MAG and SCMPO have agreed that MAG will serve as the lead air quality planning organization for the West Central Pinal nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS and the West Pinal nonattainment area for the $PM_{10}$ NAAQS and will work in cooperation with SCMPO on the preparation of plans for those areas.

MAG, PAG and SCMPO are also working with ADEQ, the Arizona Department of Transportation and local governments to adopt new, or update existing, memoranda of agreement to address the division of planning responsibilities, as required by section 174(a) and A.R.S. § 49-406.

Sincerely,

Douglas A. Ducey
Governor
State of Arizona