

Electric Generating Unit (EGU) WORKGROUP CHARGE

Updated 1/24/2018

General Tasks

1. Develop a scope of work for developing base and future year inventories
2. Develop a 2016 inventory
3. Develop projections to 2023 and 2028, including activity forecasts and emissions controls
4. Project the 2016 inventory to 2023 and 2028
5. Develop and/or collect ancillary data needed to prepare the inventories for photochemical grid models
6. Document the process and data used to develop the base and future year inventories

Inventory Years

Base year = 2016

Projection Year(s) = 2023, 2028

Timing and Deliverables

The expected timeline for completing the inventory, with interim milestones, are as follows:

- February 2018 – 2016alpha
- Late March 2018 - EPA provides a draft 2016 point inventory for state review of annual emissions
- Late May 2018 - States provide comments on the 2016 annual inventory
- Summer 2018 – 2016 NEI point sources available after EPA QA and augmentation
- Fall 2018 – 2016 beta version with projections to 2023 and 2028
- Early 2019 – 2016v1.0 with projections to 2023 and 2028

Current plans are to have a preliminary version of ERTAC EGU 2016/2023/2028 by May 2018.

Documentation

Data files will not be considered complete without documentation. Documentation will be based on the Inventory Collaborative [Specification Sheet Format](#). The workgroup is charged with providing documentation for the 2016 and future year EGU inventory development process and data in the form of a specification sheet. State/MJO/Tribal participants will provide the ERTAC EGU documentation, as

provided by the ERTAC EGU leadership. Per the specification sheet template, documentation will include data sources, processing, inventory analysis, projection methods, and workgroup membership.

Workgroup Scope of Work

The EGU workgroup is charged with delivering working base and projected EGU hourly emissions inventory files for use in air quality modeling. The workgroup will prepare documentation that describes the preparation of the inventory files and summarizes the emissions data. The workgroup, in coordination with the US EPA, will define and conduct a quality assurance process of the base and future EGU emissions data. The files will be named and versioned according to a convention devised by the inventory collaborative coordination workgroup.

Workgroup Organization

The workgroup will be composed of state and EPA staff who have volunteered to review and, as necessary, improve the draft initial 2016 emissions files and the draft methodologies to grow and control the 2016 emissions. The workgroup will be led by co-leads Julie McDill (MARAMA) and Serpil Kay (EPA), with assistance from Alison Eyth (EPA) to address base year and emissions modeling issues. As implied by the name, each workgroup member agrees to contribute substantially to the technical development, documentation and/or communication of the final work products. No contractor support is anticipated for workgroup activities. EPA staff at CAMD and OAQPS will provide data, information and advice to the workgroup to the extent feasible.

The workgroup is charged with organizing themselves to meet at least monthly between January and December 2018 to coordinate their work. The workgroup will provide periodic analysis and progress briefings to the 2016 coordination workgroup who may revise the charge as needed. Each workgroup is responsible for their own file-sharing, although a folder under the Collaborative Google account is provided for small to moderate-sized files.

Initial materials

Current 2011 platform cross reference file that matches NEI sources to ORIS IDs (for Continuous Emissions Monitoring System (CEMS) and National Electric Energy Data System (NEEDS) IDs for Integrated Planning Model (IPM) sources. 2014 v2 point source annual emissions for alpha version - until 2016 is available. Temporalization files based on preliminary 2016 work, and speciation files. Note that in prior to the availability of the 2016 draft inventory, it is difficult to model EGUs considering CEMS data because SMOKE requires an annual emissions total that is matched to hourly CEMS data and sources will change from 2014 to 2016.

Base Year Inventory Development

States will have submitted 2016 emissions to EIS for Type A point sources, along with additional sources in some states by January, 2018. EPA will combine the submitted emissions for 2016 with 2014 emissions for remaining non-submitted sources and provide a merged version of the inventory for state review by late March, 2018. States may provide updates through the end of the comment period (May,

2018). The final merged inventory in conjunction with the hourly 2016 CEMS data will form the basis for 2016 EGU emissions (July, 2018).

Of particular importance for EGUs is the temporal allocation to hours. This is an issue for both the base and future year inventories. For EGUs with CEMS data in the base year, the CEMS data is the primary source for temporal allocation. The workgroup should consider appropriate methods for temporal allocation of EGUs without CEMS data and ensure that the methods are compatible and consistent with those used for future year allocations. For example:

- How should new sources in future years be temporally allocated?
- How should sources without CEMS data be temporally allocated?
- Should we use broader regions for temporal allocation profiles?
- If a source has substantially different emissions in the future year from base year, how should those be temporally allocated?

The workgroup may choose to analyze the initial draft 2016 EGU hourly emissions and documentation to identify outliers and anomalies. In addition, the workgroup may identify new sources of input data. Consideration may be given to temporal and spatial aspects of the data. Chemical speciation may be reviewed and revised. The workgroup will be responsible for making changes to the 2016 hourly and annual summary emission files and providing adequate documentation and QA of the changes.

Projection Factor Development

Many states prefer to prepare future EGU emissions using ERTAC EGU. State and MJO workgroup participants will periodically report progress by the ERTAC EGU workgroup to estimate emissions using that approach. EPA CAMD will periodically report progress in estimating future EGU emissions using IPM or other methodologies. The workgroup will actively look to identify ways that resources and information can be shared between ERTAC EGU and EPA methodologies. For example ERTAC EGU will share the tool input files, including UAF, controls, and temporalization approaches. Only highly reliable data sources should be considered.

Future Year Inventory Development

Future year inventories will be developed for 2023 and 2028 using ERTAC EGU and EPA-developed methods. Details will be fleshed out during the first months of 2018.

Temporal allocation of EGUs in the future year is important. The workgroup should consider appropriate methods for the temporal allocation of EGUs without CEM data and ensure they are compatible / consistent with those used in the base year so that anomalies do not result when comparing base and future year emissions and air quality modeling outputs.

Splitting the point source inventory into EGU and non-EGUs

The Integrated Planning Model (IPM), the ERTAC EGU Tool, and the recent EPA engineering approach (see EPA 2023en case) are techniques to estimate EGU emissions in future years. One set of inventories by the EGU Workgroup will be created by projecting the 2016 inventory to 2023 and 2028 using the ERTAC EGU Tool. Because there is not a one-to-one correspondence

between the sources covered by the ERTAC and IPM projection methods, three point source datasets will be combined and re-partitioned to facilitate the use of ERTAC EGU. The point source subsectors to be combined are

- 2016 ERTAC EGU
- 2016 EGU-Point
- 2016 Other, or NonEGU-Point
- 2014 Other, or NonEGU-Point

The 2014 Other Point source file is included because states do not report as many years in a non-PEI year, such as 2016. The 2014 Other Point will be combined to be sure that point sources are not missing from the 2016 point source emissions. A series of quality assurance checks will be done to remove double counting between the combined datasets. The combined datasets without duplicate records will then be split out into three subsectors as follows:

- Two datasets which, in combination, comprise the total of EPA's IPM sources
 - EGUs with CEMS (these are modeled by ERTAC)
 - EGUs without CEMS (this subsector is sometimes termed "Small EGUs" and are not modeled by ERTAC)
- Non-EGU Point Sources (note these are currently split by EPA into oil and gas-related sources and the rest of the non-EGU point sources)

A unit level national 2016 cross-reference file must be prepared to facilitate this split. The 2011 cross-reference file will be used as a starting point for development of the 2016 cross-reference. The cross-reference matches unit level records in the ERTAC UAF with analogous records in the both the 2011 NEI and EPA modeling platform. ORIS facility and boiler identifiers are used to match units across the three data systems.

Facility names and county assignments, as well as the magnitudes of the SO₂ and NO_x emissions should be checked to confirm matches. Note that the ERTAC UAF input file flags units as either EGU or NonEGU. However, only units flagged as EGU in the UAF input file are included in the ERTAC EGU forecasting tool projections. Units flagged as nonEGU in the UAF are only included for informational purposes, and were not included in the EGU modeling. S/L/T agencies representative will review and correct the cross-reference.

The "Other Point Source" file obtained from this process replaces the "Other Point Source" file from the initial EPA modeling inventory. This process cannot start until the 2016 NEI Other Point Source file is available in summer 2018.