

Greenhouse 100 Suppliers Technical Notes

PERI's Greenhouse 100 Suppliers database combines data from EPA's GHGRP Suppliers database and a dataset of information compiled by PERI about US coal mines. The top 100 list made from this database ranks companies by their supply of products that result in GHG emissions when the products are released, combusted, or oxidized. The Greenhouse 100 Suppliers Index is different from the Greenhouse 100 Polluters Index, which ranks companies that directly release GHG emissions.

GHGRP Suppliers Data

The Greenhouse Gas Reporting Program database (GHGRP), compiled by the U.S. Environmental Protection Agency (EPA) in response to the FY2008 [Consolidated Appropriations Act \(H.R. 2764; Public Law 110--161\)](#), annually reports the weight (in metric tons) of greenhouse gasses from both large direct emission sources and suppliers of fossil fuels. From an EPA page about the program, facilities are required to report as suppliers if "supply of certain products would result in over 25,000 metric tons CO₂e of GHG emissions if those products were released, combusted, or oxidized." Data has been reported so far (as of when this report was made) for 2010 through 2021. We did not include large direct emissions sources, since these are included in the Greenhouse 100 Polluters database of emitters, and since some suppliers provide fuel to direct emission sources which could result in the fuel being counted twice.

Sectors with facilities that report as GHGRP Suppliers include:

- * Natural Gas Suppliers: Natural Gas Distribution Companies, Natural Gas Liquids Fractionators
- * Petroleum Product Suppliers: Refiners, Importers, Exporters
- * Industrial GHG Suppliers: Producers, Importers, Exporters
- * Coal-based Liquid Fuel Suppliers: Producers, Importers, Exporters
- * Equipment Pre-Charged with Fluorinated GHGs: Importers, Exporters

Some of these sectors have facilities that are also direct emitters: for instance, refineries emit GHGs as part of the process of refining, in addition to the GHGs released when their petroleum products are burned as fuel. These direct emissions are not included within the Greenhouse Suppliers 100 database: they are included in the Greenhouse 100 emitters database.

It is important to note that EPA treats CO₂ quantities from suppliers as confidential if the supplying facility only produces one fossil fuel product and converting back from CO₂ emissions would let the public figure out the production amount of the fossil fuel. PERI has no way of determining the value of these confidential amounts and has treated them as zeroes within totals, although they are marked as confidential in detailed data displays. EPA has not to our knowledge released a suppliers CO₂ total that includes the total of the confidential amounts. Users of the Greenhouse Suppliers 100 should be aware that any totals derived from EPA GHGRP Suppliers data are a lower bound and could be larger.

Since the Greenhouse 100 Suppliers database is intended to be a database of production, not of imports and exports, we have included only the GHGRP producer amounts above (natural gas distribution companies, natural gas liquids fractionators, petroleum refiners, industrial GHG producers, coal-based liquid fuel suppliers, plus coal mines from a non-GHGRP data set). The data available to us do not include import and export amounts in any case except for petroleum products, and all of the petroleum import amounts are treated as confidential. Petroleum exports are therefore

the only significant quantity from the GHGRP suppliers database that we have not included in totals or displays. (Exports are displayed as a separate column within the advanced data display for individual facilities.)

Some double counting of fossil fuel supplies may occur within the natural gas supply chain, but this aspect of the data is poorly understood. Double-counting of supplies probably occurs between coal mines and coal-based liquid fuel suppliers, but there is only one major coal-based liquid fuel supplier with a marginal effect on the overall totals.

We obtained the GHGRP Suppliers data from the [Envirofacts Customized Search](#) Summary Subjects in March 2023 (last updated by EPA on 10/05/2022) , and combined this with a matching "2021 Data Summary Spreadsheets" source taken directly from EPA's GHGRP Web page.

Coal Data

EPA decided to not collect data from suppliers of coal (except for suppliers of coal-based liquid fuel) when it set up its GHGRP database. To fix this data gap, PERI has collected 2021 (and 2022) data on U.S. operating coal mines from the Department of Energy's EIA-7A survey, augmented by information from MSHA. The survey includes all US coal mines with production of over 25,000 short tons in a year, plus anthracite mines with production of over 10,000 short tons in a year.

Mines are classified as Underground, Surface, or Refuse mines, and if a single mine has more than one component they have been combined into one record. Unlike the GHGRP Suppliers data, the EIA-7A database includes production amounts of fossil fuels (coal). PERI multiplied these amounts by EIA conversion factors to find the amount of CO₂ released when the coal was combusted. Note that the Coal data is not strictly the same as the GHGRP Suppliers data in that the coal data includes only coal mines (producers) while the GHGRP Suppliers data includes producers, importers, and exporters, although PERI does not use the import/export component of GHGRP.

PERI released the Coal data as a separate database at <http://grconnect.com/coal100/ry2021> . This database has more data fields than the coal data that has been incorporated into the Greenhouse 100 Suppliers, but those data fields that are part of both are the same.

Both the GHGRP Suppliers database and the Coal data convert other gasses to CO₂ equivalents using GWPs from IPCC's AR4 and use a 100-year time horizon. Both databases only have data on CO₂ equivalent releases: neither breaks down releases into component GHGs as the GHGRP emitters database does.

Parent Company Matching

Using information on company ownership of facilities from the GHGRP reports, company websites, the CrocTail database of SEC filings, and news reports, we matched each facility to its parent company. Each facility was assigned either one or two parents as follows:

If more than 50% of a facility was controlled by a single parent, that parent was assumed to have final control over the facility's operations, and was assigned full responsibility for the facility's pollution.

If two companies each controlled 50% of a facility (i.e. it was a 50/50 joint venture), then its pollution was divided between the two companies.

If a single company controlled 50% of a facility and no other single entity controlled the other 50%, that company was considered to be the parent of the facility.

If no parent controlled 50% of a facility, the facility was considered to be its own parent.

The GHGRP database includes detailed ownership percentages of facilities by multiple parents, and we could have used these to assign each facility's pollution to many parents instead of one or two. However, these percentages reported within the GHGRP are [percentages of ownership, not percentages of emissions](#). It is possible for power plants to have multiple generating units owned by different companies in which the percentage of ownership of the facility as a whole does not match the percentage of the facility's emissions from each set of generating units. Therefore, we consider that assigning pollution by corporate majority ownership better reflects the data.

Corporate ownership of facilities was reported to the GHGRP as it was on December 31, 2021. In some cases we updated parent companies according to mergers, acquisitions, and corporate name changes that took place through mid 2023, under the principle that when one company acquires another, it takes responsibility for that company's past pollution. We also combined some U.S. subsidiaries of common foreign companies together. Coal mines had information on ownership of each mine that we similarly converted to ultimate parent companies as of mid-2023.

The Greenhouse 100 Suppliers Index was created by ranking the 100 largest parent companies after parent companies were assigned as above. Facilities that were owned 50%/50% by two companies had half of their emissions assigned to each parent.

The Greenhouse 100 Suppliers Index and application lists both parent company carbon dioxide equivalent totals and percentages of the database. The application also shows data from individual facilities owned by each parent company. For each parent company, the percentage of the company's total emissions that are from a single facility is displayed. This helps to identify companies whose overall emissions are dominated by fossil fuel from a single source.

New: State Data

PERI has created a new list of states together with the CO₂ from fossil fuel supplies produced in each, together with an individual display for each state that is accessible by clicking on a state name from the states list.

EJ Data

Unlike the Toxic 100 Air, Toxic 100 Water, or Greenhouse 100 Polluter Indexes, the Greenhouse 100 Suppliers Index has no EJ component. This is because the fossil fuels produced or imported are sent to multiple locations to be burned, so there is no single geographic location that suffers from the co-pollutants of combustion of these fuels.