

Memorandum

To: Linda C. Murchison, PhD
Division Chief
Planning and Technical Support Division
Air Resources Board

Date: January 23, 2007

Telephone: (916) 654-4628

From : **California Energy Commission -- Rosella Shapiro, Deputy Director**
1516 Ninth Street
Sacramento CA 95814-5512
Fuels and Transportation Division

Subject: REVISIONS TO THE 1990 TO 2004 GREENHOUSE GAS EMISSIONS INVENTORY REPORT, PUBLISHED IN DECEMBER 2006 (CEC-600-2006-013)

As we finalized the technical report titled *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004* in late December 2006, my staff discovered a need to change greenhouse gas (GHG) emissions estimates for in-state electricity production. They discussed the need for these changes with both Peggy Taricco and Webster Tasat of your staff. They requested that we document these changes as we transmit them to the Air Resources Board.

Enclosed in this package is the published version of Table 6 from the referenced report, a revised version of Table 6 showing the needed changes for GHG emissions from in-state electricity production, and a detailed description of the specific changes needed. Gerry Bemis of my staff is available to assist your staff to provide whatever additional assistance may be needed to implement these changes. He will also provide your staff with a final version of all GHG inventory files.

December 20, 2006 Changes Identified for In-State Electricity GHG Emissions

1. Refinery Self-Generation

The Energy Balance (Assembly File) has an entry on Row 22 under “Transfer, Oil Refineries”. This was erroneously thought to be “Refinery Self-Generation” and was listed as such in both the GHG inventory published in 2005 and the one published in 2006. These values should be removed from all years, but entries for 1990 to 1992 were zero, so those years are not affected. This reduces GHG emissions values published in 2006 by 0.7 to 4.3 MMTCO₂E, depending on year.

Change Needed:

Remove all columns of Row 178 from Table A-4 in the main file¹ including removing this row from the equation in Row 172. Also remove all columns of Row 184 from the Fossil Fuel CO₂ tab and the summary equation in Row 178 of this tab.

2. Coal

There was an error made in multiplying Thousand Short Tons of coal by the energy content of the coal. This was a simple mechanical error, which shows up in the GHG inventory published in 2006, but was not in the 2005 GHG inventory.

Changes Needed:

On “Appendix B in the main file, Columns “G” through “U”:

a) Change Row 193 to read as follows:

='[assembly(July 2006 Update).xls]COAL'!C16*'[assembly(July 2006 Update).xls]Conv Energy'!C49/10^3 (change “C13” to “C49”)

b) Change Row 194 to read as follows:

='[assembly(July 2006 Update).xls]COAL'!C17*'[assembly(July 2006 Update).xls]Conv Energy'!C50/10^3 (change “C14” to “C50”)

c) Change Row 195 to read as follows:

='[assembly(July 2006 Update).xls]COAL'!C19*'[assembly(July 2006 Update).xls]Conv Energy'!C52/10^3 (change “C16” to “C52”; see below for “C19”)

For changes a) through c), change each column correspondingly to apply the change to each year, 1990 through 2004.

3. Merchant Power (natural gas)

On the “Appendix B” tab in the main file, Row 195 had the wrong reference cell for BTUs used by Merchant Power facilities. This is another mechanical error which appears in the 2006 GHG inventory but not in the 2005 GHG inventory.

¹ 2005 GHG Inventory (1990 to 2004).xls

Change Needed:

Change the first term from “COAL’C18” to “COAL’C19” as indicated above for Row 195.
Make this change for all columns, “G” through “U”.

Changes #2 and #3 taken together increase values above those published in 2006 for GHG emissions from coal-based electricity generation by 1.0 to 2.5 MMTCO₂E, depending on year.

4. “Other” Petroleum Products

These fuel uses were left off of both the 2005 and 2006 GHG inventories. This was an oversight. To fix this problem and because the Energy Balance (Assembly File) did not identify “Other Petroleum Products” fuel uses by fuel type, it was necessary to use an Energy Information Administration (EIA) database, specifically the one for EIA Form 906. This database provides fuel use for in-state fuel consumption to produce electricity.

There is a separate file for each year from 2001 through 2005. Each file was data-filtered for California, then data-filtered for each fuel and each sub-category of fuel use as listed in Appendix B of the main file. End results of filtering for natural gas and coal (after making the adjustments above) match very closely to Energy Balance (Assembly) values when comparing physical units (TCFs and BBLs). This shows that the proper sub-categories (Utility, Merchant Plant, etc) were identified in the Form 906 database. Corresponding values for BTU equivalents to the physical units were also close, but differed slightly because the Form 906 database has monthly values for conversion from physical unit to BTUS, while the Energy Balance uses a yearly approximation. The corrections below include using BTU values from the Form 906 database for natural gas and coal (years 2001 to 2005) because they are viewed to be slightly more accurate than Energy Balance BTUs. The results of filtering, done for each year, are in new files for each year and a summary file titled “Electric GHG Emissions” within a new folder “EIA Electricity Data”.

This process yields in-state electricity fuel uses for distillate oil, residual fuel oil and petroleum coke, each of which has a tab in the Energy Balance (Assembly file) which was empty. The process also yields a modest amount of “Other Organic Gases” from the EIA 906 database, which could not be identified. For purposes of making emissions calculations, these were assumed to be refinery still gas for purposes of calculation. These Other Organic Gases are calculated to contribute 0.6 to 1.3 MMTCO₂E. If the carbon content of these unknown gases is different from refinery still gas, their correct emissions are likely to be similar.

Rows were added to the “Fossil Fuel CO₂” tab (new file, Rows 189 to 194) to accommodate this change. Row 177 was also revised to include Row 189, the subtotal for petroleum. Table 2 was likewise expanded to add a subtotal for petroleum under Electricity Generation (In-State).

Changes Needed (as described in the revised main file²):

Add Rows 410 to 462, column “A” through “U” to Fossil Fuel CO₂ tab in the main file. These new cells link to a new file “Electric GHG Emissions” within a new folder “EIA Electricity Data” where new calculations are made from EIA forms.

Link these new cells to corresponding cells in “Electric GHG Emissions” file. Then make the following changes to Fossil Fuel CO₂ file:

² 2005 GHG Inventory (12-20-06 edits--1990 to 2004).xls

(Note: no changes needed for rows 178 to 188, columns “F” through “P”)

a) Make new summary Row 189 for petroleum subtotal and new Rows 190-194.

b) For Columns “F” through “P”:

Make Row 190 = Row 450

Make Row 191 = Row 451

Make Row 192 = Row 452

Make Row 193 = Row 453

Make Row 194 = Row 454

c) For Columns “Q” through “U”:

Make Rows 179-184 = Rows 415-420, respectively;

Make Rows 186-188 = Rows 423-425, respectively;

Make Row 190 = row 430;

Make Row 191 = Rows 441+445;

Make Row 192 = Rows 431+437+442+446+447;

Make Row 193 = Rows 428+435;

Make Row 194 = Rows 429+436+440

Add Row 189 to the equation in Row 177, for all columns.

One effect of these changes is to make slight modifications for years 2001 through 2004 in the natural gas data. This was possible because the Form 906 file has monthly values for fuel energy content, so the revised annual BTUs are slightly different. Coal data were revised as discussed above. The change discussed here will be limited to natural gas GHG emissions, which increase by 0.9 MMTCO₂E in 2002 and 2003, and 2.1 MMTCO₂E in 2004.

The second effect of these changes is to add petroleum fuel GHG emissions in years 1990 to 2005 (2005 shown for information). These changes add 2.5 to 4.6 MMTCO₂E depending on year.

The net effect of all these changes is to increase emissions from in-state electricity production. The maximum increase is in 2004, +8.0³ MMTCO₂E. The smallest increase is in 2003, +1.8⁴ MMTCO₂E.

5. Electricity Imported to California

Staff are still in the process of updating the method used to estimate out-of-state emissions for electricity imported into California. However, if the current method continues to be used, GHG emissions should be increased to account for transmission line losses which were not included in the previous calculation. The Energy Commission uses an overall bulk average of 7.5% for transmission line losses, but this includes all sources, local and imported. In-state line losses are implicit in the existing methodology, which is based upon fuel used, not electricity used. In the methodology currently being used, GHG emissions from imported electricity are computed from imported electricity, not fuel use, and this method should have included an estimate of transmission line losses. This can be done by multiplying the computed results by 1.075, if 7.5% is the appropriate value. However, imported electricity would travel over greater distances than

³ 2004 value increases 1.8 for natural gas, 2.6 for coal and 3.6 for petroleum fuels, all MMTCO₂E.

⁴ 2003 value decreases 3.4 for natural gas, and increases 2.0 for coal and 3.2 for petroleum fuels, all in MMTCO₂E.

in-state electricity and thus may have larger transmissions losses than the bulk average. The bulk average transmission losses (7.5%) can be determined from Form 1.2 of the document *California energy Demand 2006-2016, Staff Energy Demand Forecast, Revised September 2005*, CEC-400-2005-034-SF-ED2, September 2005.

The above change was not made in the December 20, 2006 revisions because the entire methodology is expected to change.

Table 6 -- California Greenhouse Gas Emissions and Sink Summary: 1990 to 2004 (MMTCO₂Eq.)

Version: #REF!

(As Revised in January 2007)

| Gas/Source | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Percent growth (1990 to 2004) |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------------|
| 1 Carbon Dioxide (Gross) | 324.3 | 315.7 | 321.8 | 316.8 | 334.9 | 318.4 | 322.6 | 332.2 | 349.9 | 352.4 | 372.2 | 377.8 | 371.3 | 348.9 | 363.8 | 12.2% |
| 2 Fossil Fuel Combustion | 313.3 | 305.1 | 310.5 | 307.3 | 323.5 | 306.9 | 310.7 | 320.1 | 336.0 | 341.3 | 360.5 | 364.2 | 360.0 | 335.9 | 350.4 | 11.9% |
| 3 Residential | 29.0 | 29.5 | 27.9 | 28.4 | 29.3 | 26.7 | 26.6 | 26.3 | 30.6 | 31.9 | 30.2 | 27.2 | 27.3 | 26.4 | 27.9 | -3.8% |
| 4 Commercial | 12.6 | 12.0 | 9.7 | 9.6 | 10.3 | 9.8 | 9.6 | 9.6 | 13.5 | 14.8 | 15.6 | 12.0 | 17.8 | 15.1 | 12.2 | -3.6% |
| 5 Industrial | 66.1 | 64.8 | 61.3 | 64.3 | 66.0 | 62.6 | 68.8 | 73.0 | 75.4 | 71.0 | 76.2 | 80.5 | 71.5 | 65.5 | 67.1 | 1.5% |
| 6 Transportation | 161.1 | 156.7 | 161.9 | 158.9 | 163.9 | 166.2 | 167.4 | 170.8 | 173.3 | 176.3 | 181.7 | 182.5 | 190.2 | 180.6 | 188.0 | 16.7% |
| 7 Electricity Generation (In State) | 43.4 | 41.5 | 49.3 | 45.6 | 53.5 | 41.1 | 37.9 | 39.9 | 43.3 | 46.8 | 55.9 | 61.3 | 47.8 | 45.9 | 55.1 | 27.1% |
| 8 No End Use Specified | 1.1 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | -0.1 | 0.6 | 0.9 | 0.7 | 5.4 | 2.4 | 0.2 | -84.8% |
| 9 Cement Production | 4.6 | 4.3 | 3.8 | 4.4 | 5.1 | 5.0 | 5.3 | 5.5 | 5.4 | 5.6 | 5.9 | 5.6 | 6.1 | 6.3 | 6.5 | 40.4% |
| 10 Lime Production | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | -45.2% |
| 11 Limestone & Dolomite Consumption | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 64.8% |
| 12 Soda Ash Consumption | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | -4.1% |
| 13 Carbon Dioxide Consumption | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 26.3% |
| 14 Waste Combustion | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 2.4% |
| 15 Land Use Change & Forestry Emissions | 5.5 | 5.6 | 6.8 | 4.4 | 5.6 | 5.8 | 5.8 | 5.9 | 7.7 | 4.8 | 5.1 | 7.3 | 4.3 | 6.0 | 6.1 | 10.4% |
| 16 Land Use Change & Forestry Sinks | (22.7) | (22.3) | (21.9) | (21.5) | (21.1) | (20.7) | (20.3) | (19.9) | (19.5) | (19.1) | (19.6) | (19.9) | (20.3) | (20.5) | (21.0) | -7.6% |
| 17 Carbon Dioxide (Net) | 301.6 | 293.4 | 299.9 | 295.3 | 313.9 | 297.7 | 302.3 | 312.3 | 330.3 | 333.3 | 352.6 | 357.8 | 351.0 | 328.4 | 342.9 | 13.7% |
| 18 Methane (CH ₄) | 26.0 | 24.9 | 23.8 | 25.4 | 25.4 | 26.2 | 25.5 | 24.2 | 25.3 | 26.3 | 26.4 | 26.7 | 27.1 | 27.5 | 27.9 | 7.1% |
| 19 Petroleum & Natural Gas Supply System | 1.0 | 0.9 | 0.4 | 0.8 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | -47.0% |
| 20 Natural Gas Supply System | 1.6 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | -13.2% |
| 21 Landfills | 8.1 | 8.0 | 7.7 | 8.4 | 8.2 | 7.9 | 8.3 | 6.1 | 7.6 | 7.8 | 8.0 | 7.9 | 8.2 | 8.3 | 8.4 | 3.9% |
| 22 Enteric Fermentation | 7.5 | 7.3 | 7.4 | 6.6 | 7.1 | 7.3 | 6.8 | 6.9 | 6.8 | 7.1 | 6.7 | 7.0 | 7.1 | 7.2 | 7.2 | -4.8% |
| 23 Manure Management | 3.3 | 3.9 | 3.9 | 4.0 | 4.3 | 4.6 | 4.6 | 4.9 | 4.8 | 5.2 | 5.4 | 5.6 | 5.8 | 5.9 | 6.0 | 83.4% |
| 24 Flooded Rice Fields | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.6 | 49.4% |
| 25 Burning Ag & Other Residues | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | -3.2% |
| 26 Wastewater Treatment | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 | 18.7% |
| 27 Mobile Source Combustion | 1.2 | 0.1 | 0.1 | 0.7 | 0.2 | 1.0 | 0.2 | 0.8 | 0.6 | 0.5 | 0.8 | 0.5 | 0.7 | 0.7 | 0.6 | -49.1% |
| 28 Stationary Source Combustion | 1.3 | 1.3 | 0.8 | 1.2 | 1.2 | 1.2 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.2 | 1.2 | 1.3 | -2.2% |
| 29 Nitrous Oxide (N ₂ O) | 32.7 | 30.4 | 30.5 | 31.5 | 30.0 | 31.9 | 30.8 | 28.8 | 29.2 | 29.4 | 31.4 | 30.8 | 34.5 | 33.9 | 33.3 | 1.8% |
| 30 Nitric Acid Production | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | -59.0% |
| 31 Waste Combustion | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4% |
| 32 Agricultural Soil Management | 14.7 | 13.1 | 13.4 | 14.4 | 13.8 | 15.5 | 15.1 | 13.6 | 14.0 | 14.3 | 15.9 | 15.3 | 19.4 | 19.2 | 19.2 | 30.6% |
| 33 Manure Management | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 11.1% |
| 34 Burning Ag Residues | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | -31.1% |
| 35 #REF! | 0.9 | 0.9 | 0.8 | 0.9 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.0 | 0.7 | 1.0 | 1.0 | 0.9 | 1.1 | 17.2% |
| 36 Mobile Source Combustion | 15.6 | 14.9 | 14.8 | 14.8 | 14.1 | 14.1 | 13.6 | 13.0 | 13.0 | 12.8 | 13.3 | 13.0 | 12.8 | 12.4 | 11.8 | -24.6% |
| 37 Stationary Source Combustion | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | -19.3% |
| 38 High GWP Gases (HFCs, PFCs & SF ₆) | 7.1 | 7.4 | 7.9 | 8.4 | 8.9 | 9.3 | 11.4 | 12.6 | 8.9 | 9.9 | 10.5 | 11.2 | 12.0 | 12.9 | 14.2 | 99.0% |
| 39 Substitution of Ozone-Depleting Substances | 4.5 | 4.9 | 5.3 | 5.7 | 6.1 | 6.5 | 8.4 | 9.8 | 6.7 | 7.8 | 8.6 | 9.5 | 10.5 | 11.4 | 12.6 | 182.4% |
| 40 Semiconductor Manufacture | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 0.8 | 0.5 | 0.5 | 0.5 | 0.6 | 61.3% |
| 41 Electricity Transmission & Distribution (SF ₆) | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.3 | 2.1 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | -56.0% |
| 42 Gross California Emissions (w/o Electric Import) | 390.1 | 378.4 | 384.1 | 382.0 | 399.2 | 385.8 | 390.3 | 397.9 | 413.2 | 418.0 | 440.5 | 446.4 | 444.9 | 423.3 | 439.2 | 12.6% |
| 43 Land Use Change & Forestry Sinks | (22.7) | (22.3) | (21.9) | (21.5) | (21.1) | (20.7) | (20.3) | (19.9) | (19.5) | (19.1) | (19.6) | (19.9) | (20.3) | (20.5) | (21.0) | |
| 44 Net Emissions (w/o Electric Imports) | 367.4 | 356.1 | 362.2 | 360.5 | 378.2 | 365.1 | 370.0 | 378.0 | 393.7 | 398.9 | 420.9 | 426.5 | 424.6 | 402.7 | 418.3 | 13.8% |
| 45 Electricity Imports | 43.3 | 43.1 | 43.0 | 40.8 | 43.2 | 38.5 | 40.6 | 47.0 | 52.9 | 51.7 | 40.5 | 47.4 | 51.7 | 56.4 | 60.8 | 40.4% |
| 46 Gross California Emissions with Electricity Imp | 433.5 | 421.5 | 427.1 | 422.8 | 442.4 | 424.3 | 430.8 | 444.9 | 466.1 | 469.7 | 481.0 | 493.8 | 496.6 | 479.7 | 500.1 | 15.4% |
| 47 Net California Emissions with Electricity Import | 410.8 | 399.2 | 405.2 | 401.3 | 421.3 | 403.7 | 410.5 | 425.0 | 446.6 | 450.5 | 461.4 | 473.8 | 476.4 | 459.2 | 479.1 | 16.6% |
| 48 International Bunker Carbon Dioxide Emissions | 39.9 | 34.6 | 28.0 | 27.9 | 32.4 | 35.8 | 35.4 | 27.0 | 26.8 | 30.3 | 33.8 | 31.8 | 31.8 | 24.5 | 26.5 | -33.6% |
| 49 Gross GHGS without forestry or land use (emissions OR sinks) | 428.8 | 417.2 | 423.3 | 418.4 | 437.3 | 419.4 | 425.6 | 439.4 | 460.7 | 464.1 | 475.1 | 488.2 | 490.5 | 473.4 | 493.6 | 15.1% |

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---|--------------|--------------|--------------|--------------|
| In-State Electricity Generation | 43.4 | 41.5 | 49.3 | 45.6 | 53.5 | 41.1 | 37.9 | 39.9 | 43.3 | 46.8 | 55.9 | 61.4 | 47.8 | 45.9 | 55.1 | 49.0 |
| Natural Gas | 36.42 | 36.51 | 43.61 | 38.68 | 46.23 | 35.00 | 31.19 | 34.38 | 37.31 | 41.09 | 49.71 | 55.48 | 41.98 | 40.56 | 48.94 | 43.02 |
| Commercial CHP | 0.64 | 0.57 | 0.64 | 0.66 | 0.73 | 0.75 | 0.77 | 0.73 | 0.74 | 0.73 | 0.71 | 0.67 | 0.63 | 0.80 | 0.86 | 0.98 |
| Electric CHP | 6.46 | 6.70 | 7.36 | 7.65 | 7.87 | 7.85 | 7.80 | 8.23 | 8.16 | 8.15 | 7.98 | 7.41 | 9.86 | 8.30 | 9.78 | 9.29 |
| Industrial CHP | 4.19 | 4.52 | 4.38 | 4.41 | 4.55 | 4.58 | 5.05 | 4.75 | 4.78 | 4.76 | 4.73 | 4.88 | 5.42 | 4.75 | 7.60 | 6.10 |
| Utility | 24.89 | 24.37 | 30.78 | 25.34 | 32.66 | 21.40 | 17.23 | 20.33 | 14.57 | 7.68 | 6.85 | 6.75 | 4.80 | 5.28 | 5.89 | 6.28 |
| Merchant Power | 0.24 | 0.35 | 0.46 | 0.62 | 0.42 | 0.42 | 0.34 | 0.34 | 9.05 | 19.78 | 29.44 | 35.70 | 21.26 | 21.12 | 24.66 | 20.18 |
| Other | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.31 | 0.15 | 0.21 |
| Coal | 2.33 | 2.51 | 3.04 | 3.00 | 3.10 | 2.73 | 2.42 | 2.10 | 2.01 | 2.23 | 2.26 | 2.13 | 2.39 | 2.17 | 2.58 | 2.23 |
| Electric CHP | 1.41 | 1.99 | 2.11 | 2.21 | 2.10 | 2.00 | 1.71 | 1.57 | 1.72 | 1.91 | 1.93 | 1.79 | 2.04 | 1.87 | 2.09 | 1.92 |
| Industrial CHP | 0.75 | 0.30 | 0.70 | 0.56 | 0.78 | 0.73 | 0.71 | 0.54 | 0.29 | 0.32 | 0.32 | 0.34 | 0.35 | 0.30 | 0.49 | 0.32 |
| Merchant | 0.17 | 0.22 | 0.23 | 0.23 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | |
| Distillate Fuel Oil | | | | | | | | | | | | 0.58 | 0.09 | 0.11 | 0.10 | 0.10 |
| Utility | | | | | | | | | | | | 0.10 | 0.04 | 0.05 | 0.05 | 0.06 |
| Merchant Power | | | | | | | | | | | | 0.47 | 0.05 | 0.06 | 0.05 | 0.04 |
| Commercial CHP | | | | | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Industrial CHP | | | | | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other | | | | | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Residual Fuel Oil | | | | | | | | | | | | 0.24 | 0.02 | 0.01 | 0.00 | 0.00 |
| Utility | | | | | | | | | | | | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| Merchant Power | | | | | | | | | | | | 0.04 | 0.02 | 0.01 | 0.00 | 0.00 |
| Industrial CHP | | | | | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Petroleum Coke | | | | | | | | | | | | 2.26 | 2.62 | 2.31 | 2.18 | 2.42 |
| Merchant Power | | | | | | | | | | | | 0.95 | 0.92 | 1.14 | 1.19 | 1.21 |
| Electric CHP | | | | | | | | | | | | 0.85 | 0.98 | 0.86 | 0.83 | 0.99 |
| Industrial CHP | | | | | | | | | | | | 0.47 | 0.72 | 0.31 | 0.17 | 0.22 |
| Other Organic Gases (assume Still Gas) | | | | | | | | | | | | 0.66 | 0.67 | 0.77 | 1.30 | 1.20 |
| Electric CHP | | | | | | | | | | | | 0.00064 | 0.00000 | 0.01977 | 0.04462 | 0.04131 |
| Industrial CHP | | | | | | | | | | | | 0.65909 | 0.67244 | 0.75404 | 1.22395 | 1.07412 |
| Other | | | | | | | | | | | | 0.00000 | 0.00000 | 0.00000 | 0.03637 | 0.08326 |
| Petroleum Products | 4.61 | 2.49 | 2.64 | 3.88 | 4.12 | 3.42 | 4.29 | 3.41 | 3.98 | 3.44 | 3.90 | (Values below were estimated from average emissions/BBL for 2001 to 2004) | | | | |
| Commercial CHP | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | (Calculated from EIA Form 906 Fuel Use Data.) | | | | |
| Electric CHP | 0.01 | 0.04 | 0.26 | 0.18 | 0.40 | 0.73 | 0.76 | 0.78 | 1.13 | 0.91 | 0.98 | | | | | |
| Industrial CHP | 0.92 | 1.27 | 1.26 | 1.40 | 1.57 | 1.46 | 2.16 | 1.72 | 1.92 | 1.61 | 1.42 | | | | | |
| Utility | 3.17 | 0.45 | 0.26 | 1.44 | 1.27 | 0.36 | 0.48 | 0.14 | 0.12 | 0.05 | 0.14 | | | | | |
| Merchant Power | 0.49 | 0.71 | 0.83 | 0.84 | 0.85 | 0.86 | 0.89 | 0.77 | 0.81 | 0.87 | 1.36 | | | | | |

(Note: This is the same approach used in the 1990 to 1999 GHG inventory for GHG emissions from imported electricity.)