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Subject: Emission Inventories for Final Mercury and Air Toxics Standards
National Emission Inventory Matching Documentation

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I. Background

The U.S. Environmental Protection Agency (EPA) is preparing for promulgation of the National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units (EGUs) under Clean Air Act (CAA or the Act) section 112(d) (referred to in this Work Assignment as the Mercury and Air Toxics Standards [MATS]). Concurrent with this regulatory development effort, EPA developed nationwide emissions estimates of hazardous air pollutant (HAP) emissions for emission units expected to be regulated under MATS. The development of the emissions inventory, including the list of affected units, unit-level annual heat input, development of emission factors, and the emissions inventory calculation methodology is described in a separate memorandum (Emission Inventories for Final Mercury and Air Toxics Standards, National Emissions Estimates and Case Study Documentation, September 30, 2011).

Subsequent to the development of the nationwide emissions estimates, the EPA required the development of a National Emission Inventory (NEI) update that included estimates of CY2008 emissions of selected hazardous air pollutants (HAP) for emission units expected to be regulated under MATS. As the first step in this process, RTI was asked to complete the matching of the facilities and units included in the EGU nationwide emissions inventory with the units currently reporting in the Emission Inventory System (EIS) and to provide an updated spreadsheet displaying all EGUs subject to MATS with their corresponding EIS codes. The completion of this matching then enabled the creation of an annual 2008 HAP emissions dataset in the EIS staging table format.

This memorandum describes the data and processes used to match the list of facilities and units with their corresponding EIS IDs (facility, unit, and process).

II. Discussion

A. EIS Codes.

The EIS includes facility, unit, and process identification codes used to uniquely identify specific emission units for emissions reporting. “EISFacilitySiteIdentifier” is generally used to identify a specific facility or site (e.g., a specific electric utility plant location).

“EISEmissionsUnitIdentifier” is generally used to identify a specific emissions unit, or collection of emission units (e.g., a specific boiler or group of boilers). “EISEmissionProcessIdentifier” is generally used to identify a distinct operating scenario (e.g., emissions from the combustion of a specific fuel, such as bituminous coal or No. 6 fuel oil).

In the MATS information collection request (ICR) database, respondents provided ORIS codes (EIA Plant Codes) to identify specific facilities and boiler IDs to identify specific boilers (emission units). Additional information was provided in the MATS ICR responses to indicate primary fuels (processes) for each boiler.

In order to link emission estimates for specific facilities and emission units from the MATS emissions inventory to the corresponding EIS codes, the ORIS codes and boiler IDs from MATS had to be matched to the EIS facility and emission unit codes. Information on the primary fuel for each boiler was used to identify the most appropriate EIS process codes. Much of the work to match the facilities (ORIS codes) and units (boiler IDs) with their corresponding EIS codes was completed by the EPA. RTI’s task under this Work Assignment was to match the remaining facilities and units.

B. List of Boilers for Matching.

The “facility_information” and “boiler_information” tables from the MATS ICR database were used to gather the facility ORIS codes and boiler IDs, respectively. The primary fuel information was extracted from the “Fuels_boiler_information”, “boiler_fuels”, and/or “test_report_fuels” database tables. The MATS database contains information on 1,283 boilers. Fifteen (15) boilers are not expected to be subject to MATS due to size; twenty-three (23) boilers are not expected to be subject to MATS because they are retired (permanently shutdown); and one boiler is not expected to be subject to MATS because it is a biomass boiler. This results in a list of 1,244 boilers ($1,283 - 15 - 23 - 1 = 1,244$) expected to be subject to MATS. Notes indicating the reason for exclusion for the 39 excluded boilers are included on the boiler list (Attachment 1).

The EPA provided a database entitled “ORIS_IDs_inEIS.accdb”. This file contained the “CAMD_ORIS_blr_to_EIS_Process_v15” table that included 2,064 units with corresponding EIS codes. This list included 1,099 boilers that were included in the MATS ICR list and 965 boilers that were not in the MATS ICR list.

The 965 boilers on the EPA list that were not on the MATS ICR list were excluded from the matching exercise because they were not expected to be regulated under MATS due to applicability criteria (generally due to fuel type, size, or being permanently shut down). Notes indicating the specific reasons that boilers were excluded are provided in Attachment 1.

C. EIS Code Matching

The process to create a complete list of units expected to be subject to the MATS with their corresponding EIS codes involved database work, manual matching, and close collaboration with the EPA. The general process is described below.

1. A database query was developed to compare the EPA list and the MATS ICR list based on “facility_id” and “boiler_id”. This query matched 942 boilers.
2. An additional 157 boilers were matched by hand. These boilers were not matched through the queries generally due to differences in boiler ID naming conventions between the CAMD boiler IDs and MATS ICR boiler IDs. For example, the CAMD boiler ID may have been “3”, while the MATS ICR ID may have been “No. 3”.
3. Additional information was needed from the EPA in order to match EIS codes for the remaining 145 MATS ICR boilers. In some instances the facility IDs could be determined, but the emissions unit and process IDs could not be determined with certainty.

The EPA provided additional database files (EIS extractions) with information that facilitated the matching of the majority of the remaining boilers. The database tables including the most helpful additional data were entitled “FacilityInventoryProcesses”. These tables included fields providing text descriptions of the emission unit and process unit codes.

In addition, EIS codes were selected which were associated with emissions in 2008. EIS codes that were used in past inventories (e.g., 2005), but that have been discontinued were not selected.

Once ORIS and boiler IDs were matched with EIS facility and unit codes, the MATS primary fuel data were used to select the most appropriate EIS process code for each boiler. In general, emissions were assigned to the facility/unit/process code combination that most closely reflected the primary fuel for each boiler. In order to avoid the double-counting of emissions, all other process codes for these emission units were assigned emissions of “zero”.

Some states (e.g., New Jersey and West Virginia) report HAP emissions at the facility-wide level, while still reporting criteria pollutant emissions at the emission unit level. In these instances, in order to avoid double-counting, the facility-wide HAP emission process codes were assigned emissions of “zero,” and the 2008 HAP emissions estimates were assigned to the most appropriate facility/unit/process code combination.

III. Conclusion

Attachment 1 includes a boiler list containing EIS facility/unit/process codes that were representative of the primary fuel for each boiler. These are the codes with which the 2008 emissions estimates were associated. This table contains all 2,248 units originally provided from the MATS ICR or the EPA-provided list. Columns “Excluded from MACT Output” and “Exclude” (columns “L” and “N”) provide notes regarding which units were excluded. Columns “Reason_for_ICR_Exclusion” and “Reason_for_Exclusion” (columns “M” and “O”) provide the reasons for their exclusion. All other EIS process codes for the included units were associated with “zero” emissions for the 2008 NEI staging tables.

Attachment 1

Boiler List with Selected EIS Facility, Unit, and Process Codes