



The information in the tables below should be used by electricity users in the US and Canada for calculating the Scope 2 GHG emissions associated with unspecified sources of electricity (i.e. any portion of electricity use for which specified sources of electricity have not been purchased). The purchase of a Green-e Energy certified product is considered a purchase of specified sources. These tables provide a residual mix emissions rate for each NERC region<sup>1</sup> that has been adjusted to remove all Green-e Energy certified sales. When calculating Scope 2 GHG emissions for unspecified electricity use, where more accurate information about the resources and emissions associated with electricity use is not available from the user’s state, region or electricity supplier or a tracking system, the below residual mix rates should be used. Green-e Energy residual mix emissions rates will be published annually in the Spring using verified Green-e Energy sales data from two calendar years prior, and the most recent Canadian and US generation and emissions rate at the time of publication. Users of Green-e Energy residual mix emissions rates are not expected to update accounting each time the rates are published, but should instead cite the residual mix rates used in their accounting.

Use of these numbers is compatible with the World Resource Institute’s Greenhouse Gas Protocol Scope 2 Guidance (<http://www.wri.org/publication/ghg-protocol-scope-2-guidance>), which defines “residual mix” in more detail. Green-e Energy has published a summary of the WRI Guidance showing users of Green-e Energy certified renewables how to calculate Scope 2 emissions, at <http://www.green-e.org/docs/energy/Scope2Summary.pdf>.

The residual mix emissions rate used should be based on the NERC region in which the electricity is consumed.

**2015 Green-e Residual Mix Emission Rates for US Customers (lbs CO2/MWh)**

NERC Region	Adjusted Emissions Rate
ASCC	1,094.22
FRCC	1,131.73
HICC*	1,470.96
MRO	1,465.86
NPCC	602.56
RFC	1,248.99
SERC	1,186.09
SPP	1,695.27
TRE	1,190.95
WECC	888.84

\*HICC emissions rate is unadjusted from eGrid because Hawaiian generation is not eligible for Green-e Energy.

**2015 Green-e Residual Mix Emission Rates for Canadian Customers (lbs CO2/MWh)**

NERC Region	Adjusted Emissions Rate
MRO	579.68
NPCC	135.29
WECC	943.48

### Residual Mix Rate Calculation Methodology

The 2016 Green-e Energy residual mix emissions rates were calculated using the data collected by Green-e Energy during annual verification of 2014 certified sales and the most recent emissions and generation data provided by eGRID<sup>2</sup> in the US for each NERC region<sup>3</sup> and provincial emissions data in Canada provided by Natural Resources Canada.<sup>4</sup>

The residual mix emissions rate is calculated by first subtracting all unique Green-e Energy certified sales<sup>5</sup> (MWh) from the total generation within each region. The total CO<sub>2</sub> emissions for each region is then divided by this new generation number for each region, resulting an emissions rate (lbs CO<sub>2</sub>/MWh) that does not include generation from renewables that have been used in a Green-e Energy certified sale.

For this calculation, each US MWh is matched to a specific NERC region based on the location of the generator. If there is no publicly available source of information identifying the NERC region of a generator (e.g. tracking system or EIA data), and the state of the generator is covered by more than one NERC region, the generator’s output is assigned the NERC region that covers the majority of the state.

<sup>1</sup> Since there are regional differences in generation and construction patterns in the US electricity sector, regional boundaries provide a more accurate representation of the effects of the generating renewable energy. While NERC regions do not necessarily represent the exact boundaries of power flows and vary dramatically in size, they are preferable to smaller regions (such as smaller eGRID subregions) since the publicly available data generally does not account for the substantial impact of power imports/exports.

<sup>2</sup> U.S. EPA’s Emissions & Generation Resource Integrated Database (eGRID). eGRID 10th Edition (released 10/08/2015) contains the complete release of year 2012 data, <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>.

<sup>3</sup> NERC region map: <http://www.nerc.com/AboutNERC/keyplayers/Pages/default.aspx>

<sup>4</sup> Natural Resources Canada’s Energy and Economic Policy Analysis Modeling Division for the Energy Policy Branch (retrieved 4/16/2016).

<sup>5</sup> Unique Green-e Energy certified sales remove any MWh associated with a Green-e Energy certified retail sale for which the supply was purchased via a Green-e Energy certified wholesale transaction, since these two sales represent the same MWh of generation.