

AT&T 2011 International Greenhouse Gas Emissions Inventory Methodology and Process Detail Document

06/19/2012

Overview

The purpose of this document is to provide an overview of the process and activities AT&T used to develop the company's 2011 greenhouse gas (GHG) emissions inventory. The following document provides specific detail on the scope, standards, methodologies and results of AT&T's 2011 inventory efforts.

1. Protocol:

AT&T used the fundamentals of *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, Revised Edition* by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). In addition, the protocol outlined by the EPA Climate Leaders program, which is founded on WRI principles, was applied to select emission sources to determine emissions.

2. Organizational Boundary:

AT&T has chosen to utilize the Operational Control approach to consolidate GHG emissions. This approach includes any asset or facility in which AT&T has an operating interest in the inventory. For instance, we included both owned and leased assets in our real estate portfolio and mobile fleet in our inventory. We believe that omitting estimated emissions from leased assets would result in a materially incomplete measurement.

AT&T chose to use this approach because it more accurately reflects all operations. However, because there are no uniform and mandatory standards for data acquisition and reporting at this point, it is important to note that AT&T's emissions data cannot accurately be compared to other entities, as their approach might not be comparable to ours.

Consistent with the approach used in reporting its prior inventories, AT&T has included international Scope 1 emissions from ground fleet vehicles, Scope 2 emissions from electric power, and Scope 3 emissions from business air travel.

3. Emission Sources:

The following sources within AT&T's operational footprint were included in the 2011 Inventory:

- Emission Source
 - Scope 1 (Direct):
 - Natural Gas
 - Propane
 - #2 Fuel Oil (Diesel)
 - Ground Fleet
 - Flight Operations
 - Engines (Stationary Generators)
 - Engines (Portable Generators)
 - Refrigerant

- Scope 2 (Indirect):
 - Purchased Electric Power
 - Purchased Steam
- Scope 3 (Ancillary Indirect):
 - Business Air Travel
 - Business Rental Car Travel

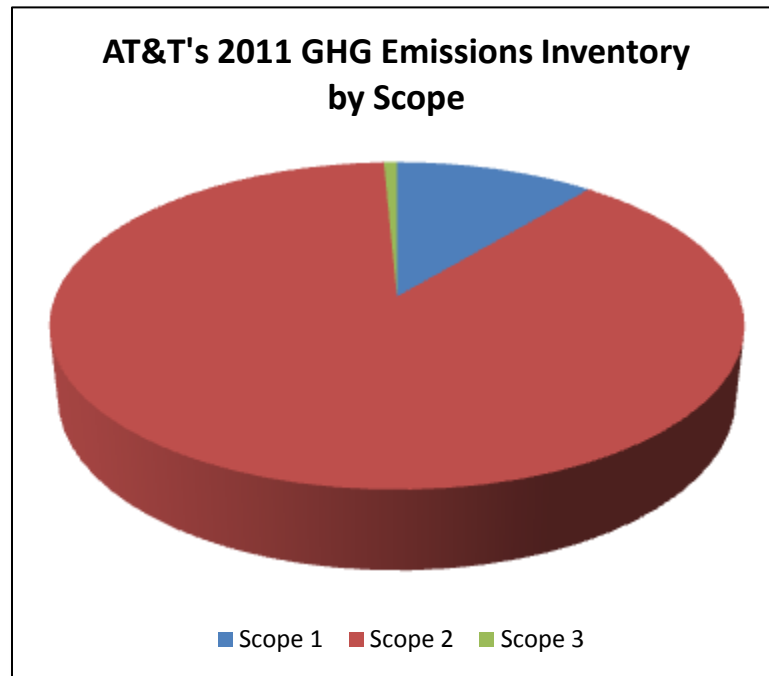
4. Greenhouse Gases

The AT&T 2011 inventory includes measures of carbon dioxide (CO₂), nitrous oxide (N₂O) methane (CH₄) emissions, and hydrofluorocarbons (HFCs), and their carbon dioxide equivalents (CO₂-e).

5. Emission Factors:

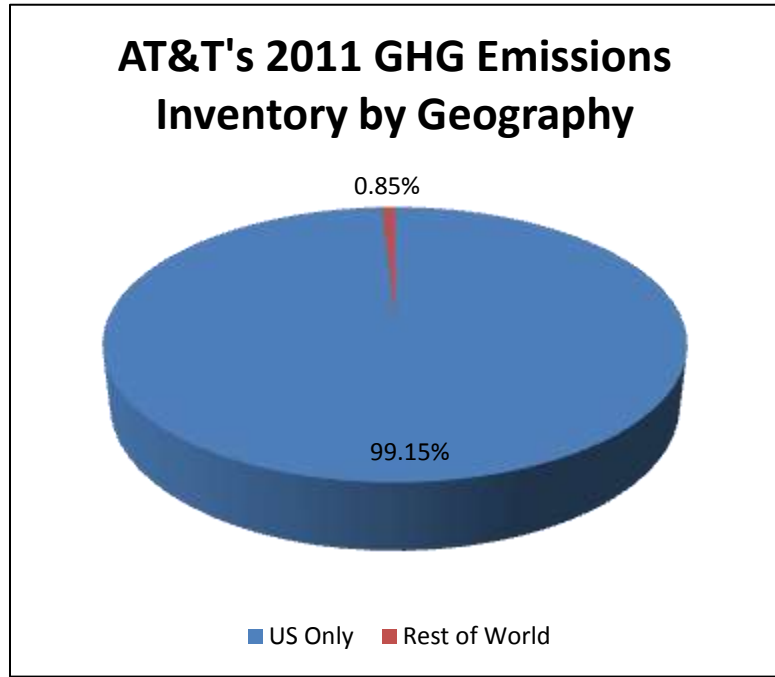
Consistent with prior inventories, AT&T has elected to utilize guidance from the EPA Climate Leaders for emissions calculations in preparing the 2011 GHG Inventory. The emission factors for each greenhouse gas (CO₂, CH₄, N₂O, HFC) were taken from guidance documentation and multiplied by the respective global warming potential (GWP) to derive an emission factor in terms of carbon dioxide equivalents (CO₂-e). Detailed references are listed in Appendix B.

6. AT&T's 2011 Greenhouse Gas Emissions Inventory, by Scope:



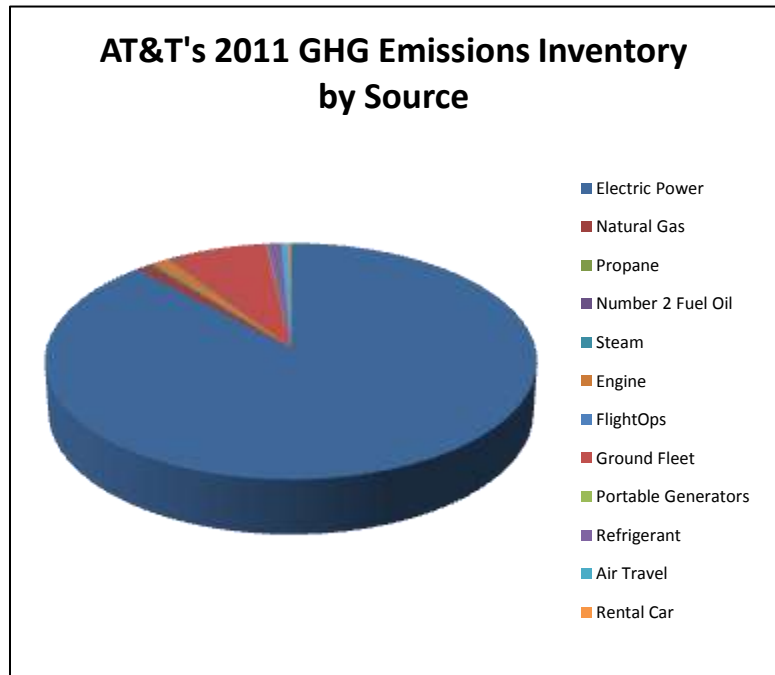
| Scope | mtons CO ₂ -e | % |
|--------------|--------------------------|----------------|
| Total | 9,144,648 | 100.00% |
| Scope 1 | 1,007,201 | 11.01% |
| Scope 2 | 8,071,070 | 88.26% |
| Scope 3 | 66,377 | 0.73% |

7. AT&T's 2011 Greenhouse Gas Inventory by Geography



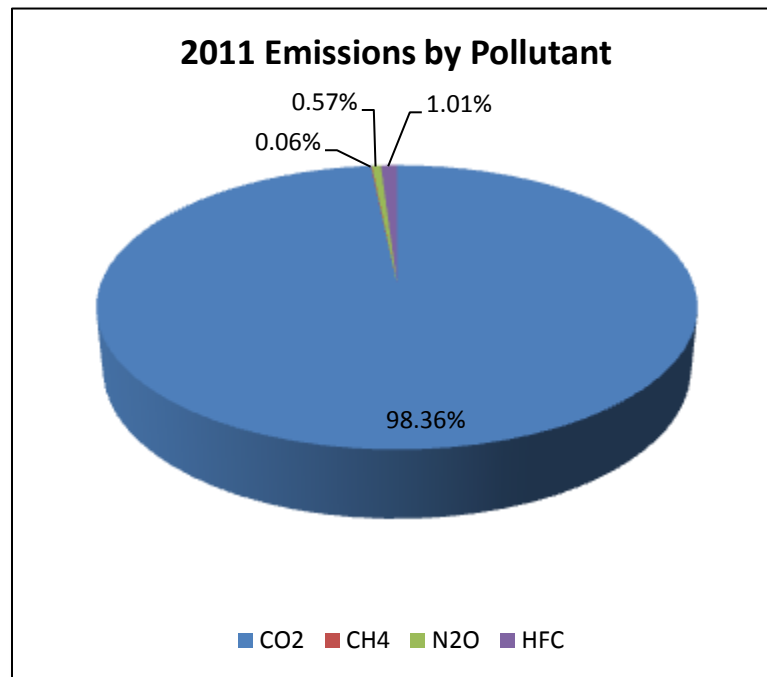
| Region | US Only | Rest of World |
|---------|-------------|---------------|
| Scope | mtons CO2-e | mtons CO2-e |
| Scope 1 | 1,004,037 | 3,164 |
| Scope 2 | 7,999,058 | 72,012 |
| Scope 3 | 63,463 | 2,914 |
| Total | 9,066,558 | 78,090 |

8. AT&T's 2011 Greenhouse Gas Emissions Inventory, by Source:



| Source | mtons CO2-e | % |
|---------------------------|------------------|-------------|
| Total (mtons CO2e) | 9,144,648 | 100% |
| Electric Power | 8,055,588 | 88.09% |
| Natural Gas | 95,070 | 1.04% |
| Propane | 4,081 | 0.04% |
| Number 2 Fuel Oil | 8,938 | 0.10% |
| Steam | 15,482 | 0.17% |
| Engine | 113,195 | 1.24% |
| FlightOps | 13,650 | 0.15% |
| Ground Fleet | 671,320 | 7.34% |
| Portable Generators | 8,860 | 0.10% |
| Refrigerant | 92,087 | 1.01% |
| Air Travel | 52,618 | 0.58% |
| Rental Car | 13,759 | 0.15% |

9. AT&T's 2011 Greenhouse Gas Emissions Inventory, by Pollutant:



| Source | CO2-e | CO2 | CH4 | N2O | HFC | Total |
|---------------------------------|------------------|------------------|--------------|---------------|---------------|---------------|
| Total (mtons CO2e) | 9,144,648 | 8,994,700 | 5,750 | 52,111 | 92,087 | 100.0% |
| Natural Gas | 95,070 | 99.90% | 0.04% | 0.06% | 0.00% | 100.0% |
| Propane | 4,081 | 99.61% | 0.10% | 0.29% | 0.00% | 100.0% |
| #2 Fuel Oil / Diesel | 8,938 | 99.66% | 0.09% | 0.25% | 0.00% | 100.0% |
| Engines (Stationary Generators) | 113,195 | 99.88% | 0.05% | 0.06% | 0.00% | 100.0% |
| Flight Operations | 13,650 | 98.95% | 0.06% | 0.99% | 0.00% | 100.0% |
| Ground Fleet | 671,320 | 97.59% | 0.24% | 2.17% | 0.00% | 100.0% |
| Engines (Portable Generators) | 8,860 | 99.66% | 0.09% | 0.25% | 0.00% | 100.0% |
| Refrigerant | 92,087 | 0.00% | 0.00% | 0.00% | 100.00% | 100.0% |

| Source | CO2-e | CO2 | CH4 | N2O | HFC | Total |
|----------------------------|-----------|--------|-------|-------|-------|--------|
| Purchased Electric Power | 8,055,588 | 99.50% | 0.04% | 0.45% | 0.00% | 100.0% |
| Purchased Steam | 15,482 | 99.60% | 0.03% | 0.37% | 0.00% | 100.0% |
| Business Air Travel | 52,618 | 98.56% | 0.11% | 1.33% | 0.00% | 100.0% |
| Business Rental Car Travel | 13,759 | 96.63% | 3.18% | 0.20% | 0.00% | 100.0% |

10. Data Acquisition:

The majority of AT&T's emission source data is collected via enterprise data systems. For instance, the vast majority of AT&T utility bills are paid by a third-party bill payment service. This results in consolidated data collection and improved data accuracy because of the specialized and focused service of our vendor/partner. In addition, the vast majority of AT&T's mobile fleet fuel purchases and miles driven are logged in a centralized fleet management platform, enabling accurate data collection for calculation of fleet emissions. Additional data systems, such as real estate portfolio systems, flight operations management systems, building and emergency engine inventory systems, and travel management systems were also utilized as needed. However, there were some instances in which data estimations were required. Any estimations or assumptions have been documented in the sections below.

As described throughout this document, AT&T has employed methodologies for acquiring data and reporting results that are intended to yield an accurate, detailed and fair representation of AT&T's emissions. It is important to note, however, that in the absence of uniform and mandatory processes for data acquisition and reporting of emissions, comparing the results reported by AT&T and those reported by other entities may not yield an accurate comparison of emissions and operations. AT&T commits to continue to review and refine the data acquisition and reporting methodologies for future reports as appropriate to address further development of industry standards.

Source Description and Calculation Methodology

A discussion of the emission sources included in AT&T's 2011 inventory is below. Sources are listed in descending order of magnitude and methodology references are available in Appendix B.

1. Electric Power

Data Collection:

Electric power is used to energize AT&T facilities and equipment. Actual electricity usage information was obtained from utility invoices, when available. However, for some facilities in which AT&T operates, no discrete bill was available (e.g. a full-service leased facility in which utilities are a component of rent). In these instances, electricity consumption was estimated based on the square footage and type of space. AT&T evaluated the use of the U.S. Energy Information Administration's Commercial Buildings Energy Consumption Survey (CBECS) intensity factors to estimate usage. However, because of the greater electricity intensity of some of AT&T's technical spaces (e.g. telephone switching and data center space) we felt strongly that the CBECS estimate understated consumption for our technical spaces. So, we chose to develop specific intensity measures for these types of spaces. To develop these AT&T-specific intensities, we performed a comprehensive review of consumption data by facility type and square footage. We are confident that this exercise provides a more accurate representation of the consumption for those facilities at which consumption estimation was required.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-03-006 - June 2008) and eGrid 2010 v1.1 (issued February 2011) to calculate emissions from electricity consumption. For U.S. based facilities where zip code information was available, we utilized the zip codes' corresponding eGrid Subregion emission factors for CO₂, N₂O, and CH₄. If zip code was not known, we utilized state-based emissions factors. In the rare case where state information was not known, we used the standardized national emission factors for the U.S. for each pollutant. For facilities outside of the U.S., AT&T utilized International Energy Agency data as per WRI / WBCSD GHG Protocol guidance (International Energy Agency Data Services. "CO₂ Emissions from Fuel Combustion (2011 Edition)"). A detailed list of the emissions factors for purchased electric power can be found in Appendix C.

2. Ground Fleet

Data Collection: AT&T's ground fleet is comprised of an assortment of vehicle types from passenger cars to heavy duty trucks. In the U.S., fuel consumption and mileage information is gathered via an enterprise fleet management system that allows AT&T to track fuel purchases for and miles driven by vehicles in the fleet. Fuel consumption data was used to estimate CO₂ emissions. Mileage and vehicle type data were utilized to calculate CH₄ and N₂O emissions.

For international based fleet vehicles, activity data was available and utilized for leased vehicles in Austria, Belgium, the Czech Republic, France, Germany, Italy, the Netherlands, Slovakia, Spain, Switzerland and the UK. This activity was provided in annual miles or kilometers driven per vehicle. Manufacturers' published figures for emissions in grams of CO₂ per kilometer were then used to calculate CO₂ emissions for the International Fleet. CH₄ and N₂O emissions were then calculated using the ratio of each pollutant to overall CO₂e for the US dataset.

Emission Factor:

Domestic Fleet (eFOSS):

- Utilized EPA Climate Leaders guidance (EPA430-K-08-004 May 2008 – Table B-3) for fuel-specific CO₂ emission factors
- Derived CO₂ equivalent (CO₂-e) emission factors utilizing CH₄ and N₂O emission factors (Table 16 below) based on fuel type and model year

International Fleet (Lease Reports)

- Utilized OEM published emission factors in g/km for international vehicles where mileage data is provided in lieu of fueling volumes

3. Refrigerants

Data Collection:

Refrigerants are used in building cooling systems. The most commonly used refrigerant within AT&T's portfolio is R-22, which was not considered a GHG per the WRI GHG Protocol. However, a subset of cooling systems exist that makes use of HFC based refrigerants - primarily R-134a and R410. For our 2011 GHG inventory, building inventory systems were analyzed to identify the total tonnage of HFCs in use and applied a standard loss rate. This loss rate (or refrigerant emitted) used to derive an emissions rate per square foot for the subset of facilities where refrigerant capacity is tracked. This emissions rate is then scaled over the portfolio-wide square footage in order to estimate emissions inclusive of those facilities at which HVAC capacity is not tracked.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430K-03-004 - May 2008) for emission factors based on each refrigerant's GWP and standard equipment loss rate. The equivalent emissions factor is based on a weighted GWP that takes into account the proportion of R134a and R410a used within the portfolio.

4. Natural Gas

Data Collection:

Natural gas is used within the AT&T portfolio for facility and equipment heating needs. Consumption data for natural gas was collected via utility invoices that were processed, verified and paid by a third-party bill payment vendor. Potential natural gas usage at leased assets where bills are not paid by AT&T and were not estimated.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-08-003 - May 2008) to derive emission factors for natural gas.

5. Engines (Stationary and Portable Generators)

Data Collection:

Engines and stationary generators are used to generate power on an emergency basis at AT&T facilities. These engines are engaged whenever the electricity grid is unavailable or whenever requested as part of a Demand Response program to support grid operations and prevent grid failure. Additionally, monthly maintenance runs occur to ensure each engine is operating properly. These maintenance runs account for the majority of emissions associated with these assets. AT&T also uses engines that power portable generators to support its operations for portable backup power, to power truck-mounted equipment, and for outside field use, such as pumping out of manholes.

In order to obtain activity related data for this emissions source AT&T's internal database for engines inventory is referenced to provide several engine characteristics, as well as run-time data, where available. In order to estimate the fuel usage that serves as the basis of our emissions estimate, we used engine runtime data (actual runtime data, where available, and average runtime estimates by state when not available), in conjunction with engine horsepower capacity, to estimate fuel consumption used during maintenance runs. To estimate fuel usage based on engine runtime, AT&T utilized the guidance provided in Appendix 2 of the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines, developed by the California Environmental Protection Agency Air Resources Board. This fuel consumption is then used to calculate emissions from stationary and portable generators utilizing fuel specific emissions factors as described below .

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-08-003 - May 2008) to derive emission factors specific to each fuel type.

6. Business Air Travel

Data Collection:

Business travel on commercial airline carriers is considered a Scope 3 emissions stream. AT&T's travel system captures the mileage flown by AT&T passengers on commercial airline jets. All business air travel including international flights was included.

Emission Factor:

Flight legs were categorized into short, medium, long hauls and the specific emission factors for CO₂, N₂O, and CH₄ were applied to each flight leg according to EPA Climate Leaders’ guidance (EPA430-R-08-006 May 2008) (see below).

Table 1. Air Travel Emission Factors

| Emission Factors | | | |
|---|--|---------------------------------------|---------------------------------------|
| http://www.epa.gov/stateply/documents/resources/commute_travel_product.pdf | | | |
| Climate Leaders: Optional Emissions from Commuting, Business Travel, and Product Transport | | | |
| Airline Travel Distance | kg CO ₂ /passenger- mile | g CH ₄ /passenger- mile | g N ₂ O/passenger- mile |
| Long Haul (>>_ 700 miles) | 0.185 | 0.0104 | 0.0085 |
| Medium Haul (>>_ 300 and < 700 miles) | 0.229 | 0.0104 | 0.0085 |
| Short Haul (< 300 miles) | 0.277 | 0.0104 | 0.0085 |
| Distance Not Known | 0.271 | 0.0104 | 0.0085 |

7. Flight Operations

Data Collection:

AT&T uses corporate jets to transport AT&T passengers for business travel and for network support operations in remote areas such as Alaska. The travel data, including flight leg miles flown and fuel consumption, are managed by a specific flight management system.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-08-004 - May 2008), Table B-2 for CO₂ and Table A-6 for N₂O, and CH₄ to estimate emissions for Jet Fuel.

8. Purchased Steam

Data Collection:

Steam is primarily used within the AT&T portfolio for facility and equipment heating needs. Consumption data for steam was collected via utility invoices that were processed, verified and paid by a third-party bill payment vendor.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-03-006 - June 2008) and the average heat input of saturated steam and standard boiler efficiency to derive emission factors.

9. Business Rental Car Travel

Data Collection:

Business rental car travel via commercial vendors is considered a Scope 3 emissions stream. To estimate this emission source, AT&T engaged its primary rental car vendors to gather mileage driven by car class for AT&T passengers. These primary vendors were estimated to represent 90% of the total; the remaining balance was extrapolated based on available data.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-08-004, Table B-1) to derive the CO₂ emission factor. In order to calculate N₂O and CH₄ emissions, vehicle miles were assigned car or light-duty truck classifications, and the appropriate emission factors were applied based on EPA Climate Leaders guidance in EPA430-R-08-006, Table 2.

Table 1. Ground Fleet CO₂ Emission Factor

| EPA CL (EPA430-K-08-004) Table B-1 | | | | |
|------------------------------------|-----------------|----------------------------|-----------------|-------------------------|
| Fuel | CO ₂ | Units | CO ₂ | Units |
| UNLEADED | 19.42 | lbs CO ₂ -e/gal | 8.81 | kg CO ₂ /gal |

Table 2. Business Rental Car CH₄ & N₂O Emission Factors

| May 2008 EPA CL (EPA430-R-08-006) Table 1 Commuting, Business Travel and Product Transport | | |
|---|-------|---------------------------------|
| | EF | UOM |
| Car | 0.031 | g CH ₄ /vehicle-mile |
| | 0.032 | g N ₂ O/vehicle-mile |
| Light-duty Truck | 0.036 | g CH ₄ /vehicle-mile |
| | 0.047 | g N ₂ O/vehicle-mile |

10. No. 2 Fuel Oil (Diesel)

Data Collection:

No. 2 Fuel Oil (also called stationary “Diesel”) is primarily used within the AT&T portfolio for facility and equipment heating needs as a stationary fuel. Diesel is also used in engines and ground fleet, but these sources are documented in other sections of this document. Consumption data for Fuel Oil was collected via utility invoices that were processed, verified and paid by a third-party bill payment vendor.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-08-003 - May 2008) to derive emission factors for Fuel Oil.

11. Propane

Data Collection:

Propane is primarily used within the AT&T portfolio for facility and equipment heating needs and for on-site fork trucks. In addition, handheld propane is used in the field for operational needs. The bulk of propane usage information was obtained from utility invoices from AT&T’s third-party bill payment service provider. In addition, propane consumption used for field operations was estimated based on average consumption per technician, based on a sampling of usage data from several locations across the country. This figure was calculated for 2011 based upon the total number of employees in the WorkCenter group. The emissions reported for 2011 are the aggregate of this estimated figure and the billed usage from facilities.

Emission Factor:

AT&T utilized EPA Climate Leaders guidance (EPA430-K-08-003 - May 2008) to derive emission factors for propane.

Appendix A: Emission Factor Summary

| Scope | Source | CO2 | Units | CH4 | Units | N2O | Units |
|-------|------------------------------|---|---------------------|----------|---------------------|---------|---------------------|
| 1 | Natural Gas | 116.977 | lbs CO2-e/MMBtu | 0.0463 | lbs CO2-e/MMBtu | 0.0683 | lbs CO2-e/MMBtu |
| 1 | Propane | 12.653 | lbs CO2-e/gallon | 0.0126 | lbs CO2-e/gallon | 0.0373 | lbs CO2-e/gallon |
| 1 | Number 2 Fuel Oil | 22.416 | lbs CO2-e/gallon | 0.0193 | lbs CO2-e/gallon | 0.0570 | lbs CO2-e/gallon |
| 1 | Engines (Stationary) | 22.416 | lbs CO2-e/gallon | 0.0193 | lbs CO2-e/gallon | 0.0570 | lbs CO2-e/gallon |
| 1 | Portable Generators | 22.416 | lbs CO2-e/gallon | 0.0193 | lbs CO2-e/gallon | 0.0570 | lbs CO2-e/gallon |
| 1 | FlightOps | 21.098 | lbs CO2-e/gallon | 0.0125 | lbs CO2-e/gallon | 0.2119 | lbs CO2-e/gallon |
| 1 | Ground Fleet | <i>Due to multiple fuel types, consult Methodology Discussion for Emission Factor details.</i> | | | | | |
| 1 | Refrigerant | <i>Leakage rate of 15% and weighted GWP of 1300.</i> | | | | | |
| 2 | Electric Power | <i>See Appendix C for Electric Power Emission Factors</i> | | | | | |
| 2 | Steam | 0.2156 | lbs CO2-e/lbs steam | 0.000073 | lbs CO2-e/lbs steam | 0.00080 | lbs CO2-e/lbs steam |
| 3 | Business Air Travel* | <i>Due to varying EFs based on flight length, consult Methodology Discussion for Emission Factor details.</i> | | | | | |
| 3 | Business Rental Car Travel** | 19.4227 | lbs CO2-e/unit | - | lbs CO2-e/unit | - | lbs CO2-e/unit |

Appendix B: Summary of Methodology Sources

| Source | Reporting Protocol | Source File | Document Name | Table # | Document Link |
|---------------------|---------------------|------------------|---|--|----------------------|
| Electric Power | EPA Climate Leaders | EPA 430K-03-006 | Indirect Emissions from Purchases/Sale of Electricity and Steam | n/a | LINK |
| Natural Gas | EPA Climate Leaders | EPA 430K-08-003 | Direct Emissions from Stationary Combustion Sources | Table B-3; Table A-1 adjusted for fuel type | LINK |
| Propane | EPA Climate Leaders | EPA 430K-08-003 | Direct Emissions from Stationary Combustion Sources | Table B-3; Table A-1 adjusted for fuel type | LINK |
| Number 2 Fuel Oil | EPA Climate Leaders | EPA 430K-08-003 | Direct Emissions from Stationary Combustion Sources | Table B-3; Table A-1 adjusted for fuel type | LINK |
| Steam | EPA Climate Leaders | EPA 430K-03-006 | Indirect Emissions from Purchases/Sale of Electricity and Steam | n/a | LINK |
| Stationary Engines | EPA Climate Leaders | EPA 430K-08-003 | Direct Emissions from Stationary Combustion Sources | Table B-3; Table A-1 adjusted for fuel type | LINK |
| FlightOps | EPA Climate Leaders | EPA 430K-08-004 | Direct Emissions from Mobile Combustion Sources | Table B-2 CO ₂ ; Table A-6 N ₂ O & CH ₄ | LINK |
| Ground Fleet | EPA Climate Leaders | EPA 430K-08-004 | Direct Emissions from Mobile Combustion Sources | Table B-1 | LINK |
| Portable Generators | EPA Climate Leaders | EPA 430K-08-003 | Direct Emissions from Stationary Combustion Sources | Table B-3; Table A-1 adjusted for fuel type | LINK |
| Refrigerant | EPA Climate Leaders | EPA 430K-03-004 | Direct HFC and PFC Emissions from Use of Refrigeration and Air Conditioning Equipment | Table 1 | LINK |
| Air Travel | EPA Climate Leaders | EPA 430-R-08-006 | Optional Emissions from Commuting, Business Travel, and Product Transport | Table 4 | LINK |
| Rental Car | EPA Climate Leaders | EPA 430-R-08-006 | Optional Emissions from Commuting, Business Travel, and Product Transport | Table 1 | LINK |

Appendix C: Electric Power Emission Factors

Source: USEPA's eGRID 2010 v1.1 (w/ 2007 data):
<http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>

Year 2007 eGRID Subregion Emissions - Greenhouse Gases

| eGRID subregion acronym | eGRID subregion name | Carbon dioxide (CO ₂) | | Methane (CH ₄) | | Nitrous oxide (N ₂ O) | | Carbon dioxide equivalent (CO ₂ e) | |
|-------------------------|-------------------------|-----------------------------------|-------------------------------------|----------------------------|-------------------------------------|----------------------------------|-------------------------------------|---|-------------------------------------|
| | | Emissions (tons) | Total output emission rate (lb/MWh) | Emissions (lbs) | Total output emission rate (lb/GWh) | Emissions (lbs) | Total output emission rate (lb/GWh) | Emissions (tons) | Total output emission rate (lb/MWh) |
| AKGD | ADCC Alaska Grid | 3,504,228.2 | 1,284.72 | 147,873.9 | 27.11 | 40,577.9 | 7.44 | 3,512,070.5 | 1,287.60 |
| AKMB | ADCC Miscellaneous | 365,943.1 | 535.73 | 30,937.2 | 22.65 | 6,113.6 | 4.48 | 367,215.5 | 537.69 |
| AZNM | WECC Southwest | 113,156,262.7 | 1,252.61 | 3,396,786.6 | 18.80 | 2,993,639.1 | 16.57 | 113,655,943.1 | 1,258.14 |
| CAMX | WECC California | 75,000,493.2 | 681.01 | 6,231,629.5 | 28.29 | 1,372,599.9 | 6.23 | 75,278,663.3 | 683.53 |
| ERCT | ERCOT All | 214,038,968.8 | 1,252.57 | 6,068,633.9 | 17.76 | 4,781,591.7 | 13.99 | 214,843,836.0 | 1,257.28 |
| FRCC | FRCC All | 133,272,674.4 | 1,220.11 | 8,999,083.8 | 41.19 | 3,332,563.5 | 15.28 | 133,883,710.5 | 1,225.70 |
| HIMS | HICC Miscellaneous | 2,150,675.8 | 1,343.92 | 432,568.6 | 135.15 | 69,488.1 | 21.71 | 2,165,988.7 | 1,353.39 |
| HIOA | HICC Oahu | 6,752,509.4 | 1,620.76 | 758,650.8 | 91.05 | 174,049.2 | 20.89 | 6,787,452.8 | 1,629.15 |
| MROE | MRO East | 25,034,396.5 | 1,592.32 | 851,783.6 | 28.79 | 859,415.2 | 29.05 | 25,176,549.6 | 1,701.93 |
| MROW | MRO West | 160,080,984.1 | 1,722.67 | 5,383,698.4 | 28.97 | 5,425,784.9 | 29.19 | 160,978,509.6 | 1,732.33 |
| NEWE | NPCC New England | 54,841,847.2 | 827.95 | 10,198,269.4 | 76.98 | 2,013,707.0 | 15.20 | 55,261,063.6 | 834.28 |
| NWPP | WECC Northwest | 115,898,956.2 | 858.79 | 4,410,057.5 | 16.34 | 3,682,826.8 | 13.64 | 116,516,100.0 | 863.36 |
| NYCIW | NPCC NYC/Westchester | 15,514,550.1 | 704.80 | 1,154,394.0 | 26.22 | 147,480.7 | 3.35 | 15,549,530.7 | 706.39 |
| NYLI | NPCC Long Island | 9,201,030.7 | 1,418.74 | 1,173,906.8 | 90.50 | 169,932.2 | 13.10 | 9,239,896.2 | 1,424.70 |
| NYUP | NPCC Upstate NY | 31,665,404.6 | 693.27 | 1,614,017.9 | 17.41 | 917,461.3 | 9.90 | 31,824,559.3 | 696.71 |
| RFCE | RFC East | 143,562,646.4 | 1,059.32 | 7,427,798.2 | 27.40 | 4,616,541.5 | 17.03 | 144,376,202.2 | 1,065.17 |
| RFCM | RFC Michigan | 78,181,546.8 | 1,651.11 | 3,083,000.4 | 32.55 | 2,631,774.1 | 27.79 | 78,621,543.3 | 1,660.41 |
| RFCW | RFC West | 495,807,207.6 | 1,551.52 | 11,741,028.7 | 18.37 | 16,569,716.6 | 25.93 | 498,486,794.4 | 1,559.94 |
| RMFA | WECC Rockies | 51,510,428.0 | 1,906.06 | 1,524,891.5 | 23.63 | 1,864,622.6 | 28.89 | 51,815,455.9 | 1,915.52 |
| SPNO | SPP North | 62,905,859.2 | 1,798.71 | 1,484,066.0 | 21.22 | 2,042,414.2 | 29.20 | 63,238,016.3 | 1,808.20 |
| SPSO | SPP South | 115,289,602.0 | 1,624.03 | 3,481,418.3 | 24.52 | 3,182,725.9 | 22.42 | 115,819,479.4 | 1,631.49 |
| SRMV | SERC Mississippi Valley | 82,644,787.0 | 1,004.10 | 3,587,999.4 | 21.80 | 1,834,731.1 | 11.15 | 82,966,854.3 | 1,008.01 |
| SRMW | SERC Midwest | 123,933,747.9 | 1,779.27 | 2,865,634.9 | 20.57 | 4,123,975.9 | 29.60 | 124,603,053.4 | 1,788.88 |
| SRSO | SERC South | 205,339,150.2 | 1,495.47 | 6,492,058.4 | 23.64 | 6,748,363.3 | 24.57 | 206,453,311.5 | 1,503.59 |
| SRTV | SERC Tennessee Valley | 184,884,320.9 | 1,540.85 | 4,769,477.1 | 19.87 | 6,114,686.2 | 25.48 | 185,882,176.7 | 1,549.17 |
| SRVC | SERC Virginia/Carolina | 175,693,242.5 | 1,118.41 | 6,992,327.3 | 22.26 | 5,993,080.8 | 19.08 | 176,695,589.5 | 1,124.79 |
| U.S. | | 2,880,261,488.1 | 1,288.05 | 104,302,928.0 | 26.07 | 81,709,843.8 | 18.84 | 2,704,011,880.1 | 1,298.88 |



Source: "CO2 Emissions from Fuel Combustion (2011 Edition)", International Energy Agency, Paris.

Dataset: 2009 Data

<http://www.iea.org/co2highlights/>

| IEA Country | g CO2/kWh |
|------------------------------------|-----------|
| Albania | 11 |
| Algeria | 576 |
| Angola | 237 |
| Argentina | 355 |
| Armenia | 108 |
| Australia | 853 |
| Austria | 163 |
| Azerbaijan | 443 |
| Bahrain | 665 |
| Bangladesh | 585 |
| Belarus | 302 |
| Belgium | 218 |
| Benin | 725 |
| Bolivia | 393 |
| Bosnia and Herzegovina | 776 |
| Botswana | 2 063 |
| Brazil | 64 |
| Brunei Darussalam | 755 |
| Bulgaria | 463 |
| Cambodia | 1 151 |
| Cameroon | 243 |
| Canada | 167 |
| Chile | 373 |
| Chinese Taipei | 635 |
| Colombia | 175 |
| Congo | 207 |
| Costa Rica | 40 |
| Côte d'Ivoire | 426 |
| Croatia | 283 |
| Cuba | 752 |
| Cyprus | 744 |
| Czech Republic | 514 |
| Dem. Rep. of Congo | 3 |
| Denmark | 303 |
| Dominican Republic | 591 |
| DPR of Korea | 499 |
| Ecuador | 290 |
| Egypt | 466 |
| El Salvador | 319 |
| Eritrea | 672 |
| Estonia | 704 |
| Ethiopia | 118 |
| Finland | 205 |
| Former Soviet Union (if no detail) | x |
| Former Yugoslavia (if no detail) | x |

| IEA Country | g CO2/kWh |
|------------------------|-----------|
| France | 90 |
| FYR of Macedonia | 710 |
| Gabon | 322 |
| Georgia | 129 |
| Germany | 430 |
| Ghana | 187 |
| Gibraltar | 740 |
| Greece | 722 |
| Guatemala | 349 |
| Haiti | 547 |
| Honduras | 344 |
| Hong Kong, China | 763 |
| Hungary | 302 |
| Iceland | 0 |
| India | 951 |
| Indonesia | 746 |
| Iraq | 684 |
| Ireland | 465 |
| Islamic Rep. of Iran | 630 |
| Israel | 695 |
| Italy | 386 |
| Jamaica | 544 |
| Japan | 415 |
| Jordan | 581 |
| Kazakhstan | 480 |
| Kenya | 395 |
| Korea | 498 |
| Kuwait | 870 |
| Kyrgyzstan | 81 |
| Latvia | 153 |
| Lebanon | 717 |
| Libyan Arab Jamahiriya | 872 |
| Lithuania | 111 |
| Luxembourg | 384 |
| Malaysia | 649 |
| Malta | 850 |
| Mexico | 455 |
| Mongolia | 535 |
| Morocco | 638 |
| Mozambique | 1 |
| Myanmar | 196 |
| Namibia | 237 |
| Nepal | 4 |
| Netherlands | 374 |
| Netherlands Antilles | 707 |
| New Zealand | 167 |
| Nicaragua | 506 |
| Nigeria | 416 |
| Norway | 17 |

| IEA Country | g CO ₂ /kWh |
|-------------------------|------------------------|
| Oman | 842 |
| Other Africa | 494 |
| Other Asia | 268 |
| Other Latin America | 249 |
| Pakistan | 458 |
| Panama | 302 |
| Paraguay | - |
| People's Rep. of China | 743 |
| Peru | 236 |
| Philippines | 478 |
| Poland | 640 |
| Portugal | 368 |
| Qatar | 494 |
| Republic of Moldova | 400 |
| Romania | 414 |
| Russian Federation | 317 |
| Saudi Arabia | 757 |
| Senegal | 614 |
| Serbia | 680 |
| Singapore | 519 |
| Slovak Republic | 222 |
| Slovenia | 316 |
| South Africa | 926 |
| Spain | 299 |
| Sri Lanka | 460 |
| Sudan | 356 |
| Sweden | 43 |
| Switzerland | 40 |
| Syrian Arab Republic | 641 |
| Tajikistan | 29 |
| Thailand | 513 |
| Togo | 202 |
| Trinidad and Tobago | 719 |
| Tunisia | 538 |
| Turkey | 480 |
| Turkmenistan | 789 |
| Ukraine | 374 |
| United Arab Emirates | 631 |
| United Kingdom | 450 |
| United Rep. of Tanzania | 281 |
| United States | 508 |
| Uruguay | 253 |
| Uzbekistan | 461 |
| Venezuela | 199 |
| Vietnam | 384 |
| Yemen | 630 |
| Zambia | 3 |
| Zimbabwe | 619 |

Appendix D: Breakdown of Emissions by Source and Pollutant

AT&T 2011 GHG Inventory Breakdown by Source and Pollutant

| Source | Total | | | CO2 | | | CH4 | | | N2O | | | HFC | | |
|---------------------|------------------|------------------|-------|------------------|------------------|--------|--------------|---------------|-------|--------------------|---------------|-------|---------------|-----------|---------|
| | mt CO2-e | Check | Scope | mt CO2-e | mt CO2 | % | mt CO2-e | mt CH4 | % | mt CO2-e | mt N2O | % | mt CO2-e | mt HFC | % |
| Natural Gas | 95,070 | 95,070 | 1 | 94,978 | 94,978 | 99.90% | 37 | 1.77 | 0.04% | 55 | 0.18 | 0.06% | - | - | 0.00% |
| Propane | 4,081 | 4,081 | 1 | 4,065 | 4,065 | 99.61% | 4 | 0.19 | 0.10% | 12 | 0.04 | 0.29% | - | - | 0.00% |
| Number 2 Fuel Oil | 8,938 | 8,938 | 1 | 8,908 | 8,908 | 99.66% | 8 | 0.37 | 0.09% | 23 | 0.07 | 0.25% | - | - | 0.00% |
| Engine | 113,195 | 113,195 | 1 | 113,062 | 113,062 | 99.88% | 59 | 2.82 | 0.05% | 73 | 0.24 | 0.06% | - | - | 0.00% |
| FlightOps | 13,650 | 13,650 | 1 | 13,507 | 13,507 | 98.95% | 8 | 0.38 | 0.06% | 136 | 0.44 | 0.99% | - | - | 0.00% |
| Ground Fleet | 671,320 | 671,320 | 1 | 655,114 | 655,114 | 97.59% | 1,623 | 77.27 | 0.24% | 14,583 | 47.04 | 2.17% | - | - | 0.00% |
| Portable Generators | 8,861 | 8,861 | 1 | 8,831 | 8,831 | 99.66% | 8 | 0.36 | 0.09% | 22 | 0.07 | 0.25% | - | - | 0.00% |
| Refrigerant | 92,087 | 92,087 | 1 | - | - | 0.00% | - | - | 0.00% | - | - | 0.00% | 92,087 | 70 | 100.00% |
| Electric Power | 8,055,587 | 8,055,587 | 2 | 8,015,662 | 8,015,662 | 99.50% | 3,503 | 166.85 | 0.04% | 36,422 | 117.49 | 0.45% | - | - | 0.00% |
| Steam | 15,482 | 15,482 | 2 | 15,420 | 15,420 | 99.60% | 5 | 0.25 | 0.03% | 57 | 0.18 | 0.57% | - | - | 0.00% |
| Air Travel | 52,618 | 52,618 | 3 | 51,860 | 51,860 | 98.56% | 58 | 2.76 | 0.11% | 700 | 2.26 | 1.33% | - | - | 0.00% |
| Rental Car | 13,759 | 13,759 | 3 | 13,295 | 13,295 | 96.63% | 437 | 20.82 | 3.18% | 27 | 0.09 | 0.20% | - | - | 0.00% |
| TOTAL | 9,144,648 | 9,144,648 | | 8,994,700 | 8,994,700 | | 5,750 | 273.82 | | 52,110.9340 | 168.10 | | 92,087 | 70 | |

| | Total | | | CO2 | | | CH4 | | | N2O | | | HFC | | |
|---------|-----------|-----------|---------|-----------|-----------|--------|----------|--------|-------|----------|--------|-------|----------|--------|-------|
| | mt CO2-e | mt CO2-e | % | mt CO2-e | mt CO2 | % | mt CO2-e | mt CH4 | % | mt CO2-e | mt N2O | % | mt CO2-e | mt HFC | % |
| Scope 1 | 1,007,201 | 1,007,201 | 100.00% | 898,464 | 898,464 | 89.20% | 1,746 | 83 | 0.17% | 14,905 | 48 | 1.48% | 92,087 | 70 | 9.14% |
| Scope 2 | 8,071,070 | 8,071,070 | 100.00% | 8,031,082 | 8,031,082 | 99.50% | 3,509 | 167 | 0.04% | 36,479 | 118 | 0.45% | 0 | 0 | 0.00% |
| Scope 3 | 66,377 | 66,377 | 100.00% | 65,155 | 65,155 | 98.16% | 495 | 24 | 0.75% | 727 | 2 | 1.10% | 0 | 0 | 0.00% |

Appendix E: Revenue Normalized Emissions

| | Total | CO2 | | CH4 | | N2O / NOx* | | HFC | |
|----------------------------|--------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|
| | mt CO2-e / mln USD | mt CO2-e / mln USD | mt CO2 / mln USD | mt CO2-e / mln USD | mt CH4 / mln USD | mt CO2-e / mln USD | mt N2O / mln USD | mt CO2-e / mln USD | mt HFC / mln USD |
| Scope 1 Intensity | 7.9481 | 7.0900 | 7.0900 | 0.0138 | 0.0007 | 0.1176 | 0.0004 | 0.7267 | 0.0006 |
| Scope 2 Intensity | 63.6906 | 63.3751 | 63.3751 | 0.0277 | 0.0013 | 0.2879 | 0.0009 | 0.0000 | 0.0000 |
| Scope 3 Intensity | 0.5238 | 0.5142 | 0.5142 | 0.0039 | 0.0002 | 0.0057 | 0.0000 | 0.0000 | 0.0000 |
| Total GHG Intensity | 72.1625 | 70.9792 | 70.9792 | 0.0454 | 0.0022 | 0.4112 | 0.0013 | 0.7267 | 0.0006 |
| 2011 Revenue (million USD) | 126,723 | | | | | | | | |

* AT&T discloses only the N₂O portion of overall NO_x emissions as part of their annual GHG inventory.