



WRAP SCC Temporal and Speciation Profile Improvement Project Status

**WRAP Regional Modeling Center
Carolina Environmental Program**

November 4, 2003

Purpose

- ⇒ Review temporal and chemical speciation profiles applied to WRAP region point and area sources
- ⇒ Check by SCC and county
- ⇒ Phase I – review and recommend changes
- ⇒ Phase II – (2004) implement changes

Emissions Summaries Descriptions

- ⇒ Emissions summaries for all source categories modeled for the 1996 base case (area, on-road mobile, nonroad mobile, point, fires, biogenics, road dust) were used to determine the pollutants for which point and area sources are significant contributors
- ⇒ If the source category contributed to at least 20% of the total emissions for a pollutant across all source categories in any of the 13 WRAP states, then that pollutant was considered to be significant for that source category in all WRAP region states

Emitted pollutants to which point and area sources contributed significantly

Source Category	Pollutants
Point	NO _x , VOC, SO ₂ , PM ₁₀ , PM _{2.5}
Area	NO _x , VOC, NH ₃ , SO ₂ , PM ₁₀ , PM _{2.5}

Approach

- ⇒ CEP created SMOKE reports for the base 1996 point- and area-source emissions inventories that included state names, source classification codes (SCCs), SCC names, temporal profile assignments, and speciation profile assignments
- ⇒ To create quality assurance (QA) spreadsheets, these reports were imported into Microsoft Excel and sorted by state. The resulting spreadsheets for each of the 13 WRAP states for each source category (26 spreadsheets total) were then organized by the significant pollutants listed above

Approach, cont.

- ⇒ By sorting the data by the annual daily average (tons/day) for each pollutant in descending order and then calculating cumulative percentages for each SCC or facility (in the case of point sources), CEP determined the top 80% of the sources contributing to each significant pollutant
- ⇒ The top 80% of the emissions sources for each significant pollutant are tagged with blue font in the spreadsheets.

Description of each worksheet

- ⇒ • **spp profile_desc** – Text descriptions of the VOC and PM_{2.5} speciation profiles. This worksheet cross-references speciation profile numbers with brief text descriptions of the profiles.
- ⇒ • **monthly** – Monthly temporal profiles and the corresponding monthly allocation factors for each profile.
- ⇒ • **weekly** – Weekly temporal profiles and the corresponding weekly allocation factors for each profile.
- ⇒ • **diurnal** - Diurnal temporal profiles and the corresponding diurnal allocation factors for each profile.

Description of each worksheet

- ⇒ ● **Spp_Prof Data** – Parsed SMOKE report output listing the region (state FIPS codes), state names, SCCs, speciation profile assigned to each state and SCC combination, SCC descriptions, and the annual daily average emissions reported for each state and SCC combination for each significant pollutant in each of the 13 WRAP states.
- ⇒ ● **Temp_Prof Data** – SMOKE report listing every SCC in each of the 13 WRAP states, the three temporal profile codes (monthly, weekly, diurnal) assigned to the SCC, the SCC description, and the annual daily average emissions for all inventory pollutants.
- ⇒ ● **Temporal Plots** (in point-source spreadsheets only) – Line graphs of the temporal profiles assigned to the significant pollutants for the major sources.

Description of each worksheet

- ⇒ • **State Abbreviation** (e.g., AZ) – The first section of this worksheet is a SMOKE report listing the region (state FIPS codes), state name, SCC, SCC description and annual daily average for all inventory pollutants for that state and source category. The worksheet is then organized by each of the significant pollutants (Table 1 above) for the given source category. For area sources there are six such sections, and for point sources five sections, based on the number of significant pollutants.

Description of each worksheet

- ➔ • For area sources, the sections are composed of the SCCs contributing to the pollutant; the SCC descriptions; the annual daily average emissions for the pollutant; the cumulative percent contribution by each SCC; the monthly, weekly, and diurnal profiles assigned to the SCC; the speciation profile assigned to the SCC; and the description of the speciation profile (if applicable).
- ➔ • For point sources, the sections are composed of the SCCs contributing to the pollutant; plant ID; facility ID; stack ID; source ID; the SCC description; the annual daily average emissions for the pollutant; the cumulative percent contribution by each SCC; the monthly, weekly, and diurnal profiles assigned to the SCC; the speciation profile assigned to the SCC; and the description of the speciation profile (if applicable).

SCC Assignment and Profile Review

- SCC assignment: Based on the SCC descriptions, do the rankings of top sources look reasonable for each of the significant pollutants? Does each SCC have a valid description?
- ⇒ • Temporal profile assignment: Based on the SCC descriptions, are the monthly, weekly, and diurnal profiles reasonable for that source category?
- ⇒ • Speciation profile assignment: Are the SCC descriptions and speciation profile descriptions (currently only possible for VOC and PM_{2.5}) consistent?

Action Items

- ⇒ • Review inventory and profile flags raised by CEP. Comment on the validity of these flags and propose any recommended changes.
- ⇒ • Check the SCC assignments to see whether the rankings of the top sources look reasonable for each of the significant pollutants.
- ⇒ • Check whether the monthly, weekly, and diurnal profiles are reasonable for the top 80% of the SCCs for the significant pollutants.
- ⇒ • Confirm that the cross referencing between the descriptions of the speciation profiles and the SCC descriptions looks reasonable for VOC and PM_{2.5}.