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Rev. 2

U.S. Department of Energy
Idaho Operations Office

INL FY 2011 Site Sustainability Plan with the FY 2010 Annual Report

December 2010

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Prepared for the
U.S. Department of Energy
DOE Idaho Operations Office

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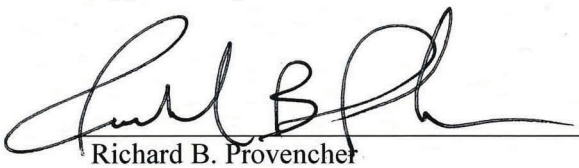
Approved By:



Richard B. Provencher
Manager
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12/14/10
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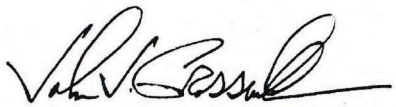

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Approved By:

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EXECUTIVE SUMMARY

Clean energy and sustainability have long been at the core of the mission of the U.S. Department of Energy (DOE) and are newly reinforced in Executive Order (EO) 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. DOE has articulated its key strategies and goals in its Strategic Sustainability Performance Plan (SSPP), *Discovering Sustainable Solutions to Power and Secure America's Future*. The Idaho National Laboratory (INL) Site incorporates these strategies through this plan.

Executive Order 13423, "*Strengthening Federal Environmental, Energy, and Transportation Management,*" establishes requirements to cost effectively meet or exceed the goals and objectives of the Energy Policy Act of 2005 for energy efficiency, use of renewable energy, transportation energy, and water conservation at Federal facilities. DOE Order 430.2B, "*Departmental Energy, Utilities, and Transportation Management,*" contains requirements that DOE will accomplish to implement EO 13423.

DOE Order 430.2B defines an Executable Plan as an action plan setting forth a binding obligation of the applicable site that commits appropriate personnel resources, establishes a financing plan that prioritizes the use of life-cycle cost effective private sector financing and optimizes the application of appropriations and budgeted funds, and establishes a time line for execution coupled with specific performance measures and deliverables designed to achieve the listed requirements. Beginning in Fiscal Year (FY) 2011, the Executable Plan is being updated to support the department's broader sustainability program. Renamed the INL Site Sustainability Plan, it was expanded to cover the requirements of EO 13514 and the SSPP.

The "*INL FY 2011 Site Sustainability Plan with the Annual Report,*" hereafter referred to as the Plan, was developed according to the narrative requirements from the "*Guidance for the FY 2010 DOE Site Sustainability Plans*" issued on August 25, 2010. This Plan contains strategies and activities that will lead to continual Greenhouse Gas (GHG), energy, water, and transportation fuels efficiency to move the INL Site toward meeting the goals and requirements of the SSPP, EOs 13514 and 13423, and DOE Orders 430.2B and 450.1A before the end of FY 2020. The Plan also summarizes energy and fuel use reporting requirements and references criteria for performing sustainable design. Energy and transportation fuels management requirements are integrated into each of the INL Site contractor's Integrated Safety Management Systems (ISMS) and Environmental Management Systems (EMS). The Energy and Transportation Fuels Management Programs are also integrated with the Ten Year Site Plan (TYSP) and operations and acquisition systems.

This DOE Idaho Operations Office (DOE-ID) INL Site document serves as an overall INL Site Sustainability Plan. It is supplemented by individual contractor energy and transportation fuels management plans as needed. Updates to the Plan are anticipated annually with added specificity as projects are developed and requirements change. This Plan encompasses all contractors and activities at the INL Site under the control of DOE-ID. The operations and activities of the Naval Reactors Facility (NRF), located on the INL Site, are specifically excluded from this Plan.

The intent of this Plan is to provide the overall strategy for the INL Site during FY 2011. Integral to this Plan is the Annual Report information and data for energy use and accomplishment during FY 2010. The Annual Report data for FY 2010 are provided on the Consolidated Energy Data Report (CEDR) that is included as Appendix B.

DOE-ID and the INL Site contractors use their existing EMS to establish goals, track, and review progress towards meeting the energy efficiency, water conservation, greenhouse gas reduction, and renewable energy goals. The primary means of funding energy and water reduction projects to satisfy these goals will be through the alternative funding programs such as Energy Savings Performance Contracts (ESPC) and Utility Energy Savings Contracts (UESC). The INL Site will leverage utility incentive programs to the maximum extent available.

The INL Site has also proposed several projects that may be implemented as funding is appropriated. These projects are not conducive to alternative funding due to long paybacks or installing technologies and equipment that support an ESPC but do not provide direct energy or water savings, such as metering. These projects are included on the Conservation Measures worksheet of the CEDR.

The INL Site, as a whole, spent nearly $15.6M in FY 2010 for facility, process, and equipment energy. Of this total, $13.3M was spent for building energy, $1.6M was spent for process energy, and $621k was spent on equipment fuel. The managed area used over 1.08 trillion Btu of energy and 473.3 million gallons of water. Transportation fuel use across the INL Site in FY 2010 totaled 898,266 gallons of various types of fuels. The fleet is composed of light duty vehicles fueled by gasoline and E-85. Heavy-duty vehicles include over-the-road buses fueled by diesel and biodiesel, and a complex assortment of trucks and equipment. Typically, 9.5 million miles are driven annually and over 50,000 hours are logged on heavy equipment.

Table-1and the graph in Figure-1 summarize the Annual Report data and provide an FY 2010 status of the DOE Order 430.2B goals. The FY 2010 goals in the graph are the trend point of where the INL Site should be to remain on track to meet the overall goals by the end of FY 2020. Discussion of the FY 2010 actual status is found in the body of this Plan.

Table-1. Annual Report data.

DOE Goal	Performance Status	Planned Actions and Key Issues
28% Scope 1 and 2 GHG reduction by FY 2020 from a FY 2008 baseline (related goals indented below).	The FY 2008 INL Site baseline is **complete** for Scopes 1, 2, and 3.	INL will report Scope 1 and Scope 2 GHG emissions for the baseline year, FY 2008, and annually thereafter. Nearly $20M is needed to reduce all GHG emissions 4%. Further funding is needed to meet this additional requirement.
30% energy intensity reduction by FY 2015 from a FY 2003 baseline.	As demonstrated through data entered into the Energy Management System 4 (EMS4) database and compared to FY 2003 data, the INL Site is at a 3.6% in energy reduction (**9.4%** when normalized for weather data).	Capital project upgrades are funded primarily through alternative funding mechanisms that include ESPC and UESC. INL is actively pursuing these two alternative funding strategies to obtain additional energy savings.
7.5% of a site's annual electricity consumption from renewable sources by FY 2020 (2x credit if the energy is produced onsite).	INL Site has procured a total of 16,393 MWh of Renewable Energy Credits (RECs) from Sterling Planet, Inc. This purchase represents **7.5%** of the INL Site electric usage in FY 2009 and is the purchase for FY 2010.	INL is actively pursuing Renewable Energy Generation capability and annually purchases RECs in amounts as outlined in the Energy Policy Act of 2005.

Table-1. (continued).

DOE Goal	Performance Status	Planned Actions and Key Issues
Every site to have at least one onsite renewable energy generating system by FY 2010.	Passive solar walls are in place on three INL buildings. Plans are in place to research the feasibility of installing up to 20MW of wind power production on the INL Site.	By the end of Calendar Year 2011 INL and DOE-ID will document the decision whether to proceed with development of a wind farm on the INL Site based on the business case and NEPA analysis.
10% annual increase in fleet alternative fuel consumption through FY 2015 relative to a FY 2005 baseline.	The INL Site has exceeded the 2010 goal by increasing alternative fuel **124%** relative to FY 2005.	INL will continue to optimize the transportation system and institute an intermodal model. However, major funding is required to upgrade the fleet and associated infrastructure.
2% annual reduction in fleet petroleum consumption through FY 2015 relative to a FY 2005 baseline.	The INL Site has made small progress toward the 2015 goal by reducing fleet petroleum reduction by **3.2%**.	INL will continue to obtain increasingly fuel-efficient buses and will research the feasibility of implementing alternative fuel for bus operations.
75% of light duty vehicle purchases must consist of alternative fuel vehicles (AFVs) by FY 2015.	**75%** of the INL Site light duty vehicles purchased in FY 2010 were AFV.	INL Site will continue to replace the current fleet with AFVs as General Services Administration (GSA) allows.
To the maximum extent practicable, advanced metering for electricity (by October 2012), steam, and natural gas (by October 2016), and standard meters for water.	The INL Site contractors have performed an analysis on all existing infrastructure that will still be in place by FY 2020. This analysis identified 20 buildings managed by the INL contractor, 13 buildings managed by the Idaho Cleanup Project contractor, and four buildings managed by the Advance Mixed Waste Treatment Project contractor that may be cost effective to meter.	The city of Idaho Falls is planning to upgrade all of its electrical power meters to smart meter technology. INL's Idaho Falls facilities will be upgraded as part of the city's initial upgrade project during FY 2011. All other meters are planned for installation through ESPC projects.

Table-1. (continued).

DOE Goal	Performance Status	Planned Actions and Key Issues
Cool roofs, unless uneconomical, for roof replacements unless project already has Conceptual Design -2 (CD-2) approval. New roofs must have a thermal resistance of at least R-30.	INL installed 67,000 ft² of roof on five existing buildings and one partial roof. There are 13 buildings totaling 98,323 ft² of cool roofs at INL. INL also has an additional nine partial roofs totaling 140,000 ft² and applied a cool-roof finish to the historical Experimental Breeder Reactor (EBR)-1 building roof.	Roof replacements currently planned for FY 2011 will result in five new complete cool roofs totaling 51,800 ft² and a partial roof replacement totaling 8,600 ft².
Training and outreach: DOE facility energy managers to be Certified Energy Managers by September 2012.	The INL Energy Manager is a Certified Energy Manager, holding the certificate since 1995.	Obtain Certified Energy Manager certification or Leadership in Energy and Environmental Design (LEED™) Accreditation for at least one employee per year until FY 2015.
Sulfur hexafluoride (SF_6) capture program by September 2012.	INL's Power Management group maintains a small inventory of SF_6 (approximately 60 pounds) to recharge the switchgear units should they lose pressure	Although not a major contributor, INL will continue to consider cost effective opportunities for improved management of all fugitive emissions.
13% Scope 3 GHG reduction by FY 2020 from a FY 2008 baseline.	The FY 2008 INL baseline is **complete** for Scopes 1, 2, and 3 and includes anthropogenic and biogenic emissions.	INL will report Scope 3 GHG emissions for the baseline year, FY 2008, and annually thereafter. Nearly $20M is needed to reduce all GHG emissions 4% based on Idaho Falls Facility projects. Further funding is needed to meet this additional requirement.
All new construction and major renovations greater than $5M to be LEED™ Gold certified. Meet high performance and sustainable building (HPSB) guiding principles if less than or equal to $5M.	Documentation for two INL facilities was submitted for LEED™ certification.	One laboratory building under construction and one new office building in conceptual design are designated for LEED™ Gold certification.

Table-1. (continued).

DOE Goal	Performance Status	Planned Actions and Key Issues
15% of existing buildings larger than 5,000 gross square feet (GSF) to be compliant with the five guiding principles of HPSB by FY 2015.	Over **25%** of the INL town campus was evaluated for LEED™-Existing Building certification. Projects were developed and cost estimates determined to bring buildings into compliance.	All enduring infrastructure at Central Facilities Area, Advanced Test Reactor Complex (ATR), and the Idaho Nuclear Technology Center will be evaluated as part of continuing ESPC project development. The five Guiding Principles are planned for implementation through the ESPC funding process. In FY 2011, INL will develop projects that allow eight existing buildings to meet LEED Existing Buildings requirements. These projects will be included on the Integrated Project List for the FY 2013 funding year.
16% water intensity reduction by FY 2015 from a FY 2007 baseline, 26% by FY 2020.	The INL Site has reduced the total water pumped from 1,060.8 M gal in FY 2007 to 870.5 M gal in FY 2010 for a total **18% reduction**. Even though the overall water pumped at the INL Site was reduced by 190.3 M gal, the total building square footage was also reduced by 439,465 ft² due to ongoing D&D work. The effect was an increase in reportable water use intensity from 71.8 M gal/ft² to 88.5 M gal/ft² or a **23% increase** as compared to FY 2007.	Water will continue to be a priority with ESPC project development and additional savings are planned for both the Materials and Fuels Complex and ATR Complex areas.
20% water consumption reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from a FY 2010 baseline.	INL did not separate potable and non-potable water usage in FY 2010.	INL will modify data collection processes to separate potable and non-potable water usage in FY 2011 and will update the FY 2007 baseline to reflect this new reporting criteria.

Figure-1. Current INL status to the DOE goals.

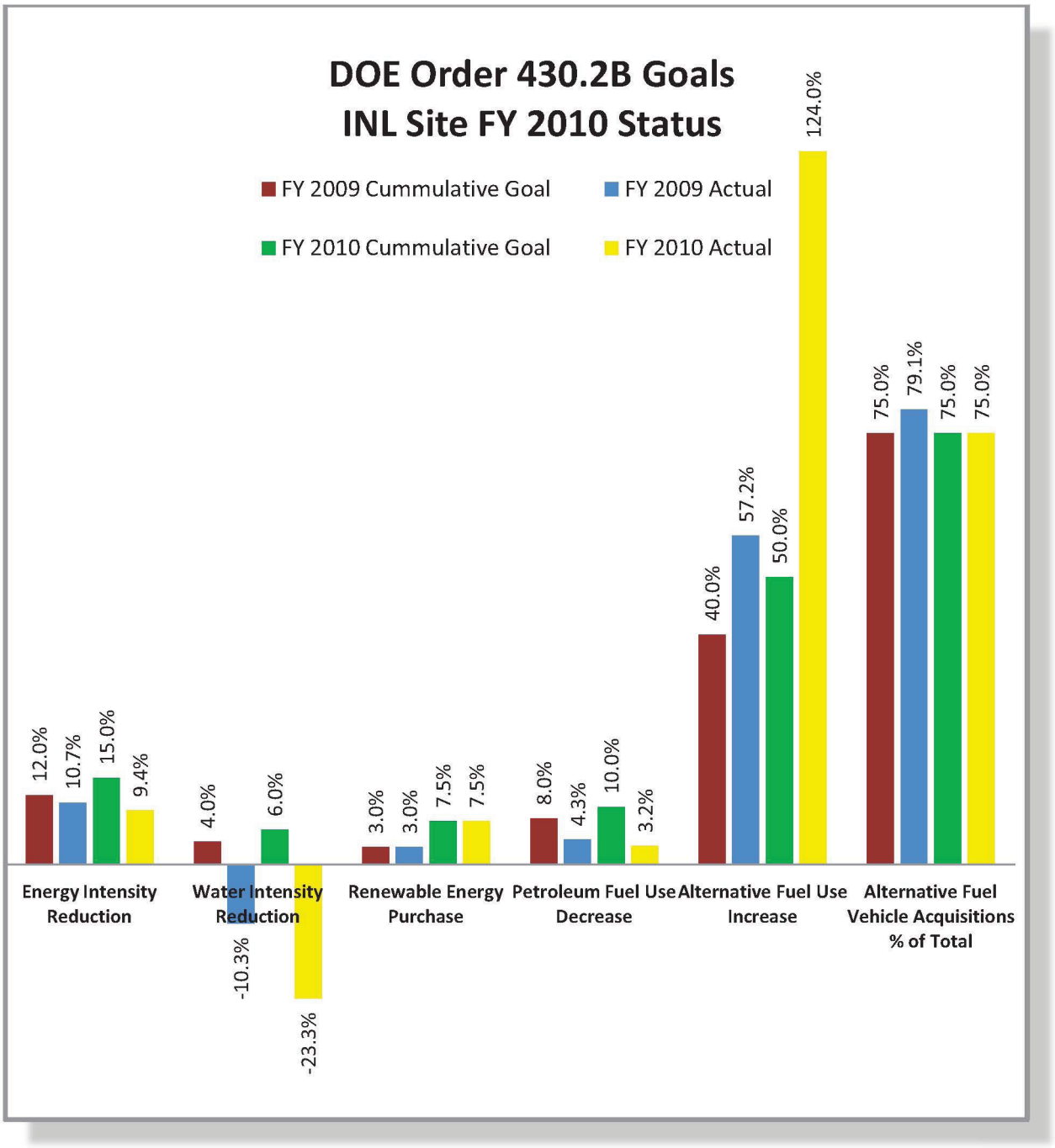


Figure-2 shows the INL Sites total Reportable Energy Use from FY 2006 to FY 2010 and the total for base year FY 2003. The Reportable Energy Use includes all energy sources for buildings across the entire INL Site. Reportable Energy does not include electricity used at the ATR facilities that are excluded from energy use reporting. This graph illustrates the raw energy use data that has not been corrected for any factors including changing weather conditions.

Figure-2. INL Site total reportable energy use.

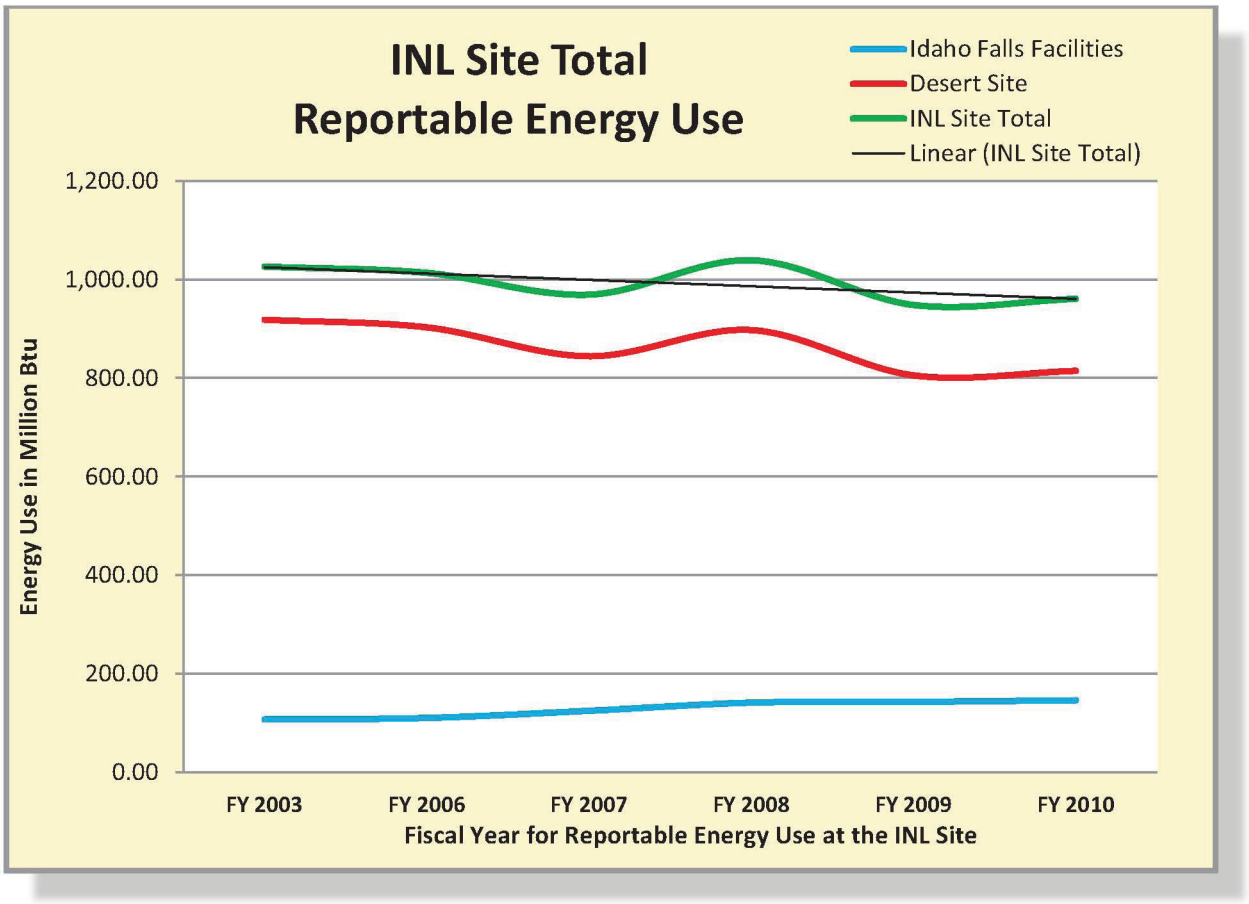
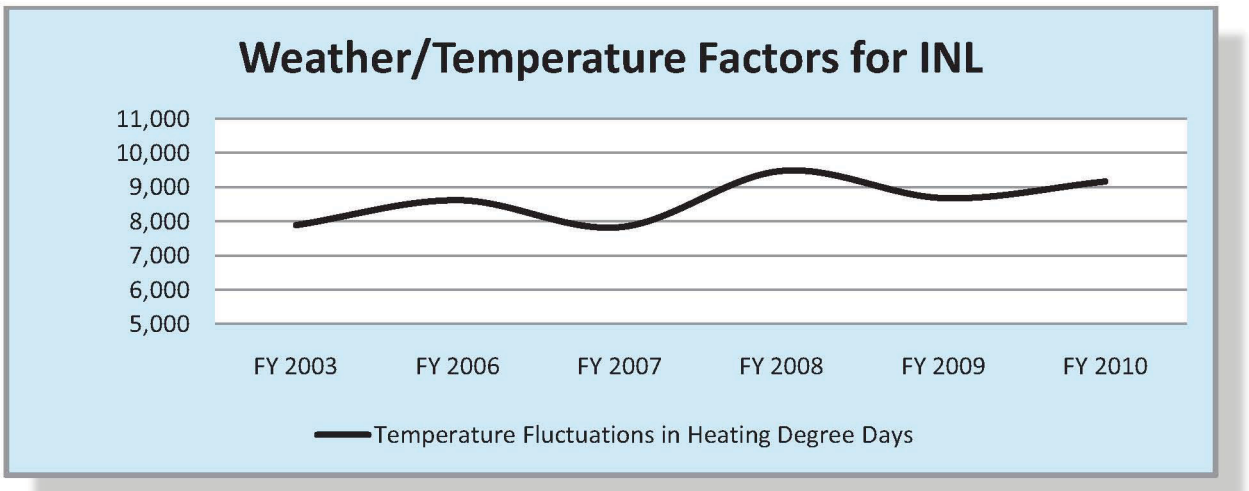


Figure-3 shows temperature factors that influence the amount of energy used in INL Site buildings. Heating Degree Days are a compilation of the duration that temperatures are below 65°F throughout the year. Note that as Heating Degree Days increase, the amount of energy needed to heat INL Site buildings increases proportionately.

Figure-3. Weather/temperature factors for INL.



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CONTENTS

FIGURES

TABLES

ACRONYMS

AEE	Association of Energy Engineers
AFV	alternative fuel vehicle
AMWTP	Advanced Mixed Waste Treatment Project
ARRA	American Recovery and Reinvestment Act
ATR	Advanced Test Reactor
Btu	British thermal unit
BEA	Battelle Energy Alliance, LLC
BPA	Bonneville Power Administration
CAES	Center for Advanced Energy Studies
CD-2	Conceptual Design
CDP	Calcine Disposition Project
CEDR	Consolidated Energy Data Report
CFA	Central Facilities Area
CNG	compressed natural gas
CSB	Common Support Building
CUI	controlled unclassified information
D&D	Decontamination and Dismantlement
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
E-85	Ethanol 85 (alternative fuel that is 85% ethanol and 15% gasoline)
EBOM	Existing Buildings Operations and Maintenance
ECM	Energy Conservation Measure
EFCOG	Energy Facility Contractors Group
EM	Environmental Management
EMS	Environmental Management Systems
EMS4	Energy Management System 4
EO	Executive Order
EPA	Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
EROB	Engineering Research Office Building
ESCo	Energy Services Contractor
ESH&Q	Environmental, Safety, Health, and Quality
ESPC	Energy Savings Performance Contract

FEC	Federal Electronics Challenge
FEMP	Federal Energy Management Program
FIMS	Facilities Information Management System
FY	Fiscal Year
GGE	gasoline gallon equivalent
GHG	greenhouse gas
GPP	General Plant Project
GPS	Global Positioning System
GSA	General Services Administration
GSF	gross square feet
HEV	hybrid electric vehicle
HPSB	high performance and sustainable building
HWMA	Hazardous Waste Management Act
ICP	Idaho Cleanup Project
ILA	industrial, landscaping, and agricultural
IM	Information Management
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IRC	INL Research Center
ISMS	Integrated Safety Management Systems
IWTU	Integrated Waste Treatment Unit
LEED™	Leadership in Energy and Environmental Design
LNG	liquefied natural gas
MEP	Material Exchange Program
MFC	Materials and Fuels Complex
MRAP	Material Request Approval Process
MT	metric tons
NEC	National Electrical Code
NREL	National Renewable Energy Laboratory
NRF	Naval Reactors Facility
NYLD	New York Leak Detection, Inc.
PHEV	plug-in hybrid electric vehicle
RCRA	Resource Conservation and Recovery Act
REC	Renewable Energy Credit
RESL	Radiological Environmental Sciences Laboratory

RFI	Request for Information
RFID	Radio Frequency Identification
RFP	Request for Proposal
RWMC	Radioactive Waste Management Complex
SMC	Specific Manufacturing Capability
SSPP	Strategic Sustainability Performance Plan
TTAF	Test Train Assembly Facility
TYSP	Ten-Year Site Plan
UESC	Utility Energy Savings Contracts
USGBC	United States Green Building Council
WMF	Waste Management Facility

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INL FY 2011 Site Sustainability Plan with the FY 2010 Annual Report

1. GOAL PERFORMANCE REVIEW AND PLANS

For the purposes of this document, the "INL Site" is considered all operating contractors and DOE-ID, and includes the industrial complexes located west of Idaho Falls and the Idaho Falls buildings. INL is considered to be those facilities operated by Battelle Energy Alliance, LLC (BEA). The Advanced Mixed Waste Treatment Project (AMWTP) and Idaho Cleanup Project (ICP) are referred to by their noted acronyms.

1.1 Scopes 1 and 2 Greenhouse Gas Reduction

Scope 1 GHG emissions are from equipment or operations within the INL organizational boundary that directly emit GHGs. INL will report Scope 1 and Scope 2 GHG emissions for the baseline year, FY 2008, and annually thereafter. Reportable Scope 1 and 2 emissions result from the following types of activities: stationary combustion and generation of electricity, heat or steam, combustion of fuels in INL-controlled mobile sources, and process operations. Scope 2 GHG emissions are indirect emissions and include those associated with the consumption of purchased or acquired electricity and heating.

The INL Site contractors' Environmental Management Systems (EMS) provide the framework and process for evaluating and monitoring Scopes 1, 2, and 3 GHG emissions and related reduction activities. On an annual basis, appropriate sustainability targets are developed and monitored through the EMS to support the overall reduction in GHG emissions.

1.1.1 Energy Intensity Reduction

The INL goal for energy usage is a 30% reduction of energy intensity by FY 2015, as compared to the FY 2003 energy intensity baseline. Energy intensity is defined as energy use divided by building area measured in Btu/ft^2. On average, an annual energy use reduction goal of 3% supports meeting the overall goal and provides a means to measure and trend progress. Energy intensive loads that are mission specific are excluded from the goal. The Advanced Test Reactor (ATR) and its support facilities are currently excluded from the reporting goal but are not excluded from the responsibility to reduce energy use and GHGs where practicable.

Energy sources affected by this goal include electricity, natural gas, fuel oil, liquefied natural gas (LNG), and propane. Methods to reduce energy usage include capital project upgrades, operational modifications, and behavior changes by the INL workforce.

The INL Site energy intensity for FY 2010 was 176,780 Btu/ft^2 as compared to 183,471 Btu/ft^2 in FY 2003 for a calculated reduction of 3.6%. This reduction falls far short of the desired 15% cumulative reduction goal for FY 2010. However, the INL Site normalizes energy intensity each year for weather-related factors to provide an accurate comparison with the base year. To make this correction, the portion of energy used for space conditioning (defined as 43% of the total according to DOE's Energy Information Administration) is adjusted to the weather conditions for the base year. In FY 2010, there were 9,169 Heating Degree Days as compared to only 7,892 in FY 2003. In this comparison, the energy intensity would have been less had the weather been warmer in FY 2010 as it was in FY 2003. The result is a corrected energy use intensity of 166,193 Btu/ft^2, and when compared to the base year energy intensity of 183,471 Btu/ft^2, calculates to an actual 9.4% reduction.

Due to the nature of the various INL Site missions, many of the related operations can be cyclical and result in varying usages of energy. As facilities are removed or processes are modified, the INL Site energy usage intensity can vary seemingly unrelated to actual overall reduction efforts. As an example, in FY 2010 American Recovery and Reinvestment Act (ARRA) Stimulus funding was provided to

accelerate Decontamination and Dismantlement (D&D) of numerous facilities across the INL Site. This activity has contributed to an overall decrease in square footage of 229,000 ft² compared to FY 2003, which has contributed to the calculated energy intensity not being reduced as much as planned.

It is anticipated that continued D&D of an additional 122,197 ft² of building space will result in similar small increases during FY 2011 in energy use intensity due the elimination of facilities using very little energy for security and freeze protection purposes. These additional facilities are currently scheduled for completed D&D by the end of FY 2012. Additional water usage is expected during D&D activities, but overall water usage is not expected to be impacted by the elimination of excess facilities awaiting D&D.

There is one major new project under construction at the ICP. Construction of the Integrated Waste Treatment Unit (IWTU) is nearly complete and houses the treatment process for treating the remaining wastes in the Tank Farm Facility. This treatment process is slated to begin hot operations in late FY 2011. The treatment process will use significant amounts of water and electricity. The facility does not have the capability for individual building metering and is captured in the overall Idaho Nuclear Technology Center (INTEC) metering. While an increase in INTEC energy use will occur, this process is expected to operate for less than two years in order to complete its mission, at which time the facility energy use will decrease back to the current INTEC load.

A future facility is currently being designed for the final treatment of the calcine solids stored in the Calcine Solids Storage Facility locates at INTEC. The Calcine Disposition Project (CDP) is planning to use a portion of the IWTU facility for this project. The CDP will also be an energy intensive treatment process. The CDP will have individual energy metering capability and the expectation is that this facility will be exempted from the energy reduction goals. The energy metering capability will enable the facility use to be subtracted from the overall INTEC use so that progress on energy reduction at INTEC can be monitored.

INL Site is planning for significant growth to further its missions with additional process related facilities at the major desert site locations and additional office and laboratory facilities at Idaho Falls locations. The INL Ten-Year Site Plan (TYSP) (DOE/ID–11427) provides an overview and details of conceptual laboratory growth. Several of these new facilities are identified in the New Buildings worksheet of the CEDR.

1.1.1.1 Performance Status

To meet the energy goal in DOE 430.2B, the INL Site should be at a 15% reduction at the end of FY 2010 as compared to the established FY 2008 baseline. As demonstrated through data entered into the EMS4 database and corrected for weather related factors, the INL Site is actually at a 9.4% in energy reduction.

INL made progress in FY 2010 with final design and construction of the Materials and Fuels Complex (MFC) Energy Savings Performance Contract (ESPC) project and finished 100% of the lighting retrofit Energy Conservation Measure (ECM). INL is also developing a Bonneville Power Administration (BPA)-sponsored Utility Energy Savings Contracts (UESC) project for all Idaho Falls town facilities. The building analyses for this project development progressed through FY 2010 with project development and financing planned to be completed in FY 2011.

The ICP energy reduction activities completed in FY 2010 consisted of the replacement of water pumps at INTEC that reduced annual energy consumption by 1,200 MWh (1.2 M kWh).

At the AMWTP, heating and air conditioning equipment in Waste Management Facility (WMF)-610 was replaced with energy efficient units. The National Electrical Code (NEC) required connected load calculations were reduced from 600 amps to 500 amps, a reduction of about 83 kVA.

1.1.1.2 Planned Actions

Capital project upgrades are funded primarily through alternative funding mechanisms that include ESPC and UESC. They both use external (non-DOE) funding for energy-related upgrades and are paid back over time using the energy cost savings generated by the project. INL is actively pursuing these two alternative funding strategies to obtain additional energy savings.

The following projects were identified that will contribute to continued energy reductions for the INL Site:

- Completion of the MFC ESPC project should provide an additional 5% in energy reduction. This project is scheduled for completion by mid-FY 2012. The MFC ESPC is a $33M upgrade project that will eliminate over 580,000 gallons of fuel oil use and save over $1.7M in first year energy savings. This project will upgrade the central boiler plant and the central compressed air system in addition to HVAC systems and controls. The project will also install passive solar walls on two facilities.
- The implementation cost for the Idaho Falls BPA UESC project is estimated at over $20M. This project has identified 76 different Energy Conservation opportunities in Idaho Falls facilities that will upgrade HVAC systems, lighting fixtures, and plumbing fixtures. The project has finished conceptual design and is currently planned for final project development and financing research in FY 2011.
- Site Information Packages for additional ESPC projects were prepared and distributed to 16 Super ESPC Energy Services Contractors. The areas identified for continued ESPC activities include all enduring facilities at the Central Facilities Area (CFA), ATR-Complex, outside the security perimeter at the Specific Manufacturing Capability (SMC) facility, and INTEC. Two ESPC projects should be under Investment Grade Audit development in FY 2011.
- The INL Site has identified a $740K project to install electric and water metering in 37 facilities. This Metering Plan was developed according to Federal Energy Management Program (FEMP) Metering Guidance. Installation of meters will be pursued as part of the next INL and ICP ESPC projects. The Metering Plan is included in Appendix C.
- ICP planned actions for energy reduction activities consist of finalization of the proposed UESCs at Idaho Falls ICP managed facilities. Continued D&D will result in a projected net reduction of building square footage for the INL Environmental Management (EM) program between the end of FY 2011 and the end of FY 2020 that is anticipated to be 122,197 ft^2 (from 2,346,529 ft^2 to 2,223,732 ft^2). Federal regulations require the payback on any project not to exceed the length of the remaining lease. Ten-year leases are typically the maximum length allowed and payback calculations that exceed the lease length are considered unfeasible.

The INL Site anticipates that energy consumption reductions will provide the majority of INL GHG reductions. The first 22% of the 30% energy reduction goal will be achieved by completing identified ESPC projects. However, the final 8% will require major investments to implement yet-to-be identified opportunities.

1.1.2 Increase Departmental Renewable Energy Consumption

The INL Site is actively pursuing Renewable Energy Generation capability and is annually purchasing Renewable Energy Credits (RECs) in amounts as outlined in the Energy Policy Act of 2005.

This goal may not be met due to the low cost of electricity from abundant older hydroelectric and coal sources. The payback for Renewable Energy projects is unlikely to be successful without outside funding to support such projects.

1.1.2.1 Performance Status

There is one solar transpired wall at the INL Research Center (IRC) Complex Records Storage Facility. This wall preheats outside fresh air for the office area of this facility. Two other transpired solar walls were installed in FY 2010 as part of the MFC ESPC project. These solar walls provide renewable energy that avoids the use of conventionally generated electricity.

As an interim compliance activity, the INL Site has procured a total of 16,393MWh of Renewable Energy Credits (RECs) from Sterling Planet, Inc. at a total cost of $16,393. This purchase represents 7.5% of the INL Site electric usage in FY 2009 and is the purchase for FY 2010.

1.1.2.2 Planned Actions

INL is pursuing development of a 20MW wind farm by performing initial project development activities such as wind data collection and analysis, preliminary siting, INL mission impact and integration reviews, environmental reviews, permitting, and basic electrical interconnect design. By the end of calendar year 2011, INL and DOE-ID will document the decision whether to proceed with development of a wind farm on the INL Site based on the business case and NEPA analysis. Additionally, the INL Site is looking to securing funding to install a transmission line between the boundary of the MFC Area and the actual wind farm location, and preparing Request for Information (RFI) and Request for Proposal (RFP) materials. This unfunded project development would require between $1.5M and $3.0M, but would assist with the successful implementation of a $45M–$55M privately funded wind generation facility on federal property that could be completed by the end of FY 2012.

The INL Site anticipates meeting the onsite renewable energy generation goal if the funding is secured to support the wind farm project. However, if funding is not obtained, the goal will not be met. At a minimum, INL plans to purchase RECs equivalent to 7.5% of the INL Site electrical usage.

1.1.3 Reduce Departmental Fleet Petroleum Use by 2% Annually and Increase Alternative Fuel by 10% Annually over the Previous Year

The INL Site is developing diversified strategies for reducing fossil fuel use and carbon emissions associated with light and heavy-duty vehicles. The DOE Order 430.2B transportation fuels goal is to reduce petroleum fuels by 20% while increasing the use of alternative fuels by 100%, as compared to the FY 2005 usage baseline. There are many opportunities to affect DOE's petroleum fuel usage by implementing fuel reduction and fuel switching activities at INL.

1.1.3.1 Performance Status

The INL Site is a significant user of diesel fuel especially in its bus fleet of more than 80 over-the-road motor coaches. To meet the transportation fuels goals in DOE 430.2B, the INL Site should be at a 10% reduction in petroleum based fuels and a 50% increase in the use of alternative fuels at the end of FY 2010 as compared to the FY 2005 baseline. As demonstrated through data entered into the Federal Automotive Statistical Tool (FAST) database, the INL Site used 951,181 gasoline gallon equivalent (GGE) of petroleum based fuel in FY 2010 as compared to 982,751 GGE in FY 2005 for a 3.2% reduction. Additionally, 170,392 GGE of alternative fuel was consumed as compared to 76,203 GGE in FY 2005 for a 124% increase.

The INL Site is meeting the alternative fuel increase goals through actively pursuing Ethanol (E-85) fuel usage and by using biodiesel blends. These increases are facilitated by increasing the availability of E-85 and mandating its use while researching and implementing the use of biodiesel blends in the INL bus fleet throughout the year and across varied climate conditions. Activities in FY 2010 included:

- Increased the availability of alternative fuel by converting petroleum tanks to alternative fuel tanks and by encouraging the use of alternative fuel by all users of flex fuel vehicles.

- Updated the existing fueling infrastructure and provided additional alternative fuel locations to allow for improved fuel use tracking and control. The new technology, also called "ring technology," makes it easier to fuel INL vehicles by automatically capturing mileage and other data that employees once had to manually enter.
- Incorporated a Reduce Idle Campaign in its bus fleet that is saving fuel by better managing idling times. Results are positive as this campaign is saving 1,400 gallons of fuel per month.
- Used innovative technology to track and reduce fuel usage such as Global Positioning System (GPS), Radio Frequency Identification (RFID) fuel rings, and data logger technology to monitor engine performance and driver habits.
- Incorporated the Park and Ride concept to reduce bus fuel usage, and developed additional Park and Ride lots for employees at outlying locations.
- Selected by General Services Administration (GSA) to receive three ARRA-funded Parallel Hybrid drive shuttle buses to replace three 24-year-old buses. These new buses reduce petroleum use through greater efficiency and use biodiesel. In FY 2010, the new buses were used on lightly loaded commuter routes and for shuttle and tour service. The buses were received late in FY 2010 and only contributed a small amount to the FY 2010 petroleum fuel reductions.
- Increased overall bus efficiencies by implementing express routes and eliminating underutilized routes. This was in conjunction with continued efforts in right sizing the fleet with more flex-fuel vehicles and hybrids.
- Researched methods to use biodiesel blends in the bus fleet year around.
- Continued efforts to right size the fleet with more flex-fuel vehicles capable of using E-85 and partnered with a local fuel distributor to make E-85 commercially available to east Idaho.
- In FY 2010, INL Site acquired 167 new light duty vehicles. Of those acquisitions, 125 (75%) were flex fuel vehicles The balance was a combination of conventional and hybrid vehicles.

The AMWTP currently operates 91 passenger carrying light use vehicles for transportation of personnel and goods to the remote desert location 55 miles west of Idaho Falls, Idaho. The fleet consists of minivans capable of transporting up to six individuals. This small fleet averages 3 million miles a year transporting approximately 600 personnel to and from car-pool locations in local community areas surrounding the AMWTP location.

Each vehicle in the AMWTP fleet is an AFV, and capable of using Unleaded Regular or Ethanol (E-85) as a fuel. In FY 2010, the AMWTP also partnered with the local fuel distributer to furnish E-85 fuel at a single location in Idaho Falls. Employee commute vanpools based in Idaho Falls were requested by AMWTP management to use the E-85 fuel. These actions resulted in approximately 50% of total fleet using E-85.

The AMWTP was able to meet the DOE goal of a 10% annual increase in fleet alternative fuel consumption by FY 2015 and is now striving to surpass that objective. Also in FY 2010, the DOE-ID established a contract to install an E-85 filling station adjacent to the AMWTP. When this station begins operating by the end of FY 2011, it is expected that nearly 100% of the AMWTP commuter fleet will be utilizing alternative fuels.

1.1.3.2 Planned Actions

Additional reductions in petroleum-based transportation fuels and increases in the use of alternative fuels will be obtained through numerous INL Site identified projects and activities that include:

- Replace the INL bus fleet with new alternatively fueled intra-city coaches and additional smaller hybrid mini motor coaches. This opportunity was jointly identified by National Renewable Energy

Laboratory (NREL) and INL. It will be refined in FY 2011 to determine the best alternative fuel option and submitted to obtain funding. It is estimated that this project can be completed as early as the end of FY 2012 if funding and motor coaches are available, and will provide the DOE complex with significant petroleum reductions when complete. The INL bus fleet could be converted to operate on natural gas if the DOE complex needs to pursue further reductions in petroleum fuel consumption to meet the Executive Order goals. However, this $60M+ project is not feasible for INL or NE to pursue on their own.

- Continue to implement Park and Ride locations to reduce neighborhood bus routes and further reduce bus fleet fuel usage.
- Consider offering an incentive opportunity, or "X Prize," to employees who develop the most innovative idea for using off-the-shelf technology on the INL fleet vehicles.
- Continue to track and trend reliability, fuel usage, and performance of new hybrid buses while evaluating future purchases.
- Continue to encourage the use of E-85 in flex-fuel vehicles at the end user level. Increased alternative fueling infrastructure and revisions to mobile fueling capability and schedules will allow for the mandatory use of E-85.
- Continue to support and utilize available efficient shuttle and taxi services within and between the various INL Site facilities.
- Complete ARRA-funded installation of two 12,000 gallon E-85 skid mounted tanks, one each at AMWTP and INTEC. This $340K project is planned for completion in FY 2011.
- DOE-ID and INL are collaborating with the Yellowstone-Teton Clean Energy Coalition (local area Clean Cities program) to encourage and cooperate with local fueling stations and vendors to provide alternative transportation and fueling stations in the area.

The FY 2010 data shows that the INL Site has exceeded the FY 2010 goals for fuel usage. The INL Site anticipates fully meeting or exceeding the transportation fuels goals.

1.1.4 Metering

Most of the INL Site buildings do not have meters installed. As funding is available, the INL Site is planning to install advanced metering by the end of FY 2012 as far as is practicable. "Practicable" is defined through tables and graphs in the *DOE Buildings Electric Metering Guidance*, September 27, 2006, FEMP Document 2006.100, Rev 0.

Both INL and ICP anticipate that building or facility level metering selections will be further developed and implemented as appropriate through planned ESPC projects.

1.1.4.1 Performance Status

The INL Site contractors have performed an analysis on all existing infrastructure that will be operating in 2015. That analysis used the stated Guidance to identify 20 buildings managed by the INL contractor, 13 buildings managed by the ICP contractor, and four buildings managed by the AMWTP contractor that may be cost effective to meter. These will be considered the minimum buildings for future planned metering. There are currently 25 additional buildings at MFC having meters installed as part of the ongoing MFC ESPC Project.

During FY 2010, INL developed a basic data collection system to provide real-time viewing of the existing area level metering for the desert site.

1.1.4.2 Planned Actions

The INL Site will be using the ESPC project mechanism to design, fund, and install the meters. The INL Site has provided a conceptual estimate to install meters in these 37 locations. This project was estimated at $740K and will be pursued as part of the next two ESPC projects.

The city of Idaho Falls is planning to upgrade all of its electrical power meters to smart meter technology. Major INL Idaho Falls facilities will be upgraded as part of the city's initial upgrade project during FY 2011. This upgrade will provide smart meters and a network to supply a central data-collection point to view and analyze the data, and provide demand management capabilities.

In addition to providing a means of trending and validating energy savings, metering also provides proactive space management opportunities. Building energy and water usage information assists with maintenance scheduling, enhanced resource utilization, and accurate space charge-back to building tenants. Advanced metering provides a method to encourage and validate employee behavior change, and provides a dependable tool for facility managers to tune building systems and controls.

1.1.5 Cool Roofs

The INL Site will evaluate roof repair and replacement projects to determine if a Cool Roof application is cost effective and appropriate.

1.1.5.1 Performance Status

INL initiated implementation of the National Nuclear Security Administration's Roof Asset Management Program. During the first year of the program (2010), INL installed 67,000 ft² of roof on five existing buildings and one partial roof. These roofs meet the Cool Roof standard for reflectivity and R30 level of insulation. There are 13 buildings totaling 98,323 ft² of Cool Roofs at INL.

INL also has an additional nine partial Cool Roofs totaling 140,000 ft² including a partial cool-roof finish to the Experimental Breeder Reactor (EBR)-1 building roof, a National Historic Landmark.

1.1.5.2 Planned Actions

INL will evaluate on a project-by-project basis, all roof replacement and repair projects and will install Cool Roofs or Cool Roof finishes as applicable and cost effective. Roof replacements currently planned for FY 2011 will result in five new complete Cool Roofs totaling 51,800 ft² and a partial roof replacement totaling 8,600 ft².

No ICP planned actions for Cool Roof installations within the remaining duration of the current contract. After the ICP contract is complete, the buildings will be addressed on a case-by-case basis as noted above.

1.1.6 Training

INL has institutionalized a program to implement sustainable practices in facility design and operation, procurement, and program operations that meet the requirements of Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, and Department of Energy (DOE) Order 430.2B, *Departmental Energy, Renewable Energy, and Transportation Management*.

The goal of the INL Sustainability program is to promote economic, environmental, and social sustainability for INL, and help to ensure its long-term success and viability as a premier DOE national laboratory. The INL Sustainability program seeks to achieve measurable and verifiable energy, water, and greenhouse gas reductions, as well as responsible use and disposal of materials and resources; advanced sustainable building designs; to explore the potential use of renewable energy; and support cost-effective facilities, services, and program management.

The INL Site strives to maintain a trained workforce through accredited training programs and to provide regular and timely general employee training on energy efficiency and sustainability topics.

1.1.6.1 Performance Status

The INL Energy Manager is a current Certified Energy Manager through the Association of Energy Engineers (AEE) and is a Leadership in Energy and Environmental Design (LEED™) Accredited Professional. There are four additional INL engineers and project managers accredited through the U.S. Green Building Council as LEED™ Accredited Professionals. The ICP assigned energy manager completed initial training Energy Manager certification through AEE. AMWTP currently has three employees that are LEED™ Green Associates accredited by the U.S. Green Building Council.

The INL Site staff has obtained training in energy efficient auditing, lighting systems, sustainability, current code and directives modifications, and ESPC topics.

The INL Sustainability program has provided monthly newsletters to all employees on topics of interest including:

- Full Spectrum Lighting
- Multiple newsletters on Sustainability Program Principles and Priorities
- Carbon Footprint
- Sustainable Cafeterias
- Energy Reduction Competitions
- Energy Basics and Resources including a link to the DOE Energy Savers Booklet.

INL has also established the Sustainable INL website for both internal and external INL customers, and has developed full color Sustainable INL brochures and a tri-fold summary. These websites include a repository of current and historical newsletters.

Recycling program training was conducted at MFC, CFA, and ATR Complex during the rollout of the co-mingled and paper shredding recycling programs in late FY 2010.

ICP employee incentive activities included cash awards to employees for identification and engineering of energy and water reduction activities involving water supply systems at INTEC. Ongoing employee orientation programs such as the ICP Safety Toolbox pamphlet emphasize pollution prevention aspects including reduce, reuse, recycle, and rebuy activities.

Annual contractor Environmental, Safety, Health, and Quality (ESH&Q) refresher training emphasizes energy conservation, sustainable energy and transportation activities, and behavior at home and at work.

The INL Site contractors all received the 2010 Eastern Idaho Environmental Education Association awards for "Excellence in Community Environmental Education and Outreach" for their outstanding contribution and consistent support of environmental community outreach events like the Idaho Falls Earth Day Celebration and the Bonneville County Household Hazardous Waste Collection event.

1.1.6.2 Planned Actions

The first step toward sustainability is to educate managers and staff about the physical, biological, cultural, socioeconomic, and ethical dimensions of sustainability. The second step is to empower INL employees to understand and apply sustainable practices in their work activities. INL will fully implement sustainability into its culture through thoughtful consideration of the following strategies:

- Make sustainable design easy and accessible to scientists, engineers, architects, and designers.
- Partner and collaborate with innovators and thought-leaders such as the U.S. Green Building Council, the Integrated Design Lab, and others.

- Encourage the development and certification of INL research products that deliver significant, sustainable operating benefits to clients, and increase innovation in product design around energy and environmental challenges.
- Value nationally recognized training and certification programs for key personnel that address sustainable design and operations and pursue certification for four additional design engineers and project managers as LEED™ Accredited Professionals.
- Conduct a 1-day onsite training activity for all employees associated with the INL's next two ESPC projects. This training is provided by FEMP and was completed in November 2010.
- Continue to provide monthly newsletters on sustainability topics, but change to a new or different format or vehicle to enhance interest and readership.
- Continue to provide recycling program training to INL employees on a semi-annual basis until the program has been well established. Currently, this training is expected to take 1 year for full program implementation and acceptance.
- INL will incorporate energy and resource conservation and recycling training during new employee orientation programs beginning early in FY 2011.

1.1.7 SF6 Reduction

1.1.7.1 Performance Status

INL's Power Management group maintains a small inventory of sulfur hexafluoride (SF_6) (approximately 60 pounds) to recharge the switchgear units should they lose pressure. Additionally, SF_6 is used with research and development activities.

1.1.7.2 Planned Actions

Although SF_6 is not a major contributor to INL Site GHG emissions, INL will continue to consider cost effective opportunities for improved management of all fugitive emissions.

No ICP or AMWTP planned actions as neither program has any equipment containing SF_6.

1.1.8 Overall Reduction of Scope 1 & 2 GHG Emissions

Executive Order 13514 mandates that agencies develop specific GHG reductions. DOE has set a reduction target of 28% for Scope 1 and 2 greenhouse gases. The EO sets 2008 as the baseline year against which reductions will be measured.

The challenge is to minimize the impact of operations while increasing the growth of the Laboratory. INL is integrating environmental performance improvement in the areas that matter most to its stakeholders and the Laboratory, including minimizing the environmental footprint, taking a progressive approach to climate change, and championing energy conservation.

1.1.8.1 Performance Status

During FY 2008, the INL Site generated 133,253 metric tons (MT) of CO_2 equivalents from GHG emissions categories within Scopes 1 and 2 according to calculations provided by DOE based on energy and fuels consumption reported in the EMS4 and FAST databases. Of that total, INL generated 95,781 MT of CO_2 equivalents based on calculations prepared at INL. Many factors influence INL's GHG emissions, including the large land area on which the Laboratory's facilities sit. The area requires long commutes, an extensive fleet to provide transportation for desert site workers, and contains many antiquated inefficient facilities built before the current appreciation for energy efficiency and high-performance design. These factors tie directly into the following conclusions from INL's baseline GHG inventory:

- Electricity is the largest contributor to INL's GHG inventory, with over 60% of the net anthropogenic CO_2e emissions from Scopes 1 and 2
- Other sources with high emissions were stationary combustion, fugitive emissions from the onsite landfills, and mobile combustion (fleet fuels)
- Among the sources with low emissions within Scopes 1 and 2 were fugitive emissions from refrigerants and onsite wastewater treatment.

1.1.8.2 Planned Actions

INL has a detailed cost estimate and schedule to upgrade multiple owned and leased facilities at the Idaho Falls Campus. The Idaho Falls UESC energy audit resulted in 17.5% (nearly 550,000 ft^2) of the total INL square footage being evaluated for conformance to the Guiding Principles associated with existing facilities. In addition, INL progressed with a LEED™ for Existing Buildings subcontract by prioritizing and evaluating 20 Idaho Falls facilities to determine their status and potential for certification with the US Green Building Council.

Overall, there are 76 detailed projects totaling $20.1M. These projects are broken into two categories: maintenance projects that can be completed using master contracts in place, and upgrade projects that will need to be bid. Maintenance projects include 32 electrical, 10 HVAC/Controls, and 15 plumbing projects. Facility upgrade projects consist of 18 HVAC and one roofing upgrade.

Scope 1 and 2 reductions will be primarily met through the INL Site planned energy reduction and fuel reduction activities. Additional funds are needed to reach the 28% reduction goal.

1.2 Scope 3 Greenhouse Gas Emissions Reductions

1.2.1 Performance Status

Scope 3 GHG emissions are a result of INL activities, but originate from sources outside of INL's organizational boundary. They include other indirect emissions not accounted for in Scope 1 and 2 emissions, and include employee commute, employee travel, waste disposal, and transmission and distribution (T&D) losses. For FY 2008, INL reported a selected set of Scope 3 GHG emissions.

During FY 2008, the INL Site generated 47,598 MT of CO_2 equivalents from GHG emissions categories within Scope 3 according to calculations provided by DOE. Of that total, INL generated 18,474 MT of CO_2 equivalents based on calculations prepared at INL. Similar to Scopes 1 and 2 GHG emissions described above, one of the most significant factors that influence INL's Scope 3 GHG emissions is the large land area that requires long commutes (approximately 50 miles, one way). Transportation fuel was, in turn, the largest source of GHG emissions within Scope 3. Another source with high emissions was business air travel. Sources with low emissions were contracted waste disposal, contracted wastewater treatment, and business ground travel (rental and personal vehicles).

INL continues to reduce GHGs by transporting employees with a modernized transportation system, taking nearly 2,000 cars per day off the road. By streamlining the INL mass transit system that provides safe, efficient, and sustainable transportation to work for INL employees throughout the eastern Idaho region, INL encourages travel behavior changes to reduce carbon emissions and fossil fuel consumption, increased highway safety, and in doing so, INL models future trends in mass transit to local governments across the region. Other actions include instituting a park and ride system, relocating employees to town offices, use of E85 and biodiesel fuels, and use of modern buses, vans, and light-duty vehicles to reduce carbon emissions.

1.2.2 Planned Actions

INL has recently established a Sustainability Community of Practice that includes employees from key areas across the Laboratory. The intent is to establish subcommittees to evaluate particular areas of Sustainability, such as Scope 3 GHG emission reduction. Activities to reduce Scope 3 emissions include:

- Increase use of Web-based meetings
- Conduct an internal survey to determine where additional bandwidth and equipment are needed to support an increase in Web-based meetings. Once the required equipment has been ordered and installed, reassess the need for and criteria used to approve air travel.
- Reduce air travel, particularly short range (<300 miles) air travel, except where necessary for mission accomplishment
- Reduce car rentals by promoting carpooling at conferences and other meetings
- Research establishing a government rate for plug-in hybrid electric vehicle (PHEV) and hybrid electric vehicle (HEV) rentals while on business travel
- Encourage the use of public or group transportation modes at destination cities
- Promote carpooling and telecommuting
- Promote public transit and shared-commuting modes where available
- Expand waste reduction and recycling programs
- Introduce environmentally focused product packaging requirements
- Increase reusability or recyclability requirements in procurement practices.

The largest contributors to Scope 3 emissions at the INL Site are Employee Commuting and Business Air Travel. Reducing either by 13% will be a tremendous challenge based on the INL Site remoteness.

1.3 Comprehensive Greenhouse Gas Inventory

DOE has committed to reduce Scope 1 and 2 GHG emissions by 28% before the end of FY 2020, as compared to the FY 2008 baseline. INL has determined the initial Carbon Footprint. This GHG inventory supports INL Site emissions reduction efforts and is an accepted method of identifying environmental impacts by assessing major GHG contributors and the best methods to reduce them.

During FY 2008, the INL Site generated 180,852 MT of CO_2 equivalents. Of that total, INL generated 114,256 MT of CO_2 equivalents. Many factors influence INL's GHG emissions, including the large land area that requires long commutes, an extensive fleet to provide transportation for desert site workers, and contains many antiquated inefficient facilities, built before the current appreciation for energy efficiency and high-performance design. These factors tie directly into the following conclusions from INL's baseline GHG inventory:

- Electricity is the largest contributor to INL's GHG inventory, with over 50% of the net anthropogenic CO_2e emissions
- Other sources with high emissions were stationary combustion, fugitive emissions from the onsite landfills, mobile combustion (fleet fuels), and the employee commute
- Sources with low emissions were contracted waste disposal, wastewater treatment (onsite and contracted), and fugitive emissions from refrigerants.

Activities to partially reduce this baseline inventory will be funded primarily from alternative sources by increasing infrastructure efficiency and switching to fuel with less GHG-intensive emissions. Direct funding will be needed to meet the entire goal. INL is pursuing other opportunities to increase the efficiency of onsite transportation, business activities, and employee commutes. GHG emissions will be tracked and allocated on a program-by-program basis to incorporate accountability.

1.4 High-Performance Sustainable Design

1.4.1 HPSB New Construction

The INL Site is implementing High Performance Sustainable practices and design specifications in new building design and construction by introducing High Performance Sustainable design criteria at conceptual design and following though during design and construction by using LEED™ and construction concepts and the Guiding Principles for High Performance Sustainable Buildings.

The INL Site also constructs buildings that are very mission specific and are not readily compatible with LEED™ or with the Guiding Principles. One new such facility is described as follows: "INTEC's new Integrated Waste Treatment Unit (IWTU) is currently anticipated to have construction completed in FY 2011. This will be a large energy intensive facility with an estimated 3-year life. Due to the mission of this facility and its energy use characteristics, it is being planned for exclusion using Part G of the Excluded Buildings Self Certification. The internal process at this facility will consume most of the metered energy."

INL new construction includes DOE-owned and privately leased facilities. All existing leased facilities are privately owned. INL has no GSA leased facilities.

1.4.1.1 Performance Status

The ATR Complex Test Train Assembly Facility (TTAF) and Common Support Building (CSB) were evaluated and documentation submitted to the U.S. Green Building Council for a LEED™-NC Certification.

INL implemented language requiring LEED™-Gold certification for all new construction and new build-to-lease facilities.

INL developed language to implement a degree of energy efficiency and sustainability in short-term lease solicitations.

The AMWTP will ensure that all new designs for permanent buildings over $5M will allow LEED™ Gold Certification and ensure that designs for projects under the $5M General Plant Project (GPP) threshold comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles) as outlined in DOE Order 430.2B.

1.4.1.2 Planned Actions

The new Radiological Environmental Sciences Laboratory (RESL) is currently under construction and has been designed to certify as LEED™-NC Gold.

A new CSB office for MFC is in designed and is planned for LEED™-NC Gold certification.

ICP "Architectural Engineering Standards - Energy Conservation & Sustainable Design" were revised to implement the criteria identified in Section 4.d of DOE 430.2B. ICP has no projected new building construction activities that will occur within the remaining duration of the current contract.

1.4.2 HPSB Existing Buildings

INL is currently developing language for lease solicitation to establish a preference for LEED™ NC Gold Certified facilities. This will be a relatively simple process for new building leases, but may be more difficult when renewing existing leases.

The Guiding Principles for High Performance Sustainable Buildings are required to implemented into at least 15% of the INL enduring facilities by FY 2015. The INL Site plans to implement the Guiding Principles through the completion of the next two ESPC projects.

1.4.2.1 Performance Status

INL has completed an evaluation of all long-term Idaho Falls facilities as part of a UESC in partnership with Bonneville Power. This analysis was finalized into a project summary with cost estimate and Life Cycle Cost analyses performed. After review, this project should begin the funding and design phases in FY 2011.

1.4.2.2 Planned Actions

To expand the UESC energy and water evaluations for the Idaho Falls facilities, INL will complete an analysis of 20 Idaho Falls facilities to determine their suitability for the US Green Building Council's LEED™ for Existing Buildings Operations and Maintenance (EBOM). Buildings that can be readily upgraded to meet the EBOM parameters will be upgraded and certifications pursued.

In FY 2011, INL will develop projects that allow eight existing buildings to meet LEED Existing Buildings requirements. These projects will be included on the Integrated Project List for the FY 2013 funding year.

The INL Site has identified a minimum of 57 buildings for audits and upgrades to ensure that the Guiding Principles are incorporated at the INL Site. These 57 buildings represent 13% of the total number of INL Site facilities or 61% of the total INL building gross square footage. These are essentially the same buildings planned for advanced meter installations. Facilities Information Management System (FIMS) has been updated to reflect these designations. These buildings are listed on the Existing Buildings worksheet of the CEDR (Appendix B).

The ESPC and UESC funding vehicles will be used as the primary means to evaluate the identified facilities and to install all cost effective Energy Conservation Measures ECMs that will meet the intent of the Guiding Principles.

ICP anticipates that Guiding Principle evaluations will be conducted for 17 existing EM buildings (of greater than 5,000 ft²) as part of the INTEC and RWMC ESPCs.

The INL Site currently has two facilities that meet LEED™ certification and Guiding Principle standards out of 447 INL Site facilities or less than 1% of existing facilities. INL has performed energy efficiency audits and LEED™ for Existing Buildings analyses on 20 Idaho Falls facilities. An additional 124 facilities have been targeted for the next two identified ESPC projects. If all facilities are analyzed for the Guiding Principles and all cost effective opportunities are implemented, 48% of the INL Site's facilities will meet the five Guiding Principles. It is currently anticipated that the INL Site will be able to meet the 15% goal.

1.5 Regional and Local Planning

1.5.1 Performance Status

Use of E85 - Through our partnership with a regional fuel distributor, INL provided the region's first E85 fuel island that is open to the public. INL solicited media attention to inform the community that the fueling station provides both E85 and biodiesel fuels for public consumption.

Linx Transportation Cooperative – INL was instrumental in creating the INL Park & Ride system, and in supporting the nation's first rural regional transportation cooperative - called Linx – that is being developed by the Yellowstone Business Partnership. Linx is developing software and enlisting regional transportation providers and customers to build the nation's first rural transportation cooperative – increasing the effectiveness, affordability, and practicality for members of the public as well as corporate

customers to use regional mass transit providers rather than personal vehicles for transportation across significant parts of Idaho, Wyoming, and Montana.

Park & Ride – By streamlining the INL mass transit system that provides safe, efficient, and sustainable transportation to work for INL employees throughout the eastern Idaho region, INL encourages travel behavior changes to reduce carbon emissions and fossil fuel consumption, to increase highway safety, and in doing so INL models future trends in mass transit to local governments across the region.

Defensive Driving – INL bus drivers that are certified in defensive driving instruction share their knowledge of safe and sustainable driving practices with the Targhee Regional Public Transportation Authority (TRPTA) and other regional transportation interests (school systems, local governments, etc.)

State of Idaho – INL has partnered with the State of Idaho to improve local highway conditions, particularly in winter time, and to increase the use of Web cameras, signs, and other communications tools to improve the timeliness and accuracy of road and highway safety information provided to the public. Improving safety among highway users is a direct contributor to sustainability – conserving resources through reducing travel on icy roads, reducing winter accidents caused by unsafe travel, and encouraging INL employees to use provided mass transit—the safest mode of commuting—to remote INL facilities year-around.

1.5.2 Planned Actions

As part of the Greater Yellowstone Ecosystem, the INL Site and employees have a stake in maintaining the balance between laboratory missions and the carrying capacity of the local ecosystem. INL will continue to support local, regional, state, and national initiatives, including those listed above. Regional-level transportation needs based on anticipated growth and system modeling will be used to developed integrated transportation models and optimize internal transportation needs. System modeling also identifies fluctuations in demand and availability of planning resources in the short and long term.

1.6 Water Use Efficiency and Management

The INL goal for water usage is a 16% reduction of usage intensity by FY 2015, or 2% each year, as compared to the FY 2007 Water Usage Intensity Baseline measured in gal/ft^2.

Water used for processes and returned to the aquifer through rapid infiltration ponds is eligible for exemption from the reportable INL water usage. The ATR Complex meters the process water returned to the aquifer via the Cold Waste Pond.

1.6.1 Water Efficiency

The INL Site submitted its final 2007 Reportable Water Baseline to FEMP in February FY 2009. This baseline compiles all water pumped and used at the INL Site and credits clean water returned to the aquifer from the ATR-Complex and INTEC areas. These two areas return State of Idaho-permitted aquifer replenishment water to cold waste rapid infiltration ponds. The INL Site 2007 Reportable Water Baseline is final and is being used to determine progress with water use reductions.

1.6.1.1 Performance Status

To meet the water reduction goal in DOE 430.2B, the INL Site should be at a 6% reduction at the end of FY 2010 as compared to the FY 2007 Reportable Water Usage Baseline. The INL Site pumped a total of 870.5 M gal of water and returned a total of 396.7 M gal to the aquifer for a total net reportable water usage of 478.8 M gal. The reportable water usage intensity for FY 2010 calculates to 88.5 gal/ft^2 as compared to 71.8 gal/ft^2.

As demonstrated through data entry into EMS4, the INL Site is actually at a 23.3% increase in water use intensity even as the total water pumped at the INL Site has decreased from 1,060.8 M gal in FY 2007 to 870.5 M gal in FY 2010.

ICP completed the INTEC water supply system pump down-sizing replacement project in FY 2010.

1.6.1.2 Planned Actions

Other projects that will continue to contribute to water use reductions for the INL Site include several on-going tasks:

- In FY 2008, the New York Leak Detection, Inc. (NYLD) concluded a survey of water leaks at the INL Site and delivered a report that identified 10 leaks estimated to be leaking 8.4 million gallons per year at an annual cost of $7,936. Due to the low cost of water ($.00095/gal), the estimated cost of repairing these leaks of $433,897 would not result in an acceptable payback for an ESPC project, so this ECM was proposed for possible future funding.
- The Idaho Falls UESC project, when complete, will provide approximately 2% in water savings through new fixture upgrades.
- INL will purchase Environmental Protection Agency Watersense or other water efficient products.
- INL will continue with implementation of the MFC ESPC project during FY 2011, which when complete, eliminate the existing leaking condensate lines and will provide 3.5 M gal of annual water savings.
- The ESPC project planned for the ATR Complex, SMC, and CFA will eliminate once-through HVAC cooling water, increase efficiency through fixture replacements, and locate and repair leaking water lines.
- ICP will complete the deactivation, decommissioning, and demolition of the INTEC Analytical Laboratory facilities, which will provide a combined additional 150 M gal of annual water savings.

Due to the nature of the various INL Site missions, many of the operations can be cyclical and result in varying usages of water throughout the year and from year to year. In addition, as facilities are removed and processes are shut down, the lower square footage can actually result in an increase in water use intensity even as overall water usage is reduced. As an example, in FY 2010, the overall water pumped at the INL Site was reduced by 190.3 M gal as compared to FY 2007, but the square footage was also reduced by 439,465 ft^2 due to ongoing D&D work, and the water returned to the aquifer at INTEC was reduced due to process changes. The end-effect was an increase in reportable water use intensity of 23.3% as compared to FY 2007.

ICP anticipates performing no major industrial, landscaping, and agricultural (ILA) water reduction activities within the remaining duration of the current contract. ICP has no existing or active landscaping or agricultural water systems. The majority of ICP industrial water production is returned as "aquifer replenishment." Future potable and ILA water consumption from EM activities at INL are expected to continue to decline due to anticipated completion of various remediation projects within the remaining duration of the current contract resulting in related workforce reductions.

The water intensity reduction goal will be very difficult for the INL Site to accomplish. Completion of the identified ESPC projects is anticipated to contribute approximately 7.5% towards the 16% goal. However, water usage is so dependent upon process usage and unplanned events such as the FY 2010 wildfires and ARRA-funded additional D&D work, that the remaining 8.5% may be very difficult to obtain. Significant funding is needed to reduce process potable water usages such as the secondary cooling water at the ATR Reactor.

1.6.2 Storm Water Management

1.6.2.1 Performance Status

INL has internal laboratory-wide procedures that detail the process for storm water pollution prevention activities and discharges within the INL Site storm water corridor. The INL Site storm water corridor consists of those land areas at the desert site determined to have a reasonable potential to discharge into Waters of the United States, and was developed based on topography, precipitation rates, soil infiltration rates, and other hydrologic factors. Storm water corridor requirements do not apply to the town facilities.

INL internal laboratory-wide procedures require preparation of an Environmental Checklist for constructing or modifying facilities, structures, equipment, or processes to identify issues and planning needs. During this planning process, storm water pollution prevention requirements are addressed both for INL Site facilities within the storm water corridor and for town facilities. Applicable requirements in the Environmental Protection Agency (EPA) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities and the General Permit for Stormwater Discharges from Construction Activities are followed. Idaho Falls facilities also follow City of Idaho Falls requirements.

INL does not have an overall, comprehensive drainage plan for the Idaho Falls facilities. Each building must be designed and constructed in accordance with the EPA Storm Water Pollution Prevention Plan for Construction Activities.

1.6.2.2 Planned Actions

INL will continue to design Idaho Falls Facilities to meet or exceed the City of Idaho Falls storm water runoff requirements. The desert site locations will incorporate the pollution prevention requirements for discharges to the storm water corridor. For projects greater than 5,000 ft^2, INL will implement to the maximum extent practical the EPA guidance: "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act." That is, construction or modification projects will use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. Projects will use the strategies specified in the guidance to achieve this aim.

ICP does not anticipate altering the landscape during construction of buildings or other infrastructure such as parking lots, roads, etc. (grading, removal of vegetation, soil compaction, etc.), such that the changes affect runoff volumes, rates, temperature, and duration of flow within the remaining duration of the current contract. Resurfacing of parking lots or other travel areas is not being considered under this requirement.

1.7 Pollution Prevention (P2)

1.7.1 Performance Status

The INL Site Pollution Prevention Plan, DOE/ID-10333, describes the pollution prevention practices pursued at the INL Site. INL expanded the co-mingled recycling and paper shredding programs to the desert site facilities (CFA, MFC, and ATR Complex) during late FY 2010. All INL employees are now capable of participating in the co-mingled recycling program that allows employees to place a variety of recyclable materials into one collection bin. ICP also has co-mingled recycling at town facilities and paper recycling at the desert site facilities. With the exception of SMC, all town and desert site employees have the option to participate in the paper shredding recycling program, which includes regular office paper and controlled unclassified information (CUI) materials for shredding. In FY 2010, INL Idaho Falls facilities recycled 76,320 pounds of co-mingled materials and 295,080 pounds of office paper and cardboard. This accounts for approximately 25% diversion of municipal solid wastes collected at INL Idaho Falls facilities.

The INL Site reported 5,318 MT of Construction and Demolition Waste generated in FY 2010. Debris diverted from the waste stream totaled 1,250 MT (23.5%) and waste sent to landfill totaled 4,069 MT (76.5%).

The INL Site reported 2,459MT of municipal solid waste generation in FY 2010. Diverted from landfill disposal totaled 279 MT (11.3%) and waste sent to landfill totaled 2,179 MT (88.6%).

INL and ICP continue to use a number of processes to reduce the quantity and toxicity of hazardous chemicals at INL. These processes follow the simple steps of reduce, reuse, and recycle to achieve overall goal. The first step of the process involves reduce or reduction in the quantity of the toxic of hazardous material being procured prior to purchase. The chemical coordinators and the environmental specialist ensure that the product being ordered is actually needed, the smallest quantities ordered, and determine if a less toxic or hazardous chemical can be substituted. The review and approval process follows the Material Request Approval Process (MRAP) prior to ordering the chemical. The second step prior to ordering the chemical is to review what is being requested to determine if a sharable chemical exists at INL. If a shareable chemical exists, arrangements are made with the requester to contact the chemical owner and share the existing quantity, thus eliminating the need to purchase the toxic or hazardous chemical. The last step that is reviewed prior to purchasing a toxic or hazardous chemical is to review the INL Site Material Exchange Program (MEP) list of chemicals to determine if the requested chemical is available elsewhere at INL from another site contractor. The INL Site MEP includes chemicals, solvents, lubricants, and equipment. An additional recycle opportunity was used when chemicals were transferred via the INL excess program to the University of Idaho for continued research at the Center for Advanced Energy Studies (CAES). This new recycle process from INL to CAES is still evolving and offers another method to allow INL to fulfill the simple steps of reduce, reuse, and recycle.

The AMWTP Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) Permit requires that the AMWTP conduct and complete a source reduction evaluation review and written plan, in accordance with the procedures and format provided in the "EPA Waste Minimization Opportunity Assessment Manual" (EPA/625/7-88/003). This review and plan shall be submitted to the director by March 31, 2011 and every 4 years thereafter, and must include detailed descriptions of any programs the AMWTP may have to assist generators of hazardous and mixed waste in reducing the volume (quantity) and toxicity of wastes produced.

AMWTP reduces and minimizes the quantity and toxicity of hazardous chemicals and materials through a procurement process that stresses environmentally preferable purchases. One of the objectives stated in the AMWTP management procedure for the acquisition of material and services is to use recycled-content and bio-based content materials and other environmentally preferable products and services to the maximum practicable extent. Purchase requisitions are screened by an assigned procurement specialist for environmentally preferable materials.

1.7.2 Planned Actions

INL has recently established a Sustainability Community of Practice that includes employees from key areas across the Laboratory. The intent is to establish subcommittees to look at particular areas such as waste diversion (both non-hazardous solid waste and construction and demolition waste). INL currently has a goal of diverting 20% of both of these waste streams from the landfill during FY 2011.

INL will continue to implement and encourage employees to participate in the recycling and paper shredding programs in town and at the desert site facilities. It is anticipated that it will take approximately 1 year to fully develop and customize the programs at the desert site facilities to optimize INL's efforts.

INL will continue to evaluate potential outlets and the expansion of recyclable waste streams, such as cafeteria grease, fluorescent light tubes, batteries, and food wastes, to further increase the amount of wastes diverted from the landfill.

INL will also evaluate making duplex the default on all eligible printers and copiers to reduce office paper use.

The INL Site anticipates meeting this goal if funding is allocated to optimize the current waste diversion systems, modify contracts, and markets are available to divert waste streams.

1.8 Sustainable Acquisition

1.8.1 Performance Status

INL has established a sustainable acquisition program in accordance with the Resource Conservation and Recovery Act (RCRA).

- Preference program: INL's automatic document generation system ensures applicable contracts include language that favors the acquisition of recovered content products. For example, INL requires its supplier of standard desktop computers to provide items designated as Electronic Product Environmental Assessment Tool (EPEAT) Silver or better.
- Promotion program: INL's acquisition systems and company procedures promote sustainable acquisition requirements and incorporate mechanisms that enable limited tracking of applicable purchases.
- Estimation, Certification, and Verification: INL requires suppliers (e.g., construction services, office products, paper products) to deliver spend reports listing the designated versus preferred purchases. In addition, INL has developed standard reports that provide the summary data necessary for reporting spend for recycled content products.
- Annual Review and Monitoring: INL conducts an annual review and assessment of a specific aspect of the sustainable acquisition program.

The ICP material acquisition process directs procurement to use recycled-content and bio-based content materials and other environmentally preferable products and services to the maximum extent practicable.

1.8.2 Planned Actions

In recent years, there continues to be many changes and additions in sustainable acquisition requirements. INL plans to perform the following actions to improve its sustainable acquisition program:

- Understand recent changes in sustainable acquisition policy and regulations (FARs and DEARs) and determine the potential impacts on current systems and processes
- Leverage the capabilities of the automated document generation system to assist in implementing provisions of EO 13514 to the extent INL deems practicable
- Ensure personnel resources are adequate and aligned in accordance with the proper organizational roles and responsibilities
- Expand its review process to include classifications currently not tracked (e.g., biobased, water efficient, non-construction services) and those not adequately tracked
- Conduct a campaign to increase the education and awareness of sustainable acquisitions and their effect on certain INL performance requirements
- Benchmark processes with other labs to leverage lessons learned and to discover potential improvements to INL's process
- Re-engineer existing standard reports and processes to capture additional categories.

The sustainable acquisition goal will likely fall short due to the increased cost of material in the supply chain.

1.9 Electronic Stewardship and Data Centers

1.9.1 Performance Status

INL has been a partner in the Federal Electronics Challenge (FEC) since FY 2007. INL's participation in the FEC is supported by representatives from procurement, information management, property management, and pollution prevention. Through continuous improvement, INL has emerged as a leader in electronics stewardship as evidenced by winning the FEC Bronze award in FY 2007 and FY 2008, and the FEC Silver award in FY 2009 and FY 2010. More specifically:

- INL is committed to purchasing environmentally responsible electronics and uses Electronic Product Environmental Assessment Tool (EPEAT) to assist with purchasing registered electronics (currently limited to the categories of desktops, laptops, and monitors). A target to purchase at least 95% EPEAT-registered equipment is identified in INL's EMS, and all of the standard computers specified on a blanket purchase order are rated as EPEAT Silver or better.
- INL currently has both a policy and procedure the covers the responsibility and directions for implementing and maintaining power management on PCs and monitors, and shutting down PCs (and peripherals) when not in use. This document contains a scope that covers 100% of Information Management (IM)-managed systems and excludes sensitive and mission-critical equipment. It also calls for owners of self-managed systems to implement the "company-standard" power management settings.
- INL's Property Management System uses an approved process that promotes the reuse of desktop computer electronics after they are excessed by INL employees at the end of their first life. Employees are reminded that when procuring a new item, "excess is the first source of supply."

ICP has also been a partner in the FEC and has consistently been awarded the annual FEC Bronze award.

INL operates the Information Operations and Research Center (IORC) data center and a second new data center located in the Engineering Research Office Building (EROB). ICP does not manage any data centers.

It is AMWTP's policy to procure only Energy Star compliant computer monitors with Energy Star Power Management features enabled as part of the standard load. The AMWTP Information Technology Infrastructure Group has an established policy stating that all eligible computers and monitors must have Energy Star features that allow AMWTP to comply with DOE's mission while ensuring effective energy conservation. The Group has implemented configurations and mechanisms on eligible systems to automatically execute energy conservation measures. Certain production and plant operations systems were excluded from this policy, for example control room systems and camera monitors, as those systems are safety and operations related and must remain in the "on" position. AMWTP employees are prevented from making changes to these settings by cyber security policies that are in place on all AMWTP systems.

1.9.2 Planned Actions

INL has recently established a Sustainability Community of Practice that includes employees from key areas across the Laboratory. The intent is to establish subcommittees to look at specific Sustainability areas such as duplex printing.

INL will complete a data center survey for each of its data centers to benchmark against DOE's Web-based DCPRO Software.

The INL Site anticipates meeting or exceeding this goal.

1.10 Site Innovations

The energy and environment mission of the Laboratory is derived from engineering and research capabilities in specific areas of energy supply (i.e., biomass assembly, testing of advanced vehicles, and development of catalysts) and in developing engineering solutions for the integration of energy systems.

The goal of INL's Bioenergy Program is to overcome key technical barriers facing the U.S. bio-energy industry by systematically researching, characterizing, modeling, demonstrating, and harnessing the physical and chemical characteristics of the nation's diverse lignocellulosic biomass resources to produce biofuels and other value-added products more cost-effectively. Realizing national biofuel production goals requires development of feedstock supply systems that can provide biomass to biorefineries sustainably and cost-effectively. The INL's Bioenergy Program developed an engineering design, analysis model, and conceptual strategy for a feedstock supply system that can sustainably provide uniform-format lignocellulosic biomass at a commodity scale within national cost targets.

INL is the lead DOE laboratory for field performance and life testing of advanced technology vehicles. The Laboratory provides benchmark data for DOE technology modeling, simulations, and R&D, as well as to fleet managers and other vehicle purchasers for informed purchase, operations, and infrastructure decisions.

The transition to hybrid electrical and all-electrical light duty vehicles for personal transportation has the potential to shape the demand curve for electricity in the U.S. However, realization of this advanced technology will require improvements in batteries, energy conversion, and electrical infrastructure – all of which are established areas of INL expertise. INL is coordinating plug-in demonstration projects with private companies and city, county, port, and environmental agencies. Onboard data-loggers, cellular modems, and global positioning system (GPS) units will transmit information from these vehicles to INL researchers for analysis. The INL's integrated vehicle, energy storage, and grid demonstration and testing laboratory is a regional and national testing and demonstration resource for DOE, DOD, other federal agencies, and industry. The applied battery research and diagnostic testing includes thermodynamic life analysis of advanced battery chemistries under development and advanced physical and materials modeling.

Energy production and distribution require the development and use of multiple natural resources (e.g., water, land, minerals, and biomass) and often compete with other important resource uses such as food production, residential development, recreation, and other industrial applications. Ecosystem and regional-level analysis tools based on Geospatial Information Systems (GIS) and system-dynamics modeling techniques are being developed to analyze energy and natural resource development and use. They also identify systems that address fluctuations in demand and availability of resources and energy in the short and long term. Finally, researchers are developing advanced environmental forensics capabilities to detect trace levels of specific chemicals and other small changes in the environment.

2. RETURN ON INVESTMENT EVALUATION

2.1 Performance Status

The INL Site is primarily using alternative funding processes such as Energy Savings Performance Contracting (ESPC) and Utility Energy Services Contracting (UESC) to identify, develop, and construct Energy Conservation Measures (ECMs). In addition, Idaho Power and Bonneville power have incentive programs that provide partial funding for the completion of ECMs. These incentives will also be used in conjunction with alternative funding mechanisms to enhance the Return on Investment of these projects.

- Construction is over 50% complete on the Materials and Fuels Complex (MFC) ESPC project. Completion of this project will result in an addition 5% in energy savings toward the 30% reduction goal. This ESPC is providing $33M for facility upgrades and has a $1.7M calculated first year energy cost savings. The project should be complete in FY 2012 and has a contract term of 15.4 years, well below the 25-year program limit. This ESPC project is the second ESPC to be implemented at INL, the first being completed in FY 2000 with a 17-year contract term.
- A UESC project opportunity was identified and analyzed in FY 2010 for all of the enduring Idaho Falls facilities. This project will require $20M for facility upgrades and will provide up to $480k in first year annual savings. This project has identified 76 separate ECMs that will upgrade HVAC, lighting, and plumbing systems.

2.2 Planned Actions

The INL Site will continue to use alternative funding processes as the primary funding resource for continued energy and water reduction projects.

- A third ESPC project is being developed for the enduring facilities at the Central Facilities Area, the ATR Complex, and limited facilities at the Specific Manufacturing Complex, all on the INL's desert site. The Investment grade audit has not been completed for this project, but INL is expecting a project similar in scope and size to the MFC ESPC project. This assumption would suggest a project at approximately $30M in upgrades, saving over $1M in first year energy reductions, and spanning a 15-year contract term
- A fourth ESPC project is being concurrently developed for the enduring facilities at the Idaho Cleanup Project (ICP). This project is also in the conceptual stage, but is expected to be approximately one-half the size of ESPC project #3 or $15M in upgrades with $500k in first year annual energy savings over a 15-year contract term.
- The Idaho Falls area UESC project will be further defined to develop a project with a simple payback not to exceed the expected life of the owned facilities and not exceeding the remaining lease term of the leased facilities. The Bonneville Power Administration UESC program will be used to the maximum extent possible to fund these projects.
- Other miscellaneous projects will be identified and developed in the remaining areas of the INL Site. Similar to the Idaho Falls UESC, these projects will provide energy and water savings not to exceed the remaining life of the facilities. These projects will maximize the use of utility incentive programs. It is the intent of the INL Sustainability Program to reinvest the savings from these projects into addition project development and construction.

3. ENERGY MANAGEMENT

3.1 Proposed Funding for Projects

The primary means of funding energy and water reduction projects will be through the alternative funding programs such as ESPC and UESC. The INL Site will leverage utility incentive programs to the maximum extent available.

The INL Site has also proposed several projects to DOE that may be available for implementation with future funding as is it appropriated. These are projects that are not conducive to alternative funding due to long paybacks or installing technologies and equipment that support an ESPC but do not provide direct energy or water savings, such as metering. These projects have been included on the Conservation Measures worksheet of the CEDR.

3.2 Additional DOE O 430.2B Elements to Address in FY 2011

As found in the INL TYSP, INL will continue to support energy and water efficiency reductions, transportation fuel efficiency, and GHG reductions through a variety of creative and proactive sustainable activities, including, but not limited to, the following:

- Updating the INL Carbon Footprint Baseline.
- Ensuring that all new construction and new infrastructure leases include provisions to obtain the United States Green Building Council (USGBC) LEED™ Gold certification, at a minimum.
- Applying the Guiding Principles of Executive Order 13423 to operations and renovations of all appropriate enduring infrastructure across the INL Site and in Idaho Falls.
- Evaluating and supporting potential onsite renewable energy construction opportunities and purchasing RECs to support the growth and success of renewable energy generation industries and to reduce GHG emissions.
- Increasing the overall efficiency of the INL fleet while focusing on increased opportunities to utilize alternative fuels.
- Incorporating new Executive Order 13514 requirements into design and construction of all new facility projects before the EO goal to be net-zero facilities by FY 2020 is reached. Net-zero means that the facility generates at least as much renewable energy as the total energy it consumes.
- Evaluating and updating all internal plans, goals, and documentation of sustainability-related activities to remain current with federal requirements.
- Actively leading and contributing to the Energy Facility Contractors Group (EFCOG), federal, Battelle Corporate, and INL working groups and communities of practice to influence future goals and requirements that will lead to increased efficiency, reduced emissions, and more productive infrastructure environments.
- Providing INL campus development and planning to address effective space management, facility utilization and disposal, and operations consolidation through trending and analyzing facility utilization and utility usage data.
- Reviewing and analyzing new building designs, proposed changes to existing buildings, and requests for new-leased facilities to ensure the integration of sustainable concepts.
- Actively pursuing advanced metering to provide central "real-time" energy and water usage evaluation, utility-level demand-side management, and tools to assist with facility and process operations.
- Achieving Carbon Neutrality for all non-mission-specific activities by FY 2025.

- Incorporating cool roof principles and technologies into roof replacements and new construction projects immediately.
- Actively participating with industry-specific conference and training programs such as GovEnergy, GreenGov, and the EFCOG Energy and Infrastructure Working Group to gain and share information on best practices and sustainable programs for energy and water conservation.
- Participation with INL Site specific working groups and networking activities to provide the various INL Site contractors with a mechanism to share lessons learned and technical information.
- Compiling reports as required for INL Site energy use and program performance validation including quarterly and annual energy use reports, monthly program reports to DOE-ID, and reports as needed to the FEMP, at a minimum.

The habits and actions of all INL Site employees are an integral part of INL energy reduction activities. No controls or engineered systems can shut off equipment when not needed as effectively as the employees themselves can. There are several actions that all employees can take to significantly reduce energy waste and taxpayer dollars needed for utility costs at the INL Site:

- Ensure that all nonessential lighting, personal computers, equipment, and other systems are turned off when not needed. Diligence with these activities when leaving for the day or an extended period during the workday can truly make a difference.
- Be aware of energy efficiency and sustainable practices. Identify additional opportunities to reduce energy use and notify cognizant facility managers when you either see or suspect energy or water waste.
- Realize that real and significant energy savings requires an effort on the part of facilities personnel. Accept and work with the changes that are needed to make the facilities and facility control systems more efficient and economical.
- Reduce the use of government passenger vehicles between the desert site and in-town facilities by maximizing utilization of existing shuttle buses and taxi systems. If a government vehicle must be used, select the most fuel-efficient vehicle available.
- Schedule meetings to align with bus shuttle schedules as much as possible.
- Maximize the use of alternate fuel in all government vehicles that are flex-fuel capable.
- Employee awareness and education activities will be accomplished through each of the contractor's Web-based programs.

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Appendix A

Glossary

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Appendix A

Glossary

Alternative Fuel. A vehicle or equipment fuel that is either not petroleum based, or significantly reduces the petroleum content of the fuel. Biodiesel blends such as B20 (20% biodiesel) and Ethanol blends such as E-85 (85% Ethanol) are the more common alternative fuels. Compressed natural gas (CNG) and liquefied natural gas (LNG) are also recognized alternative fuels that are not a blended fuel.

Alternative Fuel Vehicle. Alternative fuel vehicles (AFV) are specially designed to run on an alternative fuel. They can be dedicated to a single alternative fuel such as LNG, or they can be dual fuel capable of operating on both alternative such as CNG or E-85 and gasoline. Diesel engine vehicles that can simply be operated on a biodiesel blend are usually not considered AFVs.

Commissioning. A process of ensuring that all building systems are installed and perform interactively according to the design intent, the systems are efficient and cost effective and meet the owner's operational needs, the installation is adequately documented, and the operators are adequately trained.

Commissioning Authority. The individual hired by, or responsible to, the building owner and is tasked with implementing the commissioning process for a new or existing building. The Commissioning Authority is typically responsible for all aspects of the commissioning process, leads and trains the commissioning team, and witnesses or verifies all system checks or inspections throughout the process. The Commissioning Authority has final jurisdiction for the entire commissioning process.

Continuous Commissioning. Continuous commissioning involves ongoing monitoring and testing of systems as part of a regular maintenance plan to ensure optimum performance and enhanced equipment longevity. Continuous commissioning can be at a system or a building level depending upon the requirements of the stakeholders.

Energy Efficiency. The ability of a building to minimize the amount of energy used for employee safety, health, and comfort. Energy efficiency also applies to the processes that are performed inside the building, which are not necessarily part of the physical structure. Energy efficiency improvements should always be measured by life cycle cost effectiveness, and not by first cost or simple payback.

ESPC. Energy Savings Performance Contracts (ESPC) are projects that are developed, engineered, performed, and funded by an outside contractor called an Energy Services Contractor (ESCo). ESPCs are paid for through the energy savings derived from the project and are intended to be a no-cost turn-key process or project. The annual payments are made to the ESCo with funds that would have been distributed to the utility. ESPCs are especially useful when capital funding is not readily available. DOE sites can take advantage of the Super ESPC program, which provides pre-evaluated ESCos familiar with federal processes.

HVAC. Heating, ventilating, and/or air conditioning (cooling) systems in a building. HVAC systems include all components, controls, and distribution systems needed to deliver conditioned air to the desired point of use.

Indoor Environment. A building's indoor environment includes many factors including the quality of the air in and supplied to the building, temperature levels, and consistency throughout the building, amount of pollutants in the workspace, lighting levels, and quality, levels of unwanted sound, and amount of day lighting.

INL Site. All contractors and activities at the INL Site under the control of the DOE-ID Operations Office but excludes the Naval Reactors Facility (NRF).

LEED™ Rating System. Leadership in Energy and Environmental Design (LEED™) is a tool for green building design to help design teams and owners determine green project goals, identify green design strategies, measure and monitor progress, and document success. The LEED™ Rating System was developed and is administered by the U.S. Green Building Council (USGBC), which is a national non-profit organization that includes representation from all aspects of the building industry. The LEED™ Rating System is a point system of five technical categories and four levels of certification: LEED™ Certified, Silver, Gold, and Platinum.

Low-Cost. Low Cost modifications or repairs may be performed during the commissioning process, but are typically implemented shortly after. Low-cost opportunities typically cost less than $500 and can be accomplished in bundled groups.

No-Cost. Adjustments or modifications that can be made during the commissioning implementation phase by in-house crafts. These on-the-spot modifications are essentially no-cost other than the time for the craft person to be available. No-cost adjustments should be maximized during the implementation phase.

Re-commissioning. Commissioning that is performed several years after a building, which was previously commissioned, has been in operation to ensure that the building and systems are meeting the original design requirements. Re-commissioning is typically used to identify and correct malfunctions in a building that occur as the building ages and to ensure continued indoor air quality, employee productivity, and energy efficiency. Re-commissioning can also be used to address changes in ownership, building use patterns, and operation and maintenance practices. A building's use and mission often change during the building's life and these changes necessitate the need for re-commissioning to ensure that the building is capable of efficiently meeting its new and/or evolving mission.

Retro-commissioning. Applying the commissioning process to a building that has never been commissioned. *Retro-commissioning* is sometimes referred to as "Existing Building Commissioning" and is used to compare the building's original design parameters and operational criteria with current design and operational requirements. Retro-commissioning determines if the building is capable of meeting its current mission needs and identifies modifications required to meet those needs. Retro-commissioning then identifies upgrades to the building that will enhance its energy efficiency, tenant comfort and productivity, and indoor air quality. Retro-commissioning as a best practice means using a whole building approach to ensure that the building is operating within well-defined criteria established by the building stakeholders.

Sustainability. The ability of a society to operate indefinitely into the future without depleting its resources. Sustainability includes concepts of green building design and construction, reuse and recycling of materials, reduced use of material and energy resources for building construction and operation, water conservation, and responsible stewardship of the environment adjacent to the building.

Appendix B

Consolidated Energy Data Report (CEDR)

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Appendix B

Consolidated Energy Data Report (CEDR)

CEDR Content

The Consolidated Energy Data Report (CEDR) consists of nine worksheets that should be completed by each site, as applicable, and included as part each site's SSP in a MS Excel electronic format. To assist with navigation of large tables, a key has been provided identifying the fields that have been pre-populated, fields that need to be completed, and optional fields to be completed should the information be applicable and available. In general, cells highlighted in orange should be

	Worksheet	Suggested Responsible Party	Overview	Action
	Content	NA	Stand-alone overview of the CEDR tabs.	None
	INL Site Energy Use Quarterly Reports	Facility/energy manager	Information copies of the INL Site Energy Use Quarterly Reports as input into the EMS4 data base.	None
1	2010 Data Report	Facility/energy manager	Collects information on energy and water spending, and metering status.	If applicable, complete cells highlighted in orange. Edited and new data cells should be highlighted in light blue.
2	Operating On-Site Renewables	Facility/energy manager	Houses the list of active renewable energy systems at DOE sites to track progress towards renewable energy requirements in EPACT 2005 and DOE O 430.2B. Also used towards developing the site's GHG inventory.	Review pre-populated data and update as need be. If applicable, complete new data fields. Edited and new data cells should be highlighted in light blue.
3	Purchased Renewables	Facility/energy manager	Collects renewable energy purchases to track progress towards renewable energy requirements in EPACT 2005 and DOE O 430.2B. Also used towards developing the site's GHG inventory.	Review pre-populated data and update with FY 2010 purchased data. If applicable, complete new data fields. Edited and new data cells should be highlighted in light blue.
4	Source Energy Savings Credit	Facility/energy manager	Part of the *Annual Energy Report* to adjust site energy use accounting from projects — especially combined heat and power — that would change the accounting of site vs. source energy.	Complete worksheet, if applicable. Edited and new data cells should be highlighted in light blue.
5	Conservation & RE Measures	Facility/energy manager	Main worksheet that is used to track a site's planned energy and water conservation measures, in addition to future renewable energy systems. Used to project a site's future energy/water consumption based on savings.	Review pre-populated data and update as need be. If applicable, complete new data fields. Edited and new data cells should be highlighted in light blue.
6	Fleet Measures	Fleet manager	Tracks future fleet management strategies and their anticipated petroleum savings or alternative fuel use.	Review pre-populated data and update as need be. If applicable, complete new data fields. Edited and new data cells should be highlighted in light blue.
7	New Bldg Construction	Facility/energy manager	Tracks new construction projects and their requirements for meeting HPSB goals, EPACT 2005 30 percent better than ASHRAE, and storm water design requirements. Also projects energy and water consumption in the future.	Review pre-populated data and update as need be. If applicable, complete new data fields. Edited and new data cells should be highlighted in light blue.
8	Existing Bldgs HPSB	Facility/energy manager	Tracks compliance of existing buildings, or plans to gain compliance, with HPSB existing building requirements.	Review pre-populated data and update as need be. Edited and new data cells should be highlighted in light blue.
9	Data Centers	Data center manager	Inventory of DOE data centers along with basic energy management metrics.	Review pre-populated data and update as need be. Edited and new data cells should be highlighted in light blue.

FY 2010 Energy Management Data Report

Program:	Department of Energy	**Prepared by:**	**Ernest L. Fossum**
Site:	**Idaho National Laboratory**	**Phone:**	**(208) 526-2513**
Fiscal Year:	2010	**Date:**	**12/6/2010**

Note: Part 1, Consumption and Cost Data, in past Annual Energy Reports and CEDRs has been taken out. Instead data will be pulled from DOE databases: FIMS, EMS4, and FAST.

Requirement(s): See tables.

Instructions: Complete cells in orange. The information requested is specifically to complete DOE's Annual Energy Report. Edited and new data cells should be highlighted in light blue.

Source: As provided by sites in their FY 2010 CEDR.

ENERGY EFFICIENCY IMPROVEMENTS AND FUNDING

1-5a. EPACT 2005 Metering Of Electricity Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter.)

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	23	18.0%	0	0.0%	85	27.1%
2011 Planned	23	18.0%	25	TBD	85	56.5%
2012 Planned	23	18.0%	50	TBD	85	85.9%
2013 Planned	23	18.0%	62	TBD	85	100.0%

1-5b. DOE Order 430.2B Metering Of Water Use

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Water Metered	Cumulative # of Buildings Metered	Cumulative % of Water Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	19	14.0%	0	0.0%	TBD	TBD
2011 Planned	19	14.0%	7	TBD	TBD	TBD
2012 Planned	19	14.0%	TBD	TBD	TBD	TBD
2013 Planned	19	14.0%	TBD	TBD	TBD	TBD

1-5c. EISA 2007 Metering Of Natural Gas Use

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Natural Gas Metered	Cumulative # of Buildings Metered	Cumulative % of Natural Gas Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	20	100.0%	0	0.0%	20	100.0%
2011 Planned	20	100.0%	0	0.0%	20	100.0%
2012 Planned	20	100.0%	0	0.0%	20	100.0%
2013 Planned	20	100.0%	0	0.0%	20	100.0%

1-5d. EISA 2007 Metering Of Steam Use

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Steam Metered	Cumulative # of Buildings Metered	Cumulative % of Steam Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	0	0.0%	0	0.0%	0	0.0%
2011 Planned	0	0.0%	5	TBD	TBD	TBD
2012 Planned	0	0.0%	TBD	TBD	TBD	TBD
2013 Planned	0	0.0%	TBD	TBD	TBD	TBD

FY 2010 Energy Management Data Report

Program:	Department of Energy	**Prepared by:**	**Ernest L. Fossum**
Site:	**Idaho National Laboratory**	**Phone:**	**(208) 526-2513**
Fiscal Year:	2010	**Date:**	**12/6/2010**

Note: Part 1, Consumption and Cost Data, in past Annual Energy Reports and CEDRs has been taken out. Instead data will be pulled from DOE databases: FIMS, EMS4, and FAST.

Requirement(s): See tables.

Instructions: Complete cells in orange. The information requested is specifically to complete DOE's Annual Energy Report. Edited and new data cells should be highlighted in light blue.

Source: As provided by sites in their FY 2010 CEDR.

ENERGY EFFICIENCY IMPROVEMENTS AND FUNDING

1-5a. EPACT 2005 Metering Of Electricity Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter.)

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	23	18.0%	0	0.0%	85	27.1%
2011 Planned	23	18.0%	25	TBD	85	56.5%
2012 Planned	23	18.0%	50	TBD	85	85.9%
2013 Planned	23	18.0%	62	TBD	85	100.0%

1-5b. DOE Order 430.2B Metering Of Water Use

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Water Metered	Cumulative # of Buildings Metered	Cumulative % of Water Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	19	14.0%	0	0.0%	TBD	TBD
2011 Planned	19	14.0%	7	TBD	TBD	TBD
2012 Planned	19	14.0%	TBD	TBD	TBD	TBD
2013 Planned	19	14.0%	TBD	TBD	TBD	TBD

1-5c. EISA 2007 Metering Of Natural Gas Use

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Natural Gas Metered	Cumulative # of Buildings Metered	Cumulative % of Natural Gas Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	20	100.0%	0	0.0%	20	100.0%
2011 Planned	20	100.0%	0	0.0%	20	100.0%
2012 Planned	20	100.0%	0	0.0%	20	100.0%
2013 Planned	20	100.0%	0	0.0%	20	100.0%

1-5d. EISA 2007 Metering Of Steam Use

Fiscal Year	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Steam Metered	Cumulative # of Buildings Metered	Cumulative % of Steam Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2010 Report	0	0.0%	0	0.0%	0	0.0%
2011 Planned	0	0.0%	5	TBD	TBD	TBD
2012 Planned	0	0.0%	TBD	TBD	TBD	TBD
2013 Planned	0	0.0%	TBD	TBD	TBD	TBD

Source Energy Savings Credit

Requirement(s): EO 13123

Instructions: Optional, complete the tables below for projects that increase site energy use but save source energy. For additional guidance see: http://www.eere.energy.gov/femp/pdfs/sec502e_%20guidance.pdf. Edited and new data cells should be highlighted in light blue.

Source: Site/Lab

EPACT Goal Subject Buildings

Name of Project Saving Source Energy in FY 2010 (insert additional rows as necessary)	Annual Site Energy Increase with the Project (10^6 BTU/Yr)	Annual Source Energy Saved with the Project (10^6 BTU/Yr)	Adjustment to Annual Site Energy (10^6 BTU/Yr)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	0.0	0.0	0.0

EPACT Excluded Buildings

Name of Project Saving Source Energy in FY 2010 (insert additional rows as necessary)	Annual Site Energy Increase with the (10^6 BTU/Yr)	Annual Source Energy Saved with (10^6 BTU/Yr)	Adjustment to Annual Site (10^6 BTU/Yr)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	0.0	0.0	0.0

List of Operating On-Site Renewable Energy Systems

Key:	
Light Green	Pre-populated data by FEMP to be reviewed and edited.
Orange	Data field in need of review or completion (if applicable) by site.
Yellow	Optional data field to be completed, if applicable and available.

Requirement(s): DOE Order 430.2B, EPACT 2005, EO 13423

Instructions: Update the list of currently operating on-site renewable energy systems in the table below and complete all new data fields, if applicable. The new data fields are for GHG emission calculations. For additional guidance see Appendix A of the Site Sustainability Plan Guidance and comments in row 9 for each column. Purchased renewable energy should be listed in the "Purchased Renewables" worksheet. Newly proposed or potential on-site renewable energy systems should be listed in the "Conservation & RE Measures" worksheet. Edited and new data cells should be highlighted in light blue.

Source: Site/Lab FY 2009 CEDR

System Information											Cost	Production/Consumption Information					Biomass Fuel Information				
System Description/Name	System Type/Category	Location Description (i.e., building name, etc.)	System Location (Zip Code)	Year Installed (YYYY)	End Use Category	On Federal or Indian Land?	On or Off Grid?	% of RECs Retained	Does the site own the T&D system that delivers the electricity?	Scope 1 or 2 System?	Implementation Cost ($)	Generator Nameplate Capacity (MW)	Estimated Annual Renewable Electricity Consumed (MWh/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Thermal Consumed (10^6 BTU/Yr)	Estimated Annual Renewable Thermal Output (10^6 BTU/Yr)	Principal Biomass Fuel Type	Principal Biomass Fuel Use (10^6 BTU/Yr)	Secondary/ Blend Fuel Type	Secondary/ Blend Fuel Use (10^6 BTU/Yr)	Fuel Costs ($)
Solar transpired wall	Solar Photovoltaic	IF 663, Records Storage Facility, Idaho Falls	83415	2001	Goal Subject	On Federal or Indian Land, On	Electric Off-Grid	100%	Yes	Scope 1	$3,245.00	N/A	0.000	0.000	102.400	102.400					

List of Purchased Renewable Energy

Key:	
Light Green	Pre-populated data by FEMP to be reviewed and edited.
Orange	Data field in need of review or completion (if applicable) by site.
Yellow	Optional data field to be completed, if applicable and available.

Requirement(s): DOE Order 430.2B, EPACT 2005, EO 13423

Instructions: Update the list of purchased renewable energy resources in the table below and complete all new data fields, if applicable. The new data fields are for GHG emission calculations. For additional guidance see Appendix A of the Site Sustainability Plan Guidance and comments in row 9 for each column. On-site operational renewable energy should be listed in the "Operating On-Site Renewables" worksheet. Newly proposed or potential on-site renewable energy systems should be listed in the "Conservation & RE Measures" worksheet. Edited and new data cells should be highlighted in light blue.

Source: Site/Lab FY 2009 CEDR

Purchase Information								Consumption Information			Cost	Biomass Fuel Information				
Type of Renewable Energy Purchased	Source Type/Category	Source Location (Zip Code)	Service Year (YYYY)	Purchase Year (FY)	End Use Category	Purchase Term	On Federal or Indian Land?	Total Renewable Electricity Purchased (MWh/Yr)	Total Renewable Thermal Purchased (10^6 BTU/Yr)	Portion Purchased from Projects on Federal or Indian Lands	Annual Cost ($)	Principal Biomass Fuel Type	Principal Biomass Fuel Use (10^6 BTU/Yr)	Secondary/ Blend Fuel Type	Secondary/ Blend Fuel Use (10^6 BTU/Yr)	Fuel Costs ($)
Renewable Energy Credit	Wind	76952	2008	2008	Goal Subject	Short-Term (≤ 10)	NOT on Federal or Indian Land, Adjacent to User Site	6,600.000	0.000	0.000	$18,678.00					
Renewable Energy Credit			2009	2009	Goal Subject	Short-Term (≤ 10)	NOT on Federal or Indian Land, Transmitted to User Site	6,920.000	0.000	0.000	$6,920.00					
Renewable Energy Credit	Wind		2010	2010	Goal Subject	Short-Term (≤ 10)	NOT on Federal or Indian Land, Transmitted to User Site	16,393.000	0.000	0.000	$16,393.00					

Conservation and Renewable Energy Measures List

Key:	
Light Green	Pre-populated data by FEMP to be reviewed and edited.
Orange	Data field in need of review or completion (if applicable) by site.
Yellow	Optional data field to be completed, if applicable and available.

Requirement(s): DOE Order 430.2B, EISA 2007

Instructions: Update the list of conservations and renewable energy measures/projects in the table below and complete all new data fields, if applicable. The new data fields are for GHG emission calculations. For additional guidance see Appendix A of the Site Sustainability Plan Guidance and comments in row 9/10 for each column. On-site operational renewable energy should be listed in the "Operating On-Site Renewables" worksheet. Newly proposed or potential fleet measures should be listed in the "Fleet Measures" worksheet. Edited and new data cells should be highlighted in light

Source: Site/Lab June 2010 EISA Sec 432 report

Measure/Project Description											Funding Overview					
FEMP Measure	Has this measure been entered in your IFI Crosscut?	IFI Project # (Necessary, if applicable	Site Project # (Optional)	Conservation Measure(s) Status (Necessary)	Conservation Measure(s) Type (Necessary)	Conservation Measure(s) Name or Description	Measure(s) Location (FIMS Property Sequence No., if	Measure(s) Location (Zip Code	Does the measure contribute to the reduction of deferred maintenance	Does the measure contribute to HPSB requirements	Funding Source/Type (Actual or Potential	Percent of funds obligated (if applicable and for measures not yet operational) (%)	Starting Year of Measure Implementation (Anticipated or Actual - YYY	Measure Completion Year (Anticipated or Actual -- YYYY)	Estimated Service Life	Estimated Implementation Cost ($)
NE-0602-0011			BEA and CWI	Verified	Heating, Ventilating, and Air Conditioning (HVAC)	Idaho Falls Facilities UESC Project: Energy and Water	INL Idaho Falls (602)	83415	Yes	Yes	UESC	0%	2011	2012	25	$2,100,000
NE-0603-0001			BEA	Identified	Standard Metering Systems	INL Sitewide Electric and Water Meter Installations	INL All	83415	No	Yes	ESPC	0%	2012	2014	25	$1,240,000
NE-0603-0002-A			BEA	Operational	Water and Sewer Conservation Systems	Water Leak Repairs - ATR Complex		83415	Yes	No	M&R Direct	100%	2009	2009	25	$164,881
NE-0603-0002-B			BEA	Identified	Water and Sewer Conservation Systems	Water Leak Repairs - CFA		83415	Yes	No	Other	0%	2010	2011	25	$269,016
NE-0603-0003			BEA	Identified	Wind	INL On-Site Wind Farm Development - Site Development, Electrical Infrastructure, and NEPA Documentation only.		83415	No	No	Other	0%	2010	2012	25	$2,500,000
NE-0603-0005			ECM-001	Awarded/Approved	Lighting Improvements	INL ESPC Project #2 MFC - Lighting Improvements	INL MFC	83415	Yes	Yes	ESPC	100%	2009	2010	25	$1,874,000
NE-0603-0006			ECM-002	Awarded/Approved	Boiler Plant Improvements	INL ESPC Project #2 MFC - Boiler Plant Improvements	INL MFC	83415	Yes	Yes	ESPC	100%	2009	2011	25	$22,199,000
NE-0603-0007			ECM-003	Awarded/Approved	Energy Related Process Improvements	INL ESPC Project #2 MFC - Compressed Air Improvements	INL MFC	83415	Yes	Yes	ESPC	100%	2009	2011	25	$1,230,000
NE-0603-0008			ECM-004	Awarded/Approved	Energy Related Process Improvements	INL ESPC Project #2 MFC - Digital EMS Controls	INL MFC	83415	No	Yes	ESPC	100%	2009	2011	25	$7,521,000
NE-0603-0009			ECM-005	Awarded/Approved	Solar Thermal (including water and space conditioning)	INL ESPC Project #2 MFC - Solar Thermal Transired Walls (2)	INL MFC	83415	No	Yes	ESPC	100%	2009	2011	25	$757,000
NE-0603-0010			BEA and CWI	Awarded/Approved	Other	Idaho Falls Facilities UESC Project - Proposal Development Energy Surveys		83415	No		UESC	100%	2009	2010	25	$250,000
NE-0603-0012			CWI	Verified	Heating, Ventilating, and Air Conditioning (HVAC)	INTEC CPP-663 HVAC Upgrade	INL INTEC	83415	Yes	Yes	Other	0%	2010	2011	25	N/A
NE-0603-0013			CWI	Operational	Water and Sewer Conservation Systems	INTEC CPP-606 Water and Sewer Conservation Systems	INL INTEC	83415	Yes	No	Other	100%	2009	2010	25	$325,434
NE-0603-0014			BEA	Identified	Other	INL ESPC Project #3 CFA, ATR Complex and SMC	INL CFA, ATR Complex, and SMC	83415	Yes	Yes	ESPC	0%	2011	2014	25	$30,000,000
NE-0603-0015			CWI	Identified	Other	INL ESPC Project #4 INTEC and RWMC	INL INTEC and RWMC	83415	Yes	Yes	ESPC	0%	2011	2014	25	$15,000,000

Sustainability Metrics I - Energy and Water													
Estimated Annual Energy Savings (10^6 BTU/Y	Estimated Annual Energy Cost Savings ($/Yr)	For measures that increase energy efficiency, provide the percent of energy saved for each energy type. The sum of all savings should equal to 100 percent. This information is needed to calculate GHG emissions mitigated.							Estimated Annual Potable Water Savings (10^3 Gal/Yr	Estimated Annual ILA Non-Potable Freshwater Savings (10^3 Gal/Yr)	Estimated Annual Water Cost Savings ($/Yr)	Estimated Annual Ancillary Cost Savings ($/Y	Estimated Annual Cost Savings ($/Y
		Estimated Annual Electricity Saved (%)	Estimated Annual Fuel Oil Saved (%)	Estimated Annual Natural Gas Saved (%)	Estimated Annual LPG/Propane Saved (%)	Estimated Annual Coal Saved (%	Estimated Annual Steam Saved (%	Estimated Annual Other BTUs Saved (%)					
34,683	$475,581	72%	0%	28%	0%	0%	0%	0%	5,259	0	$4,733	N/A	$480,314
8,882	$85,901	100%	0%	0%	0%	0%	0%	0%	N/A	N/A	N/A	$0	$85,901
353	$3,904	100%	0%	0%	0%	0%	0%	0%	4,563	0	N/A - Water Cost savings are Electrical Savings	$0	$3,904
577	$6,370	100%	0%	0%	0%	0%	0%	0%	7,483	0	N/A - Water Cost savings are Electrical Savings	$0	$6,370
0	$0	0%	0%	0%	0%	0%	0%	0%	N/A	N/A	N/A	$0	$0
2,276	$42,839	100%	0%	0%	0%	0%	0%	0%	0	0	$0	$13,974	$56,813
36,529	$1,479,618	0%	100%	0%	0%	0%	0%	0%	3,479	0	$1,278	$29,994	$1,510,890
989	$8,791	100%	0%	0%	0%	0%	0%	0%	0	0	$0	$9,071	$17,862
13,076	$119,551	100%	0%	0%	0%	0%	0%	0%	0	0	$0	$0	$119,551
503	$12,310	0%	100%	0%	0%	0%	0%	0%	0	0	$0	$0	$12,310
N/A	N/A	0%	0%	0%	0%	0%	0%	0%	N/A	N/A	N/A	$0	$0
N/A	N/A	65%	32%	3%	0%	0%	0%	0%	N/A	N/A	N/A	N/A	$0
4,190	$61,412	100%	0%	0%	0%	0%	0%	0%	0	0	$0	N/A	$61,412
TBD	$1,000,000	65%	32%	3%	0%	0%	0%	0%	N/A	N/A	N/A	N/A	$1,000,000
TBD	$500,000	65%	32%	3%	0%	0%	0%	0%	N/A	N/A	N/A	N/A	$500,000

Sustainability Metrics II - Renewables											
Estimated Annual Renewable Electricity Consumed (kWh/Yr)	Estimated Annual Renewable Electricity Output (kWh/Yr)	Estimated Annual Renewable Thermal Consumed (10^6 BTU/Yr)	Estimated Annual Renewable Thermal Output (10^6 BTU/Y	For measures that switch from a fossil fuel to a renewable source, provide the percent of energy saved for each energy type. The sum of all savings should equal to 100 percent. This information is needed to calculate GHG emissions mitigated.							Estimated Annual Cost Savings ($/Yr) from switching to a renewable energy source
				Estimated Annual Electricity Saved (%)	Estimated Annual Fuel Oil Saved (%)	Estimated Annual Natural Gas Saved (%)	Estimated Annual LPG/Propane Saved (%)	Estimated Annual Coal Saved (%	Estimated Annual Steam Saved (%	Estimated Annual Other BTUs Saved (%)	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	52,560,000	N/A	N/A	100%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	503	503	0%	100%	0%	0%	0%	0%	0%	
N/A	N/A	N/A	N/A	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
0	0	0	0	0%	0%	0%	0%	0%	0%	0%	
N/A	N/A	N/A	N/A	0%	0%	0%	0%	0%	0%	0%	
N/A	N/A	N/A	N/A	0%	0%	0%	0%	0%	0%	0%	

Return on Investment				Notes	
Have you performed a Life-Cycle Cost Analysis? If so, what is the…					
Simple Payback	Internal Rate of Return	Net Present Value	Savings-to-Investment Ratio	Site Priority	Additional Information (Optional)
43.721				3	Final project still being developed/refined.
14.435				4	INL Metering Plan developed - No funding identified. Will include in ESPC if project funding is not available.
				Complete	All identified water leaks at the INL ATR Complex have been repaired in conjunction with other program project work scope.
				7	Bore holes failed to positively identify leaks. Further investigation is necessary to pinpoint the leaks as identified by the Leak Study for repair.
				8	Identified Opportunity - Project Work Scope has been developed and infrastructure support work may begin if funding is made available.
				1	Construction In Progress
				1	Construction In Progress
				1	Construction In Progress
				1	Construction In Progress
				2	Survey Only - No Project
				6	EM Program
				Complete	EM Program Project. This project primarily reduced energy use. There are no net reductions in water usage as the water reductions came from water previously being returned to the aquifer.
				5	Completing ESCo Solicitation Process: NE Program
				5	Completing ESCo Solicitation Process: EM Program

Transportation and Fleet Management Strategies to Meet Goals

Key:	
Light Green	Pre-populated data by FEMP to be reviewed and edited.
Orange	Data field in need of review or completion (if applicable) by site.
Yellow	Optional data field to be completed, if applicable and available.

Requirement(s): DOE Order 430.2B

Instructions: Update the list of fleet measures/projects in the table below and complete all new data fields, if applicable. The new data fields are for marginal cost calculations. For additional guidance see Appendix A of the Site Sustainability Plan Guidance and comments in row 9 for each column. Note this table is for transportation and fleet management measures only. Edited and new data cells should be highlighted in light blue.

Source: Site/Lab FY 2009 CEDR

Measure Description				Funding Overview						Savings		Return on Investment		Notes
Strategy Description	Vehicle Type	Vehicle Size	Fuel Type	Funding Source (Potential or Actual)	Implementation Year (Anticipated or Actual -- YYYY)	Number of Vehicles	Cost per Vehicle	Estimated Service Life	Total Estimated Implementation Cost ($)	Estimated Annual Petroleum Savings (GGE/Yr)	Estimated Annual Alternative Fuel Consumption (GGE/Yr)	Simple Payback	Net Present Value	Additional Information (Optional)
Alternative Fuel Vehicle Acquisition	Compressed Natural Gas (CNG)	Buses	CNG	Direct	2012	TBD	TBD	TBD	$6,166,000	487,700	487,700			Bus fleet Replacement (Fuel Switching) @ BEA
Alternative Fuel Infrastructure	E85 Flexible-Fuel Vehicle (FFV)	Light Duty	E85	Direct	2011	91	TBD	TBD	$340,000	TBD	TBD			Fueiling Infrastructure @ AMWTP and CWI.

List of New Federal Building Construction and Major Renovation, HPSB Compliance and Projected Utilities Consumption

Key:	
Light Green	Pre-populated data by FEMP to be reviewed and edited.
Orange	Data field in need of review or completion (if applicable) by site.
Yellow	Optional data field to be completed, if applicable and available.

Requirement(s): EPACT 2005, DOE Order 430.2B, EISA 2007

Instructions: Update the list of new building construction and major renovation in the table below and complete all new data fields, if applicable. The new data fields are for projecting future energy and water consumption. For additional guidance see Appendix A of the Site Sustainability Plan Guidance and comments in row 9/10 for each column. Edited and new data cells should be highlighted in light blue.

Source: Site/Lab FY 2009 CEDR

Basic Information														For compliance with Sec 438 of EISA	For compliance with DOE O 430.2B	Complete this section if *new* building project was CD-1 or lower on 10/1/06		Complete this section if construction has been completed
									Other Usage									
Project ID (optional)	Building/Project Name	Planned or Actual CD-2 Date (MM/YY)	Current CD Status	Total Project Cost ($ M)	Number/Type of Facilities	Anticipated Electricity Usage (kWh/Yr)	Anticipated Natural Gas Usage (10^3 Cubic Feet/Yr)	Anticipated Water Usage by Facility (10^3 Gal/Yr)	Type	Units	Quantity	Expected Building Occupancy Year (YYYY)	Anticipated Square Footage	If > 5,000 sq ft, will it maintain or restore pre-development hydrology?	What will the building achieve (LEED® level or GP)?	Estimated percentage below ASHRAE Std 90.1--2004 in terms of energy use	If not at least 30% below ASHRAE Std 90.1--2004, will design achieve maximum level of energy efficiency that is life-cycle cost-effective?	In terms of energy use, percentage below ANSI/ASHRAE/IESNA Standard 90.1--2004 achieved
	Irridated Materials Caracterization Lab (IMCL)	N/A	Complete	$10								TBD	TBD	Yes	None of the Above	Planning for 30%	Yes	
	Radiological and Environmental Science	N/A	Complete									2011	12	Yes	None of the Above	Planning for 30%	Yes	
	MFC Technical Support	N/A	Complete	$12								TBD	TBD	Yes	None of the Above	Planning for 30%	Yes	
	MFC Dial Room	N/A	Complete	$7								TBD	TBD	Yes	Guiding Principles	TBD	Yes	
	Radioanalytical Chemistry Laboraory (RACL)	N/A	Complete	$6								2010	5	Yes	Guiding Principles	TBD	Yes	
	Radiochemistry Laboraory	N/A	Complete	$6								2009	8	Yes	Guiding Principles	TBD	Yes	
	Test Train Assembly Facility	N/A	Complete	$3								2009	4	Yes	LEED® Certified	30%	Yes	
	ATR Complex Technical Support Building	N/A	Complete	$5								2009	16	Yes	LEED® Certified	30%	Yes	
	ATR Complex Dial Room	N/A	Complete	$10								TBD	TBD	Yes	Guiding Principles	TBD	Yes	
Lease	Industrial Control system Cyber Emergency Reponse Team (ICS-CERT)	N/A	Complete	$4								TBD	35		Guiding Principles	TBD	Yes	
Lease	INL Testing and Demonstration Facility (TDF)	TBD	Not Started	$22								2011	55		None of the Above	Planning for 30%	Yes	
Lease	Additional Office Space	TBD	Not Started	TBD								TBD	65		Guiding Principles	TBD	Yes	
Lease	Research and Education Facility	TBD	Not Started	$50								2011	131		None of the Above	Planning for 30%	Yes	

List of Existing Buildings to Meet 15% HPSB Goal

Key:	
Light Green	Pre-populated data by FEMP to be reviewed and edited.
Orange	Data field in need of review or completion (if applicable) by site.
Yellow	Optional data field to be completed, if applicable and available.

Requirement(s): DOE Order 430.2B, E.O. 13423

Instructions: Update the list of existing building meeting or planned to meet the HPSB goal in the table below. For additional guidance see Appendix A of the Site Sustainability Plan Guidance and comments in row 9 for each column. Edited and new data cells should be highlighted in light blue.

Source: Site/Lab FY 2009 CEDR

Basic Information				Guiding Principle Compliance Path							LEED® Compliance Path							
Building Name	FIMS Property Sequence No.	Square Footage	Compliance Path	Assessment Date (Planned or Actual) (MM/DD/YY)	Currently meets Integrated Design GP?	Currently meets Energy Performance GP?	Currently meets Water GP?	Currently meets Indoor Environmental Quality GP?	Currently meets Materials GP?	Planned or actual compliance FY for all 5 Guiding Principles	CD Level on 10/1/08	USGBC Project Title	Planned or Actual Registration Date (MM/DD/YY)	Planned or Actual Certification Date (MM/DD/YY)	Planned or Actual LEED® EBOM Certification Level	LEED EBOM Version	Planned or Actual LEED NC Level	Planned or Actual LEED NC Certification Date (MM/DD/YY)
CF-1611	130981	29,801		2010	Met	Not Yet Met	Not Yet	Met	Not Yet	2013								
CF-1612	130982	22,715		2010	Met	Not Yet Met	Not Yet	Met	Not Yet	2013								
CF-1618	141217	15,522		2010	Met	Not Yet Met	Met	Met	Not Yet	2013								
CF-609	95686	38,934		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
CF-621	95118	11,787		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
CF-623	95102	12,615		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
CF-696	126655	82,152		2010	Met	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
CF-698	95124	11,311		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
CPP-1604	96027	22,633		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-1605	95999	17,105		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-1631	96017	12,000		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-603	95173	40,759		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-606	95170	14,921		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-663	95966	64,197		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-666	95954	152,388		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-684	95995	13,101		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
CPP-691	95923	160,611		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
EBR-1-601	N/A	27,152		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
IF-601	96659	20,100		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-602	96658	46,494		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-603	96656	112,380		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-604A	96849	50,528		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-604B	96838	49,787		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-606	96848	67,725		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-608	96655	37,353		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-616	96834	272,309		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-639	96841	22,030		2009	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
IF-654	96845	243,059		2009	Not Yet	Met	Met	Met	Not Yet	2012								
IF-663	140110	21,716		2009	Met	Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-710	124700	11,612		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-752	124737	81,726		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								

Basic Information				Guiding Principle Compliance Path							LEED® Compliance Path							
Building Name	FIMS Property Sequence No.	Square Footage	Compliance Path	Assessment Date (Planned or Actual) (MM/DD/YY)	Currently meets Integrated Design GP?	Currently meets Energy Performance GP?	Currently meets Water GP?	Currently meets Indoor Environmental Quality GP?	Currently meets Materials GP?	Planned or actual compliance FY for all 5 Guiding Principles	CD Level on 10/1/08	USGBC Project Title	Planned or Actual Registration Date (MM/DD/YY)	Planned or Actual Certification Date (MM/DD/YY)	Planned or Actual LEED® EBOM Certification Level	LEED EBOM Version	Planned or Actual LEED NC Level	Planned or Actual LEED NC Certification Date (MM/DD/YY)
MFC-753	124769	23,365		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-765	124745	51,385		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-768	124741	43,120		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-774	124766	29,148		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-781	124772	30,722		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-785	124753	61,085		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
MFC-791	124748	16,896		2008	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2012								
TAN-629	95195	112,949		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TAN-675	95166	19,877		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TAN-677	95859	12,050		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TAN-679	95182	86,199		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TAN-679A	205001	25,142		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TAN-681	95181	12,523		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TRA-605	96098	22,235		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TRA-628	96653	13,013		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TRA-652	96125	13,284		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TRA-653	96126	29,714		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
TRA-670	96138	131,954		2010	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2013								
WMF-1612	205640	45,248		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
WMF-1614	N/A	38,575		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
WMF-610	96052	11,557		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
WMF-635	126926	40,954		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
WMF-636	126927	316,511		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
WMF-637	94857	24,262		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
WMF-676	202168	234,922		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								
WMF-697	202154	56,215		2011	Not Yet	Not Yet Met	Not Yet	Not Yet Met	Not Yet	2014								

Data Centers

Requirement(s): DOE Order 430.2B, EISA 2007

Instructions: Update the list of data centers in the table below and complete all new data fields, if applicable. For additional guidance see Appendix A of the Site Sustainability Plan Guidance and comments in row 9/10 for each column. Edited and new data cells should be hig

Source: Site/Lab 2009 Data Center Survey

Key:	
Light Green	Pre-populated data by FEMP to be reviewed and edited.
Orange	Data field in need of review or completion (if applicable) by site.
Yellow	Optional data field to be completed, if applicable and available.

			DC Pro									Uninterruptable Power Source										
Building/ Room ID	Zip	Area (SQ FT)	Bench-marked?	MM/DD/YY	Dedicated	DCIE	PUE	Contact	Function	Construction Year	IT Power (kWh)	Cooling Power (kW)	Input (kW)	Output (kW)	Loss (kW)	Total Power (kWh)	Power Data is…	Additional Information/Comments (Optional)	Dedicated data center meter and monitored weekly?	If no meter, planned year of installation	% of cloud activity hosted	Average CPU utilization (%)	% of Data Center activity implemented via virtualization
IF-608	83415	37,353	No		Yes	0.750	1.333		Data	1968	2,998,980					3,998,640							
IF-654	83415	243,059	No		No	0.340	2.941		Office	2007	2,134,656					6,278,400							

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Appendix C

Metering Plans

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Appendix C

Metering Plans

Conceptual Metering Plans for both INL and ICP are included for information on the buildings planned for Advanced Meter installation. Funding and installation are currently planned for implementation through the ESPC process and the next two planned ESPC projects. Buildings listed in yellow or green are part of the Metering Plan as they are targeted for metering, but have already been identified and funded through the MFC ESPC project.

INL Metering Plan Analysis and Summary

Prepared by: Ernest L. Fossum and Steve A. Birrer
Prepared for: DOE / INL Site Sustainability Plan
Updated: December 2010

This Metering Plan analysis summarizes the facilities identified for Advanced Meter installations using the DOE Buildings Electric Metering Guidance issued by the Federal Energy Management Program (FEMP) on September 27, 2006

This analysis uses the INL's actual blended unit electric cost (energy and demand) to determine the minimum size of facilities that can be cost effectively metered. A five-year blended rate of $.033/kWh was rounded up to $,040 to be more conservative and capture additional facilities that would benefit from installations. The $.040/kWh rate was used in the charts included in the guidance to establish the minimum building size for metering.

A worksheet tab has been prepared listing the facilities selected for each of the primary Contractors at the INL Site; BEA and CWI. The worksheets contain facilities that have been identified for meter installations by pending Energy Savings Performance Contracts (ESPC). ESPCs are the preferred method for funding the installation of meters and will be further pursued at major areas at the INL Site.

Assumptions

Minimum Facility Size for Cost Effective Meter Installation:

Laboratory and Industrial Facilities: **11,000 ft²**
Commercial Facilities: **16,500 ft²**
Warehouse/storage Facilities: **125,000 ft²**
Vacant Facilities: **160,000 ft²**

$20,000/meter: Average ROM cost estimate for engineering/project management/contingency for each building

Rounded and Blended Electric Rate (5-yr Average) for Building Selection: **$.040/kWh**
Blended Electric Rate (5-yr Average) for Calculations: **$.033/kWh**
Actual Average Electric Energy Use Intensity from INL Annual Report: ***185,244 Btu/ft²/yr***
Energy Reduction Estimate: ***2.0%*** *(Minimum savings stipulated by DOE/EE-0312)*

INL/BEA Facilities

Installation Cost: *($20,000/meter) x (20 meters)* = ***$400,000***
Energy Savings: *(730,929 ft²) x (185,244 Btu/ft²/yr) /(3,412 Btu/kWh) = 39,683,532 kWh/yr*
(39,683,532 kWh/yr) x (2.0%) = 793,671 kWh/yr
(793,671 kWh/yr) x ($0.033/kWh) = ***$26,191/yr***
Payback Period: *($400,000) / ($26,191/yr)* = ***15.3 yr payback***

BEA Laboratory and Industrial Facilities (Greater than 11,000 square feet)

ID	Name	Owned Leased	Status	Program	Gross SF	Year Built
CF-1611	CFA Fire Station	Owned	Operating	NE	29,801	1996
CF-1612	CFA Medical Facility	Owned	Operating	NE	22,715	1996
CF-1618	Health Physics Instrument Lab	Owned	Operating	NE	15,522	2002
CF-609	Security Headquarters	Owned	Operating	NE	38,934	1988
CF-621	Multi-craft Shop #1	Owned	Operating	NE	11,787	1983
CF-623	Multi-craft Shop #3	Owned	Operating	NE	12,615	1986
CF-696	CFA Transportation Complex	Owned	Operating	NE	82,152	1995
CF-698	Std & Cal Lab	Owned	Operating	NE	11,311	1969
EBR-I-601	Reactor Building And Annex	Owned	Operating	NE	27,152	1953
MFC-701	Security Building	Owned	Operating	NE	5,834	1981
MFC-704	Fuel Manufacturing Facility	Owned	Operating	NE	7,809	1986
MFC-710	Engineering Office Building	Owned	Operating	NE	11,612	1991
MFC-725	MFC Fire Station	Owned	Operating	NE	9,240	1998
MFC-752	Lab & Office Building	Owned	Operating	NE	81,726	1962
MFC-753	Plant Services Building	Owned	Operating	NE	23,365	1961
MFC-759	Emergency Reentry Building	Owned	Operating	NE	2,550	1961
MFC-765	Fuel Conditioning Facility	Owned	Operating	NE	51,385	1963
MFC-765A	FCF Office Annex	Owned	Operating	NE	7,631	1963
MFC-768	Power Plant	Owned	Operating	NE	43,120	1961
MFC-772	EBR-II Engineering Lab	Owned	Operating	NE	5,199	1966
MFC-774	ZPPR Support Wing	Owned	Operating	NE	29,148	1967
MFC-781	Materials Handling Building	Owned	Operating	NE	30,722	1967
MFC-782	Machine Shop Building	Owned	Operating	NE	5,096	1967
MFC-784	ZPPR Material Control Building	Owned	Operating	NE	5,075	1968
MFC-785	Hot Fuel Examination Facility	Owned	Operating	NE	61,085	1974
MFC-787	Fuels and Applied Science Building	Owned	Operating	NE	7,046	1970
MFC-788	EBR-II Maintenance Shop	Owned	Operating	NE	3,960	1955
MFC-791	Instrument & Maintenance Facility	Owned	Operating	NE	16,896	1972
MFC-792	SSPSF Control Room	Owned	Operating	NE	3,044	1973
MFC-792A	Space & Security Power System Facility Annex	Owned	Operating	NE	10,452	2004
MFC-793	Sodium Comp Maintenance Shop	Owned	Operating	NE	3,809	1960
MFC-793C	SCMS Contaminated Storage	Owned	Operating	NE	1,880	1984
MFC-798	Radioactive Liquid Waste Treatment Facility	Owned	Operating	NE	5,397	1983
MFC-799	Sodium Process Facility	Owned	Operating	NE	7,329	1986
TAN-629	SMC Assembly Building	Owned	Operating	NE	112,949	1959
TAN-675	SMC Office	Owned	Operating	NE	19,877	1984
TAN-677	Truck Docking Building	Owned	Operating	NE	12,050	1984
TAN-679	Manufacturing & Assembly Building	Owned	Operating	NE	86,199	1986
TAN-679A	Manufacturing and Assembly Annex	Owned	Operating	NE	25,142	2002
TAN-681	Waste Treatment Building	Owned	Operating	NE	12,523	1986
TRA-605	Warm Waste Treatment Facility	Owned	Operating	NE	22,235	1952
TRA-628	Engineering Office Building	Owned	Operating	NE	13,013	1986
TRA-652	Reactor Wing Extension B	Owned	Operating	NE	13,284	1966
TRA-653	ATR Maintenance Shop	Owned	Operating	NE	29,714	1957
TRA-670	ATR Reactor Building	Owned	Operating	NE	131,954	1966

	MFC buildings planned to be metered by the ESPC#2 Project
	MFC buildings planned for metering by the ESPC#2 Project that are less than 11,000 ft²
	All other buildings over 11,000 ft² planned for meter installations

Idaho Falls Facilities - Commercial Standard Facilities (Greater than 16,500 square feet)

All of the Idaho Falls facilities occupied by any of the three INL Site contractors are currently metered and are planned for an advanced meter upgrade by the City of Idaho Falls in FY 2011.

ID	Name	Owned Leased	Status	Program	Gross SF	Year Built
IF-601	Research Office Building #1	Owned	Operating	NE	20,100	1987
IF-663	Records Storage Facility	Owned	Operating	NE	21,716	2001
IF-639	North Holmes Laboratory	Leased	Operating	NE	22,030	1960
IF-641	Lindsay Boulevard Complex	Leased	Operating	EM	36,104	1988
IF-608	Information Operations & Research Center	Owned	Operating	NE	37,353	1968
IF-602	IRC Office Building	Owned	Operating	NE	46,494	1983
IF-609	Energy Drive Facility (AMWTP)	Leased	Operating	EM	48,542	1978
IF-604B	Technical Support Building (ICP)	Leased	Operating	EM	49,787	1976
IF-604A	Technical Support Annex (ICP)	Leased	Operating	EM	50,528	1978
IF-606	INL Admin Building	Leased	Operating	NE	67,725	1985
IF-603	IRC Laboratory Building	Owned	Operating	NE	112,380	1984
IF-654	Engineering Research Office Building	Leased	Operating	NE	243,059	1993
IF-616	Willow Creek Building	Leased	Operating	NE	272,309	1979

ICP/CWI Facilities

Installation Cost: *($20,000/meter) x (13 meters)* = ***$260,000***

Energy Savings: *(622,015 ft^2) x (185,244 Btu/ft^2/yr) / (3,412 Btu/kWh) = 33,770,383 kWh/yr*
(33,770,383 kWh/yr) x (2.0%) = 675,407 kWh/yr
(675,407 kWh/yr) x ($0.033/kWh) = ***$22,288/yr***

Payback Period: *($260,000) / ($22,288/yr)* = ***11.7 yr payback***

ICP Laboratory and Industrial Facilities (Greater than 11,000 square feet)

ID	Name	Owned Leased	Status	Program	Gross SF	Year Built
CPP-1631	Production Computer Support	DOE Owned	Operating	EM	12,000	1988
CPP-684	Remote Analytical Lab	DOE Owned	Operating	EM	13,101	1985
CPP-606	Service Bldg Powerhouse	DOE Owned	Operating	EM	14,921	1953
CPP-1605	Engineering Support Building	DOE Owned	Operating	EM	17,105	1986
CPP-603	Wet and Dry Fuel Storage Facility	DOE Owned	Operating	EM	40,759	1953
CPP-1604	Office Building	DOE Owned	Operating	EM	22,633	1986
WMF-637	Operations Control Building	DOE Owned	Operating Pending D&D	EM	24,262	1995
WMF-1614	Retrieval Enclosure 3	DOE Owned	Operating	EM	38,575	
WMF-1612	Retrieval Enclosure 2	DOE Owned	Operating	EM	45,248	
WMF-697	Retrieval Enclosure I (PIT 4)	DOE Owned	Operating	EM	56,215	2004
CPP-663	Maintenance/Crafts/Warehouse Building	DOE Owned	Operating	EM	64,197	1980
CPP-666	FDP/FAST Facility	DOE Owned	Operating	EM	152,388	1983
CPP-691	Fuel Processing Restoration Facility	DOE Owned	Shutdown Pending Disposal	EM	160,611	1992

AMWTP/BBWI Facilities

Installation Cost: *($20,000/meter) x (4 meters)* = ***$80,000***

Energy Savings: *(603,944 ft^2) x (185,244 Btu/ft^2/yr) / (3,412 Btu/kWh) = 32,789,274 kWh/yr*
(32,789,274 kWh/yr) x (2.0%) = 655,785 kWh/yr
(655,785 kWh/yr) x ($0.033/kWh) = ***$21,641/yr***

Payback Period: *($80,000) / ($21,641/yr)* = ***3.7 yr payback***

AMWTP Laboratory and Industrial Facilities (Greater than 11,000 square feet)

ID	Name	Owned Leased	Status	Program	Gross SF	Year Built
WMF-610	Waste Examination Plant (AMWTP)	Owned	Operating	EM	11,557	1985
WMF-635	Type I Storage Module (AMWTP)	Owned	Operating	EM	40,954	1995
WMF-636	TSA Retrieval Enclosure (AMWTP)	Owned	Operating	EM	316,511	1996
WMF-676	Adv Mixed Waste Treatment Facility (AMWTP)	Owned	Operating	EM	234,922	2002