INL/EXT-17-43002
Revision 0

Idaho National Laboratory's FY 2016 Greenhouse Gas Report

Kimberly Frerichs

August 2017

The INL is a U.S. Department of Energy National Laboratory
operated by Battelle Energy Alliance

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Idaho National Laboratory
Idaho Falls, Idaho 83415

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EXECUTIVE SUMMARY

A greenhouse gas (GHG) inventory is a systematic approach to account for the production and release of certain gases generated by an institution from various emission sources. The gases of interest are those that climate science has identified as related to anthropogenic global climate change. This document presents an inventory of GHGs generated during Fiscal Year (FY) 2016 by Idaho National Laboratory (INL), a Department of Energy (DOE)-sponsored entity, located in southeastern Idaho.

In recent years, concern has grown about the environmental impact of GHGs. This, together with a desire to decrease harmful environmental impacts, would be enough to encourage the calculation of an inventory of the total GHGs generated at INL. Additionally, INL has a desire to see how its emissions compare with similar institutions, including other DOE national laboratories. Executive Order 13693 requires that federal agencies and institutions document reductions in GHG emissions.

INL's GHG inventory was calculated according to methodologies identified in federal GHG guidance documents using operational control boundaries. It measures emissions generated in three scopes: (1) INL emissions produced directly by stationary or mobile combustion and by fugitive emissions, (2) the share of emissions generated by entities from which INL purchased electrical power, and (3) indirect or shared emissions generated by outsourced activities that benefit INL (occur outside INL's organizational boundaries, but are a consequence of INL's activities).

This inventory found that INL generated 85,525 metric tons (MT) of CO_2-equivalent (CO_2e) emissions during FY 2016. The following conclusions were made from looking at the results of the individual contributors to INL's FY 2016 GHG inventory:

- Electricity (including the associated transmission and distribution losses) is the largest contributor to INL's GHG inventory, with over 50% of the CO_2e emissions
- Other sources with high emissions were employee commuting, mobile combustion (fleet fuels), stationary combustion (facility fuels), business air travel, and waste disposal (fugitive emissions from the onsite landfill)
- Sources with low emissions were wastewater treatment (onsite and contracted), business ground travel (in personal and rental vehicles), waste disposal (contracted disposal), and fugitive emissions from refrigerants.

This report details the methods behind quantifying INL's GHG inventory and discusses lessons learned on better practices by which information important to tracking GHGs can be tracked and recorded. It is important to note that because this report differentiates between those portions of INL that are managed and operated by Battelle Energy Alliance (BEA) and those managed by other contractors, it includes only the Laboratory activities overseen by BEA. It is assumed that other contractors will provide similar reporting for those activities they manage, where appropriate.

ACKNOWLEDGMENTS

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- Ernest Fossum, Sustainable INL Energy Manager
- Chris Ischay, Sustainable INL Program Manager
- Heather Rohrbaugh, INL Editor.

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ACRONYMS

ATR	Advanced Test Reactor
BEA	Battelle Energy Alliance
BMPC	Bechtel Marine Propulsion Corporation
CAS	Chemical Abstract Service
CEDR	Consolidated Energy Data Report
CFA	Central Facilities Area
CH_4	methane
CITRC	Critical Infrastructure Test Range Complex
CNG	Compressed Natural Gas
CO_2	carbon dioxide
CO_2e	CO_2 equivalents
CY	cubic yard
DOE	Department of Energy
DOE-HQ	Department of Energy Headquarters
DOE-ID	Department of Energy Idaho Operations Office
eGRID	Emissions & Generation Resource Integrated Database
EO	executive order
EPA	Environmental Protection Agency
FY	fiscal year
GHG	greenhouse gas
GWP	Global Warming Potential
HFC	hydrofluorocarbon
HHV	higher heating value
HVAC	heating, ventilating, and air conditioning
INEEL	Idaho National Engineering and Environmental Laboratory (a forerunner of INL)
INL	Idaho National Laboratory
INWMIS	INEEL Nonradiological Waste Management Information System
LandGEM	Landfill Gas Emissions Model
LNG	Liquefied Natural Gas
LPG	Liquefied Propane Gas
MFC	Materials and Fuels Complex
MRR	Mandatory Reporting of Greenhouse Gases Rule
MSW	municipal solid waste

MT	metric tonnes
N_2O	nitrous oxide
NF_3	nitrogen trifluoride
NWPP	Northwest Power Pool
PFC	perfluorocarbon
REC	Renewable Energy Certificate
SF_6	sulfur hexafluoride
SMC	Specific Manufacturing Capability
T&D	Transmission and Distribution
TIMS	Transportation Issues Management System
TSD	Technical Support Document
WECC	Western Electricity Coordinating Council

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1. INTRODUCTION

Idaho National Laboratory (INL) has been in operation since 1949. Battelle Energy Alliance (BEA) currently operates INL for the Department of Energy (DOE). In addition to specializing in nuclear energy, INL supports the overall DOE missions in energy research, science, and national defense as indicated in their stated mission to "Discover, demonstrate and secure innovative nuclear energy solutions, clean energy options and critical infrastructure."

The INL Site covers approximately 890 square miles of high-elevation desert in southeastern Idaho and is home to multiple facilities operated by several contractors in addition to BEA. BEA is currently the largest contractor and is responsible for day-to-day management and operation of the Laboratory. Through fiscal year (FY) 2016, other major contractors operating at the INL Site included:

- Fluor Idaho, LLC manages the Idaho Cleanup Project, which includes the Idaho Nuclear Technology Center facility and the performance of cleanup work across the INL Site and operates the Advanced Mixed Waste Treatment Project
- Bechtel Marine Propulsion Corporation (BMPC) operates the Naval Reactor Facilities
- DOE Idaho Operations Office (DOE-ID).

This report will look exclusively at the greenhouse gas (GHG) emissions that INL (BEA) owns; it is assumed that other contractors will provide similar reporting for the activities they control. All attempts have been made to look only at INL's emissions unless otherwise indicated. In this report "INL" is used to indicate the BEA operations and employees to which this report applies, while "INL Site" will apply to the entire geographical area and all contractors.

INL's employees work at multiple locations throughout the INL Site, as indicated in Figure 1. The metropolitan area closest to the Site is Idaho Falls, which is also the location of the Research and Education Campus or "town" facilities. The major campuses within the INL Site where INL employees work include the Advanced Test Reactor (ATR) Complex (45 miles west of Idaho Falls), Materials and Fuels Complex (MFC, 28 miles west of Idaho Falls), and the Specific Manufacturing Capability (SMC, 60 miles northwest of Idaho Falls). The INL Site's large geographical area and long history make for some unique characteristics, including:

- Long Commutes. Approximately half of INL's employees work at Site desert locations that are between 30 and 50 miles west of Idaho Falls, and ride INL buses or utilize their own personal vehicles to commute to work.
- Large Transportation Fleet. INL operates a large vehicle fleet that includes light-duty passenger vehicles, commercial buses, and off-road equipment. This fleet is being modernized through a transition to General Services Administration vehicles. INL's commercial buses are used for transporting employees from all INL Site contractors on their commute to and from the Site facilities.
- Antiquated Facilities. The INL Site includes hundreds of buildings, some are DOE-owned and some leased; however, many of these buildings are aged. INL is in the process of modernizing its buildings to support the INL mission, attract and retain its work-force, and satisfy Executive Order (EO) requirements.

Figure 1. Location map of the INL Site and major facilities.

On a historical note, INL is home to the peaceful atom—the world's first usable amount of electricity produced from nuclear energy was generated at INL's forerunner, the National Reactor Test Station, in 1951. With such a long history and a commitment to revitalizing nuclear energy, a low-carbon source of energy, it is only appropriate that INL would be interested in lowering its own GHG emissions.

The first step to quantifying any GHG savings is to establish a baseline. Fiscal Year (FY) 2008 was chosen as the baseline year since this calculation effort will also support EO 13693, "Planning for Federal Sustainability in the Next Decade" requirements to report on and reduce GHG emissions based on an FY 2008 baseline. This report documents the effort to calculate the GHG emissions for FY 2016 and compares them to the FY 2008 baseline results. (For more information on INL's FY 2008 GHG Baseline results, see INL/EXT-10-19264, "Idaho National Laboratory's Greenhouse Gas FY08 Baseline.")

This report documents the methodology and calculations to determine the INL GHG inventory, and provides perspective on the results of INL's GHG inventory (also referred to as the carbon footprint). Methodology is still being fine-tuned for calculating GHGs, particularly at the federal level where the intent is to standardize the emissions categories considered and the associated calculations to standardize reporting. These GHG inventory calculations follow the most current methodology available: the EO 13514,[a] "Federal Greenhouse Gas Accounting and Reporting Guidance, Revision 1" (referred to herein as the Guidance) [2012], and its accompanying "Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document" (referred to herein as the TSD) [2012]. In addition to

a. No new technical support documentation was issued with the new EO 13693; therefore, to maintain consistency, the 2012 TSD methodologies were followed.

standardizing the methodology, these documents attempt to best utilize the data that federal facilities are already required to report, such as fuel (for energy and fleet) and electricity usage. The Guidance and TSD uses a combination of existing guidance and regulations as their basis, including:

- The World Resource Institute's and Land Management Institute's Public Sector GHG Accounting and Reporting Standard (Public Sector Standard)
- Environmental Protection Agency's (EPA) Climate Leaders Guidance
- EPA's "Final Rule: Mandatory Reporting of Greenhouse Gases" (MRR, 40 CFR 98), as references for their methodologies and emission factors.

1.1 Changes from Previous Year's Reporting

A few significant changes occurred between FY 2015 and FY 2016 reporting.

First, a significant increase in the eGRID emissions factors was issued by EPA that affect Scope 2 emissions. In FY 2015, INL regional GHG emission rates were 665.75 pounds per megawatt/hour (lbs/MWh) for CO_2, 12.6 lbs per gigawatt hour (GWh) for CH_4, and 10.38 lbs/GWh for N_2O. In FY 2016, EPA updated emission reporting to the 2014 eGRID factors of 907.0 lbs/MWh, 97.8 lbs/GWh, and 14.2 lbs/GWh, respectively. While the total electricity purchased at INL increased by approximately 17,900 MWh (a 12.9% increase from FY 2015), the emissions increased by approximately 17,500 $MTCO_2e$ (a 36.5 % increase from FY 2015). When FY 2016 emissions were calculated with the former 2012 eGRID factors (as used in FY 2015), INL Scope 2 emissions from purchased electricity would have totaled 47,718.96 $MTCO_2e$ (an increase of only 5,437.9 $MTCO_2e$). As the eGRID factors are updated periodically, previous year emissions were not recalculated.

Second, a site-specific waste audit was conducted for the REC town facility municipal solid waste to help better understand what was being disposed of in the trash. As a result, an actual density was determined that affects the Scope 3 emissions. The actual density was significantly less than what INL was using as an estimate (the published EPA conversion factor). In FY 2015, the EPA conversion factor was 150 lbs/cubic yard (CY); however, in FY 2016 the actual density of 46 lbs/CY was used in all calculations.

Finally, Scope 3 emission changes occurred when INL discovered an inaccurate assumption was made for the FY 2008 offsite wastewater baseline. When the baseline was originally calculated, INL was unable to confirm if the wastewater treatment plant used nitrification, so the more conservative approach was used to assume they did use nitrification. Subsequently, INL confirmed the wastewater treatment plant does not routinely use nitrification, so the FY 2008 baseline was updated to reflect this change and resulted in a drop from 68 to 11.6 MT CO_2e.

2. WHY LOOK AT GREENHOUSE GASES?

INL has many reasons to calculate the organization's GHG emissions, including environmental and political pressures external to INL as well as internal requirements within the Laboratory.

When considering the results of this analysis, it will be important to consider the limits of the analysis. While a GHG inventory is currently the popular method for assessing an organization's environmental impacts, it is focused on just one impact to the earth: climate change. It is important to keep the full lifecycle effects of various sources of environmental impact in mind—including air pollution, habitat degradation, and resource extraction—when making a decision or drawing any overall conclusions.

2.1 Environmental Motivations

Environmental impacts come in a variety of forms. Many emitted pollutants have been the subject of historical environmental regulation (e.g., air pollutants by the Clean Air Act of 1963 or water pollutants by the Federal Water Pollution Control Amendments of 1972). Climate change (sometimes called global warming) is a primary focus of current scientific inquiry, and policymaking reflects the current understanding of the impact of GHGs in causing anthropogenic climate change. Policies currently being considered include the introduction of carbon taxes or carbon-emissions trading—a market-based system of incentives aimed at achieving reductions in emissions of GHGs. Such a system might bear a similarity to the trading system in place in the United States that regulates SO_2 emissions under the Clean Air Act of 1990.

2.2 Political Motivations

This effort of identifying and calculating GHG emissions supports EO 13693, "Planning for Federal Sustainability in the Next Decade," signed in March 2015. The EO requires that federal agencies "lead by example" in measuring, reporting, and reducing GHG emissions. It requires that agencies of the federal government report existing emissions and steps taken to eliminate pollutants in a way that is transparent.

This report represents the effort to catalog INL's contribution to the INL Site carbon footprint. To be in compliance with the EO, some emission metrics must be separated from information that INL already tracks and reports for the entire Site (e.g., fuels and electricity), and several metrics, such as employee commuting and travel, are tracked now to comply with the EO.

2.3 INL Objectives

INL chooses to support efforts to monitor and reduce GHG emissions for several reasons. These include an existing Battelle Corporate initiative that seeks to monitor and reduce the corporate contribution to GHG emissions. As a research institution committed to making contributions in the areas of energy research and national security, INL has mission-based interests in the clean, sustainable production of energy. Its historical interest in nuclear reactor testing represents a longstanding commitment to low-carbon power generation.

INL is committed to sustainability. A GHG inventory is an accepted method of identifying environmental impacts, and assessing major contributions to GHG emissions and the best methods to reduce them.

2.3.1 Sustainable INL

The Sustainable INL Program is part of a movement among federal agencies to evaluate current processes and establish goals for achieving sustainability. The Sustainable INL mission is to "enable researchers who ensure the nation's energy security with safe, competitive, and sustainable energy systems without compromising the ability of future generations to meet their own needs." Its intent is to enable innovation and research while simultaneously improving energy efficiency, becoming responsible

environmental stewards, and conserving natural resources. Focus areas within the program include those covered in EO 13693: greenhouse gas emission reduction, energy efficiency, sustainable buildings, community involvement, data center efficiency, renewable energy, water conservation, fleet efficiency, sustainable acquisition, recycling (Pollution Prevention), electronics stewardship, and climate change adaptation. Sustainable INL relies on management and employee participation to achieve its goals. For questions specific to Sustainable INL, visit www.inl.gov/about-inl/inl-safety/sustainability/, or contact Chris Ischay (Program Manager, 208-526-4382, Christopher.Ischay@inl.gov), Ernest Fossum (Energy Manager, 208-526-2513, Ernest.Fossum@inl.gov), or Maryl Fisher (Senior Energy Analyst, 208-526-8340, Maryl.Fisher@inl.gov).

3. CALCULATION APPROACH

3.1 Selected GHG Protocol

As mentioned in Section 1, these calculations follow the Guidance and the TSD unless otherwise indicated.

3.2 Defined Inventory Boundaries

This GHG inventory considers all INL-owned operations, including buildings and employees. As mentioned in the Introduction, several other contractors operate on the INL Site including Fluor Idaho and BMPC. Facilities managed by these other contractors were not included in this inventory. Some non-INL employees (including DOE-ID) are located in several INL buildings that were included in these calculations, but since INL pays for the operations (e.g., boiler fuels, electricity, solid waste removal) and thus has operational control, these were counted in the INL inventory. Operations directly associated with the employees of other contractors (such as employee travel and employee commuting) were not included in INL's inventory GHG calculations.

The following metrics are offered to give a sense of scale for INL's and FY 2016 contributions to the overall INL Site's GHG inventory:

- INL employees (including interns and temporary employees) amounted to 4,087 of the combined 5,800 (approximate) employees at the INL Site during FY 2016 (excluding Naval Reactors Facility)
- The total square footage of buildings owned by INL or occupied by INL personnel and used for INL operations represented 58.7% of the total 5.75 million square feet that made up the INL Site in FY 2016 (61.8% of 532 buildings)[b]
- The percentage of electrical power consumed by INL operations and personnel is 71.0% of the total 221,525 MWh.

3.3 Defined Scope

GHG inventories or footprints consider emissions from three emissions scopes (Scope 1, 2, and 3) as indicated in Figure 2, and described below:

- Scope 1: Direct or INL-owned emissions that are produced onsite, such as stationary combustion (from fuel combustion), mobile combustion (from fleet vehicles), and fugitive emissions (from refrigerants, onsite landfills, and onsite wastewater treatment). These include emissions that may benefit another entity or contractor, but for which INL controls or owns the associated process.
- Scope 2: Indirect or shared emissions produced by INL's electricity, heat, and steam purchases. (Note that INL did not purchase heat or steam during FY 2016.)
- Scope 3: Indirect or shared emissions generated by outsourced activities that benefit INL (occur outside INL's organizational boundaries, but are a consequence of INL's activities). This can include a large number of activities, but for purposes of this inventory, INL focused on transmission and distribution losses, employee commuting, employee travel, contracted waste disposal, and contracted wastewater treatment since these categories were identified in the TSD for required reporting. Other activities that could be included in Scope 3 include the embodied emissions of purchased materials.

b. These are based on the numbers provided in the FIMS snapshot at the end of FY 2016 (typically in November of the next fiscal year), which is considered representative for the entire year. INL's portion is based on the buildings that belong to the DOE Nuclear Energy program, while the remaining buildings at the INL Site belong to the Environmental Management program. The total number of buildings only includes those considered energy-consuming, to be consistent with information submitted in the annual DOE Sustainability Dashboard.

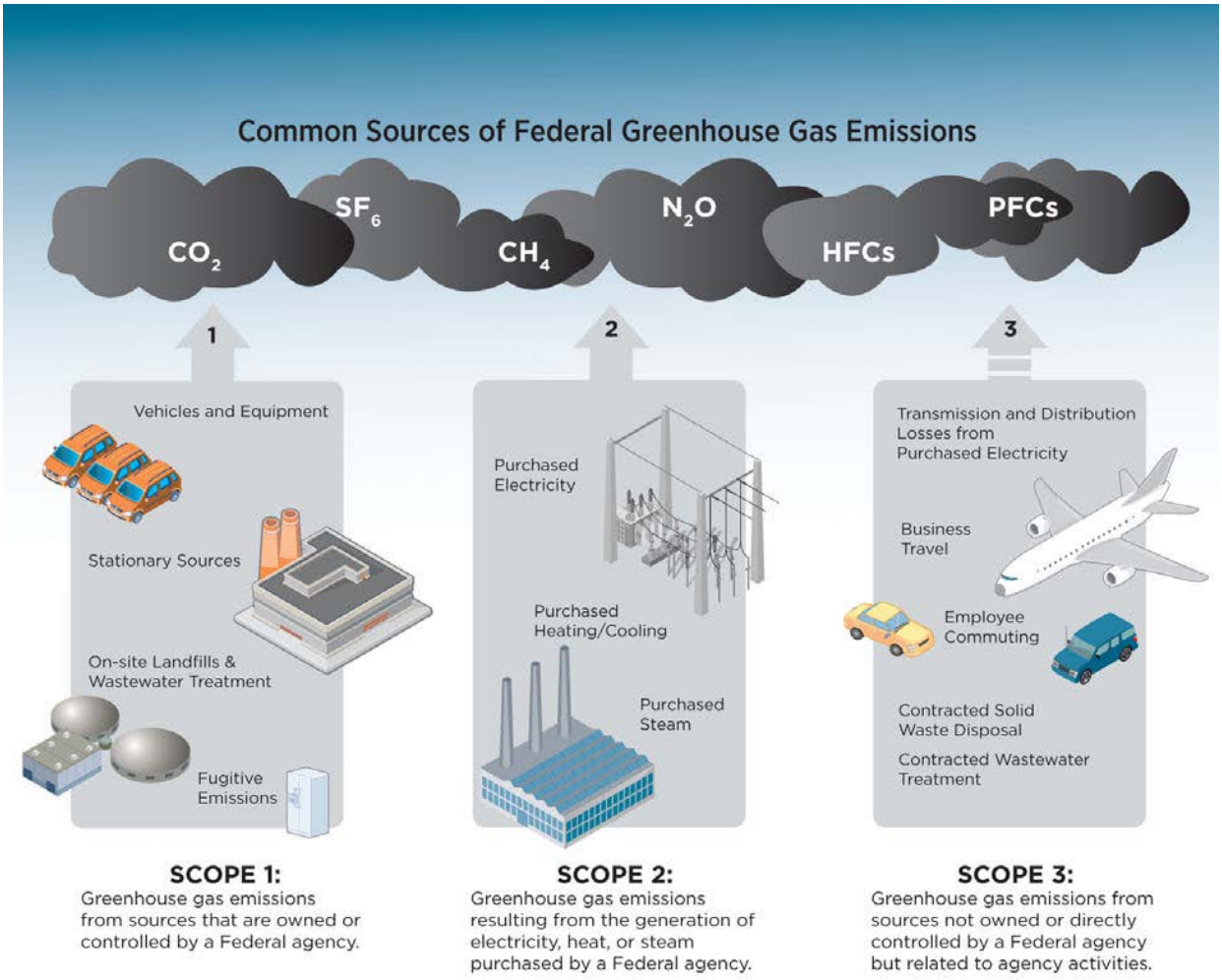

Figure 2. GHG emissions from Scope 1, 2, and 3.

This inventory considered the following six gases: carbon dioxide (CO_2), sulfur hexafluoride (SF_6), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs), as required by the Guidance. Nitrogen trifluoride (NF_3) and other GHGs with high global warming potential (GWP) are identified for optional reporting.

The GWP of the gases considered was used to convert all GHG emissions to units of carbon dioxide equivalent (CO_2e)—a means of describing the cumulative effect of all GHGs weighted by their 100-year warming potential. The GWP indicates each gas's heat-trapping impact relative to CO_2, which has a GWP of 1.0 and functions as a warming index. The GWP values used for the FY 2016 calculations are based on the EPA MRR and are shown in Appendix A, "Global Warming Potentials."

Table 1 summarizes the GHG emissions categories that were identified in the Guidance and TSD, whether they were calculated for INL's FY 2016 report, and their reporting status in the Guidance and TSD (identified as required or recommended for reporting). Some Scope 3 GHG sources will not require reporting until FY 2016 or later since the calculation method for determining their emissions is still being developed.

Table 1. GHG emissions categories identified in Guidance and TSD.

Scope	Emissions Category	Calculated for FY 2016	Reporting Status in Guidance and TSD
1 (Direct)	Stationary Combustion (Boilers, Generators, etc.)	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Mobile Combustion (Fleet Vehicles)[a]	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Fugitive Emissions: Refrigerants	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Fugitive Emissions: Onsite Landfill	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Fugitive Emissions: Onsite Wastewater Treatment	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Industrial Process Emissions (Manufacturing or Processing Chemicals or Materials)	No, INL does not perform any of the activities listed in the TSD	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
2 (Indirect)	Purchased Electricity	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Purchased Steam, Hot Water, or Chilled Water	No, INL does not purchase	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Combined Heating and Power	No, INL does not utilize	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Purchased Steam from Waste to Energy	No, INL does not purchase	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Transmission & Distribution (T&D) Losses (within INL's operational controls)	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Purchased Green Power (Renewable Energy Certificates [RECs])	Yes, INL purchased RECs	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
3 (Indirect)	T&D Losses (outside INL's operational controls)	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Employee Commuting	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Business Air Travel	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Business Ground Travel: Rental Vehicle	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Business Ground Travel: Personal Vehicle	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Contracted Municipal Solid Waste (MSW) Disposal	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.

Table 1. (continued).

Scope	Emissions Category	Calculated for FY 2016	Reporting Status in Guidance and TSD
3 (Indirect) (cont'd)	Contracted Wastewater Treatment	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Vendor and Contractor Emissions (Indirect emissions in the supply chain)	No, will wait for additional guidance.	Do not require reporting at this time, but future inventories will include these emissions. It is expected that this category will be a large contributor to INL's GHG inventory.
	Fuel Production	No	Do not require reporting at this time, but future inventories are expected to include these emissions.
	Land Management (changes that sequester or release GHGs)	No	Do not require reporting at this time.
	Biomass Combustion, Enteric Fermentation, Composting, and Manure Management	No, INL does not perform.	Do not require reporting at this time.
Biogenic[b]	Mobile Combustion	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Stationary Combustion	No, INL did not utilize biofuels for this category.	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Fugitive Emissions: Onsite Landfill	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.
	Contracted MSW Disposal	Yes	Required reporting in FY 2008 Baseline and FY 2016 Inventory.

a. This includes CH_4 and N_2O from biofuel blends. Per the TSD, biogenic CO_2 emissions generated from combustion of biofuels are counted separately since this carbon would have been released through the plant's natural decomposition.
b. Note that biogenic emissions will not count against GHG reduction targets.

As shown in Table 1, the TSD differentiates between anthropogenic and biogenic emissions for reporting purposes. Anthropogenic emissions are those that are human caused, while biogenic emissions are considered to be those that would have been released due to naturally occurring processes (without human involvement). For example, when considering the combustion of biofuels versus fossil fuels, the carbon from biofuels is absorbed from the atmosphere during plant growth and recycled during the natural decomposition process; therefore, the combustion of biofuels is considered biogenic, while the carbon from fossil fuels has been locked in the earth for millennia and will yield a net increase in atmospheric carbon relative to what would have occurred naturally. Although the TSD requires reporting of biogenic emissions, they will not count against an agency's GHG reduction targets; therefore, INL will focus on their anthropogenic emissions.

3.4 Identified Greenhouse Gas Emissions Categories

After identifying which GHG emission categories in Table 1 would need to be calculated for INL, the next step is to identify where to find the INL-specific organizational data for performing the calculations. Table 2 summarizes the INL-specific data sources for each emissions category.

Table 2. INL's GHG emissions categories for Scopes 1, 2, and 3.

Scope	Emissions Category	INL Data Source
1 (Direct)	Stationary Combustion (Boilers, Generators, etc.)	Fuel consumption reports (INL's Quarterly Energy Reports and Fuel Sheets)
	Mobile Consumption (Fleet Vehicles)	Fuel consumption database (Transportation Issues Management System [TIMS]) and Fuel Sheets
	Fugitive Emissions: Refrigerants	Refrigerant purchases, use, and disposal (Comply Plus Database)
	Fugitive Emissions: Onsite Landfill	INL Landfill records (INEEL Nonradiological Waste Management Information System [INWMIS])
	Fugitive Emissions: Onsite Wastewater Treatment	INL's Environmental Support & Services and Human Resources staff
2 (Indirect)	Purchased Electricity	INL's Quarterly Energy Reports
	Purchased RECs	RECs Purchase Documentation
3 (Indirect)	T&D Losses	INL's Quarterly Energy Reports
	Employee Commuting	FY 2016 Employee Commute Survey Results
	Business Air Travel	INL Travel Office
	Business Ground Travel: Rental Vehicle	INL Travel Office
	Business Ground Travel: Personal Vehicle	INL Travel Office
	Contracted MSW Disposal	City of Idaho Falls Sanitation invoice records
	Contracted Wastewater Treatment	City of Idaho Falls
Biogenic	Mobile Combustion	Fuel consumption databases (TIMS)
	Fugitive Emissions: Onsite Landfill	INL landfill records (INWMIS)
	Contracted MSW Disposal	City of Idaho Falls Sanitation invoice records

The identification of sources of information for the different emissions allows for the:

- Collecting of necessary data from sources identified in Table 2.
- Gathering of necessary emissions factors (the TSD was consulted as a primary document, and then the EPA's Climate Leaders guidance was referenced if the applicable emissions factors were not available in the TSD).

- Calculating inventory of INL's GHG emissions categories. For each emissions category, the GHG emissions were calculated in metric tons of CO_2e based on INL-specific data, emission factors, and applicable GWPs. (A sample calculation is shown in Appendix B, "Sample Calculation.") The majority of these calculations were performed following the TSD, with Excel spreadsheets prepared specifically for establishing INL's GHG inventory. Exceptions to this process are noted in the sections below and include the emissions from the onsite landfill, which were calculated using an EPA model (per the TSD).

4. DISCUSSION AND RESULTS

4.1 Summary

Table 3 and Figure 3 through Figure 5 summarize the GHG emissions from INL during FY 2016. Details on the emission factors and calculation methods used, as well as a discussion of the individual results, follow in the sections below.

Table 3. INL's GHG emissions during FY 2016.

Scope	Emissions Category	FY 2016 GHG Emissions (MT CO_2e)
1 (Direct)	Stationary Combustion	6,130.36
	Mobile Combustion	6,911.56
	Fugitive Emissions: Refrigerants	413.94
	Fugitive Emissions: Onsite Landfill	6,282.00
	Fugitive Emissions: Onsite Wastewater Treatment	159.15
	SCOPE 1 TOTAL	**19,897.00**
2 (Indirect)	Purchased Electricity	65,156.06
	Transmission & Distribution Losses (Owned)	1,002.65
	Purchased RECs	(20,830.75)
	SCOPE 2 TOTAL	**45,327.96**
3 (Indirect)	Transmission & Distribution Losses (Shared)	4,293.78
	Employee Commuting	9,617.00
	Business Air Travel	5,492.71
	Business Ground Travel: Rental Vehicle	357.25
	Business Ground Travel: Personal Vehicle	231.79
	Contracted MSW Disposal	295.35
	Contracted Wastewater Treatment	11.67
	SCOPE 3 TOTAL	**20,299.54**
TOTAL ANTHROPOGENIC EMISSIONS[a]		**85,524.50**
Biogenic	Mobile Combustion	1,635.86
	Fugitive Emissions: Onsite Landfill	766.10
	Contracted MSW Disposal	32.49
TOTAL BIOGENIC EMISSIONS		**2,434.45**
TOTAL EMISSIONS (ANTHROPOGENIC + BIOGENIC)		**87,958.95**

a. INL will report these numbers as their overall emissions. Furthermore, INL will try to reduce this number in future years.

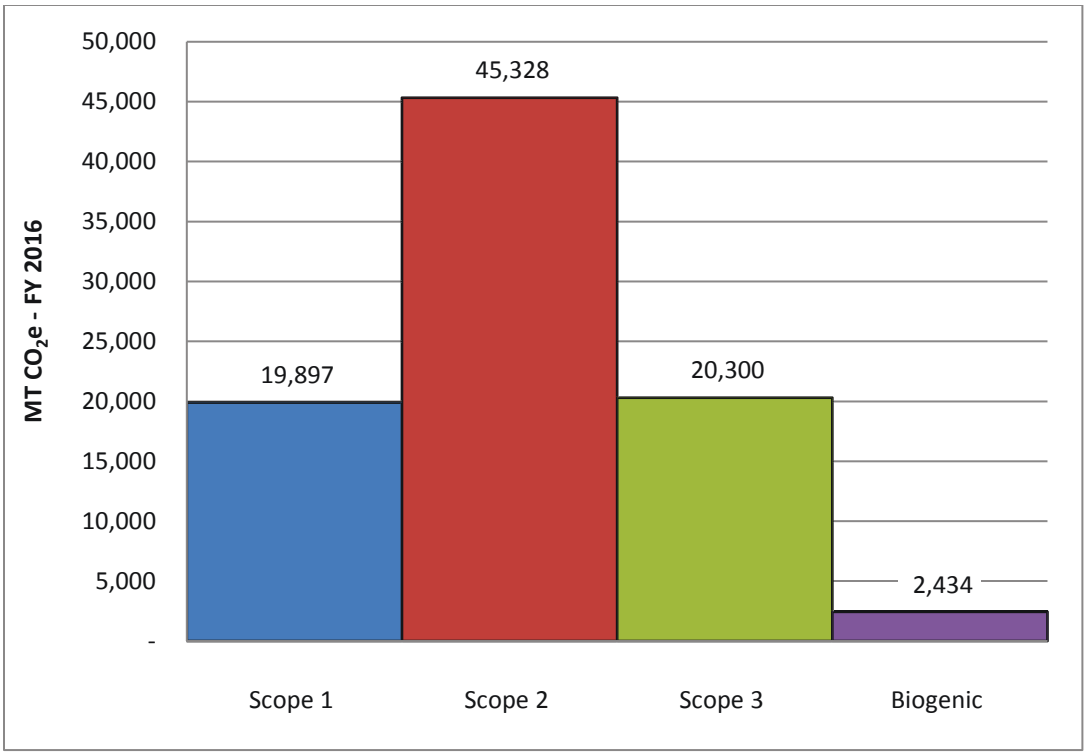

Figure 3. INL's FY 2016 GHG emissions, by scope.

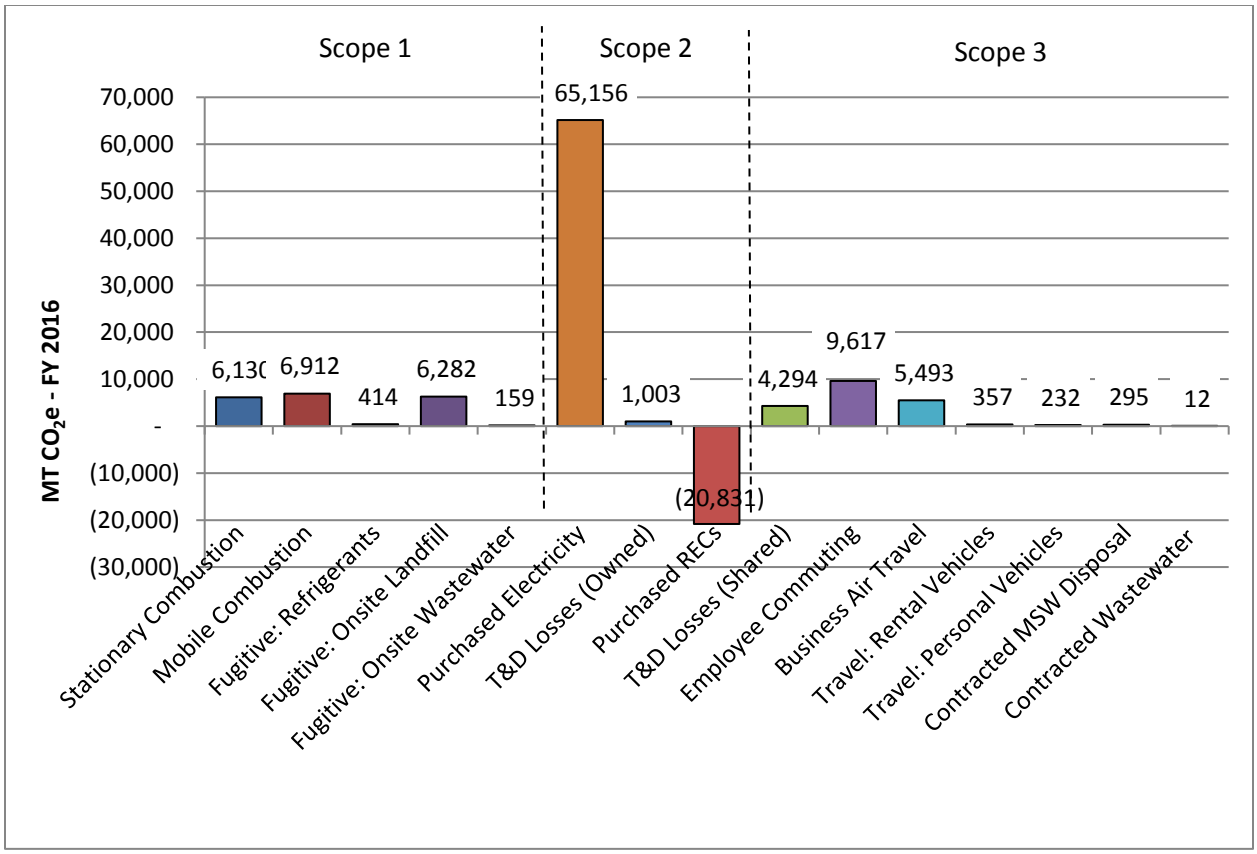

Figure 4. INL's FY 2016 GHG emissions, by scope and emissions category, excluding biogenic emissions.

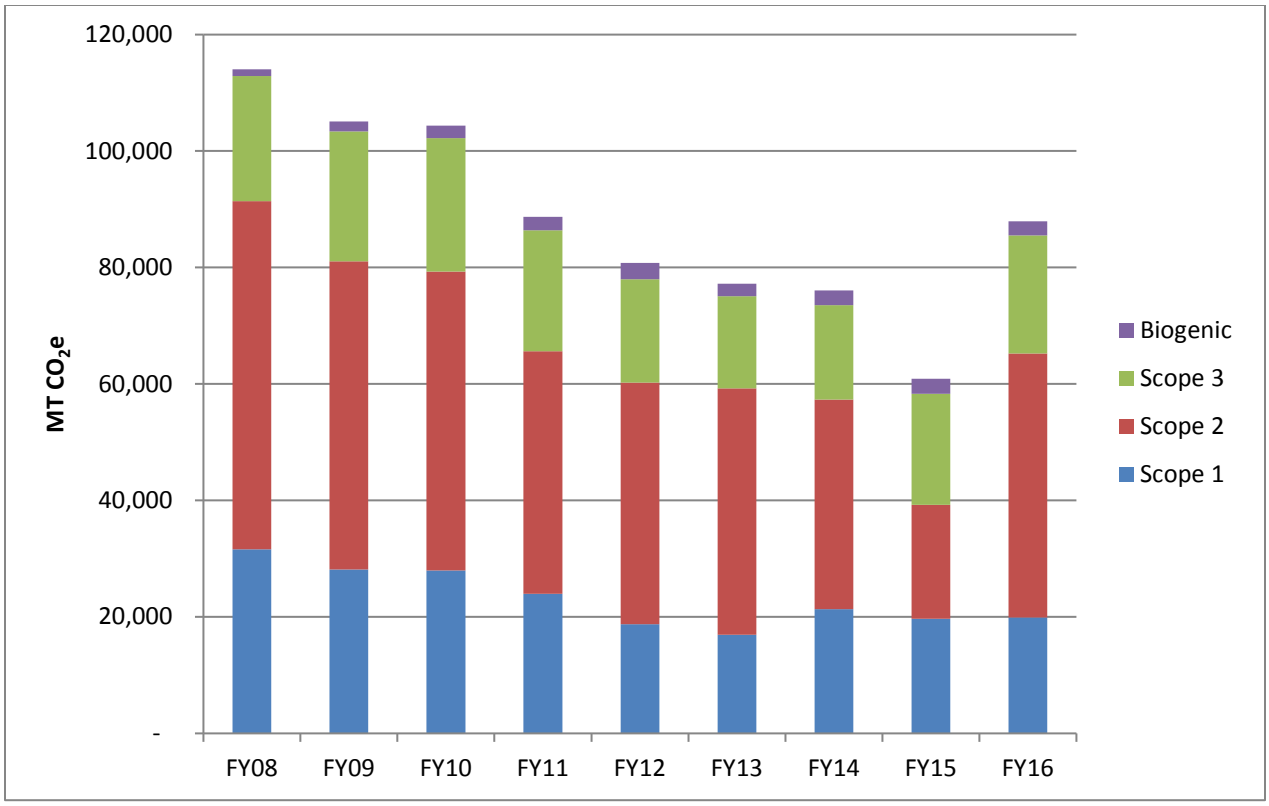

Figure 5. Comparison of INL's FY 2008 through FY 2016 GHG emissions, by scope and emissions category, including biogenic emissions.[c]

4.2 Scope One – Direct Emissions

INL's FY 2016 Scope 1 emissions are summarized in Figure 6, with a comparison to the FY 2008 baseline shown in Figure 7. A discussion of each of the Scope 1 emissions categories follows and includes the calculation methods, the significance of the results, lessons learned from the data collection and calculation process, and a comparison to the FY 2008 baseline results. A comprehensive table, as well as the FY 2008 baseline emissions and the subsequent FY data is included in Appendix C, "Scope 1 Comprehensive Tables."

c. Scope 2 numbers for FY 2011 and FY 2012 were revised in FY 2013 as a result of a revision to Scope 2 total calculations.

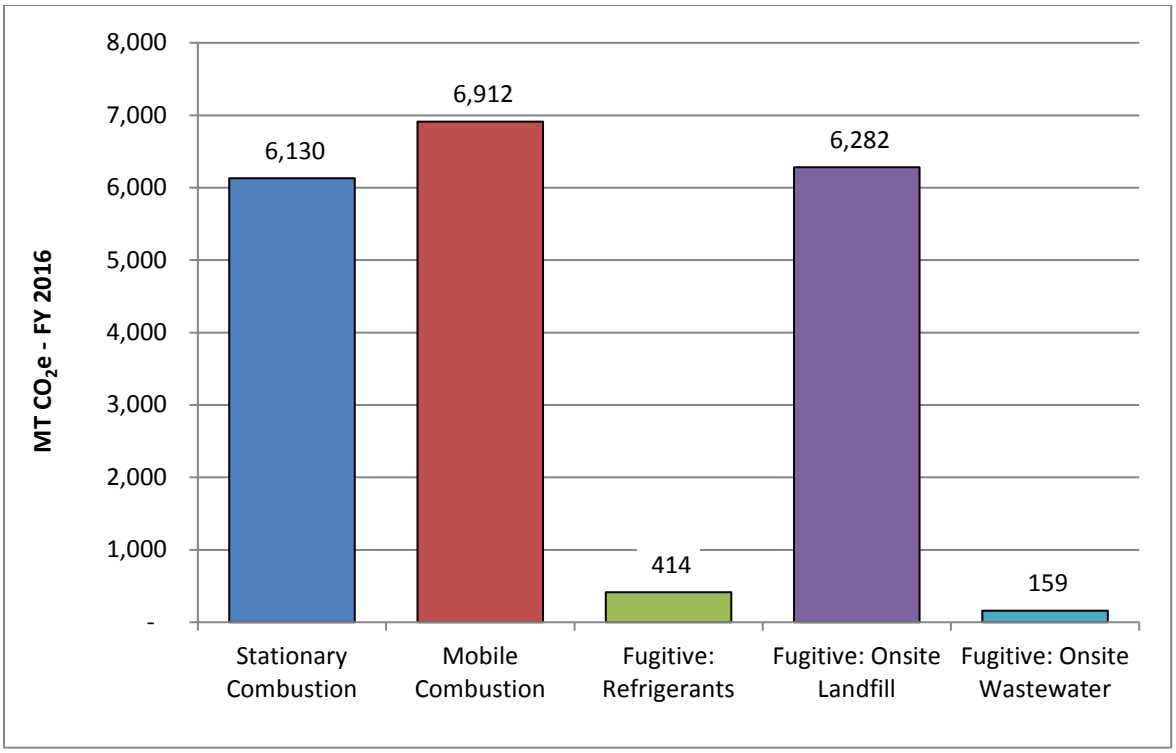

Figure 6. INL's FY 2016 GHG emission results for Scope 1.

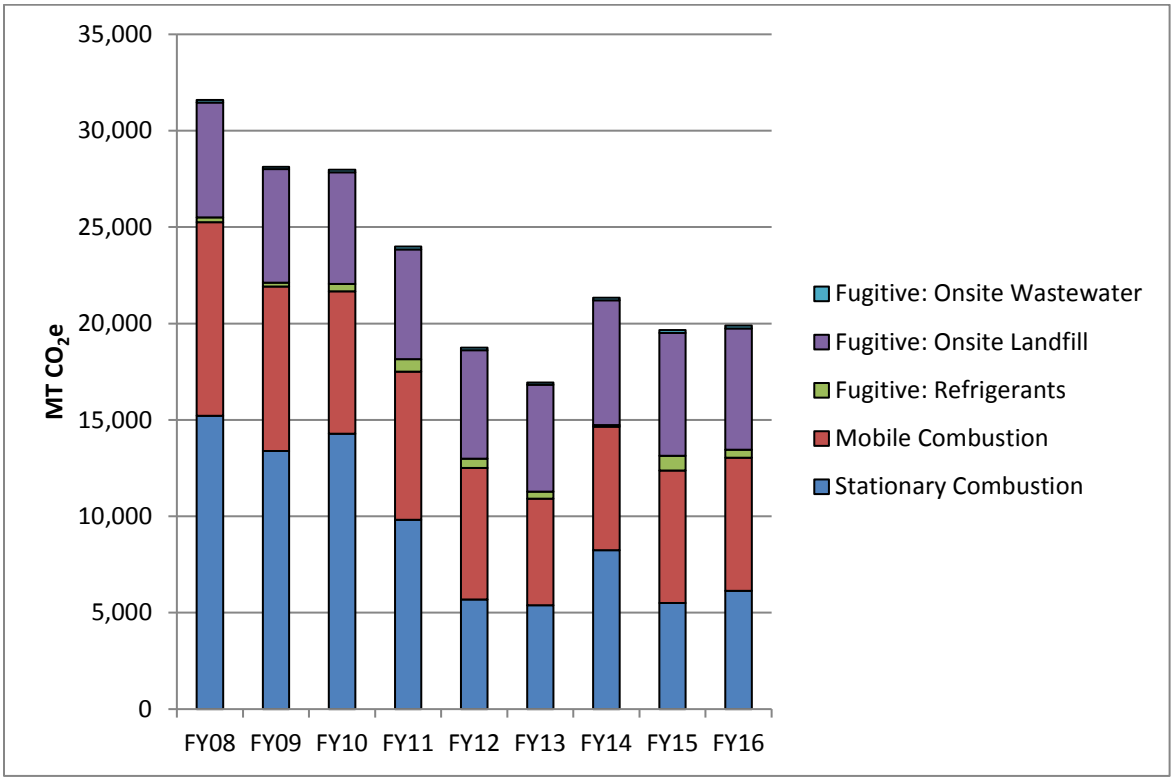

Figure 7. Comparison of INL's FY 2008 through FY 2016 Scope 1 GHG emissions.

4.2.1 Stationary Combustion Emissions

4.2.1.1 Calculation Method. To estimate the GHG emissions of INL's stationary combustion from boilers and generators, the default methodology identified in the TSD was adopted. This consisted of obtaining the total amount of fuels used (purchased) onsite by INL. Since these data are also submitted for the DOE Sustainability Dashboard, and are already tracked for the INL Site, the only calculations needed were to isolate the emissions that INL owns from those owned by other INL Site contractors by separating the fuels purchased for INL-operated facilities.

4.2.1.2 Results Discussion. During FY 2016, INL used the types and amounts of fuel shown in Table 4 for stationary combustion.

Table 4. Amounts of fuel used for stationary combustion at INL during FY 2016.

Energy Type	Fuel Used		GHG Emissions (MT CO_2e)
	Amount	Units	
Fuel Oil No. 2	190,473	Gallons	1,950.72
Liquefied Natural Gas (LNG)	35,721	Gallons	263.01
Liquefied Propane Gas (LPG)	113,553	Gallons	647.33
Natural Gas (Pipeline)	617,312	Therms	3,269.30
		TOTAL	**6,130.04**

As shown in Table 4, INL's stationary combustion emissions were calculated to produce 6,130 MT CO_2e in FY 2016. In FY 2016, this equates to 30.8% of INL's Scope 1 emissions, and 7.2% of the total anthropogenic emissions considered.

Since these data are already collected and reported annually for the DOE Sustainability Dashboard, they are considered to be of high quality.

4.2.1.3 Lessons Learned. Since the data are already gathered at INL for the DOE Sustainability Dashboard, no changes are needed for reporting in future years. In addition, the data are considered accurate, with all INL-owned sources of stationary combustion included.

4.2.1.4 Comparison to FY 2008 Baseline. The FY 2016 results showed a 59.7% decrease over the FY 2008 baseline. Looking closer at the differences among the four fuel types showed an 84% decrease in diesel, 18% decrease in LNG deliveries (to the Site), 24% decrease in propane deliveries, and a 160.9% increase in natural gas (to town facilities).

MFC discontinued use of diesel-fueled boilers in 2011 and 2012 and ATR Complex switched from diesel-fueled boilers to electric boilers with battery backup in May 2015, resulting in a significant decrease in diesel usage compared with FY 2008. As for the changes in natural gas at town facilities, several new buildings (UB1–UB4, RESL, ESL, and EIL) came online in between FY 2009 and FY 2016 and are now reaching full operating capacity, which likely accounts for the increased use in FY 2016.

4.2.2 Mobile Combustion Emissions

INL operates a large vehicle fleet that includes everything from light-duty passenger vehicles to commercial buses to off-road equipment (including bulldozers, backhoes, cranes, road graders, dump trucks, tractors, manlifts, and even a compactor for the onsite landfill).[d] This fleet is being modernized by a variety of methods to lower overall fuel consumption and increase the use of alternative fuels, including the following:

- Used B20 biodiesel blend for year-round use rather than a B10 and B20 winter/summer blend throughout the year (formerly averaged as B15).
- Increased overall bus efficiencies by implementing two additional express routes. These efficiency gains were achieved in conjunction with continued efforts at right sizing the fleet with more flex-fuel vehicles while reducing petroleum-only vehicles.
- Used innovative technology to track and reduce fuel usage such as Global Positioning System, Radio Frequency Identification fuel rings, and data logger technology to monitor engine performance and driver habits.

INL's commercial buses are used for transporting other INL Site contractor employees, as well as BEA employees, on their commute to and from the Site facilities. Since INL owns the bus operations for all Site contractors, these emissions are considered Scope 1 for INL.

During FY 2016, INL continued to:

- Research feasibility of converting and implementing use of dual-fuel (LNG and diesel) buses to further reduce fossil fuel use and GHG emissions. INL converted two additional buses to dual fuel for a total of seven conversions, allowing these buses to run on biodiesel and LNG. INL also replaced aging buses in the INL fleet with six new motor coaches that run on B20 and have improved fuel mileage by up to 100% (from 3 to 6 mpg).
- Continued implementation of the Park and Ride concept to reduce bus fuel usage, and developed additional Park and Ride lots for employees at outlying locations.
- Work with Motor Coach Industries to test and compile data on fuel efficient prototype coaches and systems that Motor Coach Industries partners with INL to evaluate.
- Right size the fleet with more fuel efficient vehicles.

4.2.2.1 Calculation Method. To calculate the GHG emissions from INL's mobile combustion sources, a combination of the default and advanced methodology from the TSD were used. INL tracks the majority of its fuel usage in TIMS, which tracks fuel used by vehicle type for road vehicles (when fuel taxes are paid), as well as a number of other vehicle metrics. A small portion of INL's fuel use is tracked with fuel sheets for off-road equipment (for which no fuel taxes are paid).

Since the amount of each type of fuel consumed by general vehicle type (bus, light-duty truck, light-duty car, equipment, and heavy-duty truck) was known (see Table 5), more specific CH_4 and N_2O emission factors were used than what is assumed for the TSD default methodology. Since the number of miles traveled by vehicle type is not tracked accurately (some employees bypass inputting this value while refueling), the average mileage by vehicle type was used to calculate this value. For CH_4 and N_2O emission factors based on the vehicle's emission control technology (approximated by the vehicle model year) conservative assumptions were made as indicated in Appendix D, "Emissions Factors Used."

d. Confirmed in February 11, 2014, e-mail from Tad Pearson and in discussion with Kathy Miles.

4.2.2.2 Results Discussion. During FY 2016, INL used a combination of fossil fuels and biofuels to power its diverse vehicle fleet as shown in Table 5. Per the TSD, the CO_2 emissions from biofuels are to be considered biogenic rather than anthropogenic emissions[e]; therefore, they were calculated and reported separately.

Table 5. Fuel amounts and corresponding GHG emissions for INL's FY 2016 fleet.

Fuel Type	Vehicle Type	Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)
B20 Biodiesel Blend[d]	Bus	419,171.00	3,426.53	792.36
	Equipment	6,738.38	55.64	12.74
	Heavy Duty	346.49	2.83	0.65
	Light-Duty Truck	44.52	0.36	0.08
Diesel	Bus	12,330.09	125.96	—
	Equipment	63,002.37	648.83	—
	Heavy Duty	69,461.50	709.91	—
	Light-Duty Car	0.00	—	—
	Light-Duty Truck	10,882.41	111.15	—
E10 Ethanol Fuel Blend	Bus	—	—	—
	Equipment	17,170.50	137.43	9.87
	Heavy Duty	20,892.31	174.99	12.01
	Light-Duty Car	521.70	4.29	0.30
	Light-Duty Truck	152,032.59	1,266.31	87.40
E85 Ethanol Fuel Blend	Equipment	1,318.09	2.13	6.44
	Light-Duty Car	2,776.33	4.91	13.57
	Light-Duty Truck	143,336.44	240.28	700.43
	TOTAL	**920,024.73**	**6,911.56**	**1,635.86**

As shown in Table 5, INL's mobile combustion emissions were calculated to produce 6,912 MT CO_2e of anthropogenic and 1,636 MT CO_2e of biogenic GHG emissions in FY 2016. In FY 2016, this equates to 34.7% of INL's Scope 1 emissions, and 8.1% of the total FY 2016 anthropogenic emissions considered.

Since these data are already collected in TIMS and fuel sheets, they are considered to be of high quality, with all INL-owned sources of mobile combustion included.

e. Although a controversial position, the TSD states that biogenic emissions in the form of CO_2 emissions generated from biofuel combustion are to be counted separately since this carbon would have been released through the plant's natural decomposition. The CH_4 and N_2O emissions from the combustion of biofuel blends are not considered biogenic emissions.

4.2.2.3 Lessons Learned. Since the data for calculating GHG emissions from mobile combustion are already gathered at INL with TIMS, no major changes are needed for reporting in future years. However, a few tracking and reporting items could slightly improve the overall accuracy. As discussed above, the accuracy of the calculations could be improved slightly if the total miles driven were tracked along with the gallons of fuel consumed in each vehicle, and more specific vehicle information, including model year, was reported when determining the applicable CH_4 and N_2O emission factors. (Both mileage and emissions control technology affect the GHG contributions from CH_4 and N_2O, which are a small portion of the GHG compared to the CO_2 contribution.) Furthermore, other INL Site contractors' fuel use is tracked in TIMS and not readily identified as non-INL use that can be separated from INL's numbers. This includes when INL rents heavy equipment to other contractors, but these are a very small portion of the total INL use.[f]

4.2.2.4 Comparison to FY 2008 Baseline. In FY 2016, GHG emissions from mobile combustion sources decreased 31.2% over the FY 2008 baseline. When considering the differences between the total amounts of fuel consumed between these years, there was an 11.9% decrease in total gallons between FY 2016 and FY 2008.

In addition to the changes to the fleet discussed above, the largest contributor to the decrease in GHG emissions is due to the changes in fuel types used since FY 2008. The largest fuel user at INL is the buses that were moved away from LNG (small amount of fuel used in FY 2008) and diesel (large amount of fuel used in FY 2008) to biodiesel (B15 and B20 blends). Furthermore, in light-duty vehicles ethanol (E85) replaced gasoline use. These changes yielded a decrease in the associated anthropogenic emissions, and an increase in biogenic emissions.

4.2.3 Fugitive Emissions: Refrigerants

Fugitive emissions from refrigerants and fluorinated gases are those GHG emissions from equipment and vehicles that are not captured or destroyed by an emissions control system (those that do not pass through a stack, chimney, etc.).

4.2.3.1 Calculation Method. DOE Headquarters (DOE-HQ) publicized a data call in October 2010 for each facility's FY 2010 fugitive emissions from refrigerants and fluorinated gases that focused on the gases listed in Table 6, identified by their Chemical Abstract Service (CAS) number. The 2016 DOE Sustainability Dashboard data call did not include updated guidance, so the list of gases provided in FY 2010 was used for FY 2016. Note that the calculation methodologies for the 2016 DOE Sustainability Dashboard differ significantly from the TSD; therefore, the results vary greatly. As INL's inventory system does not allow for returning products to supply, the entire received product was assumed used or released according to the DOE Sustainability Dashboard calculations. The TSD takes several other factors into consideration when calculating emissions, including inventory differences at the beginning and end of the reporting year and how much product was received, used, recovered, or disposed. The TSD methodology was followed for this report for consistency with previous inventories. To evaluate INL's fugitive emissions during FY 2016, data from the following sources was reviewed:

- Purchase, usage, and disposal data contained in INL's chemical inventory database, Comply Plus
- Use and disposal information contained on Refrigeration Service Records
- Transaction and adjustment detail reports pulled from Comply Plus database for each CAS number.

f. Tad Pearson confirmed these small uses of INL's fuel by other INL Site contractors in a February 11, 2014, e-mail.

Queries were run in Comply Plus for the different outcomes during FY 2016 using the CAS numbers. Additionally, INL obtained electronic and hard copies of the refrigerant service records from different facilities. These records were reviewed to determine if there was a difference between the amount of refrigerant recovered from a system and its total full capacity. If fewer refrigerants were recovered than the system's full charge amount, the difference was determined to have been released (used). If there was no difference, then there was no release. Additionally, if the refrigerant service record indicated the equipment would be disposed, any difference in the amount recovered and the full charge was considered a released (used) amount. If refrigerants were disposed, the quantity indicated on the refrigerant service record was included as disposed on the spreadsheet. Transaction detail reports were run in Comply Plus for each CAS number for the specific date range to ensure no duplicate entries from the refrigerant service record and the information maintained in Comply Plus. Any duplicate data was removed from the total amount reported. Adjustment queries were also run in Comply Plus to account for "manual" changes to inventory data that is not included in the transaction detail reports. These "manual" changes typically occur during chemical inventories performed by chemical coordinators. Negative values calculated are results of "found" inventory that was previously reported as used.

This methodology aligns with the default methodology presented in the TSD. INL relied on information contained in the Comply Plus inventory database and on hard-copy maintenance records for heating, ventilating, and air conditioning (HVAC) systems and vehicles. The amounts of fluorinated gases emitted were calculated as detailed in examples in the TSD (depending on the original units of the gas included in the database or on the maintenance record).

4.2.3.2 Results Discussion. Using the method described above, the fugitive refrigerant emissions in Table 6 were considered for their contribution to INL's GHG emissions during FY 2016. A majority of the evaluated gases in the table were not considered to have any releases during FY 2016, but they are listed in the table to show that they have been evaluated. Also shown in the table is the GWP of each gas, which indicates each gas heat-trapping impact relative to CO_2.

Table 6. Fugitive refrigerants evaluated for GHG emissions during FY 2016 at INL.

		BEA 2016 DOE Sustainability Dashboard		FY 2016 TSD	
Common Name	**GWPa**	**Mass Emitted (lbs)**	**GHG Emissions (MT CO_2e)**	**Mass Emitted (lbs)**	**GHG Emissions (MT CO_2e)**
CO_2	1	161.18	0.04	−19.51	−0.01
CH_4	25	37,960.65	430.84	38.427.66	435.77
N_2O	298	0.00	0.00	1.05	0.14
HFC-23	14,800	27.6	33.57	0.00	0.00
HFC-32	675	135.08	63.90	-15.00	-4.59
HFC-41	92	0.00	0.00	0.00	0.00
HFC-125	3,500	141.20	358.44	-15.00	-23.81
HFC-134	1,100	0.00	0.00	0.00	0.00
HFC-134a	1,430	1,684.18	192.82	4.48	2.91
HFC-143	353	0.00	0.00	0.00	0.00
HFC-143a	4,470	0.00	0.00	0.00	0.00
HFC-152	53	0.00	0.00	0.00	0.00
HFC-152a	124	6.05	0.48	5.47	0.31
HFC-161	12	0.00	0.00	0.00	0.00

Table 6. (continued).

Common Name	GWPa	BEA 2016 DOE Sustainability Dashboard		FY 2016 TSD	
		Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)
HFC-227ca	NL	0.00	0.00	0.00	0.00
HFC-227ea	3,220	0.00	0.00	0.00	0.00
HFC-236ca	NL	0.00	0.00	0.00	0.00
HFC-236cb	1,340	0.00	0.00	0.00	0.00
HFC-236ea	1,370	0.00	0.00	0.00	0.00
HFC-236fa	9,810	0.00	0.00	0.00	0.00
HFC-245ca	693	0.00	0.00	0.00	0.00
HFC-245fa	1,030	0.00	0.00	0.00	0.00
HFC-365mfc	794	34.34	1.95	28.80	10.37
HFC-c-447-ef	NL	NE	NE	NE	NE
HFC-43-10mee	1,640	40.79	2.35	-9.60	-7.14
PFC-14	7,390	0.00	0.00	0.00	0.00
PFC-116	12,200	0.00	0.00	0.00	0.00
PFC-218	8,830	0.00	0.00	0.00	0.00
PFC-318 or PFCc318	10,300	0.00	0.00	0.00	0.00
PFC-3-1-10	8,860	0.00	0.00	0.00	0.00
PFC-4-1-12	9,160	0.00	0.00	0.00	0.00
PFC-5-1-14	9,300	0.00	0.00	0.00	0.00
PFC-9-1-18	7,500	0.00	0.00	0.00	0.00
c-C3F6	17,340	0.00	0.00	0.00	0.00
SF6 – Sulfur Hexafluoride	22,800	276.25	5,177.73	0.00	0.00
NF3	17,200	0.00	0.00	0.00	0.00
TOTAL		40,535.88	6,300.83	38,408.35	413.94

a. Numerous GWPs were updated in November 2013, for reporting consideration in 2014. Updated GWPs (noted in red).
NL = Not listed. GWP not listed for compound.
NE = Not evaluated. Refrigerant was not included in Consolidated Energy Data Report data call.

As shown in Table 6, INL's fugitive emissions from refrigerants were calculated to produce 413.94 MT CO_2e in FY 2016. In FY 2016, this equates to 2.1% of INL's Scope 1 emissions, and a nearly negligible amount of the total anthropogenic emissions considered.

4.2.3.3 Lessons Learned. The accuracy of the data used to calculate GHG emissions from refrigerants is hard to verify as some of the maintenance records are completed by hand and stored in hard copy. It is difficult to be assured that all of the maintenance records have been reviewed, including fluorinated gas charges. Some overlap exists in data contained on the maintenance records and Comply Plus. Comply Plus was used to verify the amounts of refrigerants emitted and the volumes reported on the maintenance records.

It may be helpful to have electronic data gathering at point of entry (i.e., maintenance personnel enter the data directly into an electronic system that updates to Comply Plus automatically, removing one potential source of error in data entry). Also, this would eliminate the requirement to obtain hard copies of the maintenance records and remove one source of information to review during the calculations.

4.2.3.4 Comparison to FY 2008 Baseline. INL's increase in FY 2016 over FY 2008 baseline is likely due to natural variations in fugitive purchasing cycles, improved data collection abilities, and using the simplified mass balance approach for calculating release emissions.

Generally, although the variation between years is large, it is important to keep in mind the escalation of scale—overall fugitive emissions are a small contributor to the total INL GHG footprint. And although slight changes make for large changes within this emissions category, they are insignificant when compared to the total footprint.

It should be noted that INL's reporting is based on the DOE-HQ data calls for FY 2008 and FY 2016. The FY 2008 baseline data call requested information on fewer items than the FY 2016 data call.

4.2.4 Fugitive Emissions: Onsite Landfill

INL utilized a combination of both an onsite and offsite (contracted) landfill for non-hazardous solid waste disposal during FY 2016. These Scope 1 calculations look at the emissions associated with solid waste disposal in the onsite landfill at the Central Facilities Area (CFA), while the Scope 3 calculations look at the emissions associated with contracted MSW disposal from town facilities that go to an offsite landfill.

INL operates the landfill at CFA, which accepts waste from all INL Site contractors. The CFA landfill currently includes one open designated area for compactable non-municipal solid waste that has been receiving waste since 1984. Three other designated waste areas have been opened and closed since 1947 and are no longer receiving waste. The CFA landfill has no landfill gas collection or destruction, is not subject to Title V GHG reporting, and has no formalized operating permit.[g] A daily soil cover is applied to produce an estimated overall soil-to-trash ratio of one-to-one. Of the 198 acres currently designated as landfill space at CFA, 150 acres have been designated for compactable non-municipal solid waste, although only a portion of this area is currently being utilized.[h]

4.2.4.1 Calculation Method. To determine the Scope 1 emissions associated with INL's onsite landfill, the historical quantities of solid waste were pulled from the INWMIS database. INWMIS tracks the amounts (by both weight and volume) and types of waste collected from each Site facility for delivery to the CFA landfill. INWMIS tracks multiple types of waste, including a number of types of construction and demolition waste. For this calculation, only two categories of waste in INWMIS were considered: Category 1 for "regular trash" and Category 2 for "cafeteria waste."

EPA's Landfill Gas Emissions Model (LandGEM) was used to calculate the GHG emissions associated with the CFA landfill, as identified in the TSD methodology. LandGEM utilizes the mass of solid waste disposed of from the year the landfill was opened until the year it was closed. The historical

g. INL's CFA landfill does not receive household waste, but it does receive a portion of waste that is MSW-like. It is operated according to a State of Idaho-approved non-municipal solid waste operating plan, which prohibits disposal of many substances including hazardous waste and sludge.

h. CFA landfill information is based on correspondence with Kathy Hernandez, e-mail dated January 29, 2013.

data shown in Table 7 were input to LandGEM to get the estimated annual amounts of CO_2 (biogenic) and CH_4 (anthropogenic) produced. These calculations only considered the open portion of the CFA landfill (open since 1984) and ignored the three areas that have been closed. Since INWMIS only includes data starting in 1992, the solid waste amounts for 1984 through 1991 were estimated based on an average trend from the available data (average of the previous 5 years). The solid waste disposed of in the CFA landfill is documented in Table 7.

Table 7. Amount of solid waste produced annually since 1984 for disposal in INL's onsite CFA landfill.

Fiscal Year	Amount of Solid Waste (tons)
1984	15,196.35
1985	15,196.35
1986	15,196.35
1987	15,196.35
1988	15,196.35
1989	15,196.35
1990	15,196.35
1991	15,196.35
1992	40,540.28
1993	8,308.58
1994	13,707.36
1995	9,178.26
1996	4,247.27
1997	1,436.32
1998	3,479.26
1999	1,135.21
2000	1,091.80
2001	972.30
2002	1,099.19
2003	1,299.64
2004	1,639.89
2005	1,070.45
2006	1,754.07
2007	1,145.95
2008	826.64
2009	647.06
2010	805.48
2011	708.65
2012	663.54
2013	567.14
2014	610.95
2015	618.91
2016	675.14
TOTAL	216,664.38

4.2.4.2 Results Discussion. INL's disposal of non-hazardous solid waste in the onsite landfill at CFA is estimated to conservatively contribute 6,282.0 MT CO_2e of anthropogenic emissions to the GHG inventory during FY 2016. An additional 766.1 MT CO_2e of biogenic emissions were contributed to the GHG inventory during FY 2016. In FY 2016, the anthropogenic emissions equate to 31.6% of INL's Scope 1 emissions, and 7.6% of the total anthropogenic emissions considered.

4.2.4.3 Lessons Learned. Since INL currently tracks the quantities and types of materials sent to the onsite landfill at CFA, the data used are considered accurate, and no changes are needed for streamlining the calculation in future years. However, additional searching may identify the amounts deposited in the landfill prior to 1992; this information had to be estimated for this calculation.

4.2.4.4 Comparison to FY 2008 Baseline. In FY 2016, GHG emissions from the landfill increased 5.4% over the FY 2008 GHG baseline. When considering the change in the amount (weight) of waste disposed per Site employee against the FY 2008 baseline, FY 2016 showed a 24.5% decrease. It should be noted that the GWP for CH_4 increased 16% from 21 to 25, resulting in a larger increase in emissions regardless of an increase in waste being disposed (there is an 18.3% decrease in the amount of waste sent to the landfill over the FY 2008 GHG baseline).

In addition to EO 13693 setting GHG goals that led to INL quantifying their annual GHG emissions, the EO covers a number of other environmental areas including waste diversion. INL is currently working to divert their solid waste to meet a goal of 50% diversion by weight each year; this increased diversion rate is expected to result in a decrease in the overall amount of solid waste deposited in the landfill; however, it is not guaranteed since the diversion goal only considers the waste produced within a single year rather than with previous years.

It should be noted that the onsite landfill GHG calculations (the LandGEM) rely predominately on historical waste disposal amounts rather than current information. A significant lag time occurs before the current actions will have a notable effect on the associated GHG emissions, particularly diversion efforts (e.g., recycling).

4.2.5 Fugitive Emissions: Onsite Wastewater Treatment

At its Site facilities, INL operates its own wastewater treatment that consists of a combination of lagoons and septic systems. Evaporative lagoons are located at the major facilities, while septic tanks are located at the smaller or remote locations, including Experimental Breeder Reactor I, SMC fire station, the Gun Range, the main INL guard gate, and the Critical Infrastructure Test Range Complex (CITRC) (formerly known as the Special Power Excursion Test Reactor Tests II, III, and IV). It should be noted that the evaporative lagoons are facultative, with an aerobic upper layer and an anaerobic lower layer. The methodology behind the TSD considers facultative lagoons to be anaerobic.

INL also operates a number of lagoons (including evaporative ponds) for industrial waste. Since this industrial waste does not contain significant amounts of organics, the lagoons were not considered in these calculations.

4.2.5.1 Calculation Method. INL's data on onsite lagoons used for wastewater treatment are identified by facility in Table 8 for FY 2016. INL's Human Resources department provided the employee counts at each facility as an average for the year based on the numbers at the end of each quarter. The number of visitors to each facility was estimated based on 10% of the number of employees—a conservative estimate to account for subcontractors and visitors.

Table 8. FY 2016 population data by facility for onsite wastewater treatment calculations.

Facility Name	Wastewater Type	Number of Employees	Number of Visitors	Total Population Considered
EBR-I	Septic Tank	1	0.083	0.913
CITRC	Septic Tank	0.75	0.075	0.825
Gun Range	Septic Tank	5	0.458	5.038
Main INL Guard Gate	Septic Tank	2	0.2	2.2
			TOTAL SEPTIC POPULATION	8.976
ATR	Lagoon	488	48.75	536.25
CFA	Lagoon	490	48.992	538.912
MFC	Lagoon	928	92.783	1,020.613
SMC	Lagoon	199	19.85	218.35
			TOTAL LAGOON POPULATION	2,072.675

The population data from Table 8 were used with the calculation method in the TSD, and the default national averages (from the TSD) for the specific treatment process.

4.2.5.2 Results Discussion. INL's onsite wastewater treatment is estimated to contribute 159.15 MT CO_2e (158.58 from lagoons and 0.57 from septic systems) emissions to the GHG inventory during FY 2016. In FY 2016 this equates to less than 1% of INL's Scope 1 emissions, and a nearly negligible amount of the total anthropogenic emissions considered.

4.2.5.3 Lessons Learned. For future inventories it is believed that site-specific data and the factors unique to INL would produce more accurate results than calculations based on national averages. In addition, future calculations for industrial waste treatment should be included, even though these are likely minimal GHG contributors relative to the lagoons.

4.2.5.4 Comparison to FY 2008 Baseline. In FY 2016, there was an apparent 23.5% increase over the FY 2008 GHG baseline; however, in FY 2014 the GWP for CH_4 increased from 21 to 25. When FY 2008 baseline numbers were recalculated with the updated GWP, emissions from onsite wastewater actually increased 1.9%. Since the wastewater calculations are based on employee counts, the increase in GHG emissions from wastewater generally followed the increase in Site employee numbers of 8.1% in FY 2016 over the FY 2008 baseline.

4.3 Scope Two – Indirect Emissions

INL's FY 2016 Scope 2 emissions are summarized in Figure 8, with a comparison to the FY 2008 baseline shown in Figure 9. A discussion of INL's FY 2016 Scope 2 emissions categories follows, including the calculation methods, the significance of the results, lessons learned from the data collection and calculation process, and a comparison to the FY 2008 baseline results. A comprehensive table, as well as the FY 2008 baseline emissions and the subsequent FY data, is included in Appendix E, "Scope 2 Comprehensive Tables."

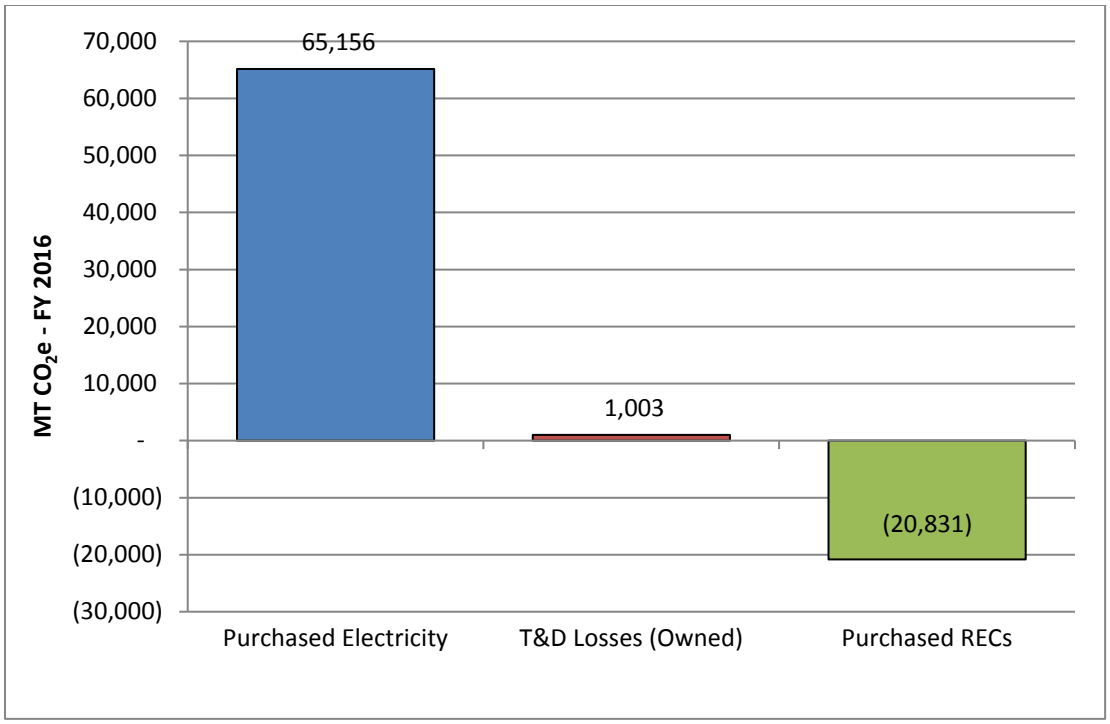

Figure 8. INL's FY 2016 GHG emission results for Scope 2.

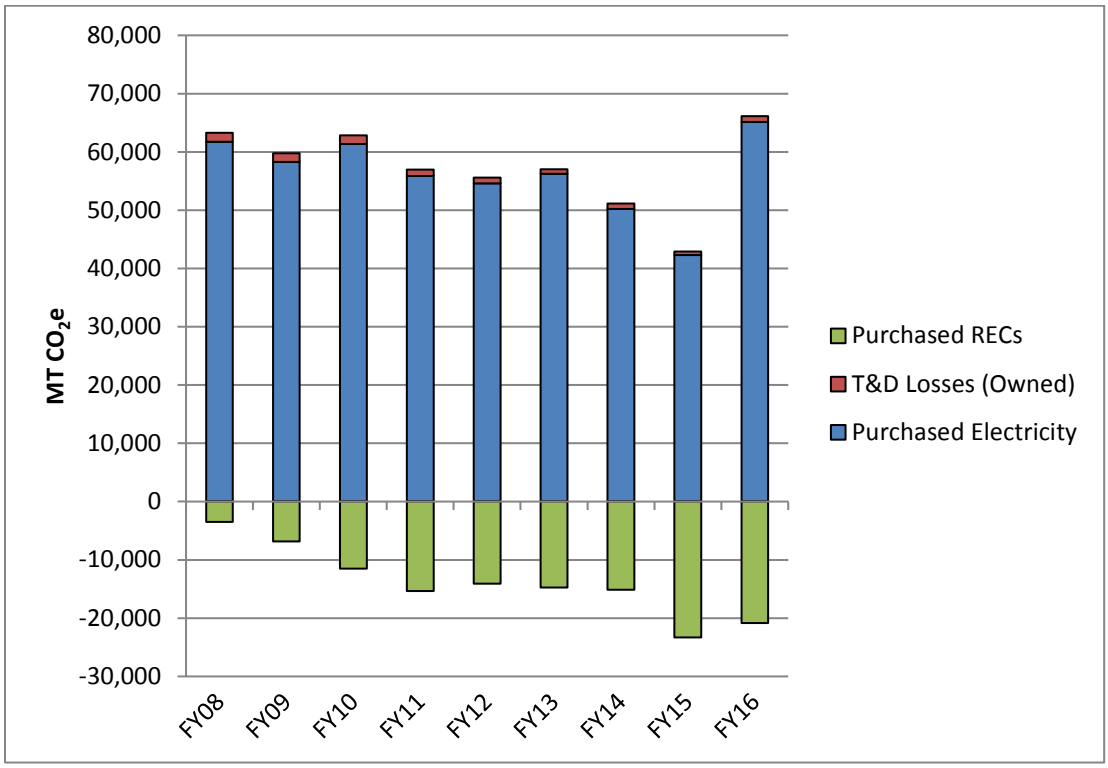

Figure 9. Comparison of INL's FY 2008 through FY 2016 Scope 2 GHG emissions.[i]

i. Scope 2 numbers for FY 2011 and FY 2012 were revised in FY 2013 as a result of a revision to Scope 2 total calculations.

4.3.1 Purchased Electricity Emissions

4.3.1.1 Calculation Method. These calculations follow the TSD default methodology of electricity purchases reported for the DOE Sustainability Dashboard. The amounts are determined based on a combination of monthly electrical bills and INL's onsite electricity meters. Since these data are also submitted in the DOE Sustainability Dashboard and they are tracked for the INL Site, the only calculations needed were to isolate the emissions that INL owns (consumed in INL-operated facilities) from the other INL Site contractors.

INL purchases electricity from four different electrical utilities to support the operations of its different facilities: Idaho Falls Power supplies electricity to the town facilities, Idaho Power supplies electricity to the Site facilities as well as some small locations outside of Idaho Falls city limits, and Rocky Mountain Power and Lost River Electrical Company provide electricity to some of the smaller buildings and equipment outside of Idaho Falls city limits, including lighting at some bus lots. The breakdown in electrical purchases by electrical provider is shown in Table 9 for FY 2016.

INL purchased 157,215.74 MWh during FY 2016, with 42,305.81 MWh provided to non-Site locations, and 114,909.93 MWh going to INL facilities at the INL Site. Per the TSD, the emission factors for purchased electricity are determined using the EPA's Emissions and Generation Resource Integrated Database (eGRID) and the location of INL's facilities. eGRID uses subregional emission factors based on plant-specific data in that region, as reported to the EPA, the Energy Information Administration, and the Federal Energy Regulatory Commission. (For more information on eGRID, refer to https://www.epa.gov/energy/egrid.) All INL facilities are located in the Western Electricity Coordinating Council (WECC) Northwest eGRID subregion, the Northwest Power Pool (NWPP).

Table 9. INL's FY 2016 electrical purchases by location and provider.

Location	Owner of T&D System	Electrical Provider	FY 2016 Electricity Purchase (MWh)
INL Site	INL	Idaho Power (includes owned T&D losses)	114,909.93
SUBTOTAL (Site)			114,909.93
Assorted Locations (excludes INL Site)	Electrical Provider	Idaho Power	90.71
Town Facilities	Electrical Provider	Idaho Falls Power	42,011.08
Assorted Locations Outside INL Site and Idaho Falls City Limits	Electrical Provider	Lost River Electric Company	3.30
Assorted Locations Outside INL Site and Idaho Falls City Limits	Electrical Provider	Rocky Mountain Power	200.72
		SUBTOTAL (Non-Site)	42,305.81
		TOTAL INL Purchases	157,215.74

4.3.1.2 Results Discussion. For FY 2016, the purchased electricity and owned T&D losses amount to 66,158.71 MT CO_2e, which is all of INL's Scope 2 emissions (before accounting for the credit from the RECs) and 77.4% of the net total anthropogenic emissions considered.

4.3.1.3 Lessons Learned. Since these data are already collected and reported annually for the DOE Sustainability Dashboard, they are considered to be of high quality.

4.3.1.4 Comparison to FY 2008 Baseline. In FY 2016, INL purchased 2.2% more electricity than the FY 2008 baseline, which yielded a 5.5% increase in associated GHG emissions. The eGRID emission factors were updated for this year's reporting and increased by nearly 30%. In FY 2015, INL's regional GHG emission rates were 665.75 pounds per megawatt/hour (lbs/MWh) for CO_2, 12.6 lbs per gigawatt hour (GWh) for CH_4, and 10.38 lbs/GWh for N_2O. In FY 2016, EPA updated to the 2014 eGRID factors of 907.0 lbs/MWh, 97.8 lbs/GWh, and 14.2 lbs/GWh, respectively. While the total electricity purchased at INL increased by approximately 17,900 MWh (a 12.9% increase from FY 2015), the emissions increased by approximately 17,500 $MTCO_2e$ (a 36.5 % increase from FY 2015). If calculating FY 2016 emissions with the 2012 eGRID factors (as used in FY 2015), INL Scope 2 emissions from purchased electricity would have been 47,718.96 $MTCO_2e$ (an increase of 5,437.9 $MTCO_2e$). As the eGRID factors are updated periodically, previous year emissions were not recalculated.

Efforts to reduce the overall INL carbon footprint will focus on reducing electricity demand and increasing REC purchases since this source is such a significant contributor.

4.3.2 Transmission and Distribution Loss Emissions, Owned

4.3.2.1 Calculation Method. The TSD calls for differentiating between T&D losses within INL's operational controls and those outside INL's operational controls as Scope 2 and 3, respectively, based on whether the organization owns the associated transmission lines. To facilitate this differentiation, electricity purchases in Table 9 are identified according to who owns the T&D system: INL or the electrical provider. Since INL owns the electrical grid at the Site, and the T&D losses are considered within INL's operational controls, the electricity purchase for the Site from Idaho Power (shown in Table 10) includes the associated T&D losses. (The Scope 3 T&D losses [outside INL's operational controls] are based on the total INL electrical purchase.)

The amount of INL's owned T&D losses was calculated based on an average T&D loss factor of 2.105% in FY 2016. This percentage was determined based on the difference between the total amount of electricity purchased for the INL Site (based on the Idaho Power meter at the Scoville, Idaho substation) and the total metered amounts at individual Site facilities (this difference accounts for the losses within the INL Site).

4.3.2.2 Results Discussion. The owned T&D losses of 2,419.31 MWh for FY 2016 equates to 1,002.65 MT CO_2e of emissions. It should be noted that this T&D loss is already accounted for in the purchased electricity emissions, and simply reduces the GHG emissions from the purchased electricity report above; the goal of these calculations was to isolate this amount for reporting purposes according to the TSD.

4.3.2.3 Lessons Learned. Since this calculation is based on a percentage of the GHG emissions presented for INL's Scope 2 electricity purchases, the data used are considered accurate, and no changes are needed for streamlining the calculation in future years.

4.3.2.4 Comparison to FY 2008 Baseline. Since T&D losses are based on a percentage of the INL electricity purchase, a comparison to the FY 2008 baseline yields the same results as Section 4.3.1.4.

4.3.3 Renewable Energy Certificates Emissions

4.3.3.1 Calculation Method. In addition to the electricity purchased directly for its facilities, INL purchased the following amount of RECs to offset a portion of its carbon emissions:

- 29,200 MWh in FY 2016 from multiple wind power projects in Idaho, Washington, Oregon, and Wyoming. (See Appendix F, "Receipt for RECs Purchased in FY 2016," for the receipt, which includes details on INL's RECs purchase.)

INL did not actually purchase renewable energy, but rather purchased the RECs or certified environmental benefits of the renewable energy generated in another region to support the growth and expansion of the renewable energy industry as a whole. INL is credited for the GHG emissions that this renewable energy did not emit.

The emission factors for the RECs purchased in FY 2016 are based on the wind power facility locations in Idaho, Washington, Oregon, and Wyoming, and the NWPP of the WECC eGRID subregion (the subregion was determined using the facility's ZIP Codes and EPA's Power Profiler Web site [https://www.epa.gov/energy/egrid]). (Note that the TSD calls for using the eGRID non-baseload emission rates for calculating the GHG emissions associated with RECs, as opposed to the baseload emission rates used for emissions from purchased electricity.)

4.3.3.2 Results Discussion. Table 10 summarizes how much INL reduced its Scope 2 GHG emissions in FY 2016 by purchasing RECs. Specifically, the RECs purchased decreased the overall Scope 2 GHG emissions by 20,830 MT CO_2e in FY 2016.

Table 10. INL's GHG emissions from electricity and RECs purchased in FY 2016.

Emissions Category	FY 2016 GHG Emissions (MT CO_2e)
Purchased Electricity (includes T&D losses within INL's operational controls)	66,158.71
Purchased RECs (displaced GHG emissions)	(20,830.75)
SCOPE 2 TOTAL	45,327.96

4.3.3.3 Lessons Learned. Since these data are based on the RECs receipts, and are already collected and reported annually for the DOE Sustainability Dashboard, they are considered to be of high quality.

4.3.3.4 Comparison to FY 2008 Baseline. In FY 2016, significantly more (342.4% more) RECs were purchased than FY 2008 (by MWh). The associated emissions avoided were calculated according to the NWPP subregional eGRID emission factors, which led to a 499.7% increase over FY 2008. The 2014 eGRID emission factors for the NWPP subregion increased by nearly 30% and the non-baseload emission factors for the NWPP subregion (amount credited for RECs) decreased by approximately 1%; therefore, significantly increasing the CO_2e emissions from purchased electricity while slightly reducing the benefits of purchased RECs from previous years.

4.4 Scope Three – Indirect Emissions

INL's FY 2016 Scope 3 emissions are summarized in Figure 10, with a comparison to the FY 2008 baseline shown in Figure 11. Each of the Scope 3 emissions categories is discussed here and includes the calculation methods, the significance of the results, lessons learned from the data collection and calculation process, and a comparison to the FY 2008 baseline results. A comprehensive table, as well as the FY 2008 baseline emissions and the subsequent FY data, is included in Appendix G, "Scope 3 Comprehensive Tables."

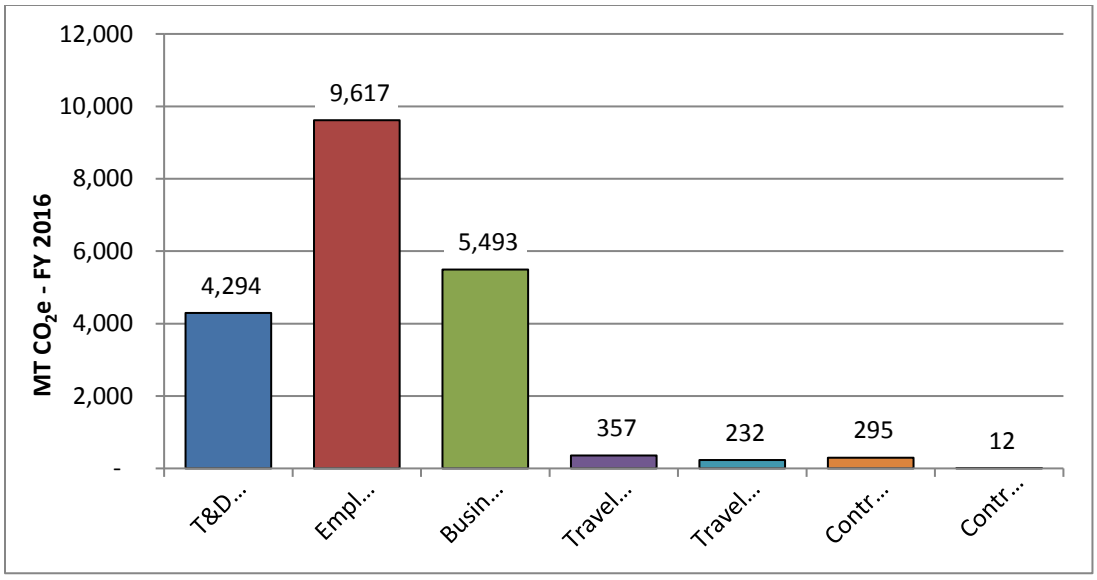

Figure 10. INL's FY 2016 GHG emission results for Scope 3.

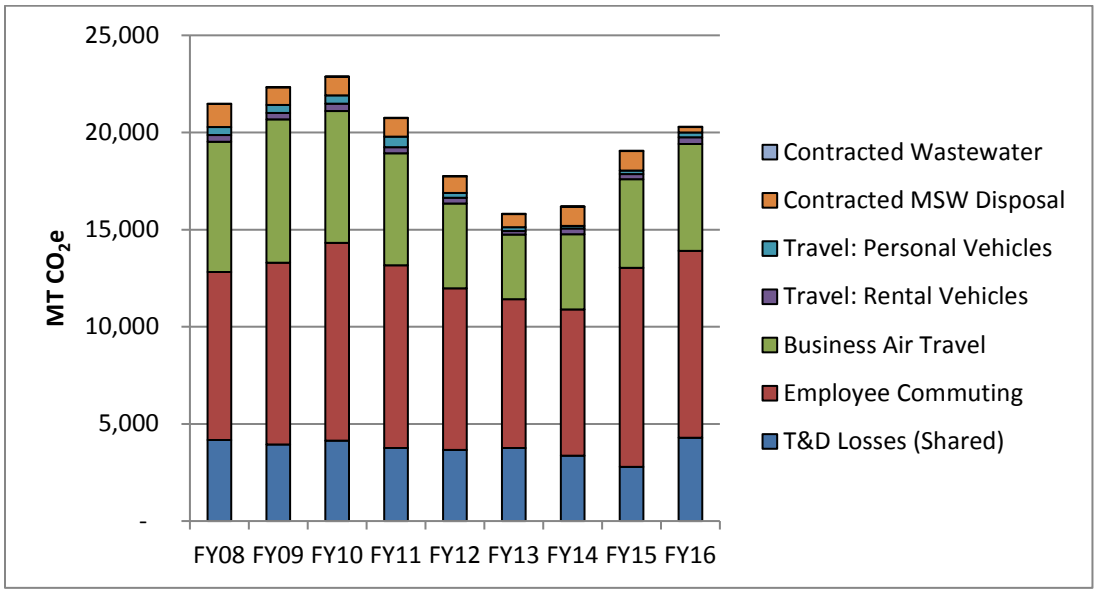

Figure 11. Comparison of INL's FY 2008 through FY 2016 Scope 3 GHG emissions.

4.4.1 Transmission and Distribution Loss Emissions, Shared

4.4.1.1 Calculation Method. The TSD provides only a default calculation methodology for determining the GHG emissions from T&D losses outside INL's operational control. This method assumes the national average T&D loss factor of 6.59% for purchased electricity, and utilizes the same eGRID subregion emission factors used for Scope 2 purchased electricity (https://www.epa.gov/energy/egrid). As stated in Section 5.3.1.1, the TSD differentiates between T&D losses inside and outside of INL's operational controls. While the owned T&D losses reported in Scope 2 are based only on the electricity purchased at the Site where INL owns the T&D lines, the Scope 3 shared T&D losses are based on INL's total annual electrical purchases.

4.4.1.2 Results Discussion. A T&D loss of 6.59% equates to 11,613.57 MWh for INL's FY 2016 electricity purchases, and 4,293.78 MT CO_2e of emissions. In FY 2016 this equates to 21.2% of INL's Scope 3 emissions, and 5.0% of the total anthropogenic emissions considered.

4.4.1.3 Lessons Learned. Since this calculation is based on a percentage of the GHG emissions presented for INL's Scope 2 electricity purchases, the data used are considered accurate, and no changes are needed for streamlining the calculation in future years.

4.4.1.4 Comparison to FY 2008 Baseline. Since T&D losses are based on a percentage of the INL electricity purchase, a comparison to the FY 2008 baseline yields the same results as Section 4.3.1.4.

4.4.2 Employee Commuting Emissions

4.4.2.1 Calculation Method. The TSD identified an employee survey as the best source for calculating the GHG emissions from employee commuting. Employee commuting behaviors for FY 2008 and FY 2009 were calculated by utilizing available historical data that was gathered and combined with appropriate assumptions for FY 2008 and FY 2009 calculation. However, for the FY 2016 calculation of employee commuting emissions, a survey was utilized. These processes are described below.

The FY 2016 employee commute survey was distributed to 4,254 employees. The distribution list included all BEA employees, including management at the director level and above and subcontractors with INL e-mail addresses (since they were assumed to be dedicated INL employees with offices within INL office). The survey response was approximately 55% (2,339 employees completed the survey) and considered to be representative of the INL population. The results were distributed across the total INL FY 2016 population, which included subcontractors. The survey results are summarized in several Excel spreadsheets.

4.4.2.2 Results Discussion. As shown in Table 11, INL employees commuted an estimated 22.3 million vehicle-miles during FY 2016. The associated GHG emissions were estimated to be 9,617.00 MT CO_2e. In FY 2016, the GHG emissions equates to 47.4% of INL's Scope 3 emissions, and 11.2% of the total anthropogenic emissions.

Table 11. Number and type of commute miles traveled by INL employees during FY 2016.

Type of Miles	Number of Miles	GHG Emissions (MT CO_2e)
Passenger Car Miles, Gasoline	12,698,096	4,753.04
Passenger SUV or Truck Miles, Gasoline	7,261,772	3,877.10
Motorcycle Miles	118,566	20.26
Passenger Car Miles, Diesel	370,593	167.53
Passenger SUV or Truck Miles, Diesel	1,179,759	662.13
Passenger Car Miles, Alternative Fuel	720,804	136.94
TOTAL VEHICLE MILES	22,349,590.03	9.617.00
Walk, Run, or Bike Miles	124,769.20	0
TOTAL COMMUTE MILES	22,474,359.23	9,617.00

4.4.2.3 Lessons Learned. This was the first full year in which bus passes were free to BEA employees.

4.4.2.4 Comparison to FY 2008 Baseline. In FY 2016, there was an 11.1% increase in GHG emissions from employees commuting over the FY 2008 baseline, a 10.3% increase in the total number of commute miles, and the number of commute miles per employee increased by 5.6%, indicating there are more employees and they are commuting farther (there are 12.6% more Site employees than town employees for FY 2016 compared with FY 2008 when there were 9.7% more Site employees than town employees).

The commute survey utilized in FY 2016, to gather the commute data, could be considered more accurate than the method used in FY 2008, which called for a great number of assumptions.

4.4.3 Business Air Travel Emissions

INL employees took 8,576 business trips during FY 2016, as indicated by submitted and approved travel request forms. Employees submit the forms to the INL Travel Office to make necessary reservations for both domestic and international travel on behalf of the Laboratory. Travel request forms are also submitted to secure insurance coverage for employees that do not need travel arrangements, so there are times when a form is submitted and no travel arrangements are necessary (this could lead to no Scope 3 GHG emissions calculated, for example, in the case where an employee uses an INL fleet vehicle or is carpooling in another employee's personal vehicle to an offsite location).

Each trip can include commercial airline and/or ground travel (in both personal and rental cars). Ground travel by taxi, bus, or rail is less common and is currently only tracked as a dollar value when an employee requests reimbursement. For the FY 2016 GHG calculations, only employees travelling by commercial airline, personal vehicle, and rental vehicle were included. Travel by taxi, bus, rail, and other commercial means is not currently tracked; furthermore, they are considered de minimis when compared to these other transportation means, especially airline travel. It is also considered likely that INL travelers with large ground transportation needs will rent a car rather than take public transportation; thus, these emissions are included in INL's FY 2016 inventory.

INL travel requests are submitted by full-time INL employees as well as by subcontractors, student interns, and prospective employees traveling for interviews, house hunting, and/or relocation. If an employee is performing work for others, their trip may be paid for and arranged by the external entity, and thus these data would not be tracked by the INL Travel Office nor included in the reported airline miles. This would also apply to tracking the associated personal and rental car miles. In these cases, the "other" would own the associated GHG emissions.

4.4.3.1 Calculation Method. The TSD provides one calculation method (the default methodology) for calculating the GHGs of airline travel, which is based on the actual flight miles traveled. This data was provided by the travel vendor as total passenger-miles traveled on short-, medium-, and long-haul flights[j] based on the length of each individual flight leg of an employee's trip (as opposed to the total miles between the starting and destination airports). These passenger-miles were then multiplied by the appropriate emission factors for short-, medium-, and long-haul flights that account for the increased GHG emissions during take-off and landing. (This is different from the FY 2008 calculation approach when the travel vendor was only able to provide a value for the total passenger-miles traveled, and then it was multiplied by an average emission factor per mile of commercial flight.)

4.4.3.2 Results Discussion. Table 12 shows that the 27,992,521 passenger-miles flown by INL employees during FY 2016 resulted in an estimated 5,492.71 MT CO_2e, or 0.196 MT CO_2e per 1,000 passenger-miles for the year. In FY 2016, this equates to 27.1% of INL's Scope 3 emissions and 6.4% of the total anthropogenic emissions considered.

j. Short haul are flight segments <300 miles, medium haul are flight segments 300–699 miles, and long haul are flight segments >700 miles.

Table 12. Number of miles flown by INL employees during FY 2016.

Type of Miles	FY 2016	
	Number of Passenger-Miles	GHG Emissions (MT CO_2e)
Short Haul	2,681,701	745.03
Medium Haul	4,530,056	740.98
Long Haul	20,780,764	4,006.70
TOTAL	27,992,521	5,492.71

4.4.3.3 Lessons Learned. Since this data is already tracked and reported in the DOE Sustainability Dashboard, it is considered accurate and no changes are needed for future reporting.

4.4.3.4 Comparison to FY 2008 Baseline. When comparing the FY 2016 inventory to the FY 2008 GHG baseline, there was a 17.9% decrease in airline GHG emissions, 10.3% more passenger-miles flown, and an overall 21.8% decrease in the number of trips[k] per employee.

INL employees are traveling less than FY 2008; however, they are flying more domestic miles resulting in greater GHG emission reductions. It should be noted that the FY 2008 passenger-miles were not able to be broken down into flight length, which resulted in using an emissions factor for unknown flight lengths that appears to have been more conservative than using emission factors specific to the flight segment length.

4.4.4 Business Ground Travel: Rental Vehicle Emissions

4.4.4.1 Calculation Method. For calculating the GHG emissions from rental vehicles, the INL Travel Office was able to provide the total number of miles that INL employees traveled during FY 2016 by each vehicle class. This data was provided by the rental car vendor.

Vehicle classes were divided into two categories: passenger cars and light-duty trucks/vans/SUVs. The emission factors from the TSD were applied accordingly based on these two categories.

This calculation process followed the TSD's advanced methodology since the number of miles traveled in each rental car class was known (the default methodology called for making assumptions on the numbers of vehicle miles per rental car use).

4.4.4.2 Results Discussion. As shown in Table 13, INL's rental car use during FY 2016 resulted in 357.25 MT CO_2e based on 851,619 vehicle-miles traveled this year. In FY 2016 this equates to 1.8% of INL's Scope 3 emissions, and less than 1% of the total anthropogenic emissions considered.

Table 13. Number of vehicle-miles traveled in rental cars by INL employees during FY 2016.

Vehicle Class	FY 2016	
	Number of Vehicle Miles	GHG Emissions (MT CO_2e)
Passenger Cars	610,502	228.52
Light-Duty Truck/Van/SUV	241,117	128.73
TOTAL	851,619	357.25

4.4.4.3 Lessons Learned. Since the number of miles traveled in rental vehicles is already tracked by the rental car vendors and reported in the DOE Sustainability Dashboard, these data are considered to be of high quality, and no changes are needed for tracking the data in future years.

k. The number of trips includes all of the trips coordinated by the INL Travel Office, and includes more than airline trips.

4.4.4.4 Comparison to FY 2008 Baseline. In FY 2016, GHG emissions from rental vehicle business travel increased 1.8% over the FY 2008 baseline, while the number of miles traveled increased by 5.7%.

4.4.5 Business Ground Travel: Personal Vehicle Emissions

4.4.5.1 Calculation Method. For calculating the GHG emissions from personal vehicles, the INL Travel Office was able to provide the total number of miles that INL employees traveled during FY 2016 in personal vehicles as submitted in electronic expense reports for reimbursement. The expense report programmer provided this data to the INL Travel Office.

To determine which emission factors to use for calculating the associated GHG emissions during FY 2016, the distribution between passenger cars and light-duty trucks/vans/SUVs that was found in the FY 2016 employee commute survey was used (this amounted to 62% of the travel completed in passenger cars and 38% in light-duty trucks/vans/SUVs).

4.4.5.2 Results Discussion. The 532,894 vehicle-miles that INL employees traveled during FY 2016 resulted in an estimated 231.79 MT CO_2e. In FY 2016 this equates to 1.1% of INL's Scope 3 emissions, and a nearly negligible amount of the total anthropogenic emissions considered.

4.4.5.3 Lessons Learned. The electronic system for expense reports that was introduced during FY 2010 will continue to allow for more streamlined and accurate reporting of personal car miles than previous years (FY 2008 and FY 2009) when a representative sample was used. An additional assumption could be removed in future years if employees were asked to indicate the type of vehicle they used for their personal vehicle miles during the reimbursement process (since the actual distribution between the type of vehicles traveled was not known, an assumption was made based on the commute survey responses).

4.4.5.4 Comparison to FY 2008 Baseline. In FY 2016, GHG emissions from personal vehicle business travel decreased 43.8% over the FY 2008 baseline, while the number of miles traveled also decreased by 44.8%.

4.4.6 Contracted MSW Disposal Emissions

4.4.6.1 Calculation Method. To determine the Scope 3 emissions associated with INL's contracted offsite waste disposal from town facilities during FY 2016, the quantity of MSW sent to an offsite landfill was compiled. This information came from the City of Idaho Falls invoice records of the trash-collection history for each town building, including dumpster location, size of dumpster, and pick-up frequency.

Since the City of Idaho Falls does not track actual volumes or weights of solid waste collected from INL facilities, the records of dumpster size and pick-up frequency from monthly invoices were used to calculate an estimated volume (assuming dumpster fill rates of 80%). A site-specific density was used for the first time in FY 2016. The site-specific density was calculated from a waste audit conducted in July 2016. Based on the waste audit, town MSW density is calculated using 46 pounds per cubic yard (lbs/CY). The FY 2016 volume of 8,368 cubic yards, was converted to a weight based on the site-specific density.[l] This resulted in a weight of 192.46 tons (384,911 pounds) for INL's offsite MSW disposal during FY 2016.

The TSD default methodology identifies the EPA's municipal solid waste mass balance model to calculate the GHG emissions associated with offsite MSW disposal. The estimated weight of INL's MSW disposed offsite was used with the calculation method in the TSD, along with default national averages (from the TSD).

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l. Historic calculations used an assumed solid waste density of 150 pounds per cubic yard (density value was selected based on EPA range [www.archive.epa.gov/wastes/conserve/tools/recmeas/web/pdf/guide_b.pdf]).

4.4.6.2 Results Discussion. INL's offsite disposal of MSW during FY 2016 is estimated to contribute 295.35 MT CO_2e to FY 2016's anthropogenic GHG inventory. In FY 2016, this equates to 1.5% of INL's Scope 3 emissions, and a nearly negligible amount of the total anthropogenic emissions considered.

It was also calculated that 32.49 MT CO_2e of biogenic emissions associated with MSW disposal were released in FY 2016.

4.4.6.3 Lessons Learned. Since the quantity of INL's MSW sent for offsite disposal is based on estimated volumes, it would be preferable to work with the City of Idaho Falls to get actual weights collected. If actual weights are not available, then actual volumes could be collected, and could be analyzed using the site-specific density. These approaches will also assist with more accurate tracking of INL's waste disposal and overall diversion rates that are additional requirements under EO 13693.

In addition to the waste volumes estimated from the city, INL has several small buildings located outside of the Idaho Falls city limits that were not included in the amount of MSW collected from INL for offsite disposal. In future years it would be good to include these amounts.

4.4.6.4 Comparison to FY 2008 Baseline. In FY 2016, GHGs decreased 75.1% over the FY 2008 baseline. When considering the change in waste disposed per employee against the FY 2008 baseline, FY 2016 showed an 80.0% decrease. These decreases are substantially due to the change from using an assumed density to the site-specific one. A portion is also due to the change in recycling practices at INL site and town facilities, which allows for a greater number of items to be recycled.

As discussed previously in Section 4.2.4.4 for the onsite landfill baseline comparison, the EO 13693 waste diversion goals are expected to decrease INL's amount of GHGs produced by contracted MSW disposal.

4.4.7 Contracted Wastewater Treatment

4.4.7.1 Calculation Method. Wastewater from INL's town facilities is sent for treatment to the City of Idaho Falls' wastewater treatment plant and is INL's only source of offsite contracted treatment.

Employee counts at INL's town facilities were provided by Human Resources as an average during FY 2016, based on the total number of employees at the end of each month of the year. The reported number of town employees was 1,884 employees for FY 2016. The number of visitors to the town facilities was estimated based on 10% of the number of employees. This yielded a total population of 2,073, which was used with the calculation method in the TSD along with default national averages (from the TSD) for the specific treatment process.

4.4.7.2 Results Discussion. INL's contracted wastewater treatment during FY 2016 is estimated to contribute 11.68 MT CO_2e[m] emissions to the GHG inventory. In FY 2016, this equates to less than 0.1% of INL's Scope 3 emissions, and a nearly negligible amount of the total anthropogenic emissions considered.

4.4.7.3 Lessons Learned. For future inventories it is believed that site-specific data and factors would produce more accurate results than calculations based on national averages.

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m. It should be noted that during the FY 2012 calculations, it was discovered that an incorrect equation was used for FY 2008 and subsequent years. The TSD directions indicated the reporting portal would automatically calculate emissions from flaring. This was missed in previous years. For FY 2008 percentage comparisons, the FY 2008 data was revised for a total emissions from contracted wastewater treatment of 12.25 MT CO_2e, resulting in a 7.9% increase for FY 2012 for both population change and for GHG emissions. ("Offsite Wastewater (FY08)" tab in "FY12 Wastewater for GHG (Scope 1+3) 9Oct12.xlsx"). In FY 2016 it was discovered the FY 2008 WWTP baseline assumption was different (to include nitrification/denitrification) than the actual operations of the centralized WWTP (no consistent use of nitrification/denitrification). To have a more accurate comparison, the FY 2008 baseline (and subsequent years) was recalculated with the assumption of no nitrification/denitrification and should be 11.60 MT CO_2e.

4.4.7.4 Comparison to FY 2008 Baseline. In FY 2016, there was an approximate 1.0% increase over the FY 2008 GHG baseline (as recalculated in FY 2016, see footnote). Since the wastewater calculations are based on employee counts, the increase in GHG emissions from wastewater generally followed an increase in INL's total town employee counts of 4.7% and full realization of water reduction activities implemented previously. Several water reduction projects occurred at INL town facilities, including installing low-water vegetation around the Willow Creek Building, landscape intensity reduction at INL Research Complex, efficient water fixture installation at Engineering Research Office Building, xeriscaping efforts at Engineering Research Office Building and INL Research Complex, and water meter installation at all four University Boulevard buildings. Water meter installation allowed for actual water usage to be measured rather than estimated.

5. PUTTING INL'S FOOTPRINT INTO PERSPECTIVE

During FY 2016, the INL GHG inventory is estimated to have emitted 85,525 MT of anthropogenic CO_2e. This represents 20.9 MT for each employee working at INL that year. Furthermore, the total GHG emissions generated by the Laboratory during FY 2016 are the equivalent to the CO_2 emissions from any one of the following[n]:

- Consuming approximately 9.6 million gallons of gasoline or more than 198,000 barrels of oil
- Driving 18,066 passenger vehicles for 1 year
- Supplying electricity to 9,031 homes for 1 year.

Comparing these equivalency results to the FY 2008 baseline shows that INL removed an equivalent of 4,077 vehicles from the road in FY 2016. As an overall reduction goal, INL is progressing to meet the EO 13693 total emissions goals for FY 2025, which is the basis of this report. The FY 2025 target goal for INL is 61,805 MT of anthropogenic CO_2e.

n. Calculated with the EPA Greenhouse Gas Equivalencies (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator) in June 2017.

6. SUMMARY AND CONCLUSIONS

As mentioned earlier, this will be the final year for which GHG reduction goals are reported against EO 13693. Executive Order 13693 mandated reductions in the output of GHGs generated by federal agencies. These reductions are targeted at 50% for direct (Scope 1 and 2) emissions and 25% for indirect (Scope 3) emissions, all by 2025 (White House 2015). The EO set 2008 as the baseline year against which reductions will be measured, and this report documents the calculations for INL's FY 2016 inventory and the associated reductions. The reductions observed in GHG emissions are shown in Figure 12 along with the 2025 goal. The specific values in FY 2016 consist of a 28.6% reduction for Scope 1 and 2, and a 5.7% decrease for Scope 3 was calculated over the respective FY 2008 baseline values.

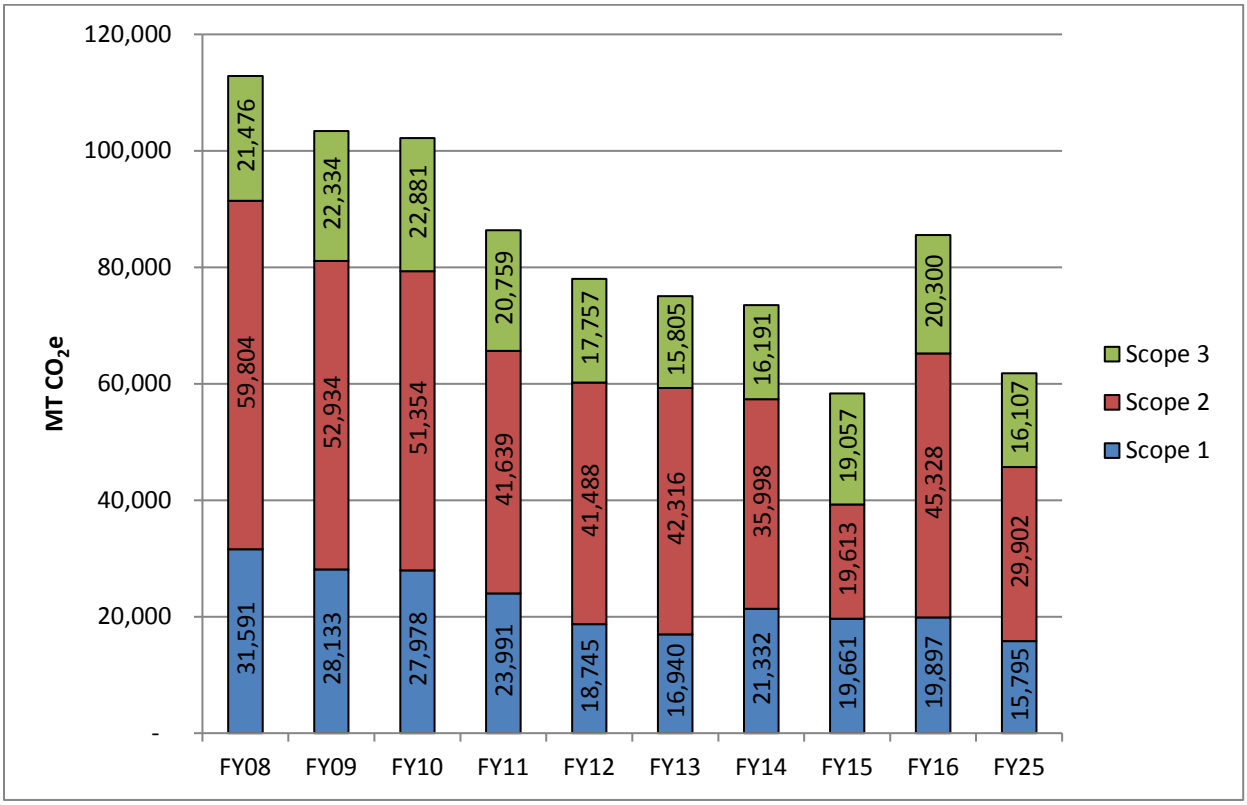


Figure 12. Comparison of INL's FY 2008, FY 2009, FY 2010, FY 2011, FY 2012, FY 2013, FY 2014, FY 2015, and FY 2016 actual, and FY 2025 goal GHG emissions, by scope.[o]

While preparing this inventory, it was observed that much of the data needed to quantify INL's GHG emissions already exist in high-quality form, since they are recorded and tracked for reports to other federal entities. Some information is less accessible, but can be approximated from existing records and will be better tracked in the future due to the standards established by INL in response to the EO and the Laboratory's concern for the environment. Some data and assumptions must be estimated using national averages supplied in the TSD.

o. Scope 2 numbers for FY 2011 and FY 2012 were revised in FY 2013 as a result of a revision to Scope 2 total calculations.

During FY 2016, INL generated 85,525 MT of CO_2 equivalents, respectively. Many factors influence INL's GHG emissions, including the large land area on which the Laboratory's facilities are located. The area requires long commutes and an extensive fleet to provide transportation for desert Site workers, and contains antiquated facilities that were built before the current appreciation for energy efficiency and high-performance design. These factors tie directly to the following conclusions from INL's FY 2016 GHG inventory:

- Electricity (including the associated transmission and distribution losses) is the largest contributor to INL's GHG inventory, with over 50% of the CO_2e emissions
- Other sources with high emissions were employee commuting, mobile combustion (fleet fuels), stationary combustion (facility fuels), business air travel, and waste disposal (fugitive emissions from the onsite landfill)
- Sources with low emissions were wastewater treatment (onsite and contracted), business ground travel (in personal and rental vehicles), waste disposal (contracted disposal), and fugitive emissions from refrigerants.

INL's GHG inventory for FY 2016 was performed according the guidelines contained in the TSD. INL recognizes its role as a DOE-sponsored research laboratory to "lead by example" in measuring, reporting, and reducing GHG emissions. To that end, the Laboratory has already moved to promote reductions in GHGs. Now that 8 years of data have been gathered, the next step is to continue to implement GHG reduction strategy activities into everyday operations that will contribute to the EO goals and continue to reduce GHG emissions.

7. REFERENCES

74 FR 56260, "Final Rule: EPA Mandatory Reporting of Greenhouse Gases," 40 CFR 98, http://www.epa.gov/ghgreporting/documents/pdf/2009/GHG-MRR-FinalRule.pdf, Web page accessed March 2017.

EPA, Appendix B, "Standard Volume-to-Weight Conversion Factors," Environmental Protection Agency, www.epa.gov/epawaste/conserve/tools/recmeas/docs/guide_b.pdf, Web page accessed March 2017.

EPA Climate Leaders, "Commuting, Business Travel & Mobile Transport," EPA 430-R-08-006, May 2008.

EPA Climate Leaders, "Mobile Sources Guidance," www.epa.gov/stateply/documents/resources/mobilesource_guidance.pdf, Web page accessed August 2010.

EPA, "eGRID 2014 Summary Tables," p. 3, 2017, https://www.epa.gov/sites/production/files/2017-02/documents/egrid2014_summarytables_v2.pdf, Web page accessed March 2017.

Executive Order (EO) 13693, "Planning for Federal Sustainability in the Next Decade," March 19, 2015.

WECC, "State/Provincial/Voluntary Compliance Report," Appendix F, April 2017.

White House, "Federal Greenhouse Gas Accounting and Reporting Guidance," Revision 1, June 4, 2012.

White House, "Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document," Revision 1, June 2012.

Appendix A

Global Warming Potentials

Appendix A

Global Warming Potentials

Table A-1 below shows the GWPs for the GHGs that were considered to have been released by INL during FY 2016. All GWP values shown are based on those used in the EPA Mandatory Reporting Rule.

Table A-1. Global warming potentials.

Name	CAS No.	Chemical Formula	Global Warming Potential (100 year)
Carbon dioxide	124–38–9	CO_2	1
Methane	74–82–8	CH_4	25
Nitrous oxide	10024-97-2	N_2O	298
HFC–32	75–10–5	CH_2F_2	675
HFC–125	354–33–6	C_2HF_5	3,500
HFC–134a	811–97–2	CH_2FCF_3	1,430
HFC-152a	75-37-6	CH_3CHF_2	124
HFC-365mfc	406-58-6	$CH_3CF_2CH_2CF_3$	794
HFC-43-10mee	138495-42-8	$CF_3CFHCFHCF_2CF_3$	1,640

Source: EPA Mandatory Reporting Rule, 40 CFR 98.
Table A-1 to Subpart A of Part 98. http://www.ecfr.gov/, Web page accessed March 2017.

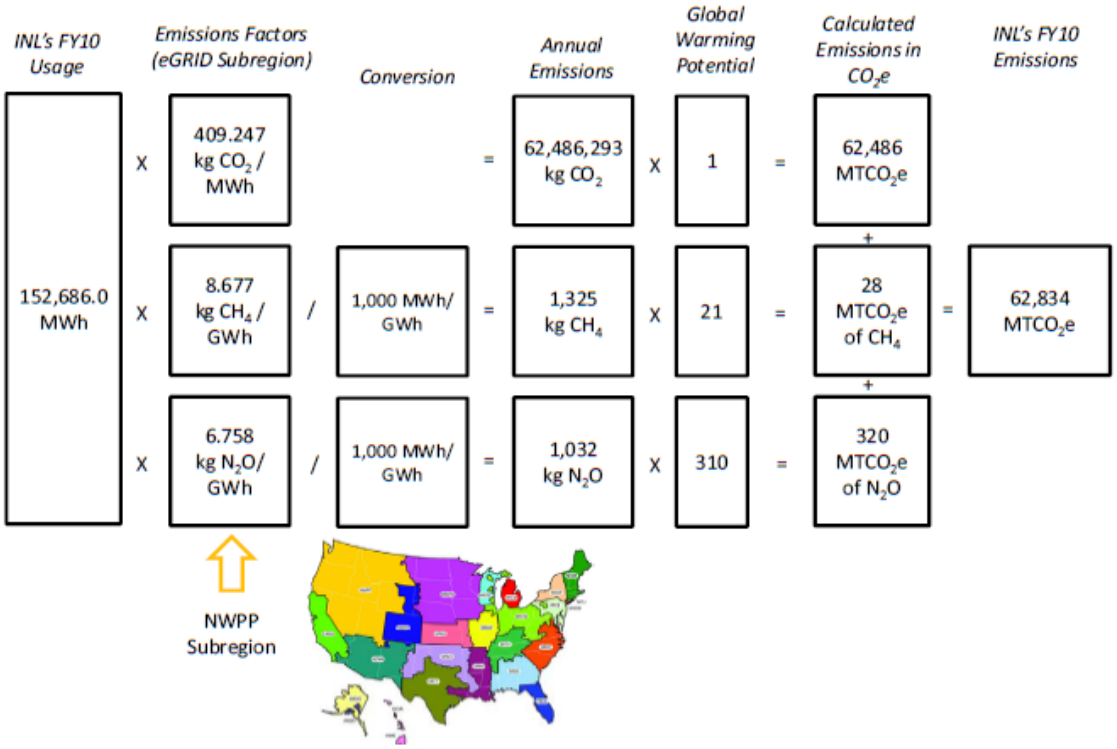
Appendix B

Sample Calculation

Appendix B

Sample Calculation

The following diagram is an example of the steps followed for calculating the GHG emissions from each of INL's emissions categories.



Appendix C

Scope 1 Comprehensive Tables

Appendix C

Scope 1 Comprehensive Tables

Table C-1. INL's GHG emissions from FY 2008 to FY 2016.

Scope	Emissions Category	FY 2008 GHG Emissions (MT CO_2e)	FY 2009 GHG Emissions (MT CO_2e)	FY 2010 GHG Emissions (MT CO_2e)	FY 2011 GHG Emissions (MT CO_2e)[a]	FY 2012 GHG Emissions (MT CO_2e)	FY 2013 GHG Emissions (MT CO_2e)	FY 2014 GHG Emissions (MT CO_2e)	FY 2015 GHG Emissions (MT CO_2e)	FY 2016 GHG Emissions (MT CO_2e)
1 (Direct)	Stationary Combustion	15,213	13,381	14,288	9,826	5,682	5,391	8,249	5,505	6,130
	Mobile Combustion	10,040	8,545	7,383	7,680	6,834	5,523	6,396	6,863	6,912
	Fugitive Emissions: Refrigerants	245	200	385	640	481	372	89	764	414
	Fugitive Emissions: Onsite Landfill	5,963	5,878	5,785	5,702	5,617	5,532	6,480	6,381	6,282
	Fugitive Emissions: Onsite Wastewater Treatment	129	130	136	142	131	123	118	148	159
	SCOPE 1 TOTAL	31,591	28,133	27,978	23,991	18,745	16,940	21,332	19,661	19,897
2 (Indirect)	Purchased Electricity	61,746	58,297	61,364	55,862	54,595	56,242	50,198	42,281	65,156
	Transmission & Distribution Losses (Owned)	1,532	1,450	1,470	1,109	975	796	919	652	1003
	Purchased RECs	-3,474	-6,813	-11,480	(15,332)	(14,082)	(14,722)	(15,119)	(23,321)	(20,831)
	SCOPE 2 TOTAL	59,804	52,934	51,354	41,639	41,488	42,316	35,998	19,613	45,328
3 (Indirect)	Transmission & Distribution Losses (Shared)	4,170	3,937	4,141	3,754	3,662	3,759	3,367	2,786	4,294
	Employee Commuting	8,657	9,354	10,171	9,410	8,313	7,666	7,525	10,248	9,617
	Business Air Travel	6,687	7,380	6,785	5,765	4,364	3,320	3,875	4,559	5,493
	Business Ground Travel: Rental Vehicle	351	337	393	319	300	186	286	272	357
	Business Ground Travel: Personal Vehicle	413	411	422	531	251	185	143	183	232
	Contracted MSW Disposal	1,187	903	956	967	853	677	985	999	295
	Contracted Wastewater Treatment[b]	12	12	13	14	13	11	10	11	12
	SCOPE 3 TOTAL	21,476	22,334	22,881	20,759	17,757	15,805	16,191	19,057	20,300

Table C-1 (continued).

Scope	Emissions Category	FY 2008 GHG Emissions (MT CO_2e)	FY 2009 GHG Emissions (MT CO_2e)	FY 2010 GHG Emissions (MT CO_2e)	FY 2011 GHG Emissions (MT CO_2e)[a]	FY 2012 GHG Emissions (MT CO_2e)	FY 2013 GHG Emissions (MT CO_2e)	FY 2014 GHG Emissions (MT CO_2e)	FY 2015 GHG Emissions (MT CO_2e)	FY 2016 GHG Emissions (MT CO_2e)
TOTAL ANTHROPOGENIC EMISSIONS[c]		112,871	103,401	102,212	86,389	77,989	75,061	73,521	85,525	85,525
Biogenic	Mobile Combustion	162	723	1,182	1,339	1,855	1,274	1,667	1,707	1,636
	Fugitive Emissions: Onsite Landfill	866	853	840	828	816	803	790	778	766
	Contracted MSW Disposal	155	118	125	127	112	89	108	110	32
TOTAL BIOGENIC EMISSIONS		1,184	1,695	2,148	2,294	2,782	2,165	2,566	2,595	2,434
TOTAL EMISSIONS (ANTHROPOGENIC + BIOGENIC)		114,055	105,096	104,359	88,682	80,771	77,226	76,087	60,925	87,959

a. Scope 2 numbers for FY 2011 and FY 2012 were revised in FY 2013 as a result of a revision to Scope 2 total calculations performed in FY 2013.

b. In FY 2016 it was discovered the FY 2008 WWTP baseline assumption was different (to include nitrification/denitrification) than the actual operations of the centralized WWTP (no consistent use of nitrification/denitrification). To have a more accurate comparison, the FY 2008 baseline (and subsequent years) was recalculated with the assumption of no nitrification/denitrification and should be 11.6 MT CO_2e. All emissions calculations were updated accordingly.

c. These are the numbers that INL will report as their overall emissions. Furthermore, this is the number that INL will be trying to reduce in future years.

Table C-2. Amounts of fuel used for stationary combustion at INL during FY 2008.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	1,247,088	Gallons	12,771
Liquefied Natural Gas (LNG)	43,590	Gallons	321
Liquefied Propane Gas (LPG)	149,475	Gallons	870
Natural Gas (Pipeline)	236,600	Therms	1,252
		TOTAL	15,213

Table C-3. Amounts of fuel used for stationary combustion at INL during FY 2009.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	1,098,582	Gallons	11,250
Liquefied Natural Gas (LNG)	41,259	Gallons	304
Liquefied Propane Gas (LPG)	74,660	Gallons	434
Natural Gas (Pipeline)	263,099	Therms	1,392
		TOTAL	13,381

Table C-4. Amounts of fuel used for stationary combustion at INL during FY 2010.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	1,173,716	Gallons	12,020
Liquefied Natural Gas (LNG)	43,284	Gallons	318
Liquefied Propane Gas (LPG)	95,586	Gallons	556
Natural Gas (Pipeline)	263,433	Therms	1,394
		TOTAL	14,288

Table C-5. Amounts of fuel used for stationary combustion at INL during FY 2011.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	751,045	Gallons	7,691
Liquefied Natural Gas (LNG)	35,392	Gallons	260
Liquefied Propane Gas (LPG)	58,659	Gallons	341
Natural Gas (Pipeline)	289,757	Therms	1,533
		TOTAL	9,826

Table C-6. Amounts of fuel used for stationary combustion at INL during FY 2012.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	371,587	Gallons	3,805
Liquefied Natural Gas (LNG)	36,263	Gallons	267
Liquefied Propane Gas (LPG)	53,366	Gallons	310
Natural Gas (Pipeline)	245,554	Therms	1,299
		TOTAL	5,682

Table C-7. Amounts of fuel used for stationary combustion at INL during FY 2013.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	309,029	Gallons	3,165
Liquefied Natural Gas (LNG)	32,664	Gallons	240
Liquefied Propane Gas (LPG)	57,138	Gallons	332
Natural Gas (Pipeline)	312,433	Therms	1,653
		TOTAL	5,391

Table C-8. Amounts of fuel used for stationary combustion at INL during FY 2014.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	466,282	Gallons	4,775
Liquefied Natural Gas (LNG)	38,997	Gallons	287
Liquefied Propane Gas (LPG)	61,495	Gallons	351
Natural Gas (Pipeline)	535,400	Therms	2,836
		TOTAL	8,249

Table C-9. Amounts of fuel used for stationary combustion at INL during FY 2015.

Energy Type	Fuel Used		GHG Emissions ($MT CO_2e$)
	Amount	Units	
Fuel Oil No. 2	189,217	Gallons	1,938
Liquefied Natural Gas (LNG)	24,851	Gallons	183
Liquefied Propane Gas (LPG)	98,333	Gallons	561
Natural Gas (Pipeline)	533,192	Therms	2,824
		TOTAL	5,505

Table C-10. Amounts of fuel used for stationary combustion at INL during FY 2016.

Energy Type	Fuel Used		GHG Emissions (MT CO_2e)
	Amount	Units	
Fuel Oil No. 2	190,473	Gallons	1,951
Liquefied Natural Gas (LNG)	35,721	Gallons	263
Liquefied Propane Gas (LPG)	113,553	Gallons	647
Natural Gas (Pipeline)	617,312	Therms	3,269
		TOTAL	5,505

Table C-11. Fuel amounts and corresponding GHG emissions for INL's FY 2008 fleet.

Fuel Type	Vehicle Type	Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)
B15 Biodiesel Blend[a]	Bus	50,677.20	440	72
	Equipment	77.10	1	<1
	Heavy Duty	836.50	7	1.19
	Light-Duty Truck	19.60	<1	<1
Compressed Natural Gas (CNG)	Bus	90.00	1	—
	Light-Duty Car	54.30	<1	—
	Light-Duty Truck	437.40	3	—
Diesel	Bus	544,548.50	5,563	—
	Equipment	50,229.00	517	—
	Heavy Duty	50,066.80	512	—
	Light-Duty Truck	10,326.70	105	—
E85 Ethanol Fuel Blend	Light-Duty Car	2,063.20	4	10.08
	Light-Duty Truck	16,195.00	27	79.14
Gasoline	Bus	2,391.50	21	—
	Equipment	5,803.10	51	—
	Heavy Duty	6,852.90	64	—
	Light-Duty Car	15,529.40	141	—
	Light-Duty Truck	241,383.42	2,228	—
LNG	Bus	45,964.30	348	—
	Light-Duty Truck	30.00	<1	—
Propane	Equipment	851.90	5	—
	TOTAL	1,044,427.83	10,040	162

a. Carol Comstock clarified in a December 10, 2009, phone call that BEA utilizes a combination of B10 (used in winter) and B20 (used in summer), and the exact amounts of each blend are not currently tracked (at least not in such a way that can easily be reported). Assume a 50/50 split of B10 and B20, and therefore refer to the biodiesel blend as B15.

Since the vehicle type category was reported a bit differently than the subsequent years, only FY 2009–FY 2016 is combined in the comprehensive tables on the following pages.

Table C-12. Fuel amounts and corresponding GHG emissions for INL's fleet—FY 2009 to FY 2011.

Fuel Type	Vehicle Type	FY 2009			FY 2010			FY 2011		
		Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)	Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)	Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)
B15 Biodiesel Blend[a]	Bus	219,814.50	1,909	312	331,916.34	2,883	471	363,731.46	3,159	516
	Equipment	9,462.90	83	13	14,256.11	125	20	5,454.84	48	8
	Light-Duty Truck	6,551.70	57	9	8,797.74	76	12	2,118.54	18	3
	Truck	2,351.00	20	3	3,061.95	27	4	546.93	5	1
Diesel	Bus	302,302.50	3,088	—	186,610.28	1,906	—	164,017.55	1,676	—
	Equipment	96,249.70	991	—	54,192.00	558	—	78,481.02	808	—
	Heavy Duty	21,369.20	218	—	20,127.87	206	—	32,963.00	337	—
	Light-Duty Truck	6,071.00	62	—	5,553.66	57	—	7,540.25	77	—
E10 Ethanol Fuel Blend	Bus	1,138.60	9	<1	76.20	<1	<1	—	—	—
	Equipment	76,793.90	615	44	19,590.83	157	11	22,401.88	179	13
	Light-Duty Car	14,218.80	117	8	6,646.48	56	4	6,242.52	52	4
	Light-Duty Truck	122,823.80	1,025	71	4,134.43	34	2	1,907.45	16	1
E85 Ethanol Fuel Blend	Bus	66.80	<1	<1	130,063.10	1,085	75	125,990.31	1,051	72
	Equipment	3,223.90	5	16	1,946.67	3	10	647.81	1	3
	Light-Duty Car	3,398.35	6	17	8,457.22	15	41	8,583.05	15	42
	Light-Duty Truck	46,965.15	80	230	108,806.18	186	532	138,476.16	236	677
Gasoline	Equipment	1,717.30	15	—	845.60	7	—	—	—	—
LNG	Bus	31,771.00	241	—	38.00	<1	—	—	—	—
	Equipment	231.00	2	—	76.00	<1	—	—	—	—
TOTAL		966,521.10	8,545	723	905,196.64	7,383	1,182	959,102.76	7,680	1,339

a. Carol Comstock clarified in a December 10, 2009, phone call that BEA utilizes a combination of B10 (used in winter) and B20 (used in summer), and the exact amounts of each blend are not currently tracked (at least not in such a way that can be easily reported). Assume a 50/50 split of B10 and B20, and refer to the biodiesel blend as B15. Tad Pearson confirmed in a December 22, 2010, phone call that this assumption was valid for FY 2009 and FY 2010.

Table C-13. Fuel amounts and corresponding GHG emissions for INL's fleet—FY 2012 to FY 2015.

Fuel Type	Vehicle Type	FY 2012			FY 2013			FY 2014			FY 2015		
		Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)	Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)	Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)	Fuel Used (gal)	GHG Emissions (MT CO_2e)	Biogenic Emissions (MT CO_2e)
B20 Biodiesel Blend[a]	Bus	389,607.82	3,184.95	736.48	386,333.66	3,158.18	730.29	428,397.73	3,501.95	809.80	438,355.55	3,583.35	828.63
	Equipment	4,026.97	33.24	5.71	3,434.83	28.36	6.49	3,397.53	28.05	6.42	4,877.18	40.27	9.22
	Heavy Duty	765.48	6.26	1.45	364.34	2.98	0.69	84.42	0.69	0.16	302.04	2.47	0.57
	Light-Duty Truck	—	—	—	—	—	—	94.55	0.77	0.18	136.88	1.12	0.26
Compressed Natural Gas (CNG)	Bus	—	—	—	—	—	—	—	—	—	—	—	—
	Light-Duty Car	—	—	—	—	—	—	—	—	—			
	Light-Duty Truck	—	—	—	—	—	—	—	—	—			
Diesel	Bus	106,683.01	1,089.88	—	27,738.99	283.38	—	27,119.78	277.05	—	17,024.09	173.92	—
	Equipment	46,311.52	476.97	—	38,224.96	393.69	—	36,691.64	377.87	—	67,390.69	694.02	—
	Heavy Duty	26,717.37	273.07	—	28,485.68	291.14	—	38,909.46	397.66	—	56,982.22	582.37	—
	Light Duty Car[b]	—	—	—	6.01	0.06	—	6.01	0.06	—	—	—	—
	Light-Duty Truck	6,966.56	71.16	—	5,977.91	61.06	—	10,285.37	105.05	—	9,246.66	94.44	—
E85 Ethanol Fuel Blend	Equipment	1,367.85	2.29	6.68	2,669.71	4.33	13.05	2,749.37	4.44	13.44	1,480.46	2.39	7.23
	Light-Duty Car	7,302.10	13.17	35.68	6,292.66	11.22	30.75	6,250.13	11.06	30.54	5,262.08	9.31	25.71
	Light-Duty Truck	199,673.62	341.30	975.73	84,519.11	142.54	413.01	144,530.18	242.28	706.26	150,741.77	252.69	736.62
Gasoline	Bus	3,464.86	29.08	1.99	119.68	0.95	0.07	389.54	3.10	0.22	—	—	—
	Equipment	1,625.20	13.38	0.93	20,177.56	161.52	11.60	14,036.47	112.34	8.07	13,567.62	112.23	8.06
	Heavy Duty	133,636.56	1,114.90	76.83	2,999.46	25.17	1.72	3,883.23	32.53	2.23	3,533.71	29.60	2.03
	Light-Duty Car	—	—	—	1,501.70	12.36	0.86	1,352.14	11.12	0.78	589.16	4.84	0.34
	Light-Duty Truck	1,367.85	2.29	6.68	113,383.25	945.93	65.18	154,862.58	1,289.89	89.03	153,633.47	1,279.65	88.32
TOTAL		951,170.45	6,833.91	1,854.72	722,229.52	5,522.88	1,273.72	873,040.13	6,395.91	1,667.14	923,123.58	6,862.68	1,706.99

a. Per October 11, 2012, e-mail from Tad Pearson, BEA utilized a B20 (20% biodiesel blend) for the FY 2012 reporting year. BEA continued to use the B20 for subsequent years (FY 2013–FY 2016).
b. New category for FY 2013.

Table C-14. Fuel amounts and corresponding GHG emissions for INL's fleet—FY 2016.

Fuel Type	Vehicle Type	FY 2016		
		Fuel Used (gal)	**GHG Emissions (MT CO_2e)**	**Biogenic Emissions (MT CO_2e)**
B20 Biodiesel Blend[a]	Bus	419,171.00	3,426.53	792.36
	Equipment	6,738.38	55.64	12.74
	Heavy Duty	346.49	2.83	0.65
	Light-Duty Truck	44.52	0.36	0.65
Compressed Natural Gas (CNG)	Bus	—	—	—
	Light-Duty Car	—	—	—
	Light-Duty Truck	—	—	—
Diesel	Bus	12,330.09	125.96	—
	Equipment	63,002.37	648.83	—
	Heavy Duty	69,461.50	709.91	—
	Light Duty Car[b]	—	—	—
	Light-Duty Truck	10,882.41	111.15	—
E85 Ethanol Fuel Blend	Equipment	1,318.09	2.13	6.44
	Light-Duty Car	2,776.33	4.91	13.57
	Light-Duty Truck	143,336.44	240.28	700.43
Gasoline/E10 Fuel Blend	Bus	—	—	—
	Equipment	17,170.50	137.43	9.87
	Heavy Duty	20,892.31	147.99	12.01
	Light-Duty Car	521.70	4.29	0.30
	Light-Duty Truck	152,032.59	1,266.31	87.40
TOTAL		920,024.73	6,911.56	1,635.86

Table C-15. Fugitive refrigerants evaluated for GHG emissions from FY 2008 to FY 2013 at INL.

Common Name	GWP	FY 2008		FY 2009		FY 2010		FY 2011		FY 2012		FY 2013	
		Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)
CO_2	1	NE	NE	20,072.60	9	1,849.18	1	1,849.18	1	3.22	0.0	−39.81	−0.02
CH_4	21	NE	NE	2,842.50	27	32,961.47	314	32,961.47	314	−588.29	−5.6.0	33,106.47	315.36
N_2O	310	NE	NE	0.00	0	20.18	3	20.18	3	0.0	0.0	0.0	0.0
HFC-23	11,700	0.43	2	1.50	8	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-32	650	71.99	21	0.00	0	92.13	27	92.13	27	180.5	53.22	30.75	9.07
HFC-41	150	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-125	2,800	88.98	113	0.00	0	100.15	127	100.15	127	60.12	76.35	31.25	39.69
HFC-134	1,000	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-134a	1,300	173.15	102	238.20	140	316.35	187	316.35	187	419.61	247.44	13.07	7.70
HFC-143	300	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-143a	3,800	0.20	<1	0.00	0	−18.72	−32	−18.72	−32	20.76	35.78	0.0	0.0
HFC-152	53	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-152a	140	23.88	2	23.50	1	3.28	0	3.28	0	77.22	4.90	0.29	0.02
HFC-161	12	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-227ca	2,900	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-227ea	2,900	0.00	0	0.00	0	46.0	61	46.0	61	0.0	0.0	0.0	0.0
HFC-236ca	120	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-236cb	1,340	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-236ea	1,370	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-236fa	6,300	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-245ca	560	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-245fa	1,030	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
HFC-365mfc	794	3.86	1	38.00	14	−0.4	0	−0.4	0	0.9	0.32	0.0	0.0
HFC-c-447-ef	250	0.00	0	0.00	0	NE	NE	NE	NE	NE	NE	NE	NE
HFC-43-10mee	1,300	1.69	1	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
PFC-14	6,500	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
PFC-116	9,200	0.51	2	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
PFC-218	7,000	0.00	0	0.00	0	0.0	0	0.0	0	1.1	3.5	0.0	0.0
PFC-318 or PFCc318	8,700	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
PFC-3-1-10	7,000	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
PFC-4-1-12	7,500	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
PFC-5-1-14	7,400	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
PFC-9-1-18	7,500	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
c-C_3F_6	17,340	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
SF_6 - Sulfur Hexafluoride	23,900	0.00	0	0.00	0	−4.28	−46	−4.28	−46	6.0	65.05	0.0	0.0
NF_3	17,200	0.00	0	0.00	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
TOTAL		364.69	245	23,216.30	200	29,242.00	385	35,365.34	640	181.15	480.96	33,142.02	371.82

NE = Not evaluated. Refrigerant was not included in data call table.

Table C-16. Fugitive refrigerants evaluated for GHG emissions for FY 2014–FY 2016 at INL.

Common Name	GWP	FY 2014		FY 2015		FY 2016	
		Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)	Mass Emitted (lbs)	GHG Emissions (MT CO_2e)
CO_2	1	−137.78	−0.06	−114.95	−0.05	−19.51	−0.01
CH_4	25	123.35	1.40	34,699.70	393.49	38.427.66	435.77
N_2O	298	0.0	0.0	0.00	0.00	1.05	0.14
HFC-23	14,800	0.0	0.0	0.00	0.00	0.00	0.00
HFC-32	675	49.2	15.06	21.90	6.71	-15.00	-4.59
HFC-41	92	0.0	0.0	0.00	0.00	0.00	0.00
HFC-125	3,500	38.75	61.52	22.50	35.72	-15.00	-23.81
HFC-134	1,100	0.0	0.0	0.00	0.00	0.00	0.00
HFC-134a	1,430	17.55	11.38	55.22	35.82	4.48	2.91
HFC-143	353	0.0	0.0	0.00	0.00	0.00	0.00
HFC-143a	4,470	0.0	0.0	0.00	0.00	0.00	0.00
HFC-152	53	0.0	0.0	0.00	0.00	0.00	0.00
HFC-152a	124	1.7	0.10	0.00	0.00	5.47	0.31
HFC-161	12	0.0	0.0	0.00	0.00	0.00	0.00
HFC-227ca	NL	0.0	0.0	0.00	0.00	0.00	0.00
HFC-227ea	3,220	0.0	0.0	0.00	0.00	0.00	0.00
HFC-236ca	NL	0.0	0.0	0.00	0.00	0.00	0.00
HFC-236cb	1,340	0.0	0.0	0.00	0.00	0.00	0.00
HFC-236ea	1,370	0.0	0.0	0.00	0.00	0.00	0.00
HFC-236fa	9,810	0.0	0.0	0.00	0.00	0.00	0.00
HFC-245ca	693	0.0	0.0	0.00	0.00	0.00	0.00
HFC-245fa	1,030	0.0	0.0	0.00	0.00	0.00	0.00
HFC-365mfc	794	0.0	0.0	0.00	0.00	28.80	10.37
HFC-c-447-ef	NL	NE	NE	NE	NE	NE	NE
HFC-43-10mee	1,640	0.0	0.0	0.00	0.00	-9.60	-7.14
PFC-14	7,390	0.0	0.0	0.00	0.00	0.00	0.00
PFC-116	12,200	0.0	0.0	0.00	0.00	0.00	0.00
PFC-218	8,830	0.0	0.0	-0.05	-0.18	0.00	0.00
PFC-318 or PFCc318	10,300	0.0	0.0	0.00	0.00	0.00	0.00
PFC-3-1-10	8,860	0.0	0.0	0.00	0.00	0.00	0.00
PFC-4-1-12	9,160	0.0	0.0	0.00	0.00	0.00	0.00
PFC-5-1-14	9,300	0.0	0.0	0.00	0.00	0.00	0.00
PFC-9-1-18	7,500	0.0	0.0	0.00	0.00	0.00	0.00
c-C_3F_6	17,340	0.0	0.0	0.00	0.00	0.00	0.00
SF_6 - Sulfur Hexafluoride	22,800	0.0	0.0	28.26	292.32	0.00	0.00
NF_3	17,200	0.0	0.0	0.00	0.00	0.00	0.00
TOTAL		95.77	89.41	34,712.58	763.83	38,408.35	413.94

NE = Not evaluated. Refrigerant was not included in data call table.
Updated GWPs in 2014 are in red

Appendix D

Emissions Factors Used

Appendix D

Emissions Factors Used

D-1. SCOPE ONE – DIRECT EMISSIONS

Table D-1. Stationary combustion conversion and emissions factors used.

Emissions Source	Factor Type	Amount	Units	Reference
Fuel Oil No. 2	Higher Heating Value (HHV) Conversion Factor	0.138	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emission Factor	73.96	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CH_4 Emission Factor	0.003	kg CH_4/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.
	N_2O Emission Factor	0.0006	kg N_2O/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.
Liquefied Natural Gas (LNG)	HHV Conversion Factor	0.110	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emission Factor	66.88	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CH_4 Emission Factor	0.001	kg CH_4/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.
	N_2O Emission Factor	0.0001	kg N_2O/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.

Table D-1. (continued).

Emissions Source	Factor Type	Amount	Units	Reference
Natural Gas (Pipeline)	Conversion Factor	0.001028	MMBtu/scf	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	Conversion Factor	96.99	scf/therm	Published conversion in common literature.
	CO_2 Emission Factor	53.06	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CH_4 Emission Factor	0.001	kg CH_4/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.
	N_2O Emission Factor	0.0001	kg N_2O/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.
Liquefied Propane Gas (LPG)	HHV Conversion Factor	0.092	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emission Factor	61.71	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CH_4 Emission Factor	0.003	kg CH_4/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.
	N_2O Emission Factor	0.0006	kg N_2O/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-2 to Subpart C of Part 98.

Table D-2. Mobile combustion emissions factors used.

Emissions Source	Factor Type	Amount	Units	Reference
Gasoline (Considered "Motor gasoline")	HHV Conversion Factor	0.125	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emissions Factor	70.22	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
Gasoline, Bus (Considered "Gasoline Buses")	CH_4 Emissions Factor	0.021	g CH_4/mile	Emission Factors from Cross-Sector Tools, GHG Protocol, "Emission factors from cross-sector tools (August 2012).xlsx"
	N_2O Emissions Factor	0.017	g N_2O/mile	Emission Factors from Cross-Sector Tools, GHG Protocol, "Emission factors from cross-sector tools (August 2012).xlsx."
Gasoline, Light-Duty Car (Considered "Gasoline Passenger Car," Tier 1 [1995–2000])	CH_4 Emissions Factor	0.0271	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0429	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Gasoline, Light-Duty Truck (Considered "Gasoline Light-Duty Trucks," Tier 1 [1995–2000])	CH_4 Emissions Factor	0.0452	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0871	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Gasoline, Equipment (Considered "Gasoline Construction Equipment")	CH_4 Emissions Factor	0.5	g CH_4/gal	Table A-6, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.22	g N_2O/gal	Table A-6, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Gasoline, Heavy Duty (Considered "Gasoline Heavy-Duty Trucks," Tier 0)	CH_4 Emissions Factor	0.0655	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.175	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.

Table D-2. (continued).

Emissions Source	Factor Type	Amount	Units	Reference
LNG (Considered "Natural Gasoline")	HHV Conversion Factor	0.110	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emission Factor	66.83	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
LNG, Bus (Considered "CNG Buses")	CH_4 Emissions Factor	1.966	g CH_4/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.175	g N_2O/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
LNG, Equipment (Considered "LNG Heavy-Duty Vehicles")	CH_4 Emissions Factor	1.966	g CH_4/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.175	g N_2O/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Diesel (Considered "Distillate Fuel Oil No. 2")	HHV Conversion Factor	0.138	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emissions Factor	73.96	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
Diesel, Bus (Considered "Diesel Heavy-Duty Trucks")	CH_4 Emissions Factor	0.0051	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0048	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Diesel, Light Duty Car (Considered "Diesel Passenger Car, Moderate)	CH_4 Emissions Factor	0.0005	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0010	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Diesel, Light-Duty Truck (Considered "Diesel Light Trucks," Moderate)	CH_4 Emissions Factor	0.0009	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0014	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.

Table D-2. (continued).

Emissions Source	Factor Type	Amount	Units	Reference
Diesel, Heavy Duty (Considered "Diesel Heavy-Duty Trucks")	CH_4 Emissions Factor	0.0051	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0048	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Diesel, Equipment (Considered "Diesel Construction Equipment")	CH_4 Emissions Factor	0.58	g CH_4/gal	Table A-6, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.26	g N_2O/gal	Table A-6, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Biodiesel (Considered "Biodiesel [100%]")	HHV Conversion Factor	0.128	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emissions Factor	73.84	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
Biodiesel, Bus (Considered "Diesel Heavy-Duty Trucks")	CH_4 Emissions Factor	0.0051	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0048	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Biodiesel, Equipment (Considered "Diesel Construction Equipment")	CH_4 Emissions Factor	0.58	g CH_4/gal	Table A-6, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.26	g N_2O/gal	Table A-6, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Biodiesel, Light-Duty Truck (Considered "Diesel Light Trucks," Moderate)	CH_4 Emissions Factor	0.0009	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0014	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Biodiesel, Heavy-Duty (Considered "Diesel Heavy-Duty Vehicles")	CH_4 Emissions Factor	0.0051	g CH_4/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.0048	g N_2O/mile	Table A-1, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.

Table D-2. (continued).

Emissions Source	Factor Type	Amount	Units	Reference
Ethanol (Considered "Ethanol [100%]")	HHV Conversion Factor	0.084	MMBtu/gal	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
	CO_2 Emissions Factor	68.44	kg CO_2/MMBtu	EPA Mandatory Reporting Rule, 40 CFR 98, Table C-1 to Subpart C of Part 98.
Ethanol, Bus (Considered "Ethanol Buses")	CH_4 Emissions Factor	0.197	g CH_4/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.175	g N_2O/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Ethanol, Equipment and Heavy Duty (Considered "Ethanol Heavy-Duty Vehicles")	CH_4 Emissions Factor	0.197	g CH_4/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.175	g N_2O/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
Ethanol, Light-Duty Car and Truck (Considered "Ethanol Light-Duty Vehicles")	CH_4 Emissions Factor	0.055	g CH_4/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.
	N_2O Emissions Factor	0.067	g N_2O/mile	Table A-7, EPA Climate Leaders, Mobile Combustion Sources, EPA 430-K-08-004, May 2008.

Fugitive emissions are based directly on the GWP of the various gases emitted, so no additional table is provided from Table 8 that was shown previously in the main body.

D-2. SCOPE TWO – INDIRECT EMISSIONS

Table D-3. Electricity emissions factors used.

Emissions Source	Factor Type	Amount	Units	Reference
INL Site Electricity Purchase (and T&D loss) (Considered NWPP of "WECC" eGRID Subregion)	CO_2 Emissions Factor	411.409	kg CO_2/MWh	EPA, eGRID 2014 Summary Tables, p. 3, "Output Emission Rates."
	CH_4 Emissions Factor	44.361	kg CH_4/GWh	EPA, eGRID 2014 Summary Tables, p. 3, "Output Emission Rates."
	N_2O Emissions Factor	6.441	kg N_2O/GWh	EPA, eGRID 2014 Summary Tables, p. 3, "Output Emission Rates."
FY 2016 RECs Purchase (Considered NWPP of "WECC" eGRID Subregion)	CO_2 Emissions Factor	708.648	kg CO_2/MWh	EPA, eGRID 2014 Summary Tables, p. 3, "Output Emission Rates."
	CH_4 Emissions Factor	69.853	kg CH_4/GWh	EPA, eGRID 2014 Summary Tables, p. 3, "Output Emission Rates."
	N_2O Emissions Factor	10.024	kg N_2O/GWh	EPA, eGRID 2014 Summary Tables, p. 3, "Output Emission Rates."

D-3. SCOPE THREE – INDIRECT EMISSIONS

Table D-4. Employee commute, rental car miles, and personal car miles emissions factors used.

Emissions Source	Factor Type	Amount	Units	Reference
Passenger Cars	CO_2 Emissions Factor	0.364	kg CO_2/ vehicle-mile	Table 5, EPA Climate Leaders, Commuting, Business Travel & Mobile Transport, EPA 430-R-08-006, May 2008.
	CH_4 Emissions Factor	0.031×10^{-3}	kg CH_4/ vehicle-mile	Table 5, EPA Climate Leaders, Commuting, Business Travel & Mobile Transport, EPA 430-R-08-006, May 2008.
	N_2O Emissions Factor	0.032×10^{-3}	kg N_2O/ vehicle-mile	Table 5, EPA Climate Leaders, Commuting, Business Travel & Mobile Transport, EPA 430-R-08-006, May 2008.
Light-Duty Truck/Van/SUV	CO_2 Emissions Factor	0.519	kg CO_2/ vehicle-mile	Table 5, EPA Climate Leaders, Commuting, Business Travel & Mobile Transport, EPA 430-R-08-006, May 2008.
	CH_4 Emissions Factor	0.036×10^{-3}	kg CH_4/ vehicle-mile	Table 5, EPA Climate Leaders, Commuting, Business Travel & Mobile Transport, EPA 430-R-08-006, May 2008.
	N_2O Emissions Factor	0.047×10^{-3}	kg N_2O/ vehicle-mile	Table 5, EPA Climate Leaders, Commuting, Business Travel & Mobile Transport, EPA 430-R-08-006, May 2008.

Table D-5. Business travel airline miles emissions factors used.

Emissions Source	Factor Type	Amount	Units	Reference
Airline Miles, Short Haul (<300 miles)	CO_2 Emissions Factor	0.275	kg CO_2/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
	CH_4 Emissions Factor	9.1×10^{-6}	kg CH_4/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
	N_2O Emissions Factor	8.7×10^{-6}	kg N_2O/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
Airline Miles, Medium Haul (300–700 miles)	CO_2 Emissions Factor	0.162	kg CO_2/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
	CH_4 Emissions Factor	8.0×10^{-7}	kg CH_4/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
	N_2O Emissions Factor	5.2×10^{-6}	kg N_2O/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
Airline Miles, Long Haul (≥700 miles)	CO_2 Emissions Factor	0.191	kg CO_2/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
	CH_4 Emissions Factor	8.0×10^{-7}	kg CH_4/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"
	N_2O Emissions Factor	6×10^{-6}	kg N_2O/ passenger-mile	Tab 1.3 Factors & Drop Down Key, FY 2014+ Factors from "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"

Appendix E

Scope 2 Comprehensive Tables

Appendix E

Scope 2 Comprehensive Tables

Table E-1. INL's GHG emissions from electricity and RECs purchased in FY 2008–FY 2016.

Emissions Category	FY 2008 GHG Emissions (MT CO_2e)	FY 2009 GHG Emissions (MT CO_2e)	FY 2010 GHG Emissions (MT CO_2e)	FY 2011 GHG Emissions (MT CO_2e)[a]	FY 2012 GHG Emissions (MT CO_2e)	FY 2013 GHG Emissions (MT CO_2e)	FY 2014 GHG Emissions (MT CO_2e)	FY 2015 GHG Emissions (MT CO_2e)	FY 2016 GHG Emissions (MT CO_2e)
Purchased Electricity (includes T&D losses within INL's operational controls)	63,278	59,747	62,834	56,971	55,570	57,038	51,117	42,933	66,159
Purchased RECs (displaced GHG emissions)	-3,474	-6,813	-11,480	-15,332	-14,082	-14,722	-15,119	-23,321	-20,831
SCOPE 2 TOTAL	59,804	52,934	51,354	41,639	41,488	42,316	35,998	19,613	45,328

a. Scope 2 numbers for FY 2011 and FY 2012 were revised in FY 2013 as a result of a revision to Scope 2 total calculations.

Appendix F

Receipt for RECs Purchased in FY 2016

Appendix F

Receipt for RECs Purchased in FY 2016

State/Provincial/Voluntary Compliance Report

Printed Date: 4/14/2017 10:55:24 AM

Account Holder	SubAccount	Subaccount ID	Retirement Types	Retirement Reason	State/Province	Certification #	Compliance Period	Reason	Additional Details	WREGIS GU ID	Generator Plant-Unit Name	Fuel Type	Vintage Month	Vintage Year	Certificate Serial Numbers	Quantity	eTags	Duration - Start Date	Duration - End Date	AZ	BC	CA	CO	MT	NV	NM	TX	WA	OR	AB	UT	Green-e Energy Eligible	Ecologo Certified	Hydro Certification	SMUD Eligible	eTag Matched	eTag	Action Date
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	10	2015	3996-OR-180867-1396 to 1452	57		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	11	2015	3996-OR-183938-2616 to 2721	106		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	12	2015	3996-OR-187517-1209 to 1259	51		12/01/2015	12/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:13 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	9	2015	3996-OR-183937-4395 to 4451	57		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	4	2016	3996-OR-206393-368 to 376	9		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	1	2016	3996-OR-190822-2678 to 2698	61		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	2	2016	3996-OR-194022-3968 to 4032	85		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	3	2016	3996-OR-197141-5552 to 5669	118		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	5	2016	3996-OR-203733-2082 to 2125	44		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	6	2016	3996-OR-207506-471 to 479	9		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	7	2016	3996-OR-210958-67 to 69	3		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	9	2016	3996-OR-212720-1376 to 1428	53		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3996	Bonneville Dam - Bonneville Dam G1	Alternate Use	10	2016	3996-OR-221214-2717 to 2822	106		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W4035	Bonneville Dam - Bonneville Dam G10	Alternate Use	4	2016	4035-OR-206751-425 to 434	10		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3997	Bonneville Dam - Bonneville Dam G2	Alternate Use	4	2016	3997-OR-201146-362 to 369	8		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3998	Bonneville Dam - Bonneville Dam G3	Alternate Use	4	2016	3998-OR-201147-431 to 440	10		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#0017664S	W3999	Bonneville Dam - Bonneville Dam G4	Alternate Use	4	2016	3999-OR-201148-428 to 437	10		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM

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Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4000	Bonneville Dam - Bonneville Dam G5	Alternate Use	4	2016	4000-OR-201149-428 to 435	8		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4001	Bonneville Dam - Bonneville Dam G6	Alternate Use	4	2016	4001-OR-201150-432 to 440	9		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4002	Bonneville Dam - Bonneville Dam G7	Alternate Use	4	2016	4002-OR-201151-422 to 430	9		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4003	Bonneville Dam - Bonneville Dam G8	Alternate Use	4	2016	4003-OR-201152-430 to 438	9		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4004	Bonneville Dam - Bonneville Dam G9	Alternate Use	4	2016	4004-OR-201153-430 to 441	12		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	5	2015	4405-WA-165559-1795 to 1908	114		05/01/2015	05/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	6	2015	4405-WA-168743-1710 to 1818	109		06/01/2015	06/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	7	2015	4405-WA-171927-2245 to 2387	143		07/01/2015	07/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	8	2015	4405-WA-175047-2516 to 2676	161		08/01/2015	08/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	9	2015	4405-WA-177950-1690 to 1798	109		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	10	2015	4405-WA-181176-1879 to 1998	120		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	11	2015	4405-WA-184263-1624 to 1727	104		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	12	2015	4405-WA-187873-1594 to 1696	103		12/01/2015	12/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	9	2016	4405-WA-217968-380 to 393	14		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	1	2016	4405-WA-191137-849 to 865	17		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	2	2016	4405-WA-194306-782 to 797	16		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	3	2016	4405-WA-197450-883 to 900	18		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	4	2016	4405-WA-200663-974 to 994	21		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	5	2016	4405-WA-204024-961 to 980	20		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	6	2016	4405-WA-207805-935 to 953	19		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	7	2016	4405-WA-211223-846 to 862	17		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	8	2016	4405-WA-214561-745 to 760	16		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4405	Chief Joseph Dam - Chief Joseph G11	Alternate Use	10	2016	4405-WA-221461-365 to 380	16		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	10	2016	4406-WA-221412-370 to 383	14		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	1	2016	4406-WA-191072-846 to 862	17		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	2	2016	4406-WA-194249-783 to 800	18		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	3	2016	4406-WA-197398-877 to 896	20		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	4	2016	4406-WA-200612-983 to 1002	20		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	5	2016	4406-WA-203971-972 to 991	20		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	6	2016	4406-WA-207746-936 to 955	20		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	7	2016	4406-WA-211174-844 to 862	19		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	8	2016	4406-WA-214508-747 to 761	15		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4406	Chief Joseph Dam - Chief Joseph G12	Alternate Use	9	2016	4406-WA-217915-377 to 390	14		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	9	2016	4407-WA-218197-380 to 393	14		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	10	2016	4407-WA-221680-364 to 377	14		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	1	2016	4407-WA-191419-848 to 864	17		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	2	2016	4407-WA-194614-775 to 790	16		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	3	2016	4407-WA-197758-888 to 906	19		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	4	2016	4407-WA-200950-981 to 1002	22		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	5	2016	4407-WA-204344-965 to 984	20		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	6	2016	4407-WA-208102-939 to 958	20		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	7	2016	4407-WA-211474-853 to 870	18		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4407	Chief Joseph Dam - Chief Joseph G13	Alternate Use	8	2016	4407-WA-214797-750 to 764	15		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	10	2016	4408-WA-221622-362 to 376	15		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	1	2016	4408-WA-191339-845 to 861	17		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	2	2016	4408-WA-194529-779 to 795	17		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	3	2016	4408-WA-197674-892 to 910	19		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	4	2016	4408-WA-200865-978 to 997	20		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	5	2016	4408-WA-204258-963 to 982	20		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	6	2016	4408-WA-208025-938 to 957	20		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	7	2016	4408-WA-211401-853 to 871	19		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	8	2016	4408-WA-214721-748 to 762	15		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4408	Chief Joseph Dam - Chief Joseph G14	Alternate Use	9	2016	4408-WA-218123-383 to 397	15		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	10	2016	4399-WA-221539-364 to 377	14		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	1	2016	4399-WA-191238-847 to 865	19		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	2	2016	4399-WA-194406-781 to 797	17		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	3	2016	4399-WA-197540-887 to 905	19		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	4	2016	4399-WA-200760-980 to 999	20		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	5	2016	4399-WA-204136-960 to 980	21		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	6	2016	4399-WA-207922-933 to 952	20		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	7	2016	4399-WA-211317-845 to 862	18		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	8	2016	4399-WA-214637-748 to 762	15		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4399	Chief Joseph Dam - Chief Joseph G5	Alternate Use	9	2016	4399-WA-218038-388 to 401	14		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	9	2016	4403-WA-218039-377 to 390	14		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	1	2016	4403-WA-191239-842 to 859	18		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	2	2016	4403-WA-194407-782 to 798	17		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	3	2016	4403-WA-197541-886 to 905	20		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	4	2016	4403-WA-200761-982 to 1002	21		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	5	2016	4403-WA-204137-971 to 990	20		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	6	2016	4403-WA-207923-938 to 956	19		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	7	2016	4403-WA-211318-850 to 868	19		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	8	2016	4403-WA-214638-752 to 766	15		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4403	Chief Joseph Dam - Chief Joseph G9	Alternate Use	10	2016	4403-WA-221540-365 to 378	14		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	1	2016	833-OR-189939-1193 to 1228	36		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	2	2016	833-OR-193147-1471 to 1514	44		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	3	2016	833-OR-196295-1914 to 1970	57		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	4	2016	833-OR-199594-1247 to 1283	37		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	5	2016	833-OR-202885-1234 to 1270	37		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	6	2016	833-OR-206580-1141 to 1174	34		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	7	2016	833-OR-210240-998 to 1028	31		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	8	2016	833-OR-213568-785 to 807	23		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	9	2016	833-OR-216971-789 to 811	23		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	10	2016	833-OR-220477-1501 to 1558	58		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	6	2015	833-OR-166327-964 to 992	29		06/01/2015	06/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	7	2015	833-OR-169512-989 to 1018	30		07/01/2015	07/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	8	2015	833-OR-172703-1355 to 1394	40		08/01/2015	08/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	9	2015	833-OR-175746-858 to 882	25		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	10	2015	833-OR-179806-1236 to 1274	39		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	11	2015	833-OR-182968-1730 to 1782	53		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W833	Condon Wind Power Project - Condon Phase II	Wind	12	2015	833-OR-186310-2320 to 2391	72		12/01/2015	12/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	1	2016	774-OR-189086-1161 to 1196	36		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	2	2016	774-OR-192327-1436 to 1478	43		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	3	2016	774-OR-195557-1871 to 1926	56		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	4	2016	774-OR-198844-1221 to 1257	37		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	5	2016	774-OR-202126-1206 to 1241	36		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	6	2016	774-OR-205815-1107 to 1141	35		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	7	2016	774-OR-209548-973 to 1001	29		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	8	2016	774-OR-212903-766 to 788	23		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	9	2016	774-OR-216291-770 to 792	23		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	10	2016	774-OR-219777-1468 to 1523	56		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	6	2015	774-OR-166298-1538 to 1554	17		06/01/2015	06/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	7	2015	774-OR-169481-1375 to 1396	22		07/01/2015	07/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	8	2015	774-OR-172674-1335 to 1373	39		08/01/2015	08/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	9	2015	774-OR-175718-831 to 854	24		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	10	2015	774-OR-178908-1210 to 1246	37		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	11	2015	774-OR-182094-1690 to 1741	52		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W774	Condon Wind Power Project - Condon Wind Power Project	Wind	12	2015	774-OR-185353-2268 to 2337	70		12/01/2015	12/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	7	2016	4422-OR-211079-96 to 97	2		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	8	2016	4422-OR-214434-103 to 104	2		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	9	2016	4422-OR-217825-52 to 52	1		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	5	2016	4422-OR-203864-75 to 75	1		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	6	2016	4422-OR-207642-106 to 106	1		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	10	2016	4422-OR-221331-32 to 32	1		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	7	2015	4422-OR-171940-50 to 51	2		07/01/2015	07/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	8	2015	4422-OR-175070-52 to 54	3		08/01/2015	08/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	10	2015	4422-OR-180943-56 to 57	2		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	11	2015	4422-OR-184064-59 to 60	2		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W4422	Cougar Dam - Cougar Dam G2	Alternate Use	9	2015	4422-OR-177964-55 to 57	3		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	6	2015	201-WY-165931-173 to 185	13		06/01/2015	06/30/2015	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	7	2015	201-WY-169110-1416 to 1436	21		07/01/2015	07/31/2015	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	8	2015	201-WY-172328-320 to 338	19		08/01/2015	08/31/2015	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	9	2015	201-WY-175385-972 to 1000	29		09/01/2015	09/30/2015	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	10	2015	201-WY-179030-2296 to 2336	41		10/01/2015	10/31/2015	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	11	2015	201-WY-182204-916 to 964	49		11/01/2015	11/30/2015	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	12	2015	201-WY-185488-1845 to 1902	58		12/01/2015	12/31/2015	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	1	2016	201-WY-189192-1553 to 1609	57		01/01/2016	01/31/2016	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	2	2016	201-WY-192434-4841 to 4910	70		02/01/2016	02/29/2016	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	3	2016	201-WY-195647-1301 to 1350	50		03/01/2016	03/31/2016	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	4	2016	201-WY-198934-2650 to 2684	35		04/01/2016	04/30/2016	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	5	2016	201-WY-205234-573 to 603	31		05/01/2016	05/31/2016	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	6	2016	201-WY-208910-370 to 389	20		06/01/2016	06/30/2016	No	No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	7	2016	201-WY-212210-535 to 563	29		07/01/2016	07/31/2016	No	No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	8	2016	201-WY-215473-608 to 627	20		08/01/2016	08/31/2016	No	No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	9	2016	201-WY-218871-1875 to 1905	31		09/01/2016	09/30/2016	No	No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W201	Foote Creek I - Foote Creek I	Wind	10	2016	201-WY-222359-746 to 804	59		10/01/2016	10/31/2016	No	No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	5	2015	248-WA-162630-6406 to 6530	125		05/01/2015	05/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	6	2015	248-WA-165964-6055 to 6138	84		06/01/2015	06/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	7	2015	248-WA-169142-7210 to 7383	174		07/01/2015	07/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	8	2015	248-WA-172359-6370 to 6522	153		08/01/2015	08/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	9	2015	248-WA-175414-5793 to 5904	112		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	10	2015	248-WA-178942-2791 to 2876	86		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	11	2015	248-WA-182123-4131 to 4258	128		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	12	2015	248-WA-185382-6148 to 6338	191		12/01/2015	12/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	1	2016	248-WA-189114-3644 to 3752	109		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	2	2016	248-WA-192354-5512 to 5679	168		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	3	2016	248-WA-195577-6695 to 6896	202		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	4	2016	248-WA-198865-5443 to 5608	166		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	5	2016	248-WA-202143-5868 to 6044	177		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	6	2016	248-WA-205836-5701 to 5872	172		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	7	2016	248-WA-209570-4785 to 4928	144		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	8	2016	248-WA-212916-4533 to 4670	138		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	9	2016	248-WA-216309-4696 to 4838	143		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W248	Stateline (WA) - FPL Energy Vansycle LLC	Wind	10	2016	248-WA-223076-4949 to 5141	193		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	1	2016	3802-WA-189891-17481 to 17856	376		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	2	2016	3802-WA-193105-15322 to 15648	327		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	3	2016	3802-WA-196258-14865 to 15181	317		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	4	2016	3802-WA-201218-17255 to 17623	369		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	5	2016	3802-WA-204676-17316 to 17685	370		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	6	2016	3802-WA-208377-19512 to 19928	417		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	7	2016	3802-WA-211726-18975 to 19380	406		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	8	2016	3802-WA-215026-15688 to 16023	336		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	9	2016	3802-WA-218430-7412 to 7698	287		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	10	2016	3802-WA-221920-9888 to 10271	384		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	5	2015	3802-WA-165065-7854 to 8172	319		05/01/2015	05/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	6	2015	3802-WA-168266-8834 to 9193	360		06/01/2015	06/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	7	2015	3802-WA-171445-9947 to 10350	404		07/01/2015	07/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	8	2015	3802-WA-174592-9719 to 10113	395		08/01/2015	08/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	9	2015	3802-WA-177512-7830 to 8148	319		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	10	2015	3802-WA-179754-8933 to 9296	364		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	11	2015	3802-WA-182919-9005 to 9370	366		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3802	Grand Coulee - Grand Coulee G3	Alternate Use	12	2015	3802-WA-186252-9390 to 9771	382		12/01/2015	12/31/2015	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	1	2016	3260-ID-191600-5988 to 6748	761		01/01/2016	01/31/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	2	2016	3260-ID-194766-6917 to 7795	879		02/01/2016	02/29/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	3	2016	3260-ID-197907-4238 to 5085	848		03/01/2016	03/31/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	4	2016	3260-ID-201100-3764 to 4516	753		04/01/2016	04/30/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	5	2016	3260-ID-204558-3060 to 3671	612		05/01/2016	05/31/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	6	2016	3260-ID-208256-3327 to 3991	665		06/01/2016	06/30/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	4	2015	3260-ID-161374-3759 to 4436	678		04/01/2015	04/30/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	5	2015	3260-ID-164576-2969 to 3504	536		05/01/2015	05/31/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	6	2015	3260-ID-167805-2676 to 3158	483		06/01/2015	06/30/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	7	2015	3260-ID-170978-2809 to 3315	507		07/01/2015	07/31/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	8	2015	3260-ID-174153-3255 to 3841	587		08/01/2015	08/31/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	9	2015	3260-ID-177090-3851 to 4545	695		09/01/2015	09/30/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	10	2015	3260-ID-179447-3220 to 3800	581		10/01/2015	10/31/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	11	2015	3260-ID-182621-413 to 1174	762		11/01/2015	11/30/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	12	2015	3260-ID-188393-768 to 1757	990		12/01/2015	12/31/2015	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	7	2016	3260-ID-211604-5546 to 6243	698		07/01/2016	07/31/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	8	2016	3260-ID-214921-4869 to 5430	562		08/01/2016	08/31/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	9	2016	3260-ID-218322-5098 to 5705	608		09/01/2016	09/30/2016	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W3260	Horse Butte Wind - Horse Butte Wind	Wind	10	2016	3260-ID-221806-7653 to 8018	366		10/01/2016	10/31/2016	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	6	2015	237-OR-165954-4206 to 4330	125		06/01/2015	06/30/2015	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	7	2015	237-OR-169132-65073 to 65225	153		07/01/2015	07/31/2015	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	8	2015	237-OR-172350-4411 to 4541	131		08/01/2015	08/31/2015	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	9	2015	237-OR-175405-3137 to 3229	93		09/01/2015	09/30/2015	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	10	2015	237-OR-181359-30124 to 30196	73		10/01/2015	10/31/2015	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	11	2015	237-OR-184438-2485 to 2561	77		11/01/2015	11/30/2015	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	12	2015	237-OR-188064-7710 to 7764	55		12/01/2015	12/31/2015	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	1	2016	237-OR-191293-1313 to 1351	39		01/01/2016	01/31/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	2	2016	237-OR-194483-1642 to 1692	51		02/01/2016	02/29/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	3	2016	237-OR-197624-2973 to 3061	89		03/01/2016	03/31/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	4	2016	237-OR-200823-35636 to 35786	151		04/01/2016	04/30/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	5	2016	237-OR-204213-5109 to 5263	155		05/01/2016	05/31/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	6	2016	237-OR-207986-4745 to 4889	145		06/01/2016	06/30/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	7	2016	237-OR-211370-5615 to 5783	169		07/01/2016	07/31/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	8	2016	237-OR-214693-4225 to 4352	128		08/01/2016	08/31/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	9	2016	237-OR-218086-3976 to 4095	120		09/01/2016	09/30/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W237	Klondike III - Klondike Wind Power III LLC	Wind	10	2016	237-OR-225111-1901 to 1973	73		10/01/2016	10/31/2016	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	1	2016	238-OR-188707-457 to 470	14		01/01/2016	01/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	2	2016	238-OR-191952-560 to 576	17		02/01/2016	02/29/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	3	2016	238-OR-195233-1174 to 1208	35		03/01/2016	03/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	4	2016	238-OR-198499-2128 to 2191	64		04/01/2016	04/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM

Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	5	2016	238-OR-201756-2124 to 2187	64		05/01/2016	05/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	6	2016	238-OR-205467-1913 to 1969	57		06/01/2016	06/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	7	2016	238-OR-209200-2250 to 2316	67		07/01/2016	07/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	8	2016	238-OR-212588-1587 to 1633	47		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	9	2016	238-OR-215993-1402 to 1445	44		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	10	2016	238-OR-223118-719 to 745	27		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	6	2015	238-OR-165955-2036 to 2096	61		06/01/2015	06/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	7	2015	238-OR-169133-2590 to 2666	77		07/01/2015	07/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	8	2015	238-OR-172351-2191 to 2256	66		08/01/2015	08/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	9	2015	238-OR-175406-1479 to 1521	43		09/01/2015	09/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	10	2015	238-OR-178458-1156 to 1192	37		10/01/2015	10/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	11	2015	238-OR-181716-1244 to 1282	39		11/01/2015	11/30/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W238	Klondike I - Klondike Wind Power LLC	Wind	12	2015	238-OR-184946-1265 to 1303	39		12/01/2015	12/31/2015	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No		4/14/2017 10:42:12 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W5088	Lookout Point Dam - Lookout Point G3	Alternate Use	8	2016	5088-OR-222997-206 to 213	8		08/01/2016	08/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W5088	Lookout Point Dam - Lookout Point G3	Alternate Use	9	2016	5088-OR-222998-146 to 152	7		09/01/2016	09/30/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
Idaho Falls Power	Battelle Energy Alliance FY2016	7343	GEP	Voluntary Green Energy Purchase				Voluntary Green Energy Purchase	Battelle FY2016 PO#00176645	W5088	Lookout Point Dam - Lookout Point G3	Alternate Use	10	2016	5088-OR-222999-179 to 185	7		10/01/2016	10/31/2016	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No		4/14/2017 10:51:52 AM
																29,200																						

IDAHO FALLS POWER

Invoice for August-16

Via E-Mail: acctpay@inl.gov

August 26, 2016

Battelle Energy Alliance, LLC
Attn: Accounts Payable
P.O. Box 1625
Idaho Falls, ID 83415-3117

Renewable Energy Credits: August-16 PO # 00176645

SALE:

Quantity		Total $
29,200	$	36,500.00

PURCHASE:

Quantity		Total $
-	$	-

TOTAL DUE	**$**	**36,500.00**

REMIT TO:

City of Idaho Falls
dba Idaho Falls Power
Controller's Office
Attn: Stacy Scott
PO Box 50220
Idaho Falls ID 83405-0220
208.612.8596

WIRE:

Wells Fargo Bank
320 A Street
Idaho Falls ID 83405
Phone: 208.533.6033
Contact: Shawna Smith
Account: City of Idaho Falls
Account No: XXXXXX
ABA: XXXXXX

Appendix G

Scope 3 Comprehensive Tables

Appendix G

Scope 3 Comprehensive Tables

Table G-1. Number and type of commute miles traveled by INL employees during FY 2008 to FY 2015.

Type of Miles	FY 2008		FY 2009		FY 2010		FY 2011		FY 2012		FY 2013		FY 2014		FY 2015	
	Number of Miles	GHG Emissions (MT CO_2e)	Number of Miles	GHG Emissions (MT CO_2e)	Number of Miles	GHG Emissions (MT CO_2e)	Number of Miles	GHG Emissions (MT CO_2e)	Number of Miles	GHG Emissions (MT CO_2e)	Number of Miles	GHG Emissions (MT CO_2e)	Number of Miles	GHG Emissions (MT CO_2e)	Number of Miles	GHG Emissions (MT CO_2e)
Passenger Car Miles, Gasoline	NA[a]	0	14,667,892	5,494	15,876,348	5,947	13,148,613.94	4,925	12,191,061.62	4,566.42	10,557,232.51	3,954.43	10,156,632.59	3,801.74	10,668,699.81	5,343.24
Passenger SUV or Truck Miles, Gasoline	NA[a]	0	7,224,484	3,860	6,472,196	3,458	6,762,734.90	3,612	5,790,039.03	3,093.77	5,318,564.68	2,841.85	5,444,415.77	2,906.81	5,966,269.03	3,811.81
Motorcycle Miles	NA[a]	0	NA[b]	0	260,255	44	206,003.65	35	141,226.58	24.10	99,987.66	17.06	134,752.07	23.02	97,138.84	23.45
Passenger Car Miles, Diesel	NA[a]	0	NA[b]	0	132,135	74	397,064.15	223	227,665.87	102.92	455,001.37	205.68	474,717.50	214.60	331,921.20	181.66
Passenger SUV or Truck Miles, Diesel	NA[a]	0	NA[b]	0	1,153,449	648	1,091,658.30	613	772,147.64	433.52	971,366.78	545.37	809,677.42	454.43	863,313.19	753.99
Passenger Car Miles, Alternative Fuel	NA[a]	0	NA[b]	0	NA[c]	—	481,231.75	35	489,078.99	92.44	540,463.54	102.08	655,286.82	124.49	621,265.39	133.36
TOTAL VEHICLE MILES	20,260,127	8,657	21,892,377	9,354	23,894,383	10,171	22,087,306.70	9,410	19,611,219.73	8,313.16	17,942,616.54	7,666.47	17,675,482.17	7,525.08	18,548,607.46	10,247.52
Walk, run, or bike Miles	NA[a]	0	65,315	0	85,636	0	514,043.20	0	84,320.40	0	48,837.72	0	46,189.87	0	80,688.11	0
TOTAL COMMUTE MILES	20,260,127	8,657	21,957,691	9,354	23,980,019	10,171	22,601,349.90	9,410	19,695,540.14	8,313.16	17,991,454.27	7,666.47	17,721,672.04	7,525.08	18,629,295.57	10,247.52

a. This category was not considered in the FY 2008 commute calculations, which only estimated total number of commute vehicle miles.
b. This category was not considered in the FY 2009 commute calculations, which assumed employees drove only gasoline cars and SUVs/trucks.
c. This was a new category included in the FY 2011 employee commute survey and was not included in the FY 2010 commute survey.

Table G-2. Number and type of commute miles traveled by INL employees during FY 2016.

Type of Miles	FY 2016	
	Number of Miles	GHG Emissions (MT CO_2e)
Passenger Car Miles, Gasoline	12,698,096.50	4,753.04
Passenger SUV or Truck Miles, Gasoline	7,261,771.79	3,877.10
Motorcycle Miles	118,566.30	20.26
Passenger Car Miles, Diesel	370,592.60	167.53
Passenger SUV or Truck Miles, Diesel	1,179,758.84	662.13
Passenger Car Miles, Alternative Fuel	720,804.00	136.94
TOTAL VEHICLE MILES	22,349,590	9,617.00
Walk, run, or bike Miles	124.769.20	0
TOTAL COMMUTE MILES	22,349,590	9.617.00

Table G-3. Number of miles flown by INL employees during FY 2008.

Type of Miles	Number of Passenger-Miles	GHG Emissions (MT CO_2e)
Domestic	18,861,146	5,165
International	5,558,308	1,522
TOTAL	24,419,454	6,687

Since airline miles were further broken down into short-, medium-, and long-haul flights, subsequent years are included in the following table:

Table G-4. Number of miles flown by INL employees during FY 2009–FY 2016.

Type of Miles	FY 2009		FY 2010		FY 2011		FY 2012		FY 2013		FY 2014		FY 2015		FY 2016	
	Number of Passenger-Miles	GHG Emissions (MT CO_2e)	Number of Passenger-Miles	GHG Emissions (MT CO_2e)	Number of Passenger-Miles	GHG Emissions (MT CO_2e)	Number of Passenger-Miles	GHG Emissions (MT CO_2e)	Number of Passenger-Miles	GHG Emissions (MT CO_2e)	Number of Passenger-Miles	GHG Emissions (MT CO_2e)	Number of Passenger-Miles	GHG Emissions (MT CO_2e)	Number of Passenger-Miles	GHG Emissions (MT CO_2e)
Short Haul	3,797,347	1,063	3,302,333	924	2,861,280	801	2,231,351	653	1,676,050	491	1,924,764	535	2,200,131	611	2,681,701	745.03
Medium Haul	7,965,079	1,847	7,631,935	1,770	4,750,674	1,102	3,482,410	582	2,477,466	414	3,038,297	497	3,702,956	605	4,530,056	740.98
Long Haul	23,795,526	4,470	21,778,636	4,091	20,561,904	3,863	16,371,756	3,129	12,639,219	2,415	14,745,751	2,843	17,332,661	3,341	20,780,764	4,006.70
TOTAL	35,557,952	7,380	32,712,904	6,785	28,173,858	5,765	22,085,517	4,364	16,792,735	3,320	19,708,812	3,875	23,235,748	4,558	27,992,521	5,492.71

Table G-5. Number of vehicle-miles traveled in rental cars by INL employees during FY 2008–FY 2016.

Vehicle Class	FY 2008		FY 2009		FY 2010		FY 2011		FY 2012		FY 2013		FY 2014		FY 2015		FY 2016	
	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)	Number of Vehicle Miles	GHG Emissions (MT CO_2e)
Passenger Cars	499,500	187	533,177	200	490,076	183	632,548	237	478,904	179	415,295	156	636,701	238	625,821	234	610,502	228.52
Light-Duty Truck/Van/SUV	306,413	164	257,392	138	254,027	136	292,809	156	225,320	120	56,992	30	90,108	48	70,737	37	241,117	128.73
TOTAL	805,913	351	790,569	338	744,103	319	925,357	393	704,225	300	472,287	186	726,809	286	696,558	272	851,619	357.25

Appendix H

Calculation Spreadsheets and Notes

Appendix H

Calculation Spreadsheets and Notes

Table H-1 summarizes the following for each of INL's emissions categories considered during FY 2016:

- Source spreadsheets for data calculation (e.g., calculating how much waste INL produced based on quantities from each facility)
- Source spreadsheets for GHG calculation (e.g., calculating how many GHGs were produced by INL's annual waste disposal)
- Applicable comments (the TSD equation number[s] used, who provided the data, etc.).

Table H-1. Calculation spreadsheets and comments for emissions categories included in the INL FY 2016 GHG inventory.

Scope	Emissions Category	FY 2016 Spreadsheet for Data Calculation	FY 2016 Spreadsheet for GHG Calculation	Comments
All	Summary	Sheet: "Sheet1," "Overall Summary Stats 7Mar17.xlsx"	Sheet: "Sheet1" and "Summary for Plots," "Overall Summary Stats 7Mar17.xlsx"	None.
1	Stationary Combustion	Sheet: "Fuel Data," "FY16 Summary for GHG - Stationary Combustion 7Mar17.xlsx"	Sheet: "GHG Emissions," "FY16 Summary for GHG - Stationary Combustion 7Mar17.xlsx"	Default Methodology, Equations A-1, A-2, and A-3. Fuel data provided by Ernest Fossum and Jacqueline Dedic (INL Energy Management).
	Mobile Combustion	Sheet: "Report (Sorted)," "FY16 Summary for GHG - Mobile Combustion 7Mar17.xlsx"	Sheet: "GHG Emissions," "FY16 Summary for GHG - Mobile Combustion 7Mar17.xlsx"	Advanced Methodology, Equations A-5, A-9, and A-10 (A-11 and A-12 for biogenic). Fuel data extracted from INL TIMS database – GHG Summary Revised Report by Kim Frerichs (INL Pollution Prevention).
	Fugitive Emissions: Refrigerants	Sheet: "Emissions Summary Sheet,", "GHG Report FY16 Backup Summary Sheets.xlsx"	Sheet: "Emissions Summary Sheet,", "GHG Report FY16 Backup Summary Sheets.xlsx"	Advanced Methodology, Equation A-15. Data compiled by Kim Frerichs (INL Pollution Prevention).

Table H-1. (continued).

Scope	Emissions Category	FY 2016 Spreadsheet for Data Calculation	FY 2016 Spreadsheet for GHG Calculation	Comments
1 (cont'd)	Fugitive Emissions: Onsite Landfill	Sheet: "Landfill Data," "Landfill Report for LandGEM 14Oct15.xlsx"	Sheet: "FY16 GHG Calcs," "Landfill Report for LandGEM 14Oct15.xlsx"	Used LandGEM and Equation A-34 from TSD. Data pulled from INWMIS by Kim Frerichs (INL Pollution Prevention).
	Fugitive Emissions: Onsite Wastewater Treatment	Sheet: "Wastewater Types," "FY16 Wastewater for GHG (Scope 1+3) 17Oct16.xlsx"	Sheet: "Onsite Wastewater," "FY16 Wastewater for GHG (Scope 1+3) 17Oct16.xlsx"	Default Methodology, Equations A-23 and A-24 from TSD. Employee counts provided by Lynette Martin (INL Human Resources).
2	Purchased Electricity	Sheet: "Elec Totals," "FY16 Summary for GHG - Scope 2 7Mar17.xlsx"	Sheet: "GHGCalcs," "FY16 Summary for GHG - Scope 2 7Mar17.xlsx"	Default Methodology, Equations B-1 and B-2 from TSD. Data provided by Ernest Fossum and Jacqueline Dedic (INL Energy Management).
	Transmission and Distribution Losses (Owned)	Sheet: "GHGCalcs," "FY16 Summary for GHG - Scope 2 7Mar17.xlsx"	Sheet: "GHGCalcs," "FY16 Summary for GHG - Scope 2 7Mar17.xlsx"	Default Methodology, Equations B-1 and B-2 from TSD. T&D loss information provided by Ernest Fossum (INL Energy Management).
	Purchased RECs	"160325 Contract – Executed FY 2015.pdf"	Sheet: "GHGCalcs," "FY16 Summary for GHG - Scope 2 7Mar17.xlsx"	Default Methodology, Equations B-28 and B-29 from TSD. RECs Receipts provided by Ernest Fossum (INL Energy Management).
3	Transmission and Distribution Losses (Shared)	Sheet: "GHGCalcs," "FY16 Summary for GHG - Scope 2 7Mar17.xlsx"	Sheet: "GHGCalcs," "FY16 Summary for GHG - Scope 2 7Mar17.xlsx"	Default Methodology, Equations C-3, C-4, and C-5 from TSD.
	Employee Commuting	Sheet: "BEA Totals," "FY16 Commute Survey Results.xlsx"	Sheet: "8.3 Commute," "Commute – CEDR for BEA only GHG calcs – 7Mar17.xlsx"	Default Methodology, Equations C-14, C-15, and C-16 from TSD. FY16 Employee commute data provided by Jodi Grgich (INLSystems Engineering)

Table H-1. (continued).

Scope	Emissions Category	FY 2016 Spreadsheet for Data Calculation	FY 2016 Spreadsheet for GHG Calculation	Comments
3 (cont'd)	Business Air Travel	Sheet: "Sheet1," "INL-100115-093016.xlsx"	Sheet: "8.1 Air Travel," "CEDR FY 2016 Dashboard Verification - INL All - Broken Links.xlsx"	Default Methodology, Equations C-1 and C-2 from TSD. Data provided by TMP Travel on behalf of Bruce Cook (INL Travel Office).
	Business Ground Travel: Rental Vehicle	Sheets: "Avis-All" and "Enterprise – All," "FY16 Rental Car Miles Summary 12Oct15.xls"	Sheet: "GHGs," "FY16 Rental Car Miles Summary 6Oct16.xlsx"	Advanced Methodology 2, Equations C-11, C-12, and C-13 from TSD. Data provided by travel vendors on behalf of Bruce Cook (INL Travel Office).
	Business Ground Travel: Personal Vehicle	Sheet: "POV Totals," "2016 POV Miles - ER.xlsx"	Sheet: "GHGs," "2016 POV Miles - ER.xlsx"	Advanced Methodology 2, Equations C-11, C-12, and C-13 from TSD. Data pulled from INL Expense Reports - provided by Roni Bounmixay (INL Travel Office).
	Contracted MSW Disposal	Sheets: "FY16 sml," "FY16 30yd," and "Summary," "Sanitation Department Report FY16.xls"	Sheet: "Offsite MSW," "FY16 Offsite MSW for GHG – 17Oct16.xlsx"	Default Methodology, Equation C-6 from TSD (C-7 for biogenic). Data compiled by Kim Frerichs (INL Pollution Prevention).
	Contracted Wastewater Treatment	Sheet: "Wastewater Types," "FY16 Wastewater for GHG (Scope 1+3) 17Oct16.xlsx"	Sheet: "Offsite Wastewater," "FY16 Wastewater for GHG (Scope 1+3) 17Oct16.xlsx"	Default Methodology, Used Equations A-19, A-20, and A-22 from TSD. Employee counts provided by Lynette Martin (INL Human Resources).