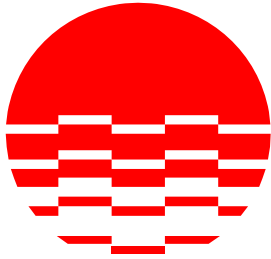


# Greenhouse Gas Inventory Management Plan (IMP)



# *Entergy*

Entergy Corporation  
New Orleans, LA

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Corporate Safety and Environment

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## **Entergy's GHG Commitment Snapshot**

Base Year – 2000

Original Commitment Years –	2001 to 2005
Original Commitment –	Stabilize at 2000 levels
Original Commitment Funding –	\$25 million (\$5 million per year)

Second Commitment Years –	2006 to 2010
Second Commitment –	20% below 2000 levels
Second Commitment Funding –	\$3.25 million (\$650K per year)

# **Entergy Corporation Greenhouse Gas Inventory Management Plan**

## **Introduction and Background**

In May 2001, Entergy publicly committed to stabilize CO<sub>2</sub> emissions from its power plants at year 2000 levels through 2005, and dedicated \$25 million in supplemental corporate funding to achieve this target over the five-year period. This commitment was focused on CO<sub>2</sub> emissions from fuel combustion at the company's power plants and requires that we:

- Stabilize CO<sub>2</sub> emissions from our U.S. power plants at year 2000 levels through 2005.
- Establish the \$25 Million Environmental Initiatives Fund (EIF) in support of achieving the 2001-2005 stabilization targets.
- Document activities and annual report progress (these updates for 2001 through 2004 are available at <http://www.energy.com/Corp/she/>).
- Employ an independent third party organization to verify measurement of Entergy's CO<sub>2</sub> emissions from U.S. power plants.

Entergy joined [EPA's Climate Leaders Program](#) in 2004 and began the process of renewing its GHG commitment by developing a detailed inventory of all GHGs resulting from its operations and documented the inventory development and results in this Inventory Management Plan (IMP). Entergy's second commitment includes:

- Stabilize CO<sub>2</sub> emissions from all Entergy operations at 20% below 2000 levels through 2010.
- Commit funding of \$3.25 million in support of achieving the 2005-2010 target.
- Document activities and annually report progress.

This IMP has been created according to the requirements in the [World Resources Institute](#) and the [World Business Council for Sustainable Development](#) Greenhouse Gas Protocol, [2004 revised edition](#), and formatted according to the US EPA Climate Leaders 2004 draft checklist of IMP components.

This IMP is used to create and document an inventory that is reported to the Climate Leaders program and other external parties. The Climate Leaders does not have a specific de minimus threshold. Accordingly, Entergy has made an estimate of all emissions, including small sources, for reporting to EPA under the Climate Leaders program and other external parties.

## **Partner Information**

Entergy Corporation (Entergy) is an integrated energy company engaged primarily in electric power production and retail distribution operations. Entergy owns and operates power plants with approximately 30,000 megawatts of electric generating capacity, and it is the second largest nuclear generator in the United States. Entergy delivers electricity to 2.7 million utility customers in Arkansas, Louisiana, Mississippi, and Texas. Entergy has annual revenues of more than \$13 billion (2008) and approximately 14,000 employees. Additional company information can be located at [www.entergy.com](http://www.entergy.com).

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## **Boundary Conditions**

*Consolidated Approach for Emissions Reporting* – Entergy has elected to include all company owned assets and those under a capital lease, consistent with “equity share” reporting under EPA and WRI reporting protocols. Where partial ownership share of an asset exists, only Entergy’s owned portion of the asset/emissions is included in the inventory. Additionally, Entergy has opted to include those emissions associated with the electricity purchased to support grid operations and meet customer demand, primarily due to an increased reliance on purchased power over the last few years. The GHG emissions resulting from the full life cycle of the various fuel sources are not included in the inventory.

Other emission sources (including transportation assets, sulfur hexafluoride (SF6), building air conditioning and refrigeration equipment, losses from natural gas distribution system, etc.) that have emissions estimated to be less than 1% of the total inventory are considered de minimus unless they are anticipated to change dramatically and grow above this threshold. Emissions of each GHG from facilities/assets that are de minimus are estimated and included in the inventory for each gas and/or source. The same data are used for future years unless one of the categories of emissions changes significantly. These estimates will be recalculated after major equipment changes, asset acquisition and/or asset divestiture in order to reconfirm de minimus status.

*Facilities List* –The majority of Entergy’s emissions are from fossil-fueled electricity generation facilities. However, other sources include small sources at other company facilities, The Facilities List (Attachment 1) identifies Entergy’s fossil-fueled electricity generation assets and ownership share; this list of generating facilities is publicly available on the [Entergy website](#) and is updated as needed. All other GHG emission-producing assets are assumed to be 100% owned by Entergy.

*List of GHGs Included* – Entergy includes the following from various sources in its inventory and management program:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)

- Nitrous Oxide (N<sub>2</sub>O)
- Sulfur Hexafluoride (SF<sub>6</sub>)
- Hydrofluorocarbons (HFC)

## **Entergy Corporation Emission Sources**

*Process for Identifying Emissions Sources* – The Climate Leaders spreadsheet “General Emission Source Checklist” (Attachment 2), created by Platts/E source as contractors to EPA’s Climate Leaders program, was utilized as an overall roadmap to help identify GHG emission sources at Entergy locations. Within each line item, a determination was made as to the applicability to Entergy’s operations. The findings of this analysis are presented in the section below. Additionally, publicly-available data, previous equipment inventories, internal company data and existing air permit information were utilized to identify GHG sources at company locations. This includes an extensive analysis and estimates of emissions from small combustion sources co-located at electrical power generating facilities. The specific information gathered and its sources are shown in Attachment 2 and summarized in the sections below. Entergy is confident that this methodology has captured emission estimate information for the majority of small source equipment at its locations.

### *Direct Sources*

Entergy’s direct emissions are included in the following categories:

- ⇒ Stationary combustion: Entergy’s direct sources of GHGs include emissions from the direct combustion of fossil-fuels in electrical generation boilers, small sources at company facilities.
- ⇒ Mobile Combustion: Fossil fuels combusted in company fleet vehicles.
- ⇒ Fugitive Emissions: Methane (CH<sub>4</sub>) from natural gas distribution systems, SF<sub>6</sub> from power transmission and distribution equipment, and HFCs from building HVAC systems and district cooling operations.

Company activity data sources including contacts and information for the various emissions from and/or usage of these assets are included in Attachment 2.

### *Indirect Sources*

Entergy's indirect sources of emissions include those from purchased electricity and electrical line transmission/conversion losses. Data sources for the various emissions from and/or usage of these assets are included in Attachment 2. All electricity consumed in the operation of generating plants and consumed in Entergy's various administrative and commercial buildings and operations are accounted for in Entergy's direct emissions for stationary combustion. Additionally, line losses for self-generated and purchased electricity are accounted for by the additional generation necessary to make-up for these losses. There are no other indirect sources included in Entergy's inventory or program.

### *Optional Sources*

Entergy is reporting emissions associated with power purchased to meet customer demand and support grid operations. This emission source is not required under EPA and WRI reporting protocols. Entergy has elected to report these emissions because it has decreased its self generation while increasing the amount of power it purchases. Subsequently, trends in the Direct emissions category will not accurately represent the full corporate emissions footprint and trends toward a reduction goal. Including purchased power presents the most accurate representation of the emission footprint required to support grid operations and meet customer demand.

## **GHG Emissions Quantification**

### *Quantification Method and Emission Factors*

The quantification methodologies used in the Entergy inventory are commonly accepted methods for measuring GHG emissions. For inventory years 2000-2004, Entergy used methodologies outlined in the EPA Climate Leaders Protocol, or methodologies proposed by Platts/E source staff and approved by EPA Climate Leaders staff. In a number of cases, Entergy has used conservative estimation methodologies for expected de minimus emission sources (<1% of corporate total). In all cases, these estimation methodologies have also been reviewed and approved by EPA Climate Leaders staff. When emissions are based on these conservative estimates, they are identified as such below.

Emission factors used for the initial inventory were derived from various sources including *USEPA Climate Leaders GHG Protocol* (derived from AP-42), US DOE, and the eGrid system. The quantification methodologies, emission factors and their sources can be found in the GHG inventory calculation spreadsheets, accessible through Entergy's internal website, [SENet](#). Entergy will remain engaged with the EPA Climate Leaders Program updates and staff in order to stay aware of any changes to quantification methodologies, emission factors, or protocol changes.

### *Direct Emissions*

Entergy's direct emissions are either measured directly via a continuous emissions monitoring (CEM) system, calculated using emission factors and fuel throughput or other relevant data, or estimated using equipment capacity factors and maximum fuel throughput data. The quantification method and data source for each major category of direct GHG sources is detailed below.

Fossil-Fuel Combustion Boilers and Gas Turbines – Entergy's electrical generation equipment is heavily regulated by state and federal agencies and is required to report emissions on a periodic basis. A continuous emission monitoring (CEM) system is used at most plants to directly monitor emissions. CO<sub>2</sub> is directly monitored in these systems and other GHGs, such as CH<sub>4</sub> and N<sub>2</sub>O, are calculated based on the data collected by these systems. However, in some cases, CO<sub>2</sub> is calculated based on fuel throughput and heat rate data. However the CO<sub>2</sub> number is derived, it is reported to the EPA as required under the Acid Rain Program. In 2008, this category represented 66.2% of the corporate total.

Source: This GHG emissions data is reported to the Safety and Environment Group by Entergy's Fossil Environmental Support Group annually (at a minimum).

Small Sources at Company Facilities – This category includes equipment such as emergency generators, house service boilers, natural gas-fired comfort heaters,

and other small combustion/emission sources not monitored by CEM systems at company facilities and major office buildings. Using an available equipment inventory and information contained in facility air permits and real estate personnel, small source emissions were calculated for each plant for which this data was available. This data was compiled in 1994 in the Fossil Operations Equipment Inventory. Entergy does not expect that these equipment lists have changed significantly since this inventory was prepared. These equipment profiles, data regarding maximum heat input, and assumed/derived capacity factors were used to develop small source emissions profiles for these four categories of plants: Nuclear, Fossil Base Load, Fossil Intermediate Load, and Fossil Peaking. This profile was then applied consistently across the Entergy plants where information regarding small source equipment was not available (about 3 or 4 plants). In 2008, this category represented 0.7% of the corporate total using conservative estimates calculated from the above data.

This exercise resulted in finding that this category of equipment across Entergy produces a de minimus amount of CO<sub>2</sub> emissions from fossil fuels; therefore, emissions of CH<sub>4</sub> and N<sub>2</sub>O from these sources were not calculated. Accordingly, a consistent factor of 0.5% was added to the inventory and will be carried forward annually unless a significant change in a small source equipment profile occurs at a facility.

Transportation Fleet Vehicles – Entergy’s Transportation Group maintains a detailed inventory of vehicles owned and/or leased throughout the company. This group also tracks information regarding the fleet’s fuel usage and miles traveled. Additionally, Entergy’s Aviation Group (part of Human Resources and Administration) maintains fuel usage information for our fleet of corporate aircraft. This information was used to calculate GHG emissions for this equipment category. In 2008, this category represented 0.1% of the corporate total. Entergy decided not to include GHG emissions resulting from employee

business travel and employee commuting. Fleet emissions were quantified using units of all mobile fossil fuels and default emission factors.

Source: The source of this information is the Manager, Transportation.

Fugitive Emissions: Methane – This category of emissions includes losses of methane from Entergy’s natural gas distribution system and Entergy’s natural gas storage facility. Losses of methane from the distribution system were estimated using the Gas Research Institute’s protocol which USEPA may adopt as its standard methodology for quantifying these emissions. This protocol uses input data such as miles of pipe and number of services (steel, coated, and plastic), number of meters (commercial and residential) and gas vented to estimate methane emissions from these types of distribution systems. The emissions from the storage facility were estimated, using Tier 1 factors for natural gas storage for both vented and fugitive natural gas. In 2008, this category represented 0.3% of the corporate total.

Source: These input data were obtained from the Manager, Gas Distribution Operations and Fossil Operations, Sabine Plant.

Fugitive Emissions: HFCs – This category of emissions includes losses of HFCs from HVAC equipment at buildings which Entergy owns or for which it holds a capital lease, from Entergy’s district cooling/thermal operations (chillers), and from Entergy vehicular air conditioning. For the indoor air cooling equipment, square footage of company building space was collected and an emission factor developed by Platts/E source was applied to this number in order to estimate HFC losses from this equipment. This emission factor is based on national averages of tonnage of equipment per square foot of space and average leakage rates of common air conditioning equipment. An investigation revealed that no HFC-based air or water pre-cooling is performed at any Entergy electric power generation facilities. Conservative estimates were completed for all sources of HFC emissions; this category of emissions was determined to be de minimus. In

2008, this category represented less than 0.01% of the corporate total. For the district cooling operations, information regarding chiller equipment located at these facilities, along with estimates of equipment leakage rates were used to derive the initial inventory estimates. The calculations behind all factors used in estimating HFC emissions can be found in the inventory documents.

Source: The source of this information was the Manager, Real Estate Operations and the Director, Thermal Operations.

Fugitive Emissions: SF6 – This category of emissions includes unintentional releases of SF6 used in electricity transmission equipment. Emissions of this gas are estimated using a protocol similar to the protocol utilized for EPA’s SF6 Emission Reduction Partnership Program. The protocol for derivation of this emission estimate is primarily a mass balance exercise. In 2008, this category represented 0.5% of the corporate total.

Source: The source of this information is the Manager, Claims and Environmental in Entergy’s Transmission and Distribution Organization. SF6 emissions are reported to Corporate Safety and Environment at least once per year.

Estimates completed for each fugitive GHG emissions category above resulted in finding that **aggregated fugitive emissions from all sources across Entergy are de minimus**. Accordingly, a consistent quantity of emissions is included in the inventory for each emissions source category and will be carried forward annually unless a significant change in this category occurs.

#### *Indirect Emissions*

Transmission/Distribution System Line Losses – Line losses associated with power purchased to support the utility operations are considered required Indirect emissions under EPA and Scope 2 Indirect under WRI reporting requirements. Emissions from T&D losses of purchased power are calculated by applying Entergy’s system loss factor to the total amount of power purchased. The custom

loss factor is developed using power data from the 5 utilities' FERC 1 forms (specific data noted in "purchased power" worksheet in inventory). This custom factor was calculated for 2004 data using 2004 FERC forms. Because 2004 is the base year inventory for Climate Leaders, the custom loss factor calculated for 2004 was applied to purchased power amounts of previous years of GHG inventories (2000-2003) rather than recalculating this factor for each prior year. This emission estimate is calculated and presented; however, it is not subtracted from the purchased power emission number described below since the bulk of purchased power is generated from within Entergy's service area. T&D line losses are already accounted for in the extra generation required to make up for these losses.

#### *Optional Emissions*

Purchased Power – This category of emissions includes those from power purchased by Entergy to supplement its own supply in order to meet customer demand and/or support utility operations. In some cases, the source of this power is known (controllable or unit-contingent purchases). These purchases made up 18% of total power purchases in 2003 and 24% in 2004. This increased to over 47% in 2008. The remaining sources of purchased power is not known (non-controllable or grid purchases). Under the EPA and WRI protocols, including emissions from power purchased by utilities is optional. Entergy has opted to include all purchased power in its GHG inventory and subsequent tracking since these purchases are required to meet customer demand and in order to fully characterize the GHG footprint of its operations. In 2008, this category represented 32.1% of the corporate total.

Both controllable and non-controllable purchase information (in terms of millions of megawatt-hours) was collected. In the case of non-controllable purchases, emission factors from the eGRID system were used to calculate GHG emissions. In the case of controllable purchases, supplier-specific emission rate information, where available, was used to develop a supplier-specific custom GHG emissions

factor. If supplier-specific GHG emission factors were not available, the regional grid factor was used as a default.

Source: All data regarding power purchases were obtained and are available from Entergy's System Planning Group. Primary contact for the data was the Sr. Staff Engineer in the Energy Analysis and Reporting Group.

## **Data Management**

### *Activity Data*

In all cases, the best available activity data was used to calculate or estimate emissions from a specific source. All collected data for each source is maintained by the data source identified in the previous section.

The primary source of data related to Entergy's largest category of emissions (representing approximately 68% of total corporate emissions in 2008 when purchased power is included) is CEM system data. CEM data from monitored plants is managed by Entergy's Fossil Environmental Support Group. CEM data is closely managed and maintains a high level of quality control as required by EPA regulations (40 CFR Part 75). The Director, Fossil Environmental Support is responsible for maintaining these data. Power purchase information is managed by the Manager, System Planning.

### *Data Management*

All data required for the inventory is either reported to or collected by the Manager, Corporate Environmental Operations in the Safety and Environment Group during its annual metrics collection requirement contained in the SH&E Functional Procedure. This information is maintained in electronic files and calculation spreadsheets. Annual inventories and IMP updates will be published and posted on SENet, Entergy's intranet portal for all information related to Safety and Environmental. Entergy will continue to use and update the inventory template in future years in order to remain as consistent as possible.

### *Key Performance Indicator Selection and Data Collection*

Entergy's goal is to reduce GHG emissions to 20% below 2000 levels on an absolute basis. The goal does not use emissions intensity. Therefore, Key Performance Indicator Selection and Data Collection are not required components of the IMP.

### *Data Collection Process Quality Assurance*

The company data keepers for data identified in the previous section are responsible for maintaining data quality assurance. Every effort should be made to ensure that the data reported are accurate and complete. The Safety and Environment Group will evaluate the data, once collected, to ensure that it is reasonable and consistent with past years.

As part of the process each data manager uses for collecting GHG data, they must define and document any areas of possible error and the QA/QC actions they use to maintain accuracy. CEMS data quality is maintained in accordance with the compliance requirements contained in EPA regulations (40 CFR Part 75). Any departures from these data quality measures (i.e. non-compliance events) should be communicated to Corporate S&E. Possible errors in emissions factors and calculations are also documented with the emissions factors and calculations records. Any inconsistencies and large unexpected changes from the previous year's data should be sufficiently explained when the data is transmitted. The Manager, Corporate Environmental Operations will compare the current year's data for each source category to the previous year's data in order to identify any large, unexpected variations. The data should also be reviewed and all calculations that are required to ensure that the calculations are correct.

### *Data Collection System Security and Integrated Tools*

Data is typically transferred through Entergy's e-mail system. Security of this system is the responsibility of the IT group. Security of the data once it is collected and consolidated is the responsibility of the Safety and Environment Group. Every effort will be made to ensure the security of the inventory information. Entergy's [SENet](#) will serve as the final publication repository for the GHG inventory. SENet is accessible by all employees through any computer connected to the internal network.

### *Frequency*

Data will be reported to/collected by the Safety and Environment Group on an annual basis. This information will be used to produce an updated GHG inventory each year. No later than the end of the 2<sup>nd</sup> quarter of each year, the Safety and Environment Group

will produce an updated inventory for the previous calendar year. This updated inventory will be used to track progress against the reduction goal. Annual totals will also be entered into the EPA Climate Leaders Emissions Summary Form and submitted as required by the program. Annual inventories will also be sent to E source for review at this time.

## **Base Year**

*Adjustment for Structural Changes* – The base year (2000) will be adjusted for mergers, acquisitions, and divestitures that occur during the reporting time frame for the goal. Actual yearly emissions the acquisition of each emission-producing entity/asset that existed during the base year will be added to the base year and each year that follows. Emissions from divestitures of assets that existed during the base year will be removed from the base year and every year that follows. Mergers and capital leases on emission-producing assets will be planned in the same manner as the acquisitions to the degree that it is practical. There are no planned adjustments for outsourcing. Mergers, acquisition, divestitures, and capital leases will be identified by the Safety and Environment Group and integrated into the GHG inventory for the calendar year when the deal closes. Additionally, data managers should keep Safety and Environment informed of any such changes. Finally, Safety and Environment will monitor such changes through the investment approval process, which it participates in on a regular basis.

*Adjustment for Methodology Changes* - Changes will be made to calculations and emissions factors only if justified by regulatory changes, scientific/engineering judgment, or if the US EPA Climate Leaders program/specifications require it. The Vice President, Safety and Environment will make the final decision as to whether or not make such adjustments. In cases where changes are made, the changes will be made to all years in the inventory, including the base year, so that all emissions are reported using the same basis for all years. Any significant changes will be reviewed with US EPA Climate Leaders program staff before making the changes.

An **IMP Revision Log** is included in this document as Attachment 4 and should be used to document any structural or methodological changes to corporate greenhouse gas inventories or this IMP.

## **Management Tools**

### *Roles and Responsibilities*

The Director, Corporate Environmental Programs is responsible for overall GHG program management and external reporting. This individual is also responsible for compiling the data required to update the GHG inventory on an annual basis before the end of Q2 and for evaluating the reasonableness of the GHG data.

The Vice President, Safety and Environment reviews changes to the programs that Entergy participates in and updates the IMP as needed. These responsibilities are defined in more detail in specific sections of this IMP. The Safety and Environment Group then produces and distributes needed reports summarizing the emissions inventory and progress toward the goal.

The Safety and Environment Group also provides guidance and feedback to relevant company Managers and Directors on what sources to include in the inventory, what data to use and collect, and what emissions factors are most appropriate.

Various Managers and Directors around the company are responsible for maintaining the data necessary to complete the inventory and subsequent updates. Entergy's Environmental Leadership Team (ELT) reviews and approves the summary of each year's data.

### *Communication*

The IMP will be communicated upon initial finalization and subsequently on a periodic basis, as needed. Opportunities for communication with Data Managers include when training is delivered, when data requests are made and when the IMP is revised.

### *Training*

Entergy currently has no training materials available regarding GHG management or inventory. A training program will be developed over time, using the IMP as a

reference tool, in order to provide employees and data managers an understanding of the system.

*Document Retention and Control Policy*

Entergy's GHG management program and all relevant records and documentation should be managed in accordance with [Entergy's Records Management & Retention Policy](#). Entergy's SENet will serve as the final publication repository for the GHG inventory. SENet is accessible by all employees through any computer connected to the internal network.

Data verification and documentation is essential for the authenticity of this program. To maintain a high standard, all records verifying the GHG inventories and registry contents will be maintained by the Corporate Safety and Environment Group for a minimum of three years. Documentation of GHG reduction project expenditures and project close-out reports shall also be maintained for a minimum of three years.

## **Auditing and Verification**

### *Internal Auditing*

Internal auditing of the GHG program will be conducted by Safety and Environment staff. Some of the data used to develop emission estimates are also audited through Entergy's Safety and Environment Audit Program (i.e., CEMS data/processes) administered by Corporate Safety and Environment. Findings related to the GHG Inventory will be provided to the VP, S&E who will determine the responsible individual for each finding's corrective action. The audit will include a review of the IMP and the latest version of the inventory. Changes to the IMP driven by audit results will also be entered into the IMP Revision Log (Attachment 4).

### *External Validation and/or Verification*

Entergy is committed to an external third-party audit of the GHG baseline data, calculations, and records. This third-party verification of the program will be conducted at least every other year, including 2006 and the goal year.

### *Management Review*

The GHG emissions summary data will be reviewed and approved annually by the ELT. Goal setting, progress toward meeting goals, and any additional action or options necessary to meet the goals will be covered in this management review. The VP, S&E will certify that the information has been reviewed and found to be substantially compliant with this IMP. Additionally, this information will be presented to our Safety and Environmental Executive Forum and to the Audit Committee of the Board of Directors during our annual reporting cycle.

### *Corrective Action*

Any findings identified through QA/QC and internal and external audits related to the greenhouse gas inventory or IMP are assigned to the appropriate Manager or Director for action by the VP, S&E. The VP, S&E will maintain a list of identified gaps related to the program, the person that is responsible for closing the gap, and the required timing for

gap closure. Changes to the IMP driven by this process will also be entered into the IMP Revision Log (Attachment 3).

Any findings identified through QA/QC and internal and external audits related to the GHG emission inventory, calculations, or reporting are assigned to the VP, S&E or his designee.

**Attachment 1**

**Facilities List**

## Entergy Facility List

Generating facility and EPA Acid Rain Unit ID	EPA Acid Rain Unit ID (Entergy ID if different)	Max capacity (MW)	State	Entergy equity share of unit	Primary fuel(s)
A B Paterson	3	56	LA	100%	Gas/Oil
A B Paterson	4	87	LA	100%	<u>Gas/Oil</u>
Arkansas Nuclear One	1	838	AR	100%	Nuclear
Arkansas Nuclear One	2	992	AR	100%	Nuclear
Atalla	11		MS	100%	Gas
Atalla	21		MS	100%	Gas
Baxter Wilson	1	550	MS	100%	Gas/Oil
Baxter Wilson	2	771	MS	100%	Gas/Oil
Big Cajun 2	2B3 (3)	257	LA	42%	Coal
Carpenter Dam	1	29	AR	100%	Hydro
Carpenter Dam	2	30	AR	100%	Hydro
Cecil Lynch	2	74	AR	100%	Gas/Oil
Cecil Lynch	3	130	AR	100%	Gas/Oil
Delta	1	104	MS	100%	Gas/Oil
Delta	2	103	MS	100%	Gas/Oil
Fitzpatrick	1	838	NY	100%	Nuclear
Gerald Andrus	1	761	MS	100%	Gas/Oil
Grand Gulf	1	1267	MS	100%	Nuclear
Hamilton Moses	1	72	AR	100%	Gas/Oil

Hamilton Moses	2	72	AR	100%	Gas/Oil
Harrison County Power Project	GT-1		TX	60.9%	Natural gas
Harrison County Power Project	GT-2		TX	60.9%	Natural gas
Harvey Couch	1	30	AR	100%	Gas/Oil
Harvey Couch	2	131	AR	100%	Gas/Oil
Independence	1	472	AR	57%	Coal
Independence	2	332	AR	39%	Coal
Indian Point	3	1010	NY	100%	Nuclear
Indian Point	2	1025	NY	100%	Nuclear
Lake Catherine	1	52	AR	100%	Gas/Oil
Lake Catherine	2	51	AR	100%	Gas/Oil
Lake Catherine	3	106	AR	100%	Gas/Oil
Lake Catherine	4	547	AR	100%	Gas/Oil
Lewis Creek	1	260	TX	100%	Gas/Oil
Lewis Creek	2	260	TX	100%	Gas/Oil
Little Gypsy	1	244	LA	100%	Gas/Oil
Little Gypsy	2	436	LA	100%	Gas/Oil
Little Gypsy	3	573	LA	100%	Gas/Oil
Louisiana Plant 2	10	40	LA	100%	Gas/Oil
Louisiana Plant 2	11	40	LA	100%	Gas/Oil
Louisiana Plant 2	12	60	LA	100%	Gas/Oil
Michoud	1	113	LA	100%	Gas/Oil
Michoud	2	244	LA	100%	Gas/Oil

Michoud	3	561	LA	100%	Gas/Oil
Monroe	11	41	LA	100%	Gas/Oil
Monroe	12	71	LA	100%	Gas/Oil
Natchez	1	73	MS	100%	Gas/Oil
Ninemile Point	1	74	LA	100%	Gas/Oil
Ninemile Point	2	107	LA	100%	Gas/Oil
Ninemile Point	3	135	LA	100%	Gas/Oil
Ninemile Point	4	748	LA	100%	Gas/Oil
Ninemile Point	5	763	LA	100%	Gas/Oil
Perryville	1-1		LA	100%	Gas/Oil
Perryville	1-2		LA	100%	Gas/Oil
Perryville	2-1		LA	100%	Gas/Oil
Pilgrim	1	681	MA	100%	Nuclear
R S Cogen	RS-5		LA	50%	Natural gas
R S Cogen	RS-6	425	LA	50%	Natural gas
R S Nelson	3	146	LA	100%	Gas/Oil
R S Nelson	4	500	LA	100%	Gas/Oil
R S Nelson	6	385	LA	70%	Coal
Rommel Dam	1	4	AR	100%	Hydro
Rommel Dam	2	3	AR	100%	Hydro
Rommel Dam	3	4	AR	100%	Hydro
Rex Brown	1A	?	MS	100%	Natural gas
Rex Brown	1B	?	MS	100%	Natural gas

Rex Brown	3	?	MS	100%	Gas/Oil
Rex Brown	4	?	MS	100%	Gas/Oil
Riverbend	1	968	LA	100%	Nuclear
Robert E Ritchie	1	356	AR	100%	Gas/Oil
Robert E Ritchie	2	544	AR	100%	Natural gas
Sabine	1	230	TX	100%	Gas/Oil
Sabine	2	230	TX	100%	Gas/Oil
Sabine	3	420	TX	100%	Gas/Oil
Sabine	4	530	TX	100%	Gas/Oil
Sabine	5	480	TX	100%	Gas/Oil Natural Gas
Spindletop	NA	NA	TX	100%	Gas Storage
Sterlington	10	?	LA	100%	Gas/Oil
Sterlington	7AB	?	LA	100%	Gas/Oil
Sterlington	7C	?	LA	100%	Gas/Oil
Thermal – Houston	NA	NA	TX	100%	Thermal Unit
Thermal – New Orleans	NA	NA	LA	100%	Thermal Unit
Top of Iowa	NA	80	IA	50%	Wind
Vermont Yankee	1	498	VT	100%	Nuclear
Warren	AA-001		MS	75%	Natural gas
Warren	AA-002		MS	75%	Gas/Oil
Warren	AA-003		MS	75%	Gas/Oil
Warren	AA-004		MS	75%	Gas/Oil
Waterford	1	411	LA	100%	Gas/Oil

Waterford	2	411	LA	100%	Gas/Oil
Waterford	3	1158	LA	100%	Nuclear
White Bluff	1	465	AR	57%	Coal
White Bluff	2	481	AR	57%	Coal
White Deer	NA	80	TX	50%	Wind
Willow Glen	1	172	LA	100%	Gas/Oil
Willow Glen	2	224	LA	100%	Gas/Oil
Willow Glen	3	522	LA	100%	Gas/Oil
Willow Glen	4	568	LA	100%	Gas/Oil
Willow Glen	5	559	LA	100%	Gas/Oil

**Notes:**

1 – Louisiana Station – only Plant 2 included since it is included in the EGSI regulated rate base. Plant one is on a long-term capital lease to Exxon and is not considered an Entergy generating asset.

**Attachment 2**

**Entergy Corporation General Emissions Source Checklist**

## Entergy Corporation General Emission Source Checklist

Emissions source category	GHG	Emissions source	Data Source/Comments
<b>Direct emissions</b>			
<b>Stationary Combustion</b>			
Fossil fuels	CO2	Boilers	CEMS data from Fossil Environmental Support Group
		Emergency/Backup Generation and other Small Sources	An inventory of all potential emission sources at Entergy locations was performed in 1994. The package of information for each Fossil site that includes a summary table of potential emission sources and maximum heat input for each non-boiler combustion source. This information was supplemented by information in air permits.
		cogeneration	RS Cogen is the only cogeneration plant in Entergy. CEMS data for this site is available from public sources. Ownership share was accounted for.
	CH4	CH4 from stationary combustion	Calculated from CEMS data
	N2O	N2O from stationary combustion	Calculated from CEMS data
<b>Mobile Combustion</b>			
Fossil Fuels	CO2	employee transportation in company vehicles	See spreadsheet for fuel activity by year, mileage driven by year, number of vehicles by type (car, light truck, heavy trucks, etc.) and by fuel. These data, along with emission factors, were used to estimate emissions from these sources. Source is Mic Cowart, Entergy's Manager of Transportation (8-633-2142)
		company service vehicles	
	CH4	CH4 from mobile combustion	
	N2O	N2O from mobile combustion	
<b>Fugitive Emissions</b>			
Gas Distribution System Line Losses	CH4	Leaks in or venting of gas distribution system in New Orleans and Baton Rouge	<p>Lost and Unaccounted for Gas (LUGF) for 2000 - 2004 from the Statistical Report is one source of this data; however, it may not be accurate enough. Subsequently, an alternative equipment-based calculation was used for estimating emissions (see below)</p> <p>Gas Distribution Operations provided these data and they can also be found in the Statistical Report. (Line Losses (LUGF)) - Mike Leger - Manager, Gas Distribution Operations Support (8-567-3579)</p> <p>Basically, these numbers represent the starting inventory + purchases -</p>

## Entergy Corporation General Emission Source Checklist

			<p>sales. However, it is likely that the majority of this is attributed to meter inaccuracy, company uses, and other factors which introduce uncertainty. Mike Leger, Entergy's Gas Distribution Operations Support Manager, estimates that at most, 30% of these numbers represent actual, physical losses.</p> <p>An equipment-based quantification methodology was used for these emissions. Mike Leger also provided a spreadsheet that contains a list of gas distribution assets (miles of pipe and what type, number of meters, etc.) and Platts used a GRI protocol to develop emission estimates.</p> <p>Mike Leger has subsequently been replaced by Keith McInerney, current Manager, Gas Distribution Operations.</p>
T&D Equipment Gas Loss	SF6	Leakage of SF6 from certain types of T&D equipment	<p>2003 1605(b) report SF6 Management Program – Rick McCabe established as the SME for this particular gas – provided 2004 emissions</p> <p>1997 - 1082.42 lbs 1998 - 649.62 lbs 1999 - 649.62 lbs 2000 – NO DATA 2001 – NO DATA 2002 - 30,360 lbs 2003 – NO DATA 2004 – 22700 lbs</p> <p>Rick McCabe (T&amp;D Environmental Management) has developed a protocol to derive these emissions.</p>
Cooling Operations	HFC	Building cooling/air conditioning	<p>Owned square footage: 2,578,000 Capital leased square footage: 830,000 These numbers do not include power plants, estimate 25,000 - 50,000 square feet per power plant</p> <p>Source is Ken Looper - Manager, Real Estate (576-4505)</p>
		Mobile air conditioning	Derived from vehicle usage information – see item above. Emission factor used to estimate HFC emissions from this source
		District Cooling Operations	Information regarding equipment/coolant ratings and capacities obtained from the Director, Thermal Operations (John Carlson – 8-561-2120). Emission factors used to estimate emissions.
<b>Indirect Emissions</b>			
Fossil Fuels	CO2	purchased electricity	<p>2000 – 24.05 million MWh 2001 – 19.32 million MWh 2002 – 27.16 million MWh 2003 – 37.57 million MWh (Controllable = 6.61; balance is UC) 2004 – 38.05 million MWh (Controllable = 9.23; balance is UC)</p> <p>Information regarding specific sources of purchased power was not tracked in 2000 - 2002; therefore, unit-specific data required to calculate emissions is not available for this timeframe. However, unit-specific data is available for 2003 and 2004.</p> <p>All of this information obtained from System Planning and Operations (Jim Lanning 504-576-6337)</p>
	CH4	purchased electricity	
	N2O	purchased electricity	
Transmission and Distribution	CO2	Losses from electricity T&D for purchased power only	USEPA/Climate Leaders is currently developing a protocol to calculate these emissions. Currently, this is not included in Entergy's GHG inventory.
Green power		Purchased Green Power (non-biomass)	<p>2000 - 488,922 MWh</p> <p>In 2000, Entergy owned and operated 3 hydro facilities totaling 150 MW. Additionally, Entergy purchased power from other hydro assets...this total is shown.</p> <p>This information was obtained from Entergy's 1605(b) report.</p>

**Attachment 3**  
**IMP Revision Log**

