Entergy Corporation Greenhouse Gas Inventory for Calendar Year 2016

Verification Report

March 8, 2017

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Statement of Verification

March 8, 2017

Entergy Corporation
Environmental Strategy & Policy Group
Entergy Services, Inc.
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Scope

Entergy Corporation ("Responsible Party") engaged ICF in cooperation with Cventure LLC ("ICF") to review Entergy Corporation's 2016 Corporate Greenhouse Gas ("GHG") Inventory, and supporting evidence including Entergy's Inventory Management Plan and Reporting Document ("IMPRD"), detailing the GHG emissions and associated source documents over the period January 1, 2016 to December 31, 2016 inclusive. These components are collectively referred to as the "GHG Assertion" for the purposes of this report.

The Responsible Party is responsible for the preparation and presentation of the information within the GHG Assertion. Our responsibility is to express a conclusion as to whether anything has come to our attention to suggest that the GHG Assertion is not presented fairly in accordance with generally accepted GHG accounting standards, in particular, *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, Revised Edition, World Resources Institute and World Business Council for Sustainable Resource Development, March 2004.*

Methodology

We completed our review in accordance with the ISO 14064 Part 3:2006 *Greenhouse Gases: Specification with guidance for the validation and verification of greenhouse gas* assertions. We planned and performed our work in order to provide a limited level of assurance with respect to the GHG Assertion. Our review criteria were based on *The Greenhouse Gas Protocol* and quantification methodologies referenced in Entergy's IMPRD. We reviewed the GHG Assertion and associated documentation and believe our work provides a reasonable basis for our conclusion.

Conclusion

Based on our review, nothing has come to our attention that causes us to believe that the GHG Assertion is materially misstated. The emission estimates were calculated in a consistent and transparent manner and were found to be a fair and accurate representation of Entergy Corporation's actual emissions and were free from material misstatement. ICF has verified a total of **39,870,814** metric tons of CO_2 equivalent (CO_2e) emissions for calendar year 2016.

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1. Verification Summary

Lead Verifier:	Julie Tartt (ICF)
Associate Verifier:	Kevin Johnson (Cventure), Sheldon Fernandes (ICF)
Technical Experts:	Kevin Johnson (Cventure), Mollie Averyt (ICF)
Internal Peer Reviewer:	Selena Fraser, P.Eng. (ICF)
Verification Timeframe:	December 2016 to March 2017
Objective of the verification:	Limited level assurance on Entergy's 2016 Corporate GHG Inventory
Assurance being provided to:	Entergy Corporation
Standard being verified to:	ISO 14064-3:2006 Specification with guidance for the validation and verification of greenhouse gas assertions
Verification criteria employed:	The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, Revised Edition, World Resources Institute and World Business Council for Sustainable Resource Development, March 2004
Verification scope – Gases:	Carbon Dioxide, Methane, Nitrous Oxide, Sulfur Hexafluoride, Hydrofluorocarbons
Organization:	Entergy Corporation
Inventory Boundary:	Equity share of Entergy's corporate operations including electric power production and retail distribution operations as well as its natural gas distribution operations throughout the 2016 calendar year
Location:	U.S.A.
Reporting Year:	January 1, 2016 to December 31, 2016 (inclusive)
Verification Summary:	No material misstatements were detected in the final GHG Assertion. Limited level assurance Verification Statement issued.

Main Contact (Verifier)	Julie Tartt Senior Manager, ICF 400 University Avenue, 17th Floor, Toronto, Ontario M5G 1S5, Canada Email: julie.tartt@icf.com Tel: (416) 341-0127
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2. Introduction

Entergy Corporation ("Entergy") has prepared a voluntary greenhouse gas ("GHG") inventory for its corporate operations active through the 2016 calendar year. Entergy has engaged ICF to provide a third-party verification of the GHG inventory, including Scope 1, Scope 2, and select Scope 3 emissions, ("GHG Assertion") for voluntary GHG reporting purposes for the 2016 calendar year. Cventure LLC serves as a partner to ICF in the verification exercise.

The quantification of Entergy's corporate GHG emissions inventory is guided by the World Resources Institute and World Business Council for Sustainable Resource Development's *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, Revised Edition, March 2004* ("the GHG Protocol"), using an equity share approach to establish the inventory boundary. The 2016 GHG inventory includes the following emissions sources (as depicted in the figure on the next page):

Scope 1**:** Stationary combustion in electric generating units and small sources at company facilities; mobile combustion in company fleet vehicles; fugitive methane from natural gas transmission and distribution ("T&D") systems; fugitive sulfur hexafluoride (SF_6) from electric power T&D systems; and fugitive hydrofluorocarbons (HFCs) from building HVAC systems and vehicle air conditioning systems.

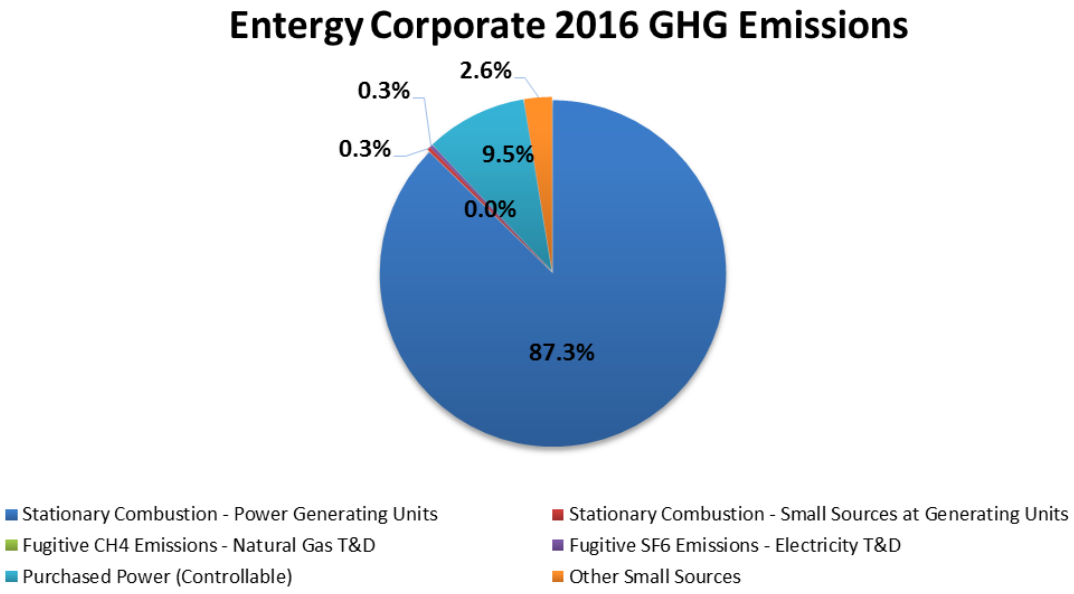
Scope 2: Indirect emissions associated with grid purchased power for wholesale generation plants (outside of Entergy's regulated electricity transmission service territory).

Scope 3: Indirect emissions associated with controllable purchased power[1] for resale to end-users; customer consumption of distributed natural gas; and Entergy employee commuting.

The GHG emissions associated with all electricity consumed in the operation of Entergy's generation facilities and in Entergy's various administrative and commercial buildings and operations, in the regulated service territory, are accounted for in the Scope 1 direct emissions from stationary combustion. In addition, emissions associated with line losses through electric power T&D systems are also captured in the Scope 1 emissions associated with stationary combustion. The GHG emissions associated with the full life cycle of the various fuel sources consumed through Entergy's business operations are not included in the inventory. In line with the 2013, 2014, and 2015 inventories and Entergy's utility generation portfolio listed on the company's website[2], emissions associated with Louisiana Station Plant 1 are also not included in the 2016 inventory, as this plant generates electricity for the sole use of ExxonMobil under a long term lease agreement.

GHG emissions from stationary combustion and controllable purchased power in aggregate comprise approximately 97% of Entergy's total 2016 corporate GHG emissions.

[1] Controllable purchased power is defined as power for which the originating source (generating plant) is known and for which Entergy has made a direct buying decision.
[2] http://entergy.com/content/operations_information/Utility_Fossil_and_Renewable_Portfolio.pdf



Other Small Sources in the figure above, comprising approximately 2.6% of the inventory, include emissions associated with: mobile combustion, purchased electricity for business operations outside Entergy service territory, fugitive CH_4 (natural gas T&D), fugitive HFCs (HVAC systems and vehicles), consumer consumption of distributed natural gas, and employee commuting.

This is the ninth year in which ICF has been engaged by Entergy for verification services pertaining to its annual corporate inventory.

This document describes the terms and scope of this verification. It serves to communicate the findings of the verification.

3. Verification Execution

The scope of the verification was defined during the verification planning stage and is detailed in the Verification Plan, which is appended to this document. The Verification Plan also describes ICF's verification process that was executed through the course of the verification. The specific verification procedures that were planned and executed through the verification process are described in the appended Plan. The Verification Plan has evolved during the course of the verification exercise; the final version of the Plan is in the Appendix.

The 2016 GHG inventory verification focused primarily on direct emissions associated with fossil fuel consumption at large electric generating facilities using Continuous Emission Monitoring System ("CEMS") data, and indirect emissions associated with purchased power. Entergy's 2016 GHG Inventory includes several small emissions sources (small stationary combustion; fugitive emissions of SF_6 associated with electricity T&D; and customer consumption of distributed natural

gas), some of which are *de minimus*[3] in nature (mobile combustion in company fleet vehicles; employee commuting; and fugitive CH_4 associated with natural gas T&D; and HFCs from air conditioning/cooling refrigerant systems). All emissions sources in Entergy's corporate 2016 GHG inventory have been reviewed with a focus on stationary combustion from electric generating units and purchased power, given the risk-based approach used in this verification.

3.1 Site Visit/Interviews

A site visit was conducted during the period of January 30 to February 1, 2017 in Mississippi and Louisiana. The site visit and interviews consisted of two types of meetings. One set of meetings was devoted to better understanding the operations, data gathering processes and links to data systems, management controls, and overall Entergy information systems through telephone interviews with key Entergy personnel. The second included visits to Entergy's Hinds Gas Plant in Mississippi, Ouachita and Perryville Combined Cycle Gas Plants in Louisiana, and Attala Combined Cycle Gas Plant in Mississippi, as part of our sampling exercise in an effort to obtain data from plants and to better understand GHG information and data management systems. This included a review of all GHG emissions sources at the facilities through a review of the process flow and data flow diagrams. Subsequently, a review of metering and data management processes was discussed with control room operations staff, including a review of meter calibration/validation procedures.

The site visit was an important step in planning and executing the verification. During the course of the telephone interviews as well as the plant tours, ICF interviewed key site operations personnel regarding power and fossil fuel generation plants operations and environmental data management at Entergy.

Key Entergy staff interviewed over the phone included:

- Grady Kaough, Andrew Dornier and Bruce Wilhelm, Power Trading Operations and Intra-System Billing ("ISB")
- Tad Chenet and Minh Nguyen, CEMS Information and Small Stationary Combustion Sources
- David Sommers, David Bruess and Jill Siekmeier, Fuel Supply and Oil & Gas Energy Analytics
- Scott Marino and Rachel Hill, Fuel Data Management, Coal, Rail Car Management
- KT Huang and Daniel Tegtmeier - Performance Monitoring and Diagnostics ("PM&D")
- Melissa Lejeune and Charmaine Johnson, Generation and Fuel Accounting
- Toby Chu, Kelly McQueen and Kim Fuller, Environmental Management - SF_6 Quantification
- Leon Hinson, Gas Operations
- Kyle Sannino and Tuongvi Tran, Line Loss Discussion

[3] Entergy describes emissions sources that have been estimated to be less than 1% of the total inventory as *de minimus* in its IMPRD

Key Entergy staff interviewed in-person during the Hinds, Ouachita, Perryville and Attala plant site visits included:

- Kyle Sykes, Environmental Specialist, Hinds and Attala Plants
- Kathy Brown, Environmental Specialist, Ouachita and Perryville Plants
- Martha Hester, Mississippi Air Lead
- Mike Bell, Hinds Plant Instrument Technician
- Bruce Bryan, Hinds Plant Manager
- Richard Corvers, Senior Environmental Analyst, Ouachita and Perryville Plants
- JB Gates, Plant Manager & Production Superintendent, Ouachita Plant
- Bill Rey, Plant Manager, Perryville Plant
- Ryan Arnold, Production Technician, Attala Plant
- Tim Stone, Attala Plant

3.2 Verification Approach

This section that follows outlines the approaches used to review the main emissions sources in the 2016 GHG inventory.

Stationary Combustion: Fossil Fuel Usage at Generating Facilities

The entire inventory of Entergy fossil fuel generation units was reviewed at a limited depth, and a significant sample of data from select units was reviewed in greater detail. Generation units were selected for detailed audit trail reviews based primarily on relative contribution to the 2016 corporate GHG emissions inventory, e.g., using the 1% de minimus accounting methodology/reporting threshold of Entergy's GHG inventory, as unit selection screening priority. Other considerations in selecting units for detailed review included large, "sister" units at the same selected generation plant, availability of facility fuel usage validation data (for gas-fired facilities), and to account for some overlap with last year's samples (to test for any changes).

The twenty-seven (27) generation units selected for this more detailed desktop review included the following 5 coal and 22 natural gas units:

Coal

- Independence 1
- Independence 2
- RS Nelson 6
- White Bluff 1
- White Bluff 2

Gas

- Attala AO1

- Attala AO2
- Baxter Wilson 2
- Hinds HO1
- Hinds HO2
- Lewis Creek 1
- Lewis Creek 2
- Little Gypsy 2
- Little Gypsy 3
- Ninemile Point 4
- Ninemile Point 5
- Ninemile Point 6A
- Ninemile Point 6B
- Ouachita CTGEN1
- Ouachita CTGEN2
- Ouachita CTGEN3
- Perryville 1-1
- Perryville 1-2
- Perryville 2-1
- Sabine 3
- Sabine 4
- Sabine 5

As part of this detailed verification review of the Entergy CEMS units, site visit verification reviews were conducted at the following four (4) gas turbine combined cycle plants:

- Attala
- Hinds
- Ouachita
- Perryville

The following information was requested from Entergy and available data reviewed in relation to the above samples:

- Annual data on CO_2 emissions, electricity generation (MWh), heat input (total Btu), and operating time for all sixty-two (62) Entergy units which operated in 2016, from the EPA Clean Air Markets (CAM) Air Monitoring Program Data (AMPD) database;

- EPA emissions collection and monitoring plan system (ECMPS) quarterly feedback reports for twenty-seven (27) units;

- Annual CO_2 /flue gas flow monitors relative accuracy test audits (RATAs) for the five (5) selected coal units;

- Quarterly CO_2 CEM linearity checks for the five (5) selected coal units;

    - Natural gas fuel flow meter CEMS calibration/accuracy checks for the twenty-two (22) natural gas units audited in detail (with natural gas fuel flow meter transmitter calibration records obtained from the plant environmental coordinators for the four [4] gas turbine combined plants at which site visits were conducted [Attala, Hinds, Ouachita, and Perryville], and from Fossil Environmental for the balance of the natural gas-fired power plants reviewed in detail);

- Monthly data on electricity generation (MWh) and heat input (total Btu) for nineteen (19) of the Entergy-operated sampled units, from Entergy's Performance Monitoring and Diagnostics (PM&D) data historian database. PM&D data are only available on the gas turbine combined cycle units at the system level (e.g., Unit 6 collectively, not 6A and 6B individually, at Ninemile Point; also for Attala, Hinds, Ouachita, and Perryville).

- Monthly facility-level gas burn data for all natural gas-fired electric generation facilities (from Entergy's Gas Burn Accounting database, maintained by the Natural Gas Supply and Purchasing department);

- Daily facility-level coal delivery, coal usage, and coal burn testing analytical data for all three coal-fired electric generation facilities owned and operated by Entergy (from Entergy's Rail Car Management System database, maintained by the Coal Supply and Purchasing department);

- Hourly CO_2 CEMS data for 2016 obtained directly from the plant's CEMS Data Acquisition and Handling System (DAHS) for the units at the on-site survey visit facilities (Attala AO1 and AO2; Hinds HO1 and HO2; Ouachita CTGEN1, 2, and 3; and Perryville 1-1, 1-2, and 2-1); and

- Multiple days of coal burn independent sampling and testing data for three (3) coal-fired plants (Independence, RS Nelson, and White Bluff).

The twenty-seven (27) units above that were reviewed in greater detail represented approximately 69% of Entergy's total direct CO_2 emissions from power generation units; and approximately 61% of Entergy's total corporate GHG emissions, in 2016.

Organizational boundaries were verified using information contained in Entergy's 2015 Statistical Report and Investor Guide, 2015 SEC 10-K, and Entergy's inventory list of generation assets posted on their corporate website. As described in Entergy's GHG Inventory Management Planning and Reporting Document (IMPRD), Entergy GHG emissions inventory boundaries are determined on an equity share basis (i.e., the percent equity share of those facilities owned by Entergy which Entergy owns jointly with other companies) which was used to calculate the GHG emissions in the inventory database for this category. These equity share values in the GHG

inventory were cross-checked against the data provided in the IMPRD, and Entergy's statistical reports.

CEMS reports supplied by Entergy were checked against both the GHG emissions data in their GHG inventory spreadsheets, and the EPA Clean Air Markets' air monitoring program data (AMPD) database, for the twenty-seven (27) above selected units. Monthly and annual CO_2 CEMS reports were generated by ICF from queries of the AMPD database, and were checked and confirmed against the data for those twenty-seven (27) sampled units as reported in Entergy's GHG emissions inventory spreadsheets.

Associated CEM system and natural gas flow meter QA/QC supporting documentation (including relative accuracy test audits, linearity checks, and flow meter calibration tests) were reviewed for the Entergy generating units. These documentary evidence verification checks were performed and confirmed that the reported GHG emissions data, and CO_2 emissions/flue gas flow and natural gas flow monitoring measurements and monitoring calibrations, were accurate, and the associated measurements data were reliable, as reported in the Entergy GHG inventory.

For each of the units sampled, various error checking tests were performed on the Entergy GHG inventory spreadsheets, and the sampled data to assess the information collected, including some examples such as record counts, missing data, re-computation, and other cross-checks. For each of the selected units, some aggregation calculation checks, and source type and equity share checks, were made and compared against database outputs/reports and the Entergy GHG inventory spreadsheets. Also, for each fuel type among the selected generating units, a sampling of daily CO_2 emissions values were checked using an alternative quantification methodology, based on activity data (e.g., fuel heat input values) and emissions factors.

Through the course of the verification, the data management systems and controls employed in the quantification of emissions were reviewed, as detailed in the Sampling Plan procedures. These systems were found to be effective in the calculation of the GHG Assertion.

Purchased Power (Controllable)

The key emissions factors, sources, and calculations that Entergy used to quantify the emissions associated with its controllable power purchases in the 2016 GHG inventory were checked. This source comprised approximately 9.5% of the total Entergy 2016 GHG Assertion.

Raw data outlining daily (and monthly) purchased power by Entergy operating company and counterparty/long-term contract for 2016 was provided by the ISB group and cross-checked against the TRADES database containing controllable purchased power for 2016, as well as the Entergy GHG inventory spreadsheets.

All controllable power purchases were checked against SPO's raw data for correct MWh amounts. They were also checked for correct application of plant-specific emissions factors from EPA's eGRID database (2017 release for year 2014 data).

Other Emissions Sources

Entergy has a number of small sources that collectively comprise approximately 2.9% of the total GHG Assertion. These sources include emissions associated with small stationary combustion sources; mobile combustion (corporate fleet); fugitive CH_4 (natural gas T&D); fugitive SF_6 (electricity T&D); fugitive HFCs (HVAC and vehicle); purchased electricity for business operations outside Entergy service territory; customer consumption of distributed natural gas; and employee commuting. Many of those emissions sources are categorized in the *de minimus*, category as defined in the IMPRD (sources representing <1% of the total GHG Assertion). Each of these emissions sources, with size relative to total GHG Assertion, was reviewed through this verification as indicated below.

Scope 1 Emissions Sources:

- small stationary combustion sources – 2015 Subpart C submissions reviewed, fuel volumes could not be confirmed in all cases (0.3% of GHG Assertion, *de minimus*)
- mobile combustion, corporate fleet – 2016 fuel consumption data was used to quantify emissions (0.1% of GHG Assertion, *de minimus*)
- fugitive CH_4, natural gas T&D – 2015 Subpart W submissions reviewed as well as Entergy estimate for Spindletop Storage Facility (0.2% of GHG Assertion, *de minimus*)
- fugitive SF_6, electricity T&D – estimate based on 2015 Subpart DD submission (0.3% of GHG Assertion, *de minimus*)
- fugitive HFCs, HVAC and vehicle – quantified from 2016 data (0.01% of GHG Assertion, *de minimus*)

Scope 2 Emissions Source:

- purchased electricity for business operations outside Entergy service territory – quantified from 2016 data with updated eGRID 2014 emission factors (0.1% of GHG Assertion, *de minimus*)

Scope 3 Emissions Sources:

- customer consumption of distributed natural gas – 2015 Subpart NN submissions reviewed (2.1% of GHG Assertion)
- employee commuting– estimates quantified for previous years reviewed (0.1% of GHG Assertion, *de minimus*)

4. Data Management and Control System Review

A critical element of the verification process was for the Verification Team to gain a thorough understanding of the data management systems and controls employed by Entergy. This understanding necessitated a review of:

- The parties involved and their respective responsibilities;
- The facility data collection and automated data measurement and management systems;

- Software system configuration;
- Post-collection data manipulation;
- Quality assurance procedures employed to detect erroneous or missing data;
- Processes for updating historical data in the event that errors are detected;
- Document control and security systems, including access, and tracking of edits; and
- Changes to the data management system over time or opportunities for improvement.

Testing Internal Controls

The Verification Team developed a sufficient understanding of the GHG information system and internal controls to determine whether the overall data management system is sound, examining it for sources of potential errors, omissions, and misrepresentations. This assessment incorporated examining three aspects of the company's internal controls: (1) the control environment, (2) the data systems, and (3) the control and maintenance procedures. The testing procedures documented in the Verification Plan included some procedures to test the effectiveness of the internal controls in place. The results of these tests influence the type and amount of activity data being sampled. Sampling procedures are included in Section 7 of the final Verification Plan.

Conducting Substantive Testing

Substantive testing procedures were used to assess the reasonability and validity of the GHG Assertion where further testing was required to assess internal controls based on the observations and preliminary findings of the Verification Team. The specific procedures are summarized in Section 7 of the final Verification Plan as separate tables for each process or activity involved in the quantification and reporting of the GHG Assertion. Materiality was assessed for each specific procedure and aggregate materiality was determined separately. The details of the testing of internal controls and substantive testing undertaken are described in detail in the final Verification Plan.

The Verification Team developed a thorough knowledge of the data management and control systems utilized in the organization through the review of the IMPRD, observations during the site visit, and interviews with key personnel. The following were the key data systems observed.

- ISB – Purchased power data was sent by Charmaine Johnson.
- TRADES – controllable power purchases tracking system: hourly purchase amounts from 1/1/2016 to 12/31/2016 inclusive were extracted and sent via Excel to ICF by Grady Kaough.
- Generation Fuels and Accounting – Monthly purchased power totals for 2016 were sent to ICF by Charmaine Johnson.
- Entergy Gas Business – Gas distribution systems – from Leon Hinson.
- PM&D data – for large fossil generating stations.

- CEMS data – for large fossil generating stations (as well as for small stationary sources that have CEMS).
- Gas purchases data – monthly for all gas-fired electric generating units – from David Sommers: purchase amounts inputted into ISB.
- Coal purchases data – from Rachel Hill: purchase amounts inputted into ISB.

5. Verification Results

5.1 Discrepancies

The table below details discrepancies found during the verification process for each procedure, a discrepancy title (brief description) and final status.

Procedure	Discrepancy Title	Final Status
B1: Organization Boundaries, Infrastructure and Activities	N/A	No discrepancies detected
B2: Review of Operating Conditions	N/A	No discrepancies detected
C1: True-Up and Re-Performance Calculations	N/A	No discrepancies detected
C2: Minor/*De Minimus* Emissions - Methodology and Documentation	N/A	No discrepancies detected
D1: Data Collection and Quality Controls	N/A	No discrepancies detected
D2: Data Confirmation against External Sources	N/A	No discrepancies detected
D3: Data Migration into Inventory	N/A	No discrepancies detected
A1: Final Verification Assessment	N/A	No discrepancies detected

5.2 Aggregate Materiality

The sum of the immaterial discrepancies in the GHG Assertion does not result in a breach of materiality (greater than 10% of the total GHG Assertion). This is in line with the uncertainty assessment of Entergy's inventory.

5.3 Other Findings

- As part of the verification review of Entergy's draft stationary combustion CEMS emissions spreadsheet, no discrepancies were identified in that part of the verification review process.

- For the twenty-seven (27) units identified as targets for more detailed audit sampling, AMPD monthly/annual CO_2 CEMS data from US EPA's Clean Air Markets database system were reviewed. These results were verified against the direct emissions reported in Entergy's GHG emissions inventory spreadsheets. No material errors or omissions associated with Entergy's GHG emissions inventory accounting and reporting were identified, as part of this US EPA CO_2 emissions database and Entergy GHG emissions inventory spreadsheets/supporting documentation comparisons and data checks.

- Emission factors for CH_4 and N_2O emissions from each of the Entergy fossil generation units were also checked, revealing no discrepancies or omissions.

- Organizational and operational boundary verification checks revealed no discrepancies or omissions.

- For the twelve (12) natural gas-fired facilities with generation units audit-sampled (representing 22 total gas-fired units targeted), under this verification program, monthly and annual natural gas fuel use/total heat input data were obtained from the Entergy Gas Burn Accounting database. This Entergy gas burn database tracks gas utility purchases and pipeline deliveries to Entergy's electric generating stations, based on the gas utility's invoice/billing data, with the associated gas volume/heat content of the amounts delivered being determined by the gas utility pipeline's natural gas flow meter (i.e., a financial meter, operated and maintained by the natural gas utility, outside the Entergy plants' fence lines). These monthly natural gas delivery/burn data from Entergy's gas burn database were then compared to the EPA AMPD database results. (Note: Total heat input comparisons for natural gas-fired generation units were deemed appropriate here, as the CEMS emissions reported to U.S. EPA are based on natural gas fuel flow rate measurements.) The results of these cross-check comparisons showed the facility-wide deviations between the two datasets had an overall average of +1.6% difference for the twelve (12) facilities, with the largest deviation occurring at the Ouachita Plant, at +7.5%, which was identified in the 2014 verification review as having a significantly higher proportion of small combustion source emissions than most other Entergy natural gas-fired power plants). Given the distinct differences between the metering characteristics (e.g., Entergy's electric generation unit-specific natural gas fuel flow meters, and the respective natural gas pipeline company's utility gas sales meter; as well as Entergy's small, natural gas-fired combustion sources' fuel use included in the Gas Burn database data, but not captured in the EPA AMPD database), this level of agreement provides an additional degree of

confidence in the reliability of reported results for Entergy's gas-fired generation, and reduction in the associated residual risk of misstatement.

- For the three (3) Entergy-operated coal-fired electric generation plants, comparisons were made by cross-checking the daily total plant coal burn analytical data on total coal fuel heat input MMBtu, as provided by Entergy's Rail Car Management System's (RCMS) plant-level data, against the daily, unit-specific/plant total fuel heat input from the EPA AMPD database. These plant level RCMS data are based on coal feed rate process monitoring data generated by the coal feeders (which feed coal from the boiler's coal feed hoppers to the pulverizers), and coal analytical data generated by chemical analyses of coal samples taken on a daily basis by the Entergy plant personnel. The EPA data on MMBtu fuel heat input are based on in-stack CEMS measurements on flue gas flow rates, and flue gas constituent concentrations (CO_2 or O_2). The results of these cross-checking comparisons between the two datasets showed the three plants having an average deviation of -1.3%, between the RCMS and AMPD plant heat input daily data for 2016. As in the case of the Gas Burn Accounting database comparison above, the results of this cross-check add further credibility to Entergy's coal-fired generation GHG emissions inventory reporting, especially when considering the overall accuracy and operational/maintenance characteristics of the coal feed rate measurement process monitoring sensors, and the associated data used in this validation check.

- For the five (5) Entergy-operated coal-fired units, and fourteen (14) of the natural gas-fired units/gas turbine combined cycle plants selected for audit data sampling, comparisons on unit-specific fuel heat input from the EPA AMPD database were made by cross-checking MMBtu values from Entergy's Plant PM&D department. This Entergy database contains unit operational data recorded by each unit's Pi historian (i.e., the data monitoring component of Entergy's supervisory control and data acquisition [SCADA] system). The PM&D system is a process monitoring system, in which its sensors are not routinely calibrated, nor are they certified. Unit-/gas turbine combined cycle plant-specific data from these process monitoring systems were supplied on a monthly basis, for fuel flow, heat input (MMBtu), and power generation (MW-hr), for nineteen (19) of the audit-sampled units/gas turbine combined cycle plants. The results of these cross-checking comparisons between the two datasets showed the individual units having an average deviation of +0.3% for the five (5) coal-fired units, with only two of the coal units' deviations being greater than +/-10% (Independence 1 at +12.6%, and R S Nelson 6 at -11.7%). For the fourteen (14) gas units/plants with PM&D data, the individual unit deviations between the two data sets showed an average deviation of +0.6%, with only one (1) of the fourteen (14) units having a deviation greater than +/-5% (Lewis Creek 1 at +9.9%). As in the case of the Gas Burn Accounting and the Rail Car Management System databases' comparisons above, the results of this cross-check add further credibility to Entergy's coal- and gas-fired generation GHG emissions inventory reporting, especially when considering the overall accuracy and operational/maintenance characteristics of the PM&D process

monitoring sensors and the associated monitoring system data used in this validation check.

- For the units with hourly data supplied by the Entergy site visit plants' personnel (at Attala, Hinds, Ouachita, and Perryville), from the plants' on-site DAHS computer database archive systems, these hourly, "raw" data sets agreed with the final EPA-approved AMPD database 2016 annual results to within +/-0.2% for each of the ten (10) gas-fired units. Such a low QA/QC adjustment of raw data throughout the 2016 reporting year is a further indicator of the reliability of Entergy's reported CEMS data.

- A re-calculation of CO_2 emissions was made for several of the data-sampled generating plants: RS Nelson 4 for natural gas, based on fuel heat input data, and CO_2 emissions factors. For the coal-fired plant (Independence), daily test burn measurements data (including coal feed rates and fuel composition analyses), provided an alternative, direct measurement of fuel heat input. The results of this alternative quantification methodology comparison showed all calculated daily total CO_2 output values being within +/- 1.6% of the reported value from the CEMS system for the natural gas-fired unit. Also, the alternative quantification methodology average daily CO_2 agreement over the collective twenty-two (22) days of coal burn tests, conducted over two different test periods in 2016, was within +/- 3.8% of the CEMS values for the coal-fired unit. This degree of agreement between two alternative emissions quantification methodologies is deemed to represent an acceptable precision of agreement between two alternative quantification methodologies, for an ISO 14064 limited level of assurance verification program. This is further corroborated considering that compliance-based CEMS measurements are generally significantly more accurate than most emission factor-based quantification approaches (especially compared to the use of default emission factors, as opposed to site-specific factors, as well as the accuracy level of solid fuel flow rate measurements). Therefore, the alternative quantification methodology comparison results provide additional verification confirmation of the CEM systems measurement approach and results.

Through the course of the verification, the data management systems and controls employed in the quantification of emissions for Entergy were reviewed, as detailed in the Verification Plan procedures. These systems were found to be effective in the calculation of the GHG Assertion.

6. Verification Team

Since 1969, ICF has been serving major corporations, all levels of government, and multilateral institutions. Globally, approximately 500 of our approximately 5,000 employees are dedicated climate change specialists, with experience advising public and private-sector clients. ICF has earned a reputation in the field of climate change consulting for its analytical rigor, in-depth expertise, and technical integrity through scores of GHG emissions-related assignments over the past two decades.

For more than a decade, ICF has carried out numerous facility-level GHG verifications and verifications of emissions reduction projects. ICF's Verification Body has developed the necessary internal controls to ensure qualified and competent staffing uphold the principles of the relevant standard while quality control processes are utilized to assure data integrity is maintained and safeguarded. ICF's clients choose ICF for its strong brand, technical expertise, and rigorous methodological approach. ICF has assembled a Verification Team consisting of experienced GHG verifiers and relevant technical experts.

Verifiers

Julie Tartt has a Bachelor of Science degree in Environmental Sciences from the University of Guelph and has completed supplementary verification training, receiving a certificate of training for ISO 14064. Julie is the Manager of ICF's Verification Management System (VMS) and is also a Lead Verifier – she led and managed the development of ICF's ANSI-accredited ISO 14065 VMS. *Note that while ICF no longer maintains the ISO 14065 accreditation, it still maintains its Verification Body*. Julie has considerable experience and expertise quantifying greenhouse gases through her work developing numerous GHG inventories, and verifying GHG emissions. Julie has been working with ICF's Verification Body since 2010 and has worked on verifications under several regulatory reporting programs including British Columbia, Ontario, and Quebec's Greenhouse Gas Reporting Regulations, and Alberta's Specified Gas Emitters Regulation. Facility compliance reports verified have included natural gas pipeline and natural gas processing linear facility operations, coal mining, electricity generation, and cogeneration facilities. Emissions reduction project verifications have included wind electricity generation, landfill gas capture and utilization, aerobic composting, and tillage management projects. Additionally, she has provided verification services for organizations reporting to the Carbon Disclosure Project and The Climate Registry, as well as voluntary emissions reductions projects. Julie also has extensive experience managing and administering large, multi-client, carbon market modeling and analysis studies nationally and at the provincial level.

Kevin Johnson (Cventure LLC) has over 30 years energy and environmental consulting experience, focusing over the last half of his career on verification, greenhouse gas and CO_2 emissions inventories, carbon offset projects, and sustainability programs. In 2005, he founded Carbon Solutions, Inc., an independent consulting services firm, and in 2007 co-founded Cventure LLC. While a contractor for ERT-Winrock in 2008-9, he served as project manager for several GHG emissions reduction credit ("ERC") protocol development and verification projects, as well as corporate GHG inventory verification projects, and drafted the verification guidelines for the American Carbon Registry. He was also a primary author of the ERT Corporate GHG Verification Guidelines, and has performed dozens of verification projects for over a decade. At Cventure, he has also performed CDP reporting benchmarking, and ISO 14064 and GRI sustainability reporting gap analyses, for several commercial clients. Prior to forming Carbon Solutions, Inc., he previously served as the leader of URS Corporation's corporate GHG/climate change practice. Some of his other project management experience includes corporate strategy development, offset project assessments and feasibility studies, GHG emission inventories/protocols and verification, environmental management information system implementations, and ERC verification and trading support. Some climate change clients include Entergy, Exelon, Eni, El Paso, Google, Wal-Mart,

Bloomberg LP, NewsCorp, Marathon, 21st Century Fox, Unocal, T. Rowe Price, Conoco, Compuware, PetroSource, Kimco Realty, BlueSource, Anadarko Petroleum, Albertsons, US Energy Biogas, EDF, U.S. DOE, GRI, U.S. EPA, and several independent oil producers.

Sheldon Fernandes is an Analyst in ICF's Toronto office, and has over four years of experience working on energy, climate change and sustainability issues in Canada and abroad. He has strong experience in carbon market analysis, regulatory analysis, sustainability reporting, GHG verification and energy efficiency program design and delivery in provinces, territories, and states across North America as well as in the European Union. Sheldon has previous experience working with federal and provincial government agencies in Canada developing GHG and energy efficiency measurement and reporting tools, and with two NGOs - in the State of Washington, Global Ocean Health, focused on advocacy for the accurate measurement of sea level rise in two highly vulnerable counties, and in Switzerland, Earthmind, where he contributed to the development and release of a centralized area-based online registry to assist managers of biologically rich areas in securing financial support to continue ecological conservation work. Sheldon is a highly skilled researcher with extensive experience in technical analysis, and technical and non-technical writing.

Technical Experts

Kevin Johnson, while at Radian Corporation during the first half of his career, had significant field experience with continuous emissions monitoring systems ("CEMS"). These field testing projects included serving as project manager or on-site field testing task leader on CEMS testing projects at four electric power generation plants, numerous industrial steam plant boilers, and a cement kiln; two of those electric utility field testing projects also included CEMS certification relative accuracy test audit ("RATA") testing.

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Selena Fraser is a registered Professional Engineer in the Province of Ontario and holds Master and Bachelor Degrees in Environmental Engineering from Carleton University with a particular focus on air emissions and air quality. Ms. Fraser has seven years of experience in a wide breadth of environmental related issues including GHG and CAC emission identification, quantification and verification, climate change impacts and adaptation, environmental impact assessment, energy efficiency, and environmental processes and systems. She has completed verification exercises for Sustainable Development Technology Canada (SDTC) as well as numerous projects that involve quantifying emissions and assessing emission reduction estimates for clients such as Natural Resources Canada (NRCan), Environment Canada, Tree Canada, the Federation of Canadian Municipalities (FCM), Alberta Environment, and Nova Scotia Environment. Her experience also includes post-implementation compliance audits in multi-unit residential complexes and commercial facilities, carried out in accordance with the International Performance Measurement and Verification Protocol (IPMVP). Selena has acted as a Lead and Associate Verifier for a number of emission reduction (offset) projects under the Alberta-based Offset Credit System including projects pertaining to Acid Gas Injection, Enhanced Oil Recovery and Landfill Gas Combustion for energy. Selena has acted as Associate Verifier for a number of emission quantification and credit applications under the Alberta-based Emissions Trading Regulation (ETR), specifically in the power generation sector. She has acted as Associate Verifier for a number of compliance exercises under Alberta's Specified Gas Emitter Regulation in the power generation and oil and gas sectors. Selena has been certified by CSA as a GHG Inventory Quantifier.

Conflict of Interest

ICF has conducted a review of any real or perceived conflicts of interest resulting from advocacy, intimidation, self-review, self-interest or familiarity. No threats to independence, either real or perceived, have been identified.

Statement of Qualifications

The information contained within this document and this statement of qualifications is complete and correctly represents the qualifications of ICF and the members of the Verification Team described herein. Dated this eighth day of March, 2017.

Duncan Rotherham
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Appendix

Verification Plan

2016 Final Verification Plan

Entergy Corporation

1 Introduction

This document provides details on the verification scope and process that is planned to conduct a limited level verification of the 2016 organization-wide GHG inventory ("GHG Assertion") for Entergy Corporation ("Entergy"). The GHG Assertion made by Entergy requires the quantification of the emissions produced during calendar year 2016, and related primarily to stationary combustion of fossil fuels and from purchased power, as well as from a number of minor sources. An overview of operations for the organization will be provided in the Verification Report.

A Verification Risk Assessment will be conducted during the verification planning stage; the results of which will be provided in Section 6 of the final Verification Plan. Additionally, the results of the Risk Assessment informed the development of the Sampling Plan.

The Verification and Sampling Plans will be updated through the course of the verification as additional information becomes available.

The verification conclusion will be documented in the Verification Statement and the verification findings will be further described in the Verification Report. The Verification and Sampling Plans will be appended to the Verification Report to provide information related to the verification scope and process.

2 Verification Scope

2.1 Objective

The primary objective of this verification engagement is to provide assurance to Entergy, and any external users of Entergy's public GHG reporting, that the GHG Assertion is reliable, and of sufficient quality for:

- Internal purposes, namely tracking towards internal reduction targets as well as annual reports, corporate social responsibility ("CSR") reports, and other disclosures;
- External voluntary reporting, primarily to the Carbon Disclosure Project ("CDP") the Dow Jones Sustainability Index ("DJSI"), and the American Carbon Registry ("ACR").

2.2 Parties and Users

The person or persons responsible for the provision of the GHG Assertion and the supporting information, as defined in Section 2.23 of ISO 14064-1:2006, is the "Responsible Party". For this verification, Entergy is the Responsible Party.

ICF has been engaged to provide a third-party verification of the GHG Assertion. Experts from ICF as well as from Cventure LLC compose the "Verification Team".

The "Intended User," is defined in Section 2.24 of ISO 14064-1:2006 as the individual or organization identified by those reporting GHG-related information that relies on that information to make decisions. Entergy (and the public at large) are the intended users of the information contained within the Verification Statement.

2.3 Scope

The verification will be conducted in accordance with *ISO 14064-3: Specification with guidance for the validation and verification of greenhouse gas assertions.* The verification will be designed to provide a *limited level of assurance.*

The Verification and Sampling Plans were developed based on the relevant criteria described in the following:

- The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard (WRI/WBCSD Revised Edition, 2004)

The following table defines the scope elements specified for the organization.

Scope Element	ISO 14064-1 Definition
Boundary	The organization's corporate-wide boundary, including legal, financial, operational and geographic boundaries
Infrastructure and Activities	The physical infrastructure, activities, technologies and processes of the organization
GHG Sources	GHG sources to be included
GHG Types	Types of GHGs to be included
Reporting Period	Time period to be covered

The manner in which each of the above scope elements applies to Entergy's GHG Assertion are described below.

Boundary

During the initial verification planning, the organizational boundaries and the sources which would be required to be included in the emissions inventory quantification will be reviewed. The procedures to review the GHG Assertion will be designed to support a *limited level* of assurance. These procedures will systematically review:

- the emissions sources included in the quantification procedures;
- the methodologies employed in the quantification procedures;
- data handling, information and management system and associated controls, and quality assurance / quality control activities;
- any changes in the quantification methodology, or to organizational boundaries due to acquisitions or divestitures, as compared to previous corporate GHG emissions reports;
- the GHG Assertion.

Entergy has chosen to include all company-owned assets and those under a capital lease consistent with *'equity share'* reporting under EPA and WRI/WBCSD GHG reporting protocols.

Infrastructure and Activities

According to Entergy's website[1], "Entergy Corporation 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, including nearly 10,000 megawatts of nuclear power. Entergy delivers electricity to 2.8 million utility customers in Arkansas, Louisiana, Mississippi and Texas. Entergy has annual revenues of approximately $11.5 billion and more than 13,000 employees."

GHG Sources

The following key sources comprise the 2016 GHG inventory categorized by Entergy as follows:

Entergy Category	Emissions Source Category	Corporate Emissions Source	GHGs Included
Direct Emissions	Stationary Combustion	Power Generating Units	CO_2 , CH_4 , N_2O
		Small Stationary Combustion	CO_2 , CH_4 , N_2O
	Mobile Combustion	Corporate Fleet	CO_2 , CH_4 , N_2O
	Fugitive Emissions	Natural Gas Trans. & Dist.	CH_4
		Electricity Trans. & Dist.	SF_6

[1] Accessed on January 25, 2017 at http://www.entergy.com/about_entergy/

Entergy Category	Emissions Source Category	Corporate Emissions Source	GHGs Included
		Cooling/Air-Conditioning (building, mobile sources)	HFCs
Indirect Emissions	Purchased Electricity	Purchased Power for Business Operations Outside Entergy Service Territory	CO_2
	T&D Losses	Entergy Purchased Power Consumed on Entergy T&D System	CO_2 , CH_4 , N_2O
Optional Emissions Sources	Purchased Power (Controllable)	Controllable Purchased Power Sold to Customers	CO_2 , CH_4 , N_2O
	Product Combustion	Combustion of Natural Gas Distributed to Customers	CO_2 , CH_4 , N_2O
	Employee Commuting		CO_2 , CH_4 , N_2O

GHG Types

The emission portion of the assertion accounts for the following greenhouse gases:

- Carbon Dioxide (CO_2)
- Methane (CH_4)
- Nitrous Oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Sulphur Hexafluoride (SF_6)

Neither Perfluorocarbons nor Nitrogen Trifluoride are not included in Entergy's inventory given the nature of its business and that these classes of chemicals are not used in any of Entergy's operations in any sizeable amount.

The final inventory will be expressed in both short tons of CO_2 equivalent emissions ("CO_2e"), as well as in metric tonnes CO_2e.

Reporting Period

The GHG Assertion covers the 2016 calendar year, from 1 January 2016 through 31 December 2016, inclusive.

2.4 Materiality

During the course of the verification, individual errors, omissions or misrepresentations (collectively referred to as discrepancies) or the aggregate of these discrepancies will be evaluated qualitatively and quantitatively.

Materiality defines the level at which discrepancies in the GHG Assertion or any underlying supporting information precludes the issuance of a limited level of assurance.

The Verification Team is responsible for applying professional judgment to determine if *qualitative* discrepancies could adversely affect the GHG Assertion, and subsequently influence the decisions of the Intended User, in which case, the discrepancies are deemed to be material.

Quantitative discrepancies will be calculated individually to determine the impact of the discrepancy as a percentage of the GHG Assertion.

All discrepancies that are outstanding at the conclusion of the verification will be documented in the Verification Report and classified on an individual basis as either material or immaterial.

Materiality Threshold

In the framework of a corporate entity-wide GHG inventory, the concept of materiality is defined in the context of the overall uncertainty in the reported data. A quantity, in this case errors and/or uncertainties associated with reported results, is typically considered to be "material" if it would influence any decision or action taken by users of the information. This definition of materiality is consistent with verification guidelines and goals for the reliability of reported data.

Materiality is not the same as a *de minimus* emissions threshold for either the exclusion of specific sources from the inventory, or the use of estimated values without ongoing, annual collection of associated activity data. While a *de minimus* exclusion from the inventory would contribute to overall uncertainty, completeness is only one component contributing to overall uncertainty.

A materiality threshold for this limited level of assurance verification was set at 10% for the corporate inventory.

Individual discrepancies and the aggregate of individual discrepancies will be analyzed to determine if the materiality threshold has been breached.

Entergy's current GHG inventory management plan and reporting document ("IMPRD") states that *"...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*." The *de minimus* label for emissions sources <1% of the total inventory was selected by Entergy to delineate a threshold for inventory quantification. Sources that fall within the *de minimus* category can re-use an emissions estimate for up to five years before having to re-calculate the emissions. Note that *de minimus* sources (as defined by Entergy) are still included in the total inventory quantification, they are just not re-calculated every year.

2.5 Principles

ISO 14064 defines five principles that should be upheld in the development of the GHG Assertion. These principles are intended to ensure a fair representation and a credible and balanced account of GHG-related information. The verification procedures developed and executed during the course of this verification will present evidence such that each of these principles is satisfied.

Relevance

Appropriate data sources are used to quantify, monitor, or estimate GHG sources. Appropriate minimum thresholds associated with emissions levels, i.e., from *de minimus* sources, are used to justify the exclusion or the aggregation of minor GHG sources or the number and/or frequency of data points monitored.

Completeness

All sources within Entergy's GHG inventory boundary are included within an identified source category.

Consistency

Uniform calculations are employed between the base year (i.e., year 2000 emissions, for establishing Entergy's baseline emissions levels from which past, and current, GHG emissions reduction target commitments have been made), and current accounting/reporting periods (e.g., years 2010-2020, 2nd period reduction target commitments, also defined in terms of a year 2000 baseline). Emissions calculations for each source are calculated uniformly. If more accurate procedures and methodologies become available, documentation should be provided to justify the changes and show that all other principles are upheld.

Accuracy

Measurements and estimates are presented, without bias as far as is practical. Where sufficient accuracy is not possible or practical, measurements and estimates should be used while maintaining the principle of conservativeness.

Transparency

Information is presented in an open, clear, factual, neutral, and coherent matter that facilitates independent review. All assumptions are stated clearly and explicitly and all calculation methodologies and background material are clearly referenced.

2.6 Limitation of Liability

Due to the complex nature of the organization's operations and the inherent limitations of the verification procedures employed, it is possible that fraud, error, or non-compliance with laws, regulations, and relevant criteria may occur and not be detected.

3 Verification Team

Since 1969, ICF has been serving major corporations, all levels of government, and multilateral institutions. Globally, approximately 500 of our approximately 5,000 employees are dedicated climate change specialists, with experience advising public and private-sector clients. ICF has earned an international reputation in the field of climate change consulting for its analytical rigor, in-depth expertise, and technical integrity through scores of GHG emissions-related assignments over the past two and a half decades.

ICF has carried out hundreds of facility-level GHG verifications and verifications of emission reduction projects. ICF has developed the necessary internal controls to ensure qualified and competent staffing uphold the principles of the relevant standard while quality control processes are utilized to assure data integrity is maintained and safeguarded.

For this verification, ICF assembled a Verification Team consisting of experienced GHG verifiers and relevant technical experts. The roles of the Verification Team and Internal Peer Reviewer are provided below, followed by relevant bios.

Lead Verifier

The Lead Verifier is responsible for overseeing all activities conducted within the verification, including overseeing the development of the Verification and Sampling Plans and the execution of the verification procedures. The Lead executes the Verification Statement at the conclusion of the engagement.

Verifiers

The Verifiers work with the Lead Verifier to conduct the verification procedures.

Technical Experts

The Verification Team is supported by Technical Experts, who review the Verification Risk Assessment and provide advice on the development of the Verification and Sampling Plans to ensure risks are addressed with rigorously designed verification procedures. The Technical Experts are also available to the Verification Team through the course of the verification to provide assistance with any issues as they arise.

Internal Peer Reviewer[2]

The Internal Peer Reviewer is not a member of the Verification Team and does not participate in the verification until the draft Verification Report and draft Verification Statement have been prepared. The Internal Peer Reviewer conducts an internal assessment of the verification to ensure the verification procedures have been completed, the results of the verification have been thoroughly documented, any issues or discrepancies have been investigated and the verification evidence is sufficient to reach the verification conclusion described in the Verification Statement.

[2] Note: the Internal Peer Reviewer is not a member of the Verification Team, but is listed here to keep the list of personnel involved in the engagement in one place.

Verifiers

Julie Tartt has a Bachelor of Science degree in Environmental Sciences from the University of Guelph and has completed supplementary verification training, receiving a certificate of training for ISO 14064. Julie is the Lead Verifier for this engagement. She led and managed the development of ICF's ANSI-accredited ISO 14065 VMS and has considerable experience and expertise quantifying greenhouse gases through her work developing numerous GHG inventories, and verifying GHG emissions. *Note that while ICF no longer maintains the ISO 14065 accreditation, it still maintains its Verification Body*. Julie has been working with ICF's Verification Body since 2010 and has worked on verifications under several regulatory reporting programs including British Columbia, Ontario, and Quebec's Greenhouse Gas Reporting Regulations, and Alberta's Specified Gas Emitters Regulation. Facility compliance reports verified have included natural gas pipeline and natural gas processing linear facility operations, coal mining, electricity generation, and cogeneration facilities. Emissions reduction project verifications have included wind electricity generation, landfill gas capture and utilization, aerobic composting, and tillage management projects. Additionally, she has provided verification services for organizations reporting to the Carbon Disclosure Project and The Climate Registry, as well as voluntary emissions reductions projects. Julie also has extensive experience managing and administering large, multi-client, carbon market modeling and analysis studies nationally and at the provincial level.

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Sheldon Fernandes is an Analyst in ICF's Toronto office, and has over four years of experience working on energy, climate change and sustainability issues in Canada and abroad. He has strong experience in carbon market analysis, regulatory analysis, sustainability reporting, GHG verification and energy efficiency program design and delivery in provinces, territories, and states across North

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4 Verification Process

The ICF approach for conducting verification of a GHG Assertion follows the tasks outlined in the following diagram. Although these tasks are generally completed sequentially, the order may be modified according to circumstances such as scheduling and data availability.

Pre-Engagement	Approach	Execution of Verification	Completion
1. Selection of Lead Verifier	6. Selection of Verification Team	12. Site Visit	17. Evaluate Evidence
2. Initiate Conflict of Interest Procedure	7. Communication with Client/Responsible Party	13. Conduct Verification Procedures	18. Hold Verification Findings Meeting (if necessary)
3. Pre-Engagement Planning	8. Kick-off Meeting	14. Issue Clarification & Data Request	19. Draft Verification Report & Statement
4. Contract Execution	9. Assess GHG Program & Revise Procedures as Required	15. Revise & Finalize Verification and Sampling Plan	20. Internal Peer Review
5. Initiate Verification Tracking	10. Draft Verification and Sampling Plan	16. Address and Evaluate Outstanding Issues	21. Issue Verification Report & Statement
	11. Verification Risk Assessment		22. Close Verification File
			23. Develop and Issue Management Memo

4.1 Pre-Engagement

Prior to submitting a proposal to conduct this verification, the following pre-planning steps were taken:

- The results of any previous business engagements or verifications with the Responsible Party were reviewed to determine if any previous unresolved conflicts may preclude ICF from engaging in the verification;
- The client's motivation for completing the verification was established; and
- A Conflict of Interest procedure was initiated that documents whether any perceived or real conflicts were found when considering threats due to:
  - Advocacy
  - Financial Interest
  - Familiarity/Sympathy
  - Intimidation
  - Self-Review
  - Incentives

Following the acceptance of the proposal and signing of a contract for services, the Verification Team was selected. The Verification Team for this engagement is comprised of the individuals identified in Section 3.

4.2 Approach

An extensive knowledge of the Responsible Party's business, the relevant industry, and the details of the Corporation (Responsible Party) itself are required to conduct a thorough verification that can lead to a conclusion. The initial information collected about the Responsible Party and its facilities formed the basis of the preliminary draft Verification Plan. The development of the Verification Plan is an iterative process; that is, the process will be completed several times through the course of the verification and the resulting plan will be updated as new information became available.

There are three types of risk associated with the GHG Assertion defined in ISO 14064-3:

- Inherent Risk
- Control Risk
- Detection Risk

The process of designing the Verification Plan involved the development of Verification Risk Assessment for the Responsible Party. The steps in this process include:

- Reviewing the GHG Assertion, and the methodologies employed by the Responsible Party;
- Assessing the likelihood that a material misstatement might exist in the GHG Assertion, if no controls were used to prevent misstatements in the GHG Assertion (i.e. inherent risk);
- Assessing the control environment and the corporate governance process (i.e. control risk); and
- Reviewing each emissions source identified by the Responsible Party, and evaluating the contribution of each source to the GHG Assertion and the associated potential material discrepancy for each.

The results of the Verification Risk Assessment inform the development of the verification procedures, which will be documented in Section 7 of this document, and a summary of the Verification Risk Assessment will be provided in Section 6. The Verification and Sampling Plans as well as the Verification Risk Assessment will be reviewed by the designated Technical Experts to ensure the verification procedures address each of the risks identified. The draft Verification Plan will be provided to the Responsible Party before proceeding with the verification.

4.3 Execution of Verification

With draft Verification and Sampling Plans in place, the verification procedures will be executed. This process involves collecting evidence, testing internal controls, conducting substantive testing, and developing a review file. Over the course of the verification, the draft Verification and Sampling Plans may change; the final Verification and Sampling Plans provided in the Verification Report reflect the verification parameters and procedures that were actually executed.

Site Visits

The site visit will be conducted by Julie Tartt and Kevin Johnson from January 30 – February 1, 2017 inclusive in Mississippi and Louisiana. The site visit will be a key step in the planning and

execution of the verification. During the course of the site tours, the Verification Team will interview key operations personnel regarding the operations and data management of the Responsible Party.

During the course of the site visit and telephone interviews, the Verification Team will:

a) interview key site operations personnel regarding the operations and data management of one natural gas-fired generation facility and one combined-cycle natural gas-fired generation facilities in Mississippi (Hinds and Attala respectively), and two combined-cycle natural gas-fired generation facilities in Louisiana (Ouachita and Perryville) to cross-check GHG data as well as gain a deeper understanding of GHG information systems and controls at plant level; and
b) undertake discussions with the Intra-System Billing ("ISB"), TRADES, Coal Supply, Gas Supply, Performance Monitoring and Diagnostics ("PM&D") Unit, CEMS Unit (all of these via teleconference), as well as Generation and Fuel Accounting systems (in New Orleans, LA), regarding data which they supply for purposes of the GHG Assertion, as well as related data and information management systems.

Key Entergy personnel to be interviewed on site or via telephone will include:

- Mark Bowles, Manager, Corporate Environmental Operations (based in Jackson, MS but accompanying the Verification Team during the site tours)
- Kyle Sykes, Hinds Gas Plant and Attala Combined Cycle Gas Plant
- Kathy Brown, Ouachita and Perryville Combined Cycle Gas Plants
- Grady Kaough, Andrew Dorner, and Bruce Willhelm, Power Trading and ISB
- Tad Chenet and Minh Nguyen, CEMS Unit
- Melissa Lejeune and Charmaine Johnson, Generation and Fuel Accounting
- Toby Chu and Kelly McQueen, T&D Environmental Management
- Kyle Sunino, Energy Asset Confirmation
- Brittney Farberow and Scott Marino, Rail Car Management System (RCMS)/Coal Purchasing
- David Sommers, Gas Supply
- David Bruess, Gas & Oil Analytics
- Stanley Jaskot and KT Huang, PM&D Unit

During the site visit all major GHG emissions sources for the Hinds, Ouachita, Perryville, and Attala plants will be reviewed to ensure appropriate identification and categorization. A review of any available overall plant-level process flow and metering diagrams will be followed by physical observation of the facility, collection of relevant data and confirmatory checks (as possible) on meters and other equipment.

Collecting Evidence and Review of Documentation

Sufficiency and appropriateness are two interrelated concepts that are fundamental to the collection of verification evidence. The decision as to whether an adequate quantity (sufficiency) of evidence has been obtained is influenced by its quality (appropriateness).

Through the execution of the verification procedures described in Section 7 of this document, the Verification Team will review three key forms of evidence including physical, documentary and testimonial:

- Management documentation: policies, programs, and procedures related to the collection, safeguarding, and management of the data supporting the GHG Assertion;
- Records: records comprise time-sensitive data, correspondence, and files;
- Interviews: the interviews will provide information regarding operations and data management and will provide evidence to support the sufficiency of data controls; and
- Computer systems, i.e., those data systems used to capture and manage the GHG-related data and to calculate the GHG Assertion, will also be assessed by the Verification Team as part of this review.

The following are the key data systems which will be reviewed:

- TRADES – controllable power purchases tracking system: hourly purchase amounts from 1/1/2016 to 12/31/2016 inclusive will be extracted and sent via Excel to ICF by Grady Kaough (via Mark Bowles).
- Generation and Fuels Accounting – Monthly purchased power totals for 2016 (all 12 months) in PDF form are to be sent to ICF by Melissa Lejeune and Charmaine Johnson, subsequent to site visit meetings (via Mark Bowles).
- PM&D data – for large fossil generating stations.
- CEMS data – for large fossil generating stations (as well as for small stationary sources that have CEMS).
- Gas purchases data – monthly for all gas-fired electric generating units – from David Sommers: purchase amounts input into ISB.
- Coal purchases data – from Scott Marino (solid fuels): purchase amounts inputted into ISB.
- TRADES – a subset of non-controllable power purchases data from 1/1/2016 to 12/31/2016 inclusive is to be extracted and sent via Excel to ICF by Grady Kaough.
- ISB – purchased power data to be sent by Grady Kaough, Andrew Dorner, and Bruce Willhelm.

Testing and Assessment of Internal Controls

The Verification Team will develop a sufficient understanding of the GHG information system and internal controls to determine whether the overall data management system is sound and if it supports the GHG Assertion. This assessment sought to identify any weakness or gaps in the controls that pose a significant risk of not preventing or correcting problems with the quality of the data and examining it for sources of potential errors, omissions, and misrepresentations. It will incorporate an examination of three aspects of the Responsible Party's internal controls: (1) the control environment, (2) the data systems, and (3) the control and maintenance procedures.

Assessment of Data

Substantive testing procedures will be used to assess the reasonability and validity of the GHG Assertion. Both quantitative and qualitative analysis will be performed to achieve the desired level

of assurance. The verification procedures are described in Section 7 of this document, the final Verification Plan, as separate tables for each process or activity involved in the quantification and reporting of the GHG Assertion. The verification procedures include verification activities designed to:

- Review the Responsible Party's GHG inventory boundary, including a review of the completeness of emissions sources identified;
- Review the Responsible Party's data sources to ensure the GHG Assertion is calculated based on metered or estimated data;
- Re-calculate the GHG Assertion, which demonstrates transparency and accuracy; and
- Review the GHG Assertion to ensure the emissions calculated by the Responsible Party have been accurately reported.

Developing a Review File

A review file (the "File") comprised of documents, records, working papers and other evidence collected and created during the course of the review that support the review conclusions will be developed for this verification. This evidence stored in electronic format will serve to provide support for the verification conclusion, provide evidence that the verification was conducted in accordance with the criteria set forth in this document, and aid the Verifier in conducting current and future reviews.

The File will include:

- The GHG Assertion and supporting documentation, to be used for reporting purposes by Entergy;
- Decisions on the level of materiality and the results of the Verification Risk Assessment;
- Documentation on the Responsible Party's internal controls;
- Descriptions of the controls assessment work and results;
- Documentation of the substantive testing procedures that were carried out and the results;
- Copies of any correspondence with the Responsible Party or other parties relevant to the review;
- The Verification Team's working papers; and
- Client data (copies of relevant records, spreadsheets, and other data files).

4.4 Completion

This engagement will be formally closed after the verification has been executed and the Verification Report has been finalized.

Preparing the Verification Report

The purpose of the Verification Report is to document the verification findings. All discrepancies are described and compared to the materiality threshold individually and in aggregate. The Verification Statement, which presents the Verification Team's verification conclusion, is included in the Verification Report.

Internal Peer Review Process

Prior to releasing the Verification Report and Verification Statement, an internal review process is conducted by the Internal Peer Reviewer. This process ensures that:

- All steps identified as being required to complete the verification were completed;
- Any identified material or immaterial discrepancies identified have been either:
  - corrected by the Responsible Party and reflected in the GHG Assertion; or
  - documented in the Verification Report, if discrepancies persist at the conclusion of the verification.
- All required documentation detailing the verification process has been prepared, delivered, and retained.

Closing the Engagement

The verification engagement will be closed out upon delivery of the final Verification Report.

5 Verification Schedule

The following schedule was planned for the verification (subject to change with agreement between the Verifier and the Responsible Party).

Description	Scheduled Date
Verification Planning Teleconference Meeting	December 20, 2016
Draft Verification Plan to Responsible Party	January 25, 2017
Preliminary Data Requests	January 4-6, 2017
Site Visits	January 30 – February 1, 2017
Initial GHG Assertion Clarification Request	February 6, 2017
Draft Verification Statement and Report	March 3, 2017
Final Verification Statement and Report	March 6, 2017

6 Verification Risk Assessment

There are three types of risk associated with the GHG data management system and the GHG Assertion defined in ISO 14064-3:

- Inherent Risk
- Control Risk
- Detection Risk

The assessed level of risk for this verification dictates the degree of rigor planned for the verification procedures described in the accompanying Sampling Plan. Our established audit procedures and documentation systems ensured a thorough treatment of any risk identified, including determination of magnitude and sensitivity of that risk, during the assessment process. A qualitative risk assessment was completed based on observations made by reviewing and assessing accompanying documentation, as well as assessing available information such as the GHG inventory file, interviewing key personnel, and reviewing supporting documents.

The *inherent* risk in Entergy's corporate-wide 2016 GHG Assertion emanates from the large and complex nature of the company, the number of parties involved in managing their emissions inventory and developing their assertion, the number of emission sources, a large number of natural gas, oil and coal plants used in the process, and a smaller amount of controllable power purchases occurring throughout the year. Entergy Corporation 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, including more than 10,000 megawatts of nuclear power, making it one of the nation's leading nuclear generators. Also, for the large CEMS-equipped generation units, because there are so many of them in Entergy's system (~40 units with significant operations in 2016, each contributing ~1% of Entergy's power generation GHG emissions or greater, and collectively contributing ~95% of Entergy's power generation GHG emissions), there would have to be multiple, long duration control failures to create errors which could lead to a material misstatement of Entergy's entity-wide inventory. For example, in the 2010 case of two highly unusual CEM system failures, which each went undetected for several months, while they affected 2010 GHG emissions of each unit by 5-10%, their collective impact on Entergy's overall 2010 corporate GHG inventory was less than 1%. Due to these reasons, in particular the sheer magnitude of Entergy's GHG footprint, the inherent risk has been assessed to be low.

Control risk relates to the likelihood that a material misstatement in the 2016 GHG Assertion will not be prevented or detected by Entergy's internal control and data management systems. Control risks will be assessed primarily by reviewing data controls and management systems for large fossil generating units and controllable purchased power, both comprising in aggregate approximately 97% of total company-wide emission as noted in the 2016 GHG Assertion. This percentage is slightly lower than those observed over the previous three years, due to the MISO/Entergy integration in December 2013, which resulted in a large majority of Energy's power purchases becoming non-controllable, and therefore excluded from Entergy's operational boundary definition beginning in 2014.

The largest control risk in relation to the 2016 GHG Assertion is likely to be the manual transcription method in which the inventory is prepared (i.e., emissions values are extracted from various sources and manually entered into an Excel spreadsheet; this is true for all emissions sources including the largest ones, namely stationary combustion and controllable purchased power). For purchased power, a number of data systems (e.g., TRADES) feed into ISB (intra-system billing system). Both the individual data systems that comprise data input into ISB, as well as ISB itself, undergo QA/QC checks numerous times, both on a monthly and on an annualized basis. The Verification Team will request ISB to send a data extract from 2016, and will then triangulate it with data from TRADES and other sources for confirmatory checks.

For all of the large, CEMS-equipped fossil fuel electric generation units, which contributed approximately 87% of Entergy's total 2016 GHG emissions inventory, there are very rigorous measurement, monitoring, and reporting requirements established by the U.S. EPA. These CEMS monitoring programs, and their robust associated QA/QC activities, serve as the basis for demonstrating regulatory compliance with various federal Clean Air Act and state air permit compliance requirements. Also, the equipment utilized in these CEM systems are well established technologies with demonstrated track records of accuracy, precision, and reliability. In light of the abovementioned reasons, the control risk is assessed to be low.

The *detection risk* is a measure of the risk that the verification evidence collected and reviewed will fail to detect material misstatements, should such misstatements exist. Unlike *inherent* and *control* risks, which are typically attributes of the facility types and technologies employed therein, *detection* risk is variable but can be maintained at a low level by designing an appropriate number of tests, and collecting an adequate sample size. The Verification Team will conduct a number of sampling tests, focused on large fossil electric generation units and controllable purchased power. These tests are outlined in the sampling plan. Overall, the Verification Team's procedures have been designed to minimize detection risk. Our initial assessment is that detection risk will likely be low (in line with previous years' verification exercises), given the large number and appropriateness of the verification sampling/checking tests which are focused on the largest GHG inventory segments, i.e., CEMS units and power purchases (by relative magnitude), of Entergy's 2016 GHG Assertion. These tests have been designed and targeted at the greatest risk areas within Entergy's overall GHG inventory information management and data quality control system, namely the manual parts of the process.

7 Verification Procedures (Sampling Plan)

Summary of Procedures:

- Organization Boundaries and Definition
  - B1: Organization Boundaries, Infrastructure and Activities
  - B2: Review of Operating Conditions
- Calculation
  - C1: True Up and Re-Performance Calculation
  - C2: Minor/*De Minimus* Emissions – Methodology and Documentation
- Data Sources and Supporting Data
  - D1: Data Collection and Quality Controls
  - D2: Data Confirmation against External Sources
  - D3: Data Migration into Inventory
- Assertion
  - A1: Final Verification Assessment

Procedure Definition Table Explained

Z1 – Example Procedure Category – Example Procedure Title	
Introduction: This introduction serves to explain the reason the Verification Team is undertaking the procedures described below. For instance, the inclusion of all emission sources ensures that that quantification of the total direct emission satisfies the principle of completeness.	
Type of Evidence	The Type of Evidence can usually be grouped as: Physical Examination, Confirmation, Documentation, Observation, Inquiries of the Client, Re-performance, or Analytical Procedures.
Data Sources	The *Data Sources* describes the form in which the evidence is presumed or is known to be available to the Verification Team. Specific Documents or Assigned Positions, for example.
Objective (specific principles)	The objective serves to focus the procedure as pursuant to one or more of the audit principles of: *Relevance, Completeness, Consistency, Accuracy, or Transparency*.
Specific Activities	• The *Specific Activities* are outlined here.
Error Conditions	• The anticipated *Error Conditions* are listed here to aid the verification team; • As the Sampling Plan is a living document until the end of the verification process, additional error conditions may be identified during the execution of the procedures.

Facility Boundaries and Definition

B1 – Facility Boundaries, Infrastructure and Activities	
Introduction: This procedure evaluates the boundaries defined by the Responsible Party against the GHG Assertion.	
Type of Evidence	Documentation, Observation, Inquiries of the Client, Physical Examination
Data Sources	GHG Inventory Management Plan and Reporting Document (IMPRD), GHG Assertion, Previous GHG Assertions, Entergy Personnel, Annual Reports, Corporate Statistical Report
Objective (specific principles)	*Completeness, Consistency*
Specific Activities	1. Compare the GHG emission sources listed for the organization in the GHG Assertion against GHG emission sources listed in previous GHG Assertions; 2. Compare the GHG emission sources listed for the organization in the GHG Assertion against relevant annual reports, statistical report, and Entergy's website regarding operations and assets for completeness; 3. Compare the GHG emissions sources listed for the organization in the GHG Assertion against observations and discussions during site tour for completeness; 4. Interview Entergy personnel regarding changes to inventory or changes in the organization that have occurred in the current reporting period; 5. Interview relevant Entergy personnel regarding completeness of inventory described in the GHG Assertion; 6. Compare total emissions for each GHG emissions source in the current period against prior periods; 7. Evaluate the appropriateness and quantification of any *de minimus* emission sources.
Error Conditions	GHG emission sources that are not reported in the GHG Assertion.

B2 – Review of Operating Conditions	
Introduction: This procedure utilizes analytical procedures to identify changes in the scope of the GHG Assertion. This procedure was largely completed during the verification planning stage.	
Type of Evidence	Analytical Procedures, Inquiries of the Client, Documentation (i.e., IMPRD)
Data Sources	GHG Assertion, Entergy Personnel, Data from major sources such as fossil generation units and purchased power
Objective (specific principles)	*Consistency, Completeness*
Specific Activities	1. Interview Entergy personnel regarding any operational issues that may have caused a significant change to the reported emissions (e.g. asset acquisitions/divestitures, change in service/product offering); 2. Compare total emissions for each GHG emissions source in the current period against prior periods.
Error Conditions	Significant changes in emissions (including wide variances between 2016 data vs. earlier years, particularly for fossil units, such as CEMS data, or purchased power amounts, through ISB) do not constitute an error condition, but do warrant further investigation and clarifications.

Calculation

<table>
<tr><th colspan="2">C1: True Up and Re-Performance Calculations</th></tr>
<tr><td colspan="2">Introduction: As part of verification procedures, ICF checked calculations for each emissions source, with an emphasis on purchased power, large stationary fossil plants (CEMS units), and small stationary units which together comprise over 97% of total corporate-wide GHG emissions for 2016. In order to ensure the accuracy of the GHG Assertion, the objective of this procedure is re-perform the calculations independent from the calculations performed by Entergy.</td></tr>
<tr><td>Type of Evidence</td><td>Documentation, Re-performance</td></tr>
<tr><td>Data Sources</td><td>1. Large stationary fossil plants:
a. Selected CEMS reports, 27 in total (from Tad Chenet/Minh Nguyen; the plant site visit contacts at Attala, Hinds, Ouachita, and Perryville; and the PM&D group); sampling is at the smallest units corresponding to ~1% of total direct emissions (~0.5% of total ETR emissions), expected to represent in total approximately 69% of Entergy power generation direct emissions. These are:

<u>Coal</u>

• Independence 1
• Independence 2
• RS Nelson 6
• White Bluff 1
• White Bluff 2

<u>Gas</u>

• Attala AO1
• Attala AO2
• Baxter Wilson 2
• Hinds HO1
• Hinds HO2
• Lewis Creek 1
• Lewis Creek 2
• Little Gypsy 2
• Little Gypsy 3
• Ninemile Point 4
• Ninemile Point 5
• Ninemile Point 6A
• Ninemile Point 6B
• Ouachita CTGEN1
• Ouachita CTGEN2</td></tr>
</table>

	• Ouachita CTGEN3 • Perryville 1-1 • Perryville 1-2 • Perryville 2-1 • Sabine 3 • Sabine 4 • Sabine 5 b. Coal purchasing (Rachel Hill) and six (6) short-term test burns data for three (3) coal plants. c. Gas purchasing (Dave Bruess) gas burn data – all plants – monthly basis. d. Plant performance monitoring and diagnostics (PM&D) data: monthly fuel use, boiler heat input, and gross power generation for 19 of the 27 auditing sample selected units/gas turbine combined cycle plants. CEMS supporting documentation and QA/QC back-up data for selected audit sample units.
Objective (specific principles)	*Accuracy, Transparency*
Specific Activities	<u>General</u> 1. Review documentation for completeness 2. Recalculate emissions numbers 3. Perform checks <u>Emissions Factors</u> 4. Calculate emissions from each emission source category from each sampled Facility 5. Confirm and re-calculate (if applicable) emission factors against independent reference material
Potential Error Conditions	<u>General</u> • Disagreement between calculated and reported values; • Disagreement between allocated values or inconsistent methodology. <u>Emissions Factors</u> • Incorrect or out of date emissions factors
Sample Unit	1. <u>Purchased Power</u>: a. All controllable trades (daily) extract in Excel b. Emissions totals for total purchased power on monthly basis c. Possible extract directly from ISB to be able to triangulate with daily or monthly purchased power data. <u>2. Large stationary fossil plants:</u>

	a. 19 units/gas turbine combined cycle plants selected for sampling in relation to PM&D data (request sent to Daniel Tegtmeier/KT Huang) and EPA CAM checks, representing ~59% of total Entergy corporate emissions, and ~67% of Entergy's power generation direct emissions levels, including: **Coal Units** • Independence 1 • Independence 2 • RS Nelson 6 • White Bluff 1 • White Bluff 2 **Gas Units** • Attala AO1/AO2 • Hinds HO1/HO2 • Hot Spring CT-1/CT-2 • Lewis Creek 1 • Lewis Creek 2 • Little Gypsy 2 • Little Gypsy 3 • Ninemile Point 4 • Ninemile Point 5 • Ninemile Point 6A/6B • Perryville 1-1/1-2 • Sabine 3 • Sabine 4 • Sabine 5 For the selected units ICF requested the following unit-specific, reported data from a query of the PM&D database of historical data, for calendar year 2016: • Fuel flow: MCF for gas or tons for coal • Heat input: MMbtu • Power generation: MW-hr • Average heat rate for aggregation period: Btu/kw-hr • Aggregation period for reporting totalized activity data on fuel flow, heat input, and power generation on a monthly basis. b. CEMS reports – for the following coal-fired and gas-fired units– request made to Tad Chenet/Minh Nguyen at Fossil Environmental, or to the Entergy site visit environmental contact:

	Coal • Independence 1 • Independence 2 • RS Nelson 6 • White Bluff 1 • White Bluff 2 **Gas** • Attala AO1 • Attala AO2 • Baxter Wilson 2 • Hinds HO1 • Hinds HO2 • Lewis Creek 1 • Lewis Creek 2 • Little Gypsy 2 • Little Gypsy 3 • Ninemile Point 4 • Ninemile Point 5 • Ninemile Point 6A • Ninemile Point 6B • Ouachita CTGEN1 • Ouachita CTGEN2 • Ouachita CTGEN3 • Perryville 1-1 • Perryville 1-2 • Perryville 2-1 • Sabine 3 • Sabine 4 • Sabine 5 For each of the above CEMS-equipped gas or coal-fired units, the Verification Team requested the following information for calendar year 2016: • Gas flow meter accuracy test/CEMS gas flow transmitter calibration analysis (gas-fired units) • CO_2 and stack gas flow meter CEMS relative accuracy test audit (RATA) annual test results (coal-fired units) • CO_2 CEMS quarterly linearity checks (coal-fired units) • ECPMS (emissions collection and monitoring plan system) feedback reports: Q4 For the gas units at Attala, Hinds, Ouachita, and Perryville, the Verification Team requested similar

	information as above from the respective environmental manager on site, including hourly CO_2 data for 2016 from the on-site CEMS data acquisition and handling systems (DAHS). 3. Small stationary plants and combustion units – check "fossil fuel generating stations" emissions against EPA GHGRP data for 2015 for confirmatory checks against data and emissions numbers in the 2016 GHG Assertion.
Sample Size	All emissions sources and values for: • Purchased power (controllable trades) • Large stationary fossil plants listed in Sample Unit section, above • Small stationary combustion sources

C2 – Minor/*De Minimus* Emissions - Methodology and Documentation	
Introduction: In order to ensure that all relevant emission sources are included in the GHG Assertion, it is necessary to confirm that any *de minimus* emission sources have been appropriately excluded.	
Type of Evidence	Documentation, Discussions with Entergy's Director of Environmental Reporting and Climate
Data Sources	2016 GHG Assertion, IMPRD
Objective (specific principles)	*Accuracy, Transparency*
Specific Activities	1. Review minor/*de minimus* sources and discuss with Entergy Environmental Manager 2. Re-calculate emissions 3. Compare to earlier year inventories (2011-2015)
Potential Error Conditions	Material emission source(s) improperly excluded from GHG Assertion
Sample Unit	N/A
Sample Size	Minor/*de minimus* emission categories and sources

Data Sources and Supporting Data

D1 – Data Collection and Quality Controls	
Introduction: This procedure is intended to systematically review the Responsible Party's internal procedures and controls that are used to calculate the GHG Assertion.	
Type of Evidence	Documentation, Confirmation, Observation, Inquiries of the Client, Analytical Procedures
Data Sources	Data systems personnel, Entergy personnel, Standard Operating Procedures and Manuals
Objective (specific principles)	*Completeness, Consistency, Accuracy, Transparency*
Specific Activities	1. Observe or interview Entergy personnel regarding the operation of data transfer systems, including manual data entry procedures and associated controls; 2. Review or interview Entergy personnel regarding on-site sampling, laboratory and other analytical procedures; 3. Compare original data sources to data in calculation systems for consistency.
Error Conditions	• Inconsistency between raw data and data supporting the 2016 GHG Assertion • Inconsistency and/or unclear links between information management systems that are of the most relevance to the underlying data for the 2016 GHG Assertion

D2 – Data Confirmation against External Sources	
Introduction: Where possible, this verification procedure is used to gather external evidence to confirm data sources used to quantify reported emissions.	
Type of Evidence	Confirmation, Analytical Procedures
Data Sources	Inventory Report and supporting external data/information: 1. Large fossil generating stations: a. PM&D data – monthly (all 12 months for 2016). b. CEMS data – ECMPS reports and EPA CAM emissions database query reports. c. Gas and coal burn data – monthly for all gas units (all 12 months for 2016); two sets of select daily burn data for RS Nelson 6, and Independence and White Bluff plants. d. All CEMS-related QA/QC documentation for Attala, Hinds, Ouachita, and Perryville units, and hourly CO_2 data for all units. 2. Small Stationary Combustion Sources – 2015 EPA GHG Reporting Program data submitted for all fossil generating stations
Objective (specific principles)	*Accuracy*
Specific Activities	1. Review use of external data sources in GHG inventory for appropriateness 2. Compare reported/metered values to those provided by secondary sources
Potential Error Conditions	Unexplained, major discrepancy between metered/reported values and secondary source
Sample Unit	Typically monthly or annual data primarily, with some cross-checks on daily data as relevant

Sample Size	1. Large fossil generating stations: a. PM&D data – for 19 units/gas turbine combined cycle plants (representing ~59% of total Entergy corporate-wide GHG emissions). b. CEMS data – ECMPS reports – for 27 gas and coal-fired units (representing ~69% of Entergy power generation direct emissions, and ~61% of total Entergy corporate-wide GHG emissions). c. Gas and coal burn data – monthly (all 12 months for 2016) – for all gas units, and two sets of select daily data for Independence, RS Nelson 6, and White Bluff plants. d. All CEMS-related QA/QC documentation for all Attala, Hinds, Ouachita, and Perryville units, and hourly DAHS CO_2 emissions data for each. 2. Small stationary combustion sources – annual 2015 EPA GHG Reporting Program data submitted for all fossil generating stations

D3 – Data Migration into Inventory	
Introduction: This procedure is intended to review the transfer of data from calculations into the final GHG Assertion, including any summary calculations that were required.	
Type of Evidence	Documentation, Re-Performance
Data Sources	Inventory Report, IMPRD, discussions with Entergy's Environmental Manager
Objective (specific principles)	*Accuracy, Transparency*
Specific Activities	1. Recalculate summary calculations performed by Entergy; 2. Compare calculated values to those in the GHG Assertion for transcription accuracy.
Potential Error Conditions	Discrepancy between summary totals and individual sector values reported in GHG Assertion
Sample Unit	Data reported in the final GHG Assertion
Sample Size	All relevant information and emissions values

Assertion

A1 – Final Verification Assessment	
Introduction: This procedure is intended as a final review of Entergy's 2016 GHG Assertion to ensure all required information is complete and all relevant documentation is included.	
Type of Evidence	Documentation
Data Sources	GHG Assertion
Objective (specific principles)	*Completeness*
Specific Activities	1. Review the GHG Assertion and IMPRD for completeness and current information; 2. Provide Responsible Party with documentation, namely a Verification Statement and Report for voluntary reporting purposes.
Potential Error Conditions	Incomplete, inaccurate, or missing information in the GHG Assertion
Sample Unit	Data fields in the GHG Assertion
Sample Size	All fields in the GHG Assertion