THE EMISSIONS & GENERATION RESOURCE INTEGRATED DATABASE

eGRID Technical Guide with Year 2022 Data

eGRID 2022

eGRID2022

Technical Guide

Notices

This document has been reviewed by the Clean Air Markets Division (CAMD), Office of Atmospheric Programs (OAP), U.S. Environmental Protection Agency (EPA), and approved for distribution.

Acknowledgments

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Abbreviations and Acronyms

40 CFR Part 75	Code of Federal Regulations Title 40 Part 75, which specifies air emissions monitoring and reporting requirements delineated in EPA regulations
AB 32	Assembly Bill 32 - California Global Warming Solutions Act
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
AR5	Fifth Assessment Report of the Intergovernmental Panel on Climate Change
BA	Balancing authority
BBtu	Billion Btu
Btu	British thermal unit
CAMD	Clean Air Markets Division
CHP	Combined heat and power (cogeneration)
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DOE	U.S. Department of Energy
DVRPC	Delaware Valley Regional Planning Commission
EF	Emission factor
eGRID	Emissions & Generation Resource Integrated Database
eGRID1996	First edition of Emissions & Generation Resource Integrated Database with year 1996 data
eGRID1997	Second edition of the Emissions & Generation Resource Integrated Database with year 1997 data
eGRID1998	Third edition of the Emissions & Generation Resource Integrated Database with year 1998 data
eGRID2000	Fourth edition of the Emissions & Generation Resource Integrated Database with years 1999 and 2000 data (1996-1998 data were also reissued without change)
eGRID2004	Fifth edition of the Emissions & Generation Resource Integrated Database with year 2004 data
eGRID2005	Sixth edition of the Emissions & Generation Resource Integrated Database with year 2005 data (2004 data were also reissued without change)
eGRID2007	Seventh edition of the Emissions & Generation Resource Integrated Database with year 2007 data (2005 and 2004 data were also reissued without change)
eGRID2009	Eighth edition of the Emissions & Generation Resource Integrated Database with year 2009 data (2007, 2005, and 2004 data were also reissued without change)

eGRID2010	Ninth edition of the Emissions & Generation Resource Integrated Database with year 2010 data
eGRID2012	Tenth edition of the Emissions & Generation Resource Integrated Database with year 2012 data
eGRID2014	Eleventh edition of the Emissions & Generation Resource Integrated Database with year 2014 data
eGRID2016	Twelfth edition of the Emissions & Generation Resource Integrated Database with year 2016 data
eGRID2018	Thirteenth edition of the Emissions & Generation Resource Integrated Database with year 2018 data
eGRID2019	Fourteenth edition of the Emissions & Generation Resource Integrated Database with year 2019 data
eGRID2020	Fifteenth edition of the Emissions & Generation Resource Integrated Database with year 2020 data
eGRID2021	Sixteenth edition of the Emissions & Generation Resource Integrated Database with year 2021 data
eGRID2022	Seventeenth edition of the Emissions & Generation Resource Integrated Database with year 2022 data
EGC	Electric generating company
EIA	Energy Information Administration
ELCALLOC	Electric allocation factor
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FIPS	Federal Information Processing Standards
GGL	Grid gross loss
GHG	Greenhouse gas
GWh	Gigawatt-hour
GWP	Global warming potential
Hg	Mercury
ICR	Information collection request
ID	Identifier
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Planning Model
ISO	Independent System Operator
kg	Kilogram
kWh	Kilowatt-hour

|	
lb	Pound
MISO	Midcontinent Independent System Operator
GJ	Gigajoule
MMBtu	Million Btu
MMcf	Million cubic feet
MSB	Municipal solid waste – biomass component
MSN	Municipal solid waste – non-biomass component
MSW	Municipal solid waste
MW	Megawatt
MWh	Megawatt-hour
NATCARB	National Carbon Sequestration Database and Geographic Information System
NEMS	National Energy Modeling System
NERC	North American Electric Reliability Corporation
NESCAUM	Northeast States for Coordinated Air Use Management
NETL	National Energy Technology Laboratory
NGO	Nongovernmental Organization
NO_x	Nitrogen oxides
NREL	National Renewable Energy Laboratory
N_2O	Nitrous oxide
OAP	Office of Atmospheric Programs
ORIS	Office of Regulatory Information Systems
ORISPL	Office of Regulatory Information Systems Plant code
ORNL	Oak Ridge National Laboratory
OTC	Ozone Transport Commission
$PM_{2.5}$	Fine particulate matter with diameters that are generally 2.5 micrometers and smaller
RECs	Renewable Energy Credits
RTO	Regional Transmission Organization
SAR	Second Assessment Report of the Intergovernmental Panel on Climate Change
SO_2	Sulfur dioxide
TAR	Third Assessment Report of the Intergovernmental Panel on Climate Change
TJ	Terajoule
VRSA	Voluntary Renewable Set-Aside Account

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1. Introduction

The Emissions & Generation Resource Integrated Database (eGRID) is a comprehensive source of data on the environmental characteristics of almost all electric power generated in the United States. The preeminent source of emissions data for the electric power sector, eGRID is based on available plant-specific data for all U.S. electricity generating plants that provide power to the electric grid and report data to the U.S. government. Data reported include, but are not limited to, net electric generation; resource mix (for renewable and nonrenewable generation); mass emissions of carbon dioxide (CO_2), nitrogen oxides (NO_x), sulfur dioxide (SO_2), methane (CH_4), nitrous oxide (N_2O), and mercury (Hg); emission rates for CO_2, NO_x, SO_2, CH_4, and N_2O; heat input; and nameplate capacity. eGRID reports this information on an annual basis (as well as by ozone season for NO_x) at different levels of aggregation.

eGRID2022, released in January 2024 is the seventeenth edition of eGRID. eGRID2022 includes two Excel workbooks, one with imperial units and one with metric units, that contain generator and unit spreadsheets as well as spreadsheets by aggregation level for data year 2022: plant, state, balancing authority, eGRID subregion, NERC region, and United States. The workbooks also include a spreadsheet that displays the grid gross loss and the variables that are used in its estimation for year 2022.

This document provides a description of eGRID2022, including the methodology for developing the Excel spreadsheets for each level of aggregation and the grid gross loss calculation. Section 2 provides a summary of the database; Section 3 presents the methodology for emissions estimations, including adjustments for biomass and combined heat and power (CHP); Section 4 discusses eGRID specific identification codes, name changes and associations; Section 6 describes the data elements in detail; and Section 7 provides a list of references. There is also a set of four Appendices – Appendix A includes the file structure; Appendix B includes the eGRID subregion and NERC region representational maps; Appendix C includes crosswalks between different datasets and relevant data tables; and Appendix D contains information on previous releases of eGRID.

2. Summary of eGRID2022 Data

2.1 eGRID Files

eGRID2022 contains electric power data at different levels of aggregation. The eGRID2022 data are displayed in two workbooks, one with imperial units of measure and the other with metric units of measure. As the database name implies, the focus of the data spreadsheets is on two areas: generation and emissions. In the imperial unit workbook, generation is expressed in both MWh and as a percentage (called "resource mix" – generation of a certain fuel or resource type divided by total generation). Carbon dioxide, NO_x, and SO_2 emissions are expressed in short tons; CH_4, N_2O, and Hg emissions are expressed in pounds; emission rates for CO_2, NO_x, SO_2, CH_4, and N_2O are expressed in lb/MWh and lb/MMBtu. In the metric unit workbook, generation is expressed in MWh, Gigajoules (GJ), and as a percentage. Carbon dioxide, NO_x, and SO_2 emissions are expressed in metric tons; CH_4, N_2O, and Hg emissions are expressed in kilograms; emission rates for CO_2, NO_x, SO_2, CH_4, and N_2O are expressed in both kg/MWh and kg/GJ. See Table C-7 for a list of imperial to metric conversion factors.

The eGRID2022 workbooks can be downloaded from the EPA eGRID website, https://www.epa.gov/egrid, along with Summary Tables and this document. The workbooks contain eight levels of data aggregation:

- UNIT (unit), with 24,424 records;

- GEN (generator), with 25,843 records;

- PLNT (plant), with 11,973 records;

- ST (state), with 52 records;

- BA (balancing authority), with 68 records;

- SRL (eGRID subregion), with 27 records;

- NRL (NERC region), with 9 records; and

- US, with 1 record.

The unit spreadsheet is sorted by state abbreviation, plant name, plant code, and unit ID. The generator spreadsheet is sorted by state abbreviation, plant name, plant code, and generator ID. The plant spreadsheet is sorted by state abbreviation, plant name, and plant code. The state spreadsheet is sorted by state abbreviation, the balancing authority spreadsheet is sorted by balancing authority name, the eGRID subregion spreadsheet is sorted by eGRID subregion name, and the NERC region spreadsheet is sorted by NERC region acronym. The year 2022 grid gross loss spreadsheet and plant level EJScreen demographic data spreadsheet are also included in the workbook.

The spreadsheet structure for each of the spreadsheets is included in Appendix A. The spreadsheet structure also includes a description of the variables and the original data sources.

Users should take note that eGRID's emissions and emission rates are calculated at the sources of generation and do not account for losses from transmission and distribution infrastructure. Please refer to Section 3.5 for information on how to account for line losses when assigning emission rates to

estimate indirect emissions associated with electricity purchases. Aggregated eGRID data only account for U.S. generation that takes place within the aggregated area and do not account for any electricity that is imported from or exported to other areas. The grid gross loss calculation, however, does account for U.S. regional interchanges with other U.S. regions as well as Canada and Mexico.

In addition, although eGRID is based on existing Federal data sources, its development requires substantial attention to quality control. Accurate matching of entities from different databases requires great care, even where identification codes are available. Inconsistencies between data sources, missing data, and ambiguous data necessitate adjustments to values of individual data elements, especially identification data. In general, however, data are not altered in order to maintain consistency with the original data sources.

Please note that only certain eGRID spreadsheets can be linked from year 2022 to years 2021, 2020, 2019, 2018, 2016, 2014, 2012, 2010, 2009, 2007, 2005, or 2004. The spreadsheets that can be linked include the NERC region (by NERC acronym), eGRID subregion (by eGRID subregion acronym), state (by state abbreviation), plant (by Office of Regulatory Information Systems Plant [ORISPL] code), and the US.

2.2   What's New in eGRID

There was one change to the eGRID methodology in eGRID2022:

- For the socioeconomic and demographic data (DEMO tab):
  - All demographic indicators are updated to the Census Bureau's ACS 2017-2021 5-year Summary (ACS 2021),
  - Unemployment rate, Limited Life Expectancy, and Supplemental Demographic Index data were added, and
  - Columns were reordered.

2.3   Uses and Users of eGRID

eGRID data support a wide variety of users globally through a wide variety of uses. eGRID is valuable to those in the Federal Government, state and local governments, non-governmental organizations, academia, and companies who are generally seeking environmental information from the electric power sector in the United States. eGRID is most often used for the estimation of indirect emissions from electricity purchases, in greenhouse gas (GHG) inventories, for carbon footprinting, and for estimating avoided emissions from programs and projects that would reduce the consumption for grid supplied electricity. eGRID data are cited by emission inventory and registry protocols, various emission calculation tools and applications, many academic papers, and many consultants, and it is used for many research applications and efforts.

Within EPA, eGRID data are used in the following applications and programs: Power Profiler web application, Climate Leaders protocols, ENERGYSTAR's Portfolio Manager and Target Finder, the Personal Greenhouse Gas Emissions Calculator, the Greenhouse Gas Equivalencies Calculator, Green Power Equivalency Calculator, Power Plants and Neighboring Communities (PPNC), Green Vehicle's Comparison: Your Car vs. an Electric Vehicle, and the Waste Reduction Model (WARM).

When the EPA announced its "Apps for the Environment" challenge using EPA data, developers across the U.S. responded. EPA announced the winners on November 8, 2011 and the two top

winning apps -- Light Bulb Finder (http://www.lightbulbfinder.net/) and Hootroot use eGRID data for a mobile app and/or a web app, as did several other entries (EPA, 2011). Another of the winning entries, Joulebug (http://joulebug.com/), uses eGRID data and developed a game to save energy as both a web and free iPhone app.

One of the most popular uses of eGRID is to determine the indirect GHG emissions from electricity purchases and avoided GHG emissions from projects and programs that reduce the demand for grid supplied electricity. For example, The Climate Registry, California's Mandatory GHG emissions reporting program (AB 32), and the Greenhouse Gas Protocol Initiative cite eGRID for use in estimating scope 2 (indirect) GHG emissions from electricity purchases in the United States (TCR, 2019; CARB, 2007; Greenhouse Gas Protocol, 2016). Most carbon footprint calculators that are applicable to the United States use eGRID data.

The website, www.fueleconomy.gov, resulting from an EPA-U.S. Department of Energy (DOE) partnership, provides fuel economy information that consumers can use to make knowledgeable decisions when buying a car. The information can also help consumers achieve the best fuel economy from currently owned cars. This website showcases its Greenhouse Gas Emissions for Electric and Plug-in Hybrid Electric Vehicles calculator, http://www.fueleconomy.gov/feg/label/calculator.jsp, which uses eGRID data to estimate the total GHG emissions from electric and plug-in hybrid vehicles, including emissions from electricity used to charge the vehicle. eGRID is cited as a data source at http://www.fueleconomy.gov/feg/label/calculations-information.shtml. In a similar vein, the Union of Concerned Scientists published a 2012 report using eGRID data to support its study results that it is advantageous to switch to a battery-powered vehicle, although there are wide differences in both real electricity costs and GHG emissions, depending on the region in which you live (UCS, 2012).

eGRID is also used by other Federal Government agencies such as Oak Ridge National Laboratory (ORNL) for their Combined Heat and Power Calculator, the National Energy Technology Laboratory (NETL) for their sponsored distributed National Carbon Sequestration Database and Geographic Information System (NATCARB), and the National Renewable Energy Laboratory (NREL) for their micropower distributed generation optimization model named HOMER.

States and local governments rely on eGRID data for electricity labeling (environmental disclosure programs), emissions inventories, and registries as well as for efforts to analyze air emissions from the electric power sector. Several states have published state specific emissions information from eGRID or have used eGRID to inform policy decisions. The Maryland Department of the Environment determined eligibility for participation in the Voluntary Renewable Set-Aside Account (VRSA) using eGRID factors (Maryland, 2010); and in 2009, the Delaware Valley Regional Planning Commission (DVRPC) -- a nine county region in Pennsylvania and New Jersey -- completed a 2005 GHG inventory in support of regional efforts to quantify and reduce emissions associated with climate change, using eGRID factors (DVRPC, 2010).

Tracking systems for renewable energy credits (RECs), such as ISO-New England's Generation Information System and PJM Environmental Information Services' Generation Attribute Tracking System utilize eGRID data.

ISO New England used eGRID rates in developing the 2017 New England Electric Generator Air Emissions Report (http://www.iso-ne.com/system-planning/system-plans-studies/emissions).

eGRID is additionally used for nongovernmental organizations' (NGOs) tools and analysis. The following is a list of some known users and applications of eGRID data: Northeast States for Coordinated Air Use Management (NESCAUM) analysis; Powerscorecard.org; Ozone Transport Commission (OTC)'s Emission Workbook; GHG Protocol Initiative; Rocky Mountain Institute's Community Energy Finder; Leonardo Academy's Cleaner and Greener Environmental Program; National Resource Defense Council's Benchmarking Air Emissions; Berkeley Institute of the Environment; Cool Climate Carbon Footprint Calculator; Climate and Air Pollution Planning Assistant; Emission Solution's Carbon Footprint Calculator; International Council for Local Environmental Initiatives' Clean Air software, United States Department of Transportation Federal Transit Administration, Google PowerMeter; National Public Radio's Visualizing the U.S. Electric Grid; International Code Council; American Society of Heating, Refrigerating, and Air-Conditioning Engineers; American Council for an Energy-Efficient Economy's Local Energy Efficiency Policy Calculator; and World Resource Institute's Carbon Value Analysis Tool.

Carbon Visuals, which illustrate accurate volumetric images to visualize the carbon footprint of all U.S. power stations, used eGRID subregion GHG emission factors (http://www.carbonvisuals.com/projects/2015/6/23/visualising-the-carbon-footprint-of-all-us-power-stations?rq=egrid; Carbon Visuals, 2014).

The University of California, Berkeley's CoolClimate Carbon Footprint Maps use eGRID data (Jones and Kammen, 2013).

The Sustainability Institute at the University of New Hampshire (UNH)'s Sustainability Indicator Management & Analysis Platform (SIMAP) uses eGRID data to help institutions, colleges, and universities meet their sustainability goals as effectively and efficiently as possible through carbon footprint tracking (UNH, 2022).

Several papers have been written to clarify issues and respond to questions about the uses of eGRID. The following provides details on some of the most recent presentations and papers.

- In January 2021, "Using eGRID for Environmental Footprinting of Electricity Purchases," (Huetteman et al., 2021) was published on the EPA website.

- In October 2019, "EPA's 2018 Emissions & Generation Resource Integrated Database (eGRID): Updates and Improvements," (Dorn et al., 2019a) was presented at the 18th Annual Community Modeling and Analysis System Conference.

- In August 2019, "Adding Particulate Matter to EPA's eGRID Database," (Dorn et al., 2019b) was presented at EPA's 2019 International Emissions Inventory Conference.

- In June 2019, "Adding Particulate Matter to EPA's eGRID Database," (Hoer et al., 2019) was presented at the Air and Waste Management Association's 112th Annual Conference & Exhibition.

- In October 2018, "EPA's Emissions & Generation Resource Integrated Database (eGRID): Improvements and Applications" (Cooley et al., 2019) was presented at the 17th Annual Community Modeling and Analysis System Conference.

- In May 2016, "How Part 75 Data is Used in GHG Reporting and EE/RE Quantification," (Johnson, 2016a) was presented at the EPRI Continuous Emissions Monitoring User Group Conference.

- In February 2016, "Emissions & Generation Resource integrated Database (eGRID)," (Johnson, 2016b) was presented at the Energy, Utility, and Environment Conference.

- In October 2015, "EPA's Emissions & Generation Resource Integrated Database (eGRID): Improvements and Applications: (Dorn et al., 2015) was presented at the Community Modeling and Analysis System Conference.

- In February 2015, "eGRID Updates," (Johnson, Schreifels, and Quiroz, 2015) was presented at the Energy, Utility, and Environment Conference.

- The paper "Using EPA's eGRID to Estimate GHG Emissions Reductions from Energy Efficiency" (Diem, Salhotra, and Quiroz, 2013) was presented at the International Energy Program Evaluation Conference, in August 2013.

- In January 2013, "Using eGRID Data for Carbon Footprinting Electricity Purchases," (Diem and Quiroz, 2013) was presented at the Energy, Utility, and Environment Conference.

- The paper "How to use eGRID for Carbon Footprinting Electricity Purchases in Greenhouse Gas Emission Inventories" (Diem and Quiroz, 2012) was presented at the EPA 2012 International Emission Inventory Conference in August 2012.

2.4   eGRID Data Sources

eGRID is developed using the following key data sources:

- CAMD's Power Sector Emissions Data (EPA/CAMD): this includes data reported to EPA by electric generating units to comply with the regulations in 40 CFR Part 75 and 40 CFR Part 63. Data include annual emissions of CO_2, NO_x, SO_2, and Hg; ozone season emissions of NO_X; and annual and ozone season generation and heat input. The data are available at https://www.epa.gov/airmarkets/power-sector-emissions-data. CAMD's Power Sector Emissions Data used in eGRID2022 was queried on January 16, 2024.

- EIA-860: this includes data reported to EIA on electric generators. Data include nameplate capacity, prime mover, primary fuel type, and indication of whether the generator is a combined-heat-and-power unit (EIA, 2023a). The EIA-860 data used in eGRID2022 was released on September 19, 2023 and downloaded on October 18, 2023. Generators from Puerto Rico were included in the EIA-860 monthly reports. The EIA-860 monthly data used in eGRID2022 was released in February 2023 and downloaded on October 18, 2023 (EIA, 2023b).

- EIA-923: this includes data reported to EIA on fuel consumption and generation. Data include monthly generation and heat input at the unit or generator level for a subset of units and generators, and at the prime mover level for all plants. As discussed in more detail below, eGRID2022 uses unit- or generator-level data where available, and prime mover-level data for all other units and generators (EIA, 2023c). The EIA-923 data used in eGRID2022 was released on September 28, 2023 and downloaded on October 18, 2023.

The key identifier of plants in CAMD's Power Sector Emissions Data and EIA datasets is the ORISPL code. While the ORISPL code generally matches well for plants in the different datasets, there are some plants that have different ORISPL codes between CAMD's Power Sector Emissions Data and EIA data. These plants are listed in Appendix C.

3. eGRID Methodology

This section describes the methodologies utilized to develop eGRID2022. Some methods used for eGRID2022 are modified or refined from previous editions of eGRID and are so noted in this section. Also see Section 2.2 for a list of changes to eGRID2022.

3.1 Estimation of Emissions

The Unit file and Plant file in eGRID2022 include emissions data for CO_2, NO_x, SO_2, CH_4, and N_2O, and the Unit file includes Hg emissions.[1] Carbon dioxide (CO_2) is a product of combusting fossil fuels, as well as biogenic and other materials, and is the primary greenhouse gas (GHG) emitted by human activities that is driving global climate change; nitrogen oxides (NO_x) are also emitted by fossil fuel-fired electric generating units and are precursors to the formation of ozone, or smog, and fine particulates ($PM_{2.5}$), and also contributes to acid rain and other environmental and human health impacts; sulfur dioxide (SO_2) is emitted by fossil fuel-fired electric generating units, especially with coal combustion, and is a precursor to acid rain and $PM_{2.5}$ and is associated with other environmental and human health impacts. Methane (CH_4) and nitrous oxide (N_2O), two other GHGs emitted by fossil fuel-fired electric generating units, have been included in eGRID since data year 2005 at the plant level. The eGRID emissions data for the three GHGs (i.e., CO_2, N_2O, and CH_4) are used as default factors in a variety of climate protocols (including The Climate Registry, California's Mandatory GHG emissions reporting program (AB 32), and EPA's Climate Leaders) for indirect emissions estimation calculations (TCR, 2019; CARB, 2007; EPA, 2022a).

Emissions estimates are included at the unit level, in the Unit file, as well as summed to the plant level, in the Plant file. The sum of unit level emissions from the Unit file will equal the unadjusted plant level emissions in the Plant file, apart from Hg emissions.

Plant level emissions in eGRID reflect a combination of monitored and estimated data. Emissions and emission rates in eGRID represent emissions and rates at the point(s) of generation. While they do account for losses within the generating plants (net generation), they do not consider any power purchases, imports, or exports of electricity into a specific state or any other grouping of plants, and they do not account for any transmission and distribution losses between the points of generation and the points of consumption. Also, eGRID does not account for any pre-combustion emissions associated with the extraction, processing, and transportation of fuels and other materials used at the plants or any emissions associated with the construction of the plants.

eGRID emissions and heat input that are displayed in the Unit file are unadjusted, while the Plant file contains emissions and heat input that are adjusted for biomass and/or CHP units, where applicable. The Plant file also contains unadjusted emissions. The subsequent aggregation files are based on adjusted emissions. All emission rates in the Plant file and all aggregation files are based on adjusted

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[1] The Plant file also contain fields for emissions of mercury. However, while electric generating units started to report mercury data to CAMD's Power Sector Emissions Data in 2015, the data are incomplete. We have included the unit-level emissions, but since only a subset of the units at one plant may list mercury emissions, we have not summed these emissions to the plant-level. Therefore, we have retained these fields in anticipation of being able to report plant-level mercury emissions and emission rates in a future edition of eGRID.

emissions, net generation, and adjusted heat input. Both the source(s) of emissions data and adjustment flags are provided in the Plant file.

3.1.1 Unit Level and Plant Level Unadjusted Emission Estimates

3.1.1.1 Annual Emission Estimates for CO_2, NO_x, and SO_2

Unit File

Unit level emissions in the eGRID Unit file are estimated in a three-step process:

1. We include unit-level emissions and heat input data from CAMD's Power Sector Emissions Data;

2. For units that report to EIA at the unit level but not to CAMD's Power Sector Emissions Data, we include the reported unit-level heat input from EIA; and

3. For all other units that report EIA at the plant level, we distribute prime mover-level heat input to each unit based on that unit's proportion of nameplate capacity.

For units that report to EIA but not to CAMD's Power Sector Emissions Data (steps 2 and 3), we estimate emissions by multiplying the heat input by the fuel-specific emission factors shown in Appendix C.

Generally, emission sources that are included in CAMD's Power Sector Emissions Data are fossil fuel-fired boilers and turbines serving an electric generator with a nameplate capacity greater than 25 MW and producing electricity for sale. Additionally, some sources not serving a generator or serving a generator less than 25 MW also report to CAMD's Power Sector Emissions Data.

For units that are included in CAMD's Power Sector Emissions Data only during the ozone season, the non-ozone season heat input is taken from the EIA-923. The non-ozone season heat input for each included unit was distributed from the prime-mover level based on the nameplate capacity of that unit (step 3 above). The EIA-923 distributed non-ozone season heat input is added to the ozone season heat input from CAMD's Power Sector Emissions Data. Non-ozone season emissions for NOx are calculated and added to the reported CAMD's Power Sector Emissions Data ozone season NOx emissions. The emissions for CO_2 and SO_2 for these units are calculated using the methodology discussed below, using the updated heat input. The heat input and emission adjustment only applies to 124 units out of the total 181 units in CAMD's Power Sector Emissions Data that reported only during the ozone season. There are 57 units that cannot be updated to reflect annual data values due to differences for these units in CAMD's Power Sector Emissions Data and EIA data.

CO_2

As discussed above, most CO_2 emissions reported in eGRID2022 are monitored data from CAMD's Power Sector Emissions Data. For units that report to EIA but not to CAMD's Power Sector Emissions Data, or for units from CAMD's Power Sector Emissions Data where there are gaps in CO_2 emissions data, the CO_2 emissions are estimated based on heat input and an emission factor.

The emission factors are primarily from the default CO_2 emission factors from the EPA Mandatory Reporting of Greenhouse Gases Final Rule (EPA, 2009, Table C-1). For fuel types that are included in eGRID2022 but are not in the EPA Mandatory Reporting of Greenhouse Gases Final Rule, additional emission factors are used from the 2006 Intergovernmental Panel on Climate Change

(IPCC) Guidelines for National Greenhouse Gas Inventories and the EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015 (IPCC, 2007a; EPA, 2017).

Several fuel types do not have direct reported emission factors, so emission factors from similar fuel types are used:

- The emission factor for natural gas is used to estimate emissions from process gas and other gas;

- The emission factor for anthracite, bituminous, and lignite coal are used to estimate emissions from refined coal and waste coal; and

- The emission factor for other biomass liquids is used to estimate emissions from sludge waste and liquid wood waste.

The CO_2 emissions from hydrogen, nuclear, purchased steam, solar, waste heat, water, wind, and energy storage are considered to be zero. The CO_2 emissions for units with a fuel cell prime mover are also assumed to be zero.

A list of the CO_2 emission factors used in eGRID2022 can be found in Table C-1 in Appendix C.

NO_x

Similar to CO_2, the emissions from NO_x come from monitored data from CAMD's Power Sector Emissions Data where available.

For all other units, the NO_x emissions are based on heat input multiplied by an emission factor. For some units, EIA reports unit-level NO_x emission rates (lb/MMBtu) for both annual and ozone season emissions, from EIA Form 923, Schedule 8C. These unit-level emissions rates are multiplied by the unit-level heat input used to estimate annual and ozone season NO_x emissions. For all other units that report to EIA but are not included in CAMD's Power Sector Emissions Data, the unit-level heat input is multiplied by a prime mover- and fuel-specific emission factor from EPA's AP-42 Compilation of Air Pollutant Emission Factors or the EIA Electric Power Annual (EPA, 1995; EIA, 2023f, Table A-2).

Ozone season NO_x emissions include emissions from May through September. For units where the NO_x emissions are estimated with an emission factor, the NO_x ozone season emissions are based on the emission factor multiplied by the heat input for May through September.

See Table C-2 in Appendix C for the NO_x emission factors used in eGRID2022.

SO_2

As with the other pollutants, emissions of SO_2 are taken from monitored data from CAMD's Power Sector Emissions Data where available.

For all other units, SO_2 emissions are based on heat input multiplied by an emission factor. Unlike for NO_x, EIA does not report unit-level emissions rates for SO_2. Therefore, the SO_2 emissions for all units not included in CAMD's Power Sector Emissions Data are estimated using emission factors from EPA's AP-42 or the EIA Electric Power Annual, which are specific to fuel, prime mover, and in the case of boilers, boiler type (EPA 1995; EIA, 2023f, Table A-1).

For some fuels, such as coal and oil, the emission factor from AP-42 depends on the sulfur content of the fuel. For many units, EIA reports monthly unit-level data on the sulfur content of the fuel consumed, and these data are used with the AP-42 emission factors to estimate SO_2 emissions. For units without unit-level data on the sulfur content of fuels, the sulfur content is based on an average of the reported sulfur contents for units that have the same prime mover and fuel type.

For some units for which we calculated SO_2 emissions with an emission factor, EIA reports SO_2 control efficiencies. For these units the estimated SO_2 emissions are multiplied by (1 – control efficiency) to estimate the controlled emissions. Units that do not have unit-level control efficiency data are assumed to be uncontrolled. The control efficiencies are not used for units where the emissions data are from CAMD's Power Sector Emissions Data, because these emissions already take controls into account.

See Table C-3 in Appendix C for the SO_2 emission factors used in eGRID2022.

Geothermal

Geothermal emissions are estimated for CO_2, SO_2, and NO_x. While CO_2 is a gas in the geothermal reservoir, SO_2 and NO_x result from hydrogen sulfide combustion. The three pollutants' emission factors, obtained from a 2007 Geothermal Energy Association environmental guide (GEA, 2007), are applied to plant net generation, and differ depending on the type of geothermal plant. The type of geothermal plant (e.g., flash, steam, binary) is identified using the U.S. Geothermal Power Production and District Heating Market Report (NREL, 2021). For a binary or flash/binary geothermal plant, there are no CO_2, SO_2, or NO_x emissions since the plant operates a closed system; for a flash geothermal plant, there are no NO_x emissions and minimal CO_2 and SO_2 emissions; and for a dry steam geothermal plant, there are minimal CO_2, SO_2, and NO_x emissions. For geothermal plants that are not listed in the NREL report, the type of geothermal plant is pulled forward from the previous year of eGRID data.

See Table C-6 in Appendix C for the geothermal emission factors used in eGRID2022.

Plant File

The emissions of CO_2, NO_x, and SO_2 in the Plant file are the sum of all unit-level emissions at a plant from the Unit file.

3.1.1.2 Annual Emission Estimates for CH$_4$, N$_2$O, and CO$_2$ equivalent

Emissions for CH_4, N_2O, and CO_2-equivalent (CO$_2$e) are included in eGRID2022 at the plant level.[2]

The emissions for CH_4 and N_2O are calculated using heat input data and emission factors from the EPA or the IPCC. The emission factors are primarily from the EPA Mandatory Reporting of Greenhouse Gases Final Rule (EPA, 2009, Table C-1). For fuel types that are included in eGRID2022 but not in Table C-1 of the EPA Mandatory Reporting of Greenhouse Gases Final Rule, additional emission factors are used from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

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[2] Nitrous oxide is an oxide of nitrogen that is not part of the NO_x subset of oxides of nitrogen. N_2O is a greenhouse gas, the emissions of which are contributing to global climate change. N_2O should not be confused with NO_X.

and the EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015 (IPCC, 2007a; EPA, 2017).

Several fuel types do not have direct reported emission factors, so emission factors from similar fuel types are used:

- The emission factor for natural gas is used to estimate emissions from process gas and other gas;

- The emission factor for anthracite, bituminous, and lignite coal are used to estimate emissions from refined coal and waste coal; and

- The emission factor for other biomass liquids is used to estimate emissions from sludge waste and liquid wood waste.

The CH_4 and N_2O emissions for electricity used from energy storage (megawatt-hours), hydrogen, nuclear, purchased steam, solar, waste heat, water, and wind are considered to be zero. The CH_4 and N_2O emissions from units with a fuel cell prime mover are also considered to be zero.

A list of the CH_4 and N_2O emission factors used in eGRID2022 can be found in Table C-1in Appendix C.

The CO_2 equivalent (CO_2e) emissions, in tons, and total output emission rate (lb/MWh) are included in the Plant file and subsequent aggregation files. The CO_2e nonbaseload output emission rate (in lb/MWh) is included at the aggregated State, BA, NERC region, eGRID subregion, and US level in the eGRID file. CO_2e emissions are calculated based on the global warming potential of CO_2, CH_4, and N_2O.

Global warming potential is a value assigned to a GHG so that the emissions of different gases can be assessed on an equivalent basis to the emissions of the reference gas, CO_2. Traditionally, the 100-year GWPs are used when calculating overall CO_2 equivalent emissions, which is the sum of the products of each GHG emission value and their GWP. Based on the fourth IPCC assessment (2007) (AR4), the GWP of CO_2 is 1, CH_4 is 25 and N_2O is 298. When calculating the CO_2 equivalent, it is important to ensure that each of the GHG emission values has the same measurement units (i.e., either all in short tons or all in pounds), as CO_2 emissions are expressed in short tons while both CH_4 and N_2O emissions are expressed in pounds in eGRID. The GWPs were updated to AR4 in eGRID2018 to align with other EPA sources reporting CO_2 equivalent emissions. Previous versions of eGRID used the second IPCC assessment (SAR). A comparison of the GWPs for CO_2, CH_4, and N_2O is shown in Table 3-1. (EPA, 2017, Table 1-3; IPCC, 2007b, Table 3).

Table 3-1. Comparison of 100-Year GWPs

Gas	SAR	TAR	AR4	AR5*
CO_2	1	1	1	1
CH_4	21	23	25	34
N_2O	310	296	298	298

*Note that the AR5 values include climate-carbon feedbacks

CO_2e emissions are calculated by taking the sum of emissions for CO_2, CH_4, and N_2O, each multiplied by a selected GWP factor for each gas. The following equation outlines the methodology to calculate CO_2e emissions using GWP values.

$$CO_2e\ Emissions = (GWP_{CO_2}) \times Emissions_{CO_2}) + (GWP_{CH_4} \times Emissions_{CH_4}) + (GWP_{N_2O} \times Emissions_{N_2O})$$

An example of using AR4 GWP values is calculated as follows:

1. Use AR4 value from Table 3-1 for each selected gas:

$$GWP_{CO_2} = 1$$

$$GWP_{CH_4} = 25$$

$$GWP_{N_2O} = 298$$

2. Calculate the total CO_2e emissions for a plant with the following emissions: 5,000 tons of CO_2, 150 pounds of CH_4, and 20 pounds of N_2O:

$$CO_2e\ emissions\ for\ CO_2 = 1 \times (5{,}000\ tons\ of\ CO_2) = 5{,}000\ tons$$

$$CO_2e\ emissions\ for\ CH_4 = 25 \times (150\ pounds\ of\ CH_4) \times \left(\frac{1\ ton}{2000\ pounds}\right) = 1.88\ tons$$

$$CO_2e\ emissions\ for\ N_2O = 298 \times (20\ pounds\ of\ N_2O) \times \left(\frac{1\ ton}{2000\ pounds}\right) = 2.98\ tons$$

3. Add CO_2e emissions together to obtain final plant emissions in CO_2e tons:

$$Total\ CO_2e\ Emissions = (5{,}000\ tons) + (1.875\ tons) + (2.98\ tons)$$

$$Total\ CO_2e\ Emissions = 5{,}004.86\ tons$$

3.1.1.3   Annual Emission Estimates for Mercury

Mercury emissions are reported to CAMD's Power Sector Emissions Data at the unit-level and are directly incorporated into the eGRID Unit file.

Mercury emissions are not summed to the Plant file since the unit-level data may not be available for all units at a plant. While electric generating units started to report mercury data to CAMD's Power Sector Emissions Data in 2015 under the Mercury and Air Toxics Standards (MATS), the data may be incomplete. The unit-level emissions are included in the Unit file, but since only a portion of the units at one plant may not list mercury emissions, they have not summed these emissions to the plant-level. However, the fields for Hg emissions and emissions rates in the Plant file have been retained so that these data may be included in future editions of eGRID.

3.1.2   Plant Level Adjusted Emission Estimates

Emissions reported in eGRID represent emissions from fuel utilized only for electricity generation. For certain plants, there are two possible cases for which we adjust the emission estimates: (1) if the

plant is a CHP facility; and (2) if one or more units at the plant burn biomass, including biogas (such as landfill, methane, and digester gas). The Plant file reports both adjusted and unadjusted emissions, while the Unit file reports only unadjusted emissions. Due to these adjustments, the adjusted emissions reported in eGRID may be different from emissions reported in other EPA sources.

3.1.2.1 Adjustments for Biomass

Prior editions of eGRID applied a biomass adjustment to the annual emission values based on an assumption of zero emissions from biomass combustion. This assumes that the amount of carbon sequestered during biomass growth equals the amount released during combustion, without consideration of other factors. For reasons of consistency, the same approach is applied in eGRID2022.

eGRID makes adjustments for biogas emissions, for biomass emissions other than biogas, and for solid waste emissions for specified pollutants. Solid waste typically consists of a mixture of biogenic materials—such as wood, paper, and food waste—and fossil-based materials—such as plastics and tires. EIA-923 reports fuel consumption at plants that combust municipal solid waste (MSW) as the biomass component (MSB) and the non-biomass component (MSN). Emissions from the biomass component of solid waste are adjusted, while emissions from the non-biomass component of solid waste are not adjusted. In eGRID2022, the fuel type for these plants is listed as MSW.[3]

The Plant file includes a biomass adjustment flag to indicate whether a biomass adjustment is made to the annual emission values for CO_2, NO_x, SO_2, CH_4, and N_2O. The possible biomass adjustments to emissions are explained below. See Table C-1 in Appendix C for a table of biomass fuel types used in the biomass adjustments to emissions in the Plant file.

For plants that have a biomass adjustment, the amount of emissions that the total emissions are adjusted by are included in eGRID2022. The emissions adjustment values from CO_2 are listed for all plants with a biomass flag and the emissions adjustment values from NO_x, SO_2, CH_4, and N_2O are listed for plants with a biomass flag with landfill gas. Table A-3 in Appendix A. eGRID File Structure - Variable Descriptions for has a list of all the new fields added to the Plant file, including the biomass emissions adjustment values. Note that for plants that have both a biomass flag and a CHP flag, the biomass emissions adjustment value subtracted from the unadjusted emissions value will not match the adjusted emissions value. For these plants, the CHP adjustment value needs to be accounted for as well. See Section 3.1.2.3 below for a sample calculation of a plant with both a biomass and CHP adjustment.

CO_2

The emissions from biomass combustion at a plant are subtracted from the plant's overall unadjusted CO_2 emissions. The CO_2 emissions from biomass are reported at the plant level. To determine the biomass emissions if the CHP adjustment is also flagged, the adjusted emissions value from CHP plants must first be calculated (since the CHP plant adjustment is applied last; see Section 3.1.2.2 below).

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[3] Previous editions of eGRID estimated the split between the biomass and non-biomass components of MSW. Because the EIA-923 reports these components separately, this estimation is no longer necessary.

For CAMD's Power Sector Emissions Data units with a prime mover that matches EIA-923 prime movers that burn one or more biomass fuels, the CO_2 emissions are adjusted by subtracting the biomass CO_2 emissions calculated using the corresponding EIA-923 data (EIA, 2023c). In previous editions of eGRID, there were different flags for the biomass adjustment to represent different biomass fuels or differences in the emissions data source.

NO_x, SO_2, CH_4, and N_2O

Emissions adjustments for NO_x, SO_2, CH_4, and N_2O emissions are only conducted for landfill gas in eGRID. This adjustment assumes that in many cases landfills would flare the gas if they did not combust it for electricity generation. Therefore, we assume that, at a minimum, the gas would have been combusted in a flare and would have produced some emissions of NO_x, SO_2, CH_4, and N_2O anyway. Similar to the CO_2 adjustments, biogas adjustments are made by deducting the emissions from landfill gas for NO_x, SO_2, CH_4, and N_2O from the overall plant total emissions. For NO_x emissions from landfill gas, an emission factor for flaring of landfill gas, 0.08 pounds per MMBtu, is used (EPA, 1995).[4] See Table C-1 in Appendix C for a list of CH_4, and N_2O emission factors and the landfill gas (LFG) values from Table C-3 for a list of SO_2 emission factors. Note that CO_2 is also adjusted for landfill gas, as described above.

3.1.2.2 Adjustments for CHP

A CHP facility is a type of generating facility that produces electricity and another form of useful thermal energy (such as heat or steam) used for industrial, commercial, heating, or cooling purposes. CHP, also known as cogeneration, can convert energy more efficiently than facilities that separately produce heat and electricity. Plants in eGRID are designated as CHP facilities based on information from the EIA-860, EIA-923, and Department of Energy Combined Heat and Power Database datasets (EIA, 2023c; DOE, 2023). A flag indicating whether or not a plant is a CHP facility is included in the eGRID Plant file. Since emissions reported in eGRID represent electricity generation only, emissions associated with useful thermal output—the amount of heat produced in a CHP facility that is used for purposes other than making electricity—are excluded from the adjusted emissions.

eGRID's CHP adjustment methodology is designed to allocate emissions for CHP plants between electricity and thermal output. If a plant is a CHP facility, the adjustment is applied to the emissions and heat input for the entire plant after any biomass adjustment has been made.

The methodology is based on multiplying emissions and heat input by an electric allocation factor, which is calculated as follows:

1. Calculate the useful thermal output. EIA-923 reports both total fuel consumption and fuel consumption for electricity generation.[5] The useful thermal output value for eGRID2022 data is calculated from EIA-923 data as 0.8 multiplied by the difference in total heat input and electricity heat input in MMBtu. The value of 0.8 is an assumed efficiency factor from the combustion of the consumed fuel (EIA, 2023c).

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[4] Note that this factor was converted from units of lb/standard cubic foot (scf) to tons/MMBtu based on a value of 500 Btu/scf (EPA, 2016).

[5] CHP facilities do not report these values to EIA separately. They only report total fuel consumption, and EIA estimates the fuel consumption for electricity generation.

$$Useful\ Thermal\ Output = 0.8 \times (Total\ Heat\ Input - Electric\ Heat\ Input)$$

2. The electric allocation factor is calculated as the ratio of the electricity heat output to the sum of the electricity and steam heat outputs, where electricity heat output is the net generation in MWh multiplied by 3.413 to convert it to MMBtu, and steam heat output is 0.75 multiplied by the useful thermal output, in MMBtu. The 0.75 factor is another assumed efficiency factor, which accounts for the fact that once fuel is combusted for electricity generation, approximately 75 percent of the useful thermal output can be utilized for other purposes, such as space heating or industrial processes.[6]

$$Electric\ Allocation\ Factor = \frac{3.413 \times Net\ Generation}{(0.75 \times Useful\ Thermal\ Output) + (3.413 \times Net\ Generation)}$$

If the useful thermal output is zero, then the electric allocation factor is set to one. The electric allocation factor should be between zero and one. If the electric allocation factor is calculated to be greater than one, it is set to one, and if the electric allocation factor is calculated to be less than zero, it is set to zero.

In previous editions of eGRID, the CHP adjustment methodology involved a process for estimating the electric allocation factor in cases where a unit is listed as a CHP unit, but the total heat input and electric heat input reported by EIA were reported as equal. In discussions with EIA, we have determined that in these cases, there should be no CHP adjustment made. Therefore, for units listed as CHP units, but with a total heat input equal to the electric heat input, the useful thermal output is calculated to be 0, and the electric allocation factor is set to 1. This assumes that all of the heat input for these units is used for electricity generation and that useful thermal output is not produced.

For plants that have a CHP adjustment, the amount of heat input and emissions that the total emissions are adjusted by are included in eGRID2022. The emissions adjustment values from heat input, NO_x, SO_2, CO_2, CH_4, and N_2O are listed for plants with a CHP flag. Note that for plants that have both a biomass flag and a CHP flag, the unadjusted emissions multiplied by the electric allocation factor will not match the adjusted emissions value. For these plants, the biomass adjustment value needs to be accounted for as well. See Section 3.1.2.3 below for a sample calculation of a plant with both a biomass and CHP adjustment.

3.1.2.3 Plant-level adjustment example calculation

There are several plants that have both a biomass adjustment and a CHP adjustment. The following calculation steps are used to determine the final presented CO_2 adjusted emission values.

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[6] This assumes that the CHP units generate electricity first and use the waste heat for other purposes, also known as "topping." While there are some units that generate and use heat first and then use the waste heat to generate electricity, also known as "bottoming," data from the EIA shows that the vast majority of CHP facilities are topping facilities.

1. The biomass emissions are determined in accordance with section 3.1.2.1 and removed from the plant unadjusted annual CO_2 emissions.

$$UNCO2 - BIOCO2 = PLCO2_{bio\ removed}$$

Where;

UNCO2	=	plant unadjusted annual CO_2 emissions
BIOCO2	=	plant annual CO_2 biomass emissions
PLCO2$_{bio\ removed}$ =		plant annual CO_2 emissions without biomass (intermediate value)

2. The electric allocation factor is determined in accordance with section 3.1.2.2 and the CHP adjustment is then conducted by multiplying the biomass adjusted plant emissions by the electric allocation factor.

$$PLCO2_{bio\ removed} \times ELALLOC = PLCO2AN$$

Where;

PLCO2$_{bio\ removed}$ =		plant annual CO_2 emissions without biomass (intermediate value)
ELALLOC	=	electric allocation factor (see section 3.1.2.2)
PLCO2AN	=	plant annual CO_2 emissions (biomass and CHP adjusted)

3. The amount of CHP adjusted emissions are determined by subtracting the final adjusted plant emissions from the plant annual CO_2 biomass emissions.

$$PLCO2_{bio\ removed} - PLCO2AN = CHPCO2$$

Where;

PLCO2$_{bio\ removed}$ =		plant annual CO_2 emissions without biomass (intermediate value)
PLCO2AN	=	plant annual CO_2 emissions (biomass and CHP adjusted)
CHPCO2	=	plant annual CO_2 emissions CHP adjustment value

Table 3-2 and the following equations show an example calculation of how the adjustments are done together.

Table 3-2. Example Biomass and CHP CO₂ Emissions Adjustment Calculation

Plant Name	Fuel	ELALLOC	UNCO2 (tons)	BIOCO2 (tons)	CHPCO2 (tons)	PLCO2AN (tons)
Example Plant	OBG	0.1989	75,817	65,289	8,434	2,094

1. $75,817\ tons - 62,289\ tons = 10,528\ tons$

2. $10,528\ tons \times 0.1989 = 2,094\ tons$

3. $10,528\ tons - 2,094\ tons = 8,434\ tons$

3.1.3 Emission Rate Estimates

Input and output emission rates are calculated for eGRID at the plant level in the Plant file, and the subsequent aggregated files. Annual and ozone season net generation and heat input values (adjusted for CHP plants) are required to calculate the emission rates.

3.1.3.1 Generation

Net generation, in MWh, is the amount of electricity produced by the generator and transmitted to the electric grid. Net generation does not include any generation consumed by the plant. If generation consumed by the plant exceeds the gross generation of that plant, negative net generation will result. In these cases, the output emissions rates are set to 0, rather than report a negative emissions rate.

Generator-level net generation as well as prime mover-level net generation is obtained from the EIA-923. Ozone season generation is calculated by summing up the generation for the months of the ozone season, May through September (EIA, 2023c).

The methodologies employed for obtaining year 2022 net generation data are described below.

Generator-Level Net Generation

The EIA-923 dataset reports generator-level generation for a subset of generators. This generator-level generation is reported in the Generator File in eGRID2022. For all other generators, which do not have data on generator-level generation, prime mover-level net generation is distributed to the generators in the Generator file based on the proportion of nameplate capacity of generators with that prime mover at a given plant. Ozone season net generation uses the same methodology, but only includes generation data for May to September. Annual and ozone season generation is distributed to generators with a status of operating, standby/backup, out of service but was operating for part of the data year, or retired if the retirement year is 2022. Generators that are not yet in operation or retired before 2022 are not included.

In some cases, the sum of the generator-level generation does not equal the plant-level generation, even if all generator-level generation is available for all generators. In order to ensure that the generation in eGRID matches the plant-level generation data from EIA, distributed prime mover-level data are used in some cases in place of generator-level generation data.

As explained above, some generator-level net generation data are missing or not reported for various generators in the 2022 EIA-923. EIA aggregates these missing data to the state level by fuel type, but it is not possible to distribute them back to the generator level accurately (EIA, 2023c).

Plant-Level Net Generation

The annual generation data in the Plant file are the sum of all generator-level generation at the plant from the Generator file. The ozone season generation data in the Plant file are a sum of all ozone season (May-September) generator-level generation at the plant from the Generator file.

Combustion net generation is also developed (as is non-combustion generation) based on the fuel type generation of each plant. For plants that are only composed of combustion generating units, the plant combustion net generation is the same as the total plant net generation. For plants that have both combustion and non-combustion generating units, the combustion net generation will be less than the total net generation for that plant.

3.1.3.2   Heat Input

Heat input, in MMBtu, is the amount of heat energy consumed by a generating unit that combusts fuel. The method for assigning unit-level heat input follows the same process as the method for assigning unit-level CO_2 emissions (see section 3.1.1.1). Annual and ozone season unit-level heat input for eGRID is initially obtained from the reported emissions data from CAMD's Power Sector Emissions Data. The heat input from CAMD's Power Sector Emissions Data is based either on stack flow and CO_2/O_2 monitoring or fuel flow and the heat content of fuel.

If unit level heat input data from CAMD's Power Sector Emissions Data are not reported or the overall plant is not included in CAMD's Power Sector Emissions Data, annual and ozone heat input data are obtained at the unit level or prime mover level from the EIA-923 monthly data (EIA, 2023c). For units that only report ozone season heat input to CAMD's Power Sector Emissions Data, a methodology is used to add the additional heat input for non-ozone season months from the EIA-923 (see discussion in Section 3.1.1.1). Note that units that retired in the year 2022 may have operated for part of the year and can have positive heat input.

The Unit file unit level heat input is summed to the plant level and reported in the Plant file.

3.1.3.3   Emission Rates

Output, input, and combustion emission rates are reported in the Plant, State, Balancing Authority, eGRID Subregion, NERC Region, and US eGRID files. The fuel-based and nonbaseload emission rates are reported in the State, Balancing Authority, eGRID Subregion, NERC Region, and US eGRID files.

Output and Input Emission Rates

Output emission rates for SO_2, NO_x, CO_2, CO_2e, CH_4, and N_2O in lb/MWh, are reported in the Plant file. The output emission rates are calculated as total annual adjusted emissions divided by annual net generation.

Input emission rates for SO_2, NO_x, CO_2, CO_2e, CH_4, and N_2O in lb/MMBtu, are calculated as the total annual emissions divided by the annual heat input.

Fuel-based Emission Rates

For the State, Balancing Authority, eGRID Subregion, NERC Region, and US eGRID files, coal, oil, gas, and fossil fuel output and input emission rates are calculated based on a plant's primary fuel (see Section 3.2). If a plant's primary fuel is coal, oil, gas, or another fossil fuel, then all of its adjusted emissions, adjusted heat input, and net generation from combustion are included in the respective aggregation level for that fuel category. For example, all plants in Alabama with coal as primary fuel will have their emissions, heat input, and combustion net generation summed to the state level and then the appropriate calculations will be applied to determine the coal-based output and input emission rates for Alabama. See Table 3-3 for a list of primary fuels and fuel categories used for fuel-based emission rates in the State, Balancing Authority, eGRID Subregion, NERC Region, and US eGRID files.

Table 3-3. Fuel-based Emission Rates – Primary Fuel Category

Fuel Code	Description	Fuel Category
BIT	Bituminous coal	Coal
LIG	Lignite coal	Coal
SUB	Subbituminous coal	Coal
RC	Refined coal	Coal
WC	Waste coal	Coal
SGC	Coal-derived synthetic gas	Coal
COG	Coke oven gas	Coal
NG	Natural gas	Gas
BU	Butane gas	Gas
DFO	Distillate fuel oil	Oil
JF	Jet fuel	Oil
KER	Kerosene	Oil
PC	Petroleum coke	Oil
RG	Refinery gas	Oil
RFO	Residual fuel oil	Oil
WO	Waste oil	Oil
BFG	Blast furnace gas	Other fossil
OG	Other gas	Other fossil
TDF	Tire-derived fuel	Other fossil

Nonbaseload Emission Rates

In addition to emission rates for all plants, eGRID also reports emission rates for nonbaseload plants in the State, Balancing Authority, eGRID Subregion, NERC Region, and US eGRID files. The nonbaseload emission rates are sometimes used as an estimate to determine the emissions that could be avoided through projects that displace marginal fossil fuel generation, such as energy efficiency and/or renewable energy.

Capacity factor is used as a surrogate for determining the amount of nonbaseload generation and emissions that occur at each plant. While there are other factors that can influence a particular unit's capacity factor besides dispatch or load order (e.g., maintenance and repairs), capacity factor is used as a surrogate for dispatch-order for this calculation. The nonbaseload information is published in eGRID at the aggregate level (state, balancing authority, eGRID subregion, NERC region, and the US), but not for individual plants.

The nonbaseload emission rates are determined based on the plant-level capacity factor. All generation and emissions at plants with a low capacity factor (less than 0.2) are considered nonbaseload and are assigned a nonbaseload factor of 1. Plants with a capacity factor greater than 0.8 are considered baseload and are assigned a nonbaseload factor of 0. For plants with a capacity factor

between 0.2 and 0.8, we use a linear relationship to determine the percent of generation and emissions that is nonbaseload:

$$Nonbaseload\ Factor = -5/3 \times (Capacity\ Factor) + 4/3$$

To aggregate the nonbaseload generation and emissions, the plant-level generation and emissions are multiplied by the nonbaseload factor and summed to the state, balancing authority, eGRID subregion, NERC region, and US levels. The aggregated nonbaseload emissions and generation are used to calculate the nonbaseload output emission rates.

While nonbaseload rates can be used to estimate the emissions reductions associated with projects that displace electricity generation, such as energy efficiency and/or renewable energy, these rates should not be used for assigning an emission value for electricity use in carbon-footprinting exercises or GHG emissions inventory efforts. Rather, eGRID subregion-level total output emission rates are recommended for estimating emissions associated with electricity use (scope 2 emissions).

Note that generation from renewable fuels is not included in the nonbaseload calculations.

Combustion Emission Rates

Combustion output emission rates for all pollutants are estimated at the plant level and higher levels of aggregation. Combustion fuel-based output emissions rates are calculated by dividing total plant emissions by the combustion net generation for that plant. Generation from non-combustion sources, such as nuclear, hydro, geothermal, solar, and wind will not be included in the calculation of this rate.

3.2   Determination of Plant Primary Fuel

The primary fuel of a plant is determined solely by the fuel that has the maximum heat input in the Unit file.

For plants that do not consume any combustible fuel, the primary "fuel" is determined by the nameplate capacity of the units at the plant. The fuel from the unit with the highest nameplate capacity is used as the primary fuel.

See Section 6 for a description of all possible unit and plant primary fuel codes.

The EIA-923 includes solid waste plants as two fuel codes: municipal solid waste – biomass (MSB) and municipal solid waste – non-biomass (MSN). The EIA-860 only lists municipal solid waste under one code (MSW). In eGRID2022 the MSW fuel code is the only fuel code used for municipal solid waste in the Unit, Generator, and Plant files. While the MSB/MSN EIA-923 fuel information is used to calculate biomass adjusted emissions, these fuel codes are not listed in eGRID2022. See Section 3.1.2.1 for a discussion of the biomass adjustment methodology (EIA, 2023c).

3.3   Estimation of Resource Mix

The resource mix is the collection of nonrenewable and renewable resources that are used to generate electricity for a plant. Nonrenewable resources include fossil fuels (e.g., coal, oil, gas, and other fossil) and nuclear energy sources; renewable energy resources include biomass, solar, wind, geothermal, and hydro. The resource mix is determined by calculating the percentage of the total generation that a given nonrenewable or renewable resource generated. In eGRID, the resource mix is

represented as generation, in MWh, for each nonrenewable or renewable resource category, as well as a percentage of the total. Each category for nonrenewable and renewable resources should sum to be 100 percent. eGRID plant resource mix and net generation are derived from the EIA-923 prime mover level data.

For cases in which there is only one fuel and its generation is negative, that fuel's generation percent is assigned 100%. For cases in which there are fuels with both negative and positive net generation, the generation percentages only include the positive generation in both the denominator and numerator.

For the three grouped aggregate categories—total net generation from nonrenewables, total net generation from all renewables, and total net generation from renewables minus hydro—the sum of the total net generation from nonrenewables and from all renewables equals the total net generation.

It should be noted that there are cases where the sum of the generation by fuel type does not equal the value reported for total annual generation in eGRID. This is because the total annual generation is calculated using a mix of generator- and prime mover-level data from the EIA-923. The calculation of generation by fuel type uses only prime mover-level data (EIA, 2023c).

3.4   Aggregating Plant-Level Data

eGRID includes five aggregated files based on the Plant file: State, Balancing Authority (BA), eGRID Subregion, NERC Region, and the US. The State file data are developed by summing up the Plant file data (adjusted heat input, adjusted emissions, adjusted fuel-based emissions, net generation, fuel-based net generation, nameplate capacity, and the plant data values needed to calculate nonbaseload emission rates), based on the state in which the plant is located. The Balancing Authority, eGRID Subregion, and NERC Region files are developed by summing up the plant data for each of the values for each aggregation level. The US file is developed by taking the sum of all fields for all plants from the Plant file.

Emission rates are recalculated at the state, balancing authority, eGRID subregion, NERC region, and US levels. Nonbaseload emission rates have also been included at the aggregated level. For a list of all variables included in the aggregated files, see Sections 6.4 through 6.8.

The totals from the Plant, State, Balancing Authority, eGRID Subregion, NERC Region, and US files' adjusted heat input, adjusted emissions, adjusted fuel-based emissions, net generation, fuel-based net generation, and nameplate capacity data are equal, accounting for minor differences due to rounding.

The following sections describe three of the levels of aggregation used to summarize the data from the Plant file, including the balancing authority, eGRID subregion, and NERC region levels.

3.4.1   Balancing Authority

A balancing authority is a portion of an integrated power grid for which a single dispatcher has operational control of all electric generators. A balancing authority is the responsible entity that integrates resource plans ahead of time, maintains demand and resource balance within a BA area, and supports interconnection frequency in real time. The balancing authority dispatches generators in order to meet an area's needs and can also control load to maintain the load-generation balance.

Balancing authority ID codes are assigned to a plant based on the EIA-860 plant-level data and the balancing authority names are assigned to the corresponding balancing authority ID codes based on the EIA-861 (EIA, 2023a; EIA, 2023d). In Alaska, Hawaii, and Puerto Rico, isolated electric utility systems, which are not part of an integrated power grid, have been grouped into nominal balancing authorities titled Alaska Miscellaneous, Hawaii Miscellaneous, and Puerto Rico Miscellaneous, respectively. These three balancing authorities have an ID code of "NA" since there are no ID codes available from EIA for these regions. Other plants with no listed balancing authority ID in the EIA-860 plant-level data have a code of "NA" and name of "No Balancing Authority" in eGRID2022.

The balancing authority associated with a plant is reported to the EIA-860 plant-level data and used in eGRID2022.

Since BAs are not strictly geographically based, shapefiles for mapping them are not available with eGRID2022.

3.4.2 eGRID Subregion

eGRID subregions are identified and defined by EPA and were developed as a compromise between NERC regions (which EPA felt were too big) and balancing authorities (which EPA felt were generally too small). Using NERC regions and balancing authorities as a guide, the subregions were defined to limit the import and export of electricity in order to establish an aggregated area where the determined emission rates most accurately matched the generation and emissions from the plants within that subregion.

A map of the eGRID subregions used for eGRID2022 is included in Appendix B. This map is representational and shows approximate boundaries that are based on electrical grid attributes, not on strict geographical boundaries.[7]

The 27 eGRID subregions are subsets of the NERC regions as configured in December 2010. The eGRID subregions themselves have not changed substantially since eGRID2000. Note, however, that some plants operating in each eGRID subregion can change from year to year. A new subregion, Puerto Rico Miscellaneous (PRMS), was added in eGRID2019 with the addition of Puerto Rico data.

Plants are assigned to eGRID subregions in a multi-step process using NERC regions, balancing authorities (BAs), Transmission IDs, Utility IDs, and NERC assessment data as a guide.

- First, there is one NERC region that is located entirely within an eGRID subregion. Plants in NERC regions TRE (within eGRID subregion ERCT) are directly assigned the corresponding eGRID subregion.

- Second, plants in BAs where the entire BA is located within the boundaries of an eGRID subregion are assigned accordingly (e.g., BA CISO is entirely within the boundaries of eGRID subregion CAMX).

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[7] Note that some areas may fall into multiple eGRID subregions due to the fact that they are supplied by multiple electricity providers. Visit Power Profiler (https://www.epa.gov/egrid/power-profiler) for more information on determining the eGRID subregion for a given area.

- Third, the Transmission or Distribution System Owner ID for each plant, reported in the EIA-860, in combination with their BA, is used to identify eGRID subregions for the remaining BAs that do not have a one-to-one match with an eGRID subregion.

- Fourth, there are some plants that do not report Transmission ID or where the Transmission ID and BA span multiple eGRID subregions so an additional step using Utility ID, reported in the EIA-860, is used to identify additional eGRID subregion matches.

- The last step in the process uses Long Term Reliability Assessment data, received from NERC, to assign additional plants to eGRID subregions based on their NERC assessment area.

After completing these five steps, there may be a few plants that were not assigned to an eGRID subregion. If the plant is operational (and not retired or proposed with no heat input, generation, or emissions data), the historical assignments were retained for these plants, if applicable. For unassigned plants that were new plants in 2022, manual assignments were made based on the plant's physical location. All of the plants in Puerto Rico were assigned to the PRMS eGRID subregion.

The 27 eGRID subregion names, their acronyms, and descriptions for eGRID are displayed in Table 3-4.

Table 3-4. eGRID Subregion Acronym and Names for eGRID

eGRID Subregion	eGRID Subregion Name	eGRID Subregion Description
AKGD	ASCC Alaska Grid	South/Central Alaska
AKMS	ASCC Miscellaneous	Most of Alaska
AZNM	WECC Southwest	Southwest US
CAMX	WECC California	Southwest Coast/Most of California
ERCT	ERCOT All	Most of Texas
FRCC	FRCC All	Most of Florida
HIMS	HICC Miscellaneous	Hawaii excluding Oahu
HIOA	HICC Oahu	Oahu Island
MROE	MRO East	Eastern Wisconsin
MROW	MRO West	Upper Midwest
NEWE	NPCC New England	New England
NWPP	WECC Northwest	Northwest US
NYCW	NPCC NYC/Westchester	New York City
NYLI	NPCC Long Island	Long Island, New York
NYUP	NPCC Upstate NY	Upstate New York
PRMS	Puerto Rico Miscellaneous	Puerto Rico
RFCE	RFC East	Mid Atlantic

eGRID Subregion	eGRID Subregion Name	eGRID Subregion Description
RFCM	RFC Michigan	Most of Michigan
RFCW	RFC West	Ohio Valley
RMPA	WECC Rockies	Colorado-Eastern Wyoming
SPNO	SPP North	Kansas-Western Missouri
SPSO	SPP South	Texas Panhandle-Oklahoma
SRMV	SERC Mississippi Valley	Lower Mississippi Valley
SRMW	SERC Midwest	Middle Mississippi Valley
SRSO	SERC South	Southeast US, Gulf Coast
SRTV	SERC Tennessee Valley	Tennessee Valley
SRVC	SERC Virginia/Carolina	Virginia/Carolinas

3.4.3 NERC Region

NERC region refers to a region designated by the North American Electric Reliability Corporation (NERC). Each NERC region listed in eGRID represents one of nine regional portions of the North American electricity transmission grid: six in the contiguous United States, plus Alaska, Hawaii, and Puerto Rico (which are not part of the formal NERC regions but are considered so in eGRID). Note that some plants can change NERC region from year to year. The nine NERC region names and their acronyms for eGRID are displayed in Table 3-5.

Although some NERC regions include portions of Canada and/or Mexico that are integrated with U.S. grids, eGRID aggregation data are limited to generation within the U.S.

A representation of the NERC region map used for eGRID is included in Figure B-2 in Appendix B. This map is representational and shows approximate boundaries that are not based on strict geographical boundaries.

Table 3-5. NERC Region Acronym and Names for eGRID

NERC Region	NERC Name
AK	Alaska
HI	Hawaii
MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
PR	Puerto Rico
RFC	Reliability First Corporation
SERC	SERC Reliability Corporation
TRE	Texas Regional Entity
WECC	Western Electricity Coordinating Council

Note that as of 2019, FRCC was no longer a NERC region (FERC, 2019)

Note that as of 2020, ASCC and HICC were no longer included as NERC regions in the EIA data.

3.5　Grid Gross Loss

eGRID output emission rates do not account for any line losses between the points of consumption and the points of generation. For example, because there are line losses, one kilowatt hour of electricity consumption requires a little more than one kilowatt hour of electricity generation. To account for transmission and distribution line losses when applying eGRID output emission rates to electricity consumption within a certain region, consumption is divided by (one minus the grid gross loss [as a decimal]) (Table 3-6).

The methodology for calculating grid gross loss uses data from EIA's State Electricity Profiles.[8] Utilities report the information used in these calculations directly to EIA through EIA-861. EIA does not include Puerto Rico in their State Electricity Profiles, so Puerto Rico is not included in the grid gross loss estimates for eGRID.

To align more closely with EIA estimates, the methodology for calculating GGL changed slightly in eGRID2014. The previous methodology used for eGRID2014 and eGRID2016 did not account for interstate trade values that were included in total disposition for each state, which led to a slight double counting of values. The revised methodology excludes net exports from each state's total disposition, that is net interstate exports are subtracted from the total disposition in the denominator.

The methodology for estimating grid gross loss uses the following data points for each state from the EIA State Electricity Profiles:

1. Total Disposition. This is the total amount of electricity sold directly to customers, sold for resale, furnished without charge, consumed by the respondent without charge, and lost. It is equal to the total amount of electricity generated.

2. Net Interstate Exports. This is the total amount of electricity exported to other states.

3. Direct Use. This is the total amount of electricity used by plants and/or utilities in the region that is not sold for wholesale or resale; direct use electricity is not transmitted through the grid and therefore does not have the potential to be lost.

4. Estimated Losses. This is the total amount of electricity, in MWh, in the region that is generated but is not sold for resale or wholesale, furnished without charge, or used by the generator or utility; i.e., electricity that is lost in transmission and distribution.

These data are reported at the state level by EIA. We aggregate them to the NERC Interconnect level (Eastern, Western, ERCOT (Texas), as well as the states of Alaska and Hawaii, and the entire U.S.). State boundaries, however, do not perfectly correspond to Interconnect boundaries. Four states (Montana, Nebraska, New Mexico, and South Dakota) have generation in two Interconnects, and one state (Texas) has generation in three Interconnects. For these states, we distributed the data from the State Electricity Profiles based on the proportion of generation from these states in each Interconnect from the EIA-923 (EIA, 2023c).

The aggregated data are then used to calculate grid gross loss as follows:

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[8] Available at: http://www.eia.gov/electricity/state/ See Table 10: Supply and disposition of electricity

$$Grid\ Gross\ Loss = \frac{Estimated\ Losses}{Total\ Disposition\ without\ Exports - Direct\ Use}$$

The eGRID2022 estimated grid gross loss percentages for each U.S. interconnect power grid are included in the worksheet called "GGL22" in the eGRID workbook and are also displayed in Table 3-6.

Table 3-6. eGRID2022 Grid Gross Loss (%)

Power Grid	Grid Gross Loss (%)
Eastern	5.1%
Western	5.1%
ERCOT	5.1%
Alaska	5.0%
Hawaii	5.4%
U.S.	**5.1%**

4. Demographic Data for eGRID Plants

Demographic and socioeconomic information from EPA's Environmental Justice Screening and Mapping Tool (EJScreen) Version 2.1 are included for the region around each plant in the worksheet called "DEMO22" in the eGRID workbook. EJScreen is EPA's environmental justice mapping and screening tool that provides EPA with a nationally consistent dataset and approach for combining environmental and demographic socioeconomic indicators. A buffer size of 3 miles was used to query these data for each plant in eGRID2022. Demographic and socioeconomic information for each plant includes percentages and percentiles (state and national) for:

- People of color
  - The percent of individuals who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino. That is, all people other than non-Hispanic white-alone individuals. The word "alone" in this case indicates that the person is of a single race, not multiracial.
- Low-income
  - The percent of the population in households where the household income is less than or equal to twice the federal "poverty level."
- Unemployment rate
  - The percent of population that did not have a job at all during the reporting period, made at least one specific active effort to find a job during the prior 4 weeks, and were available for work (unless temporarily ill).
- Limited English speaking
  - Percent of people living in limited English speaking households. A household in which all members age 14 years and over speak a non-English language and also speak English less than "very well" (have difficulty with English) is limited English speaking.
- Less than high school education
  - Percent of people age 25 or older whose education is short of a high school diploma.
- Under age 5
  - Percent of people under the age of 5.
- Over age 64
  - Percent of people over the age of 64.

If a plant did not return data from EJScreen, the field is designated with "N/A."

The data were accessed via EJScreen's Report API available at https://www.epa.gov/ejscreen/ejscreen-api. The demographic and socioeconomic information is from the U.S. Census Bureau's American Community Survey (ACS) 2016-2020 ACS 5-year summary file data (EPA, 2023b).

5. Specific eGRID Identifier Codes, Name Changes, Associations, and Data Updates

5.1 Unit Level

5.1.1 Prime Mover Changes

Some changes to the unit-level prime mover were made in eGRID2022 to better reflect the fuel consumption data reported in the EIA-923 Generation and Fuel.

- The prime movers for units MECCU1 and MECCU2 at the Deleware City Refinery plant (ORISPL 52193) are listed as "GT" in eGRID2022. The CAMD file lists these units as "CT" while the EIA-860 file lists these units as "GT". Therefore, eGRID2022 uses "GT" as the prime mover for these units at this plant.

5.1.2 Primary Fuel Changes

Some changes to the unit-level primary fuel were made in eGRID2022 to better reflect the primary fuel data reported in the EIA-923 Generation and Fuel.

- The primary fuels for units 21H, 21H701, 37H1, and 42H123 at the Deleware City Refinery plant (ORISPL 52193) are listed as "OG" in eGRID2022. These units all have a prime mover of "ST" in the EIA-923 Generation and Fuel. This change helped distribute the fuel consumption to these units.

5.2 Plant Level

5.2.1 Plant ID Changes

Some changes to EIA ORISPL ID codes are made in eGRID2022 to better reflect CAMD's Power Sector Emissions Data.

Some EIA plants are combined into single plants to reflect CAMD's Power Sector Emissions Data.

- The plants ArcelorMittal Indiana Harbor West and Indiana Harbor E 5 AC Station (ORISPL 10397 and 54995, respectively) are combined and the ORISPL changed to 10474 to match with the ArcelorMittal USA – Indiana Harbor East plant from CAMD's Power Sector Emissions Data.

- The plants Sundevil Power Holdings – Gila River and Gila River Power Block 3 (ORISPL 59338 and 59784, respectively) are combined and the ORISPL changed to 55306 to match with the Gila River Power Station plant from CAMD's Power Sector Emissions Data.

- The plants Wayne County and Lee Combined Cycle Plant (ORISPL 7538 and 58215, respectively) are combined and the ORISPL changed to 2709 to match with the H F Lee Steam Electric Plant from CAMD's Power Sector Emissions Data.

Some plants in CAMD's Power Sector Emissions Data are combined into single plants to reflect EIA data.

- The plants Frank M Tait Station and Tait Electric Generating Station (ORISPL 2847 and 55248, respectively) in CAMD's Power Sector Emissions Data are listed as one plant, Tait Electric Generating Station (ORISPL 2847), in EIA data. This plant was previously listed under both ORISPL ID codes in EIA. For eGRID2022 we have updated the ORISPL ID codes for this plant in CAMD's Power Sector Emissions Data so they are listed as one plant, matching the EIA update.

A table of ORISPL ID code changes can be found in Table C-5 in Appendix C.

5.2.2 Generator/Unit ID Changes

Some changes to CAMD's Power Sector Emissions Data Unit ID codes are made in eGRID2022 when renewable fuel units from EIA data have matching Unit ID codes.

- The CAMD's Power Sector Emissions Data Unit ID codes from the Blewett plant (ORISPL 2707) were changed. There are 4 renewable units from EIA that had the same Unit ID codes, so the Unit ID codes from CAMD's Power Sector Emissions Data were changed to match the corresponding EIA Unit ID codes (from 1, 2, 3, and 4 to GT1, GT2, GT3, and GT4).

5.2.3 Longitude/Latitude Updates

The following plants had the wrong latitude and longitude listed in the EIA-860 Plant file. The following updates, shown in Table 5-1, have been made based on the address provided in the CAMD file for each plant.

Table 5-1. eGRID2022 Latitude/Longitude Updates

Plant ID	Plant Name	Latitude	Longitude
1091	Charles Larsen Memorial Power Plant	28.0491	-81.9238
2480	George Neal North	42.3251	-96.3797
7146	Danskammer Generating Station	41.573	-73.9646
10621	Wading River Facility	40.9569	-72.8774
50558	Syracuse, LLC	43.0667	-76.2246
55117	Frontier Generating Station	35.442	-97.6477
55718	R S Cogen LLC	30.221	-93.2826
56239	Dean Peakers	42.774	-82.4818
56610	Malaga Power	36.6894	-119.7399
56674	Deer Creek Station	44.3961	-96.5333
60927	Winchester Power Park	30.0253	-96.9945
61322	Lake Charles Power Station	30.2706	-93.2886

5.2.4 EPA/CAMD Plants Not Connected to the Grid

There are several plants included in CAMD's Power Sector Emissions Data that are not connected to the electric grid and are therefore removed from eGRID2022. All plants that have an ORISPL code that starts with an 88 followed by four digits are not included in eGRID2022. Not all non-grid-connected facilities follow this practice.

Table 5-2 below provides a list of plants that have been removed from eGRID2022 that do not have an ORISPL code beginning with 88.

Table 5-2. eGRID2022 EPA/CAMD Plants Not Connected to the Grid

Plant ID	State	Plant Name
478	CO	Zuni
1594	MA	Blackstone
2440	SC	AbiBow US Inc. - Catawba Operations
2549	NY	Huntley Power
2837	OH	Eastlake
10071	VA	Virginia Renewable Power-Portsmouth LLC
10111	MI	DTE Pontiac North LLC
10381	NC	Coastal Carolina Clean Power LLC
10675	CT	AES Thames
10788	WV	Chemours Belle Plant
50044	OH	The Ohio State University
50151	WV	UCC South Charleston Plant
50202	NY	Niagara Generation, LLC
50247	OH	Smart Papers LLC
50607	PA	Veolia Energy Philadelphia – Schuylkill
54035	NC	Roanoke Valley Energy Facility I
54571	PA	North East Cogeneration Plant
54755	NC	Roanoke Valley Energy Facility II
55098	TX	Frontera Generation Facility
55422	FL	Desoto County Energy Park
55703	TN	Valero Refining Company-Tennessee, LLC
59073	MD	Cove Point LNG Terminal

6. Description of Data Elements

eGRID2022 has 8 aggregation files: UNIT (unit), GEN (generator), PLNT (plant), ST (state), BA (Balancing Authority), SRL (eGRID subregion), NRL (NERC region), and the US (United States total). eGRID2022 also includes the regional grid gross loss factor data (GGL) and the demographic data (DEMO) for areas around power plants. Appendix A provides the file structure for eGRID2022, which includes variable descriptions and original data sources. Note that definitions for similar variables are not repeated after the description in the Plant file. For example, in the Plant file, the net generation in MWh is defined at the plant level for the data element PLNGENAN. For each subsequent file, the net generation, XXNGENAN (where XX is ST, BA, SR, NR, or the US) is not defined; it is simply the sum of PLNGENAN attributed to the aggregation entity.

Note that values reported as 0 in eGRID are reported as 0 in the original data files. Values reported as blank in eGRID are either reported as blank in the original data files or are not included in the original data files. The following data element descriptions apply to fields in both the imperial unit and metric unit workbooks, but the descriptions below only are only represented in imperial units.

6.1 The UNIT (Unit) File

There are 32 variables in the Unit file, which contains unit-level data.

1. **eGRID2022 Unit File Sequence Number (SEQUNT22) –**
   Unit-level records in the 2022 data file are sorted by state abbreviation, plant name, plant code, and unit ID, and are assigned a unique sequential number beginning with 1. This sequence number is unlikely to be the same as the sequence number in the eGRID2022 file for the same entity.

2. **Data Year (YEAR) –**
   The current eGRID data year.

3. **Plant State Abbreviation (PSTATABB) –**
   The state abbreviation of the state in which the plant is located.
   Source: EIA-860

4. **Plant Name (PNAME) –**
   The name associated with each plant.
   Source: EPA/CAMD; EIA-860

5. **DOE/EIA ORIS Plant or Facility Code (ORISPL) –**
   This plant code corresponds to PNAME and was originally developed for power plants by the Office of Regulatory Information Systems (ORIS), which was a part of the Federal Power Commission. It is now assigned by EIA and is used as a unique plant identification code for many EPA electric power databases. Note that some EIA ORISPL ID codes were changed to reflect CAMD's Power Sector Emissions Data ORISPL ID codes. See Section 5.1 for a discussion of ORISPL ID changes made to eGRID2022. See Appendix C for a table of all ORISPL changes made between EIA and CAMD's Power Sector Emissions Data.
   Source: EPA/CAMD; EIA-860

6. **Unit ID (UNITID) –**
The unit ID for the unit that produces the emissions.
Source: EPA/CAMD, EIA-923

7. **Prime Mover (PRMVR) –**
The unit's electric prime mover type.
Possible values are:

BA	= Battery energy storage
BT	= Binary cycle turbine
CA	= Combined cycle steam turbine
CC	= Combined cycle - total unit
CE	= Compressed air energy storage
CP	= Concentrated solar power energy storage
CS	= Combined cycle - single shaft
CT	= Combined cycle combustion turbine
FC	= Fuel cell
FW	= Flywheel energy storage
GT	= Combustion (gas) turbine
HA	= Hydrokinetic turbine – axial flow
HY	= Hydroelectric turbine
IC	= Internal combustion engine (diesel)
OT	= Other turbine
PS	= Hydraulic turbine - reversible (pumped storage)
PV	= Photovoltaic
ST	= Steam turbine (boiler, nuclear, geothermal, and solar steam)
WS	= Wind turbine - offshore
WT	= Wind turbine - onshore

Source: EIA-860

8. **Unit Operational Status (UNTOPST) –**
The unit's operational status in 2022. Possible values are:

CN	= Cancelled (previously reported as "planned")
CO	= New unit under construction
Future	= Planned new generator
IP	= Planned new generator canceled, indefinitely postponed, or no longer in resource plan
L	= Regulatory approvals pending (not under construction)
OA	= Out of service (returned or will be returned to service)
OP	= Operating – in service
OS	= Out of service (not expected to be returned to service)
OT	= Other
P	= Planned for installation but regulatory approvals not initiated (not under construction)
PL	= Planned (expected to go into commercial service within 10 years)
RE	= Retired – no longer in service
SB	= Stand-by (long-term storage)
SC	= Cold stand-by (reserve); deactivated

T   = Regulatory approvals received (not under construction)
TS   = Testing, construction complete, but not yet in commercial operation
U   = Under construction, less than 50% constructed
V   = Under construction, more than 50% constructed
Source: EPA/CAMD, EIA-860

9. **Clean Air Markets Division (CAMD) Program Flag (CAMDFLAG) –**
Indicates if the unit was included in CAMD's Power Sector Emissions Data in 2022.
See https://www.epa.gov/airmarkets/programs for additional information.
Source: EPA/CAMD

10. **Program Codes (PRGCODE) –**
The programs, as reported to CAMD's Power Sector Emissions Data, that the unit
was subject to in 2022. Values may be combined and separated by commas. The
individual values are:

ARP   = Acid Rain Program
CSNOX   = Cross-State Air Pollution Rule for NO_x (annual)
CSOSG1, CSOSG2, = Cross-State Air Pollution Rule NO_x Ozone Season Program
CSOSG3   (Group 1, Group 2, Group 3)
CSSO2G1, CSSO2G2 = Cross-State Air Pollution Rule for SO_2 (Group 1, Group 2)
MATS   = Mercury and Air Toxics Standards
NHNOX   = New Hampshire's special NOx program
NSPS4T   = New Source Performance Standards Subpart TTTT Program
RGGI   = Regional Greenhouse Gas Initiative
SIPNOX   = NO_x SIP Call
TXSO2   = Texas SO_2 Trading Program

See https://www.epa.gov/airmarkets/programs for additional information.
Source: EPA/CAMD

11. **Unit Bottom and Firing Type (BOTFIRTY) –**
The unit firing type.
Possible values are:

       = Blank
ARCH   = Arch-fired boiler
CC   = Combined cycle
CELL   = Cell
CT   = Combustion turbine
CYCLONE = Cyclone firing
DUCTBURNER = Ductburner
ENGINE   = Internal combustion engine
FLUIDIZED = Fluidized bed firing (circulating, bubbling, or pressurized fluidized
bed)
IGC   = Integrated gasification combined cycle
KILN   = Cement Kiln
OTHER BOILER = Other boiler

OTHER TURBINE   = Other turbine
PROCESS   = Refinery process heater
STOKER   = Stoker, spreader, vibrating grate, or slinger boiler
TANGENTIAL   = Tangential, concentric, or corner-fired boiler
TURBO   = Turbo
VERTICAL   = Vertically-fired boiler
VERTICAL/ARCH   = Vertical or arch firing
WALL   = Wall-fired boiler

Source: EPA/CAMD, EIA-860

12.   Number of Associated Generators (NUMGEN) –
The number of generators associated with each EIA-860 boiler in the file.
Source: EIA-860

13.   Unit Primary Fuel (FUELU1) –
The primary fuel determined from EIA-923 boiler or generator reported data or the primary fuel reported to CAMD's Power Sector Emissions Data.
Possible values are:

AB   = Agricultural byproduct
BFG   = Blast furnace gas
BIT   = Bituminous coal
BLQ   = Black liquor
COG   = Coke oven gas
DFO   = Distillate fuel oil, light fuel oil, diesel oil
GEO   = Geothermal
H   = Hydrogen
JF   = Jet fuel
KER   = Kerosene
LFG   = Landfill gas
LIG   = Lignite coal
MSW   = Municipal solid waste
MWH   = Electricity used for energy storage (megawatt hour)
NG   = Natural gas
NUC   = Nuclear
OBG   = Other biomass gas (digester gas, methane, and other biomass gases)
OBL   = Other biomass liquids
OBS   = Other biomass solid
OG   = Other gas
OTH   = Other
PC   = Petroleum coke
PG   = Gaseous propane
PRG   = Process gas
PUR   = Purchased steam
RC   = Refined coal
RFO   = Residual fuel oil, heavy fuel oil, petroleum
SGC   = Coal-derived synthetic gas
SLW   = Sludge waste
SUB   = Subbituminous coal

SUN   = Solar
TDF   = Tire-derived fuel
WAT   = Water
WC   = Waste coal
WDL   = Wood, wood waste liquid
WDS   = Wood, wood waste solid
WH   = Waste heat
WND   = Wind
WO   = Waste oil
Source: EPA/CAMD, EIA-923, EIA-860

14.   **Unit Operating Hours (HRSOP) –**
The number of hours that a unit from CAMD's Power Sector Emissions Data reported operating during the year. Only available for CAMD units. Blank values indicate data aren't available. If the source for the *Unit unadjusted annual heat input source column* equals *EIA non-ozone season distributed and EPA/CAMD ozone season*, the operating hours only account for hours operating during the ozone season and do not include hours operated during the remainder of the year.
Source: EPA/CAMD

15.   **Unit Unadjusted Annual Heat Input (HTIAN) –**
The unit's unadjusted annual total heat input, in MMBtu, based on the values reported to CAMD's Power Sector Emissions Data or calculated using EIA-923 unit data.
Source: EPA/CAMD; EIA-923

16.   **Unit Unadjusted Ozone Season Heat Input (HTIOZ) –**
The unit's unadjusted ozone season (May through September) heat input, in MMBtu, based on the values reported to CAMD's Power Sector Emissions Data or calculated using EIA-923 unit data.
Source: EPA/CAMD; EIA-923

17.   **Unit Unadjusted Annual NO$_x$ Emissions (NOXAN) –**
The unit's unadjusted NO$_x$ emissions, in short tons, based on the values reported to CAMD's Power Sector Emissions Data or calculated using EIA-923 unit data and unit-specific emissions rates or the emission factors listed in Appendix C.
Source: EPA/CAMD; EIA-923

18.   **Unit Unadjusted Ozone Season NO$_x$ Emissions (NOXOZ) –**
The unit's unadjusted ozone season (May through September) NO$_x$ emissions, in short tons, based on values reported to CAMD's Power Sector Emissions Data or calculated using EIA-923 unit data and unit-specific ozone-season emissions rates or the emission factors listed in Appendix C.
Source: EPA/CAMD; EIA-923

19.   **Unit Unadjusted Annual SO$_2$ Emissions (SO2AN) –**

The unit's unadjusted annual SO_2 emissions, in short tons, based on the values reported to CAMD's Power Sector Emissions Data or calculated using EIA-923 unit data and the emission factors listed in Appendix C. When not available, it is zero.
Source: EPA/CAMD; EIA-923

20. **Unit Unadjusted Annual CO₂ Emissions (CO2AN) –**
The unit's unadjusted annual CO_2 emissions, in short tons, based on the values reported to CAMD's Power Sector Emissions Data or calculated using EIA-923 unit data and emission factors listed in Appendix C.
Source: EPA/CAMD; EIA-923

21. **Unit Unadjusted Annual Hg Emissions (HGAN) –**
The unit's unadjusted annual Hg emissions, in pounds, based on the values reported to CAMD's Power Sector Emissions Data.
Source: EPA/CAMD

22. **Unit Unadjusted Annual Heat Input Source (HTIANSRC)**
Identifies the annual heat input data source.
Source: EPA/CAMD; EIA-923

23. **Unit Unadjusted Ozone Season Heat input source (HTIOZSRC)**
Identifies the ozone season heat input data source.
Source: EPA/CAMD; EIA-923

24. **Unit Unadjusted Annual NOx Emissions Source (NOXANSRC)**
Identifies the annual NOx emissions data source.
Source: EPA/CAMD; EIA-923

25. **Unit Unadjusted Ozone Season NOx Emissions Source (NOXOZSRC)**
Identifies the ozone-season NOx emissions data source.
Source: EPA/CAMD; EIA-923

26. **Unit Unadjusted Annual SO₂ Emissions Source (SO2SRC)**
Identifies the annual SO_2 emissions data source.
Source: EPA/CAMD; EIA-923

27. **Unit Unadjusted Annual CO₂ Emissions Source (CO2SRC)**
Identifies the annual CO_2 emissions data source.
Source: EPA/CAMD; EIA-923

28. **Unit Unadjusted Annual Hg Emissions Source (HGSRC)**
Identifies the annual Hg emissions data source.
Source: EPA/CAMD

29. **Unit SO₂ (Scrubber) First Control Device (SO2CTLDV) –**
The first reported SO_2 control device. Values may be combined and separated by commas.
Possible values are:

	= blank
ACI	= Activated carbon injection system
CD	= Circulating dry scrubber
DA	= Dual alkali
DL	= Dry lime flue gas desulfurization unit
DSI	= Dry sorbent (powder) injection type
EK	= Electrostatic precipitator, cold side, without flue gas conditioning
FBL	= Fluidized bed
JB	= Jet bubbling reactor (wet) scrubber
LIJ	= Lime injection
MA	= Mechanically aided type (wet) scrubber
MO	= Magnesium oxide
O	= Other (EPA/CAMD)
OT	= Other equipment (EIA-860)
PA	= Packed type (wet) scrubber
SB	= Sodium based
SD	= Spray dryer type/dry FGD/semi-dry FGD
SP	= Spray type (wet) scrubber
TR	= Tray type (wet) scrubber
VE	= Venturi type (wet) scrubber
WL	= Wet lime flue gas desulfurization unit
WLS	= Wet limestone

Source: EPA/CAMD, EIA-860

30. **Unit NO$_x$ First Control Device (NOXCTLDV) –**
The first reported NO$_x$ control device. Values may be combined and separated by commas.
Possible values are:

	= Blank
CM	= Combustion modification/fuel reburning
DLNB	= Dry low NO$_x$ premixed technology
EW	= Electrostatic precipitator, hot side, without flue gas conditioning
H2O	= Water injection
LNB	= Low NO$_x$ burner
LNBO	= Low NO$_x$ burner with overfire air
LNC1	= Low NO$_x$ burner technology with close-coupled overfire air
LNC2	= Low NO$_x$ burner technology with separated OFA
LNC3	= Low NO$_x$ burner technology with close-coupled and separated overfire air
LNCB	= Low NO$_x$ burner technology for cell burners
NH3	= Ammonia injection
O/OT	= Other
OFA	= Overfire air
SCR	= Selective catalytic reduction (EPA/CAMD)
SN	= Selective noncatalytic reduction (EIA-860)
SNCR	= Selective noncatalytic reduction (EPA/CAMD)
SR	= Selective catalytic reduction (EIA-860)
STM	= Steam injection

Source: EPA/CAMD, EIA-860

31. Unit Hg Activated Carbon Injected System Flag (HGCTLDV) –
The activated carbon injection mercury control flag.
Source: EIA-860

32. Unit Year On-Line (UNTYRONL) –
The four-digit year the unit came on-line.
Source: EPA/CAMD, EIA-860

6.2 The GEN (Generator) File

There are 17 variables in the second file, GEN, which contains generator level data. This file includes generation from steam boilers and nuclear units in the EIA-923, plant prime movers in the EIA-923 that have only one generator in the EIA-860, and the EIA-923 plant prime movers where generation is distributed to the generator level based on nameplate capacity.

1. eGRID2022 File Generator Sequence Number (SEQGEN22) –
The generator records in the 2022 generator data file are sorted by state abbreviation, plant name, plant code, and generator ID, and are assigned a unique sequential number beginning with 1. This sequence number is unlikely to be the same as the sequence number in the eGRID2022 file for the same entity.

2. Data Year (YEAR) –
The current eGRID data year.

3. Plant State Abbreviation (PSTATABB) –
The state abbreviation in which the plant is located.
Source: EIA-860

4. Plant Name (PNAME) –
The name associated with each plant.
Source: EPA/CAMD; EIA-860

5. DOE/EIA ORIS Plant or Facility Code (ORISPL) –
This plant code was developed for power plants by the Office of Regulatory Information Systems (ORIS), which was a part of the Federal Power Commission. It is now assigned by EIA and is used as a unique plant identification code for many EPA electric power databases. Note that some EIA ORISPL ID codes were changed to reflect CAMD's Power Sector Emissions Data ORISPL ID codes. See Section 5.1 for a discussion of ORISPL ID changes made to eGRID2022. See Table C-5 in Appendix C for a table of all ORISPL changes made between EIA and CAMD's Power Sector Emissions Data.
Source: EPA/CAMD; EIA-860

6. Generator ID (GENID) –
The electrical generation unit (generator) at a plant. In the majority of cases, there is a one-to-one correspondence with the boiler ID if it is a steam generator.
Sources: EIA-860

7. **Number of Associated Boilers (NUMBLR) –**
The number of EIA-860 boilers associated with each generator in the file.
Sources: EIA-860

8. **Generator Status (GENSTAT) –**
The reported generator status at the end of 2022.
Possible values are:

CN	= Cancelled (previously reported as "planned")
IP	= Planned new generator canceled, indefinitely postponed, or no longer in resource plan
L	= Regulatory approvals pending (not under construction)
OA	= Out of service (returned or will be returned to service)
OP	= Operating – in service
OS	= Out of service (not expected to be returned to service)
OT	= Other
P	= Planned for installation but regulatory approvals not initiated (not under construction)
RE	= Retired – no longer in service
SB	= Stand-by (long-term storage)
T	= Regulatory approvals received (not under construction)
TS	= Testing, construction complete, but not yet in commercial operation
U	= Under construction, less than 50% constructed
V	= Under construction, more than 50% constructed

Generators with one of these above generator status values are considered potentially operating generators (including generators with status = 'RE', if the retirement date is 2022 or later).
Source: EIA-860

9. **Generator Prime Mover Type (PRMVR) –**
The reported generator's electric generator type.
Possible values are:

BA	= Battery energy storage
BT	= Binary cycle turbine
CA	= Combined cycle steam turbine
CC	= Combined cycle - total unit
CE	= Compressed air energy storage
CP	= Concentrated solar power energy storage
CS	= Combined cycle - single shaft
CT	= Combined cycle combustion turbine
FC	= Fuel cell
FW	= Flywheel energy storage
GT	= Combustion (gas) turbine
HA	= Hydrokinetic turbine – axial flow
HY	= Hydroelectric turbine
IC	= Internal combustion engine (diesel)

OT   = Other turbine
PS   = Hydraulic turbine - reversible (pumped storage)
PV   = Photovoltaic
ST   = Steam turbine (boiler, nuclear, geothermal, and solar steam)
WS   = Wind turbine - offshore
WT   = Wind turbine - onshore

Source: EIA-860

10.   **Generator Primary Fuel (FUELG1) –**
        The potential primary fuel reported for the generator.
        Possible values are:

AB   = Agricultural by-products
BFG   = Blast furnace gas
BIT   = Bituminous coal
BLQ   = Black liquor
COG   = Coke oven gas
DFO   = Distillate fuel oil, diesel, No. 1, No. 2, and No. 4 fuel oils
GEO   = Geothermal
H   = Hydrogen
JF   = Jet fuel
KER   = Kerosene
LFG   = Landfill gas
LIG   = Lignite coal
MSW   = Municipal solid waste
MWH   = Electricity
NG   = Natural gas
NUC   = Nuclear
OBG   = Other biomass gas (digester gas, methane, and other biomass gases)
OBL   = Other biomass liquids
OBS   = Other biomass solids
OG   = Other gas
OTH   = Other unknown
PC   = Petroleum coke
PG   = Gaseous propane
PRG   = Process gas
PUR   = Purchased steam
RC   = Refined coal
RFO   = Residual fuel oil
SGC   = Synthesis gas – coal-derived
SGP   = Synthesis gas – petroleum coke
SLW   = Sludge waste
SUB   = Subbituminous coal
SUN   = Solar

TDF	= Tire-derived fuel	
WAT	= Water	
WC	= Waste coal	
WDL	= Wood waste liquid (excluding black liquor)	
WDS	= Wood, wood waste solid	
WH	= Waste heat	
WND	= Wind	
WO	= Waste oil	

Source: EIA-860

11.   Generator Nameplate Capacity (NAMEPCAP) –
The nameplate capacity, in MW, of the generator.
Source: EIA-860

12.   Generator Capacity Factor (CFACT) –
This field is calculated at the generator level:
CFACT = (GENNTAN) / (NAMEPCAP * 8760).
The value should generally be between 0 and 1. However, according to reported data, there are outliers where, a generator's capacity factor is greater than 1. The capacity factor for plants with negative net generation is set to 0.

13.   Generator Annual Net Generation (GENNTAN) –
The reported net generation in MWh.
Sources: EIA-923

14.   Generator Ozone Season Net Generation (GENNTOZ) –
The generator five-month ozone season (May through September) net generation in MWh, based on monthly generator generation data.
Sources: EIA-923

15.   Generation Data Source (GENERSRC) –
The data source of the generator net generation data. The values are as follows:

- Blank (no generator level data)
- Distributed from EIA-923 Generation and Fuel
- EIA-923 Generator File
- Data from EIA-923 Generator File overwritten with distributed data from EIA-923 Generation and Fuel

16.   Generator Year On-Line (GENYRONL) –
The four-digit year the generator came on-line.
Source: EIA-860

17.   Generator Planned or Actual Retirement Year (GENYRRET) –
The four-digit year the generator retired or is planned to retire.
Source: EIA-860

6.3 The PLNT (Plant) File

There are 141 variables in the Plant file (PLNT).

1. **eGRID2022 File Plant Sequence Number (SEQPLT) –**
    The plant records in the 2022 plant data file are sorted by state abbreviation and plant name, and are assigned a unique sequential number beginning with 1. This sequence number is unlikely to be the same as the sequence number in the eGRID2022 file for the same entity.

2. **Data Year (YEAR) –**
    The current eGRID data year.

3. **Plant State Abbreviation (PSTATABB) –**
    The state abbreviation in which the plant is located.
    Source: EIA-860

4. **Plant Name (PNAME) –**
    The name associated with each plant.
    Source: EPA/CAMD; EIA-860

5. **DOE/EIA ORIS Plant or Facility Code (ORISPL) –**
    This plant code corresponds to PNAME and was originally developed for power plants by the Office of Regulatory Information Systems (ORIS), which was a part of the Federal Power Commission. It is now assigned by EIA and is used as a unique plant identification code for many EPA electric power databases, too. Note that some EIA ORISPL ID codes were changed to reflect CAMD's Power Sector Emissions Data ORISPL ID codes. See Section 5.1 for a discussion of ORISPL ID changes made to eGRID2022. See Table C-5 in Appendix C for a table of all ORISPL changes made between EIA and CAMD's Power Sector Emissions Data.
    Source: EPA/CAMD; EIA-860

6. **Plant Transmission or Distribution System Owner Name (OPRNAME) –**
    The name associated with the owner of the transmission or distribution system company to which the plant is interconnected.
    Source: EIA-860

7. **Plant Transmission or Distribution System Owner ID (OPRCODE) –**
    The transmission or distribution system owner ID. Each transmission or distribution system has a unique company code assigned by EIA, with some exceptions. Plants with no operating company ID assigned by EIA are listed as -9999 in eGRID2022.
    Source: EIA-860

8. **Utility Name (UTLSRVNM) –**
    The name of the owner of the utility service territory (a utility company or EGC) [and previously known as the utility service area] in which the plant is located.
    Source: EIA-860

9. **Utility ID (UTLSRVID) –**
The unique ID code associated with the utility name.
Source: EIA-860

10. **Plant-level Sector (SECTOR) –**
The plant level sector name, assigned by the purpose, regulatory status, and CHP status at the plant.
Possible values are:

- Commercial CHP
- Commercial Non-CHP
- Electric Utility
- Industrial CHP
- Industrial Non-CHP
- Independent Power Producer (IPP) CHP
- Independent Power Producer (IPP) Non-CHP

Source: EIA-860

11. **Balancing Authority Name (BANAME) –**
The name of the balancing authority for the plant. The balancing authority is associated with the plant's eGRID subregion and NERC region.
Source: EIA-860, EIA-861

12. **Balancing Authority Code (BACODE) –**
The code of the balancing authority for the plant.
Source: EIA-860, EIA-861

13. **NERC Region Acronym (NERC) –**
The acronym for the NERC region in which the plant is located. The NERC region is associated with the plant's BA and eGRID subregion. A representation of the eGRID NERC region map is included in Appendix B.
Source: EIA-860

14. **eGRID Subregion Acronym (SUBRGN) –**
The acronym for the eGRID subregion in which the plant is located. The eGRID subregion is associated with the plant's balancing authority and NERC region. A representation of the eGRID subregion map is included in Appendix B.
Source: EPA

15. **eGRID Subregion Name (SRNAME) –**
The name of the eGRID subregion in which the plant is located.
Source: EPA

16. **Plant Associated ISO/RTO Territory (ISORTO) –**
The name, if applicable, of the Independent System Operator (ISO) or Regional Transmission Organization (RTO) associated with the plant.
Possible values are CAISO, ERCOT, ISONE, MISO, NYISO, PJM, SPP, or blank.
Source: EIA-860

17. **Plant FIPS State Code (FIPSST)** –
The two-digit Federal Information Processing Standards (FIPS) state character code of the state in which the plant is located. The codes are from the National Institute of Standards and Technology (US Census, 2021).
Source: US Census

18. **Plant FIPS County Code (FIPSCNTY)** –
The three digit FIPS county character code of the county in which the plant is located. The codes are from the National Institute of Standards and Technology (US Census, 2021).
Source: US Census

19. **Plant County Name (CNTYNAME)** –
The name of the county in which the plant is located.
Source: EIA-860

20. **Plant Latitude (LAT)** –
The latitude, in degrees to four decimal places, associated with the plant.
Source: EIA-860

21. **Plant Longitude (LON)** –
The longitude, in degrees to four decimal places, associated with the plant.
Source: EIA-860

22. **Clean Air Markets Division (CAMD) Program Flag (CAMDFLAG)** –
Indicates if the plant was included in CAMD's Power Sector Emissions Data in 2022. See https://www.epa.gov/airmarkets/programs for additional information.
Source: EPA/CAMD

23. **Number of Units (NUMUNT)** –
The number of operating units within a plant.
Source: EIA-860

24. **Number of Generators (NUMGEN)** –
The number of potentially operating generators within a plant.
Source: EIA-860

25. **Plant Primary Fuel (PLPRMFL)** –
The plant's primary fuel based on maximum heat input of fuel consumed by the plant. If the plant does not consume fuel, it is based on the maximum nameplate capacity. Possible values are:

AB	= Agricultural byproduct
BFG	= Blast furnace gas
BIT	= Bituminous coal
BLQ	= Black liquor
COG	= Coke oven gas

DFO	= Distillate fuel oil, light fuel oil, diesel oil	
GEO	= Geothermal steam	
H	= Hydrogen	
JF	= Jet fuel	
KER	= Kerosene	
LFG	= Landfill gas	
LIG	= Lignite coal	
MSW	= Municipal solid waste	
MWH	= Electricity used for energy storage (megawatt hour)	
NG	= Natural gas	
NUC	= Nuclear material	
OBG	= Other biomass gas	
OBL	= Other biomass liquid	
OBS	= Other biomass solid	
OG	= Other gas	
OTH	= Other (unknown)	
PC	= Petroleum coke	
PG	= Gaseous propane	
PRG	= Process gas	
PUR	= Purchased fuel (unknown)	
RC	= Refined coal	
RFO	= Residual fuel oil, heavy fuel oil, petroleum	
SGC	= Coal-derived synthetic gas	
SLW	= Sludge waste	
SUB	= Subbituminous coal	
SUN	= Sun	
TDF	= Tire-derived fuel	
WAT	= Water	
WC	= Waste coal	
WDL	= Wood, wood waste liquid	
WDS	= Wood, wood waste solid	
WH	= Waste heat	
WND	= Wind	
WO	= Waste oil	

Source: EPA/CAMD; EIA-860

26. **Plant Primary Fuel Category (PLFUELCT) –**
The fuel category for the primary fuel of the plant. This field is "COAL" if the plant's primary fuel is derived from coal (fuel type = BIT, COG, LIG, RC, SGC, SUB, WC), "OIL" if it is derived from oil (DFO, JF, KER, PC, RFO, WO), "GAS" if it is derived from gas (NG, PG), "OFSL" if it is another fossil fuel (BFG, OG, TDF), "NUCLEAR" if it is derived from nuclear (NUC), "HYDRO" if it is derived from hydro power (WAT), "SOLAR" if it is derived from solar power, (SUN), "WIND" if it is derived from wind power (WND), "GEOTHERMAL" if it is derived from geothermal power (GEO), "OTHF" if it is derived from waste heat/hydrogen/purchased/unknown (H, MWH, OTH, PRG, PUR, WH), and "BIOMASS" if it is derived from biomass sources (AB, BLQ, LFG, MSW, OBG, OBL, OBS, SLW, WDL, WDS).

27. **Flag indicating if the plant burned or generated any amount of coal (COALFLAG) –**
A flag to indicate if the plant burned coal or if it has positive heat input and generated electricity from coal. The plant will not be flagged if the plant has negative coal generation and no coal heat input for 2022.

28. **Plant Capacity Factor (CAPFAC) –**
The plant capacity factor, expressed with four decimal places. It is calculated as follows:
CAPFAC = (PLNGENAN / (NAMEPCAP * 8760))
Although the value should be between 0 and 1, there are outliers.

29. **Plant Nameplate Capacity (NAMEPCAP) –**
The nameplate capacity of the plant, in MW.
Source: EIA-860

30. **Nonbaseload Factor (NBFACTOR) –**
The proportion of generation that is considered nonbaseload generation. A value of 0 means that all of the generation is baseload generation. See Section 3 for more information.
Source: Calculated

31. **Biogas/Biomass Plant Adjustment Flag (RMBMFLAG) –**
A biogas (landfill gas, digester gas)/biomass adjustment flag used to indicate where emissions are adjusted for plants using biogas or biomass fuels. A facility's emissions reported in eGRID may be different from that reported in other EPA sources, such as CAMD's Power Sector Emissions Data, due to this adjustment.

32. **Combined Heat and Power (CHP) Plant Adjustment Flag (CHPFLAG) –**
A flag to indicate if the plant is a CHP facility. A CHP facility's emissions and heat input reported in eGRID may be different from that reported in other EPA sources, such as CAMD's Power Sector Emissions Data, due to this adjustment.
Source: EPA/CAMD; EIA-860

33. **CHP Plant Useful Thermal Output (USETHRMO) –**
The useful thermal output, in MMBtu, estimated for a CHP facility.
Source: EIA-923 calculated

34. **CHP Plant Power to Heat Ratio (PWRTOHT) –**
The power to heat ratio for a CHP facility, which is the ratio of the heat value of electricity generated (3413 * kWh output) to the facility's useful thermal output.

35. **CHP Plant Electric Allocation Factor (ELCALLOC) –**
The CHP plant's decimal fraction of the emissions that are attributed to electricity. It is derived as the ratio of the electric heat output to the sum of the electric and steam heat outputs, where the steam output is 75% of the useful thermal output. The electric allocation factor is used to allocate emissions from a CHP facility to both electricity

generation and useful thermal output. For non-CHP plants, eGRID uses an electric allocation factor of 1.0.

36.   **Plant Pumped Storage Flag (PSFLAG) –**
Indicates if the plant has at least one pumped storage generator.
Source: EIA-860

37.   **Plant Annual Heat Input from Combustion (PLHTIAN) –**
The total annual heat input from combustion, in MMBtu, for the plant. For CHP plants, the value is adjusted by the electric allocation factor.

38.   **Plant Ozone Season Heat Input from Combustion (PLHTIOZ) –**
The five-month ozone season (May through September) heat input from combustion, in MWh, for the plant. For CHP plants, the value is adjusted by the electric allocation factor.

39.   **Plant Total Annual Heat Input (PLHTIANT) –**
The total annual heat input from combustion and noncombustion units, in MMBtu, for the plant. For CHP plants, the value is adjusted by the electric allocation factor.

40.   **Plant Total Ozone Season Heat Input (PLHTIOZT) –**
The five-month ozone season (May through September) heat input from combustion and noncombustion units, in MWh, for the plant. For CHP plants, the value is adjusted by the electric allocation factor.

41.   **Plant Annual Net Generation (PLNGENAN) –**
The total reported annual net generation, in MWh, for the plant, summed from the Unit file.
Source: EIA-923

42.   **Plant Ozone Season Net Generation (PLNGENOZ) –**
The five-month ozone season (May through September) net generation for the plant.
Source: EIA-923

43.   **Plant Annual NO$_x$ Emissions (PLNOXAN) –**
The total annual NO$_x$ emissions, in short tons, for the plant. Biogas components are adjusted. For CHP plants, the value is adjusted by the electric allocation factor. This adjusted emissions field is estimated by first making the biogas adjustment (if it exists) and then applying the electric allocation factor (if the plant is a CHP).

44.   **Plant Ozone Season NO$_x$ Emissions (PLNOXOZ) –**
The five-month ozone season (May through September) NO$_x$ emissions, in short tons, for the plant. Biogas components are adjusted. For CHP plants, the value is adjusted by the electric allocation factor. This adjusted emissions field is estimated by first making the biogas adjustment (if it exists) and then applying the electric allocation factor (if the plant is a CHP).

45. **Plant Annual SO₂ Emissions (PLSO2AN)** –
The total annual SO_2 emissions, in short tons, for the plant. Landfill gas components are adjusted. For CHP plants, the value is adjusted by the electric allocation factor. This adjusted emissions field is estimated by first making the landfill gas adjustment (if it exists) and then applying the electric allocation factor (if the plant is a CHP).

46. **Plant Annual CO₂ Emissions (PLCO2AN)** –
The total annual CO_2 emissions, in short tons, for the plant. All CO_2 emissions from biomass fuels are adjusted to zero. For CHP plants, the value is adjusted by the electric allocation factor. This adjusted emissions field is estimated by first making the biomass adjustment (if it exists) and then applying the electric allocation factor (if the plant is a CHP).

47. **Plant Annual CH₄ Emissions (PLCH4AN)** –
The total annual CH_4 emissions, in pounds, for the plant. Biogas biomass components are adjusted. For CHP plants, the value is adjusted by the electric allocation factor. This adjusted emissions field is estimated by first making the biomass adjustment (if it exists) and then applying the electric allocation factor (if the plant is a CHP).

48. **Plant Annual N₂O Emissions (PLN2OAN)** –
The total annual N_2O emissions, in pounds for the plant. Biogas biomass components are adjusted. For CHP plants, the value is adjusted by the electric allocation factor. This adjusted emissions field is estimated by first making the biomass adjustment (if it exists) and then applying the electric allocation factor (if the plant is a CHP).

49. **Plant Annual CO₂ Equivalent Emissions (PLCO2EQA)** –
The annual CO_2 equivalent emissions, in short tons, for the plant. This value is a universal standard of measurement. The GWPs from the fourth IPCC assessment are used for the calculation; the formula is as follows:
$$PLCO2EQA = ((1 * PLCO2AN) + (25 * PLCH4AN / 2000) + (298 * PLN2OAN / 2000)).$$

50. **Plant Annual Hg Emissions (PLHGAN)** –
Not calculated for eGRID2022.

51. **Plant Annual NOₓ Total Output Emission Rate (PLNOXRTA)** –
This field, in lb/MWh, is calculated as follows:
$$PLNOXRTA = 2000 * (PLNOXAN / PLNGENAN).$$

52. **Plant Ozone Season NOₓ Total Output Emission Rate (PLNOXRTO)** –
This field, in lb/MWh, is calculated as follows:
$$PLNOXRTO = 2000 * (PLNOXOZ / PLNGENOZ).$$

53. **Plant Annual SO₂ Total Output Emission Rate (PLSO2RTA)** –
This field, in lb/MWh, is calculated as follows:
$$PLSO2RTA = 2000 * (PLSO2AN / PLNGENAN).$$

54. **Plant Annual CO$_2$ Total Output Emission Rate (PLCO2RTA) –**
     This field, in lb/MWh, is calculated as follows:
     PLCO2RTA = 2000 * (PLCO2AN / PLNGENAN).

55. **Plant Annual CH$_4$ Total Output Emission Rate (PLCH4RTA) –**
     This field, in lb/MWh, is calculated as follows:
     PLCH4RTA = PLCH4AN / PLNGENAN.

56. **Plant Annual N$_2$O Total Output Emission Rate (PLN2ORTA) –**
     This field, in lb/MWh, is calculated as follows:
     PLN2ORTA = PLN2OAN / PLNGENAN

57. **Plant Annual CO$_2$ Equivalent Total Output Emission Rate (PLC2ERTA) –**
     This field, in lb/MWh, is calculated as follows:
     PLC2ERTA = 2000 * (PLCO2EQA / PLNGENAN).

58. **Plant Annual Hg Total Output Emission Rate (PLHGRTA) –**
     Not calculated for eGRID2022.

59. **Plant Annual NO$_x$ Input Emission Rate (PLNOXRA) –**
     This field, in lb/MMBtu, is calculated as follows:
     PLNOXRA = 2000 * (PLNOXAN / PLHTIAN).

60. **Plant Ozone Season NO$_x$ Input Emission Rate (PLNOXRO) –**
     This field, in lb/MMBtu, is calculated as follows:
     PLNOXRO = 2000 * (PLNOXOZ / PLHTIOZ).

61. **Plant Annual SO$_2$ Input Emission Rate (PLSO2RA) –**
     This field, in lb/MMBtu, is calculated as follows:
     PLSO2RA = 2000 * (PLSO2AN / PLHTIAN).

62. **Plant Annual CO$_2$ Input Emission Rate (PLCO2RA) –**
     This field, in lb/MMBtu, is calculated as follows:
     PLCO2RA = 2000 * (PLCO2AN / PLHTIAN).

63. **Plant Annual CH$_4$ Input Emission Rate (PLCH4RA) –**
     This field, in lb/MMBtu, is calculated as follows:
     PLCO2RA = 2000 * (PLCH4AN / PLHTIAN).

64. **Plant Annual N$_2$O Input Emission Rate (PLN2ORA) –**
     This field, in lb/MMBtu, is calculated as follows:
     PLCO2RA = 2000 * (PLN2OAN / PLHTIAN).

65. **Plant Annual CO$_2$ Equivalent Input Emission Rate (PLC2ERA) –**
     This field, in lb/MMBtu, is calculated as follows:
     PLCO2RA = 2000 * (PLCO2EQA / PLHTIAN).

66. **Plant Annual Hg Input Emission Rate (PLHGRA) –**
Not calculated for eGRID2022.

67. **Plant Annual NO$_x$ Combustion Output Emission Rate (PLNOXCRT) –**
This field, in lb/MWh, is calculated as follows:
PLNOXCRT = 2000 * (PLNOXAN / PLGENACY).

68. **Plant Ozone Season NO$_x$ Combustion Output Emission Rate (PLNOXCRO) –**
This field, in lb/MWh, is calculated as follows:
PLNOXCRO = 2000 * (PLNOXOZ / ((PLGENACY * PLNGENOZ) / PLNGENAN)).

69. **Plant Annual SO$_2$ Combustion Output Emission Rate (PLSO2CRT) –**
This field, in lb/MWh, is calculated as follows:
PLSO2CRT = 2000 * (PLSO2AN / PLGENACY).

70. **Plant Annual CO$_2$ Combustion Output Emission Rate (PLCO2CRT) –**
This field, in lb/MWh, is calculated as follows:
PLCO2CRT = 2000 * (PLCO2AN / PLGENACY).

71. **Plant Annual CH$_4$ Combustion Output Emission Rate (PLCH4CRT) –**
This field, in lb/MWh, is calculated as follows:
PLCH4CRT = PLCH4AN / PLGENACY.

72. **Plant Annual N$_2$O Combustion Output Emission Rate (PLN2OCRT) –**
This field, in lb/MWh, is calculated as follows:
PLN2OCRT = PLN2OAN / PLGENACY.

73. **Plant Annual CO$_2$ Equivalent Combustion Output Emission Rate (PLC2ECRT) –**
This field, in lb/MWh, is calculated as follows:
PLC2ECRT = 2000 * (PLCO2EQA / PLGENACY).

74. **Plant Annual Hg Combustion Output Emission Rate (PLHGCRT) –**
Not calculated for eGRID2022.

75. **Plant Unadjusted Annual NO$_x$ Emissions (UNNOX) –**
The total plant-level unadjusted annual NO$_x$ emissions, in short tons.

76. **Plant Unadjusted Ozone Season NO$_x$ Emissions (UNNOXOZ) –**
The unadjusted five-month ozone season (May through September) NO$_x$ emissions, in short tons, for the plant.

77.   **Plant Unadjusted Annual SO$_2$ Emissions (UNSO2) –**
      The total plant-level unadjusted annual SO$_2$ emissions, in short tons.

78.   **Plant Unadjusted Annual CO$_2$ Emissions (UNCO2) –**
      The total plant-level unadjusted annual CO$_2$ emissions, in short tons.

79.   **Plant Unadjusted Annual CH$_4$ Emissions (UNCH4) –**
      The total plant-level unadjusted annual CH$_4$ emissions, in pounds.

80.   **Plant Unadjusted Annual N$_2$O Emissions (UNN2O) –**
      The total plant-level unadjusted annual N$_2$O emissions, in pounds.

81.   **Plant Unadjusted Annual Hg Emissions (UNHG) –**
      Not calculated for eGRID2022.

82.   **Plant Unadjusted Annual Heat Input from Combustion (UNHTI) –**
      The total plant-level unadjusted annual heat input from combustion, in MMBtu.
      Sources: EPA/CAMD, EIA-923

83.   **Plant Unadjusted Ozone Season Heat Input from Combustion (UNHTIOZ) –**
      The five-month ozone season (May through September) heat input from combustion,
      in MMBtu for the plant.
      Sources: EPA/CAMD, EIA-923

84.   **Plant Unadjusted Total Annual Heat Input (UNHTIT) –**
      The total plant-level unadjusted annual heat input from combustion and
      noncombustion units, in MMBtu.
      Sources: EPA/CAMD, EIA-923

85.   **Plant Unadjusted Total Ozone Season Heat Input (UNHTIOZT) –**
      The five-month ozone season (May through September) heat input from combustion
      and noncombustion units, in MMBtu for the plant.
      Sources: EPA/CAMD, EIA-923

86.   **Plant Unadjusted Annual NO$_x$ Emissions Source (UNNOXSRC) –**
      The source of plant-level unadjusted annual NO$_x$ emissions.

87.   **Plant Unadjusted Ozone Season NO$_x$ Emissions Source (UNNOZSRC) –**
      The source of plant-level unadjusted ozone NO$_x$ emissions.

88.   **Plant Unadjusted Annual SO$_2$ Emissions Source (UNSO2SRC) –**
      The source of plant-level unadjusted annual SO$_2$ emissions.

89.   **Plant Unadjusted Annual CO$_2$ Emissions Source (UNCO2SRC) –**
      The source of plant-level unadjusted annual CO$_2$ emissions.

90.   **Plant Unadjusted Annual CH$_4$ Emissions Source (UNCH4SRC) –**

The source of plant-level unadjusted annual CH_4 emissions.

91. **Plant Unadjusted Annual N$_2$O Emissions Source (UNN2OSRC) –**
The source of plant-level unadjusted annual N_2O emissions.

92. **Plant Unadjusted Annual Hg Emissions Source (UNHGSRC) –**
Not calculated for eGRID2022.

93. **Plant Unadjusted Annual Heat Input Source (UNHTISRC) –**
The source of plant-level unadjusted annual heat input.

94. **Plant Unadjusted Ozone Season Heat Input Source (UNHOZSRC) –**
The source of plant-level unadjusted ozone season heat input.

95. **Plant Annual NO$_x$ Biomass Emissions (BIONOX) –**
The annual plant-level NO_x biomass emissions, in short tons. This is the value the total emissions are adjusted by for the biomass emissions adjustments. See Section 3.1.2.1 for more information.
Source: EIA-923

96. **Plant Ozone Season NO$_x$ Biomass Emissions (BIONOXOZ) –**
The five-month ozone season (May through September) plant-level NO_x biomass emissions, in short tons. This is the value the total emissions are adjusted by for the biomass emissions adjustments. See Section 3.1.2.1 for more information.
Source: EIA-923

97. **Plant Annual SO$_2$ Biomass Emissions (BIOSO2) –**
The annual plant-level SO_2 biomass emissions, in short tons. This is the value the total emissions are adjusted by for the biomass emissions adjustments. See Section 3.1.2.1 for more information.
Source: EIA-923

98. **Plant Annual CO$_2$ Biomass Emissions (BIOCO2) –**
The annual plant-level CO_2 biomass emissions, in short tons. This is the value the total emissions are adjusted by for the biomass emissions adjustments. See Section 3.1.2.1 for more information.
Source: EIA-923

99. **Plant Annual CH$_4$ Biomass Emissions (BIOCH4) –**
The annual plant-level CH_4 biomass emissions, in pounds. This is the value the total emissions are adjusted by for the biomass emissions adjustments. See Section 3.1.2.1 for more information.
Source: EIA-923

100. **Plant Annual N$_2$O Biomass Emissions (BION2O) –**
The annual plant-level N_2O biomass emissions, in pounds. This is the value the total emissions are adjusted by for the biomass emissions adjustments. See Section 3.1.2.1 for more information.
Source: EIA-923

101. **Plant Combustion Annual Heat Input CHP Adjustment Value (CHPCHTI) –**
The annual plant-level heat input adjustment value for CHP plants, in MMBtu. See Section 3.1.2.2 for more information.

102. **Plant Combustion Ozone Season Heat Input CHP Adjustment Value (CHPCHTIOZ) –**
The five-month ozone season (May through September) plant-level heat input adjustment value for CHP plants, in MMBtu. See Section 3.1.2.2 for more information.

103. **Plant Annual NO$_x$ Emissions CHP Adjustment Value (CHPNOX) –**
The annual plant-level NO$_x$ emissions adjustment value for CHP plants, in short tons. See Section 3.1.2.2 for more information.

104. **Plant Ozone season NO$_x$ Emissions CHP Adjustment Value (CHPNOXOZ) –**
The five-month ozone season (May through September) plant-level NO$_x$ emissions adjustment value for CHP plants, in short tons. See Section 3.1.2.2 for more information.

105. **Plant Annual SO$_2$ Emissions CHP Adjustment Value (CHPSO2) –**
The annual plant-level SO$_2$ emissions adjustment value for CHP plants, in short tons. See Section 3.1.2.2 for more information.

106. **Plant Annual CO$_2$ Emissions CHP Adjustment Value (CHPCO2) –**
The annual plant-level CO$_2$ emissions adjustment value for CHP plants, in short tons. See Section 3.1.2.2 for more information.

107. **Plant Annual CH$_4$ Emissions CHP Adjustment Value (CHPCH4) –**
The annual plant-level CH$_4$ emissions adjustment value for CHP plants, in pounds. See Section 3.1.2.2 for more information.

108. **Plant Annual N$_2$O Emissions CHP Adjustment Value (CHPN2O) –**
The annual plant-level N$_2$O emissions adjustment value for CHP plants, in pounds. See Section 3.1.2.2 for more information.

109. **Plant Nominal Heat Rate (PLHTRT) –**
The plant nominal heat rate, in Btu/kWh, for partial combustion plants. It is calculated as follows:

PLHTRT = 1000 * (PLHTIAN / PLGENACY)
For CHP plants, the value is, in effect, adjusted by the electric allocation factor, since the heat input has been adjusted.

110. **Plant Annual Coal Net Generation (PLGENACL) –**
The plant annual net generation, in MWh, for coal. Fuel codes that are included in coal are BIT, COG, SUB, LIG, WC, and SC.

111. **Plant Annual Oil Net Generation (PLGENAOL) –**
The plant annual net generation, in MWh, for oil. Fuel codes included in oil are DFO, JF, KER, OO, PC, RFO, RG, and WO.

112. **Plant Annual Gas Net Generation (PLGENAGS) –**
The plant annual net generation, in MWh, for natural gas. Fuel codes included in gas are NG and PG.

113. **Plant Annual Nuclear Net Generation (PLGENANC) –**
The plant annual net generation, in MWh, for nuclear. The fuel code is NUC.

114. **Plant Annual Hydro Net Generation (PLGENAHY) –**
The plant annual net generation, in MWh, for hydro. The fuel code is WAT.

115. **Plant Annual Biomass Net Generation (PLGENABM) –**
The annual net generation, in MWh, for biomass. Biomass is a fuel derived from organic matter such as wood and paper products, agricultural waste, or methane (e.g., from landfills). The renewable portion of solid waste, fuel code MSB, is included as biomass, as are AB, BLQ, DG, LFG, ME, OBL, OBS, PP, SLW, WDL, and WDS.

116. **Plant Annual Wind Net Generation (PLGENAWI) –**
The plant annual net generation, in MWh, for wind. The fuel code is WND.

117. **Plant Annual Solar Net Generation (PLGENASO) –**
The plant annual net generation, in MWh, for solar. The fuel code is SUN.

118. **Plant Annual Geothermal Net Generation (PLGENAGT) –**
The plant annual net generation, in MWh, for geothermal. The fuel code is GEO.

119. **Plant Annual Other Fossil Net Generation (PLGENAOF) –**
The plant annual net generation, in MWh, for other fossil fuel that cannot be categorized as coal, oil, or gas. Other fossil fuel codes include BFG, COG, HY, LB, MH, MSF, OG, PRG, and TDF. The nonrenewable portion of solid waste, fuel code MSN, is included as other fossil.

120. **Plant Annual Other Unknown/ Purchased Fuel Net Generation (PLGENAOP) –**
The plant annual net generation, in MWh, for other unknown/purchased. Fuel codes include OTH, PUR, or WH.

121. **Plant Annual Total Nonrenewables Net Generation (PLGENATN) –**
The annual total nonrenewables net generation, in MWh, for the plant. Nonrenewables are exhaustible energy resources such as coal, oil, gas, other fossil, nuclear power, and other unknown/purchased fuel. This field is the sum of PLGENACL, PLGENAOL, PLGENAGS, PLGENAOF, PLGENANC, and PLGENAOP.

122. **Plant Annual Total Renewables Net Generation (PLGENATR) –**
The annual total renewables net generation, in MWh, for the plant. Renewables are inexhaustible energy resources such as biomass, wind, solar, geothermal, and hydro.

This field is the sum of PLGENABM, PLGENAWI, PLGENASO, PLGENAGT, and PLGENAHY.

123. **Plant Annual Total Nonhydro Renewables Net Generation (PLGENATH)** –
The annual total nonhydro renewables net generation, in MWh, for the plant. This field is the sum of PLGENABM, PLGENAWI, PLGENASO, and PLGENAGT.

124. **Plant Annual Total Combustion Net Generation (PLGENACY)** –
The annual total combustion net generation, in MWh, for the plant. This field is the sum of PLGENACL, PLGENAOL, PLGENAGS, PLGENAOF, PLGENABM, and PLGENAOP.

125. **Plant Annual Total Noncombustion Net Generation (PLGENACN)** –
The annual total noncombustion net generation, in MWh, for the plant. This field is the sum of PLGENANC, PLGENAHY, PLGENAWI, PLGENASO, and PLGENAGT.

126. **Plant Coal Generation Percent (PLCLPR)** –
The coal resource mix expressed as a percent of plant annual net generation.
PLCLPR = 100 * (PLGENACL / PLNGENAN).

127. **Plant Oil Generation Percent (PLOLPR)** –
The oil resource mix expressed as a percent of plant annual net generation.
PLOLPR = 100 * (PLGENAOL / PLNGENAN).

128. **Plant Gas Generation Percent (PLGSPR)** –
The gas resource mix expressed as a percent of plant annual net generation.
PLGSPR = 100 * (PLGENAGS / PLNGENAN).

129. **Plant Nuclear Generation Percent (PLNCPR)** –
The nuclear resource mix expressed as a percent of plant annual net generation.
PLNCPR = 100 * (PLGENANC / PLNGENAN).

130. **Plant Hydro Generation Percent (PLHYPR)** –
The hydro resource mix expressed as a percent of plant annual net generation.
PLHYPR = 100 * (PLGENAHY / PLNGENAN).

131. **Plant Biomass Generation Percent (PLBMPR)** –
The biomass resource mix expressed as a percent of plant annual net generation.
PLBMPR = 100 * (PLGENABM / PLNGENAN).

132. **Plant Wind Generation Percent (PLWIPR)** –
The wind resource mix expressed as a percent of plant annual net generation.
PLWIPR = 100 * (PLGENAWI / PLNGENAN).

133. **Plant Solar Generation Percent (PLSOPR) –**
    The solar resource mix expressed as a percent of plant annual net generation.
    PLSOPR = 100 * (PLGENASO / PLNGENAN).

134. **Plant Geothermal Generation Percent (PLGTPR) –**
    The geothermal resource mix expressed as a percent of plant annual net generation.
    PLGTPR = 100 * (PLGENAGT / PLNGENAN).

135. **Plant Other Fossil Generation Percent (PLOFPR) –**
    The other fossil resource mix expressed as a percent of plant annual net generation.
    PLOFPR = 100 * (PLGENAOF / PLNGENAN).

136. **Plant Other Unknown/Purchased Fuel Generation Percent (PLOPPR) –**
    The other unknown/purchased fuel/waste heat resource mix expressed as a percent of
    plant annual net generation.
    PLOPPR = 100 * (PLGENAOP / PLNGENAN).

137. **Plant Total Nonrenewables Generation Percent (PLTNPR) –**
    The total nonrenewables resource mix expressed as a percent of plant annual net
    generation.
    PLTNPR = 100 * (PLGENATN / PLNGENAN).

138. **Plant Total Renewables Generation Percent (PLTRPR) –**
    The total renewables resource mix expressed as a percent of plant annual net
    generation.
    PLTRPR = 100 * (PLGENATR / PLNGENAN).

139. **Plant Total Nonhydro Renewables Generation Percent (PLTHPR) –**
    The total nonhydro renewables resource mix expressed as a percent of plant annual
    net generation.
    PLTHPR = 100 * (PLGENATH / PLNGENAN).

140. **Plant Total Combustion Generation Percent (PLCYPR) –**
    The total combustion resource mix expressed as a percent of plant annual net
    generation.
    PLCYPR = 100 * (PLGENACY / PLNGENAN).

141. **Plant Total Noncombustion Generation Percent (PLCNPR) –**
    The total noncombustion resource mix expressed as a percent of plant annual net
    generation.
    PLCNPR = 100 * (PLGENACN / PLNGENAN).

6.4 The ST (State) File

There are 164 variables in the fourth file, ST, which contains state level data. All size, heat input, generation, and emission values are derived by aggregating from the plant level based on the state in which the plant is located. Aggregated variable names generally begin with "ST." Variables that are either identical to those in the plant file or different from those in the plant file by the first two letters of their names (e.g., STHTIAN instead of PLHTIAN) are not re-defined here.

1. **Data Year (YEAR)** –

2. **State Abbreviation (PSTATABB)** –

3. **FIPS State Code (FIPSST)** –

4. **State Nameplate Capacity (STNAMEPCAP)** –

5. **State Annual Heat Input from Combustion (STHTIAN)** –

6. **State Ozone Season Heat Input from Combustion (STHTIOZ)** –

7. **State Total Annual Heat Input (STHTIANT)** –

8. **State Total Ozone Season Heat Input (STHTIOZT)** –

9. **State Annual Net Generation (STNGENAN)** –

10. **State Ozone Season Net Generation (STNGENOZ)** –

11. **State Annual NO_x Emissions (STNOXAN)** –

12. **State Ozone Season NO_x Emissions (STNOXOZ)** –

13. **State Annual SO_2 Emissions (STSO2AN)** –

14. **State Annual CO_2 Emissions (STCO2AN)** –

15. **State Annual CH_4 Emissions (STCH4AN)** –

16. **State Annual N_2O Emissions (STN2OAN)** –

17. **State Annual CO_2 Equivalent Emissions (STCO2EQA)** –

18. **State Annual Hg Emissions (STHGAN)** –

19. **State Annual NO_x Total Output Emission Rate (STNOXRTA)** –
    This field, in lb/MWh, is calculated as follows:
    STNOXRTA = 2000 * (STNOXAN / STNGENAN).

20. **State Ozone Season NO$_x$ Total Output Emission Rate (STNOXRTO)** –
This field, in lb/MWh, is calculated as follows:
STNOXRTO = 2000 * (STNOXOZ / STNGENOZ).

21. **State Annual SO$_2$ Total Output Emission Rate (STSO2RTA)** –
This field, in lb/MWh, is calculated as follows:
STSO2RTA = 2000 * (STSO2AN / STNGENAN).

22. **State Annual CO$_2$ Total Output Emission Rate (STCO2RTA)** –
This field, in lb/MWh, is calculated as follows:
STCO2RTA = 2000 * (STCO2AN / STNGENAN).

23. **State Annual CH$_4$ Total Output Emission Rate (STCH4RTA)** –
This field, in lb/MWh, is calculated as follows:
STHCH4RTA = STCH4AN / STNGENAN.

24. **State Annual N$_2$O Total Output Emission Rate (STN2ORTA)** –
This field, in lb/MWh, is calculated as follows:
STN2ORTA = STN2OAN / STNGENAN.

25. **State Annual CO$_2$ Equivalent Total Output Emission Rate (STC2ERTA)** –
This field, in lb/MWh, is calculated as follows:
STC2ERTA = 2000 * (STCO2EQA / STNGENAN).

26. **State Annual Hg Total Output Emission Rate (STHGRTA)** –
Not calculated for eGRID2022.

27. **State Annual NO$_x$ Input Emission Rate (STNOXRA)** –
This field, in lb/MMBtu, is calculated as follows:
STNOXRA = 2000 * (STNOXAN / STHTIAN).

28. **State Ozone Season NO$_x$ Input Emission Rate (STNOXRO)** –
This field, in lb/MMBtu, is calculated as follows:
STNOXRO = 2000 * (STNOXOZ / STHTIOZ).

29. **State Annual SO$_2$ Input Emission Rate (STSO2RA)** –
This field, in lb/MMBtu, is calculated as follows:
STSO2RA = 2000 * (STSO2AN / STHTIAN).

30. **State Annual CO$_2$ Input Emission Rate (STCO2RA)** –
This field, in lb/MMBtu, is calculated as follows:
STCO2RA = 2000 * (STCO2AN / STHTIAN).

31. **State Annual CH$_4$ Input Emission Rate (STCH4RA)** –
This field, in lb/MMBtu, is calculated as follows:
STCH4RA = 2000 * (STCH4AN / STHTIAN).

32. **State Annual N₂O Input Emission Rate (STN2ORA) –**
This field, in lb/MMBtu, is calculated as follows:
STN2ORA = 2000 * (STN2OAN / STHTIAN).

33. **State Annual CO₂ Equivalent Input Emission Rate (STC2ERA) –**
This field, in lb/MMBtu, is calculated as follows:
STC2ERA = 2000 * (STCO2EQA/ STHTIAN).

34. **State Annual Hg Input Emission Rate (STHGRA) –**
Not calculated for eGRID2022.

35. **State Annual NOₓ Combustion Output Emission Rate (STNOXCRT) –**
This field, in lb/MMBtu, is calculated as follows:
STNOXCRT =2000 * (STNOXAN / STGENACY).

36. **State Ozone Season NOₓ Combustion Output Emission Rate (STNOXCRO) –**
This field, in lb/MMBtu, is calculated as follows:
STNOXCRO = 2000 * (STNOXOZ / ((STGENACY*STNGENOZ)/STNGENAN)).

37. **State Annual SO₂ Combustion Output Emission Rate (STSO2CRT) –**
This field, in lb/MMBtu, is calculated as follows:
STSO2CRT = 2000 * (STSO2AN / STGENACY).

38. **State Annual CO₂ Combustion Output Emission Rate (STCO2CRT) –**
This field, in lb/MMBtu, is calculated as follows:
STCO2CRT = 2000 * (STCO2AN / STGENACY).

39. **State Annual CH₄ Combustion Output Emission Rate (STCH4CRT) –**
This field, in lb/MMBtu, is calculated as follows:
STCH4CRT = STCH4AN / STGENACY.

40. **State Annual N₂O Combustion Output Emission Rate (STN2OCRT) –**
This field, in lb/MMBtu, is calculated as follows:
STN2OCRT = STN2OAN / STGENACY.

41. **State Annual CO₂ Equivalent Combustion Output Emission Rate (STC2ECRT) –**
This field, in lb/MMBtu, is calculated as follows:
STC2ECRT = 2000 * (STCO2EQA / STGENACY).

42. **State Annual Hg Combustion Output Emission Rate (STHGCRT) –**
Not calculated for eGRID2022.

43. **State Annual NOₓ Coal Output Emission Rate (STCNOXRT) –**
The sum of the annual NOₓ emissions from all plants in the state that have coal as the primary fuel (PLPRMFL) divided by the sum of the annual combustion net

generation from the same set of plants, and multiplied by a unit conversion factor, in lb/MWh.

44. **State Annual NO$_x$ Oil Output Emission Rate (STONOXRT) –**
The sum of the annual NO$_x$ emissions from all plants in the state that have oil as the primary fuel (PLPRMFL) divided by the sum of the annual combustion net generation from the same set of plants, and multiplied by a unit conversion factor, in lb/MWh.

45. **State Annual NO$_x$ Gas Output Emission Rate (STGNOXRT) –**
The sum of the annual NO$_x$ emissions from all plants in the state that have natural gas as the primary fuel (PLPRMFL) divided by the sum of the annual combustion net generation from the same set of plants, and multiplied by a unit conversion factor, in lb/MWh.

46. **State Annual NO$_x$ Fossil Fuel Output Emission Rate (STFSNXRT) –**
The sum of the annual NO$_x$ emissions from all plants in the state that have any fossil fuel (coal, oil, gas, or other fossil) as the primary fuel (PLPRMFL) divided by the sum of the annual combustion net generation from the same set of plants, and multiplied by a unit conversion factor, in lb/MWh.

47. - **State Ozone Season NO$_x$ Coal, Oil, Gas, and Fossil Fuel Output Emission**
50. **Rates –**
The descriptions of the ozone season NO$_x$ fields, in lb/MWh, contain the same information as annual NO$_x$ fields #43 through #46, respectively. The state ozone season combustion net generation, used in the denominator of the equations, is calculated as the ratio of the state annual to ozone season net generation for that fuel times the state annual combustion net generation.

51. - **State Annual SO$_2$ Coal, Oil, Gas, and Fossil Fuel Output Emission**
54. **Rates –**
The descriptions of the annual SO$_2$ fields, in lb/MWh, contain the same information as annual NO$_x$ fields #43 through #46, respectively.

55. - **State Annual CO$_2$ Coal, Oil, Gas, and Fossil Fuel Output Emission**
58. **Rates –**
The descriptions of annual CO$_2$ fields, in lb/MWh, contain the same information as annual NO$_x$ fields #43 through #46, respectively.

59. - **State Annual CH$_4$ Coal, Oil, Gas, and Fossil Fuel Output Emission**
62. **Rates –**
The descriptions of annual CH$_4$ fields, in lb/MWh, contain the same information as annual NO$_x$ fields #43 through #46, respectively.

63. - **State Annual N$_2$O Coal, Oil, Gas, and Fossil Fuel Output Emission**
66. **Rates –**

The descriptions of annual N_2O fields, in lb/MWh, contain the same information as annual NO_x fields #43 through #46, respectively.

67. - **State Annual CO_2 Equivalent Coal, Oil, Gas, and Fossil Fuel Output Emission**
70. **Rates –**
The descriptions of annual CO_2 equivalent fields, in lb/MWh, contain the same information as annual NO_x fields #43 through #46, respectively.

71. - **State Annual Hg Coal, Oil, Gas, and Other Fossil Fuel Output Emission**
72. **Rates –**
Not calculated in eGRID2022.

73. - **State Annual NO_x, Ozone Season NO_x, Annual SO_2, Annual CO_2, Annual CH_4,**
102. **Annual N_2O, Annual CO_2 Equivalent Coal, Oil, Gas, and Fossil Fuel Input**
Emission Rates; and Annual Hg Coal and Fossil Fuel Input Emission Rates –
The descriptions of these fields, primary fuel-specific input emission rates, contain the same information that fields #43 through #46 do for primary fuel-specific output emission rates – except that the calculations include heat input, rather than net generation. These values are calculated in the same manner as the input emission rates, using heat input in place of generation.

103. - **State Annual NO_x, Ozone Season NO_x, Annual SO_2, Annual CO_2, Annual CH_4,**
110. **Annual N_2O, Annual CO_2 Equivalent, and Annual Hg Nonbaseload Output**
Emission Rate –
These fields, in lb/MWh, are calculated as the sum of the annual nonbaseload NO_x, ozone season nonbaseload NO_x, annual nonbaseload SO_2, annual nonbaseload CO_2, annual nonbaseload CH_4, annual nonbaseload N_2O, and annual nonbaseload CO_2 equivalent emissions divided by the sum of annual nonbaseload net generation in the state and then multiplied by a unit conversion factor. These fields are intended to provide a more refined estimate of avoided emissions than the fossil-fuel average output emission rate. The nonbaseload emissions and generation include only emissions and generation from combustion sources and exclude emissions and generation from plants that have highcapacity factors. The remaining emissions and generation are weighted by a factor which is a function of capacity factor. For more information, see Section 3.1.3 on emission rate estimates.

111. **State Annual Coal Net Generation (STGENACL) –**

112. **State Annual Oil Net Generation (STGENAOL) –**

113. **State Annual Gas Net Generation (STGENAGS) –**

114. **State Annual Nuclear Net Generation (STGENANC) –**

115. **State Annual Hydro Net Generation (STGENAHY) –**

116. **State Annual Biomass Net Generation (STGENABM) –**

117. **State Annual Wind Net Generation (STGENAWI) –**

118. **State Annual Solar Net Generation (STGENASO) –**

119. **State Annual Geothermal Net Generation (STGENAGT) –**

120. **State Annual Other Fossil Net Generation (STGENAOF) –**

121. **State Annual Other Unknown/Purchased Fuel Net Generation (STGENAOP) –**

122. **State Annual Total Nonrenewables Net Generation (STGENATN) –**

123. **State Annual Total Renewables Net Generation (STGENATR) –**

124. **State Annual Total Nonhydro Renewables Net Generation (STGENATH) –**

125. **State Annual Total Combustion Net Generation (STGENACY) –**

126. **State Annual Total Noncombustion Net Generation (STGENACN) –**

127. **State Coal Generation Percent (STCLPR) –**

128. **State Oil Generation Percent (STOLPR) –**

129. **State Gas Generation Percent (STGSPR) –**

130. **State Nuclear Generation Percent (STNCPR) –**

131. **State Hydro Generation Percent (STHYPR) –**

132. **State Biomass Generation Percent (STBMPR) –**

133. **State Wind Generation Percent (STWIPR) –**

134. **State Solar Generation Percent (STSOPR) –**

135. **State Geothermal Generation Percent (STGTPR) –**

136. **State Other Fossil Generation Percent (STOFPR) –**

137. **State Other Unknown/Purchased Fuel Generation Percent (STOPPR) –**

138. **State Total Nonrenewables Generation Percent (STTNPR) –**

139. **State Total Renewables Generation Percent (STTRPR) –**

140. **State Total Nonhydro Renewables Generation Percent (STTHPR) –**

141. **State Total Combustion Generation Percent (STCYPR)** –

142. **State Total Noncombustion Generation Percent (STCNPR)** –

143. **State Annual Nonbaseload Coal Net Generation (STNBGNCL)** –

144. **State Annual Nonbaseload Oil Net Generation (STNBGNOL)** –

145. **State Annual Nonbaseload Gas Net Generation (STNBGNGS)** –

146. **State Annual Nonbaseload Nuclear Net Generation (STNBGNNC)** –

147. **State Annual Nonbaseload Hydro Net Generation (STNBGNHY)** –

148. **State Annual Nonbaseload Biomass Net Generation (STNBGNBM)** –

149. **State Annual Nonbaseload Wind Net Generation (STNBGNWI)** –

150. **State Annual Nonbaseload Solar Net Generation (STNBGNSO)** –

151. **State Annual Nonbaseload Geothermal Net Generation (STNBGNGT)** –

152. **State Annual Nonbaseload Other Fossil Net Generation (STNBGNOF)** –

153. **State Annual Nonbaseload Other Unknown/Purchased Fuel Net Generation (STNBGNOP)** –

154. **State Nonbaseload Coal Generation Percent (STNBCLPR)** –

155. **State Nonbaseload Oil Generation Percent (STNBOLPR)** –

156. **State Nonbaseload Gas Generation Percent (STNBGSPR)** –

157. **State Nonbaseload Nuclear Generation Percent (STNBNCPR)** –

158. **State Nonbaseload Hydro Generation Percent (STNBHYPR)** –

159. **State Nonbaseload Biomass Generation Percent (STNBBMPR)** –

160. **State Nonbaseload Wind Generation Percent (STNBWIPR)** –

161. **State Nonbaseload Solar Generation Percent (STNBSOPR)** –

162. **State Nonbaseload Geothermal Generation Percent (STNBGTPR)** –

163. **State Nonbaseload Other Fossil Generation Percent (STNBOFPR)** –

164.   State Nonbaseload Other Unknown/Purchased Fuel Generation Percent (STNBOPPR) –

6.5   The BA (Balancing Authority) File

There are 164 variables in the fifth file, BA, which contains location (operator)-based balancing authority data. All generation and emission values are derived by aggregating from the plant level based on the associated balancing authority.

All variables have been described in previous file variable descriptions. Aggregated variable names generally begin with "BA."

6.6   The SRL (eGRID Subregion) File

There are 164 variables in the sixth file, SRL, which contains location (operator)-based eGRID subregions. All generation and emission values are derived by aggregating from the plant level based on the associated eGRID subregion.

All other variables in the eGRID Subregion file have been described in previous file variable descriptions. Aggregated variable names generally begin with "SR."

6.7   The NRL (NERC Region) File

There are 164 variables in the seventh file, NRL, which contains location (operator)-based NERC region data. All generation and emission values are derived by aggregating from the plant level based on the associated NERC region.

The only variable in this file that has not been described in a previous file variable description is NERCNAME, the NERC region name associated with the NERC region acronym (see Section 3.4.1). Aggregated variable names generally begin with "NR."

6.8   The US (U.S.) File

There are 162 variables in the eighth file, US, which contains data for the entire United States. All generation and emission values are derived by aggregating from the plant level. All variables have been described in previous file variable descriptions. Aggregated variable names generally begin with "US."

6.9   The Regional Grid Gross Loss File

There are six variables in the GGL file, reported in eGRID at the regional level based on the aforementioned aggregated state level data:

1.   Data Year (YEAR) –
The current eGRID data year.

2.   REGION
One of the three interconnect power grids in the U.S.: Eastern, Western, or ERCOT, plus the states of Alaska and Hawaii, and the entire U.S.

3.   **Estimated Losses (ESTLOSS)**
      The total amount of electricity, in MWh, in the region that is generated but is not sold for resale or wholesale, furnished without charge, or used by the generator or utility; i.e., electricity that is lost in transmission and distribution.
      Source: EIA State Electricity Profiles, Supply and disposition of electricity, 1990-2022.

4.   **Total Disposition without Exports (TOTDISP)**
      The total amount of electricity, in MWh, in the region that is sold directly to customers, sold for resale, furnished without charge, consumed by the respondent without charge, and lost; i.e., all electricity generated, without exports.
      Source: EIA State Electricity Profiles, Supply and disposition of electricity, 1990-2022.

5.   **Direct Use (DIRCTUSE)**
      The total amount of electricity, in MWh, used by plants and/or utilities in the region that is not sold for wholesale or resale; direct use electricity is not transmitted through the grid and therefore does not have the potential to be lost.
      Source: EIA State Electricity Profiles, Supply and disposition of electricity, 1990-2022.

6.   **Grid Gross Loss (GGRSLOSS)**
      The estimated grid gross loss as a percent. The formula used is
      [ESTLOSS/(TOTDISP – DIRCTUSE)]*100.

The grid gross loss values can be used when applying eGRID GHG factors (eGRID subregion annual GHG total output emission rates) to consumption. Specifically, to account for indirect emissions associated with consumption of electricity (both from generation and from transmission and distribution line losses) divide the product of the electricity consumption and the generation based eGRID total output emission rates by (one minus the grid gross loss as a decimal). See the equation below:

$$\text{GHG emis cons} = \text{GHG emis rate} * \text{Consumption} / (1\text{-ggl}\%/100)/2000$$

Where;

GHG emis cons =   a specified GHG emission associated with a certain amount of electricity consumption (generation and line losses) in short tons,

GHG emis rate =   eGRID subregion annual total output emission rate in lb/MWh for a specified GHG,

Consumption   =   the given electricity consumption in MWh (kWh/1000), and

ggl%   =   the estimated regional grid gross loss as a percent.

If reporting the indirect emissions for the electricity generation (scope 2 emissions) separately from the indirect emissions as a result of transmission and distribution line losses (scope 3 emissions), then the scope 2 emissions are simply the consumption in MWh multiplied by the eGRID subregion annual total output emission rate in lb/MWh, and the scope 3 emissions are calculated in the following equation:

GHG emis ll   =   GHG emis rate * Consumption * (ggl%/100) / (1-ggl%/100)/2000

Where;

GHG emis ll   =   a specified GHG emission associated with the line losses of a certain amount of electricity consumption in short tons,

GHG emis rate =   eGRID subregion annual total output emission rate in lb/MWh for a specified GHG,

Consumption   =   the given electricity consumption in MWh (= kWh/1000), and

ggl%   =   the estimated regional grid gross loss as a percent.

6.10   The DEMO (Demographics) File

There are 63 variables in the Demographics file (DEMO). More details regarding the EPA EJScreen related variables can be found at https://www.epa.gov/ejscreen/overview-socioeconomic-indicators-ejscreen.

1.   eGRID2022 File Plant Sequence Number (SEQPLT) –
The plant records in the 2022 plant data file are sorted by state abbreviation and plant name, and are assigned a unique sequential number beginning with 1. This sequence number is unlikely to be the same as the sequence number in the eGRID2022 file for the same entity.

2.   Data Year (YEAR) –
The current eGRID data year.

3.   Plant State Abbreviation (PSTATABB) –
The state abbreviation in which the plant is located.
Source: EIA-860

4.   Plant Name (PNAME) –
The name associated with each plant.
Source: EPA/CAMD; EIA-860

5.   DOE/EIA ORIS Plant or Facility Code (ORISPL) –
This plant code corresponds to PNAME and was originally developed for power plants by the Office of Regulatory Information Systems (ORIS), which was a part of the Federal Power Commission. It is now assigned by EIA and is used as a unique plant identification code for many EPA electric power databases, too. Note that some EIA ORISPL ID codes were changed to reflect CAMD's Power Sector Emissions Data ORISPL ID codes. See Section 5.1 for a discussion of ORISPL ID changes made to eGRID2022. See Table C-5 in Appendix C for a table of all ORISPL changes made between EIA and CAMD's Power Sector Emissions Data.
Source: EPA/CAMD; EIA-860

6.   Plant Latitude (LAT) –
The latitude, in degrees to four decimal places, associated with the plant.
Source: EIA-860

7.   Plant Longitude (LON) –
The longitude, in degrees to four decimal places, associated with the plant.
Source: EIA-860

8.   Plant Primary Fuel (PLPRMFL) –
The plant's primary fuel based on maximum heat input of fuel consumed by the plant. If the plant does not consume fuel, it is based on the maximum nameplate capacity. Possible values are:

AB   = Agricultural byproduct

BFG   = Blast furnace gas
BIT   = Bituminous coal
BLQ   = Black liquor
COG   = Coke oven gas
DFO   = Distillate fuel oil, light fuel oil, diesel oil
GEO   = Geothermal steam
H   = Hydrogen
JF   = Jet fuel
KER   = Kerosene
LFG   = Landfill gas
LIG   = Lignite coal
MSW   = Municipal solid waste
MWH   = Electricity used for energy storage (megawatt hour)
NG   = Natural gas
NUC   = Nuclear material
OBG   = Other biomass gas
OBL   = Other biomass liquid
OBS   = Other biomass solid
OG   = Other gas
OTH   = Other (unknown)
PC   = Petroleum coke
PG   = Gaseous propane
PRG   = Process gas
PUR   = Purchased fuel (unknown)
RC   = Refined coal
RFO   = Residual fuel oil, heavy fuel oil, petroleum
SGC   = Coal-derived synthetic gas
SLW   = Sludge waste
SUB   = Subbituminous coal
SUN   = Sun
TDF   = Tire-derived fuel
WAT   = Water
WC   = Waste coal
WDL   = Wood, wood waste liquid
WDS   = Wood, wood waste solid
WH   = Waste heat
WND   = Wind
WO   = Waste oil
Source: EPA/CAMD; EIA-860

9. **Plant Primary Fuel Category (PLFUELCT) –**
The fuel category for the primary fuel of the plant. This field is "COAL" if the plant's primary fuel is derived from coal (fuel type = BIT, COG, LIG, RC, SGC, SUB, WC), "OIL" if it is derived from oil (DFO, JF, KER, PC, RFO, WO), "GAS" if it is derived from gas (NG, PG), "OFSL" if it is another fossil fuel (BFG, OG, TDF), "NUCLEAR" if it is derived from nuclear (NUC), "HYDRO" if it is derived from hydro power (WAT), "SOLAR" if it is derived from solar power, (SUN), "WIND" if it is derived from wind power (WND), "GEOTHERMAL" if it is derived from geothermal power (GEO), "OTHF" if it is derived from waste heat/hydrogen/purchased/unknown (H, MWH, OTH, PRG, PUR, WH), and

"BIOMASS" if it is derived from biomass sources (AB, BLQ, LFG, MSW, OBG, OBL, OBS, SLW, WDL, WDS).

10. **Plant Nameplate Capacity (NAMEPCAP) –**
The nameplate capacity of the plant, in MW.
Source: EIA-860

11. **Flag indicating if the plant burned or generated any amount of coal (COALFLAG) –**
A flag to indicate if the plant burned coal or if it has positive heat input and generated electricity from coal. The plant will not be flagged if the plant has negative coal generation and no coal heat input for 2022.

12. **Total Population (TOTALPOP) –**
Source: EPA EJScreen

13. **People of Color (RAW_D_PEOPCOLOR) –**
Source: EPA EJScreen

14. **Low Income (RAW_D_INCOME) –**
Source: EPA EJScreen

15. **Less Than High School Education (RAW_D_LESSHS) –**
Source: EPA EJScreen

16. **Limited English Speaking (RAW_D_LING) –**
Source: EPA EJScreen

17. **Under Age 5 (RAW_D_UNDER5) –**
Source: EPA EJScreen

18. **Over Age 64 (RAW_D_OVER64) –**
Source: EPA EJScreen

19. **Unemployment Rate (RAW_D_UNEMPLOYED) –**
Source: EPA EJScreen

20. **Limited Life Expectancy (RAW_D_LIFEEXP) –**
Source: EPA EJScreen

21. **Demographic Index (RAW_D_DEMOGIDX2) –**
Source: EPA EJScreen

22. **Supplemental Demographic Index (RAW_D_DEMOGIDX5) –**
Source: EPA EJScreen

23. **State Average of People of Color (S_D_PEOPCOLOR) –**
Source: EPA EJScreen

24. **State Average of Low Income (S_D_INCOME)** –
    Source: EPA EJScreen

25. **State Average of Less Than High School Education (S_D_LESSHS)** –
    Source: EPA EJScreen

26. **State Average of Limited English Speaking (S_D_LING)** –
    Source: EPA EJScreen

27. **State Average of Under Age 5 (S_D_UNDER5)** –
    Source: EPA EJScreen

28. **State Average of Over Age 64 (S_D_OVER64)** –
    Source: EPA EJScreen

29. **State Average of Unemployment Rate (S_D_UNEMPLOYED)** –
    Source: EPA EJScreen

30. **State Average of Limited Life Expectancy (S_D_LIFEEXP)** –
    Source: EPA EJScreen

31. **State Average of Demographic Index (S_D_DEMOGIDX2)** –
    Source: EPA EJScreen

32. **State Average of Supplemental Demographic Index (S_D_DEMOGIDX5)** –
    Source: EPA EJScreen

33. **State Percentile of People of Color (S_D_PEOPCOLOR_PER)** –
    Source: EPA EJScreen

34. **State Percentile of Low Income (S_D_INCOME_PER)** –
    Source: EPA EJScreen

35. **State Percentile of Less Than High School Education (S_D_LESSHS_PER)** –
    Source: EPA EJScreen

36. **State Percentile of Limited English Speaking (S_D_LING_PER)** –
    Source: EPA EJScreen

37. **State Percentile of Under Age 5 (S_D_UNDER5_PER)** –
    Source: EPA EJScreen

38. **State Percentile of Over Age 64 (S_D_OVER64_PER)** –
    Source: EPA EJScreen

39. **State Percentile of Unemployment Rate (S_D_UNEMPLOYED_PER)** –
    Source: EPA EJScreen

40. **State Percentile of Limited Life Expectancy (S_D_LIFEEXP_PER)** –
    Source: EPA EJScreen

41. **State Percentile of Demographic Index (S_D_DEMOGIDX2_PER)** –
Source: EPA EJScreen

42. **State Percentile of Supplemental Demographic Index (S_D_DEMOGIDX5_PER)** –
Source: EPA EJScreen

43. **National Average of People of Color (N_D_PEOPCOLOR)** –
Source: EPA EJScreen

44. **National Average of Low Income (N_D_INCOME)** –
Source: EPA EJScreen

45. **National Average of Less Than High School Education (N_D_LESSHS)** –
Source: EPA EJScreen

46. **National Average of Limited English Speaking (N_D_LING)** –
Source: EPA EJScreen

47. **National Average of Under Age 5 (N_D_UNDER5)** –
Source: EPA EJScreen

48. **National Average of Over Age 64 (N_D_OVER64)** –
Source: EPA EJScreen

49. **National Average of Unemployment Rate (N_D_UNEMPLOYED)** –
Source: EPA EJScreen

50. **National Average of Limited Life Expectancy (N_D_LIFEEXP)** –
Source: EPA EJScreen

51. **National Average of Demographic Index (N_D_DEMOGIDX2)** –
Source: EPA EJScreen

52. **National Average of Supplemental Demographic Index (N_D_DEMOGIDX5)** –
Source: EPA EJScreen

53. **National Percentile of People of Color (N_D_PEOPCOLOR_PER)** –
Source: EPA EJScreen

54. **National Percentile of Low Income (N_D_INCOME_PER)** –
Source: EPA EJScreen

55. **National Percentile of Less Than High School Education (N_D_LESSHS_PER)** – Source: EPA EJScreen

56. **National Percentile of Limited English Speaking (N_D_LING_PER)** –
Source: EPA EJScreen

57. **National Percentile of Under Age 5 (N_D_UNDER5_PER)** –
Source: EPA EJScreen

58. **National Percentile of Over Age 64 (N_D_OVER64_PER) –**
Source: EPA EJScreen

59. **National Percentile of Unemployment Rate (N_D_UNEMPLOYED_PER) –**
Source: EPA EJScreen

60. **National Percentile of Limited Life Expectancy (N_D_LIFEEXP_PER) –**
Source: EPA EJScreen

61. **National Percentile of Demographic Index (N_D_DEMOGIDX2_PER) –**
Source: EPA EJScreen

62. **National Percentile of Supplemental Demographic Index (N_D_DEMOGIDX5_PER) –**
Source: EPA EJScreen

63. **Distance (miles) (DISTANCE) -**
Source: EPA EJScreen

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Appendix A. eGRID File Structure - Variable Descriptions for eGRID2022

The structure of the nine files – including descriptions of the variables, unit of measurement, and original source(s) of data – are delineated below in the file structure. NOTE: *Italics indicates new field*; **bold indicates methodological change.** Units in the following tables represent the units in the imperial unit eGRID2022 workbook.

Table A-1. eGRID File Structure, eGRID2022 UNIT File

Field	Name	Description	Unit	Source(s)
1	SEQUNT	eGRID2022 file unit sequence number		assigned
2	YEAR	Data year		
3	PSTATABB	Plant state abbreviation		EIA-860
4	PNAME	Plant name		EPA/CAMD
5	ORISPL	DOE/EIA ORIS plant or facility code		EPA/CAMD, EIA-860
6	UNITID	Unit ID		EPA/CAMD, EIA-923
7	PRMVR	Prime Mover		EPA/CAMD, EIA-860
8	UNTOPST	Unit operational status		EPA/CAMD, EIA-860
9	CAMDFLAG	CAMD Program flag		EPA/CAMD
10	PRGCODE	Program code(s)		EPA/CAMD
11	BOTFIRTY	Boiler bottom and firing type		EPA/CAMD, EIA-860
12	NUMGEN	Number of associated generators		EIA-860
13	FUELU1	Unit primary fuel		EPA/CAMD, EIA-923, EIA-860
14	HRSOP	Unit operating hours	hours	EPA/CAMD
15	HTIAN	Unit unadjusted annual heat input	MMBtu	EPA/CAMD, EIA-923
16	HTIOZ	Unit unadjusted ozone season heat input	MMBtu	EPA/CAMD, EIA-923
17	NOXAN	Unit unadjusted annual NO_x emissions	tons	EPA/CAMD, EIA-923
18	NOXOZ	Unit unadjusted ozone season NO_x emissions	tons	EPA/CAMD, EIA-923
19	SO2AN	Unit unadjusted annual SO_2 emissions	tons	EPA/CAMD
20	CO2AN	Unit unadjusted annual CO_2 emissions	tons	EPA/CAMD
21	HGAN	Unit unadjusted annual mercury emissions	lbs	EPA/CAMD
22	HTIANSRC	Unit unadjusted annual heat input source		EPA/CAMD, EIA-923
23	HTIOZSRC	Unit unadjusted ozone season heat input source		EPA/CAMD, EIA-923
24	NOXANSRC	Unit unadjusted annual NO_x emissions source		EPA/CAMD, EIA-923
25	NOXOZSRC	Unit unadjusted ozone season NO_x emissions source		EPA/CAMD, EIA-923
26	SO2SRC	Unit unadjusted annual SO_2 emissions source		EPA/CAMD, EIA-923
27	CO2SRC	Unit unadjusted annual CO_2 emissions source		EPA/CAMD, EIA-923
28	HGSRC	Unit unadjusted annual mercury emissions source		EPA/CAMD
29	SO2CTLDV	Unit SO_2 (scrubber) first control device		EPA/CAMD, EIA-860
30	NOXCTLDV	Unit NO_x first control device		EPA/CAMD; EIA-860
31	HGCTLDV	Unit Hg activated carbon injection system flag		EIA-860
32	UNTYRONL	Unit year on-line		EPA/CAMD, EIA-860

Table A-2. eGRID File Structure, eGRID2022 GEN Generator File

Field	Name	Description	Unit	Source(s)
1	SEQGEN	eGRID2022 file generator sequence number		assigned
2	YEAR	Data year		
3	PSTATABB	Plant state abbreviation		EIA-860
4	PNAME	Plant name		EPA/CAMD; EIA-860
5	ORISPL	DOE/EIA ORIS plant or facility code		EPA/CAMD; EIA-860
6	GENID	Generator ID		EIA-860
7	NUMBLR	Number of associated boilers		EIA-860
8	GENSTAT	Generator status		EIA-860
9	PRMVR	Generator prime mover type		EIA-860
10	FUELG1	Generator primary fuel		EIA-860
11	NAMEPCAP	Generator nameplate capacity	MW	EIA-860
12	CFACT	Generator capacity factor		calculated
13	GENNTAN	Generator annual net generation	MWh	EIA-923
14	GENNTOZ	Generator ozone season net generation	MWh	EIA-923
15	GENERSRC	Generation data source		assigned
16	GENYRONL	Generator year on-line		EIA-860
17	GENYRRET	Generator year retired		EIA-860

Table A-3. eGRID File Structure, eGRID2022 PLNT Plant File

Field	Name	Description	Unit	Source(s)
1	SEQPLT	eGRID 2022 file plant sequence number		assigned
2	YEAR	Data year		
3	PSTATABB	Plant state abbreviation		EIA-860
4	PNAME	Plant name		EPA/CAMD; EIA-860
5	ORISPL	DOE/EIA ORIS plant or facility code		EPA/CAMD; EIA-860
6	OPRNAME	Plant operator name		EIA-860
7	OPRCODE	Plant operator ID		EIA-860
8	UTLSRVNM	Utility service territory name		EIA-860
9	UTLSRVID	Utility service territory ID		EIA-860
10	SECTOR	Plant-level sector		EIA-860
11	BANAME	Balancing authority name		EIA-860; EIA-861
12	BACODE	Balancing authority ID code		EIA-860; EIA-861
13	NERC	NERC region acronym		EIA-860
14	SUBRGN	eGRID subregion acronym		EPA
15	SRNAME	eGRID subregion name		EPA
16	ISORTO	Plant associated ISO/RTO Territory		EIA-860
17	FIPSST	Plant FIPS state code		US Census
18	FIPSCNTY	Plant FIPS county code		US Census
19	CNTYNAME	Plant county name		EIA-860
20	LAT	Plant latitude		EIA-860
21	LON	Plant longitude		EIA-860
22	CAMDFLAG	CAMD Program flag		EPA/CAMD
23	NUMUNT	Number of units		EIA-860
24	NUMGEN	Number of generators		EIA-860
25	PLPRMFL	Plant primary fuel		EPA/CAMD; EIA-923
26	PLFUELCT	Plant primary fuel category		assigned
27	COALFLAG	Flag indicating if the plant burned or generated any amount of coal		assigned
28	CAPFAC	Plant capacity factor		calculated
29	NAMEPCAP	Plant nameplate capacity	MW	EIA-860
30	NBFACTOR	Plant nonbaseload factor		calculated
31	RMBMFLAG	Biogas/biomass plant adjustment flag		assigned
32	CHPFLAG	Combined heat and power (CHP) plant adjustment flag		EPA/CAMD; EIA-860
33	USETHRMO	CHP plant useful thermal output	MMBtu	EIA-923 calculated
34	PWRTOHT	CHP plant power to heat ratio		calculated
35	ELCALLOC	CHP plant electric allocation factor		calculated
36	PSFLAG	Plant pumped storage flag		EIA-860
37	PLHTIAN	Plant annual heat input for combustion units	MMBtu	EPA/CAMD; EIA-923
38	PLHTIOZ	Plant ozone season heat input for combustion units	MMBtu	EPA/CAMD; EIA-923
39	PLHTIANT	Plant annual heat input for all units	MMBtu	EPA/CAMD; EIA-923
40	PLHTIOZT	Plant ozone season heat input for all units	MMBtu	EPA/CAMD; EIA-923
41	PLNGENAN	Plant annual net generation	MWh	EIA-923, EPA/CAMD
42	PLNGENOZ	Plant ozone season net generation	MWh	EIA-923, EPA/CAMD
43	PLNOXAN	Plant annual NO_x emissions	tons	EPA/CAMD; calculated
44	PLNOXOZ	Plant ozone season NO_x emissions	tons	EPA/CAMD; calculated
45	PLSO2AN	Plant annual SO_2 emissions	tons	EPA/CAMD; calculated
46	PLCO2AN	Plant annual CO_2 emissions	tons	EPA/CAMD; calculated
47	PLCH4AN	Plant annual CH4 emissions	lbs	calculated

Field	Name	Description	Unit	Source(s)
48	PLN2OAN	Plant annual N2O emissions	lbs	calculated
49	PLCO2EQA	Plant annual CO_2 equivalent emissions ((1 * PLCO2AN) + (25 * PLCH4AN/2000) + (298 * PLN2OAN/2000))	tons	calculated
50	PLHGAN	Plant annual Hg emissions	lbs	not calculated
51	PLNOXRTA	Plant annual NO_x total output emission rate	lb/MWh	calculated
52	PLNOXRTO	Plant ozone season NO_x total output emission rate	lb/MWh	calculated
53	PLSO2RTA	Plant annual SO_2 total output emission rate	lb/MWh	calculated
54	PLCO2RTA	Plant annual CO_2 total output emission rate	lb/MWh	calculated
55	PLCH4RTA	Plant annual CH_4 total output emission rate	lb/MWh	calculated
56	PLN2ORTA	Plant annual N_2O total output emission rate	lb/MWh	calculated
57	PLC2ERTA	Plant annual CO_2 equivalent total output emission rate	lb/MWh	calculated
58	PLHGRTA	Plant annual Hg total output emission rate	lb/MWh	not calculated
59	PLNOXRA	Plant annual NO_x input emission rate	lb/MMBtu	calculated
60	PLNOXRO	Plant ozone season NO_x input emission rate	lb/MMBtu	calculated
61	PLSO2RA	Plant annual SO_2 input emission rate	lb/MMBtu	calculated
62	PLCO2RA	Plant annual CO_2 input emission rate	lb/MMBtu	calculated
63	PLCH4RA	Plant annual CH_4 input emission rate	lb/MMBtu	calculated
64	PLN2ORA	Plant annual N_2O input emission rate	lb/MMBtu	calculated
65	PLC2ERA	Plant annual CO_2 equivalent input emission rate	lb/MMBtu	calculated
66	PLHGRA	Plant annual Hg input emission rate	lb/MMBtu	not calculated
67	PLNOXCRT	Plant annual NO_x combustion output emission rate	lb/MWh	calculated
68	PLNOXCRO	Plant ozone season NO_x combustion output emission rate	lb/MWh	calculated
69	PLSO2CRT	Plant annual SO_2 combustion output emission rate	lb/MWh	calculated
70	PLCO2CRT	Plant annual CO_2 combustion output emission rate	lb/MWh	calculated
71	PLCH4CRT	Plant annual CH_4 combustion output emission rate	lb/MWh	calculated
72	PLN2OCRT	Plant annual N_2O combustion output emission rate	lb/MWh	calculated
73	PLC2ECRT	Plant annual CO_2 equivalent combustion output emission rate	lb/MWh	calculated
74	PLHGCRT	Plant annual Hg combustion output emission rate	lb/MWh	not calculated
75	UNNOX	Plant unadjusted annual NO_x emissions	tons	EPA/CAMD, EIA-923
76	UNNOXOZ	Plant unadjusted ozone season NO_x emissions	tons	EPA/CAMD, EIA-923
77	UNSO2	Plant unadjusted annual SO_2 emissions	tons	EPA/CAMD, EIA-923
78	UNCO2	Plant unadjusted annual CO_2 emissions	tons	EPA/CAMD, EIA-923
79	UNCH4	Plant unadjusted annual CH_4 emissions	lbs	EPA/CAMD, EIA-923
80	UNN2O	Plant unadjusted annual N_2O emissions	lbs	EPA/CAMD, EIA-923
81	UNHG	Plant unadjusted annual Hg emissions	lbs	not calculated
82	UNHTI	Plant unadjusted annual heat input for combustion units	MMBtu	EPA/CAMD, EIA-923
83	UNHTIOZ	Plant unadjusted ozone season heat input for combustion units	MMBtu	EPA/CAMD, EIA-923
84	UNHTIT	Plant unadjusted annual heat input for all units	MMBtu	EPA/CAMD, EIA-923
85	UNHTIOZT	Plant unadjusted ozone season heat input for all units	MMBtu	EPA/CAMD, EIA-923
86	UNNOXSRC	Plant unadjusted annual NO_x emissions source		EPA/CAMD, EIA-923
87	UNNOZSRC	Plant unadjusted ozone season NO_x emissions source		EPA/CAMD, EIA-923
88	UNSO2SRC	Plant unadjusted annual SO_2 emissions source		EPA/CAMD, EIA-923

Field	Name	Description	Unit	Source(s)
89	UNCO2SRC	Plant unadjusted annual CO_2 emissions source		EPA/CAMD, EIA-923
90	UNCH4SRC	Plant unadjusted annual CH_4 emissions source		EPA/CAMD, EIA-923
91	UNN2OSRC	Plant unadjusted annual N_2O emissions source		EPA/CAMD, EIA-923
92	UNHGSRC	Plant unadjusted annual Hg emissions source		calculated
93	UNHTISRC	Plant unadjusted annual heat input source		EPA/CAMD, EIA-923
94	UNHOZSRC	Plant unadjusted ozone season heat input source		EPA/CAMD, EIA-923
95	BIONOX	Plant annual NOx biomass emissions	tons	EIA-923
96	BIONOXOZ	Plant ozone season NOx biomass emissions	tons	EIA-923
97	BIOSO2	Plant annual SO2 biomass emissions	tons	EIA-923
98	BIOCO2	Plant annual CO2 biomass emissions	tons	EIA-923
99	BIOCH4	Plant annual CH4 biomass emissions	lbs	EIA-923
100	BION2O	Plant annual N2O biomass emissions	lbs	EIA-923
101	CHPCHTI	Plant combustion heat input CHP adjustment value	MMBtu	calculated
102	CHPCHTIOZ	Plant combustion ozone season heat input CHP adjustment value	MMBtu	calculated
103	CHPNOX	Plant annual NOx emissions CHP adjustment value	tons	calculated
104	CHPNOXOZ	Plant ozone season NOx emissions CHP adjustment value	tons	calculated
105	CHPSO2	Plant annual SO2 emissions CHP adjustment value	tons	calculated
106	CHPCO2	Plant annual CO2 emissions CHP adjustment value	lbs	calculated
107	CHPCH4	Plant annual CH4 emissions CHP adjustment value	lbs	calculated
108	CHPN2O	Plant annual N2O emissions CHP adjustment value	lbs	calculated
109	PLHTRT	Plant nominal heat rate	Btu/kWh	calculated
110	PLGENACL	Plant annual coal net generation	MWh	EIA-923
111	PLGENAOL	Plant annual oil net generation	MWh	EIA-923
112	PLGENAGS	Plant annual gas net generation	MWh	EIA-923
113	PLGENANC	Plant annual nuclear net generation	MWh	EIA-923
114	PLGENAHY	Plant annual hydro net generation	MWh	EIA-923
115	PLGENABM	Plant annual biomass net generation	MWh	EIA-923
116	PLGENAWI	Plant annual wind net generation	MWh	EIA-923
117	PLGENASO	Plant annual solar net generation	MWh	EIA-923
118	PLGENAGT	Plant annual geothermal net generation	MWh	EIA-923
119	PLGENAOF	Plant annual other fossil net generation	MWh	EIA-923
120	PLGENAOP	Plant annual other unknown/purchased fuel net generation	MWh	EIA-923
121	PLGENATN	Plant annual total nonrenewables net generation	MWh	EIA-923
122	PLGENATR	Plant annual total renewables net generation	MWh	EIA-923
123	PLGENATH	Plant annual total nonhydro renewables net generation	MWh	EIA-923
124	PLGENACY	Plant annual total combustion net generation	MWh	EIA-923
125	PLGENACN	Plant annual total noncombustion net generation	MWh	EIA-923
126	PLCLPR	Plant coal generation percent (resource mix)	%	calculated
127	PLOLPR	Plant oil generation percent (resource mix)	%	calculated
128	PLGSPR	Plant gas generation percent (resource mix)	%	calculated
129	PLNCPR	Plant nuclear generation percent (resource mix)	%	calculated
130	PLHYPR	Plant hydro generation percent (resource mix)	%	calculated
131	PLBMPR	Plant biomass generation percent (resource mix)	%	calculated
132	PLWIPR	Plant wind generation percent (resource mix)	%	calculated

Field	Name	Description	Unit	Source(s)
133	PLSOPR	Plant solar generation percent (resource mix)	%	calculated
134	PLGTPR	Plant geothermal generation percent (resource mix)	%	calculated
135	PLOFPR	Plant other fossil generation percent (resource mix)	%	calculated
136	PLOPPR	Plant other unknown/purchased fuel generation percent (resource mix)	%	calculated
137	PLTNPR	Plant total nonrenewables generation percent (resource mix)	%	calculated
138	PLTRPR	Plant total renewables generation percent (resource mix)	%	calculated
139	PLTHPR	Plant total nonhydro renewables generation percent (resource mix)	%	calculated
140	PLCYPR	Plant total combustion generation percent (resource mix)	%	calculated
141	PLCNPR	Plant total noncombustion generation percent (resource mix)	%	calculated

Table A-4. eGRID File Structure, eGRID2022 ST State File

Field	Name	Description	Unit
1	YEAR	Data year	
2	PSTATABB	State abbreviation	
3	FIPSST	FIPS state code	
4	STNAMEPCAP	State nameplate capacity	MW
5	STHTIAN	State annual heat input from combustion	MMBtu
6	STHTIOZ	State ozone season heat input from combustion	MMBtu
7	STHTIANT	State total annual heat input	MMBtu
8	STHTIOZT	State total ozone season heat input	MMBtu
9	STNGENAN	State annual net generation	MWh
10	STNGENOZ	State ozone season net generation	MWh
11	STNOXAN	State annual NO_x emissions	tons
12	STNOXOZ	State ozone season NO_x emissions	tons
13	STSO2AN	State annual SO_2 emissions	tons
14	STCO2AN	State annual CO_2 emissions	tons
15	STCH4AN	State annual CH_4 emissions	lbs
16	STN2OAN	State annual N_2O emissions	lbs
17	STCO2EQA	State annual CO_2 equivalent emissions	tons
18	STHGAN	State annual Hg emissions	lbs
19	STNOXRTA	State annual NO_x total output emission rate	lb/MWh
20	STNOXRTO	State ozone season NO_x total output emission rate	lb/MWh
21	STSO2RTA	State annual SO_2 total output emission rate	lb/MWh
22	STCO2RTA	State annual CO_2 total output emission rate	lb/MWh
23	STCH4RTA	State annual CH_4 total output emission rate	lb/MWh
24	STN2ORTA	State annual N_2O total output emission rate	lb/MWh
25	STC2ERTA	State annual CO_2 equivalent total output emission rate	lb/MWh
26	STHGRTA	State annual Hg total output emission rate	not calculated
27	STNOXRA	State annual NO_x input emission rate	lb/MMBtu
28	STNOXRO	State ozone season NO_x input emission rate	lb/MMBtu
29	STSO2RA	State annual SO_2 input emission rate	lb/MMBtu
30	STCO2RA	State annual CO_2 input emission rate	lb/MMBtu
31	STCH4RA	State annual CH_4 input emission rate	lb/MMBtu
32	STN2ORA	State annual N_2O input emission rate	lb/MMBtu
33	STC2ERA	State annual CO_2 equivalent input emission rate	lb/MMBtu
34	STHGRA	State annual Hg input emission rate	not calculated
35	STNOXCRT	State annual NO_x combustion output emission rate	lb/MWh
36	STNOXCRO	State ozone season NO_x combustion output emission rate	lb/MWh
37	STSO2CRT	State annual SO_2 combustion output emission rate	lb/MWh
38	STCO2CRT	State annual CO_2 combustion output emission rate	lb/MWh
39	STCH4CRT	State annual CH_4 combustion output emission rate	lb/MWh
40	STN2OCRT	State annual N_2O combustion output emission rate	lb/MWh
41	STC2ECRT	State annual CO_2 equivalent combustion output emission rate	lb/MWh
42	STHGCRT	State annual Hg combustion output emission rate	not calculated
43	STCNOXRT	State annual NO_x coal output emission rate	lb/MWh
44	STONOXRT	State annual NO_x oil output emission rate	lb/MWh
45	STGNOXRT	State annual NO_x gas output emission rate	lb/MWh
46	STFSNXRT	State annual NO_x other fossil fuel output emission rate	lb/MWh
47	STCNXORT	State ozone season NO_x coal output emission rate	lb/MWh
48	STONXORT	State ozone season NO_x oil output emission rate	lb/MWh
49	STGNXORT	State ozone season NO_x gas output emission rate	lb/MWh
50	STFSNORT	State ozone season NO_x other fossil fuel output emission rate	lb/MWh

Field	Name	Description	Unit
51	STCSO2RT	State annual SO_2 coal output emission rate	lb/MWh
52	STOSO2RT	State annual SO_2 oil output emission rate	lb/MWh
53	STGSO2RT	State annual SO_2 gas output emission rate	lb/MWh
54	STFSS2RT	State annual SO_2 other fossil fuel output emission rate	lb/MWh
55	STCCO2RT	State annual CO_2 coal output emission rate	lb/MWh
56	STOCO2RT	State annual CO_2 oil output emission rate	lb/MWh
57	STGCO2RT	State annual CO_2 gas output emission rate	lb/MWh
58	STFSC2RT	State annual CO_2 other fossil fuel output emission rate	lb/MWh
59	STCCH4RT	State annual CH4 coal output emission rate	lb/MWh
60	STOCH4RT	State annual CH4 oil output emission rate	lb/MWh
61	STGCH4RT	State annual CH4 gas output emission rate	lb/MWh
62	STFCH4RT	State annual CH4 fossil fuel output emission rate	lb/MWh
63	STCN2ORT	State annual N2O coal output emission rate	lb/MWh
64	STON2ORT	State annual N2O oil output emission rate	lb/MWh
65	STGN2ORT	State annual N2O gas output emission rate	lb/MWh
66	STFN2ORT	State annual N2O fossil fuel output emission rate	lb/MWh
67	STCC2ERT	State annual CO2 equivalent coal output emission rate	lb/MWh
68	STOC2ERT	State annual CO2 equivalent oil output emission rate	lb/MWh
69	STGC2ERT	State annual CO2 equivalent gas output emission rate	lb/MWh
70	STFSC2ERT	State annual CO2 equivalent fossil fuel output emission rate	lb/MWh
71	STCHGRT	State annual Hg coal output emission rate	not calculated
72	STFSHGRT	State annual Hg other fossil fuel output emission rate	not calculated
73	STCNOXR	State annual NO_x coal input emission rate	lb/MMBtu
74	STONOXR	State annual NO_x oil input emission rate	lb/MMBtu
75	STGNOXR	State annual NO_x gas input emission rate	lb/MMBtu
76	STFSNXR	State annual NO_x other fossil fuel input emission rate	lb/MMBtu
77	STCNXOR	State ozone season NO_x coal input emission rate	lb/MMBtu
78	STONXOR	State ozone season NO_x oil input emission rate	lb/MMBtu
79	STGNXOR	State ozone season NO_x gas input emission rate	lb/MMBtu
80	STFSNOR	State ozone season NO_x other fossil fuel input emission rate	lb/MMBtu
81	STCSO2R	State annual SO_2 coal input emission rate	lb/MMBtu
82	STOSO2R	State annual SO_2 oil input emission rate	lb/MMBtu
83	STGSO2R	State annual SO_2 gas input emission rate	lb/MMBtu
84	STFSS2R	State annual SO_2 other fossil fuel input emission rate	lb/MMBtu
85	STCCO2R	State annual CO_2 coal input emission rate	lb/MMBtu
86	STOCO2R	State annual CO_2 oil input emission rate	lb/MMBtu
87	STGCO2R	State annual CO_2 gas input emission rate	lb/MMBtu
88	STFSC2R	State annual CO_2 other fossil fuel input emission rate	lb/MMBtu
89	STCCH4R	State annual CH4 coal input emission rate	lb/MMBtu
90	STOCH4R	State annual CH4 oil input emission rate	lb/MMBtu
91	STGCH4R	State annual CH4 gas input emission rate	lb/MMBtu
92	STFCH4R	State annual CH4 fossil fuel input emission rate	lb/MMBtu
93	STCN2OR	State annual N2O coal input emission rate	lb/MMBtu
94	STON2OR	State annual N2O oil input emission rate	lb/MMBtu
95	STGN2OR	State annual N2O gas input emission rate	lb/MMBtu
96	STFN2OR	State annual N2O fossil fuel input emission rate	lb/MMBtu
97	STCC2ER	State annual CO2 equivalent coal input emission rate	lb/MMBtu
98	STOC2ER	State annual CO2 equivalent oil input emission rate	lb/MMBtu
99	STGC2ER	State annual CO2 equivalent gas input emission rate	lb/MMBtu
100	STFSC2ER	State annual CO2 equivalent fossil fuel input emission rate	lb/MMBtu
101	STCHGR	State annual Hg coal input emission rate	not calculated

Field	Name	Description	Unit
102	STFSHGR	State annual Hg other fossil fuel input emission rate	not calculated
103	STNBNOX	State annual NO_x nonbaseload output emission rate	lb/MWh
104	STNBNXO	State ozone season NO_x nonbaseload output emission rate	lb/MWh
105	STNBSO2	State annual SO_2 nonbaseload output emission rate	lb/MWh
106	STNBCO2	State annual CO_2 nonbaseload output emission rate	lb/MWh
107	STNBCH4	State annual CH_4 nonbaseload output emission rate	lb/MWh
108	STNBN2O	State annual N_2O nonbaseload output emission rate	lb/MWh
109	STNBC2E	State annual CO_2 equivalent nonbaseload output emission rate	lb/MWh
110	STNBHG	State annual Hg nonbaseload output emission rate	not calculated
111	STGENACL	State annual coal net generation	MWh
112	STGENAOL	State annual oil net generation	MWh
113	STGENAGS	State annual gas net generation	MWh
114	STGENANC	State annual nuclear net generation	MWh
115	STGENAHY	State annual hydro net generation	MWh
116	STGENABM	State annual biomass net generation	MWh
117	STGENAWI	State annual wind net generation	MWh
118	STGENASO	State annual solar net generation	MWh
119	STGENAGT	State annual geothermal net generation	MWh
120	STGENAOF	State annual other fossil net generation	MWh
121	STGENAOP	State annual other unknown/purchased fuel net generation	MWh
122	STGENATN	State annual total nonrenewables net generation	MWh
123	STGENATR	State annual total renewables net generation	MWh
124	STGENATH	State annual total nonhydro renewables net generation	MWh
125	STGENACY	State annual total combustion net generation	MWh
126	STGENACN	State annual total noncombustion net generation	MWh
127	STCLPR	State coal generation percent (resource mix)	%
128	STOLPR	State oil generation percent (resource mix)	%
129	STGSPR	State gas generation percent (resource mix)	%
130	STNCPR	State nuclear generation percent (resource mix)	%
131	STHYPR	State hydro generation percent (resource mix)	%
132	STBMPR	State biomass generation percent (resource mix)	%
133	STWIPR	State wind generation percent (resource mix)	%
134	STSOPR	State solar generation percent (resource mix)	%
135	STGTPR	State geothermal generation percent (resource mix)	%
136	STOFPR	State other fossil generation percent (resource mix)	%
137	STOPPR	State other unknown/purchased fuel generation percent (resource mix)	%
138	STTNPR	State total nonrenewables generation percent (resource mix)	%
139	STTRPR	State total renewables generation percent (resource mix)	%
140	STTHPR	State total nonhydro renewables generation percent (resource mix)	%
141	STCYPR	State total combustion generation percent (resource mix)	%
142	STCNPR	State total noncombustion generation percent (resource mix)	%
143	STNBGNCL	State annual total nonbaseload coal generation	MWh
144	STNBGNOL	State annual total nonbaseload oil generation	MWh
145	STNBGNGS	State annual total nonbaseload gas generation	MWh
146	STNBGNNC	State annual total nonbaseload nuclear generation	MWh
147	STNBGNHY	State annual total nonbaseload hydro generation	MWh
148	STNBGNBM	State annual total nonbaseload biomass generation	MWh
149	STNBGNWI	State annual total nonbaseload wind generation	MWh
150	STNBGNSO	State annual total nonbaseload solar generation	MWh
151	STNBGNGT	State annual total nonbaseload geothermal generation	MWh
152	STNBGNOF	State annual total nonbaseload other fossil generation	MWh
153	STNBGNOP	State annual total nonbaseload other unknown/purchased fuel generation	MWh

Field	Name	Description	Unit
154	STNBCLPR	State nonbaseload coal generation percent (resource mix)	%
155	STNBOLPR	State nonbaseload oil generation percent (resource mix)	%
156	STNBGSPR	State nonbaseload gas generation percent (resource mix)	%
157	STNBNCPR	State nonbaseload nuclear generation percent (resource mix)	%
158	STNBHYPR	State nonbaseload hydro generation percent (resource mix)	%
159	STNBBMPR	State nonbaseload biomass generation percent (resource mix)	%
160	STNBWIPR	State nonbaseload wind generation percent (resource mix)	%
161	STNBSOPR	State nonbaseload solar generation percent (resource mix)	%
162	STNBGTPR	State nonbaseload geothermal generation percent (resource mix)	%
163	STNBOFPR	State nonbaseload other fossil generation percent (resource mix)	%
164	STNBOPPR	State nonbaseload other unknown/purchased fuel generation percent (resource mix)	%

Table A-5. eGRID File Structure, eGRID2022 BA File, Balancing Authority (BA) File

Field	Name	Description	Unit
1	YEAR	Data year	
2	BANAME	BA name	
3	BACODE	BA code	
4	BANAMEPCAP	BA nameplate capacity	MW
5	BAHTIAN	BA annual heat input from combustion	MMBtu
6	BAHTIOZ	BA ozone season heat input from combustion	MMBtu
7	BAHTIANT	BA total annual heat input	MMBtu
8	BAHTIOZT	BA total ozone season heat input	MMBtu
9	BANGENAN	BA annual net generation	MWh
10	BANGENOZ	BA ozone season net generation	MWh
11	BANOXAN	BA annual NO_x emissions	tons
12	BANOXOZ	BA ozone season NO_x emissions	tons
13	BASO2AN	BA annual SO_2 emissions	tons
14	BACO2AN	BA annual CO_2 emissions	tons
15	BACH4AN	BA annual CH_4 emissions	lbs
16	BAN2OAN	BA annual N_2O emissions	lbs
17	BACO2EQA	BA annual CO_2 equivalent emissions	tons
18	BAHGAN	BA annual Hg emissions	lbs
19	BANOXRTA	BA annual NO_x total output emission rate	lb/MWh
20	BANOXRTO	BA ozone season NO_x total output emission rate	lb/MWh
21	BASO2RTA	BA annual SO_2 total output emission rate	lb/MWh
22	BACO2RTA	BA annual CO_2 total output emission rate	lb/MWh
23	BACH4RTA	BA annual CH_4 total output emission rate	lb/MWh
24	BAN2ORTA	BA annual N_2O total output emission rate	lb/MWh
25	BAC2ERTA	BA annual CO_2 equivalent total output emission rate	lb/MWh
26	BAHGRTA	BA annual Hg total output emission rate	lb/MWh
27	BANOXRA	BA annual NO_x input emission rate	lb/MMBtu
28	BANOXRO	BA ozone season NO_x input emission rate	lb/MMBtu
29	BASO2RA	BA annual SO_2 input emission rate	lb/MMBtu
30	BACO2RA	BA annual CO_2 input emission rate	lb/MMBtu
31	BACH4RA	BA annual CH_4 input emission rate	lb/MMBtu
32	BAN2ORA	BA annual N_2O input emission rate	lb/MMBtu
33	BAC2ERA	BA annual CO_2 equivalent input emission rate	lb/MMBtu
34	BAHGRA	BA annual Hg input emission rate	lb/MMBtu
35	BANOXCRT	BA annual NO_x combustion output emission rate	lb/MWh
36	BANOXCRO	BA ozone season NO_x combustion output emission rate	lb/MWh
37	BASO2CRT	BA annual SO_2 combustion output emission rate	lb/MWh
38	BACO2CRT	BA annual CO_2 combustion output emission rate	lb/MWh
39	BACH4CRT	BA annual CH_4 combustion output emission rate	lb/MWh
40	BAN2OCRT	BA annual N_2O combustion output emission rate	lb/MWh
41	BAC2ECRT	BA annual CO_2 equivalent combustion output emission rate	lb/MWh
42	BAHGCRT	BA annual Hg combustion output emission rate	lb/MWh
43	BACNOXRT	BA annual NO_x coal output emission rate	lb/MWh
44	BAONOXRT	BA annual NO_x oil output emission rate	lb/MWh
45	BAGNOXRT	BA annual NO_x gas output emission rate	lb/MWh
46	BAFSNXRT	BA annual NO_x fossil fuel output emission rate	lb/MWh
47	BACNXORT	BA ozone season NO_x coal output emission rate	lb/MWh
48	BAONXORT	BA ozone season NO_x oil output emission rate	lb/MWh
49	BAGNXORT	BA ozone season NO_x gas output emission rate	lb/MWh
50	BAFSNORT	BA ozone season NO_x fossil fuel output emission rate	lb/MWh
51	BACSO2RT	BA annual SO_2 coal output emission rate	lb/MWh
52	BAOSO2RT	BA annual SO_2 oil output emission rate	lb/MWh

Field	Name	Description	Unit
53	BAGSO2RT	BA annual SO_2 gas output emission rate	lb/MWh
54	BAFSS2RT	BA annual SO_2 fossil fuel output emission rate	lb/MWh
55	BACCO2RT	BA annual CO_2 coal output emission rate	lb/MWh
56	BAOCO2RT	BA annual CO_2 oil output emission rate	lb/MWh
57	BAGCO2RT	BA annual CO_2 gas output emission rate	lb/MWh
58	BAFSC2RT	BA annual CO_2 fossil fuel output emission rate	lb/MWh
59	BACCH4RT	BA annual CH_4 coal output emission rate	lb/MWh
60	BAOCH4RT	BA annual CH_4 oil output emission rate	lb/MWh
61	BAGCH4RT	BA annual CH_4 gas output emission rate	lb/MWh
62	BAFCH4RT	BA annual CH_4 fossil fuel output emission rate	lb/MWh
63	BACN2ORT	BA annual N_2O coal output emission rate	lb/MWh
64	BAON2ORT	BA annual N_2O oil output emission rate	lb/MWh
65	BAGN2ORT	BA annual N_2O gas output emission rate	lb/MWh
66	BAFN2ORT	BA annual N_2O fossil fuel output emission rate	lb/MWh
67	BACC2ERT	BA annual CO_2 equivalent coal output emission rate	lb/MWh
68	BAOC2ERT	BA annual CO_2 equivalent oil output emission rate	lb/MWh
69	BAGC2ERT	BA annual CO_2 equivalent gas output emission rate	lb/MWh
70	BAFSC2ERT	BA annual CO_2 equivalent fossil fuel output emission rate	lb/MWh
71	BACHGRT	BA annual Hg coal output emission rate	lb/MWh
72	BAFSHGRT	BA annual Hg fossil fuel output emission rate	lb/MWh
73	BACNOXR	BA annual NO_x coal input emission rate	lb/MMBtu
74	BAONOXR	BA annual NO_x oil input emission rate	lb/MMBtu
75	BAGNOXR	BA annual NO_x gas input emission rate	lb/MMBtu
76	BAFSNXR	BA annual NO_x fossil fuel input emission rate	lb/MMBtu
77	BACNXOR	BA ozone season NO_x coal input emission rate	lb/MMBtu
78	BAONXOR	BA ozone season NO_x oil input emission rate	lb/MMBtu
79	BAGNXOR	BA ozone season NO_x gas input emission rate	lb/MMBtu
80	BAFSNOR	BA ozone season NO_x fossil fuel input emission rate	lb/MMBtu
81	BACSO2R	BA annual SO_2 coal input emission rate	lb/MMBtu
82	BAOSO2R	BA annual SO_2 oil input emission rate	lb/MMBtu
83	BAGSO2R	BA annual SO_2 gas input emission rate	lb/MMBtu
84	BAFSS2R	BA annual SO_2 fossil fuel input emission rate	lb/MMBtu
85	BACCO2R	BA annual CO_2 coal input emission rate	lb/MMBtu
86	BAOCO2R	BA annual CO_2 oil input emission rate	lb/MMBtu
87	BAGCO2R	BA annual CO_2 gas input emission rate	lb/MMBtu
88	BAFSC2R	BA annual CO_2 fossil fuel input emission rate	lb/MMBtu
89	BACCH4R	BA annual CH_4 coal input emission rate	lb/MMBtu
90	BAOCH4R	BA annual CH_4 oil input emission rate	lb/MMBtu
91	BAGCH4R	BA annual CH_4 gas input emission rate	lb/MMBtu
92	BAFCH4R	BA annual CH_4 fossil fuel input emission rate	lb/MMBtu
93	BACN2OR	BA annual N_2O coal input emission rate	lb/MMBtu
94	BAON2OR	BA annual N_2O oil input emission rate	lb/MMBtu
95	BAGN2OR	BA annual N_2O gas input emission rate	lb/MMBtu
96	BAFN2OR	BA annual N_2O fossil fuel input emission rate	lb/MMBtu
97	BACC2ER	BA annual CO_2 equivalent coal input emission rate	lb/MMBtu
98	BAOC2ER	BA annual CO_2 equivalent oil input emission rate	lb/MMBtu
99	BAGC2ER	BA annual CO_2 equivalent gas input emission rate	lb/MMBtu
100	BAFSC2ER	BA annual CO_2 equivalent fossil fuel input emission rate	lb/MMBtu
101	BACHGR	BA annual Hg coal input emission rate	lb/MMBtu
102	BAFSHGR	BA annual Hg fossil fuel input emission rate	lb/MMBtu
103	BANBNOX	BA annual NO_x nonbaseload output emission rate	lb/MWh
104	BANBNXO	BA ozone season NO_x nonbaseload output emission rate	lb/MWh
105	BANBSO2	BA annual SO_2 nonbaseload output emission rate	lb/MWh
106	BANBCO2	BA annual CO_2 nonbaseload output emission rate	lb/MWh

Field	Name	Description	Unit
107	BANBCH4	BA annual CH$_4$ nonbaseload output emission rate	lb/MWh
108	BANBN2O	BA annual N$_2$O nonbaseload output emission rate	lb/MWh
109	BANBC2E	BA annual CO$_2$ equivalent nonbaseload output emission rate	lb/MWh
110	BANBHG	BA annual Hg nonbaseload output emission rate	lb/MWh
111	BAGENACL	BA annual coal net generation	MWh
112	BAGENAOL	BA annual oil net generation	MWh
113	BAGENAGS	BA annual gas net generation	MWh
114	BAGENANC	BA annual nuclear net generation	MWh
115	BAGENAHY	BA annual hydro net generation	MWh
116	BAGENABM	BA annual biomass net generation	MWh
117	BAGENAWI	BA annual wind net generation	MWh
118	BAGENASO	BA annual solar net generation	MWh
119	BAGENAGT	BA annual geothermal net generation	MWh
120	BAGENAOF	BA annual other fossil net generation	MWh
121	BAGENAOP	BA annual other unknown/purchased fuel net generation	MWh
122	BAGENATN	BA annual total nonrenewables net generation	MWh
123	BAGENATR	BA annual total renewables net generation	MWh
124	BAGENATH	BA annual total nonhydro renewables net generation	MWh
125	BAGENACY	BA annual total combustion net generation	MWh
126	BAGENACN	BA annual total noncombustion net generation	MWh
127	BACLPR	BA coal generation percent (resource mix)	%
128	BAOLPR	BA oil generation percent (resource mix)	%
129	BAGSPR	BA gas generation percent (resource mix)	%
130	BANCPR	BA nuclear generation percent (resource mix)	%
131	BAHYPR	BA hydro generation percent (resource mix)	%
132	BABMPR	BA biomass generation percent (resource mix)	%
133	BAWIPR	BA wind generation percent (resource mix)	%
134	BASOPR	BA solar generation percent (resource mix)	%
135	BAGTPR	BA geothermal generation percent (resource mix)	%
136	BAOFPR	BA other fossil generation percent (resource mix)	%
137	BAOPPR	BA other unknown/purchased fuel generation percent (resource mix)	%
138	BATNPR	BA total nonrenewables generation percent (resource mix)	%
139	BATRPR	BA total renewables generation percent (resource mix)	%
140	BATHPR	BA total nonhydro renewables generation percent (resource mix)	%
141	BACYPR	BA total combustion generation percent (resource mix)	%
142	BACNPR	BA total noncombustion generation percent (resource mix)	%
143	BANBGNCL	BA annual total nonbaseload coal generation	MWh
144	BANBGNOL	BA annual total nonbaseload oil generation	MWh
145	BANBGNGS	BA annual total nonbaseload gas generation	MWh
146	BANBGNNC	BA annual total nonbaseload nuclear generation	MWh
147	BANBGNHY	BA annual total nonbaseload hydro generation	MWh
148	BANBGNBM	BA annual total nonbaseload biomass generation	MWh
149	BANBGNWI	BA annual total nonbaseload wind generation	MWh
150	BANBGNSO	BA annual total nonbaseload solar generation	MWh
151	BANBGNGT	BA annual total nonbaseload geothermal generation	MWh
152	BANBGNOF	BA annual total nonbaseload other fossil generation	MWh
153	BANBGNOP	BA annual total nonbaseload other unknown/purchased fuel generation	MWh
154	BANBCLPR	BA nonbaseload coal generation percent (resource mix)	%
155	BANBOLPR	BA nonbaseload oil generation percent (resource mix)	%
156	BANBGSPR	BA nonbaseload gas generation percent (resource mix)	%
157	BANBNCPR	BA nonbaseload nuclear generation percent (resource mix)	%
158	BANBHYPR	BA nonbaseload hydro generation percent (resource mix)	%
159	BANBBMPR	BA nonbaseload biomass generation percent (resource mix)	%

Field	Name	Description	Unit
160	BANBWIPR	BA nonbaseload wind generation percent (resource mix)	%
161	BANBSOPR	BA nonbaseload solar generation percent (resource mix)	%
162	BANBGTPR	BA nonbaseload geothermal generation percent (resource mix)	%
163	BANBOFPR	BA nonbaseload other fossil generation percent (resource mix)	%
164	BANBOPPR	BA nonbaseload other unknown/purchased fuel generation percent (resource mix)	%

Table A-6. eGRID File Structure, eGRID2022 SRL File, eGRID Subregion File

Field	Name	Description	Unit
1	YEAR	Data year	
2	SUBRGN	eGRID subregion acronym	
3	SRNAME	eGRID subregion name	
4	SRNAMEPCAP	eGRID subregion nameplate capacity	MW
5	SRHTIAN	eGRID subregion annual heat input from combustion	MMBtu
6	SRHTIOZ	eGRID subregion ozone season heat input from combustion	MMBtu
7	SRHTIANT	eGRID subregion total annual heat input	MMBtu
8	SRHTIOZT	eGRID subregion total ozone season heat input	MMBtu
9	SRNGENAN	eGRID subregion annual net generation	MWh
10	SRNGENOZ	eGRID subregion ozone season net generation	MWh
11	SRNOXAN	eGRID subregion annual NO_x emissions	tons
12	SRNOXOZ	eGRID subregion ozone season NO_x emissions	tons
13	SRSO2AN	eGRID subregion annual SO_2 emissions	tons
14	SRCO2AN	eGRID subregion annual CO_2 emissions	tons
15	SRCH4AN	eGRID subregion annual CH_4 emissions	lbs
16	SRN2OAN	eGRID subregion annual N_2O emissions	lbs
17	SRCO2EQA	eGRID subregion annual CO_2 equivalent emissions	tons
18	SRHGAN	eGRID subregion annual Hg emissions	lbs
19	SRNOXRTA	eGRID subregion annual NO_x total output emission rate	lb/MWh
20	SRNOXRTO	eGRID subregion ozone season NO_x total output emission rate	lb/MWh
21	SRSO2RTA	eGRID subregion annual SO_2 total output emission rate	lb/MWh
22	SRCO2RTA	eGRID subregion annual CO_2 total output emission rate	lb/MWh
23	SRCH4RTA	eGRID subregion annual CH_4 total output emission rate	lb/MWh
24	SRN2ORTA	eGRID subregion annual N_2O total output emission rate	lb/MWh
25	SRC2ERTA	eGRID subregion annual CO_2 equivalent total output emission rate	lb/MWh
26	SRHGRTA	eGRID subregion annual Hg total output emission rate	lb/MWh
27	SRNOXRA	eGRID subregion annual NO_x input emission rate	lb/MMBtu
28	SRNOXRO	eGRID subregion ozone season NO_x input emission rate	lb/MMBtu
29	SRSO2RA	eGRID subregion annual SO_2 input emission rate	lb/MMBtu
30	SRCO2RA	eGRID subregion annual CO_2 input emission rate	lb/MMBtu
31	SRCH4RA	eGRID subregion annual CH_4 input emission rate	lb/MMBtu
32	SRN2ORA	eGRID subregion annual N_2O input emission rate	lb/MMBtu
33	SRC2ERA	eGRID subregion annual CO_2 equivalent input emission rate	lb/MMBtu
34	SRHGRA	eGRID subregion annual Hg input emission rate	lb/MMBtu
35	SRNOXCRT	eGRID subregion annual NO_x combustion output emission rate	lb/MWh
36	SRNOXCRO	eGRID subregion ozone season NO_x combustion output emission rate	lb/MWh
37	SRSO2CRT	eGRID subregion annual SO_2 combustion output emission rate	lb/MWh
38	SRCO2CRT	eGRID subregion annual CO_2 combustion output emission rate	lb/MWh
39	SRCH4CRT	eGRID subregion annual CH_4 combustion output emission rate	lb/MWh
40	SRN2OCRT	eGRID subregion annual N_2O combustion output emission rate	lb/MWh
41	SRC2ECRT	eGRID subregion annual CO_2 equivalent combustion output emission rate	lb/MWh
42	SRHGCRT	eGRID subregion annual Hg combustion output emission rate	lb/MWh
43	SRCNOXRT	eGRID subregion annual NO_x coal output emission rate	lb/MWh
44	SRONOXRT	eGRID subregion annual NO_x oil output emission rate	lb/MWh
45	SRGNOXRT	eGRID subregion annual NO_x gas output emission rate	lb/MWh
46	SRFSNXRT	eGRID subregion annual NO_x fossil fuel output emission rate	lb/MWh
47	SRCNXORT	eGRID subregion ozone season NO_x coal output emission rate	lb/MWh
48	SRONXORT	eGRID subregion ozone season NO_x oil output emission rate	lb/MWh
49	SRGNXORT	eGRID subregion ozone season NO_x gas output emission rate	lb/MWh
50	SRFSNORT	eGRID subregion ozone season NO_x fossil fuel output emission rate	lb/MWh
51	SRCSO2RT	eGRID subregion annual SO_2 coal output emission rate	lb/MWh
52	SROSO2RT	eGRID subregion annual SO_2 oil output emission rate	lb/MWh

Field	Name	Description	Unit
53	SRGSO2RT	eGRID subregion annual SO_2 gas output emission rate	lb/MWh
54	SRFSS2RT	eGRID subregion annual SO_2 fossil fuel output emission rate	lb/MWh
55	SRCCO2RT	eGRID subregion annual CO_2 coal output emission rate	lb/MWh
56	SROCO2RT	eGRID subregion annual CO_2 oil output emission rate	lb/MWh
57	SRGCO2RT	eGRID subregion annual CO_2 gas output emission rate	lb/MWh
58	SRFSC2RT	eGRID subregion annual CO_2 fossil fuel output emission rate	lb/MWh
59	SRCCH4RT	eGRID subregion annual CH_4 coal output emission rate	lb/MWh
60	SROCH4RT	eGRID subregion annual CH_4 oil output emission rate	lb/MWh
61	SRGCH4RT	eGRID subregion annual CH_4 gas output emission rate	lb/MWh
62	SRFCH4RT	eGRID subregion annual CH_4 fossil fuel output emission rate	lb/MWh
63	SRCN2ORT	eGRID subregion annual N_2O coal output emission rate	lb/MWh
64	SRON2ORT	eGRID subregion annual N_2O oil output emission rate	lb/MWh
65	SRON2ORT	eGRID subregion annual N_2O gas output emission rate	lb/MWh
66	SRFN2ORT	eGRID subregion annual N_2O fossil output emission rate	lb/MWh
67	SRCC2ERT	eGRID subregion annual CO_2 equivalent coal output emission rate	lb/MWh
68	SROC2ERT	eGRID subregion annual CO_2 equivalent oil output emission rate	lb/MWh
69	SRGC2ERT	eGRID subregion annual CO_2 equivalent gas output emission rate	lb/MWh
70	SRFSC2ERT	eGRID subregion annual CO_2 equivalent fossil fuel output emission rate	lb/MWh
71	SRCHGRT	eGRID subregion annual Hg coal output emission rate	lb/MWh
72	SRFSHGRT	eGRID subregion annual Hg fossil fuel output emission rate	lb/MWh
73	SRCNOXR	eGRID subregion annual NO_x coal input emission rate	lb/MMBtu
74	SRONOXR	eGRID subregion annual NO_x oil input emission rate	lb/MMBtu
75	SRGNOXR	eGRID subregion annual NO_x gas input emission rate	lb/MMBtu
76	SRFSNXR	eGRID subregion annual NO_x fossil fuel input emission rate	lb/MMBtu
77	SRCNXOR	eGRID subregion ozone season NO_x coal input emission rate	lb/MMBtu
78	SRONXOR	eGRID subregion ozone season NO_x oil input emission rate	lb/MMBtu
79	SRGNXOR	eGRID subregion ozone season NO_x gas input emission rate	lb/MMBtu
80	SRFSNOR	eGRID subregion ozone season NO_x fossil fuel input emission rate	lb/MMBtu
81	SRCSO2R	eGRID subregion annual SO_2 coal input emission rate	lb/MMBtu
82	SROSO2R	eGRID subregion annual SO_2 oil input emission rate	lb/MMBtu
83	SRGSO2R	eGRID subregion annual SO_2 gas input emission rate	lb/MMBtu
84	SRFSS2R	eGRID subregion annual SO_2 fossil fuel input emission rate	lb/MMBtu
85	SRCCO2R	eGRID subregion annual CO_2 coal input emission rate	lb/MMBtu
86	SROCO2R	eGRID subregion annual CO_2 oil input emission rate	lb/MMBtu
87	SRGCO2R	eGRID subregion annual CO_2 gas input emission rate	lb/MMBtu
88	SRFSC2R	eGRID subregion annual CO_2 fossil fuel input emission rate	lb/MMBtu
89	SRCCH4R	eGRID subregion annual CH_4 coal input emission rate	lb/MMBtu
90	SROCH4R	eGRID subregion annual CH_4 oil input emission rate	lb/MMBtu
91	SRGCH4R	eGRID subregion annual CH_4 gas input emission rate	lb/MMBtu
92	SRFCH4R	eGRID subregion annual CH_4 fossil input emission rate	lb/MMBtu
93	SRCN2OR	eGRID subregion annual N_2O coal input emission rate	lb/MMBtu
94	SRON2OR	eGRID subregion annual N_2O oil input emission rate	lb/MMBtu
95	SRGN2OR	eGRID subregion annual N_2O gas input emission rate	lb/MMBtu
96	SRFN2OR	eGRID subregion annual N_2O fossil input emission rate	lb/MMBtu
97	SRCC2ER	eGRID subregion annual CO_2 equivalent coal input emission rate	lb/MMBtu
98	SROC2ER	eGRID subregion annual CO_2 equivalent oil input emission rate	lb/MMBtu
99	SRGC2ER	eGRID subregion annual CO_2 equivalent gas input emission rate	lb/MMBtu
100	SRFSC2ER	eGRID subregion annual CO_2 equivalent fossil fuel input emission rate	lb/MMBtu
101	SRCHGR	eGRID subregion annual Hg coal input emission rate	lb/MMBtu
102	SRFSHGR	eGRID subregion annual Hg fossil fuel input emission rate	lb/MMBtu
103	SRNBNOX	eGRID subregion annual NO_x nonbaseload output emission rate	lb/MWh
104	SRNBNXO	eGRID subregion ozone season NO_x nonbaseload output emission rate	lb/MWh
105	SRNBSO2	eGRID subregion annual SO_2 nonbaseload output emission rate	lb/MWh
106	SRNBCO2	eGRID subregion annual CO_2 nonbaseload output emission rate	lb/MWh

Field	Name	Description	Unit
107	SRNBCH4	eGRID subregion annual CH_4 nonbaseload output emission rate	lb/MWh
108	SRNBN2O	eGRID subregion annual N_2O nonbaseload output emission rate	lb/MWh
109	SRNBC2E	eGRID subregion annual CO_2e nonbaseload output emission rate	lb/MWh
110	SRNBHG	eGRID subregion annual Hg nonbaseload output emission rate	lb/MWh
111	SRGENACL	eGRID subregion annual coal net generation	MWh
112	SRGENAOL	eGRID subregion annual oil net generation	MWh
113	SRGENAGS	eGRID subregion annual gas net generation	MWh
114	SRGENANC	eGRID subregion annual nuclear net generation	MWh
115	SRGENAHY	eGRID subregion annual hydro net generation	MWh
116	SRGENABM	eGRID subregion annual biomass net generation	MWh
117	SRGENAWI	eGRID subregion annual wind net generation	MWh
118	SRGENASO	eGRID subregion annual solar net generation	MWh
119	SRGENAGT	eGRID subregion annual geothermal net generation	MWh
120	SRGENAOF	eGRID subregion annual other fossil net generation	MWh
121	SRGENAOP	eGRID subregion annual other unknown/purchased fuel net generation	MWh
122	SRGENATN	eGRID subregion annual total nonrenewables net generation	MWh
123	SRGENATR	eGRID subregion annual total renewables net generation	MWh
124	SRGENATH	eGRID subregion annual total nonhydro renewables net generation	MWh
125	SRGENACY	eGRID subregion annual total combustion net generation	MWh
126	SRGENACN	eGRID subregion annual total noncombustion net generation	MWh
127	SRCLPR	eGRID subregion coal generation percent (resource mix)	%
128	SROLPR	eGRID subregion oil generation percent (resource mix)	%
129	SRGSPR	eGRID subregion gas generation percent (resource mix)	%
130	SRNCPR	eGRID subregion nuclear generation percent (resource mix)	%
131	SRHYPR	eGRID subregion hydro generation percent (resource mix)	%
132	SRBMPR	eGRID subregion biomass generation percent (resource mix)	%
133	SRWIPR	eGRID subregion wind generation percent (resource mix)	%
134	SRSOPR	eGRID subregion solar generation percent (resource mix)	%
135	SRGTPR	eGRID subregion geothermal generation percent (resource mix)	%
136	SROFPR	eGRID subregion other fossil generation percent (resource mix)	%
137	SROPPR	eGRID subregion other unknown/purchased fuel generation percent (resource mix)	%
138	SRTNPR	eGRID subregion total nonrenewables generation percent (resource mix)	%
139	SRTRPR	eGRID subregion total renewables generation percent (resource mix)	%
140	SRTHPR	eGRID subregion total nonhydro renewables generation percent (resource mix)	%
141	SRCYPR	eGRID subregion total combustion generation percent (resource mix)	%
142	SRCNPR	eGRID subregion total noncombustion generation percent (resource mix)	%
143	SRNBGNCL	eGRID subregion annual total nonbaseload coal generation	MWh
144	SRNBGNOL	eGRID subregion annual total nonbaseload oil generation	MWh
145	SRNBGNGS	eGRID subregion annual total nonbaseload gas generation	MWh
146	SRNBGNNC	eGRID subregion annual total nonbaseload nuclear generation	MWh
147	SRNBGNHY	eGRID subregion annual total nonbaseload hydro generation	MWh
148	SRNBGNBM	eGRID subregion annual total nonbaseload biomass generation	MWh
149	SRNBGNWI	eGRID subregion annual total nonbaseload wind generation	MWh
150	SRNBGNSO	eGRID subregion annual total nonbaseload solar generation	MWh
151	SRNBGNGT	eGRID subregion annual total nonbaseload geothermal generation	MWh
152	SRNBGNOF	eGRID subregion annual total nonbaseload other fossil generation	MWh
153	SRNBGNOP	eGRID subregion annual total nonbaseload other unknown/purchased fuel generation	MWh
154	SRNBCLPR	eGRID subregion nonbaseload coal generation percent (resource mix)	%
155	SRNBOLPR	eGRID subregion nonbaseload oil generation percent (resource mix)	%
156	SRNBGSPR	eGRID subregion nonbaseload gas generation percent (resource mix)	%
157	SRNBNCPR	eGRID subregion nonbaseload nuclear generation percent (resource mix)	%
158	SRNBHYPR	eGRID subregion nonbaseload hydro generation percent (resource mix)	%

Field	Name	Description	Unit
159	SRNBBMPR	eGRID subregion nonbaseload biomass generation percent (resource mix)	%
160	SRNBWIPR	eGRID subregion nonbaseload wind generation percent (resource mix)	%
161	SRNBSOPR	eGRID subregion nonbaseload solar generation percent (resource mix)	%
162	SRNBGTPR	eGRID subregion nonbaseload geothermal generation percent (resource mix)	%
163	SRNBOFPR	eGRID subregion nonbaseload other fossil generation percent (resource mix)	%
164	SRNBOPPR	eGRID subregion nonbaseload other unknown/purchased fuel generation percent (resource mix)	%

Table A-7. eGRID File Structure, eGRID2022 NRL File, NERC Region File

Field	Name	Description	Unit
1	YEAR	Data year	
2	NERC	NERC region acronym	
3	NERCNAME	NERC region name	
4	NRNAMEPCAP	NERC region nameplate capacity	MW
5	NRHTIAN	NERC region annual heat input from combustion	MMBtu
6	NRHTIOZ	NERC region ozone season heat input from combustion	MMBtu
7	NRHTIANT	NERC total region annual heat input	MMBtu
8	NRHTIOZT	NERC total region ozone season heat input	MMBtu
9	NRNGENAN	NERC region annual net generation	MWh
10	NRNGENOZ	NERC region ozone season net generation	MWh
11	NRNOXAN	NERC region annual NO_x emissions	tons
12	NRNOXOZ	NERC region ozone season NO_x emissions	tons
13	NRSO2AN	NERC region annual SO_2 emissions	tons
14	NRCO2AN	NERC region annual CO_2 emissions	tons
15	NRCH4AN	NERC region annual CH_4 emissions	lbs
16	NRN2OAN	NERC region annual N_2O emissions	lbs
17	NRCO2EQA	NERC region annual CO_2 equivalent emissions	tons
18	NRHGAN	NERC region annual Hg emissions	lbs
19	NRNOXRTA	NERC region annual NO_x total output emission rate	lb/MWh
20	NRNOXRTO	NERC region ozone season NO_x total output emission rate	lb/MWh
21	NRSO2RTA	NERC region annual SO_2 total output emission rate	lb/MWh
22	NRCO2RTA	NERC region annual CO_2 total output emission rate	lb/MWh
23	NRCH4RTA	NERC region annual CH_4 total output emission rate	lb/MWh
24	NRN2ORTA	NERC region annual N_2O total output emission rate	lb/MWh
25	NRC2ERTA	NERC region annual CO_2 equivalent total output emission rate	lb/MWh
26	NRHGRTA	NERC region annual Hg total output emission rate	lb/MWh
27	NRNOXRA	NERC region annual NO_x input emission rate	lb/MMBtu
28	NRNOXRO	NERC region ozone season NO_x input emission rate	lb/MMBtu
29	NRSO2RA	NERC region annual SO_2 input emission rate	lb/MMBtu
30	NRCO2RA	NERC region annual CO_2 input emission rate	lb/MMBtu
31	NRCH4RA	NERC region annual CH_4 input emission rate	lb/MMBtu
32	NRN2ORA	NERC region annual N_2O input emission rate	lb/MMBtu
33	NRC2ERA	NERC region annual CO_2 equivalent input emission rate	lb/MMBtu
34	NRHGRA	NERC region annual Hg input emission rate	lb/MMBtu
35	NRNOXCRT	NERC region annual NO_x combustion output emission rate	lb/MWh
36	NRNOXCRO	NERC region ozone season NO_x combustion output emission rate	lb/MWh
37	NRSO2CRT	NERC region annual SO_2 combustion output emission rate	lb/MWh
38	NRCO2CRT	NERC region annual CO_2 combustion output emission rate	lb/MWh
39	NRCH4CRT	NERC region annual CH_4 combustion output emission rate	lb/MWh
40	NRN2OCRT	NERC region annual N_2O combustion output emission rate	lb/MWh
41	NRC2ECRT	NERC region annual CO_2 equivalent combustion output emission rate	lb/MWh
42	NRHGCRT	NERC region annual Hg combustion output emission rate	lb/MWh
43	NRCNOXRT	NERC region annual NO_x coal output emission rate	lb/MWh
44	NRONOXRT	NERC region annual NO_x oil output emission rate	lb/MWh
45	NRGNOXRT	NERC region annual NO_x gas output emission rate	lb/MWh
46	NRFSNXRT	NERC region annual NO_x fossil fuel output emission rate	lb/MWh
47	NRCNXORT	NERC region ozone season NO_x coal output emission rate	lb/MWh
48	NRONXORT	NERC region ozone season NO_x oil output emission rate	lb/MWh
49	NRGNXORT	NERC region ozone season NO_x gas output emission rate	lb/MWh
50	NRFSNORT	NERC region ozone season NO_x fossil fuel output emission rate	lb/MWh
51	NRCSO2RT	NERC region annual SO_2 coal output emission rate	lb/MWh
52	NROSO2RT	NERC region annual SO_2 oil output emission rate	lb/MWh

Field	Name	Description	Unit
53	NRGSO2RT	NERC region annual SO_2 gas output emission rate	lb/MWh
54	NRFSS2RT	NERC region annual SO_2 fossil fuel output emission rate	lb/MWh
55	NRCCO2RT	NERC region annual CO_2 coal output emission rate	lb/MWh
56	NROCO2RT	NERC region annual CO_2 oil output emission rate	lb/MWh
57	NRGCO2RT	NERC region annual CO_2 gas output emission rate	lb/MWh
58	NRFSC2RT	NERC region annual CO_2 fossil fuel output emission rate	lb/MWh
59	NRCCH4RT	NERC region annual CH_4 coal output emission rate	lb/MWh
60	NROCH4RT	NERC region annual CH_4 oil output emission rate	lb/MWh
61	NRGCH4RT	NERC region annual CH_4 gas output emission rate	lb/MWh
62	NRFCH4RT	NERC region annual CH_4 fossil fuel output emission rate	lb/MWh
63	NRCN2ORT	NERC region annual N_2O coal output emission rate	lb/MWh
64	NRON2ORT	NERC region annual N_2O oil output emission rate	lb/MWh
65	NRGN2ORT	NERC region annual N_2O gas output emission rate	lb/MWh
66	NRFN2ORT	NERC region annual N_2O fossil fuel output emission rate	lb/MWh
67	NRCC2ERT	NERC region annual CO_2 equivalent coal output emission rate	lb/MWh
68	NROC2ERT	NERC region annual CO_2 equivalent oil output emission rate	lb/MWh
69	NRGC2ERT	NERC region annual CO_2 equivalent gas output emission rate	lb/MWh
70	NRFSC2ERT	NERC region annual CO_2 equivalent fossil fuel output emission rate	lb/MWh
71	NRCHGRT	NERC region annual Hg coal output emission rate	lb/MWh
72	NRFSHGRT	NERC region annual Hg fossil fuel output emission rate	lb/MWh
73	NRCNOXR	NERC region annual NO_x coal input emission rate	lb/MMBtu
74	NRONOXR	NERC region annual NO_x oil input emission rate	lb/MMBtu
75	NRGNOXR	NERC region annual NO_x gas input emission rate	lb/MMBtu
76	NRFSNXR	NERC region annual NO_x fossil fuel input emission rate	lb/MMBtu
77	NRCNXOR	NERC region ozone season NO_x coal input emission rate	lb/MMBtu
78	NRONXOR	NERC region ozone season NO_x oil input emission rate	lb/MMBtu
79	NRGNXOR	NERC region ozone season NO_x gas input emission rate	lb/MMBtu
80	NRFSNOR	NERC region ozone season NO_x fossil fuel input emission rate	lb/MMBtu
81	NRCSO2R	NERC region annual SO_2 coal input emission rate	lb/MMBtu
82	NROSO2R	NERC region annual SO_2 oil input emission rate	lb/MMBtu
83	NRGSO2R	NERC region annual SO_2 gas input emission rate	lb/MMBtu
84	NRFSS2R	NERC region annual SO_2 fossil fuel input emission rate	lb/MMBtu
85	NRCCO2R	NERC region annual CO_2 coal input emission rate	lb/MMBtu
86	NROCO2R	NERC region annual CO_2 oil input emission rate	lb/MMBtu
87	NRGCO2R	NERC region annual CO_2 gas input emission rate	lb/MMBtu
88	NRCCH4R	NERC region annual CH_4 coal input emission rate	lb/MMBtu
89	NROCH4R	NERC region annual CH_4 oil input emission rate	lb/MMBtu
90	NRGCH4R	NERC region annual CH_4 gas input emission rate	lb/MMBtu
91	NRFCH4R	NERC region annual CH_4 fossil fuel input emission rate	lb/MMBtu
92	NRCN2OR	NERC region annual N_2O coal input emission rate	lb/MMBtu
93	NRON2OR	NERC region annual N_2O oil input emission rate	lb/MMBtu
94	NRGN2OR	NERC region annual N_2O gas input emission rate	lb/MMBtu
95	NRFN2OR	NERC region annual N_2O fossil fuel input emission rate	lb/MMBtu
96	NRCC2ER	NERC region annual CO_2 equivalent coal input emission rate	lb/MMBtu
97	NROC2ER	NERC region annual CO_2 equivalent oil input emission rate	lb/MMBtu
98	NRGC2ER	NERC region annual CO_2 equivalent gas input emission rate	lb/MMBtu
99	NRFSC2ER	NERC region annual CO_2 equivalent fossil fuel input emission rate	lb/MMBtu
100	NRFSC2R	NERC region annual CO_2 fossil fuel input emission rate	lb/MMBtu
101	NRCHGR	NERC region annual Hg coal input emission rate	lb/MMBtu
102	NRFSHGR	NERC region annual Hg fossil fuel input emission rate	lb/MMBtu
103	NRNBNOX	NERC region annual NO_x nonbaseload output emission rate	lb/MWh
104	NRNBNXO	NERC region ozone season NO_x nonbaseload output emission rate	lb/MWh
105	NRNBSO2	NERC region annual SO_2 nonbaseload output emission rate	lb/MWh
106	NRNBCO2	NERC region annual CO_2 nonbaseload output emission rate	lb/MWh

Field	Name	Description	Unit
107	NRNBCH4	NERC region annual CH_4 nonbaseload output emission rate	lb/MWh
108	NRNBN2O	NERC region annual N_2O nonbaseload output emission rate	lb/MWh
109	NRNBC2E	NERC region annual CO_2 equivalent nonbaseload output emission rate	lb/MWh
110	NRNBHG	NERC region annual Hg nonbaseload output emission rate	lb/MWh
111	NRGENACL	NERC region annual coal net generation	MWh
112	NRGENAOL	NERC region annual oil net generation	MWh
113	NRGENAGS	NERC region annual gas net generation	MWh
114	NRGENANC	NERC region annual nuclear net generation	MWh
115	NRGENAHY	NERC region annual hydro net generation	MWh
116	NRGENABM	NERC region annual biomass net generation	MWh
117	NRGENAWI	NERC region annual wind net generation	MWh
118	NRGENASO	NERC region annual solar net generation	MWh
119	NRGENAGT	NERC region annual geothermal net generation	MWh
120	NRGENAOF	NERC region annual other fossil net generation	MWh
121	NRGENAOP	NERC region annual other unknown/purchased fuel net generation	MWh
122	NRGENATN	NERC region annual total nonrenewables net generation	MWh
123	NRGENATR	NERC region annual total renewables net generation	MWh
124	NRGENATH	NERC region annual total nonhydro renewables net generation	MWh
125	NRGENACY	NERC region annual total combustion net generation	MWh
126	NRGENACN	NERC region annual total noncombustion net generation	MWh
127	NRCLPR	NERC region coal generation percent (resource mix)	%
128	NROLPR	NERC region oil generation percent (resource mix)	%
129	NRGSPR	NERC region gas generation percent (resource mix)	%
130	NRNCPR	NERC region nuclear generation percent (resource mix)	%
131	NRHYPR	NERC region hydro generation percent (resource mix)	%
132	NRBMPR	NERC region biomass generation percent (resource mix)	%
133	NRWIPR	NERC region wind generation percent (resource mix)	%
134	NRSOPR	NERC region solar generation percent (resource mix)	%
135	NRGTPR	NERC region geothermal generation percent (resource mix)	%
136	NROFPR	NERC region other fossil generation percent (resource mix)	%
137	NROPPR	NERC region other unknown/purchased fuel generation percent (resource mix)	%
138	NRTNPR	NERC region total nonrenewables generation percent (resource mix)	%
139	NRTRPR	NERC region total renewables generation percent (resource mix)	%
140	NRTHPR	NERC region total nonhydro renewables generation percent (resource mix)	%
141	NRCYPR	NERC region total combustion generation percent (resource mix)	%
142	NRCNPR	NERC region total noncombustion generation percent (resource mix)	%
143	NRNBGNCL	NERC region annual total nonbaseload coal generation	MWh
144	NRNBGNOL	NERC region annual total nonbaseload oil generation	MWh
145	NRNBGNGS	NERC region annual total nonbaseload gas generation	MWh
146	NRNBGNNC	NERC region annual total nonbaseload nuclear generation	MWh
147	NRNBGNHY	NERC region annual total nonbaseload hydro generation	MWh
148	NRNBGNBM	NERC region annual total nonbaseload biomass generation	MWh
149	NRNBGNWI	NERC region annual total nonbaseload wind generation	MWh
150	NRNBGNSO	NERC region annual total nonbaseload solar generation	MWh
151	NRNBGNGT	NERC region annual total nonbaseload geothermal generation	MWh
152	NRNBGNOF	NERC region annual total nonbaseload other fossil generation	MWh
153	NRNBGNOP	NERC region annual total nonbaseload other unknown/purchased fuel generation	MWh
154	NRNBCLPR	NERC region nonbaseload coal generation percent (resource mix)	%
155	NRNBOLPR	NERC region nonbaseload oil generation percent (resource mix)	%
156	NRNBGSPR	NERC region nonbaseload gas generation percent (resource mix)	%
157	NRNBNCPR	NERC region nonbaseload nuclear generation percent (resource mix)	%
158	NRNBHYPR	NERC region nonbaseload hydro generation percent (resource mix)	%
159	NRNBBMPR	NERC region nonbaseload biomass generation percent (resource mix)	%
160	NRNBWIPR	NERC region nonbaseload wind generation percent (resource mix)	%

Field	Name	Description	Unit
161	NRNBSOPR	NERC region nonbaseload solar generation percent (resource mix)	%
162	NRNBGTPR	NERC region nonbaseload geothermal generation percent (resource mix)	%
163	NRNBOFPR	NERC region nonbaseload other fossil generation percent (resource mix)	%
164	NRNBOPPR	NERC region nonbaseload other unknown/purchased fuel generation percent (resource mix)	%

Table A-8. eGRID File Structure, eGRID2022 U.S. File, United States File

Field	Name	Description	Unit
1	YEAR	Data year	
2	USNAMEPCAP	U.S. nameplate capacity	MW
3	USHTIAN	U.S. annual heat input from combustion	MMBtu
4	USHTIOZ	U.S. ozone season heat input from combustion	MMBtu
5	USHTIANT	U.S. total annual heat input	MMBtu
6	USHTIOZT	U.S. total ozone season heat input	MMBtu
7	USNGENAN	U.S. annual net generation	MWh
8	USNGENOZ	U.S. ozone season net generation	MWh
9	USNOXAN	U.S. annual NO_x emissions	tons
10	USNOXOZ	U.S. ozone season NO_x emissions	tons
11	USSO2AN	U.S. annual SO_2 emissions	tons
12	USCO2AN	U.S. annual CO_2 emissions	tons
13	USCH4AN	U.S. annual CH_4 emissions	lbs
14	USN2OAN	U.S. annual N_2O emissions	lbs
15	USCO2EQA	U.S. annual CO_2 equivalent emissions	tons
16	USHGAN	U.S. annual Hg emissions	lbs
17	USNOXRTA	U.S. annual NO_x total output emission rate	lb/MWh
18	USNOXRTO	U.S. ozone season NO_x total output emission rate	lb/MWh
19	USSO2RTA	U.S. annual SO_2 total output emission rate	lb/MWh
20	USCO2RTA	U.S. annual CO_2 total output emission rate	lb/MWh
21	USCH4RTA	U.S. annual CH_4 total output emission rate	lb/MWh
22	USN2ORTA	U.S. annual N_2O total output emission rate	lb/MWh
23	USC2ERTA	U.S. annual CO_2 equivalent total output emission rate	lb/MWh
24	USHGRTA	U.S. annual Hg total output emission rate	lb/MWh
25	USNOXRA	U.S. annual NO_x input emission rate	lb/MMBtu
26	USNOXRO	U.S. ozone season NO_x input emission rate	lb/MMBtu
27	USSO2RA	U.S. annual SO_2 input emission rate	lb/MMBtu
28	USCO2RA	U.S. annual CO_2 input emission rate	lb/MMBtu
29	USCH4RA	U.S. annual CH_4 input emission rate	lb/MMBtu
30	USN2ORA	U.S. annual N_2O input emission rate	lb/MMBtu
31	USC2ERA	U.S. annual CO_2 equivalent input emission rate	lb/MMBtu
32	USHGRA	U.S. annual Hg input emission rate	lb/MMBtu
33	USNOXCRT	U.S. annual NO_x combustion output emission rate	lb/MWh
34	USNOXCRO	U.S. ozone season NO_x combustion output emission rate	lb/MWh
35	USSO2CRT	U.S. annual SO_2 combustion output emission rate	lb/MWh
36	USCO2CRT	U.S. annual CO_2 combustion output emission rate	lb/MWh
37	USCH4CRT	U.S. annual CH_4 combustion output emission rate	lb/MWh
38	USN2OCRT	U.S. annual N_2O combustion output emission rate	lb/MWh
39	USC2ECRT	U.S. annual CO_2 equivalent combustion output emission rate	lb/MWh
40	USHGCRT	U.S. annual Hg combustion output emission rate	lb/MWh
41	USCNOXRT	U.S. annual NO_x coal output emission rate	lb/MWh
42	USONOXRT	U.S. annual NO_x oil output emission rate	lb/MWh
43	USGNOXRT	U.S. annual NO_x gas output emission rate	lb/MWh
44	USFSNXRT	U.S. annual NO_x fossil fuel output emission rate	lb/MWh
45	USCNXORT	U.S. ozone season NO_x coal output emission rate	lb/MWh
46	USONXORT	U.S. ozone season NO_x oil output emission rate	lb/MWh
47	USGNXORT	U.S. ozone season NO_x gas output emission rate	lb/MWh
48	USFSNORT	U.S. ozone season NO_x fossil fuel output emission rate	lb/MWh
49	USCSO2RT	U.S. annual SO_2 coal output emission rate	lb/MWh
50	USOSO2RT	U.S. annual SO_2 oil output emission rate	lb/MWh
51	USGSO2RT	U.S. annual SO_2 gas output emission rate	lb/MWh

Field	Name	Description	Unit
52	USFSS2RT	U.S. annual SO_2 fossil fuel output emission rate	lb/MWh
53	USCCO2RT	U.S. annual CO_2 coal output emission rate	lb/MWh
54	USOCO2RT	U.S. annual CO_2 oil output emission rate	lb/MWh
55	USGCO2RT	U.S. annual CO_2 gas output emission rate	lb/MWh
56	USFSC2RT	U.S. annual CO_2 fossil fuel output emission rate	lb/MWh
57	USCCH4RT	U.S. annual CH_4 coal output emission rate	lb/MWh
58	USOCH4RT	U.S. annual CH_4 oil output emission rate	lb/MWh
59	USGCH4RT	U.S. annual CH_4 gas output emission rate	lb/MWh
60	USFCH4RT	U.S. annual CH_4 fossil fuel output emission rate	lb/MWh
61	USCN2ORT	U.S. annual N_2O coal output emission rate	lb/MWh
62	USON2ORT	U.S. annual N_2O oil output emission rate	lb/MWh
63	USGN2ORT	U.S. annual N_2O gas output emission rate	lb/MWh
64	USFN2ORT	U.S. annual N_2O fossil fuel output emission rate	lb/MWh
65	USCC2ERT	U.S. annual CO_2 equivalent coal output emission rate	lb/MWh
66	USOC2ERT	U.S. annual CO_2 equivalent oil output emission rate	lb/MWh
67	USGC2ERT	U.S. annual CO_2 equivalent gas output emission rate	lb/MWh
68	USFSC2ERT	U.S. annual CO_2 equivalent fossil fuel output emission rate	lb/MWh
69	USCHGRT	U.S. annual Hg coal output emission rate	lb/MWh
70	USFSHGRT	U.S. annual Hg fossil fuel output emission rate	lb/MWh
71	USCNOXR	U.S. annual NO_x coal input emission rate	lb/MMBtu
72	USONOXR	U.S. annual NO_x oil input emission rate	lb/MMBtu
73	USGNOXR	U.S. annual NO_x gas input emission rate	lb/MMBtu
74	USFSNXR	U.S. annual NO_x fossil fuel input emission rate	lb/MMBtu
75	USCNXOR	U.S. ozone season NO_x coal input emission rate	lb/MMBtu
76	USONXOR	U.S. ozone season NO_x oil input emission rate	lb/MMBtu
77	USGNXOR	U.S. ozone season NO_x gas input emission rate	lb/MMBtu
78	USFSNOR	U.S. ozone season NO_x fossil fuel input emission rate	lb/MMBtu
79	USCSO2R	U.S. annual SO_2 coal input emission rate	lb/MMBtu
80	USOSO2R	U.S. annual SO_2 oil input emission rate	lb/MMBtu
81	USGSO2R	U.S. annual SO_2 gas input emission rate	lb/MMBtu
82	USFSS2R	U.S. annual SO_2 fossil fuel input emission rate	lb/MMBtu
83	USCCO2R	U.S. annual CO_2 coal input emission rate	lb/MMBtu
84	USOCO2R	U.S. annual CO_2 oil input emission rate	lb/MMBtu
85	USGCO2R	U.S. annual CO_2 gas input emission rate	lb/MMBtu
86	USFSC2R	U.S. annual CO_2 fossil fuel input emission rate	lb/MMBtu
87	USCCH4R	U.S. annual CH_4 coal input emission rate	lb/MMBtu
88	USOCH4R	U.S. annual CH_4 oil input emission rate	lb/MMBtu
89	USGCH4R	U.S. annual CH_4 gas input emission rate	lb/MMBtu
90	USFCH4R	U.S. annual CH_4 fossil fuel input emission rate	lb/MMBtu
91	USCN2OR	U.S. annual N_2O coal input emission rate	lb/MMBtu
92	USON2OR	U.S. annual N_2O oil input emission rate	lb/MMBtu
93	USGN2OR	U.S. annual N_2O gas input emission rate	lb/MMBtu
94	USFN2OR	U.S. annual N_2O fossil fuel input emission rate	lb/MMBtu
95	USCC2ER	U.S. annual CO_2 equivalent coal input emission rate	lb/MMBtu
96	USOC2ER	U.S. annual CO_2 equivalent oil input emission rate	lb/MMBtu
97	USGC2ER	U.S. annual CO_2 equivalent gas input emission rate	lb/MMBtu
98	USFSC2ER	U.S. annual CO_2 equivalent fossil fuel input emission rate	lb/MMBtu
99	USCHGR	U.S. annual Hg coal input emission rate	lb/MMBtu
100	USFSHGR	U.S. annual Hg fossil fuel input emission rate	lb/MMBtu
101	USNBNOX	U.S. annual NO_x nonbaseload output emission rate	lb/MWh
102	USNBNXO	U.S. ozone season NO_x nonbaseload output emission rate	lb/MWh
103	USNBSO2	U.S. annual SO_2 nonbaseload output emission rate	lb/MWh

Field	Name	Description	Unit
104	USNBCO2	U.S. annual CO_2 nonbaseload output emission rate	lb/MWh
105	USNBCH4	U.S. annual CH_4 nonbaseload output emission rate	lb/MWh
106	USNBN2O	U.S. annual N_2O nonbaseload output emission rate	lb/MWh
107	USNBC2E	U.S. annual CO_2 equivalent nonbaseload output emission rate	lb/MWh
108	USNBHG	U.S. annual Hg nonbaseload output emission rate	lb/MWh
109	USGENACL	U.S. annual coal net generation	MWh
110	USGENAOL	U.S. annual oil net generation	MWh
111	USGENAGS	U.S. annual gas net generation	MWh
112	USGENANC	U.S. annual nuclear net generation	MWh
113	USGENAHY	U.S. annual hydro net generation	MWh
114	USGENABM	U.S. annual biomass net generation	MWh
115	USGENAWI	U.S. annual wind net generation	MWh
116	USGENASO	U.S. annual solar net generation	MWh
117	USGENAGT	U.S. annual geothermal net generation	MWh
118	USGENAOF	U.S. annual other fossil net generation	MWh
119	USGENAOP	U.S. annual other unknown/purchased fuel net generation	MWh
120	USGENATN	U.S. annual total nonrenewables net generation	MWh
121	USGENATR	U.S. annual total renewables net generation	MWh
122	USGENATH	U.S. annual total nonhydro renewables net generation	MWh
123	USGENACY	U.S. annual total combustion net generation	MWh
124	USGENACN	U.S. annual total noncombustion net generation	MWh
125	USCLPR	U.S. coal generation percent (resource mix)	%
126	USOLPR	U.S. oil generation percent (resource mix)	%
127	USGSPR	U.S. gas generation percent (resource mix)	%
128	USNCPR	U.S. nuclear generation percent (resource mix)	%
129	USHYPR	U.S. hydro generation percent (resource mix)	%
130	USBMPR	U.S. biomass generation percent (resource mix)	%
131	USWIPR	U.S. wind generation percent (resource mix)	%
132	USSOPR	U.S. solar generation percent (resource mix)	%
133	USGTPR	U.S. geothermal generation percent (resource mix)	%
134	USOFPR	U.S. other fossil generation percent (resource mix)	%
135	USOPPR	U.S. other unknown/purchased fuel generation percent (resource mix)	%
136	USTNPR	U.S. total nonrenewables generation percent (resource mix)	%
137	USTRPR	U.S. total renewables generation percent (resource mix)	%
138	USTHPR	U.S. total nonhydro renewables generation percent (resource mix)	%
139	USCYPR	U.S. total combustion generation percent (resource mix)	%
140	USCNPR	U.S. total noncombustion generation percent (resource mix)	%
141	USNBGNCL	U.S. annual total nonbaseload coal generation	MWh
142	USNBGNOL	U.S. annual total nonbaseload oil generation	MWh
143	USNBGNGS	U.S. annual total nonbaseload gas generation	MWh
144	USNBGNNC	U.S. annual total nonbaseload nuclear generation	MWh
145	USNBGNHY	U.S. annual total nonbaseload hydro generation	MWh
146	USNBGNBM	U.S. annual total nonbaseload biomass generation	MWh
147	USNBGNWI	U.S. annual total nonbaseload wind generation	MWh
148	USNBGNSO	U.S. annual total nonbaseload solar generation	MWh
149	USNBGNGT	U.S. annual total nonbaseload geothermal generation	MWh
150	USNBGNOF	U.S. annual total nonbaseload other fossil generation	MWh
151	USNBGNOP	U.S. annual total nonbaseload other unknown/purchased fuel generation	MWh
152	USNBCLPR	U.S. nonbaseload coal generation percent (resource mix)	%
153	USNBOLPR	U.S. nonbaseload oil generation percent (resource mix)	%
154	USNBGSPR	U.S. nonbaseload gas generation percent (resource mix)	%
155	USNBNCPR	U.S. nonbaseload nuclear generation percent (resource mix)	%

Field	Name	Description	Unit
156	USNBHYPR	U.S. nonbaseload hydro generation percent (resource mix)	%
157	USNBBMPR	U.S. nonbaseload biomass generation percent (resource mix)	%
158	USNBWIPR	U.S. nonbaseload wind generation percent (resource mix)	%
159	USNBSOPR	U.S. nonbaseload solar generation percent (resource mix)	%
160	USNBGTPR	U.S. nonbaseload geothermal generation percent (resource mix)	%
161	USNBOFPR	U.S. nonbaseload other fossil generation percent (resource mix)	%
162	USNBOPPR	U.S. nonbaseload other unknown/purchased fuel generation percent (resource mix)	%

Table A-9. eGRID File Structure, eGRID2022 GGL File, Grid Gross Loss (%) File

Field	Name	Description	Unit	Source(s)
1	YEAR	Data year		
2	REGION	One of the three interconnect power grids in the U.S. (plus Alaska, Hawaii, and the entire U.S.)		
3	ESTLOSS	The total amount of electricity in the region that is generated but is not sold for resale or wholesale, furnished without charge, or used by the generator or utility	MWh	EIA State Electricity Profiles, Supply and disposition of electricity, 1990-2022
4	TOTDISP	The total amount of electricity in the region that is sold directly to customers, sold for resale, furnished without charge, consumed by the respondent without charge, and lost, without exports included	MWh	EIA State Electricity Profiles, Supply and disposition of electricity, 1990-2022
5	DIRCTUSE	The total amount of electricity used by plants and/or utilities in the region that is not sold for wholesale or resale; direct use electricity is not transmitted through the grid and therefore does not have the potential to be lost	MWh	EIA State Electricity Profiles, Supply and disposition of electricity, 1990-2022
6	GGRSLOSS	The estimated regional grid gross loss as a percent [Estimated losses/(Total disposition – Direct use)]*100	%	

Table A-10. eGRID File Structure, eGRID2022 Plant-level EJScreen Demographic Data

Field	Name	Description	Unit	Source(s)
1	SEQPLT	Plant file sequence number		assigned
2	YEAR	Data Year		
3	PSTATABB	Plant state abbreviation		EPA/CAMD; EIA-860
4	PNAME	Plant name		EPA/CAMD; EIA-860
5	ORISPL	DOE/EIA ORIS plant or facility code		EPA/CAMD; EIA-860
6	LAT	Plant latitude		EIA-860
7	LON	Plant longitude		EIA-860
8	PLPRMFL	Plant primary fuel		EPA/CAMD; EIA-923
9	PLFUELCT	Plant primary fuel category		assigned
10	NAMEPCAP	Plant nameplate capacity (MW)	MW	EIA-860
11	COALFLAG	Flag indicating if the plant burned or generated any amount of coal		EIA-860
12	TOTALPOP	Total Population		EJScreen
13	RAW_D_PEOPCOLOR	People of Color	%	EJScreen
14	RAW_D_INCOME	Low Income	%	EJScreen
15	RAW_D_LESSHS	Less Than High School Education	%	EJScreen
16	RAW_D_LING	Limited English Speaking	%	EJScreen
17	RAW_D_UNDER5	Under Age 5	%	EJScreen
18	RAW_D_OVER64	Over Age 64	%	EJScreen
19	RAW_D_UNEMPLOYED	Unemployment Rate	%	EJScreen
20	RAW_D_LIFEEXP	Limited Life Expectancy	%	EJScreen
21	RAW_D_DEMOGIDX2	Demographic Index	%	EJScreen
22	RAW_D_DEMOGIDX5	Supplemental Demographic Index	%	EJScreen
23	S_D_PEOPCOLOR	State Average of People of Color	%	EJScreen
24	S_D_INCOME	State Average of Low Income	%	EJScreen
25	S_D_LESSHS	State Average of Less Than High School Education	%	EJScreen
26	S_D_LING	State Average of Limited English Speaking	%	EJScreen
27	S_D_UNDER5	State Average of Under Age 5	%	EJScreen
28	S_D_OVER64	State Average of Over Age 64	%	EJScreen
29	S_D_UNEMPLOYED	State Average of Unemployment Rate	%	EJScreen
30	S_D_LIFEEXP	State Average of Limited Life Expectancy	%	EJScreen
31	S_D_DEMOGIDX2	State Average of Demographic Index	%	EJScreen
32	S_D_DEMOGIDX5	State Average of Supplemental Demographic Index	%	EJScreen
33	S_D_PEOPCOLOR_PER	State Percentile of People of Color		EJScreen
34	S_D_INCOME_PER	State Percentile of Low Income		EJScreen
35	S_D_LESSHS_PER	State Percentile of Less Than High School Education		EJScreen
36	S_D_LING_PER	State Percentile of Limited English Speaking		EJScreen
37	S_D_UNDER5_PER	State Percentile of Under Age 5		EJScreen
38	S_D_OVER64_PER	State Percentile of Over Age 64		EJScreen
39	S_D_UNEMPLOYED_PER	State Percentile of Unemployment Rate		EJScreen
40	S_D_LIFEEXP_PER	State Percentile of Limited Life Expectancy		EJScreen
41	S_D_DEMOGIDX2_PER	State Percentile of Demographic Index		EJScreen
42	S_D_DEMOGIDX5_PER	State Percentile of Supplemental Demographic Index		EJScreen
43	N_D_PEOPCOLOR	National Average of People of Color	%	EJScreen
44	N_D_INCOME	National Average of Low Income	%	EJScreen
45	N_D_LESSHS	National Average of Less Than High School Education	%	EJScreen
46	N_D_LING	National Average of Limited English Speaking	%	EJScreen
47	N_D_UNDER5	National Average of Under Age 5	%	EJScreen
48	N_D_OVER64	National Average of Over Age 64	%	EJScreen
49	N_D_UNEMPLOYED	National Average of Unemployment Rate	%	EJScreen
50	N_D_LIFEEXP	National Average of Limited Life Expectancy	%	EJScreen
51	N_D_DEMOGIDX2	National Average of Demographic Index	%	EJScreen
52	N_D_DEMOGIDX5	National Average of Supplemental Demographic Index	%	EJScreen
53	N_D_PEOPCOLOR_PER	National Percentile of People of Color		EJScreen

Field	Name	Description	Unit	Source(s)
54	N_D_INCOME_PER	National Percentile of Low Income		EJScreen
55	N_D_LESSHS_PER	National Percentile of Less Than High School Education		EJScreen
56	N_D_LING_PER	National Percentile of Limited English Speaking		EJScreen
57	N_D_UNDER5_PER	National Percentile of Under Age 5		EJScreen
58	N_D_OVER64_PER	National Percentile of Over Age 64		EJScreen
59	N_D_UNEMPLOYED_PER	National Percentile of Unemployment Rate		EJScreen
60	N_D_LIFEEXP_PER	National Percentile of Limited Life Expectancy		EJScreen
61	N_D_DEMOGIDX2_PER	National Percentile of Demographic Index		EJScreen
62	N_D_DEMOGIDX5_PER	National Percentile of Supplemental Demographic Index		EJScreen
63	DISTANCE	Distance (miles)	miles	EJScreen

Appendix B. eGRID Subregion and NERC Region Representational Maps

Figure B-1. eGRID Subregion Representational Map
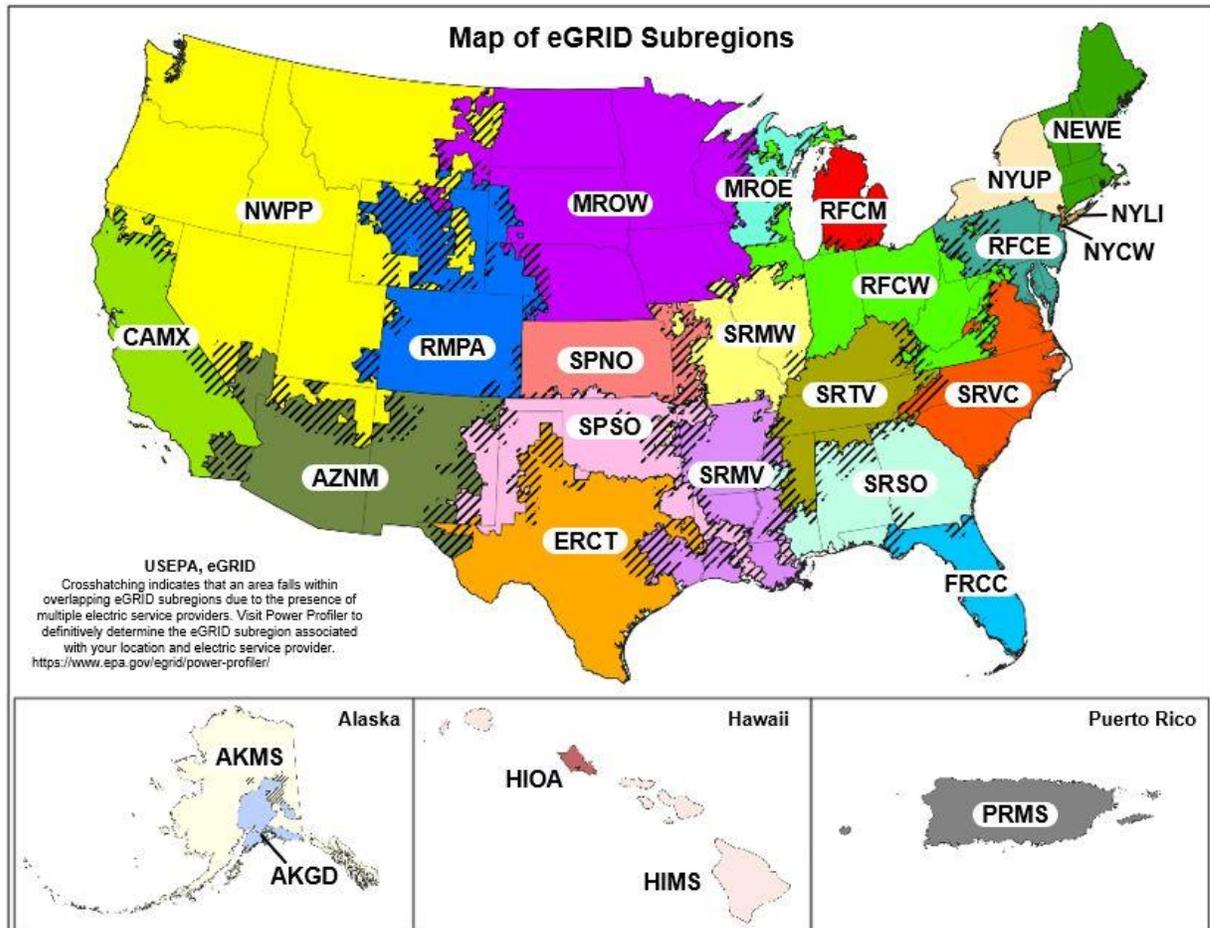
This is a representational map; many of the boundaries shown on this map are approximate because they are based on companies, not on strict geographical boundaries.

Figure B-2. NERC Region Representational Map
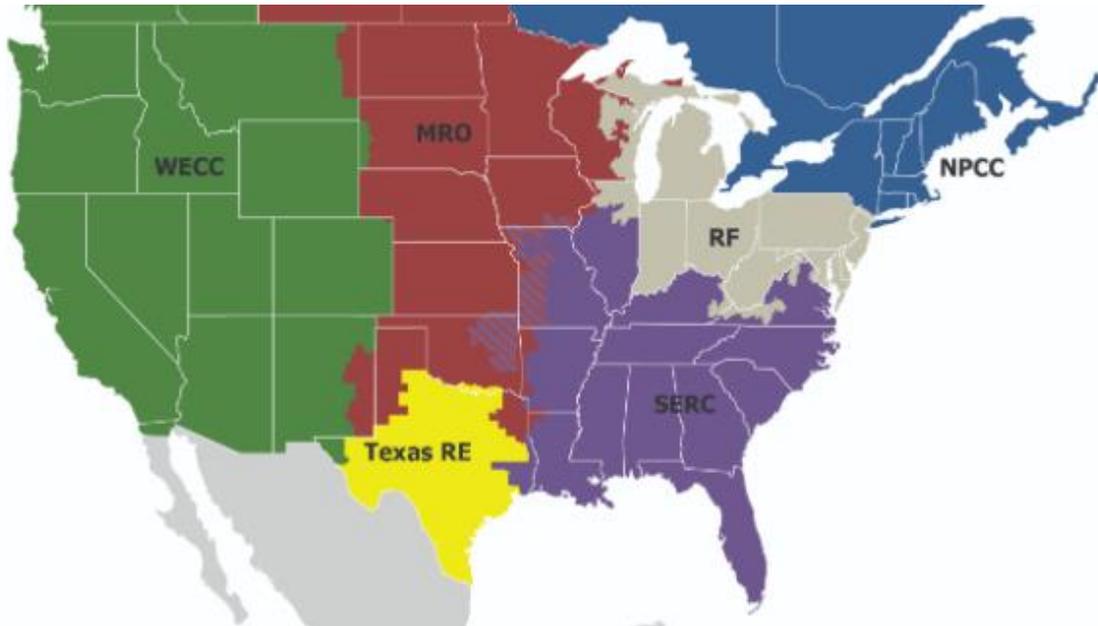
Source: NERC, 2020

This is a representational map; many of the boundaries shown on this map are approximate because they are based on companies, not on strict geographical boundaries.

Appendix C. Crosswalks and Additional Data Tables

This Appendix contains reference tables used in the development of eGRID2022. These include:
- Emission factors used to estimate emissions (where they are not available from CAMD's Power Sector Emissions Data);
- Biomass fuels used in the plant file biomass emissions adjustment;
- A crosswalk of plant ORISPL IDs that are different between CAMD's Power Sector Emissions Data and EIA data;
- Geothermal emission factors by geotype and pollutant; and
- Imperial to metric conversion factors.

Emission Factors – NOx, CO$_2$, SO$_2$, CH$_4$, and N$_2$O

For more information regarding the emission factors used and the methodology to estimate emissions, please see Section 3.1. Emission factors that have changed in eGRID2022 are represented in **bold** in the table.

Table C-1. eGRID Emission Factors for CO$_2$, CH$_4$, and N$_2$O

Fuel Type	EIA Fuel Type Code	CO$_2$ EF (ton CO$_2$/MMBtu)	CH$_4$ EF (lb CH$_4$/MMBtu)	N$_2$O EF (lb N$_2$O/MMBtu)	Source
Agricultural Byproducts	AB	0.13026	0.07055	0.00926	(EPA, 2009)
Anthracite	ANT	0.11413	0.02425	0.00353	(EPA, 2009)
Blast Furnace Gas	BFG	0.30239	0.00005	0.00022	(EPA, 2009)
Bituminous	BIT	0.10296	0.02425	0.00353	(EPA, 2009)
Sulphite lyes (Black Liquor)	BLQ	0.11083	0.00698	0.00465	(IPCC, 2007a)
Coke Oven Gas	COG	0.05164	0.00106	0.00022	(EPA, 2009)
Distillate Fuel Oil (avg)	DFO	0.08166	0.00661	0.00132	(EPA, 2009)
Hydrogen	H	0.00000	0.00000	0.00000	No EF
Kerosene-Type Jet Fuel	JF	0.07961	0.00661	0.00132	(EPA, 2009)
Kerosene	KER	0.08289	0.00661	0.00132	(EPA, 2009)
Landfill Gas	LFG	0.06350	0.00233	0.00023	(IPCC, 2007a)
Lignite	LIG	0.10622	0.02425	0.00353	(EPA, 2009)
Municipal Solid Waste (Biomass)	MSB	0.09998	0.07055	0.00926	(EPA, 2009)
Municipal Solid Waste (Non-Biomass)	MSN	0.09998	0.07055	0.00926	(EPA, 2009)
Municipal Solid Waste (Biomass)	MSW	0.09998	0.07055	0.00926	(EPA, 2009)

Fuel Type	EIA Fuel Type Code	CO$_2$ EF (ton CO$_2$/MMBtu)	CH$_4$ EF (lb CH$_4$/MMBtu)	N$_2$O EF (lb N$_2$O/MMBtu)	Source
Megawatt hours	MWH	0.00000	0.00000	0.00000	No EF
Pipeline Natural Gas (Weighted U.S. Average)	NG	0.05844	0.00220	0.00022	(EPA, 2009)
Nuclear	NUC	0.00000	0.00000	0.00000	No EF
Other Biogas	OBG	0.06350	0.00233	0.00023	(IPCC, 2007a)
Other Liquid Biofuels	OBL	0.09257	0.00698	0.00140	(IPCC, 2007a)
Other Primary Solid Biomass	OBS	0.11630	0.06978	0.00930	(IPCC, 2007a)
Other Gas	OG	0.05844	0.00220	0.00022	Use NG EF
Other	OTH	0.05844	0.00220	0.00022	Use NG EF
Petroleum Coke	PC	0.11289	0.00661	0.00132	(EPA, 2009)
Propane	PG	0.06775	0.00661	0.00132	(EPA, 2009)
Process Gas	PRG	0.05844	0.00220	0.00022	Use NG EF
Purchased Steam	PUR	0.00000	0.00000	0.00000	No EF
Refined Coal	RC	0.10529	0.02425	0.00353	(EPA, 2009)
Residual Fuel Oil (avg)	RFO	0.08159	0.00661	0.00132	(EPA, 2009)
Synthetic Gas - Petroleum Coke	SGP	0.05844	0.00220	0.00022	Use NG EF
Sludge Waste	SLW	0.09257	0.00698	0.00140	Use OBL EF
Subbituminous	SUB	0.10695	0.02425	0.00353	(EPA, 2009)
Solar	SUN	0.00000	0.00000	0.00000	No EF
Tires	TDF	0.09477	0.07055	0.00926	(EPA, 2009)
Water	WAT	0.00000	0.00000	0.00000	No EF
Waste Coal	WC	0.10529	0.02425	0.00353	(EPA, 2009)
Wood, Wood Waste Liquid	WDL	0.09257	0.00698	0.00140	Use OBL EF
Wood and Wood Residuals	WDS	0.10340	0.07055	0.00926	(EPA, 2009)
Waste Heat	WH	0.00000	0.00000	0.00000	No EF
Wind	WND	0.00000	0.00000	0.00000	No EF
Waste Oils	WO	0.08525	0.06978	0.00930	(IPCC, 2007a)

Table C-2. eGRID Emission Factors for Nitrogen Oxides (NO$_x$)

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
OT	AB	N/A	1.2	lb	ton
ST	AB	N/A	1.2	lb	ton
ST	AB	STOKER	1.2	lb	ton
OT	BFG	N/A	0.0154	lb	mcf
ST	BFG	N/A	0.0154	lb	mcf
ST	BFG	TANGENTIAL	0.0154	lb	mcf
ST	BFG	WALL	0.0154	lb	mcf
ST	BIT	CYCLONE	33	lb	ton
ST	BIT	DRY CYCLONE	33	lb	ton
ST	BIT	DRY FLUIDIZED	5	lb	ton
ST	BIT	DRY STOKER	11	lb	ton
ST	BIT	DRY TANGENTIAL	10	lb	ton
ST	BIT	DRY VERTICAL	12	lb	ton
ST	BIT	DRY WALL	12	lb	ton
ST	BIT	FLUIDIZED	5	lb	ton
ST	BIT	N/A	12	lb	ton
ST	BIT	OTHER	12	lb	ton
ST	BIT	STOKER	11	lb	ton
ST	BIT	TANGENTIAL	10	lb	ton
ST	BIT	WALL	12	lb	ton
ST	BIT	WET CYCLONE	33	lb	ton
ST	BIT	WET FLUIDIZED	5	lb	ton
ST	BIT	WET OTHER	31	lb	ton
ST	BIT	WET TANGENTIAL	14	lb	ton
ST	BIT	WET VERTICAL	31	lb	ton
ST	BIT	WET WALL	31	lb	ton
ST	BLQ	CYCLONE	1.5	lb	ton
ST	BLQ	DRY FLUIDIZED	1.5	lb	ton
ST	BLQ	DRY TANGENTIAL	1.5	lb	ton
ST	BLQ	DRY WALL	1.5	lb	ton
ST	BLQ	FLUIDIZED	1.5	lb	ton
ST	BLQ	N/A	1.5	lb	ton
ST	BLQ	OTHER	1.5	lb	ton
ST	BLQ	TANGENTIAL	1.5	lb	ton
ST	BLQ	WALL	1.5	lb	ton

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	COG	CYCLONE	0.0154	lb	mcf
OT	COG	N/A	0.0154	lb	mcf
ST	COG	N/A	0.0154	lb	mcf
ST	COG	TANGENTIAL	0.0154	lb	mcf
ST	COG	WALL	0.0154	lb	mcf
CT	DFO	CC	5.124	lb	barrels
GT	DFO	CT	5.124	lb	barrels
ST	DFO	DRY TANGENTIAL	1.008	lb	barrels
ST	DFO	DRY WALL	1.008	lb	barrels
ST	DFO	FLUIDIZED	1.008	lb	barrels
CT	DFO	N/A	5.124	lb	barrels
ST	DFO	N/A	1.008	lb	barrels
CA	DFO	N/A	5.124	lb	barrels
CS	DFO	N/A	5.124	lb	barrels
CT	DFO	N/A	5.124	lb	barrels
GT	DFO	N/A	5.124	lb	barrels
IC	DFO	N/A	18.6396	lb	barrels
ST	DFO	N/A	1.008	lb	barrels
ST	DFO	OTHER	1.008	lb	barrels
ST	DFO	TANGENTIAL	1.008	lb	barrels
ST	DFO	WALL	1.008	lb	barrels
ST	DFO	WET TANGENTIAL	1.008	lb	barrels
GT	JF	CT	4.9896	lb	barrels
GT	JF	N/A	4.9896	lb	barrels
IC	JF	N/A	18.144	lb	barrels
ST	JF	N/A	1.008	lb	barrels
GT	KER	CT	4.9896	lb	barrels
GT	KER	N/A	4.9896	lb	barrels
CA	LFG	N/A	0.087	lb	mcf
CS	LFG	N/A	0.087	lb	mcf
CT	LFG	N/A	0.087	lb	mcf
GT	LFG	N/A	0.087	lb	mcf
IC	LFG	N/A	0.725	lb	mcf
ST	LFG	N/A	0.042	lb	mcf
ST	LIG	DRY FLUIDIZED	3.6	lb	ton
ST	LIG	DRY TANGENTIAL	7.1	lb	ton
ST	LIG	DRY WALL	6.3	lb	ton
ST	LIG	FLUIDIZED	3.6	lb	ton

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	LIG	N/A	6.3	lb	ton
ST	LIG	STOKER	6.3	lb	ton
ST	LIG	TANGENTIAL	7.1	lb	ton
ST	LIG	WALL	6.3	lb	ton
ST	LIG	WET CYCLONE	15	lb	ton
ST	LIG	WET FLUIDIZED	3.6	lb	ton
ST	MSB	N/A	5	lb	ton
ST	MSW	N/A	5	lb	ton
ST	MSW	OTHER	5	lb	ton
CT	NG	CC	0.32	lb	MMBtu
CT	NG	CC	0.328	lb	mcf
GT	NG	CT	0.328	lb	mcf
ST	NG	CYCLONE	0.28	lb	mcf
ST	NG	DRY CYCLONE	0.28	lb	mcf
CA	NG	DRY DUCTBURNER	0.328	lb	mcf
ST	NG	DRY DUCTBURNER	0.17	lb	mcf
ST	NG	DRY STOKER	0.28	lb	mcf
ST	NG	DRY TANGENTIAL	0.17	lb	mcf
ST	NG	DRY VERTICAL	0.28	lb	mcf
CA	NG	DRY WALL	0.328	lb	mcf
ST	NG	DRY WALL	0.28	lb	mcf
CA	NG	DUCTBURNER	0.328	lb	mcf
CS	NG	DUCTBURNER	0.328	lb	mcf
CT	NG	DUCTBURNER	0.328	lb	mcf
ST	NG	DUCTBURNER	0.17	lb	mcf
ST	NG	FLUIDIZED	0.28	lb	mcf
CT	NG	N/A	0.328	lb	mcf
ST	NG	N/A	0.17	lb	mcf
CA	NG	N/A	0.32	lb	MMBtu
CS	NG	N/A	0.32	lb	MMBtu
CT	NG	N/A	0.32	lb	MMBtu
GT	NG	N/A	0.32	lb	MMBtu
IC	NG	N/A	2.768	lb	mcf
ST	NG	N/A	0.17	lb	mcf
CA	NG	OTHER BOILER	0.328	Lb	mcf
ST	NG	OTHER	0.17	lb	mcf
ST	NG	STOKER	0.28	lb	mcf
GT	NG	TANGENTIAL	0.328	lb	mcf

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	NG	TANGENTIAL	0.17	lb	mcf
ST	NG	WALL	0.28	lb	mcf
ST	NG	WET CYCLONE	0.28	lb	mcf
CA	OBG	N/A	0.3136	lb	mcf
CS	OBG	N/A	0.3136	lb	mcf
CT	OBG	N/A	0.3136	lb	mcf
GT	OBG	N/A	0.3136	lb	mcf
IC	OBG	N/A	2.64648	lb	mcf
ST	OBG	N/A	0.11283	lb	mcf
GT	OBL	N/A	4.7166	lb	barrels
IC	OBL	N/A	17.1486	lb	barrels
ST	OBS	N/A	2	lb	ton
ST	OBS	STOKER	2	lb	ton
GT	OG	CT	0.26382	lb	mcf
ST	OG	CYCLONE	0.15282	lb	mcf
ST	OG	DRY DUCTBURNER	0.15282	lb	mcf
ST	OG	DRY TANGENTIAL	0.15282	lb	mcf
ST	OG	DRY WALL	0.15282	lb	mcf
CA	OG	DUCTBURNER	0.15282	lb	mcf
ST	OG	DUCTBURNER	0.15282	lb	mcf
ST	OG	N/A	0.15282	lb	mcf
CA	OG	N/A	0.15282	lb	mcf
GT	OG	N/A	0.26382	lb	mcf
IC	OG	N/A	2.22641	lb	mcf
ST	OG	N/A	0.15282	lb	mcf
ST	OG	OTHER	0.15282	lb	mcf
ST	OG	TANGENTIAL	0.15282	lb	mcf
CA	OG	WALL	0.15282	lb	mcf
ST	OG	WALL	0.15282	lb	mcf
CT	OTH	CC	0.328	lb	mcf
GT	OTH	CT	0.328	lb	mcf
ST	OTH	CYCLONE	0.28	lb	mcf
ST	OTH	DRY CYCLONE	0.28	lb	mcf
CA	OTH	DRY DUCTBURNER	0.328	lb	mcf
ST	OTH	DRY DUCTBURNER	0.17	lb	mcf
ST	OTH	DRY STOKER	0.28	lb	mcf
ST	OTH	DRY TANGENTIAL	0.17	lb	mcf
ST	OTH	DRY VERTICAL	0.28	lb	mcf

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
CA	OTH	DRY WALL	0.328	lb	mcf
ST	OTH	DRY WALL	0.28	lb	mcf
CA	OTH	DUCTBURNER	0.328	lb	mcf
CS	OTH	DUCTBURNER	0.328	lb	mcf
CT	OTH	DUCTBURNER	0.328	lb	mcf
ST	OTH	DUCTBURNER	0.17	lb	mcf
ST	OTH	FLUIDIZED	0.28	lb	mcf
CT	OTH	N/A	0.328	lb	mcf
ST	OTH	N/A	0.17	lb	mcf
CA	OTH	N/A	0.328	lb	mcf
CS	OTH	N/A	0.328	lb	mcf
CT	OTH	N/A	0.328	lb	mcf
GT	OTH	N/A	0.328	lb	mcf
IC	OTH	N/A	2.768	lb	mcf
OT	OTH	N/A	0.328	lb	mcf
ST	OTH	OTHER	0.17	lb	mcf
ST	OTH	STOKER	0.28	lb	mcf
GT	OTH	TANGENTIAL	0.328	lb	mcf
GT	OTH	TANGENTIAL	0.328	lb	mcf
ST	OTH	TANGENTIAL	0.17	lb	mcf
ST	OTH	WALL	0.28	lb	mcf
ST	OTH	WET CYCLONE	0.28	lb	mcf
ST	PC	DRY FLUIDIZED	5	lb	ton
ST	PC	DRY WALL	21	lb	ton
ST	PC	FLUIDIZED	5	lb	ton
OT	PC	N/A	21	lb	ton
ST	PC	N/A	21	lb	ton
CA	PC	OTHER	21	lb	ton
ST	PC	OTHER	21	lb	ton
ST	PC	WET WALL	21	lb	ton
CT	PG	CC	0.80336	lb	mcf
GT	PG	N/A	0.80336	lb	mcf
IC	PG	N/A	0.80336	lb	mcf
ST	PG	TANGENTIAL	0.52226	lb	mcf
ST	PG	WALL	0.52226	lb	mcf
ST	PRG	DRY WALL	0.28	lb	mcf
ST	PRG	DUCTBURNER	0.17	lb	mcf
ST	PRG	N/A	0.17	lb	mcf

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
GT	PRG	N/A	0.17	lb	mcf
OT	PRG	N/A	0.17	lb	mcf
ST	PRG	N/A	0.17	lb	mcf
ST	PRG	OTHER	0.17	lb	mcf
ST	PRG	PROCESS	0.17	lb	mcf
ST	PRG	TANGENTIAL	0.17	lb	mcf
ST	PRG	WALL	0.28	lb	mcf
ST	RC	DRY TANGENTIAL	10	lb	ton
ST	RFO	DRY TANGENTIAL	1.344	lb	barrels
ST	RFO	DRY WALL	1.974	lb	barrels
CT	RFO	N/A	5.5314	lb	barrels
CA	RFO	N/A	5.5314	lb	barrels
CS	RFO	N/A	5.5314	lb	barrels
GT	RFO	N/A	5.5314	lb	barrels
IC	RFO	N/A	20.118	lb	barrels
ST	RFO	N/A	1.974	lb	barrels
ST	RFO	TANGENTIAL	1.344	lb	barrels
ST	RFO	WALL	1.974	lb	barrels
ST	RFO	WET WALL	1.974	lb	barrels
ST	SGC	N/A	0.28	lb	mcf
CA	SGP	N/A	0.28	lb	mcf
CS	SGP	N/A	0.28	lb	mcf
CT	SGP	N/A	0.28	lb	mcf
ST	SUB	CYCLONE	17	lb	ton
ST	SUB	DRY FLUIDIZED	5	lb	ton
ST	SUB	DRY TANGENTIAL	7.2	lb	ton
ST	SUB	DRY WALL	7.4	lb	ton
ST	SUB	FLUIDIZED	5	lb	ton
ST	SUB	N/A	5	lb	ton
ST	SUB	STOKER	8.8	lb	ton
ST	SUB	TANGENTIAL	7.2	lb	ton
ST	SUB	WALL			
ST	SUB	WET CYCLONE	17	lb	ton
ST	SUB	WET FLUIDIZED	5	lb	ton
ST	SUB	WET TANGENTIAL	7.2	lb	ton
ST	SUB	WET WALL	24	lb	ton
ST	TDF	STOKER	11	lb	ton
ST	WC	DRY FLUIDIZED	3.6	lb	ton

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	WC	FLUIDIZED	3.6	lb	ton
ST	WC	N/A	3.6	lb	ton
ST	WDL	N/A	0.22806	lb	barrels
ST	WDS	CELL	1.5	lb	ton
ST	WDS	DRY FLUIDIZED	2	lb	ton
ST	WDS	DRY STOKER	1.5	lb	ton
ST	WDS	DRY TANGENTIAL	2.51	lb	ton
ST	WDS	DRY WALL	2.51	lb	ton
ST	WDS	FLUIDIZED	2	lb	ton
OT	WDS	N/A	2	lb	ton
ST	WDS	N/A	2	lb	ton
OT	WDS	OTHER	2	lb	ton
ST	WDS	OTHER	2	lb	ton
ST	WDS	STOKER	1.5	lb	ton
ST	WDS	TANGENTIAL	2.51	lb	ton
ST	WDS	VERTICAL/ARCH	1.5	lb	ton
ST	WDS	WALL	2.51	lb	ton
ST	WDS	WET STOKER	1.5	lb	ton
ST	WDS	WET TANGENTIAL	2.51	lb	ton
ST	WO	DRY WALL	0.798	lb	barrels
CA	WO	N/A	3.8724	lb	barrels
CS	WO	N/A	3.8724	lb	barrels
CT	WO	N/A	3.8724	lb	barrels
GT	WO	N/A	3.8724	lb	barrels
IC	WO	N/A	14.0784	lb	barrels
ST	WO	N/A	0.798	lb	barrels

Source: AP-42 (EPA, 1995). EIA Electric Power Annual (EIA, 2023f).
N/A = not applicable

Table C-3. Sulfur dioxide (SO$_2$) emission factors

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
OT	AB	N/A	0.025	lb	MMBtu
ST	AB	N/A	0.025	lb	MMBtu
ST	AB	STOKER	0.025	lb	MMBtu
OT	BFG	N/A	0.0006	lb	Mcf

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	BFG	N/A	0.0006	lb	Mcf
ST	BFG	TANGENTIAL	0.0006	lb	Mcf
ST	BFG	WALL	0.0006	lb	Mcf
ST	BIT	CYCLONE	38*S	lb	short tons
ST	BIT	DRY CYCLONE	38*S	lb	short tons
ST	BIT	DRY FLUIDIZED	38*S	lb	short tons
ST	BIT	DRY STOKER	38*S	lb	short tons
ST	BIT	DRY TANGENTIAL	38*S	lb	short tons
ST	BIT	DRY VERTICAL	38*S	lb	short tons
ST	BIT	DRY WALL	38*S	lb	short tons
ST	BIT	FLUIDIZED	38*S	lb	short tons
ST	BIT	N/A	38*S	lb	short tons
ST	BIT	OTHER	38*S	lb	short tons
ST	BIT	OTHER	1.971977*S	lb	MMBtu
ST	BIT	STOKER	38*S	lb	short tons
ST	BIT	TANGENTIAL	38*S	lb	short tons
ST	BIT	WALL	38*S	lb	short tons
ST	BIT	WALL	1.971977*S	lb	MMBtu
ST	BIT	WET CYCLONE	38*S	lb	short tons
ST	BIT	WET FLUIDIZED	38*S	lb	short tons
ST	BIT	WET OTHER	38*S	lb	short tons
ST	BIT	WET TANGENTIAL	38*S	lb	short tons
ST	BIT	WET VERTICAL	38*S	lb	short tons
ST	BIT	WET WALL	38*S	lb	short tons
ST	BLQ	CYCLONE	7	lb	short tons
ST	BLQ	DRY FLUIDIZED	0.7	lb	short tons
ST	BLQ	DRY TANGENTIAL	7	lb	short tons
ST	BLQ	DRY WALL	7	lb	short tons
ST	BLQ	FLUIDIZED	0.7	lb	short tons
ST	BLQ	N/A	7	lb	short tons
ST	BLQ	OTHER	7	lb	short tons
ST	BLQ	TANGENTIAL	7	lb	short tons
ST	BLQ	WALL	7	lb	short tons
ST	COG	CYCLONE	0.0006	lb	Mcf
OT	COG	N/A	0.0006	lb	Mcf
ST	COG	N/A	0.0006	lb	Mcf
ST	COG	TANGENTIAL	0.0006	lb	Mcf
ST	COG	WALL	0.0006	lb	Mcf

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
CT	DFO	CC	1.01*S	lb	MMBtu
GT	DFO	CT	1.01*S	lb	MMBtu
ST	DFO	DRY TANGENTIAL	6.3*S	lb	barrels
ST	DFO	DRY WALL	6.3*S	lb	barrels
ST	DFO	FLUIDIZED	5.964*S	lb	barrels
CT	DFO	N/A	1.01*S	lb	MMBtu
ST	DFO	N/A	5.964*S	lb	barrels
CA	DFO	N/A	1.01*S	lb	MMBtu
CS	DFO	N/A	1.01*S	lb	MMBtu
CT	DFO	N/A	1.01*S	lb	MMBtu
GT	DFO	N/A	1.01*S	lb	MMBtu
IC	DFO	N/A	0.29	lb	MMBtu
ST	DFO	N/A	5.964*S	lb	barrels
ST	DFO	OTHER	5.964*S	lb	barrels
ST	DFO	TANGENTIAL	6.3*S	lb	barrels
ST	DFO	WALL	6.3*S	lb	barrels
ST	DFO	WET TANGENTIAL	6.3*S	lb	barrels
GT	JF	CT	0.003021	lb	barrels
GT	JF	N/A	0.003021	lb	barrels
IC	JF	N/A	0.003021	lb	barrels
ST	JF	N/A	0.003021	lb	barrels
GT	KER	CT	1.01*S	lb	MMBtu
GT	KER	N/A	1.01*S	lb	MMBtu
CA	LFG	N/A	0.045	lb	MMBtu
CS	LFG	N/A	0.045	lb	MMBtu
CT	LFG	N/A	0.045	lb	MMBtu
GT	LFG	N/A	0.045	lb	MMBtu
IC	LFG	N/A	0.045	lb	MMBtu
ST	LFG	N/A	0.0006	lb	MCf
ST	LIG	DRY FLUIDIZED	30*S	lb	short tons
ST	LIG	DRY TANGENTIAL	30*S	lb	short tons
ST	LIG	DRY WALL	30*S	lb	short tons
ST	LIG	FLUIDIZED	10*S	lb	short tons
ST	LIG	N/A	30*S	lb	short tons
ST	LIG	STOKER	30*S	lb	short tons
ST	LIG	TANGENTIAL	30*S	lb	short tons
ST	LIG	WALL	30*S	lb	short tons
ST	LIG	WET CYCLONE	30*S	lb	short tons

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	LIG	WET FLUIDIZED	10*S	lb	short tons
ST	MSB	N/A	1.7	lb	short tons
ST	MSW	N/A	1.7	lb	short tons
ST	MSW	OTHER	1.7	lb	short tons
CT	NG	CC	0.003196	lb	MMBtu
CT	NG	CC	0.0006	lb	Mcf
GT	NG	CT	0.0006	lb	Mcf
ST	NG	CYCLONE	0.0006	lb	Mcf
ST	NG	DRY CYCLONE	0.0006	lb	Mcf
CA	NG	DRY DUCTBURNER	0.0006	lb	Mcf
ST	NG	DRY DUCTBURNER	0.0006	lb	Mcf
ST	NG	DRY STOKER	0.0006	lb	Mcf
ST	NG	DRY TANGENTIAL	0.0006	lb	Mcf
ST	NG	DRY VERTICAL	0.0006	lb	Mcf
CA	NG	DRY WALL	0.0006	lb	Mcf
ST	NG	DRY WALL	0.0006	lb	Mcf
CA	NG	DUCTBURNER	0.0006	lb	Mcf
CS	NG	DUCTBURNER	0.0006	lb	Mcf
CT	NG	DUCTBURNER	0.0006	lb	Mcf
ST	NG	DUCTBURNER	0.0006	lb	Mcf
ST	NG	FLUIDIZED	0.0006	lb	Mcf
CT	NG	N/A	0.0006	lb	Mcf
ST	NG	N/A	0.0006	lb	Mcf
CA	NG	N/A	0.003196	lb	MMBtu
CS	NG	N/A	0.003196	lb	MMBtu
CT	NG	N/A	0.003196	lb	MMBtu
GT	NG	N/A	0.003196	lb	MMBtu
IC	NG	N/A	0.003196	lb	MMBtu
ST	NG	N/A	0.003196	lb	MMBtu
ST	NG	OTHER	0.0006	lb	Mcf
ST	NG	OTHER	0.003196	lb	MMBtu
ST	NG	STOKER	0.0006	lb	Mcf
GT	NG	TANGENTIAL	0.0006	lb	Mcf
ST	NG	TANGENTIAL	0.0006	lb	Mcf
ST	NG	WALL	0.003196	lb	MMBtu
ST	NG	WALL	0.0006	lb	Mcf
ST	NG	WET CYCLONE	0.0006	lb	Mcf
CA	OBG	N/A	0.0065	lb	MMBtu

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
CS	OBG	N/A	0.0065	lb	MMBtu
CT	OBG	N/A	0.0065	lb	MMBtu
GT	OBG	N/A	0.0065	lb	MMBtu
IC	OBG	N/A	0.0065	lb	MMBtu
ST	OBG	N/A	0.0006	lb	MCf
GT	OBL	N/A	0.0065	lb	MMBtu
IC	OBL	N/A	0.0065	lb	MMBtu
ST	OBS	N/A	0.025	lb	MMBtu
ST	OBS	STOKER	0.025	lb	MMBtu
GT	OG	CT	0.0006	lb	MCf
ST	OG	CYCLONE	0.0006	lb	Mcf
ST	OG	DRY DUCTBURNER	0.0006	lb	Mcf
ST	OG	DRY TANGENTIAL	0.0006	lb	Mcf
ST	OG	DRY WALL	0.0006	lb	Mcf
CA	OG	DUCTBURNER	0.0006	lb	Mcf
ST	OG	DUCTBURNER	0.0006	lb	Mcf
ST	OG	N/A	0.0006	lb	Mcf
CA	OG	N/A	0.0006	lb	Mcf
GT	OG	N/A	0.0006	lb	MCf
IC	OG	N/A	0.000588	lb	MMBtu
ST	OG	N/A	0.0006	lb	Mcf
ST	OG	OTHER	0.0006	lb	Mcf
ST	OG	TANGENTIAL	0.0006	lb	Mcf
CA	OG	WALL	0.0006	lb	Mcf
ST	OG	WALL	0.003196	lb	MMBtu
ST	OG	WALL	0.0006	lb	Mcf
CT	OTH	CC	0.0006	lb	Mcf
GT	OTH	CT	0.0006	lb	Mcf
ST	OTH	CYCLONE	0.0006	lb	Mcf
ST	OTH	DRY CYCLONE	0.0006	lb	Mcf
CA	OTH	DRY DUCTBURNER	0.0006	lb	Mcf
ST	OTH	DRY DUCTBURNER	0.0006	lb	Mcf
ST	OTH	DRY STOKER	2.8	lb	ton
ST	OTH	DRY STOKER	0.0006	lb	Mcf
ST	OTH	DRY TANGENTIAL	2.8	lb	ton
ST	OTH	DRY TANGENTIAL	0.0006	lb	Mcf
ST	OTH	DRY VERTICAL	2.8	lb	ton
ST	OTH	DRY VERTICAL	0.0006	lb	Mcf

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
CA	OTH	DRY WALL	2.8	lb	ton
CA	OTH	DRY WALL	0.0006	lb	Mcf
ST	OTH	DRY WALL	2.8	lb	ton
ST	OTH	DRY WALL	0.0006	lb	Mcf
CA	OTH	DUCTBURNER	2.8	lb	ton
CA	OTH	DUCTBURNER	0.0006	lb	Mcf
CS	OTH	DUCTBURNER	2.8	lb	ton
CS	OTH	DUCTBURNER	0.0006	lb	Mcf
CT	OTH	DUCTBURNER	2.8	lb	ton
CT	OTH	DUCTBURNER	0.0006	lb	Mcf
ST	OTH	DUCTBURNER	2.8	lb	ton
ST	OTH	DUCTBURNER	0.0006	lb	Mcf
ST	OTH	FLUIDIZED	2.8	lb	ton
ST	OTH	FLUIDIZED	0.0006	lb	Mcf
CT	OTH	N/A	2.8	lb	ton
CT	OTH	N/A	0.0006	lb	Mcf
ST	OTH	N/A	2.8	lb	ton
ST	OTH	N/A	0.0006	lb	Mcf
CA	OTH	N/A	2.8	lb	ton
CA	OTH	N/A	0.0006	lb	Mcf
CS	OTH	N/A	2.8	lb	ton
CS	OTH	N/A	0.0006	lb	Mcf
GT	OTH	N/A	2.8	lb	ton
GT	OTH	N/A	0.0006	lb	Mcf
IC	OTH	N/A	2.8	lb	ton
IC	OTH	N/A	0.0006	lb	Mcf
OT	OTH	N/A	2.8	lb	ton
OT	OTH	N/A	0.0006	lb	Mcf
ST	OTH	OTHER	2.8	lb	ton
ST	OTH	OTHER	0.0006	lb	Mcf
ST	OTH	STOKER	2.8	lb	ton
ST	OTH	STOKER	0.0006	lb	Mcf
GT	OTH	TANGENTIAL	2.8	lb	ton
GT	OTH	TANGENTIAL	0.0006	lb	Mcf
ST	OTH	TANGENTIAL	2.8	lb	ton
ST	OTH	TANGENTIAL	0.0006	lb	Mcf
ST	OTH	WALL	2.8	lb	ton
ST	OTH	WALL	0.0006	lb	Mcf

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	OTH	WET CYCLONE	2.8	lb	ton
ST	OTH	WET CYCLONE	0.0006	lb	Mcf
ST	PC	DRY FLUIDIZED	0.362*S	lb	MMBtu
ST	PC	DRY WALL	0.362*S	lb	MMBtu
ST	PC	FLUIDIZED	0.362*S	lb	MMBtu
OT	PC	N/A	0.362*S	lb	MMBtu
ST	PC	N/A	0.362*S	lb	MMBtu
CA	PC	OTHER	0.362*S	lb	MMBtu
ST	PC	OTHER	0.362*S	lb	MMBtu
ST	PC	WET WALL	0.362*S	lb	MMBtu
CT	PG	CC	0.0006	lb	MCf
GT	PG	N/A	0.0006	lb	MCf
IC	PG	N/A	0.0006	lb	MCf
ST	PG	TANGENTIAL	0.0006	lb	MCf
ST	PG	WALL	0.0006	lb	MCf
ST	PRG	DRY WALL	0.0006	lb	Mcf
ST	PRG	DUCTBURNER	0.0006	lb	Mcf
ST	PRG	N/A	0.0006	lb	Mcf
GT	PRG	N/A	0.0006	lb	Mcf
OT	PRG	N/A	0.0006	lb	Mcf
ST	PRG	N/A	0.0006	lb	Mcf
ST	PRG	OTHER	0.0006	lb	Mcf
ST	PRG	PROCESS	0.0006	lb	Mcf
ST	PRG	TANGENTIAL	0.0006	lb	Mcf
ST	PRG	WALL	0.003196	lb	MMBtu
ST	PRG	WALL	0.0006	lb	Mcf
ST	RC	DRY TANGENTIAL	38*S	lb	short tons
ST	RFO	DRY TANGENTIAL	6.594*S	lb	barrels
ST	RFO	DRY WALL	6.594*S	lb	barrels
CT	RFO	N/A	1.01*S	lb	MMBtu
CA	RFO	N/A	1.01*S	lb	MMBtu
CS	RFO	N/A	1.01*S	lb	MMBtu
GT	RFO	N/A	1.01*S	lb	MMBtu
IC	RFO	N/A	0.29	lb	MMBtu
ST	RFO	N/A	6.594*S	lb	barrels
ST	RFO	TANGENTIAL	6.594*S	lb	barrels
ST	RFO	WALL	6.594*S	lb	barrels
ST	RFO	WET WALL	6.594*S	lb	barrels

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	SGC	N/A	38*S	lb	short tons
CA	SGP	N/A	0.362*S	lb	MMBtu
CS	SGP	N/A	0.362*S	lb	MMBtu
CT	SGP	N/A	0.362*S	lb	MMBtu
	SLW		2.8	lb	ton
ST	SUB	CYCLONE	35*S	lb	short tons
ST	SUB	DRY FLUIDIZED	35*S	lb	short tons
ST	SUB	DRY TANGENTIAL	35*S	lb	short tons
ST	SUB	DRY WALL	35*S	lb	short tons
ST	SUB	FLUIDIZED	35*S	lb	short tons
ST	SUB	N/A	35*S	lb	short tons
ST	SUB	STOKER	35*S	lb	short tons
ST	SUB	TANGENTIAL	35*S	lb	short tons
ST	SUB	WALL	35*S	lb	short tons
ST	SUB	WET CYCLONE	35*S	lb	short tons
ST	SUB	WET FLUIDIZED	35*S	lb	short tons
ST	SUB	WET TANGENTIAL	35*S	lb	short tons
ST	SUB	WET WALL	35*S	lb	short tons
ST	TDF	STOKER	38*S	lb	short tons
ST	WC	DRY FLUIDIZED	30*S	lb	short tons
ST	WC	FLUIDIZED	30*S	lb	short tons
ST	WC	N/A	30*S	lb	short tons
ST	WDL	N/A	0.025	lb	MMBtu
ST	WDS	CELL	0.025	lb	MMBtu
ST	WDS	DRY FLUIDIZED	0.025	lb	MMBtu
ST	WDS	DRY STOKER	0.025	lb	MMBtu
ST	WDS	DRY TANGENTIAL	0.025	lb	MMBtu
ST	WDS	DRY WALL	0.025	lb	MMBtu
ST	WDS	FLUIDIZED	0.025	lb	MMBtu
OT	WDS	N/A	0.025	lb	MMBtu
ST	WDS	N/A	0.025	lb	MMBtu
OT	WDS	OTHER	0.025	lb	MMBtu
ST	WDS	OTHER	0.025	lb	MMBtu
ST	WDS	STOKER	0.025	lb	MMBtu
ST	WDS	TANGENTIAL	0.025	lb	MMBtu
ST	WDS	VERTICAL/ARCH	0.025	lb	MMBtu
ST	WDS	WALL	0.025	lb	MMBtu
ST	WDS	WET STOKER	0.025	lb	MMBtu

Prime Mover	Primary Fuel Type	Boiler Firing Type (if applicable)	Emission Factor	Emission Factor Numerator	Emission Factor Denominator
ST	WDS	WET TANGENTIAL	0.025	lb	MMBtu
ST	WO	DRY WALL	6.174*S	lb	barrels
CA	WO	N/A	1.01*S	lb	MMBtu
CS	WO	N/A	1.01*S	lb	MMBtu
CT	WO	N/A	1.01*S	lb	MMBtu
GT	WO	N/A	1.01*S	lb	MMBtu
IC	WO	N/A	0.29	lb	MMBtu
ST	WO	N/A	6.174*S	lb	barrels

Source: AP-42 (EPA, 1995). EIA Electric Power Annual (EIA, 2023f).
N/A = not applicable
S = sulfur content of fuel (%)

Biomass fuels used in the Plant file biomass emission adjustments

For more information regarding the methodology for biomass adjustments to emissions, please see Section 3.1.2.1.

Table C-4. Fuel types and pollutants included in the Plant file biomass emission adjustments

Fuel Type	EIA Fuel Type Code	CO_2	NO_x	CH_4	N_2O
Agricultural Byproducts	AB	x			
Sulphite lyes (Black Liquor)	BLQ	x			
Digester Gas	DG	x			
Landfill Gas	LFG	x	x	x	x
Municipal Solid Waste - biomass component	MSB	x			
Other Biogas	OBG	x			
Other Liquid Biofuels	OBL	x			
Other Primary Solid Biomass	OBS	x			
Sludge Waste	SLW	x			

Fuel Type	EIA Fuel Type Code	CO_2	NO_x	CH_4	N_2O
Wood, Wood Waste Liquid	WDL	x			
Wood and Wood Residuals	WDS	x			

Plant ORISPL ID Changes

For more information regarding the ORISPL ID changes, please see Section 5.1.

Table C-5. Crosswalk of Plant ID changes

EIA Plant ID	EIA Plant Name	EPA/CAMD Plant ID	EPA/CAMD Plant Name	Plant ID used in eGRID	Plant Name used in eGRID
59002	Carlsbad Energy Center	302	Cabrillo Power I Encina Power Station	302	Cabrillo Power I Encina Power Station
57901	El Segundo Power	330	El Segundo	330	El Segundo
57068	GenConn Middletown LLC	562	Middletown	562	Middletown
7546	Ponca City	762	Ponca	762	Ponca
56565	J Lamar Stall Unit	1416	Arsenal Hill Power Plant	1416	Arsenal Hill Power Plant
7538	Wayne County	2709	H F Lee Steam Electric Plant	2709	H F Lee Steam Electric Plant
58215	Lee Combined Cycle Plant	2709	H F Lee Steam Electric Plant	2709	H F Lee Steam Electric Plant
58697	L V Sutton Combined Cycle	2713	L V Sutton	2713	L V Sutton
7512	Arthur Von Rosenberg	3612	V H Braunig	3612	V H Braunig
7799	West Marinette 34	4076	West Marinette	4076	West Marinette
2518	Shoreham	7146	Wading River Facility	7146	Wading River Facility
7294	Central Energy Plant	7254	Reedy Creek	7254	Reedy Creek
7268	491 E 48th Street	7258	48th Street Peaking Station	7258	48th Street Peaking Station
55545	Hidalgo Energy Center	7762	Calpine Hidalgo Energy Center	7762	Calpine Hidalgo Energy Center
7709	Dahlberg	7765	Dahlberg (Jackson County)	7765	Dahlberg (Jackson County)
7784	Allegany Cogen	10619	Alleghany Station No. 133	10619	Alleghany Station No. 133

1393	R S Nelson	50030	Nelson Industrial Steam Company	50030	Nelson Industrial Steam Company
10789	Sabine River Works	55120	SRW Cogen Limited Partnership	55120	SRW Cogen Limited Partnership
59338	Sundevil Power Holdings - Gila River	55306	Gila River Power Station	55306	Gila River Power Station
59784	Gila River Power Block 3	55306	Gila River Power Station	55306	Gila River Power Station
57664	Astoria Energy II	55375	Astoria Energy	55375	Astoria Energy
58557	Mesquite Generating Station Block 1	55481	Mesquite Generating Station	55481	Mesquite Generating Station
55874	Panoche Peaker	55508	CalPeak Power - Panoche LLC	55508	CalPeak Power - Panoche LLC
54538	Hartwell Energy Facility	70454	Hartwell Energy Facility	70454	Hartwell Energy Facility
2847	Tait Electric Generating Station	2847	Frank M Tait Station	2847	Tait Electric Generating Station
2847	Tait Electric Generating Station	55248	Tait Electric Generating Station	2847	Tait Electric Generating Station
57788	US GSA Heating and Transmission	880004	GSA Central Heating	57788	US GSA Heating and Transmission
61082	AES Puerto Rico	880102	AES Puerto Rico, LP	61082	AES Puerto Rico
61149	Palo Seco Plant	880103	Palo Seco Steam Power Plant	61149	Palo Seco Plant
61147	Costa Sur Plant	880104	Costa Sur Steam Power Plant	61147	Costa Sur Plant
61146	Aguirre Plant	880105	Aguirre Steam Power Plant	61146	Aguirre Plant
61148	Central San Juan Plant	880106	San Juan Steam Power Plant	61148	Central San Juan Plant

Geothermal Geotype

Table C-6. Geothermal Emission Factors by Geotype and Pollutant

Geotype Code	Geotype Description	NOx EF (lb/MWh)	CO_2 EF (lb/MWh)	SO_2 EF (lb/MWh)
F	Flash	0	60	0.35
S	Steam	0.00104	88.8	0.000215
B	Binary	0	0	0
B/F	Binary/Flash	0	0	0

Imperial to Metric Conversion Factors

Table C-7. Conversion Factors

Imperial Value	Imperial Unit	Metric Value	Metric Unit
1.10231	short ton	1	metric ton
2.2046	pound (lb)	1	Kilogram (kg)
0.9478	MMBtu	1	Gigajoule (GJ)
0.2778	GJ	1	Megawatt-hour (MWh)

Appendix D. Information on Prior Editions of eGRID

Previous releases of eGRID include the following:

- eGRID1996 was first released in December 1998.

- eGRID1997, with 1996 and 1997 data, was first released in December 1999.

- eGRID1998, with 1998 data, and with 1996 and 1997 data from eGRID97, was released in March and September 2001.

- eGRID2000, with preliminary 2000 data, was first released as Version 1.0 in December 2002 and with 1996-2000 data as Version 2.0 in April 2003 and Version 2.01 in May 2003.

- eGRID2004 Version 1.0, with the year 2004 plant spreadsheet file, was first released in December 2006; Version 2.0, which includes one Excel workbook with an updated plant file, as well as the boiler and generator files for year 2004, was released in early April 2007; and Version 2.1, with the complete set of files – boiler, generator, plant, state, electric generating company (EGC) location (operator)- and owner-based, parent company location (operator)- and owner-based, power control area, eGRID subregion, and North American Electric Reliability Corporation (NERC) region – was released in late April 2007 and updated for typos in May 2007.

- eGRID2005 Version 1.0 was released in October 2008 and Version 1.1 was released in January 2009, both with two Excel workbooks with year 2005 data (plant and aggregation) and one Excel workbook with years 2004 and 2005 data (ImportExport).

- eGRID2007 Version 1.0 was released on February 23, 2011 and Version 1.1 was released May 20, 2011, including three Excel workbooks with year 2007 data as well as data for years 2004 and 2005 (the same as those included in eGRID2007). Import-export data for years 2007, 2005, and 2004 are also included.

- eGRID2009 Version 1.0 with year 2009 data was release on May 10, 2012. This edition also includes year 2007, 2005, and 2004 data from the three previously released editions. Import-export data for years 2009, 2007, 2005, and 2004 are also included.

- eGRID2010 Version 1.0 with year 2010 data was released on February 24, 2014. This edition also includes year 2009, 2007, 2005, and 2004 data from the three previously released editions. Import-export data for years 2010, 2009, 2007, 2005, and 2004 are also included.

- eGRID2012 Version 1.0 with year 2012 data was released on October 8, 2015.

- eGRID2014 Version 1.0 with year 2014 data was released on January 13, 2017 and Version 2.0 was released on February 27, 2017.

- eGRID2016 Version 1.0 with year 2016 data was released on February 15, 2018.

- eGRID2018 Version 1.0 with year 2018 data was released on January 28, 2021 and Version 2.0 was released on March 9, 2021.

- eGRID2019 Version 1.0 with year 2019 data was released on February 23, 2021.

- eGRID2020 Version 1.0 with year 2020 data was released on January 27, 2022 and Version 2.0 was released on January 30, 2023.

- eGRID2021 Version 1.0 with year 2021 data was released on January 30, 2023.

Note that the naming convention for eGRID had been changed since the release of eGRID2012 so that the year noted in the title reflects the data year rather than the release year.