The Value of eGRID and eGRIDweb to GHG Inventories

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ABSTRACT

The focus of this paper is to highlight the value and application of the Emissions & Generation Resource Integrated Database (eGRID) and eGRIDweb to the development of greenhouse gas (GHG) inventories. Both the eGRID spreadsheet database and its user-friendly web application, eGRIDweb, which can be found at the U.S. Environmental Protection Agency's (EPA's) eGRID website, http://www.epa.gov/egrid, include GHG emission factors that can be used for calculating indirect (scope 2) carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emissions as prescribed by a variety of protocols, including those of the World Resources Institute, EPA Climate Leaders, The Climate Registry, and the California Climate Action Registry.

INTRODUCTION

This paper highlights the value of the Emissions & Generation Resource Integrated Database (eGRID) for those who are developing greenhouse gas (GHG) inventories, carbon footprint calculators, or avoided emissions calculations. eGRID contains emissions data related to grid connected power plants in the United States; therefore, indirect emissions from electricity use may be calculated whenever these data are available. The eGRID output emission rates, also sometimes referred to as eGRID emission factors, are expressed in pounds (lb) per megawatt-hour (MWh) or lb per gigawatt-hour (GWh) and are particularly valuable for GHG emissions estimations.

eGRID

The Emissions & Generation Resource Integrated Database (eGRID), developed by E.H. Pechan & Associates, Inc. for the U.S. Environmental Protection Agency is a globally recognized source of emissions data for the electric power generated in the United States. The most recent eGRID data are available from the eGRID website, http://www.epa.gov/egrid.

eGRID includes operational data such as emissions, different types of emission rates, generation, resource mix, and heat input. Emissions are reported for three greenhouse gases (GHGs) – carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O); two criteria pollutants – nitrogen oxides (NO_x), and sulfur dioxide (SO_2); and one toxic air pollutant, mercury (Hg). The eGRID emissions data are associated with the generation of electricity, not with the consumption of electricity; therefore, these values do not account for transmission and distribution losses, imports and exports among subregions (or any other geographic area), transmission constraints within any geographic area, or life cycle

emissions at electric generating units (e.g. emissions from the extraction, processing, and transportation of fuels).

Operational data are for a given year, and previously available plant files may be included in a more recent eGRID edition. For eGRID2007, the most recent operational year of data is 2005, and year 2004 data from eGRID2006 is also included. Archived eGRID2002 contains operational information from years 1996 through 2000. These years of operational data are all of the years of published eGRID data to date.

The eGRID plant file also provides plant identification, location information in which the plant is located, structural information about the plant's operator and owners(s), and the operator's parent company (if there is one). The plant file also displays the plant's power control area (PCA), which is the entity that dispatches power; and the plant's eGRID subregion and North American Electric Reliability Corporation (NERC) region, both of which are associated with the plant's PCA.

eGRID structural information have been reconfigured to reflect a more current point in time, including plant ownership and operators, parent company affiliations, company mergers, and grid configurations. In eGRID2007, the year 2005 operational data are associated with entities that have been reconfigured to reflect the industry's current structure as of December 31, 2007. An example serves to explain this concept: A plant with specified environmental characteristics has owner(s) and an operator that is part of a parent company and is associated with an eGRID subregion by the end of year 2005. By 2007, the operator and owner(s) have changed, the new operator is associated with a different parent company (or no parent company), and the eGRID subregion has changed. In this example, in eGRID2007, the year 2005 environmental characteristics of this plant are attributed to the year 2007 operator, owner, parent company (or no parent company), and eGRID subregion – not to those from year 2005. Hence, the name eGRID2007 (with year 2005 data) reflects the year 2007 industry configuration.

eGRID Adjustments

In eGRID, there are two possible adjustments to the emissions and heat input that separate eGRID data from some of the other available Federal data. At the plant level, adjustments are made for the burning of biomass and for combined heat and power (CHP) plants. The adjusted emissions are used to estimate the eGRID output emissions rates for the different aggregation levels.

It is assumed that biomass, a fuel derived from organic matter, including, but not limited to, wood and paper products, agricultural waste, or methane (e.g., from landfills), is subject to the natural carbon cycle and does not contribute to global warming. As a result, in eGRID, all biomass CO_2 emissions (including those from renewable methane) are assigned a value of zero because these organic materials would otherwise release CO_2 (or other GHGs) through decomposition. It is also assumed that renewable methane, such as landfill gas and digester gas, used to generate electricity would have otherwise been flared, because flaring is usually required if the gas is not used to generate electricity. The amount of incremental emissions attributable to utilizing renewable methane to generate electricity is what is considered for eGRID's emissions, which are adjusted by decreasing the uncontrolled emission factors (used to estimate the emissions) by the emissions factor represented by a typical flare. For CO_2, CH_4, and N_2O, the emission factors are assumed to be the same as the flares', so there are no incremental CO_2, CH_4, and N_2O emissions attributable to utilizing renewable methane to generate electricity, and values of zero are assigned.

eGRID's emissions, as its full name implies, represent emissions from the combustion of fuel only for electricity generation, while a CHP plant produces both electricity and useful thermal energy

used for industrial, commercial, heating, or cooling purposes. CHP, also known as cogeneration, converts energy more efficiently than facilities that separately produce heat and electricity. The plants labeled as CHP in eGRID are an EPA designation based on a CHP file developed for the U.S. Department of Energy. 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. In the eGRID plant file, both adjusted emissions and unadjusted emissions are displayed, although only the adjusted emissions are used for the output emission rates at the plant and subsequent aggregation levels. A plant's adjusted emissions data reported in eGRID may be different from that reported in other EPA sources.

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, divide the consumption by (one minus the gross grid loss factor as a decimal). In the state import-export file, eGRID publishes gross grid loss factors, which can be used to account for line losses; they are displayed in Table 1. For the groups of states that generally comprise the three grid regions in the continental U.S., Alaska, and Hawaii, these eGRID gross grid loss factors are based on generation, consumption, and foreign net imports.

Table 1. eGRID2007 year 2005 gross grid loss factors.

| Region	Gross Grid Loss Factor (%)
Eastern Grid	6.409
Western Grid	5.333
Texas	6.177
Alaska	2.795
Hawaii	3.691
U.S.	6.179

eGRID Aggregation Levels

Data in eGRID are displayed at the plant level and are also aggregated to state, electric generating company (EGC), parent company, power control area (PCA), eGRID subregion, NERC region, and the U.S. total levels. The boilers and generators associated with the eGRID plants are also included as eGRID data. Development of the aggregate data begins with the plant level data. Each plant record includes the operator (also known as the location (operator)-based EGC), the owner(s) (also known as the owner-based EGC(s)), the operator's parent company (also known as the location (operator)-based parent company), the plant's PCA, the plant's eGRID subregion and the plant's NERC region. When aggregating to any one of these aforementioned aggregation levels, the values of the emissions, net generations, heat input, and nameplate capacity of the plants are attributed to that entity (and in the case of multiple owner EGCs, the plant ownership percentage of each of these). As an example, the emissions, net generations, heat input, and nameplate capacity of all plants whose PCA is PJM Interconnection will be summed, and emission rates and resource mix will be calculated for this PCA.

Sometimes the composition of non-state level aggregations levels may not be geographically obvious. In particular, the plant composition of the State of Florida and the eGRID subregion/NERC region FRCC are not the same; nor is the State of Texas's and the eGRID subregion ERCOT's/NERC region TRE's, nor the State of California's and the eGRID subregion CAMX's. The Intermountain

Power Project plant is a good illustration. Although this plant is physically located in the State of Utah, not California, it is in the eGRID subregion CAMX because its PCA is the Los Angeles Department of Water and Power PCA, which is connected to the CAMX eGRID subregion.

eGRID subregions are identified and defined by EPA – using the NERC regions and PCAs as a guide. An eGRID subregion is often, but not always, equivalent to an Integrated Planning Model (IPM) subregion. The 26 eGRID subregions in eGRID2007 are subsets of the NERC regions as configured on December 31, 2007 (see Figure 1). The plant's associated PCA determines the plant's associated eGRID subregion, which is defined as a subset of the NERC region and is composed of entire PCAs, with the exception of PJM Interconnection and New York Independent System Operator PCAs which are each associated with three eGRID subregions).

Figure 1. eGRID2007 eGRID subregion representational map.
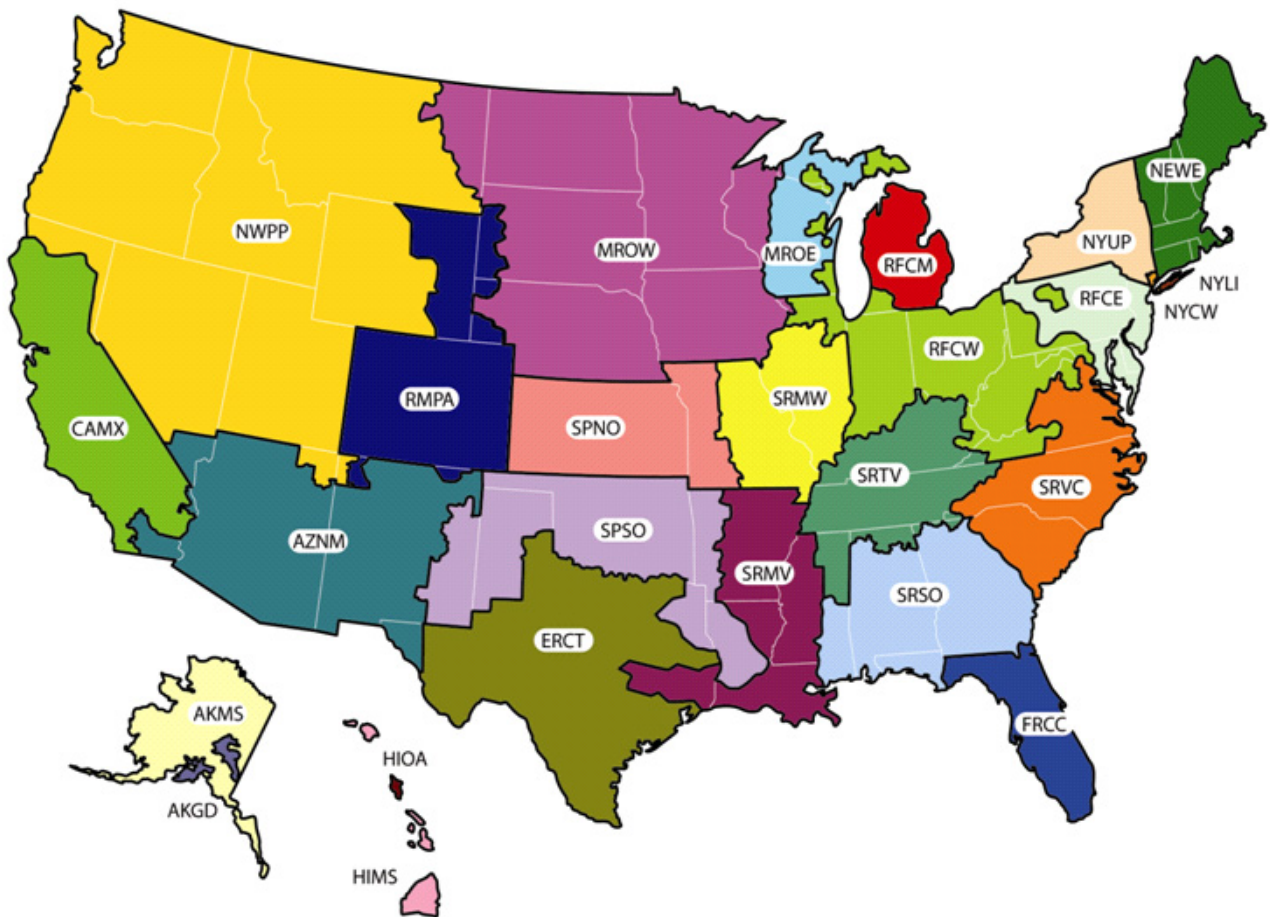
eGRID Annual Output Emission Rates

There are various eGRID emission rates at the different levels of aggregation, but two annual output emission rates described below relate the emissions to generation and serve different purposes: annual [total] output emission rates and annual non-baseload output emission rates.

Total Output Emission Rates

Description

The eGRID annual "total" output emission rate is the measure of the emissions as it relates to the net generation output. (Note that in this paper, the word total is used in the term "total output emission rate." However, in the eGRID2007 files, the word total is absent.) It is calculated as the emissions mass value divided by the generation MWh multiplied by a unit conversion factor. Units are in lb/MWh for CO_2 and lb/GWh for CH_4 and N_2O. The total output emission rate is the appropriate value to use for inventory development and carbon footprinting. The eGRID subregion total output emission rates are the default value recommended by various protocols to assign an emissions value for scope 2 emissions from the consumption of purchased electricity.

Application

The eGRID subregion total output emission rates are the underlying data for EPA's Power Profiler tool (http://epa.gov/powerprofiler), which allows the user to assess the impacts of electricity use as well as to compare the fuel mix and air emission rates of the electricity in the user's region with that of the nation. These rates are also the underlying data for EPA's Personal Emissions Calculator (http://epa.gov/climatechange/wycd/calculator/ind_calculator.html), which helps the user to estimate a personal (or family) carbon footprint and for EPA's Office Carbon Footprint Tool (http://www.epa.gov/waste/partnerships/wastewise/carboncalc.htm), which estimates office GHG emissions from a variety of sources including company-owned vehicle transportation; purchased electricity; waste disposal; and leased assets, franchises, and outsourced activities. Additionally, the eGRID subregion total output emission rates are used for estimating scope 2 indirect emissions under the World Resources Institute (WRI), The Climate Registry (TCR), The California Climate Action Registry (CCAR), and EPA Climate Leaders protocols.

eGRID is additionally used in many nongovernmental organizations' (NGOs) tools and analysis such as the Northeast States for Coordinated Air Use Management (NESCAUM) analysis, Powerscorecard.org, the Ozone Transport Commission's (OTC) Emission Workbook, the GHG Protocol Initiative, the Rocky Mountain Institute's Community Energy Finder, Leonardo Academy's "Cleaner and Greener Environmental Program," the National Resource Defense Council's Benchmarking Air Emissions, The Berkeley Institute of the Environment, Cool Climate Carbon Footprint Calculator, Emission Solution's Carbon Footprint Calculator, and the Clean Air Climate Protection software developed by the International Council for Local Environmental Initiatives (ICLEI). The Center for Global Developments' Carbon Monitoring for Action Database (CARMA) at carma.org, which contains information about carbon emissions for power plants and companies in the U.S. as well as other countries, used eGRID year 2005 data as a base, according to the Center's David Wheeler. The U.S. Department of Transportation (DOT) Federal Transit Administration (FTA), sourcewatch.org, and carbonfund.org also use eGRID data.

Non-baseload Output Emission Rates

Description

Non-baseload output emission rates were developed for eGRID to provide an improvement over the fossil fuel output emission rates as an estimate of emission reduction benefits from energy efficiency and clean energy projects. Non-baseload values should not be used for assigning an emission value for electricity use in carbon footprinting or GHG emissions inventory efforts. Non-baseload values may be less appropriate when attempting to determine the emissions benefits of some intermittent resources, such as wind power.

Demand for electricity changes diurnally and seasonally. The term "baseload" refers to those plants that supply electricity to the grid when demand for electricity is low. Baseloaded plants are usually called upon to provide electricity to the grid no matter what the demand for electricity is during any given period of time, and generally operate except when undergoing routine or unscheduled maintenance. Non-baseload emission rates are a slice of the system total mix, with a greater weight given to plants that operate coincident with peak demand for electricity. In eGRID, the capacity factor of each plant is used as a surrogate for determining whether a plant is baseloaded and how much of each plant's generation is considered to be non-baseloaded. Non-baseload emissions rates are the output emission rates for plants that combust fuel and have capacity factors less than 0.8, weighted by generation and a percent of generation determined by capacity factor.

The non-baseload emissions and generation include only emissions and generation from combustion sources and exclude emissions and generation from plants that have high capacity factors. The remaining emissions and generation are weighted by a factor which is a function of capacity factor. These data values are derived from plant level data and factor out baseload generation, which is generally unaffected by measures that affect marginal generation. This rate is the sum of the non-baseload emissions divided by the sum of non-baseload net generation, divided by a unit conversion factor.

Application

Several tools use the eGRID subregion CO_2 non-baseload output emission rates as the underlying data. Two calculators that do are EPA's Greenhouse Gas Equivalencies Calculator (http://epa.gov/cleanenergy/energy-resources/calculator.html), since the results of the calculation is the potential amount of avoided CO_2 emissions; and EPA's Green Power Equivalency Calculator http://www.epa.gov/greenpower/pubs/calculator.htm), which helps to translate a green power kilowatt-hour (kWh) purchase into more understandable everyday terms such as, for example, CO_2 emissions equivalencies in terms of the number of coal fired power plants, the number of passenger vehicles, or electricity use in a number of American homes**.**

eGRID non-baseload output emission rates can be useful when attempting to estimate the emissions benefits of reductions in grid supplied electricity use, especially those that are somewhat coincident with peak demand. For example, if a user is interested in estimating the CO_2 emission reductions associated with the installation of energy efficient equipment or products (e.g., an ENERGYSTAR heating, ventilating, and air conditioning [HVAC] system); or the installation of building envelop technologies (e.g., sealing air leaks and insulation improvements), then the user could use the eGRID subregion CO_2 non-baseload output emission rate and the expected or actual energy savings resulting from reduced electricity consumption from the installation to estimate the CO_2 emission reductions.

Example

To better illustrate how the total and non-baseload output emission rates are developed, an example of two plants may be helpful. In Alabama in 2005, the McWilliams gas plant (with a nameplate capacity of 654 MW and net generation of 0.99 million MWh) operated at a 17 percent capacity factor, while the Charles Lowman coal plant (with a nameplate capacity of 538 MW and net generation of 3.86 million MWh) operated at an 82 percent capacity factor. The McWilliams and Charles Lowman plants are both included in the total output emission rate calculations for the SERC South eGRID subregion. However, for the SERC South eGRID subregion non-baseload output emission rates, the McWilliams plant is included in the calculations, while the Charles Lowman plant is excluded.

Table 2 displays the eGRID subregion output emission rates for CO_2, CH_4, and N_2O for eGRID2007 (year 2005 data). In general, with few exceptions, the non-baseload values are larger than the total output emission rates. The non-baseload rate varies across subregions because of the many factors affecting its estimation, including, but not limited to, the distribution of fuel resources used to generate electricity, the efficiency of plants, and the plant capacity factors.

Table 3 displays the eGRID subregion carbon dioxide equivalent (CO_2e) output emission rates calculated using the eGRID subregion output emission rates for CO_2, CH_4, and N_2O and the Global Warming Potentials from the International Panel on Climate Change's Second Assessment Report. This table shows the relative contributions of including the CH_4 and N_2O emissions from electric generation along with the CO_2 emissions. The eGRID subregion CO_2e output emission rates are 0.2 to 1.4 percent higher than the CO_2 output emission rates.

eGRIDweb

A user-friendly web-based application, eGRIDweb, was developed and introduced in the Spring of 2009 to enable users to search, select, display, and download eGRID2007 data for years 2005 and 2004. Additional information such as the file with the GHG emissions rates can also be downloaded from the application, which is available from either http://cfpub.epa.gov/egridweb/ or the eGRID website.

CAVEATS

If total output emission rates are used for initial electricity use, non-baseload output emission rates are used to calculate the displaced GHG emissions from a project that would reduce the consumption of grid supplied electricity, and then total output emission rates are used for electricity use after it has changed, the displaced electricity is valued at eGRID's total output emission rate rather than at eGRID's non-baseload output emission rate. This disconnect results from the nature of the data. Both the total and non-baseload annual output emission rates are estimates and annual averages; however, a displaced emission reduction calculation using a non-baseload output emission rate is a different approach and makes different assumptions from an inventory approach that values all electricity use at the total output emission rate. To be more accurate and to minimize this disconnect, a time differentiated approach would have to be developed that takes into account the resources that operate at different system loads throughout the year.

Table 2. eGRID subregion and U.S. greenhouse gas annual output emission rates comparison (eGRID2007 version 1.1, year 2005 data).

eGRID subregion acronym	eGRID subregion name	Carbon Dioxide (CO$_2$) (lb/MWh)		Methane (CH$_4$) (lb/GWh)		Nitrous Oxide (N$_2$O) (lb/GWh)	
		Total	Non-baseload	Total	Non-baseload	Total	Non-baseload
SUBRGN	SRNAME	SRCO2RTA	SRNBCO2	SRCH4RTA	SRNBCH4	SRN2ORTA	SRNBN2O
AKGD	ASCC Alaska Grid	1,232.36	1,473.43	25.60	36.41	6.51	8.24
AKMS	ASCC Miscellaneous	498.86	1,457.11	20.75	60.47	4.08	11.87
ERCT	ERCOT All	1,324.35	1,118.86	18.65	20.15	15.11	5.68
FRCC	FRCC All	1,318.57	1,353.72	45.92	48.16	16.94	12.95
HIMS	HICC Miscellaneous	1,514.92	1,674.15	314.68	338.44	46.88	51.42
HIOA	HICC Oahu	1,811.98	1,855.10	109.47	120.11	23.62	20.79
MROE	MRO East	1,834.72	1,828.63	27.59	28.82	30.36	25.20
MROW	MRO West	1,821.84	2,158.79	28.00	45.57	30.71	35.22
NYLI	NPCC Long Island	1,536.80	1,509.85	115.41	60.32	18.09	10.78
NEWE	NPCC New England	927.68	1,314.53	86.49	77.47	17.01	16.02
NYCW	NPCC NYC/Westchester	815.45	1,525.05	36.02	56.80	5.46	9.08
NYUP	NPCC Upstate NY	720.80	1,514.11	24.82	45.30	11.19	18.41
RFCE	RFC East	1,139.07	1,790.50	30.27	41.61	18.71	24.36
RFCM	RFC Michigan	1,563.28	1,663.15	33.93	29.40	27.17	26.24
RFCW	RFC West	1,537.82	1,992.86	18.23	24.49	25.71	31.72
SRMW	SERC Midwest	1,830.51	2,101.16	21.15	25.66	30.50	32.92
SRMV	SERC Mississippi Valley	1,019.74	1,257.10	24.31	29.50	11.71	9.82
SRSO	SERC South	1,489.54	1,697.22	26.27	35.20	25.47	26.41
SRTV	SERC Tennessee Valley	1,510.44	1,998.36	20.05	28.25	25.64	32.86
SRVC	SERC Virginia/Carolina	1,134.88	1,781.28	23.77	40.09	19.79	27.46
SPNO	SPP North	1,960.94	2,169.74	23.82	31.18	32.09	31.99
SPSO	SPP South	1,658.14	1,379.05	24.98	24.40	22.61	12.04
CAMX	WECC California	724.12	1,083.02	30.24	39.24	8.08	5.55
NWPP	WECC Northwest	902.24	1,333.64	19.13	49.28	14.90	18.73
RMPA	WECC Rockies	1,883.08	1,617.71	22.88	22.42	28.75	20.14
AZNM	WECC Southwest	1,311.05	1,201.44	17.45	20.80	17.94	8.50
		USCO2RTA	USNBCO2	USCH4RTA	USNBCH4	USN2ORTA	USNBN2O
U.S.		1,329.35	1,583.28	27.27	35.77	20.60	19.97

Table 3. eGRID subregion and U.S. greenhouse gas annual output emission rates.

eGRID subregion acronym	eGRID subregion name	Carbon Dioxide equivalent, CO$_2$e (lb/MWh)	
		total	non-baseload
AKGD	ASCC Alaska Grid	1,234.92	1,476.75
AKMS	ASCC Miscellaneous	500.56	1,462.06
ERCT	ERCOT All	1,329.43	1,121.04
FRCC	FRCC All	1,324.79	1,358.75
HIMS	HICC Miscellaneous	1,536.06	1,697.20
HIOA	HICC Oahu	1,821.60	1,864.07
MROE	MRO East	1,844.71	1,837.05
MROW	MRO West	1,831.95	2,170.67
NYLI	NPCC Long Island	1,544.83	1,514.46
NEWE	NPCC New England	934.77	1,321.12
NYCW	NPCC NYC/Westchester	817.90	1,529.06
NYUP	NPCC Upstate NY	724.79	1,520.77
RFCE	RFC East	1,145.51	1,798.93
RFCM	RFC Michigan	1,572.42	1,671.90
RFCW	RFC West	1,546.17	2,003.21
SRMW	SERC Midwest	1,840.41	2,111.90
SRMV	SERC Mississippi Valley	1,023.88	1,260.76
SRSO	SERC South	1,497.99	1,706.15
SRTV	SERC Tennessee Valley	1,518.81	2,009.14
SRVC	SERC Virginia/Carolina	1,141.51	1,790.63
SPNO	SPP North	1,971.39	2,180.31
SPSO	SPP South	1,665.67	1,383.29
CAMX	WECC California	727.26	1,085.56
NWPP	WECC Northwest	907.26	1,340.48
RMPA	WECC Rockies	1,892.47	1,624.42
AZNM	WECC Southwest	1,316.98	1,204.51
U.S.		1,336.31	1,590.22

As an example of this disconnect, assume that a building located in the RFC East subregion uses 9,000 kWh of electricity in 2008. This translates to a 2008 carbon footprint of grid supplied electricity use of 10,251.63 pounds of CO_2, using the RFCE eGRID subregion total output emission rate (1,139.07lb/MWh).   If solar panels are then installed on site and reduce grid-supplied electricity use in the building by 2,000 kWh per year, then the carbon footprint of grid supplied electricity use would decrease to 7,973.49 pounds of CO_2, using the RFCE eGRID subregion total output emission rate. This is a reduction of 2,278.14 pounds of CO_2,   However, if no carbon footprint had been prepared and the decision was made to reduce electricity use by 2,000 kWh from whatever it presently was, then the estimated annual indirect CO_2 emission reduction from the solar panel installation would be 3,581 pounds of CO_2 per year, using the non-baseload emission rate for the RFCE eGRID subregion (1,790.5 lb/MWh). The reduction of 2,278 pounds CO_2 from the two different years' carbon footprint values using the total output emission rates is 36 percent less than the reduction of 3,581 pounds CO_2, the project specific reduction value using the non-baseload output emission rate. Although, the project specific value using the non-baseload emission rate is likely the better value for the reduction of indirect CO_2 emissions, if a corporate inventory has either been prepared or is the driving force behind the installation of technologies that reduce grid supplied electricity use over time, then the effective carbon footprint reduction expressed in the corporate inventory is controlled by the total output emission rate.

RECOMMENDATIONS

In most cases, using eGRID subregion emission rates is highly preferable. An EGC may purchase power and/or export its power to other EGCs; state electricity generation may not serve all of the consumption within the state. eGRID subregion emissions and resource mix (based on generation, not consumption) uniformly attribute electric generation in a specific region of the country and minimize this issue.

If the task is to track emissions over the years, the latest eGRID subregion output emission factor should be used when estimating scope 2 emissions from electricity use since these are the most recent and accurate data available. If the task is to determine whether a GHG emissions goal is being met, the latest eGRID subregion output emission factor should also be used in all cases, with one exception. The one exception is for the case when the eGRID subregion output emission rates increased from what was used in the baseline and, thereby, impede an entity from reaching its goal. In such a case, the output emission rates used for the baseline emissions should be used since the emission rate increase is a result of factors outside of the entity's control. For example, if scope 2 emissions from electricity is the predominant source of an entity's emissions, and the entity reduced its electricity use by 25 percent, but the eGRID subregion output emission rate increased by 50 percent, the emissions from electricity use would be 12.5 percent higher than in the baseline. In such a case, for tracking purposes, the latest eGRID subregion output emission rate would be used, but for determining whether a goal had been met, the baseline's eGRID subregion output emission rate would be used if the latest eGRID subregion output emission rates are impeding the entity from meeting its goal.

If a facility obtains all of its electricity from a specific utility, the eGRID subregion output emission rate, and not the eGRID EGC output rate for the utility, should be used when preparing an emission inventory. The reason is that the eGRID EGC output emission rate only accounts for emissions and generation of generators owned or operated by that utility and does not account for imports and exports of electricity from/to other utilities that may have attributes that are significantly different from the EGC's. Of course, if the actual utility rate, which includes exports and imports, is available, that rate should be used.

If a facility purchases electricity directly from a specific power plant and has transmission lines that run directly from this plant, then the plant's output emission rate should be used for electricity generated by and purchased from this power plant.

CONTACT INFORMATION

For more details on any aspect of this paper, see the Technical Support Document, which can be downloaded from the eGRID website and/or email either susy.rothschild@pechan.com or diem.art@epa.gov.

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KEY WORDS

eGRID
eGRIDweb
emissions
generation
resource mix
greenhouse gas
GHG emission factors
Scope 2 emissions
electric power
non-baseload
electricity
aggregation levels
combustion
carbon dioxide (CO_2)
methane (CH_4)
nitrous oxide (N_2O)
eGRID subregion
NERC region
Environmental Protection Agency (EPA)
power control area (PCA)
Climate Leaders
The Climate Registry (TCR)
California Climate Action Registry (CCAR)